COPPER FOX METALS INC.
SCHAFT CREEK MINE PROJECT



2011 BASELINE HYDROGEOLOGY STUDY

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EXECUTIVE SUMMARY

The Schaft Creek Project is a large porphyry copper-gold-molybdenum-silver deposit located within the Stikine-Iskut region of northwestern British Columbia, approximately 60 km southwest of Telegraph Creek. The Schaft Creek Project consists of the following components: an open pit, a tailings storage facility, waste rock storage areas, and a processing plant. The project area is characterized by steep sided mountains and broad U-shaped valleys trending north-south. The study area is bounded to the east by the northerly flowing Mess Creek and to the west by Schaft and Hickman Creeks, which also flow to the north and merge with Mess Creek downstream of the study site.

Knight Piésold Ltd. (KP) was requested by Copper Fox Metals Inc. (Copper Fox) to complete a baseline hydrogeology and groundwater quality study for the Project. The work consisted of reviewing information from previous studies and incorporating physical hydrogeological and groundwater quality testing completed by KP and Rescan Environmental Services (Rescan) in 2008, 2009, 2010 and 2011 to produce an updated study of the baseline hydrogeologic and groundwater quality conditions.

Groundwater Hydrology

Geotechnical, geological, and hydrogeological information was collected during the following site investigation programs:

- 2007, 2008 and 2011 geotechnical site investigations
- 2007 and 2008 seismic surveys
- 2007, 2008, 2009, 2010, and 2011 groundwater sampling programs
- 2010 hydrogeological investigation, and
- 2011 open pit geotechnical investigation.

The geotechnical and geological information was generally presented in rock and overburden logs; the data were used to characterize the bedrock and surficial geology that subsequently provides a context for the hydrogeology of the site. The hydrogeologic information collected includes groundwater level measurements, response and packer tests, and water quality data.

The geology of the Schaft Creek Project area in terms of groundwater conditions and all of the hydrogeologic data that has been collected to date are presented in this report. The hydrogeological data are interpreted and groundwater conditions, hydraulic conductivity and groundwater flow systems are described for the following areas: Schaft Creek Valley, the deposit and hill slope areas, the saddle area between Schaft and Mess Creek Valleys, and Skeeter Creek Valley.

In the Project area groundwater comes from infiltration of run-off from snowmelt, ice-melt from glaciers, and from rain. The groundwater surface or zone of saturation in the subsurface is likely a muted

replication of the topography. Groundwater flows from recharge zones in the upper elevations towards lower elevation discharge zones in Schaft Creek, Mess Creek and Skeeter Creek Valleys. Groundwater in the bedrock flows through fractures and is under confined conditions. No dissolution or karst features have been identified in the Project area. In unconsolidated valley-fill and overburden deposits groundwater flows through voids and pores between sediment grains. The Schaft Creek Valley-fill aquifer is very permeable and groundwater is under water table conditions. In the Skeeter Creek Valley overburden deposits groundwater is under localized confined and water table conditions and artesian conditions are common Skeeter Creek Valley.

Groundwater Quality

The groundwater quality in the Project area is generally slightly basic to basic, moderately hard to hard and alkaline. Groundwater is classified as fresh with total dissolved solids concentrations less than 1000 mg/L. All monitoring locations have high buffering capacity with alkalinity values consistently greater than 49 mg/L $CaCO_3$, ranging upwards to 201 mg/L $CaCO_3$. Sulphate concentrations exceeds the 100 mg/L BCWQG limit in at least one well at all monitoring locations in the vicinity of the proposed TSF and one other well located within the Schaft Creek floodplain.

The groundwater in the deposit area, Schaft Creek Valley and saddle areas are predominantly calcium to calcium-magnesium bicarbonate type. The groundwater in Skeeter Creek Valley ranges from magnesium type to no dominant cation type, and bicarbonate to sulphate type water.

Baseline water quality analytical and *in situ* data are examined and compared to relevant guidelines with respect to the most sensitive receptors in the downstream environment. The guidelines relevant to the water quality data for the Project are the British Columbia Ministry of Environment Approved and Working BCWQG for Fresh Water Aquatic Life (BCWQG) – Maximum and the Canadian Council of Ministers for the Environment (CCME), Canadian Environmental Quality Guidelines (CCME) - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater).

Aquatic life guideline exceedances occur for aluminium, arsenic, cadmium, iron, molybdenum, uranium and vanadium, but these issues are not pervasive. Guideline exceedances vary with location within Schaft Creek Valley. In the southern portion of the valley vanadium is the only parameter to exceed guidelines. In the central part of the valley sulphate, cadmium, molybdenum and uranium exceed guideline limits, and further north arsenic and iron are the only parameters to exceed guidelines. In the deposit and saddle areas arsenic, cadmium and iron are the only parameters to exceed guideline limits. In Skeeter Creek Valley sulphate, iron and uranium are the only parameters to exceed guidelines. It should be noted that arsenic concentrations in all of the samples that exceed guidelines are near the guideline limit and that uranium concentrations only exceed the more stringent CCME limit, and are well below the BCWQG limit. Cadmium exceedances are rare following the redevelopment of the monitoring wells, with only three samples exceeding the guideline limit for the Project area.

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Section 1.0 - INTRODUCTION

1.1 STUDY AREA

The Schaft Creek Mine Project (the Project) is a large porphyry copper-gold-molybdenum-silver deposit located in the Stikine-Iskut region of northwestern British Columbia, approximately 60 km southwest of Telegraph Creek, as illustrated on Figure 1.1. The study area and a general arrangement of the proposed mine development as currently anticipated are shown on Figure 1.2. The study area focuses on the locations of key proposed facilities including the following:

- An open pit in the deposit and hill slope areas above Schaft Creek Valley
- Waste rock storage areas in Schaft Creek Valley
- The saddle area between Schaft Creek Valley and Mess Creek Valley, and
- A tailings storage facility (TSF) area in Skeeter Creek Valley.

1.2 PROJECT BACKGROUND

The deposit was initially identified in the late 1950's and was staked by the BIK Syndicate in 1957. The deposit changed hands numerous times during the 1960's and 70's with Teck Corporation (Teck) acquiring the property around 1979. Teck continued exploratory drilling and completed a Prefeasibility Study in the early 1980's. Mr. G. Salazar optioned an interest in the Project in 2002 and incorporated the property into Copper Fox Metals Incorporated (Copper Fox) in 2005. Copper Fox has since undertaken exploratory drilling programs in 2005, 2006, 2007 and 2008 and has commissioned numerous investigations and reports to support mine permitting and development.

As of May 1, 2011, the measured and indicated resource estimate is 1.0 billion tonnes at 0.27% copper, 0.017% molybdenum and 0.18 grams per tonne (g/t) gold (David Thomas, P.Geo., May 2011).

1.3 SCOPE OF WORK

Knight Piésold Ltd. (KP) was requested by Copper Fox to complete a baseline hydrogeology and groundwater quality study for the Schaft Creek Project. This baseline study provides a description of the groundwater regime within the study area that addresses: the location of aquifers and aquitards; the rate and direction of groundwater flow; the expected interaction with surface water; and the water quality characteristics of groundwater. The intent of this study is to characterize the existing groundwater regime and to provide a basis for defining impacts, mitigation measures, monitoring, and contingency planning as mine planning proceeds. The work consisted of reviewing information from previous studies and incorporating physical hydrogeological and groundwater quality testing completed by KP and Rescan Environmental Services (Rescan) from 2008 to 2011 to produce a baseline hydrogeologic and groundwater quality report.

Physical hydrogeologic information was obtained from studies and work completed by other consultants in 2006, 2007 and 2008 (Fisher 2006; Ruthrie 2006; Ewanchuk 2007; DST 2008; DST 2008; RTEC, 2008; Rescan, 2009) and incorporated with information obtained during the 2008 geotechnical site investigation program (KP, January 2010). In June 2010, KP completed a groundwater site investigation in the Schaft Creek Valley and deposit area to address data gaps and improve the understanding of the hydrogeological and groundwater quality regime at the site. The physical hydrogeologic information considered in this report includes rock and overburden logs, groundwater level measurements, falling and rising head tests, and packer tests.

Groundwater quality information was obtained from studies and work completed by Rescan Tahltan Environmental Consultants (RTEC, 2008) and Rescan (2009), and incorporated with groundwater quality sampling data collected in the fall of 2009. Sampling continued through 2010 with the installation of seven new monitoring wells within the Schaft Creek Valley and the deposit area. Of the 22 monitoring wells in Schaft Creek, 18 wells were sampled in 2011 to further the groundwater quality information.

Section 2.0 - SITE CONDITIONS

2.1 PHYSIOGRAPHY

The Schaft Creek Project is located within the Stikine-Iskut region of northwestern British Columbia, near the eastern edge of the Boundary Range of the Coast Mountains (BC Environment, 1992). The area is characterized by steep sided mountains and broad U-shaped valleys trending north-south. Ground elevations in the area typically range from around 700 metres above sea level (masl) to 900 masl in the valley floors rising steeply to mountain peaks in excess of 2,500 masl.

The topography of the region was predominantly influenced by events that occurred during the mid and late Tertiary and the Pleistocene. Weathering and erosion during the mid-Tertiary created an undulating surface across all rock types. Subsequent uplift combined with faulting and continued erosion during the late Tertiary created a gradient from the mountainous topography in the southwest (the area of greatest uplift and highest stream gradients) to dissected plateaus in the northeast. The entire region was then glaciated during the Pleistocene, with the most extensive icefields and valley glaciers occurring within the more mountainous southwest region. Active glaciers can still be found in the region (Ryder, 1984).

The deposit is located in the southwest slopes of Mount LaCasse, which rises to an elevation of more than 2,000 masl. The proposed waste rock storage areas are located in Schaft Creek Valley and the hill slope east and south of the saddle between Schaft and Mess Creek Valleys. The proposed processing plant site is located between Mess and Skeeter Creek Valleys. The proposed TSF is located in Skeeter Creek Valley.

2.2 CLIMATE

The Project site is located near the eastern edge of the Boundary Range of the Coast Mountains, just west of the Tahltan Highlands of the Stikine Plateau. The climate of the area is characterized as the transition zone between the marine climate of the Boundary Range and the continental climate of the Tahltan Highlands (BC Environment, 1992). Glaciers dominate the upper reaches of most of the local streams.

The climate and hydrology at the Schaft Creek site have been assessed based on both short-term site data and longer–term regional data. A comprehensive report on all hydrometeorological parameters was issued as KP Report VA101-329/5-3 Rev 1, Engineering Hydrometerology Report of the Schaft Creek Project (July, 2010), which presents meteorological and hydrological data collected at the Project site since October 2005. In addition, these data, in conjunction with long-term regional data, were used to provide estimates of long-term hydrometeorological parameters for the Project site as input to engineering design and water balance modelling.

The key climate findings of the study are:

- The mean annual temperature for the project area is estimated to be 1.2°C, with minimum and maximum monthly temperatures of -8.2°C and 12.3°C occurring in January and August, respectively.
- The mean annual wind speed is approximately 2.5 m/s, with gusts reaching 6 m/s. The dominant measured wind direction is from the south.
- The mean annual relative humidity is approximately 72%.
- The mean annual precipitation for the Project area is estimated to be 850 mm, with 30% falling as rain and 70% falling as snow.
- The mean annual potential evapotranspiration for the Project site is estimated to be 433 mm.
- Climate change has not been considered explicitly in the hydrometeorological estimates, and appropriate allowances should be made where necessary.

2.3 DRAINAGE

The Project site is bounded to the east by the northerly flowing Mess Creek and to the west by Hickman and Schaft Creeks, which also flow northwards and merge with Mess Creek downstream of the project area. Mess Creek continues northwards and discharges to the Stikine River some 60 km to the north near Telegraph Creek. The topography immediately north of the deposit is dominated by Mount LaCasse, which rises to an elevation of more than 2,000 m. Mount Edziza Provincial Park, an area of recent extensive lava flows, is located approximately 20 km to the east of the project.

The deposit is located in a saddle between the Schaft Creek and Mess Creek drainages. The proposed TSF is located within the Skeeter Creek Valley, a hanging valley resulting from downcutting of Mess Creek.

2.4 HYDROLOGY

Streamflow in the region is typically highest through June and July due to melting of the winter snowpack, and in August in heavily glaciated watersheds due to glacial melt. Peak instantaneous flows commonly occur during the freshet period on larger rivers, but they may also occur in late summer or early autumn due to intense rain or rain on snow events on smaller streams. Flows decrease throughout the winter and minimum flows typically occur in March or early April. Most streams maintain some flow year-round.

Key hydrologic parameter estimates from the KP hydrometerology report (KP, 2010) for the Project are:

- The mean annual streamflow for the Project area site is highly variable as a result of the range in watershed characteristics within the area. Mean annual unit runoff in Schaft Creek, downstream of the proposed waste dump location, is 46 l/s/km^2. Mean annual unit runoff from the Skeeter Lake valley, for the northern and southern outlet creeks is 28 l/s/km^2 and 21 l/s/km^2, respectively. Glacial melt is an important contribution to differences in these unit flows.
- The greatest monthly streamflow variability at the Project site, as a percentage of the monthly mean, typically occurs in April and in October and November, as a result of variations in freshet timing and in storm event precipitation phase and magnitude.
- The annual hydrograph typically has a unimodal shape, with high flows resulting from snowmelt in the spring and summer freshet period, mid flows maintained by glacier melt and rainfall throughout the late summer and early fall, and low flows throughout the winter.

- Return period peak flows and 7-day low flows were estimated for Schaft Creek and the northern and southern Skeeter Lake valley systems. 200-year peak flows were 915 m^3/s, 119 m^3/s and 228 m^3/s, respectively. 10-year 7-day low flows were estimated to be 0.10 m^3/s, 0.02 m^3/s and 0.05 m^3/s, respectively. This information is based on 2008 data collected by Rescan. Data collected by KP in 2011 and 2012 suggest the 10-year 7-day low flows are approximately 0.70 m^3/s to 0.80 m^3/s for Schaft Creek (at SC-2) downstream of Hickman Creek.
- An orographic factor of an 8% increase in mean annual precipitation per 100 m of elevation gain was estimated for the Project area.
- The effective runoff coefficient for non-glaciated areas is estimated to be approximately 0.75.

2.5 GEOLOGY

The regional geology of the Schaft Creek Project and the surrounding areas has been described by Logan and others (1997). Additionally, Kulla and others (2011) completed an NI 43-101 compliant technical report on the updated mineral resource estimate for the Schaft Creek Project, which describes the deposit area in detail. The geology of the Schaft Creek study area is shown on Figure 2.1.

The Project is located within the Stikine terrane (Stikinia), which is the westernmost and largest allochonthonous terrane of the Intermontane Superterrane. The Stikine terrane is interpreted to have originated adjacent to the margin of ancestral North American in an island arc setting that was transitional across continental slope deposit to distal intra-oceanic settings, similar to the Aleutian arc of western Alaska. The Stikine terrane was amalgamated with the Cache Creek, Quesnel and Slide Mountain terranes prior to accretion to the North American craton during the late Jurassic. The Coast Plutonic Complex intruded the western boundary of the Stikine terrane, which consist predominantly of calcalkaline granitoid rocks of Jurassic to Paleogene in age. Cooling ages and uplift history are complex across the belt.

The Stikine terrane consists of well stratified middle Paleozoic to Mesozoic sedimentary and volcanic and comagmatic plutonic rocks of probable island arc affinity which include: the Paleozoic Stikine assemblage, the Late Triassic Stuhini Group and the Early Jurassic Hazelton Group. These are overlapped by Middle Jurassic to early Tertiary successor-basin sediments of the Bowser Lake and Sustut Groups, late Cretaceous to Tertiary continental volcanic rocks of the Sloko Group, and Late Tertiary to Recent bimodal shield volcanism of the Edziza and Spectrum ranges (Logan and others, 1997). The stratigraphy of the region are presented in Table 2.1.

The Stikine assemblage is structurally and stratigraphically the lowest bedrock unit in the area. The assemblage consists of Permian, Upper Carboniferous, Lower Carboniferous and Devonian age rocks with dominant lithologies of tholeiitic to calcalkaline, mafic and bimodal flows and volcaniclastics, interbedded carbonate, with minor shale and chert. Unconformably overlying the Stikine assemblage are Lower to Middle Triassic sedimentary and Upper Triassic volcanic rocks of the Stuhini Group. The Jurassic Hazelton Group unconformably overlies the Stuhini Group. The Hazelton Group consists of a lower sequence of intermediate flows and volcaniclastics, a middle felsic volcanic interval and an upper unit of sedimentary and submarine bimodal volcanic rocks.

At least seven plutonic episodes have been recognized in the surrounding area. The plutons generally young westward, suggesting the magmatic front migrated westward through time. Middle to Late Triassic plutonic rocks of the Polaris Ultramafic Suite and the Stikine suite intrude Stuhini Group volcanics and are considered to be comagmatic and coeval with them.

The Hickman Batholith is a complexly-zoned intrusive body associated with the Middle to Late Triassic Stikine plutonic suite. The Schaft Creek deposit was formed by the intrusion of narrow and locally discontinuous dykes and apophyses that emanated from the Hickman Batholith into the volcanic rocks of the Mess Lake facies of the Stuhini Group. The intrusions were emplaced along variably north to northwesterly structural breaks that brecciated the volcanic host rock. The intrusions are predominantly feldspar porphyry and feldspar quartz porphyry granodiorite.

The Schaft Creek deposit is hosted within the rocks of the Mess Lake facies of the Stuhini Group, which consists of a package of volcanic and sedimentary rocks that become dominated by sedimentary rocks eastward, which is consistent with the presence of a westerly volcanic arc. The Mess Lake facies include the westernmost volcanic rocks of the Stuhini Group. The Mess Lake facies correlate to a proximal volcanic facies and are predominantly made up of basaltic andesitic to andesitic massive volcanic flows, pyroclastic deposits and subaerial tuffs, which dip steeply to the east and northeast. The massive flows range from aphanitic to locally strongly augite-plagioclase±pyroxene phyric, and the pyroclastic units vary from ash-lapilli tuff to tuff breccia. Unconformably overlying the Mess Lake facies are Lower Jurassic conglomerates. The Hickman Batholith bounds the Mess Lake facies to the west and to the south the Mess Lake facies is faulted against Paleozoic rocks of various affinities.

Multiple phases of felsic intrusive rock are present in the Schaft Creek deposit which created overlapping phases of alteration and mineralization that obscure the original intrusive texture. Historical work suggested the presence of a cross-cutting intrusive body associated with the Three Sisters plutonic suite (Yehiniko intrusive). However, recent work supports a single zoned Triassic-aged intrusive rather than two intrusive bodies.

The orientation of the mineralizing structures is associated with the emplacement of the Hickman Batholith, which was originally related to the local stress field. The batholith is considered to be the source of the magmatic-hydrothermal fluids, which formed the mineralized breccias, veins and stockworks of the deposit. There are three geologically distinct and separate mineralized zones that have distinct porphyry environments which constitute the Schaft Creek Deposit. The three mineralized zones are: the Main Zone, the Paramount Zone and the West Breccia Zone. A bedrock geologic map of the deposit area is shown on Figure 2.2. Geologic cross sections through the deposit area are shown on Figures 2.3 through 2.5.

The structure of the region is complex due to the different structural histories of the numerous tectonostratigraphic units that make up the Stikine terrane. The main deformation of the Intermontane Belt occurred during collision of Stikinia, Quesnellia and the Cache Creek terrane and formation of the Omineca Belt during the Middle and Late Jurassic. Much of this resulted in thrust faulting, folding and ductile deformation. However, more recently brittle transtensional strain has produced extensional deformation structures throughout the region. A north-trending fault zone lies along Mess Creek, which comprises a zone up to 7 km wide consisting of a series of curvilinear north-trending faults that end near

the headwaters of Mess Creek. Northeast-trending splays cross the ridge between Skeeter and Mess Lake valleys. The Mess Creek fault system has undergone repeated movement, beginning at least in the Late Jurassic and continuing into the Quaternary. Faulting along the Mess Creek fault has created the Mess Creek graben, which comprises a mosaic of fault-bounded blocks that underlie the Mess and Schaft Creek Valleys. A fault zone is inferred to lie along Schaft Creek Valley. The main faults are steeply dipping and have complex and repetitive movement histories. Highly fractured zones in the bedrock are associated with faulting and emplacement of the Schaft Creek deposit.

Unconsolidated overburden overlies weathered and broken bedrock. The bedrock is more solid at depth, except in fault zones and areas with numerous lithological discontinuities related to the plutonic intrusion. The unconsolidated overburden likely forms colluvium-type deposits along and at the base of steep sided slopes in the study area. Overlying the bedrock along valley bottoms and stream corridors are alluvium deposits, which are dominated by late glacial and fluvial deposits infilling valley floors bordered by steep active slopes. The glacial history of the region provides a setting that allows for thick sand and gravel deposits as well as glacial lacustrine and moraine deposits. Glacial contact features such as lateral and terminal moraines and abandoned outwash channels may also be present. Active glaciers and steep alluvial fans continue to provide coarse alluvium to the stream channels.

Section 3.0 - SITE INVESTIGATIONS AND MONITORING

3.1 SITE INVESTIGATIONS

Geotechnical, geological, and hydrogeological information was collected during the following site investigation programs:

- 2007, 2008 and 2011 geotechnical site investigations (DST, 2008; DST, 2008; KP, 2010; KP, 2011)
- 2007 (Rescan, 2008), 2008 (Rescan, 2009), 2009, 2010, and 2011 groundwater sampling programs
- 2010 hydrogeological investigation (KP, 2010), and
- 2011 open pit geotechnical investigation (KP, 2011).

The geotechnical and geological information was generally presented in rock and overburden logs; the data were used to characterize the bedrock and surficial geology that subsequently provides a context for the hydrogeology of the site. The hydrogeologic information collected includes groundwater level measurements, response and packer tests, and water quality data.

Water quality data from the 2007 groundwater sampling program were not considered in this summary, as the samples were collected directly from open drill holes, not from groundwater monitoring wells. The geotechnical site investigations and groundwater sampling programs are summarized below.

2007 - Geotechnical site investigation of the TSF area (DST, January 2008)

1. 7 vertical drill holes were completed in the current TSF area:
   i. 3 drill holes near the proposed south TSF embankment alignment
   ii. 3 drill holes near the proposed north TSF embankment alignment, and
   iii. 1 drill hole near the proposed northwest TSF embankment alignment.
2. The overburden was logged.
3. Standard penetration tests (SPTs) were completed.
4. Rock core information was collected including lithology, total core recovery (TCR), solid core recovery (SCR), rock quality designation (RQD), fractures per meter, and rock mass rating (RMR).
5. Select core samples were sent off-site for point load testing.
6. Groundwater levels were measured in all drill holes.
7. The following response tests were completed:
   i. 27 response tests along the proposed south TSF alignment
   ii. 29 response tests along the proposed north TSF alignment, and
   iii. 6 response tests along the proposed northwest TSF alignment.

2007 - Geotechnical site investigation of the deposit area (DST, March 2008)

1. 8 drill holes, 7 oriented and one vertical were completed.
2. The overburden was briefly described.
3. Lithology, TCR, SCR, RQD, fractures per meter, and RMR was collected on rock core.
4. Groundwater levels were measured in 6 drill holes.
5. A multi-level vibrating wire piezometer system with 5 piezometers was installed in one drill hole.

2007 – Groundwater quality – piezometer installation and sampling (Rescan, March 2008)

1. Two piezometers were installed in a drill hole in the deposit area (Copper Fox Drill Hole ID 07CF304).

2. 4 drill holes were sampled for water quality.
   i. 1 drill hole near the proposed south TSF embankment alignment
   ii. 1 drill hole near the proposed north TSF embankment alignment
   iii. 1 drill hole near the proposed northwest TSF embankment alignment, and
   iv. 1 drill hole approximately 5 km south of the deposit area.
3. Water samples were collected directly from the drill holes; no piezometers were installed.

2008 - Geotechnical site investigation of the deposit, waste dump, plant site, and TSF areas (KP, January 2010)

1. 46 drill holes, 13 oriented and 33 vertical, were completed:
   i. 10 oriented and 4 vertical drill holes in the deposit area
   ii. 1 oriented and 9 vertical drill holes in the waste dump area
   iii. 4 vertical drill holes in the plant site area
   iv. 2 oriented and 7 vertical drill holes near the proposed south TSF embankment alignment
   v. 5 vertical drill holes near the proposed north TSF embankment alignment, and
   vi. 4 vertical drill holes near the proposed northwest TSF embankment alignment.
2. The overburden was logged.
3. SPTs were performed.
4. Overburden samples in the drill holes were collected using Shelby tubes (STs).
5. Rock core information was collected including lithology, recovery, RQD, and RMR.
6. 104 test pits (TPs) and 15 Dutch auger holes were completed.
7. Select soil and rock samples were sent off-site for additional testing:
   i. 140 soil samples from SPTs, STs and TPs were tested for natural moisture content (140 samples), particle size distribution (140 samples), specific gravity (2 samples), and Atterberg limits (107 samples)
   ii. 45 rock samples were tested for unconfined compressive strength with unconfined compressive strength testing (21 samples) and point load testing (24 samples), and
   iii. 6 rock samples were tested for shear strength with direct shear testing.
8. Groundwater levels were measured in 41 drill holes.
9. The following response tests were completed:
   i. 74 packer tests:
      a. 52 packer tests in the deposit area
      b. 14 packer tests in the waste dump area
      c. 2 packer tests along the proposed south TSF embankment alignment
      d. 3 packer tests along the proposed north TSF embankment alignment, and
      e. 3 packer tests along the proposed northwest TSF embankment alignment.
   ii. 111 response tests in drill rods.
      a. 45 response tests in drill rods in the deposit area
      b. 8 response tests in drill rods in the waste dump area
      c. 9 response tests in drill rods in the plant site area
      d. 26 response tests in drill rods near the proposed south TSF embankment alignment
      e. 9 response tests in drill rods near the proposed north TSF embankment alignment, and
      f. 15 response tests in drill rods near the proposed northwest TSF embankment alignment.
   iii. 43 response tests in piezometers.
      a. 8 response tests in piezometers in the deposit area

b. 13 response tests in piezometers in the waste dump area
c. 3 response tests in piezometers in the plant site area
d. 8 response tests in piezometers near the proposed south TSF embankment alignment
e. 5 response tests in piezometers near the proposed north TSF embankment alignment, and
f. 6 response tests in drill holes near the proposed northwest TSF embankment alignment.

2008 – Groundwater quality - well development and sampling (Rescan, December 2009)

1. 16 wells in 8 locations were identified as groundwater quality wells.
2. 12 wells were developed in the following locations:
   i. 2 wells in the deposit area
   ii. 6 wells in the waste dump area
   iii. 2 wells near the proposed north TSF embankment alignment, and
   iv. 2 wells near the proposed northwest TSF embankment alignment.
3. Groundwater levels were measured in 16 wells.
4. Response tests were completed in the 12 developed wells.
5. All 16 wells were sampled for water quality.

2009 – Groundwater quality sampling (KP, October/November 2009)

1. Groundwater levels were measured in 14 wells, and
2. 14 wells were sampled for water quality.

2009 – IP and Seismic Refraction for Exploration (Associated Geoscienses, November 2009)

1. 9 resistivity and IP (induced polarization) survey lines were conducted and analysed, and
2. 11 seismic refraction survey lines were conducted and analysed.

2010 – Hydrogeologic investigation (KP April, June, and September 2010)

1. April 2010 redevelopment, sampling, response testing, and installation of water level transducers for 2008 wells
2. June 2010 installation of seven monitoring wells within the Schaft Creek Valley and the deposit area
3. June 2010 development, sampling, response testing, and installation of water level transducers for 2010 wells, and
4. September 2010 groundwater data collection for 2008 and 2010 wells.

2011 – Groundwater quality sampling (KP, March/September 2011)

1. 22 wells in 12 locations were sampled as groundwater quality wells.
2. 18 wells were sampled for water quality in the following locations:
   i. 10 wells in the waste dump area
   ii. 2 wells in the plant site area
   iii. 2 wells near the proposed north TSF embankment alignment
   iv. 2 wells near the proposed northwest TSF embankment alignment, and
   v. 2 wells near the proposed south TSF embankment alignment

2011 - Geotechnical site investigation of the deposit area

1. The field program was conducted from August 8 to November 21, 2011.

2. The 2011 site investigation program consisted of 6 oriented core diamond drill holes (2011CF-416 to 420) in the open pit area.
3. Geomechanical logging of six oriented drill holes in the open pit area.
4. In-situ hydraulic conductivity testing in drill hole 2011CF-419.
5. Rock strength laboratory testing on core samples, and
6. Downhole camera surveys using acoustic televiewer in selected drill holes in the deposit area.

3.2 HYDROGEOLOGIC INFORMATION

The locations of the drill holes, piezometers and monitoring wells for the Schaft Creek Project are shown on Figures 3.1 and 3.2. A summary of the construction information for all of the drill holes, piezometers and monitoring wells that hydrogeologic information has been collected from is presented in Table 3.1. The information in Table 3.1 was obtained from other reports. Well logs and other information can be found in the referenced report for each drill hole, piezometer and monitoring well listed in Table 3.1.

3.2.1 2007 Geotechnical Drilling and Testing

DST conducted a geotechnical drilling program from July to October 2007. Vertical and oriented boreholes were drilled in the open pit area and vertical boreholes were drilled at the various dam sites. The bedrock was cored and sampled. Groundwater levels were measured in most of the boreholes and hydraulic conductivity testing was conducted in the dam site areas in both the overburden and the bedrock. Three of the boreholes in the open pit area were completed as inclinometers and one was completed as a vibrating wire piezometer. The rest of the boreholes were completed as open drill holes.

3.2.2 2008 Geotechnical Drilling and Testing

A total of 46 geotechnical and hydrogeological drill holes were drilled at 27 locations in the summer of 2008. The overburden was drilled using ODEX and/or mud rotary methods and the bedrock was cored using HQ3 coring. Ten geotechnical drill holes were drilled in the open pit area, 14 in the waste dump area, four in the plant site area, and 18 in the TSF area within the dam footprints. Sixteen of these drill holes (RES08-01A to RES08-08B) were paired holes completed as monitoring wells and the rest were completed as piezometers or open drill holes. The monitoring well boreholes were drilled with the first hole going to the maximum planned depth and the second hole drilled adjacent in the shallow overburden. The paired holes are distinguished by the letters “A” or “B”, with “A” being the deep borehole and “B” being the shallow borehole. The monitoring wells were completed with 2-inch diameter Schedule 40 PVC pipe. The piezometers were completed with 1-inch diameter Schedule 40 or Schedule 80 PVC pipe.

Piezometers were not installed in KP08-01 (08CF344) and KP08-10 (08CF342) as the drill rods were permanently stuck in the drill holes. The drill pad at KP08-02 (08CF345) became unstable during drilling and the drill was moved from the pad prior to the installation of the piezometer in this location. KP08-05 (08CF347) exhibited artesian conditions, so the casing was left in the hole and no piezometer was installed. Drill hole KP08-08 (08CF339) did not have a standpipe

piezometer installed as the required well supplies were not available when the drilling was completed.

3.2.3 2010 Monitoring Well Installations

Seven monitoring wells were installed at the five locations in the summer of 2010, within the proposed waste rock dump and open pit footprints. The boreholes were drilled using the ODEX method and the total depths ranged from approximately 9.2 m to 117.3 m. The holes were advanced either to competent bedrock, or to refusal (inability to further advance drilling in the alluvial materials). Wells were completed with 2-inch diameter Schedule 40 PVC pipe and 0.010-inch slot screens. Screen length was field fit based on the formation encountered during drilling.

3.2.4 2011 Geotechnical Site Investigation

The 2011 site investigation program consisted of drilling six oriented core drillholes (2011CF-414, 2011CF-416 to 420) in the open pit area to supplement the 2008 site investigation data. No piezometers were installed in the drill holes. Packer testing was conducted in one borehole and water levels were measured in all of the boreholes.

3.2.5 Hydrogeologic Testing

Hydrologeologic testing was conducted on most of the drill holes, piezometers and monitoring wells. The tests included packer and response testing in drill holes and response testing in completed piezometers and monitoring wells. A summary of the hydrogeologic test results is presented in Table 3.2. Generalized summaries of the hydraulic conductivity by geologic unit type and by location can be found in Tables 3.3 and 3.4, respectively. The variation in hydraulic conductivity with depth for all drill holes are shown on Figure 3.3. Analyses of the packer and response tests are presented in other reports, which are referenced in Table 3.1 for each drill hole, piezometer and monitoring well. A brief description of the test conditions, procedures, and results is presented in the sections below.

Packer Testing

Packer testing (Lugeon Method) was conducted in approximately half of the geotechnical holes drilled during the 2008 site investigation and one borehole during the 2011 site investigation. The tests were performed by seating inflatable bladders (packers) in competent bedrock to seal off a test zone within the borehole followed by pumping water at several constant pressure stages into the test zone, and measuring the pumped flow rate for each pressure stage. Three ascending and two descending pressure stages were applied for each packer test.

Response Tests – Drill Rods

Open hole response tests were conducted during drilling operations in many drill holes during the 2008 site investigation. These tests were performed by either pulling the drill casing up to a selected depth, exposing the walls and the bottom of the drill hole, or by leaving the casing at the

bottom of the drill hole, exposing only the bottom of the drill hole. Water was then added or removed and the subsequent water level recovery was measured over a period of time.

Response tests were performed in the place of packer tests under three conditions: when drilling in overburden, when the rock was too fractured to allow for packer testing, or when packer tests could not be completed. The test intervals for the response tests in the drill rods were typically 10 ft unless a packer test had been attempted beforehand, in which case a 50 ft interval was used.

Response tests performed by KP in the drill rods were analysed using the Hvorslev method to calculate hydraulic conductivity values; the approach used to analyse the response tests performed by DST is not known. Hydraulic conductivity values from response tests in the drill rods are considered qualitative indicators.

Response Tests – Piezometers and Monitoring Wells

Response tests were conducted on completed monitoring wells and piezometers, which include the monitoring wells installed by Rescan in 2007, the piezometers installed by KP in 2008 and the monitoring wells installed by KP in 2010. Response tests were carried out to estimate the hydraulic conductivity of the completion (screened) zone. Testing was completed by KP following installation of the wells and again by Rescan following development. KP redeveloped the monitoring wells in 2010 and completed response tests using water level transducers. Hydraulic conductivity values obtained from tests following well development are considered to be more representative than those completed prior to well development. Analysis of the response test data was done using the Hvorslev method, except for response tests that exhibited an oscillatory response prompting the use of the Van der Kamp method.

3.2.6 Groundwater Levels

Groundwater levels were obtained from hand measurements in piezometers, monitoring wells and open drill holes, from water level transducers installed in monitoring wells and from a vibrating wire piezometer system installed in the open pit area.

Vibrating Wire Piezometers

A multi-level vibrating wire piezometer system was installed in drill hole PO-05-07 during the 2007 site investigation program (DST, 2008). A string of five vibrating wire piezometers were installed at approximately 20 m intervals within the drill hole. Borehole PO-05-07 is inclined 61.5° (azimuth 87.0°), which corresponds to vertical depths of approximately 17.6 m. Each vibrating wire piezometer was installed within a sand pack interval that was isolated from the other piezometers by bentonite seals. The vibrating wire piezometers were installed at the following vertical depths:

- VW Piezometer 1 – 16.1 m
- VW Piezometer 2 – 32.7 m
- VW Piezometer 3 – 52.3 m
- VW Piezometer 4 – 69.8 m, and
- VW Piezometer 5 – 87.4 m.

The vibrating wire piezometers were connected to a solar powered data logger programmed to take frequency (pressure) and temperature readings every hour. The last time data were downloaded from the data logger provided readings from October 15, 2007, the installation date, to September 25, 2008. It appears that the data logger was not in operation for several hours during July 13 and 14, 2008 and from July 15 to August 5, 2008. Plots of piezometric head versus time and groundwater temperature versus time are presented on Figures 3.4 and 3.5 respectively.

Groundwater Levels

In 2010 water level pressure transducers were installed in the monitoring wells constructed in 2008 and 2010. The transducers were set at a minimum of 5 m below the water level and set to record the water level every hour. Time plots of the water level elevations are presented in Appendix A. Sites that have wells installed at different depths (nested completion), the water levels for each well are presented on one chart to compare the vertical hydraulic gradient at each site.

Water levels in the monitoring wells, piezometers and drill holes have also been measured by hand. Water levels in the piezometers and drill holes were measured by hand right after the piezometer was installed or the borehole was drilled, and when response testing was performed. Some of these measurements may not be representative of the real static water level as the drilling operations may have influenced the measured water level. Water levels measured a while after the hole was drilled or the piezometer was installed are considered to be more representative of actual conditions. Hand measured water levels for the monitoring wells have also been obtained during water sampling events. All of the available hand measured water levels are presented in Table 3.5.

3.3 CROSS HOLE SEISMIC TOMOGRAPHY

Cross hole seismic tomography was performed along the north and south TSF embankment alignments during the summer of 2008 by Associated Geosciences (AG) to further investigate the karst susceptible terrain identified by I. Spooner (no date) and BGC (2009). Cross hole seismic tomography involves installing a source array of seismic detonators and a receiver array in drill holes some distance apart, and generating a series of wavepaths. The receiver data were processed to develop a seismic velocity model. Areas of low velocity could be interpreted as karst terrain or collapsed zones (AG, 2009).

Cross hole seismic tomography was completed in drill holes A-SD07-01, A-SD07-02, and A-SD07-03 along the south embankment alignment and in drill holes A-ND07-01, A-ND07-02, and A-ND07-03 along the north embankment alignment. The cross hole seismic tomography indicates a correlation with lithology, other geophysical logging, and RQD along both embankments (AG, 2009). An anomaly was identified along the south embankment alignment, between drill holes A-SD07-01 and A-SD07-02 (the eastern portion) that may be a fracture zone, although AG has indicated that the fracture zone is likely cemented or quite narrow (2009). No voids or karstic formations were identified.

Section 4.0 - HYDROGEOLOGIC CONCEPTUALIZATION

4.1 INTRODUCTION

The source of groundwater is ultimately from precipitation that falls on the ground surface, where a portion of the precipitation infiltrates through the soil or fractured bedrock into deeper settings below the water table. This occurs in recharge zones. Groundwater typically flows from recharge areas at higher elevations through fractures and permeable zones in bedrock and unconsolidated to semi-consolidated sediments towards discharge areas located at lower elevations. In the Schaft Creek Project area groundwater comes from the infiltrating run-off from snowmelt, ice-melt from glaciers, and from rain. The groundwater surface or zone of saturation in the subsurface is likely a muted replication of the topography.

Groundwater flow is typically related to the geology and structure of the area, which includes the lithology of the geologic units and the geologic structures, such as faults and folds that influence fracturing in the geologic units. Faults can act as conduits and/or barriers to groundwater flow, which often depends upon the type of fault. Thrust faults and reverse faults form from compressional forces, which can fracture the rock, but the fractures may not be open due to compressional stress. Normal faults and transform faults form from extensional forces and fractures formed from these types of faults are more likely to be open. Fractures that form around an extensional fault typically increase the permeability along the fault, but the fault core can be filled with fine grained gouge that has low permeability, which creates a barrier to flow across the fault. As a result, faults are often conduits to groundwater flow parallel to the fault, but are barriers to flow across the fault. In the Schaft Creek area, many of the fractures are likely created by extensional forces as indicated by the presence of normal faults in the area.

Groundwater flow can also be influenced by chemical processes that may occur during water-rock interactions in the subsurface. Fractures and voids may be enhanced by dissolution of soluble rock units, such as limestone. Fractures and pores can be in-filled by precipitation of minerals, such as calcite or hematite, or silica from hydrothermal solutions. Fractures and pores can also be in-filled by alteration of the host rock, where clay is generally the product of alteration reactions.

The following sections present a brief discussion of the conceptual setting present within the study area, including identification of the primary hydrostratigraphic units and groundwater flow pathways that may be of interest during design, construction, operation, and closure of the mine.

4.2 HYDROSTRATIGRAPHIC UNITS

Geologic units which contain groundwater are typically referred to as hydrostratigraphic units. The hydraulic properties of the geologic units are influenced by several factors such as lithology, composition, grain size, strength, abundance of fractures, stress distribution, weathering and alteration. The hydrostratigraphic units within the Project area are discussed below. A summary of hydraulic conductivity for each hydrostratigraphic unit (geologic unit) in each Project location are presented in Table 3.6; the hydraulic conductivity of a hydrostratigraphic unit varies spatially.

Valley-fill Deposits

The unconsolidated valley-fill material consists of recent deposits of alluvium, glacial till, outwash, lacustrine, and moraine sediment located in Schaft Creek and Mess Creek valleys, and some tributary valleys. These deposits are generally composed of poorly sorted and unconsolidated sand, gravel, cobbles and boulders with some clay. Glacial lacustrine deposits may have a high clay component and be less permeable. Groundwater in these units is transmitted through voids and pores between sediment grains and rock clasts.

The valley-fill deposits located within Schaft Creek Valley range in thickness from about 10 m along the valley margins to approximately 75 m thick in the central part of the valley adjacent to the northern part of the deposit area, based on seismic survey and drilling data.

Unconsolidated Overburden

Unconsolidated overburden consists of glacial till, moraine sediment, alluvium and surficial weathered bedrock that was weathered in place by mechanical and chemical processes. The unconsolidated overburden is located along the hillslopes in the Project area and forms colluvium-type deposits along and at the base of steep sided slopes. The sense of movement in these colluvium deposits is relatively small.

The thickness of overburden in the deposit area ranges from approximately 25 m in the northern portion to approximately 10 m in the southern portion, based on drilling data. The overburden is thinnest in the central portion of the deposit area, where it can be as thin as approximately 2 m. The thickness of the overburden in the hill slope area south of the deposit ranges from about 10 m to 30 m. The thickness of overburden in the saddle area east of the deposit is approximately 15 m to 60 m, based on drilling data.

The unconsolidated overburden in Skeeter Creek Valley consists of interbedded gravel, sand, silt and clay deposits, which are interpreted to be glacial till, lacustrine and alluvium deposits. Overburden in the southern part of Skeeter Creek Valley ranges in thickness from approximately 1 m to 35 m, based on drilling data. In the northern portion of the valley the overburden thickness is up to 40 m.

Weathered Bedrock

Underlying the overburden is a layer of weathered and broken bedrock, which likely consists of highly fractured bedrock. The presence of the weathered and broken bedrock zone was confirmed by seismic surveys that indicated a low velocity zone in the subsurface that extended to a depth greater than the thickness of overburden observed in drill holes. The thickness of the weathered and broken bedrock varies with location as it depends upon factors such as faulting and lithology. The weathered and broken bedrock zone is up to 75 m, based on the seismic survey data.

Tertiary and Older Dykes

The Tertiary dykes are mafic to intermediate in composition and have phyric to aphyric textures. The dykes are thin, discontinuous and can cut across other bedrock units. They may act as conduits for groundwater depending upon the permeability of the host rock.

Upper Triassic to Early Jurassic Hickman Batholith

The Hickman Batholith contains at least two units, a feldspar-quartz porphyry and a suite of intrusive rocks. Each unit is described below.

- Feldspar-Quartz Porphyry - The feldspar-quartz porphyry is related to the late phases of the Hickman Batholith.
- Granodiorite - The Hickman Batholith contains a suite of intrusive rocks which include monzonite, quartz monzonite and granodiorite. In the Schaft Creek Valley area granodiorite is the dominant intrusive rock type.

Upper Triassic Vein Systems

The Late Triassic vein systems include stockworks and crackle veins containing quartz, chlorite, carbonates, and sulphides. These vein systems are irregular, discontinuous and can cut across other bedrock types.

Early Triassic Tourmaline Breccia

The Early Triassic tourmaline breccia consists of a quartz-epidote-chlorite-tourmaline-pyrite matrix with xenoliths of feldspar-quartz porphyry, granodiorite and andesite rocks. This unit is related to hydrothermal mineralization and is also discontinuous, irregular and cuts across other bedrock units. No hydraulic conductivity tests have been completed on this rock unit, but the hydraulic conductivity is expected to be relatively low.

Upper Triassic Stuhini Group

The Stuhini Group consists of three units, a volcaniclastic unit, an andesite unit, and an augite porphyry unit. The group is derived from a proximal volcanic arc setting and is predominantly made up of basaltic andesitic to andesitic massive volcanic flows, pyroclastic deposits and subaerial tuffs, which dip steeply to the east and northeast. The units are interbedded with each other reflecting the cyclic nature of the volcanic activity. The Schaft Creek deposit is hosted within the rocks of the Stuhini Group. Each unit is described below.

- Volcaniclastics - The Stuhini Group volcaniclastic unit is composed of sedimentary and volcanic rocks, which include tuff, lapilli tuff and breccia.
- Andesite - The Stuhini Group andesite unit is composed of andesite volcanic rocks.
- Augite Porphyry - The Stuhini Group also contains an augite porphyry unit.

Upper Carboniferous Limestone

The Upper Carboniferous limestone unit is part of the Stikine Assemblage and consists of grey, thin bedded, fetid and dolomitic limestone, with minor interbeds of maroon and green tuff and cherty siltstone. This unit subcrops in the Skeeter Creek hanging valley in the area of the proposed TSF.

4.3 SCHAFT CREEK VALLEY

4.3.1 Description

Schaft Creek Valley contains a valley-fill aquifer that overlies granodiorite bedrock of the Hickman Batholith. The valley-fill aquifer is infilled with an assemblage of permeable deposits, including glacial outwash, alluvium, alluvial fans from valley walls, and reworked colluvium. The valley-fill

deposits in Schaft Creek Valley range in thickness from about 10 m along the valley margins to approximately 75 m in the central part of the valley adjacent to the northern part of the deposit area, based on seismic survey and drilling data. The valley infill is over 700 m wide and extends a considerable distance both upstream and downstream of the proposed open pit.

The Schaft Creek Valley-fill aquifer is fed by glacial-melt water in the headwaters of Schaft and Hickman Creeks and small tributary streams that flow into the valley from the upper elevations, and by groundwater flow from adjacent hillslopes. The valley-fill aquifer is continuous downstream of the deposit area to a location where the creek passes through a bedrock channel on the east side of the valley floor.

Three piezometers at three sites and nine monitoring wells at five sites have been installed within Schaft Creek Valley. One of the piezometers (KP08-17) is installed in bedrock (granodiorite) underlying the unconsolidated valley-fill material. Four of the monitoring well sites have paired completions where two monitoring wells are completed at each site with one monitoring well completed at a deeper setting than the other. Three of the monitoring wells (RES08-03A, RES08-04A and RES08-04B) are completed in the granodiorite bedrock and the other monitoring wells are completed in the valley-fill material.

4.3.2 Hydraulic Conductivity

Response tests were performed in the monitoring wells and piezometers installed in Schaft Creek Valley to estimate hydraulic conductivity. Packer tests were also performed in two of the boreholes that were drilled into bedrock (RES08-03A and RES08-04A).

The valley-fill material in Schaft Creek Valley is coarse grained and very permeable. Most response tests displayed oscillatory responses with estimated hydraulic conductivity values of 1E-03 m/s using the Van der Kamp method of analysis. The minimum hydraulic conductivity of the valley-fill is approximately 1E-05 m/s. The bulk of the valley-fill material is estimated to have a hydraulic conductivity of approximately 1E-03 m/s.

The hydraulic conductivity of the Hickman Batholith ranges from 9E-09 m/s to 7E-06 m/s based on packer and response tests that were performed in the granodiorite in Schaft Creek Valley. The hydraulic conductivity for the tested portion of the batholith is estimated to be approximately 4E-07 m/s, which is the median hydraulic conductivity for the packer and response tests for granodiorite. No deep boreholes were drilled into the granodiorite, but the hydraulic conductivity is expected to decrease by about one order of magnitude per 300 m of depth. This has been observed at other locations with similar settings. Higher hydraulic conductivity values are expected immediately adjacent to faults.

4.3.3 Groundwater Levels

Groundwater levels in Schaft Creek Valley are near ground surface. Depth to water in the valley-fill material decreases going downstream from HG10-05 to HG10-01 with artesian conditions existing during part of the year at HG10-02A and B, and at HG10-01. Seasonal fluctuations of

the groundwater levels range from about 3 m at HG10-05 to less than 1 m at HG10-02. Groundwater levels are generally lowest in April during base flow conditions then sharply increase in May in response to freshet. Water levels also tend to rise sharply in late summer and early fall, which is likely in response to rain events.

The groundwater level is generally expected to be slightly higher than the stream stage at most locations. Examples of exceptions include the following:

- The water table may be lower than the stream stage at times when the stream stage increases faster than the groundwater table. This likely occurs during freshet and prolonged rain events. During these periods, losing stream conditions exists and creek water will flow into the valley-fill aquifer.
- At some locations along the valley the stream gradient may flatten, resulting in the stream stage rising above the groundwater table. This can result in reduction of stream base flows in the stream reach. This could occur upstream of a confluence where the additional sediment load can result in local flattening of the stream gradient. The base flow often returns downstream as the groundwater emerges to rejoin the surface water.

Such groundwater/surface water interactions are common and expected along valley floors. On average, the groundwater gradient in a downstream direction will be similar to the stream gradient. The gradient of Schaft Creek near the deposit is approximately 1%.

4.3.4 Groundwater Conditions and Flow

The source of groundwater for the Schaft Creek Valley-fill aquifer includes infiltration from precipitation (rainfall and snowmelt), through surface and groundwater flow from adjacent hillslopes, and as noted above, periodic interaction with streams. The valley-fill aquifer is under water table conditions, which is influenced by the stream stage of the creeks in the valley. Losing stream conditions likely occur during freshet and during rain storm events. Gaining stream conditions will likely exist during the other periods of the year, when groundwater flows from the valley-fill aquifer into the creek. As such, the water that flows in the creeks and streams during base flow conditions is primarily from discharging groundwater.

As shown on the water level time series plot on Figure A.7 (Appendix A) for RES08-03, a downward vertical hydraulic gradient between the valley-fill material and the underlying granodiorite bedrock appears to exist. The water levels for the valley-fill material and the granodiorite bedrock follow the same trend which indicates that the valley-fill material and the bedrock are hydraulically connected. However, it is expected that an upward vertical hydraulic gradient exists between the bedrock and the lower portion of the valley-fill material as the bedrock water level is in the valley-fill deposits. This is explained by a layer of sand with some gravel, silt and clay that overlies the bedrock and underlies the gravel that the shallow well is screened in. Downward hydraulic gradients are also observed in the valley fill material at HG10-05 and in the granodiorite bedrock at RES08-04. An upward hydraulic gradient is observed in the valley-fill material at HG10-02 and likely at HG10-01 as suggested by the artesian conditions that exist at HG10-01.

Groundwater in the Schaft Creek Valley-fill aquifer near the deposit flows northerly, with a component that flows towards Schaft Creek during base flow conditions. Groundwater in the bedrock in Schaft Creek Valley flows northerly with a component that flows into the overlying valley-fill.

The estimated average flow rate within the Schaft Creek Valley-fill aquifer is:

$Q = KiA$

Where the hydraulic conductivity, K, is 1E-03 m/s
The gradient, i, is 0.01, and
The area, A, is 35,000 m^2 (700 m wide and 50 m thick).

The estimated average flow rate, Q, is therefore 0.35 m^3/s (350 L/s).

The flow rate will vary seasonally. Maximum flow rates are likely to be through the majority of the non-freezing months, excluding very dry summers, and reducing over the winter as the aquifer continues to contribute to the base flow of Schaft Creek. Groundwater flows in excess of the above estimate will discharge, contributing to stream flow.

4.4 DEPOSIT AND HILLSLOPE AREAS

4.4.1 Description

The deposit area is located on the southwest slopes of Mount LaCasse, on the east side of the Schaft Creek Valley. The area extends into a saddle between Schaft and Mess Creeks.

The deposit and hillslope areas have unconsolidated overburden at the surface. The thickness of overburden in the deposit area ranges from approximately 25 m in the northern portion to approximately 10 m in the southern portion, based on drilling data. The overburden is thinnest in the central portion of the deposit area, where it can be as thin as 2 m. The thickness of the overburden in the hill slope area south of the deposit ranges from about 10 m to 30 m.

Underlying the overburden is a layer of weathered and broken bedrock, which likely consists of highly fractured bedrock. The weathered and broken bedrock zone is as thick as 75 m, based on the seismic survey data.

More solid bedrock underlies the weathered and broken bedrock. The bedrock type depends upon the locations. The geology in the deposit area is complex and consists of numerous geologic units, such as rocks from the Stuhini Group, which is the host rock to the deposit, vein systems and breccia related to mineralization of the ore and the Hickman Batholith. Fault and shear zones exist in the deposit area, which have fractured the bedrock, producing localized areas with high permeability.

Cross sections through the deposit area, which show the end of mine open pit profile, and the borehole lithologies that were encountered while drilling are presented on Figures 4.1 through 4.3. Water level and hydraulic conductivity data are also presented for drill holes in the cross sections.

4.4.2 Hydraulic Conductivity

Numerous piezometers, drill holes, and monitoring wells have been installed in the deposit and hilllslope areas. Response tests were conducted on the completed monitoring wells and piezometers and packer tests were performed on open boreholes to estimate the hydraulic conductivity of the bedrock and overburden.

The geology of the deposit area is complex and numerous lithologies are present. As such the geologic units are anisotropic and heterogeneous. The hydraulic conductivity varies with location based on factors such as lithology, composition, grain size, strength, abundance of fractures, stress distribution, weathering, and alteration. The median hydraulic conductivity value from in the bedrock of the deposit area is 3E-07 m/s (Table 3.4). Local hydraulic conductivity values in the deposit area can be estimated by looking at testing results from boreholes in specific areas.

The Stuhini Group hosts the Schaft Creek deposit and in the deposit area andesite is the most abundant rock type from the Stuhini Group. The hydraulic conductivity for the andesite varies with location depending upon the degree of fracturing. The hydraulic conductivity for andesite in the north pit area is estimated to be approximately 3E-06 m/s, based on response testing at the KP08-01 drill hole. In the central deposit area the hydraulic conductivity of andesite is approximately 2E-07 m/s based on packer testing in the KP08-04 drill hole. Andesite in the southwest part of the deposit has a hydraulic conductivity of approximately 2E-07 m/s based on response testing in KP08-16, and in the southeastern portion of the pit, the hydraulic conductivity value of andesite is approximately 6E-06 m/s, which is the mean hydraulic conductivity for andesite in the deposit area (Table 3.6).

Packer tests from KP08-04 and KP08-05 in the deposit area provide most of the available data for depths greater than 250 m. The bulk hydraulic conductivity measured at these depths is approximately 5E-07 m/s in KP08-04 and 5E-09 m/s in KP08-05. The bulk hydraulic conductivity measured at KP08-04 is likely not indicative of the bulk rock hydraulic conductivity of the deposit area but is representative adjacent to a fault/shear zone.

4.4.3 Groundwater Levels

Groundwater levels in the deposit and hillslope areas range from artesian conditions to approximately 20 m below ground surface. Artesian conditions were encountered in drill holes K08-05, K08-06, and K08-07 located in the overburden deposits within the deposit area. Deeper groundwater levels were encountered upslope in drill holes PO-07-07, PO-05-07, K08-08, and K08-09.

Seasonal groundwater level fluctuations can be as high 10 m. The lowest groundwater levels typically occur in April, then increase rapidly in response to freshet. Rain events in the summer and fall can cause the water levels to increase rapidly.

Piezometric head values recorded for the five vibrating water piezometers installed in drill hole PO-05-07, in the middle of the deposit area, are shown on Figure 3.2. All five piezometers were installed in bedrock (andesite and a dyke). All units responded to freshet with little lag time between the response of the upper piezometer and the lower piezometer. KP recommends that, if possible, the depths of these piezometers be field checked.

Water level monitoring in RES08-01A and RES08-01B started in mid May 2010. There is a general decrease in water elevation from May to late July, and an increase in elevation from late July to mid-September where elevations plateau.

4.4.4 Groundwater Conditions and Flow

Groundwater in the bedrock units in the deposit and hillslope areas is likely under confined conditions. However, water table conditions may exist in areas that are highly fractured. Vertical hydraulic gradients vary with location. The time series water level plot for RES08-02 indicates an upward hydraulic gradient between the bedrock and the overburden. The artesian conditions observed at K08-05, K08-06, and K08-07 also suggest upward hydraulic gradients. The time series water level plot for RES08-01 indicates that both upward and downward hydraulic gradients exist at that location. The vibrating wire piezometer in PO-05-07 indicates a downward hydraulic gradient within the bedrock (Figure 3.4). However, a low piezometric head exists in the zone that vibrating wire piezometer 3 (depth of 52.3 mbgs) is completed in. This zone acts like a drain and is likely a highly fractured zone with a high transmissivity.

Groundwater in the deposit and hillslope areas is recharged in up gradient areas and flows down gradient towards Schaft Creek Valley. Most of the groundwater that flows through the deposit area is likely transmitted through fracture zones. Upward and downward hydraulic gradients likely change through the year based on recharge and flow rates through the bedrock. An improved understanding of changes with time will be possible with the collection of additional data. Water levels in the drill holes and piezometers were only measured once after installation. Additional water levels should to be collected to better evaluate the groundwater conditions in the deposit area.

The hydraulic gradient is quite steep in the deposit area. The overall gradient is estimated to be 0.27 from the saddle area to Schaft Creek Valley, locally the gradient may be as steep 0.5. In the hillslope area south of the deposit area the hydraulic gradient is estimated to be 0.15.

4.5 SADDLE AREA

4.5.1 Description

The saddle area is located in a col between Mount LaCasse to the north and another peak to the south. The deposit area flanks the saddle area to the west and the slope between the saddle area and Schaft Creek Valley is relatively steep. However, the slope between the saddle area and Mess Creek is less steep. Surface water drains the saddle area by flowing to the east into Mess Creek Valley.

Overburden at the surface consists of alluvium-type deposits, which extends to depths of up to 60 m, based on drilling data. Underlying the overburden is likely a layer of broken and weathered bedrock. However, no seismic surveys were conducted in the area to confirm this. Underlying the weathered and broken bedrock is solid bedrock of the Stuhini Group. The boreholes that were drilled in the area drilled into andesite, but other rock types of the Stuhini Group are likely found at depth.

4.5.2 Hydraulic Conductivity

Two piezometers (KP08-12 and KP08-13) and a paired monitoring well (RES08-05A and RES08-05B) have been installed in the saddle area. The hydraulic conductivity of the overburden in the saddle area is approximately 7E-06 m/s based on the median value of the response tests conducted in the overburden at KP08-12, RES08-05A and RES08-05B. The hydraulic conductivity of the andesite bedrock in the saddle area is estimated to be 6E-07 m/s based on the median value of the response tests performed in the bedrock at RES08-05A and KP08-13.

4.5.3 Groundwater Levels

Groundwater levels range from just below ground surface to approximately 11.5 m below ground surface in the overburden, based on water levels measured in RES08-05B and KP08-12. Groundwater in the andesite bedrock is under artesian conditions at RES08-05A, but in KP08-13 the groundwater level is approximately 7 m below ground surface. RES08-05 is located along a hillslope and the artesian conditions may be created by a hydraulic connection with groundwater in the up gradient bedrock in the hillslope.

4.5.4 Groundwater Conditions and Flow

As shown on the time series water level plot for RES08-05, an upward vertical hydraulic gradient exists and the groundwater in the bedrock in the saddle area is likely under confined conditions. Water table to semi-confined conditions likely exists in the overburden in the saddle area.

Groundwater in the saddle area is located at the confluence of two flow systems, but it is also located at a drainage divide. Groundwater flowing south from Mount LaCasse and groundwater flowing north from the peak to the south of Mount LaCasse converge in the saddle area. The drainage divide between Mess Creek and Schaft Creek is located at the top of the hillslope above Schaft Creek, so the majority of the saddle area is located in the Mess Creek catchment. Surface

water divides are generally thought of as groundwater divides also, and the surface water in the saddle area flows eastward into Mess Creek Valley. It is likely that most of the groundwater in the converging flow systems flows eastward towards Mess Creek Valley also.

4.6 SKEETER CREEK VALLEY

4.6.1 Description

Skeeter Creek Valley is a north-south trending hanging valley located northeast of Mount LaCasse. The proposed TSF for the Project is located in Skeeter Creek Valley. Skeeter Creek flows north and is part of the Schaft Creek catchment. At the southern end of Skeeter Creek Valley is Start Creek, which flows south and is part of the Mess Creek catchment. The proposed south embankment for the TSF is located at the drainage divide between Start and Skeeter Creeks.

Overburden in the southern part of Skeeter Creek Valley ranges in thickness from approximately 1 m to 35 m, based on drilling data. In the northern portion of the valley the overburden is up to 40 m thick. The overburden consists of interbedded gravel, sand, silt and clay deposits, which are interpreted to be glacial till, lacustrine and alluvium deposits.

Underlying the overburden in Skeeter Creek Valley is likely a layer of broken and weathered bedrock. Seismic surveys were conducted in the area and the thickness of the low velocity zone correlates well with the depth of overburden. However, the underlying bedrock is likely heavily fractured as two faults run along the floor of the valley. There may not be a weathered and broken bedrock zone underlying the overburden in the area of the proposed northwest TSF embankment, as there are no identified faults in the immediate vicinity and response testing indicates that there are not any major differences in hydraulic conductivity with depth.

Skeeter Creek Valley is located at the intersection of bedrock units of the Paleozoic Stikine Assemblage and the Lower Mesozoic Stuhini Group. The Stikine Assemblage is located east of the valley and the Stuhini Group is located west of the valley. Steeply dipping normal faults that run along Skeeter Creek Valley juxtapose these two units together.

The geologic units in Skeeter Creek Valley consist of Upper Carboniferous limestone that contains beds of quartzite, siltstone and chert. The limestone unit out crops and subcrops along the southern portion of the valley and along the eastern hillslope above the valley. Volcaniclastics of the Stuhini Group are located in the southern portion of Skeeter Creek Valley and along the western hillslope above the valley. The contact between the limestone unit and the Stuhini volcanclastic unit is partly transitional as the origin of these units is from an island arc setting. Faulting also juxtaposes the two units together.

Carbonate bedrock can contain solution features, and in some cases, karstic features. Efforts have been made to either confirm or disprove the presence of potential karst formations including cross hole seismic tomography and targeted geotechnical drilling. No evidence of voids or karstic features has been detected during the course of the investigations.

Intrusive bedrock is the dominant bedrock type in the northern portion of Skeeter Creek Valley. The north western embankment of the proposed TSF is underlain by felsic rocks of the Hickman Batholith, which contain some dykes and veins of mafic and intermediate composition. The outer margin of the Hickman Batholith extends into the northern part of Skeeter Creek Valley under the northern embankment of the proposed TSF. The outer margin of the batholith has a diorite composition and is juxtaposed next to ultramafic peridotite along the eastern portion of the northern embankment.

The presence of Skeeter Creek Valley is related to the geologic structure. The valley floor is underlain by two northerly trending normal faults that run the length of the valley. The normal faults in Skeeter Creek Valley splay off of the Mess Creek fault system, which runs along Mess Creek Valley. Structurally, the small mountain located between Mess Creek Valley and Skeeter Creek Valley is horst and Skeeter and Mess Creek Valleys are grabens. The geologic structure is more complex in the northern portion of Skeeter Creek Valley as numerous northeast-southwest trending faults are present.

Cross sections through the proposed TSF embankments are shown on Figures 4.4 through 4.9. The cross sections show the borehole lithologies that were encountered while drilling. Water levels and possible fault locations are also shown in the cross sections.

4.6.2 Hydraulic Conductivity

In Skeeter Creek Valley and the TSF area, six monitoring wells (3 paired sites), 12 piezometers, and 7 drill holes have been completed. Packer and response tests were performed on the overburden and the bedrock to assess the hydraulic conductivity.

The hydraulic conductivity of the geologic units in Skeeter Creek Valley is estimated to be as follows (from Table 3.6):

- The median hydraulic conductivity of the overburden is approximately 9E-06 m/s
- The median hydraulic conductivity of the Upper Carboniferous Limestone is approximately 2E-06 m/s
- The median hydraulic conductivity of andesite from the Stuhini Group is approximately 2E-05 m/s. However, this is based on only two tests
- The median hydraulic conductivity of volcaniclastics from the Stuhini Group is approximately 6E-07 m/s
- The median hydraulic conductivity of diorite from the Hickman Batholith is approximately 2E-07 m/s
- The median hydraulic conductivity of granodiorite from the Hickman Batholith is approximately 3E-07 m/s. However, this is based on only two tests, and
- The median hydraulic conductivity of peridotite is approximately 6E-07 m/s.

4.6.3 Groundwater Levels

Groundwater levels in Skeeter Creek Valley range from artesian to approximately 15 m below ground surface. Artesian conditions were observed in numerous drill holes, piezometers and monitoring wells at each proposed TSF embankment site.

4.6.4 Groundwater Conditions and Flow

Groundwater in the overburden in Skeeter Creek Valley is under confined and water table conditions. Fine grained confining layers are present in the overburden. However, the lateral continuity of the fine grained layers is unknown, but they are extensive enough to create confined conditions. Groundwater conditions in the bedrock units are also confined, as artesian conditions are observed in numerous boreholes.

Upward vertical hydraulic gradients between the overburden and the bedrock are typical in Skeeter Creek Valley, as indicated by bedrock water levels. Skeeter Creek Valley is therefore a groundwater discharge zone, where groundwater in the valley flows upward from the bedrock into the overburden. As such, recharge to the overburden is likely predominantly provided by upwelling groundwater from the bedrock.

The drainage divide between Skeeter Creek and Start Creek is located along the proposed south TSF embankment and the southern end of Skeeter Creek Valley. Start Creek flows south and is in the Mess Creek catchment. Skeeter Creek flows north and is in the Schaft Creek catchment. Surface water divides are generally considered to be groundwater divides so groundwater in the Start Creek catchment likely flows south-southeast into Mess Creek Valley. Groundwater in the Skeeter Creek catchment likely flows north parallel with the trend of the valley.

The estimated average flow rate within the Skeeter Creek catchment valley-fill aquifer is:

$$Q = KiA$$

Where the hydraulic conductivity, K, is 9E-06 m/s
The gradient, i, is 0.01, and
The area, A, is 35,000 m^2 (1000 m wide and 30 m thick).

The estimated average flow rate, Q, is therefore 0.003 m^3/s (3 L/s).

The proposed northwest TSF embankment is also located along a drainage divide. Groundwater north of the divide flows north down the hillslope into Schaft Creek Valley and groundwater south of the divide flows south into Skeeter Creek Valley. Once in Skeeter Creek Valley groundwater flows north then down the hillslope into Schaft Creek Valley.

Groundwater in the bedrock in Skeeter Creek Valley is recharged in up gradient areas to the east and west of the valley. However, most recharge likely occurs from western sources as elevations are much higher. As such, Skeeter Creek Valley is located in a convergence zone between two

flow systems. Faults that run parallel to the valley likely create barriers to flow across the faults, which would cause water levels to rise from ponding groundwater. This explains the common artesian conditions observed in Skeeter Creek Valley.

Section 5.0 - GROUNDWATER QUALITY

5.1 GENERAL

Groundwater quality monitoring was initiated in 2008 by Rescan. Sixteen monitoring wells were installed in eight locations in the Project area with a shallow and deep well at each location. KP was retained to assess and complete the groundwater quality program for the Project in fall 2009. Following an assessment of the groundwater quality data, KP determined that four monitoring wells RES08-01A, RES08-01B, RES08-02A, and RES08-04A were contaminated by installation materials and not suitable for water quality analysis despite redevelopment efforts. During the 2010 hydrogeologic investigation carried out by KP, six groundwater monitoring well locations were installed, five in the Schaft Creek floodplain and one in the deposit area. Monitoring well locations are shown on Figure 3.1 and Figure 3.2. Completion and location details are provided in Table 3.1 and a sampling history is provided in Table 5.1.

5.2 METHODOLOGY

5.2.1 Well Development

Well development is required to facilitate the collection of representative water samples from the aquifer and to minimize the influence of materials introduced during drilling. A Waterra Hydrolift pump with one-inch high density polyethylene tubing (HDPE), a D-32 surge block, and D-32 foot-valve was used to develop the monitoring wells. Well development occurred by surging and pumping water from the screened zone in one foot increments until the water was clear, or until the field measured water quality parameters stabilized. This process was performed three times to ensure proper well development. Water sample collection occurred at least 24 hours after well development.

5.2.2 Sample Preparation

To collect representative groundwater samples, stagnant water present in the well is purged prior to sampling. The well purging and sampling procedures were adapted from the following documents:

- British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-emission, Water, Wastewater, Soil, Sediment and Biological Samples. 2003 Edition. BC Ministry of Water, Land and Air Protection.
- Low-Flow (Minimum Drawdown) Ground-Water Sampling Procedures. 2010. United States Environmental Protection Agency. EPA/540/S-95/504.

Purging and sample collection were performed with a Grundfos Redi-Flo2 submersible pump and 5/8" high-density polyethylene (HDPE) Waterra tubing. Two approaches have been used to purge and sample the monitoring wells: a three well volume approach and a minimum draw-down low flow approach.

The three well volume method is a high flow purging and sampling method by which three well volumes of water are purged from the well prior to sample collection. For this method, *in situ* parameters are measured and recorded every 10 L of purged water and samples are collected

when the three well volumes have been removed and the parameters are stable (*in situ* parameters are considered stable when there is less than 10% change in the monitored values in three consecutive buckets of purged water).

The minimum draw-down purging and sampling method involves well purging at a rate that is similar to natural groundwater flow across the well screen interval. The pump is seated 1 m above the top of the well screen and the pump rate is adjusted so the water level in the well remains static (not dropping), once this has been achieved a minimum of one well volume below the pump intake is purged and samples are collected once the *in situ* parameters have stabilized. *In situ* parameters are measured using a flow-through cell. *In situ* parameter stabilization is defined as less than 10% difference in three consecutive measurements.

The following *in situ* parameters were measured using a Yellow Springs Instrument multi-parameter probe (YSI 556) and a flow through cell:

- pH
- Temperature
- Specific Conductivity, and
- Dissolved Oxygen.

5.2.3 Sample Collection

Once the purging conditions have been met and the final *in situ* parameters have been recorded the sample line is disconnected from the flow-through cell, the pump rate is turned down, if necessary, and the samples are collected. Samples for dissolved parameters are field filtered using a 0.45 µm polyethersulfone in-line filter. Any required preservatives are added immediately after sample collection. Groundwater is generally in a reducing environment and all efforts are made to preserve the samples in their original state. Using in-line filters reduces sample contact with ambient surface conditions and the immediate preservation assists in this process too. Samples are stored in coolers with ice packs and couriered to the laboratory as soon as possible.

5.2.4 Laboratory Analysis

Water samples were submitted to ALS Environmental in Burnaby for the following analyses:

- Physical Tests – Hardness, pH, specific conductivity, total dissolved solids (TDS), total suspended solids (TSS), and turbidity
- Dissolved Anions – Alkalinity, bromide, chloride, fluoride, and sulphate
- Nutrients – Ammonium nitrogen, nitrate, nitrite, total Kjeldahl nitrogen (TKN), dissolved orthophosphate, and total and dissolved phosphate
- Dissolved Metals - analysed at low levels to meet the B.C. Water Quality Guidelines (BCWQG) and the Canadian Environmental Quality Guidelines (CEQG) criteria values, and
- Total Organic Carbon (TOC).

Laboratory results for each groundwater sample can be found in Appendix B.

5.3 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

The objective of the QA/QC program is to verify that the data are obtained in a scientifically defensible, repeatable and well documented manner. The QA/QC program uses standard methods and protocols for the collection of groundwater quality samples. The following methods and protocols were carried out as per the QA/QC program:

- Regular calibration and maintenance of all field equipment.
- Collection and preparation of field blanks, travel blanks, and duplicate samples for approximately 10% of overall samples.
- Employment of a fully accredited analytical laboratory for the analysis of all the groundwater quality samples.
- Determination of analytical precision and accuracy through the interpretation of the analysis reports for blank samples and blind duplicates.

The results of the data quality analysis are provided in Appendix B5.

5.4 RELEVANT GUIDELINES

Baseline water quality analytical and *in situ* data are examined and compared to relevant guidelines with respect to the most sensitive receptors in the downstream environment. The guidelines relevant to the water quality data for the Project are as follows:

- British Columbia Ministry of Environment Approved and Working BCWQG for Fresh Water Aquatic Life (BCWQG) – Maximum.
- Canadian Council of Ministers for the Environment (CCME), Canadian Environmental Quality Guidelines (CCME) - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater).

5.5 GROUNDWATER QUALITY ASSESSMENT

5.5.1 Overview

Groundwater quality data collection has improved greatly from 2008. Well re-development in the spring of 2010 has resulted in decreased turbidity, TSS and pH values, and has improved the groundwater quality data integrity. Wells RES08-01A, RES08-01B, RES08-02A, and RES08-04A are not suited for water quality sampling as redevelopment was not successful. A sample history is provided in Table 5.1.

The groundwater quality in the Project area is generally slightly basic to basic, moderately hard to hard and alkaline. Groundwater is classified as fresh with total dissolved solids concentrations less than 1000 mg/L. All monitoring locations have high buffering capacity with alkalinity values consistently greater than 49 mg/L $CaCO_3$, ranging upwards to 201 mg/L $CaCO_3$. Sulphate concentrations exceeded the 100 mg/L BCWQG limit in wells RES08-03A, RES08-06A, RES08-07A RES08-07B, and RES08-08A; four of these wells are located in the vicinity of the proposed TSF and the other (RES08-03A) is located within the Schaft Creek floodplain.

The groundwater in the deposit area, Schaft Creek Valley and saddle areas are predominantly calcium to calcium-magnesium bicarbonate type. The groundwater in Skeeter Creek Valley ranges from magnesium type to no dominant cation type, and bicarbonate to sulphate type water. These water types are illustrated in Piper diagram format on Figures 5.1, 5.2, 5.3 and 5.4. These diagrams were created using average values for each monitoring well (using only samples that had acceptable ion balances).

Aquatic life guideline exceedances occur for aluminium, arsenic, cadmium, iron, molybdenum, uranium and vanadium, but these issues are not pervasive. Guideline exceedances vary with location within Schaft Creek Valley. In the southern portion of the valley vanadium is the only parameter to exceed guidelines. In the central part of the valley sulphate, cadmium, molybdenum and uranium exceed guideline limits, and further north arsenic and iron are the only parameters to exceed guidelines. In the deposit and saddle areas arsenic, cadmium and iron are the only parameters to exceed guideline limits. In Skeeter Creek Valley sulphate, iron and uranium are the only parameters to exceed guidelines. It should be noted that arsenic concentrations in all of the samples that exceed guidelines are near the guideline limit and that uranium concentrations only exceed the more stringent CCME limit, and are well below the BCWQG limit. Cadmium exceedances are rare following the redevelopment of the monitoring wells, with only three samples exceeding the guideline limit for the Project area.

The parameter exceedances for the water samples collected for the Project are summarized in Table 5.2. The groundwater quality for each Project area is discussed below.

5.5.2 Schaft Creek Valley

Nine monitoring wells located in Schaft Creek Valley are used for the characterization of groundwater quality, RES08-03A, RES08-03B, HG10-02A, HG10-02B, and HG10-01, listed from south to north (down the valley), as illustrated on Figure 3.1. The monitoring wells are screened in sand and gravel of the Schaft Creek Valley-fill aquifer with the exception of RES08-03A and RES08-04B, which are screened in granodiorite of the Hickman Batholith.

Monitoring wells RES08-04A and RES08-04B were redeveloped due to pH issues likely related to contamination during well construction. Redevelopment efforts were successful for RES08-04B, with pH values reducing to acceptable levels; RES08-04A redevelopment wasn't successful and as a result the well is not used for water quality monitoring purposes and all data have been excluded from this analysis. Furthermore, samples collected from RES08-04B prior to redevelopment are considered suspect and have also been excluded (samples collected on October 1, 2008 and October 4, 2009).

Analytical and *in situ* data and aquatic life guideline exceedance information for the Schaft Creek Valley groundwater sample are provided in Appendix B2, Table B1.2. Guideline exceedance issues are summarized in Table 5.2. A piper diagram of the major ions present in the groundwater samples is provided on Figure 5.1.

Groundwater in the Schaft Creek Valley-fill aquifer is slightly basic to basic, moderately hard to hard, alkaline, is considered to be freshwater, and has a mean temperature of 4.9°C. Groundwater from Schaft Creek Valley is predominately calcium-bicarbonate type, as shown on Figure 5.1. However, water from RES08-03A is calcium-sulphate type and water from RES08-04B does not have a dominant cation, but is dominant in bicarbonate. Groundwater samples from RES08-03A are atypical for the Schaft Creek Valley.

The pH values range from 6.93 to 8.63 (median value of 7.87); pH is generally slightly higher in the deeper wells. Hardness typically ranges from 55.6 mg/L $CaCO_3$ to 145 mg/L $CaCO_3$, but is higher in RES08-03A, where concentrations range from 286 mg/L $CaCO_3$ to 529 mg/L $CaCO_3$. Alkalinity is dominantly bicarbonate in composition, with concentrations ranging from 49.9 mg/L $CaCO_3$ to 154 mg/L $CaCO_3$, there isn't a noticeable difference in concentration in RES08-03A. TDS values typically ranges from 52 mg/L to 182 mg/L, with the exception of data from RES08-03A, which has much higher TDS values, ranging from 146 mg/L to 948 mg/L. Alkalinity, hardness, TDS and conductivity all become progressively higher from south to north in Schaft Creek Valley.

Sulphate concentrations are typically low in the Schaft Creek Valley groundwater samples, ranging from below detection (0.5 mg/L) in HG10-01 to 23.9 mg/L, mean concentration of 13.6 mg/L. Sulphate concentrations in RES08-03A are the exception, with all but one sample exceeding the 100mg/L BCWQG aquatic life limit (values range from 16.6 mg/L to 534 mg/L; mean concentration of 266 mg/L). Other dissolved anions are relatively low in the samples from this area, with bromide consistently below the limits of detection. Chloride concentrations are higher in RES08-03A (maximum concentration of 16.5 mg/L) and HG10-02A (maximum concentration of 1.32 mg/L), with lower concentrations detected sporadically, or not at all, in the other wells in the valley. Fluoride concentrations are low to below detection and are not a dominant ion in any groundwater sample.

Nutrient concentrations are low in all of the groundwater samples. Ammonia concentrations were generally below the limits of detection (0.005 mg/L N), but were found at low concentrations in the samples from HG10-05B (range from 0.0854 mg/L N to 0.124 mg/L N). Nitrate concentrations were detected in at least one sample from each well, but at very low concentrations, well below guideline limits. Nitrite was detected in the occasional sample, but at concentrations near the limits of detection; again, no guideline exceedances are noted. Phosphate concentrations are all low, generally below the limits of detection or within an order greater.

Dissolved metals aquatic life guideline exceedances occur in samples from HG10-05B (vanadium only), RES08-04B (cadmium and uranium), RES08-03A (cadmium, molybdenum, uranium), and HG10-01 (arsenic, iron). There are no aquatic life guideline exceedances for dissolved metals in the samples from HG10-05A, HG10-04, RES08-03B, HG10-02A, and HG10-02B. Dissolved metals guideline exceedances are summarized below (listed from south to north, up the valley):

- HG10-05B
  - Vanadium exceeds the 0.006 mg/L BCWQG aquatic life limit in two of the four samples from this well (0.0305 mg/L on 29-Jun-10 and 0.0063 mg/L on 19-Sep-10).
- RES08-04B

  - Cadmium exceeds both the CCME and BCWQG limits on 25-Apr-10, with a concentration of 0.000036 mg/L, and
  - Uranium exceeds the 0.015 mg/L CCME limit in three of the four samples, with concentrations ranging from 0.0149 mg/L to 0.0181 mg/L.
- RES08-03A
  - Cadmium exceed both the CCME and BCWQG limits on 25-Apr-10, with a concentration of 0.00011 mg/L, despite high hardness concentration of 286 mg/L $CaCO_3$
  - Molybdenum exceeds the 0.73 mg/L CCME limit in three of the five samples, concentrations range from 0.0422 mg/L to 0.127 mg/L (mean 0.0831 mg/L), and
  - Uranium exceeds the 0.015 mg/L CCME limit in three of the five samples, concentrations range from 0.00398 mg/L to 0.0179 mg/L.
- HG10-01
  - Arsenic ranges from 0.0053 mg/L to 0.00685 mg/L, with all values exceeding the 0.005 mg/L CCME and BCWQG limit for this parameter, and
  - Iron concentrations range from 1.05 mg/L to 1.62 mg/L, all exceed the CCME (0.03 mg/L) and BCWQG (0.05 mg/L) limits.

Cadmium and uranium levels are elevated in samples from wells near the deposit area, but are not specific to the depth of installation, as they are not present in the shallow well at RES08-03. Cadmium concentrations are in fact generally very low and hardness is high, resulting in reduced toxicity of this metal. Uranium concentrations do not exceed the 0.3 mg/L BCWQG limit, and the exceedances noted above are all relatively close to the CCME guideline limit. Molybdenum concentrations are detected in all samples from this valley, though concentrations are only elevated in the samples from RES08-03A; no samples exceed the 2 mg/L BCWQG limit.

Vanadium is below the limits of detection in all samples except those from HG10-05B, and there isn't a CCME limit for this parameter. Arsenic is generally found at low levels in the majority of the samples from the Schaft Creek Valley, but concentrations are much higher in the lower reaches of the valley at HG10-01. Iron, however, is rarely detected in the water samples from this valley, with the exception of HG10-01, where concentrations are at least three times greater than guideline limits.

5.5.3 Deposit Area

Five monitoring wells are installed in the deposit area: RES08-01A, RES08-01B, RES08-02A, RES08-02B and HG10-03. All of the RES08-series wells in the deposit area were redeveloped due to pH or excess turbidity issues likely related to contamination during well construction or incomplete initial development. Only RES08-02B was successfully redeveloped in the spring of 2010 in order to decrease the turbidity, the other three wells were not successfully redeveloped have been removed from the groundwater sampling program and the data are not used for groundwater characterization. Water samples are only collected from RES08-02B because three of the wells (RES08-01A, RES08-01B, and RES08-02A) were contaminated by installation materials. Monitoring well HG10-03 is located in an avalanche path and is inaccessible during certain times of the year. It may have been damaged by recent avalanches, and its functionality will need to be check this summer.

Analytical and *in situ* data, as well as aquatic life guideline exceedance information are summarized in Table B1.3 in Appendix B1. Analytical data for RES08-02B collected prior to redevelopment are provided but the discussion will focus on samples collected afterward (2010 and 2011). Guideline exceedance issues are summarized in Table 5.2. A piper diagram of the major ions present in the groundwater samples is provided on Figure 5.2.

The groundwater in the deposit area is basic, moderately hard, alkaline, is considered to be freshwater, and has a mean temperature of 5.4^{o}C. Groundwater from RES08-02B is characterized as having a calcium-magnesium-bicarbonate type hydrochemical facies, as shown on the piper diagram on Figure 5.2. The pH ranges from 8.44 to 8.84, alkalinity ranges from 71.1 mg/L $CaCO_3$ to 76 mg/L CaCO3, and hardness ranges from 75 mg/L $CaCO_3$ to 87 mg/L $CaCO_3$. TDS and specific conductivity range from 120 mg/L to 149 mg/L and 172 µS/cm to 198 µS/cm, respectively.

Sulphate concentrations are consistently below guideline limits, ranging from 27.1 mg/L to 28.5 mg/L. Very low concentrations are persistently detected in all samples, but bromide and chloride are below detection. Very low concentrations of ammonia are detected in all samples but no other N-based nutrients are detected and all P-based nutrients are very low to below detection.

Dissolved metals are low in the samples from RES08-02B. Arsenic is the only parameter to exceed the guideline limits with two of the three samples exceeding the 0.005 mg/L CCME and BCWQG limit. Arsenic concentrations range from 0.00485 mg/L to 0.00639 mg/L. Dissolved aluminium, arsenic, copper and iron were all issues prior to re-development, but only arsenic persisted in recent samples.

5.5.4 Saddle Area

Groundwater quality monitoring wells RES08-05A and RES08-05B are located in the Saddle area. RES08-05A is screened in andesitic bedrock and RES08-05B is installed in unconsolidated sand and gravel overburden. These wells were not located or sampled during the 2009 sampling program. RES08-05B was successfully redeveloped in the spring of 2010 to decrease the turbidity and suspended solids. Monitoring well RES08-05A (bedrock) was flowing under artesian pressure during groundwater sampling.

Analytical and *in situ* data, as well as aquatic life guideline exceedance information are summarized in Table B1.4 in Appendix B1. Analytical data collected prior to redevelopment are provided but the discussion focuses on samples collected afterward (2010 and 2011). Guideline exceedance issues are summarized in Table 5.2. A piper diagram of the major ions present in the groundwater samples is provided on Figure 5.3.

Groundwater in the saddle area is slightly basic, moderately hard, alkaline, is freshwater, and has a mean temperature of 4.8^{o}C. Groundwater from RES08-05A and RES08-05B is characterized as having a calcium-bicarbonate type hydrochemical facies, as shown on the piper diagram on Figure 5.3. The pH is higher in the deeper well (RES08-05A) ranging from 8.20 to 8.36 than in

the shallow well (RES08-05B) where pH ranges from 7.40 to 7.59. Hardness and alkalinity are greater in the shallow well water quality samples; the mean hardness in the shallow well is 104.4 mg/L $CaCO_3$ and 81.4 mg/L $CaCO_3$ in the deep well. Average alkalinity is 95.4 mg/L $CaCO_3$ in the shallow well and 71.7 mg/L $CaCO_3$ in the deep well. TDS ranges from 97 mg/L to 168 mg/L and specific conductivity ranges from 185 µS/cm to 243 µS/cm.

Sulphate concentrations are all below 25.2 mg/L and are well below the 100 mg/L BCWQG aquatic life limit. Low concentrations of fluoride are detected in all of the samples and bromide and chloride are consistently below the limits of detection. N and P-base nutrients are all very low to below detection.

Dissolved metals do not exceed aquatic life guideline limits in any of the post redevelopment samples from RES08-05A. Cadmium and iron exceed guideline limits in some or all of the samples from RES08-05B. Cadmium concentrations are generally below guidelines, but one sample collected on September 23, 2010 exceeds the CCME and BCWQG limit, with a measured concentration of 0.000039 mg/L. Iron concentrations in RES08-05B range from 0.305 mg/L to 0.667 mg/L; all three samples exceed the 0.3 mg/L CCME limit and two exceed the 0.35 mg/L BCWQG limit.

5.5.5 Skeeter Creek Valley

There are three monitoring locations (six monitoring wells) in the Skeeter Creek Valley; listed from south to north, they are: RES08-07A and RES08-07B at the south embankment of the proposed TSF, RES08-08A and RES08-08B at the west embankment of the TSF, and RES08-06A and RES08-06B at the north embankment. Monitoring wells RES08-07A, RES08-07B, and RES08-06A are artesian. All of the wells in this area were redeveloped in the spring 2010 in order to reduce TSS and turbidity issues. Well development was successful and all have been included in the groundwater quality assessment for the Skeeter Creek Valley.

Analytical and *in situ* data, as well as aquatic life guideline exceedance information are summarized in Table B1.5 in Appendix B1. Analytical data collected prior to redevelopment are provided but the discussion focuses on samples collected afterward (2010 and 2011). Guideline exceedance issues are summarized in Table 5.2. A piper diagram of the major ions present in the groundwater samples is provided on Figure 5.4.

The groundwater in the Skeeter Creek Valley is neutral to basic, hard, alkaline, with an average temperature of 5.8^{o}C, and is considered to be freshwater. Groundwater from RES08-06A and RES08-06B is characterized as having a calcium-magnesium sulphate type hydrochemical facies. Groundwater from RES08-07A and RES08-07B is magnesium-bicarbonate-sulphate type, and RES08-08A is sulphate type without a dominant cation. Groundwater from RES08-08B is bicarbonate type without a dominant cation.

The pH values are similar in both shallow and deep well samples. Hardness ranges from 79.5 mg/L $CaCO_3$ to 314 mg/L $CaCO_3$, and is lowest in the RES08-06A/B wells, where the mean concentration is 112.5 mg/L $CaCO_3$ and generally higher in RES08-08A/B and RES08-07A/B,

with mean concentrations of 199 mg/L $CaCO_3$ and 287.5 mg/L $CaCO_3$, respectively. Bicarbonate alkalinity ranges from 94.7 mg/L $CaCO_3$ to 201 mg/L $CaCO_3$, showing similar variability through the valley as hardness; no measured carbonate alkalinity. TDS and specific conductivity show similar trends as hardness and alkalinity, with TDS ranging from 153 mg/L to 606 mg/L and specific conductivity ranging from 247 µS/cm to 972 µS/cm.

Sulphate concentrations exceed the 100 mg/L BCWQG aquatic life limit in all of the samples from the shallow wells (A-series) and all of the samples from the shallow well RES08-07B, which is located in the vicinity of the proposed south embankment. Sulphate concentrations range from 13.5 mg/L to 294 mg/L, and are greater with depth. Fluoride and chloride concentrations are low, but detected in all of the samples, with higher concentrations found in samples from deeper wells. Chloride is higher in the wells to the south of the valley. Bromide is consistently below detection. N and P-base nutrients are all very low to below detection.

Dissolved metals exceedances are limited to samples from RES08-08A and RES08-08B for uranium and iron only. All of the samples from RES08-08A exceed the 0.015 mg/L CCME limit for uranium, with values ranging from 0.79 mg/L to 1.33 mg/L, though none exceed the less stringent 0.3 mg/L BCWQG aquatic life limit. One sample from RES08-08B exceeds the CCME limit for uranium (4-May-10 sample has a concentration of 0.0181 mg/L. Iron concentrations exceed both the 0.35 mg/L BCWQG and 0.3 mg/L CCME limits for all samples from RES08-08B, with concentrations ranging from 0.79 mg/L to 1.33 mg/L.

Section 6.0 - SUMMARY

6.1 GROUNDWATER HYDROLOGY SUMMARY

A conceptual understanding of the groundwater hydrology of the study area has been developed with consideration of the site geology, specifically the surficial geology, groundwater levels and results from hydrogeologic testing. Geologic and hydrostratigraphic units are characterized based on their hydraulic properties and spatial distribution. Groundwater conditions are described as well as groundwater flow directions and gradients. Estimates of groundwater flow have been made for the Schaft Creek valley-fill aquifer and the Skeeter Creek valley-fill aquifer.

The major aquifers within the study area are located within the alluvial deposits of Schaft Creek Valley and Skeeter Creek Valley. Major bedrock aquifers include the andesite from the Stuhini Group and the granodiorite from the Hickman Batholith.

There are three implied groundwater divides to note within the Project area:

1. In the saddle area near the eastern boundary of the deposit. Groundwater east of the divide flows towards Mess Creek and groundwater west of the divide flows towards Schaft Creek.
2. At the southern end of Skeeter Creek Valley (the south TSF embankment alignment). Groundwater south of the proposed south TSF embankment flows towards Mess Creek along Start Creek while groundwater north of that location flows towards the north along Skeeter Creek Valley.
3. Along the proposed northwest TSF embankment alignment. Groundwater west of the northwest TSF embankment flows west towards Schaft Creek and groundwater east of the northwest TSF embankment flows to the east towards Skeeter Creek.

6.2 GROUNDWATER QUALITY SUMMARY

Groundwater quality data collection has improved greatly from 2008. Well redevelopment in the spring of 2010 has resulted in decreased turbidity, TSS and pH values, and has improved the groundwater quality data integrity. Wells RES08-01A, RES08-01B, RES08-02A, and RES08-04A are not suited for water quality as redevelopment was not successful.

The groundwater quality in the Project area is generally slightly basic to basic, moderately hard to hard and alkaline. Groundwater is classified as fresh with total dissolved solids concentrations less than 1000 mg/L. All monitoring locations have high buffering capacity with alkalinity values consistently greater than 49 mg/L $CaCO_3$, ranging upwards to 201 mg/L $CaCO_3$. Sulphate concentrations exceeds the 100 mg/L BCWQG limit in at least one well at all monitoring locations in the vicinity of the proposed TSF and one other well located within the Schaft Creek floodplain.

The groundwater in the deposit area, Schaft Creek Valley and saddle areas are predominantly calcium to calcium-magnesium bicarbonate type. The groundwater in Skeeter Creek Valley ranges from magnesium type to no dominant cation type, and bicarbonate to sulphate type water.

Baseline water quality analytical and *in situ* data are examined and compared to relevant guidelines with respect to the most sensitive receptors in the downstream environment. The guidelines relevant to the

water quality data for the Project are the British Columbia Ministry of Environment Approved and Working BCWQG for Fresh Water Aquatic Life (BCWQG) – Maximum and the Canadian Council of Ministers for the Environment (CCME), Canadian Environmental Quality Guidelines (CCME) - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater).

Aquatic life guideline exceedances occur for aluminium, arsenic, cadmium, iron, molybdenum, uranium and vanadium, but these issues are not pervasive. Guideline exceedances vary with location within Schaft Creek Valley. In the southern portion of the valley vanadium is the only parameter to exceed guidelines. In the central part of the valley sulphate, cadmium, molybdenum and uranium exceed guideline limits, and further north arsenic and iron are the only parameters to exceed guidelines. In the deposit and saddle areas arsenic, cadmium and iron are the only parameters to exceed guideline limits. In Skeeter Creek Valley sulphate, iron and uranium are the only parameters to exceed guidelines. It should be noted that arsenic concentrations in all of the samples that exceed guidelines are near the guideline limit and that uranium concentrations only exceed the more stringent CCME limit, and are well below the BCWQG limit. Cadmium exceedances are rare following the redevelopment of the monitoring wells, with only three samples exceeding the guideline limit for the Project area.

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Section 8.0 - CERTIFICATION

This report was prepared, reviewed and approved by the undersigned.

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TABLE 2.1

COPPER FOX METALS INC
SCHAFT CREEK MINE PROJECT

REGIONAL STRATIGRAPHY

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ERA	PERIOD	GROUP OR FORMATION	MAP UNIT	LITHOLOGY	THICKNESS (metres)		INTRUSIVE SUITES
QUAT	RECENT		Qt Qob Qal	tufa deposits olivine basalt unconsolidated glacial till	10-20		basaltic dikes
	PLEISTOCENE	BIG RAVEN FORMATION	Qb	olivine-plagioclase-augite basalt	10-20		basaltic dikes
TERT	PLIOCENE	SPECTRUM FORMATION NIDO FORMATION	TSr TNb	leucocratic peralkaline rhyolite aphyric and olivine-phyric basalt subaerial flows, intercalated fluvial gravel	? ?		
MESOZOIC	LATE CRETACEOUS	**SUSTUT GROUP**	uKSs	conglomerate, quartzose sandstone, arkose	?		
	MIDDLE JURRASIC TO CRETACEOUS	**BOWSER LAKE GROUP**	JBp JBcg	greywacke, shale, minor cross bedded sandstone chert pebble to granule conglomerate	500		diabasic-diorite (**MJdi**) Yehiniko Pluton monzonite (**MJmz**),
	EARLY TO MIDDLE JURASSIC	**HAZELTON GROUP**	Jw mJHsl mJHb lJHv lJHr lJHsn lJHsl	brecciated and fractured dark green siliceous siltstone siltstone, sandstone, minor tuff pillow basalt purple, maroon, and green andesite felsic welded ash-flow tuff, rhyolite flows tan sandstone, plagioclase-crystal tuffs, peperite graphitic siltstone	1000-2000		Monzonite (EJmz) and granite (EJg) stocks, augite-plagioclase diorite plugs and dikes
	LOWER JURASSIC		lJcg	thick well-bedded conglomerate	200-300		
	UPPER TRIASSIC	**STUHINI GROUP** NEWMONT LAKE facies MESS LAKE facies MORE CREEK facies	uTS uTSvt uTvr uTSl uTSva uTSpp uTSvt uTSvb uTSmt uTSv uTSs uTSc uTSsn uTSsl	undivided volcanics plagioclase crystal tuff pink flow-layered rhyolite algal limestone hornblende-plagioclase phyric andesite thick plagioclase-pyroxene porphyry flows, interbedded tuff massive pale weathering crystal tuff, lapilli tuff massive basalt flows and tuff serpentinized basaltic tuff pale green grey tuffs, minor basalt flows thick poorly bedded sandstone grey sparsely crinoidal limestone well bedded feldspathic sandstone thin laminated black siltstone	400 800 1500	2000	Hornblende-plagioclase porphyry (**LTmz**); Pyroxene diorite (**LTpp**, **LTpd**), syenite (**LTs**), hornblende diorite (**LTHd**) and periodotite (**LTum**)
	EARLY - MIDDLE TRIASSIC		mTs	thin bedded chert, siltstone	>15		
PALEOZOIC			PSu	undivided metavolcanic and metasedimentary rocks	?		
	EARLY PERMIAN	STIKINE	lPSc lPSdt	medium bedded to massive fossiliferous carbonate deformed tuff	<200		
	CARBONIFEROUS		CSst	phyllitic siltstone, graphitic argillite, tuffaceous phyllite			
	UPPER CARBONIFEROUS TO LOWER PERMIAN		uCSc uCSr uCSmv uCSb uCScg uCSss	massive and foliated limestone, chert, siltstone mauve to grey, flow-layered and spherultic rhyolite maroon tuff and lapilli tuff, ash-flow tuff massive amygdaloidal basalt volcanic conglomerate siltstone, sandstone, tuffaceous wacke	500-1000		
	MID CARBONIFEROUS		mCSc	bioclastic limestone	200		
	DEVONIAN TO EARLY MISSISSIPPIAN		DMSv DMSvr	pillow basalt - andesite, hyaloclasite and breccia rhyodacite flow breccia, tuff and subvolcanic intrusives	>2000-3000		**More Creek Pluton:** **Forrest Kerr Pluton:**
	LOWER AND MIDDLE DEVONIAN		lmDSfv lmDSc lmDSs lmDSst lmDSqs lmDSgs	intermediate to felsic plagioclase-phyric tuffs deformed thin-bedded to massive limestone thin-bedded siltstone, sandstone and argillite green and purple schistose tuffs quartz sericite schist graphitic schist			biotite granite (LDg/EMg), hornblende diorite (LDd/EMd), gabbro, hornblendite, clino-pyroxenite (LDum) pyroxene diorite (EDd)

NOTES:

1. MODIFIED FROM LOGAN AND OTHERS (1997).

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	11APR'12	ISSUED WITH REPORT VA101-329/8-3	NIB	JEM	KJB

Knight Piésold CONSULTING

TABLE 3.1

COPPER FOX METALS INC.
SCHAFT CREEK MINE PROJECT

SUMMARY OF DRILL HOLE, PIEZOMETER, AND MONITORING WELL INFORMATION

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Consultant	Year	Drillhole ID	Copper Fox Drillhole ID	Location of Drillhole	Coordinates			Dip	Azimuth	Drill Type	Total Length[1] (m)	Total Depth[2] (m)	Depth to Bedrock[2][3] (m)	Completion Zone (Length of PVC)		Completion Zone[2] (depth bgs)		Geology of Completion Zone	Hole Type	Stick Up (length of pipe) (m)	Installation Date	Report Reference	Hydrogeological Testing Performed
					Northing (m)	Easting (m)	Elevation (m)							From (m)	To (m)	From (m)	To (m)						
?	2007	?	07CF304	Open Pit Area	6,359,400	379,650	?	-90	--	?	139.9	139.9	4.6	131.9 18.7	139.9 26.4	131.9 18.7	139.9 26.4	Granodiorite Breccia	PZ	--	--	NA	Two piezometers installed - no testing performed
DST	2007	A-ND-07-01	?	North TSF Dam Area	6,374,500	382,127	820[4]	-90	--	HQ/NQ	137.5	137.5	39.8	-		--	--	--	DH	--	--	DST, January 2008	1 FHT, 9 RHT
DST	2007	A-ND-07-02	?	North TSF Dam Area	6,374,497	381,836	800[4]	-90	--	HQ/NQ	125.0	125.0	22.9	-	-	--	--	--	DH	--	--	DST, January 2008	9 RHT
DST	2007	A-ND-07-03	?	North TSF Dam Area	6,374,497	381,513	815[4]	-90	--	HQ/NQ	101.8	101.8	2.4	-	-	--	--	--	DH	--	--	DST, January 2008	1 FHT, 8 RHT
DST	2007	A-NWD-07-01	?	Northwest TSF Dam Area	6,373,335	380,516	900[4]	-90	--	HQ/NQ	113.4	113.4	12.8/13.3[8]	-	-	--	--	--	DH	--	--	DST, January 2008	6 RHT
DST	2007	A-SD-07-01	?	South TSF Dam Area	6,367,246	382,879	900[4]	-90	--	HQ/NQ	120.5	120.5	21.2/22.0[8]	-	-	--	--	--	DH	--	--	DST, January 2008	7 FHT, 3 RHT
DST	2007	A-SD-07-02	?	South TSF Dam Area	6,367,257	382,604	900[4]	-90	--	HQ/NQ	101.3	101.3	4.0	-	-	--	--	--	DH	--	--	DST, January 2008	6 FHT
DST	2007	A-SD-07-03	?	South TSF Dam Area	6,367,245[5]	382,328[5]	900[5]	-90	--	HQ/NQ	92.7	92.7	4.1	-	-	--	--	--	DH	--	--	DST, January 2008	3 FHT, 6 RHT
DST	2007	PO-01-07	07CF308	Open Pit Area	6,358,834[5]	379,626[5]	929	-60	180	HQ/NQ	62.0	53.7	9.4	-	-	--	--	--	DH	--	--	DST, March 2008	--
DST	2007	PO-02-07	07CF306	Open Pit Area	6,358,936[5]	379,094[5]	880	-60	180	HQ/NQ	65.7	56.9	24.0	-	-	--	--	--	DH	--	--	DST, March 2008	--
DST	2007	PO-03-07	07CF309	Open Pit Area	6,358,959[5]	380,021[5]	955	-59	168	HQ/NQ	57.3	49.1	10.5	-	-	--	--	--	DH	--	--	DST, March 2008	--
DST	2007	PO-04-07	07CF312	Open Pit Area	6,359,781[5]	380,614[5]	1170	-60	90	HQ/NQ	89.0	77.1	3.0	-	-	--	--	--	DH	--	--	DST, March 2008	--
DST	2007	PO-05-07	07CF313	Open Pit Area	6,360,183[5]	380,278[5]	1157	-60	90	HQ/NQ	201.3	174.3	2.0	-	-	--	--	--	VW PZ	--	--	DST, March 2008	5 VWP
DST	2007	PO-06-07	07CF314	Open Pit Area	6,360,608[5]	379,977[5]	1092[5]	-60	90	HQ/NQ	131.1	113.5	29.0	-	-	--	--	--	INC	--	--	DST, March 2008	--
DST	2007	PO-07-07	07CF315	Open Pit Area	6,361,023[5]	379,702[5]	1084	-60	90	HQ/NQ	82.7	71.6	94.5	-	-	--	--	--	INC	--	--	DST, March 2008	--
DST	2007	PO-08-07	07CF316	Open Pit Area	6,360,563[5]	380,437[5]	1353[5]	-90	--	HQ/NQ	636.1	636.1	8.5	-	-	--	--	--	INC	--	--	DST, March 2008	--
KP	2008	KP08-01	08CF344	Open Pit Area	6,361,268	379,773	1196	-63	35	HQ/HQ3	250.2	222.9	32.0	-	-	--	--	--	DH	--	--	KP, January 2010	4 FHT
KP	2008	KP08-02	08CF345	Open Pit Area	6,361,020	379,854	1157	-70	65	HQ3	101.2	95.1	28.0	-	-	--	--	--	DH	--	--	KP, January 2010	1 FHT
KP	2008	KP08-03	08CF328	Open Pit Area	6,360,467	379,823	992	-60	65	HQ/HQ3	285.9	247.6	20.7	25.9	30.8	22.4	26.7	Augite Porphyry	PZ	0.50	04/07/2008	KP, January 2010	1 FHT in piezometer
KP	2008	KP08-04	08CF341	Open Pit Area	6,360,244	380,282	1178	-65	63	HQ3	542.4	491.6	9.5	-	-	--	--	--	DH	--	--	KP, January 2010	23 PT, 6 FHT
KP	2008	KP08-05	08CF347	Open Pit Area	6,359,807[6]	380,000[6]	980[6]	-65	65	HQ/HQ3	463.6	420.2	8.5	-	-	--	--	--	DH	--	--	KP, January 2010	24 PT, 3 RHT
KP	2008	KP08-06	08CF346	Open Pit Area	6,359,641	380,352	1078	-65	90	HQ/HQ3	299.2	271.2	19.8	34.0	37.2	30.8	33.7	Alluvium	PZ	0.40	28/08/2008	KP, January 2010	1 PT, 2 FHT, 10 RHT
KP	2008	KP08-07	08CF329	Open Pit Area	6,359,248	380,336	1047	-64	121	HQ3	271.7	244.2	11.4	27.5	30.9	24.7	27.8	Sand	PZ	0.48	15/07/2008	KP, January 2010	3 RHT
KP	2008	KP08-08	08CF339	Open Pit Area	6,359,940	379,900	938	-62	221	HQ3	196.3	173.3	10.4	-	-	--	--	--	DH	--	--	KP, January 2010	2 FHT, 4 RHT
KP	2008	KP08-09	08CF338	Open Pit Area	6,360,367	379,574	920	-60	240	HQ3	245.4	212.5	25.0	47.4	51.0	41.0	44.2	Granodiorite	PZ	0.57	22/07/2008	KP, January 2010	1 RHT, 1 FHT in piezometer
KP	2008	KP08-10	08CF342	Open Pit Area	6,360,998	379,480	994	-61	327	HQ3	223.7	195.7	27.1	-	-	--	--	--	DH	--	--	KP, January 2010	1 FHT
KP	2008	KP08-12	08CF389	Saddle Area	6,359,933	381,776	1150	-90	--	ODEX/HQ3	61.9	61.9	N/A	44.8	48.8	44.8	48.8	Overburden	PZ	1.54	22/09/2008	KP, January 2010	5 FHT, 1 FHT in piezometer
KP	2008	KP08-13	08CF387	Saddle Area	6,360,071	381,404	1142	-90	--	HQ3/NQ3	25.9	25.9	20.7	21.8	25.8	21.8	25.8	Dyke	PZ	0.70	24/09/2008	KP, January 2010	1 RHT, 1 RHT in piezometer
KP	2008	KP08-16	08CF363	Open Pit Area	6,359,903	379,445	876	-90	--	ODEX/HQ2	62.5	62.5	13.7	58.5	62.2	58.5	62.2	Andesite	PZ	1.30	03/08/2008	KP, January 2010	1 PT, 3 RHT, 1 FHT in piezometer
KP	2008	KP08-17	08CF364	Open Pit Area	6,360,803	379,041	865	-90	--	ODEX/HQ3	55.8	55.8	12.2	52.6	55.8	52.6	55.8	Granodiorite	PZ	1.17	05/08/2008	KP, January 2010	2 PT, 2 RHT, 1 FHT in piezometer
KP	2008	KP08-20	08CF336	Waste Dump Area	6,360,889	378,413	835	-90	--	HQ3	76.2	76.2	N/A	12.2	16.8	12.2	16.8	Sand	PZ	0.61	17/07/2008	KP, January 2010	1 FHT in piezometer
KP	2008	KP08-21	08CF331	Waste Dump Area	6,359,157	378,441	855	-90	--	ODEX	50.9	50.9	N/A	43.9	46.9	43.9	46.9	Alluvium	PZ	0.60	14/06/2008	KP, January 2010	--
KP	2008	KP08-22	08CF335	Waste Dump Area	6,357,930	379,936	998[4]	-70	125	HQ3	72.2	67.8	33.2	-	-	--	--	--	DH	--	--	KP, January 2010	--
KP	2008	KP08-23	08CF333	Waste Dump Area	6,358,189	379,460	947	-90	--	HQ3	150.6	150.6	3.7	-	-	--	--	--	DH	--	--	KP, January 2010	2 PT, 6 RH
KP	2008	KP08-25	08CF380	North TSF Dam Area	6,374,073	382,129	824	-90	--	ODEX/HQ3	59.7	59.7	22.3	56.1	59.7	56.1	59.7	Peridotite	PZ	0.82	19/09/2008	KP, January 2010	1 PT, 1 FHT, 2 RHT, 1 FHT in piezometer
KP	2008	KP08-27	08CF381	North TSF Dam Area	6,374,151	381,687	794[7]	-90	--	ODEX/HQ3	44.2	44.2	12.5	36.9	40.5	36.9	40.5	Granodiorite	PZ	0.66	15/09/2008	KP, January 2010	1 PT, 2 RHT, 1 RHT in piezometer
KP	2008	KP08-28	08CF382	North TSF Dam Area	6,374,164	381,387	825	-90	--	ODEX/HQ3	47.0	47.0	13.7	42.8	46.7	42.8	46.7	Granodiorite	PZ	1.10	04/09/2008	KP, January 2010	2 RHT, 1 RHT in piezometer
KP	2008	KP08-31	08CF384	Northwest TSF Dam Area	6,373,183	380,396	858	-90	--	ODEX/HQ3	49.7	49.7	9.1	45.1	49.4	45.1	49.4	Granodiorite	PZ	0.70	10/09/2008	KP, January 2010	1 PT, 2 FHT, 2 RHT, 1 RHT in piezometer
KP	2008	KP08-32	08CF385	Northwest TSF Dam Area	6,372,976	380,347	877	-90	--	ODEX/HQ3	67.1	67.1	29.9	63.4	67.1	63.4	67.1	Granodiorite	PZ	1.25	28/09/2008	KP, January 2010	1 PT, 2 FHT, 1 RHT, 1 RHT in piezometer
KP	2008	KP08-37A	08CF374A	South TSF Dam Area	6,367,157	382,039	892	-90	--	ODEX/HQ3	54.6	54.6	35.4	31.1	35.1	31.1	35.1	Overburden	PZ	0.10	10/08/2008	KP, January 2010	4 FHT, 2 RHT, 1 FHT in piezometer
KP	2008	KP08-37B	08CF374B	South TSF Dam Area	6,367,154	382,039	893	-90	--	ODEX/HQ3	67.4	67.4	35.4	62.5	66.7	62.5	66.7	Sedimentary and Volcaniclastic	PZ	0.10	12/08/2008	KP, January 2010	1 RHT, 1 FHT in piezometer
KP	2008	KP08-38	08CF375	South TSF Dam Area	6,367,184	382,204	908	-70	270	ODEX/HQ3	92.7	87.1	2.7	26.5	30.2	24.9	28.4	Limestone	PZ	0.45	31/08/2008	KP, January 2010	1 FHT, 7 RHT, 1 FHT in piezometer
KP	2008	KP08-40	08CF376	South TSF Dam Area	6,367,191	382,670	891	-90	--	ODEX/HQ3	30.5	30.5	0.9	26.5	30.3	26.5	30.3	Limestone	PZ	0.55	25/08/2008	KP, January 2010	2 RHT, 1 FHT in piezometer
KP	2008	KP08-41	08CF378	South TSF Dam Area	6,367,178	382,867	885	-90	--	ODEX/HQ3	29.0	29.0	21.6	17.1	20.7	17.1	20.7	Overburden	PZ	1.00	28/08/2008	KP, January 2010	1 PT, 2 FHT, 1 RHT, 1 FHT in piezometer
KP	2008	KP08-42	08CF373	South TSF Dam Area	6,366,806	382,167	882	-90	--	ODEX/HQ3	59.7	59.7	27.7	56.1	59.7	56.1	59.7	Sedimentary and Volcaniclastic	PZ	0.89	08/08/2008	KP, January 2010	1FHT, 2 RHT, 1 FHT in piezometer
KP	2008	KP08-45	08CF379	South TSF Dam Area	6,367,822	382,266	898	-70	270	ODEX/HQ3	70.4	66.2	1.2	66.1	70.1	62.1	65.9	Limestone	PZ	0.83	03/09/2008	KP, January 2010	4 RHT, 1 FHT in piezometer

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TABLE 3.1

COPPER FOX METALS INC.
SCHAFT CREEK MINE PROJECT

SUMMARY OF DRILL HOLE, PIEZOMETER, AND MONITORING WELL INFORMATION

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Consultant	Year	Drillhole ID	Copper Fox Drillhole ID	Location of Drillhole	Coordinates			Dip	Azimuth	Drill Type	Total Length[1] (m)	Total Depth[2] (m)	Depth to Bedrock[2][3] (m)	Completion Zone (Length of PVC)		Completion Zone[2] (depth bgs)		Geology of Completion Zone	Hole Type	Stick Up (length of pipe) (m)	Installation Date	Report Reference	Hydrogeological Testing Performed
					Northing (m)	Easting (m)	Elevation (m)							From (m)	To (m)	From (m)	To (m)						
KP	2008	RES08-01A	08CF340A	Open Pit Area	6,359,940	379,718	908	-90	--	ODEX/HQ3	50.3	50.3	4.7	43.9	50.0	43.9	50.0	Andesite	MW	1.03	31/07/2008	KP, January 2010; KP, August 2010	1 PT, 1 FHT, 2 RHT, 1 FHTand 1 RHT in piezometer
KP	2008	RES08-01B	08CF340B	Open Pit Area	6,359,939	379,718	908	-90	--	ODEX/HQ3	15.2	15.2	4.7	9.1	15.2	9.1	15.2	Veins	MW	1.31	31/07/2008	KP, January 2010; KP, August 2010	1 FHT and 1 RHT in piezometer
KP	2008	RES08-02A	08CF337A	Waste Dump Area	6,358,424	380,200	1028	-90	--	HQ3	60.0	60.0	29.3	51.8	60.0	51.8	60.0	Feldspar Quartz Porphyry	MW	0.72	19/07/2008	KP, January 2010; KP, August 2010	2 PT, 1 FHT, 1 RHT, 1 FHT and 1 RHT in piezometer
KP	2008	RES08-02B	08CF337B	Waste Dump Area	6,358,423	380,200	1028	-90	--	ODEX/HQ3	28.0	28.0	N/A	23.8	28.0	23.8	28.0	Silt and Sand/Clay	MW	0.69	20/07/2008	KP, January 2010; KP, August 2010	1 FHT and 1 RHT in piezometer
KP	2008	RES08-03A	08CF330A	Waste Dump Area	6,360,095	378,645	843	-90	--	HQ3	117.3	117.3	51.5	106.4	117.3	106.4	117.3	Granodiorite	MW	0.51	07/07/2008	KP, January 2010; KP, August 2010	3 PT, 1 FHT and 1 RHT in piezometer
KP	2008	RES08-03B	08CF330B	Waste Dump Area	6,360,096	378,646	843	-90	--	ODEX	10.7	10.7	N/A	7.3	10.7	7.3	10.7	Sand and Gravel	MW	0.67	07/07/2008	KP, January 2010; KP, August 2010	1 FHT and 1 RHT in piezometer
KP	2008	RES08-04A	08CF332A	Waste Dump Area	6,358,509	378,682	865	-90	--	HQ3	99.4	99.4	6.7	86.3	99.4	86.3	99.4	Granodiorite	MW	0.52	22/06/2008	KP, January 2010; KP, August 2010	7 PT, 1 FHT and 1 RHT in piezometer
KP	2008	RES08-04B	08CF332B	Waste Dump Area	6,358,508	378,687	864	-90	--	HQ3	53.3	53.3	4.6	48.2	53.3	48.2	53.3	Granodiorite	MW	0.83	22/06/2008	KP, January 2010; KP, August 2010	1 FHT and 1 RHT in piezometer
KP	2008	RES08-05A	08CF388A	Saddle Area	6,360,632	381,532	1136	-90	--	ODEX/HQ3	27.4	27.4	13.7	21.4	27.4	21.4	27.4	Andesite	MW	0.58	25/09/2008	KP, January 2010; KP, August 2010	1 FHT, 1 RHT
KP	2008	RES08-05B	08CF388B	Saddle Area	6,360,632	381,532	1136	-90	--	ODEX	10.7	10.7	N/A	6.4	10.4	6.4	10.4	Overburden	MW	0.20	26/09/2008	KP, January 2010; KP, August 2010	1 FHT, 1 FHT in piezometer
KP	2008	RES08-06A	08CF383A	North TSF Dam Area	6,374,743	381,815	794	-90	--	ODEX/HQ3	63.1	63.1	29.3	59.4	63.1	59.4	63.1	Granodiorite	MW	0.67	17/09/2008	KP, January 2010; KP, August 2010	1 PT, 2 FHT, 2 RHT in piezometer
KP	2008	RES08-06B	08CF383B	North TSF Dam Area	6,374,744	381,815	794	-90	--	ODEX	15.2	15.2	N/A	11.6	15.2	11.6	15.2	Overburden	MW	1.15	17/09/2008	KP, January 2010; KP, August 2010	1 FHT and 1 RHT in piezometer
KP	2008	RES08-07A	08CF377A	South TSF Dam Area	6,366,778	382,819	886	-90	--	ODEX/HQ3	39.9	39.9	10.7	36.3	39.9	36.3	39.9	Limestone	MW	0.89	27/08/2008	KP, January 2010; KP, August 2010	1 PT, 1 FHT, 1 RHT, 1 FHT in piezometer
KP	2008	RES08-07B	08CF377B	South TSF Dam Area	6,366,778	382,819	886	-90	--	ODEX	9.1	9.1	N/A	4.5	9.1	4.5	9.1	Overburden	MW	0.89	27/08/2008	KP, January 2010; KP, August 2010	1 FHT in piezometer
KP	2008	RES08-08A	08CF386A	Northwest TSF Dam Area	6,373,318	379,992	829	-90	--	ODEX/HQ3	59.9	59.9	2.7	56.8	59.9	56.8	59.9	Granodiorite	MW	1.09	13/09/2008	KP, January 2010; KP, August 2010	1 PT, 1 FHT, 2 RHT, 1 FHT and 1 RHT in piezometer
KP	2008	RES08-08B	08CF386B	Northwest TSF Dam Area	6,373,318	379,992	829	-90	--	ODEX/HQ3	11.0	11.0	2.7	4.5	9.1	4.5	9.1	Granodiorite	MW	1.09	13/09/2008	KP, January 2010; KP, August 2010	1 FHT and 1 RHT in piezometer
KP	2010	HG10-01	--	Schaft Creek Valley	6,363,440	376,787	807	-90	--	ODEX	28.35	28.35	N/A	24.38	28.35	24.38	28.35	Alluvium	MW	0.78	24/06/2010	KP, August 2010	3 FHT
KP	2010	HG10-02A	--	Schaft Creek Valley	6,361,810	378,080	825	-90	--	ODEX	29.26	29.26	N/A	24.08	29.26	24.08	29.26	Alluvium	MW	0.70	20/06/2010	KP, August 2010	3 FHT
KP	2010	HG10-02B	--	Schaft Creek Valley	6,361,810	378,080	825	-90	--	ODEX	18.29	18.29	N/A	10.82	16.76	10.82	16.76	Alluvium	MW	0.67	21/06/2010	KP, August 2010	3 FHT
KP	2010	HG10-03	--	Open Pit Area	6,360,915	379,610	1,018	-90	--	ODEX	17.53	17.53	8.32	9.14	17.53	9.14	17.53	Bedrock	MW	NA	24/06/2010	KP, August 2010	N/A
KP	2010	HG10-04	--	Schaft Creek Valley	6,358,055	379,575	949	-90	--	ODEX	23.77	23.77	23.16	18.59	23.77	18.59	23.77	Alluvium	MW	0.79	16/06/2010	KP, August 2010	3 FHT
KP	2010	HG10-05A	--	Schaft Creek Valley	6,357,305	377,652	887	-90	--	ODEX	17.68	17.68	N/A	8.53	17.68	8.53	17.68	Alluvium	MW	0.98	11/06/2010	KP, August 2010	3 RHT
KP	2010	HG10-05B	--	Schaft Creek Valley	6,357,305	377,652	887	-90	--	ODEX	42.97	42.97	N/A	37.18	42.97	37.18	42.97	Alluvium	MW	0.98	14/06/2010	KP, August 2010	3 RHT
KP	2011	?	2011-CF414	Open Pit Area	6,361,273	379,775	1198	-60	90	HQ3	192.00	166.28	18.62			--	--	--	DH	--	--	KP, February 2012	--
KP	2011	?	2011-CF416	Open Pit Area	6,361,436	379,885	1341	-60	47	HQ3	331.30	286.65	0.00			--	--	--	DH	--	--	KP, February 2012	--
KP	2011	?	2011-CF417	Open Pit Area	6,361,273	379,775	1198	-70	65	HQ3	699.00	628.65	20.20			--	--	--	DH	--	--	KP, February 2012	--
KP	2011	?	2011-CF418 B	Open Pit Area	6,360,513	379,703	963	-60	270	HQ/HQ3	693.10	600.24	6.93			--	--	--	DH	--	--	KP, February 2012	--
KP	2011	?	2011-CF419	Open Pit Area	6,360,350	379,949	1025	-64	270	HQ3	396.70	356.55	8.99			--	--	--	DH	--	--	KP, February 2012	--
KP	2011	?	2011-CF420	Open Pit Area	6,360,350	379,949	1025	-55	270	HQ3	642.20	526.06	3.69	37.18	42.97	--	--	--	DH	--	--	KP, February 2012	--

\\VAN11\Prj_file\1\01\00329\08\A\Data\Hydrogeology\2011 Baseline Report\[2011 Baseline Data Tables.xlsx]Table 3.1

NOTES:

1. ALL HOLES ARE VERTICAL EXCEPT FOR PO-01-07 TO PO-07-07 AND KP08-01 TO KP08-10, KP08-22, KP08-38, KP08-45 AND 2011-CF414 TO 2011-CF420.
2. ALL DEPTH MEASUREMENTS ARE TAKEN WITH RESPECT TO GROUND SURFACE AND INDICATE VERTICAL DEPTH.
3. SEVERAL DRILLHOLES DID NOT CONTACT BEDROCK ARE INDICATED BY "N/A".
4. ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
5. COORDINATE ESTIMATED FROM THE 2007 SITE INVESTIGATION DRILLHOLE PLAN AND/OR TOPOPGRAPHIC MAPS.
6. KP08-05 (08CF347) WAS NOT SURVEYED. THE COORDINATES PROVIDED ARE THE PLANNED COORDINATES AND THE ELEVATION WAS ESTIMATED FROM TOPOGRAPHY .
7. KP08-27 (08CF381) WAS NOT SURVEYED, HOWEVER THE DRILL PAD WAS LOCATED AT THE SAME ELEVATION AS RES08-06 A/B.
8. INCONSISTENCY IN REPORTING - BOTH VALUES GIVEN.
9. DH = DRILL HOLE, PZ = PIEZOMETER, VW PZ = VIBRATING WIRE PIEZOMETER, INC = INCLINOMETER, MW = MONITORING WELL

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	10NOV'10	ISSUED WITH REPORT VA101-329/8-3	NIB	HRS	KJB

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TABLE 3.2
COPPER FOX METALS INC.
SCHAFT CREEK MINE PROJECT
SUMMARY OF HYDROGEOLOGICAL TESTING

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Consultant	Year	Drillhole ID	Copper Fox Drillhole ID	Location of Drillhole	Dip	Azimuth	Packer Test (Lugeon)					Falling/Rising Head Test					Piezometer Information					Notes
							Test Number	Packer Zone		Hydraulic Conductivity	Geology	Test Number	Test Zone		Hydraulic Conductivity[1]	Geology	Test Number	Completion Zone		Hydraulic Conductivity (Rising/ Falling Head)[1]	Geology	
								From (m)	To (m)	(m/s)			From (m)	To (m)	(m/s)			From (m)	To (m)	(m/s)		
?	2007	?	07CF304	Open Pit Area	-90	--	--	--	--	--	--	--	--	--	--	--	--	131.9	139.9	--	Granodiorite	Two piezometers installed by Rescan - no testing performed.
																		18.7	26.4	--	Breccia	
DST	2007	A-ND-07-1	?	North TSF Dam Area	-90	--	--	--	--	--	--	1	3.5	N/A	6.9E-07	Overburden	--	--	--	--	--	
												2	9.5	N/A	2.6E-06	Overburden						
												3	12.5	N/A	2.5E-06	Overburden						
												5	18.6	N/A	3.6E-04	Overburden						
												7	25.0	N/A	1.4E-04	Overburden						
												9	31.1	N/A	1.2E-04	Overburden						
												12	37.2	N/A	N/A	Overburden						
												13	40.9	N/A	2.6E-05	Peridotite						
												14	59.2	N/A	1.9E-05	Peridotite						
												15	71.3	N/A	1.9E-05	Peridotite						
												16	92.7	N/A	1.2E-05	Peridotite						
DST	2007	A-ND-07-2	?	North TSF Dam Area	-90	--	--	--	--	--	--	1	3.7	N/A	1.9E-06	Overburden	--	--	--	--	--	
												2	6.4	N/A	7.5E-07	Overburden						
												3	9.75	N/A	3.0E-07	Overburden						
												4	18.6	N/A	N/A	Overburden						
												5	25	N/A	1.0E-06	Peridotite (Fractured)						
												6	37.8	N/A	3.0E-09	Gabbro						
												8	65.25	N/A	4.7E-07	Leuco grabbro-Diorite Quartz Monzonite						
												9	98.75	N/A	N/A	Leuco grabbro-Diorite Quartz Monzonite						
DST	2007	A-ND-07-3	?	North TSF Dam Area	-90	--	--	--	--	--	--	1	0	N/A	N/A	Overburden	--	--	--	--	--	
												2	3.9	N/A	2.9E-07	Quartz Monzonite						
												3	7.3	N/A	2.3E-07	Quartz Monzonite						
												4	19.5	N/A	1.3E-07	Quartz Monzonite						
												5	31.7	N/A	1.5E-07	Quartz Monzonite						
												6	40.85	N/A	2.8E-07	Quartz Monzonite						
												7	56.1	N/A	6.8E-08	Quartz Monzonite						
												8	65.25	N/A	4.5E-06	Quartz Monzonite						
												9	86.6	N/A	1.1E-05	Quartz Monzonite						Very high hydraulic conductivity measurement - difficult to obtain accurate test results of this magnitude.
DST	2007	A-NWD-07-1	?	West TSF Dam Area	-90	--	--	--	--	--	--	2	3.05	N/A	5.0E-04	Overburden	--	--	--	--	--	
												3	6.1	N/A	3.2E-04	Overburden						
												5	12.8	N/A	4.7E-07	Quartz Monzonite						
												6	25	N/A	3.7E-07	Quartz Monzonite						
												7	43.3	N/A	7.6E-07	Quartz Monzonite						
												8	58.55	N/A	3.0E-07	Quartz Monzonite						
DST	2007	A-SD-07-1	?	South TSF Dam Area	-90	--	--	--	--	--	--	1	4.19	N/A	2.7E-05	Overburden	--	--	--	--	--	
												2	10.26	N/A	9.5E-04	Overburden						
												3	14.34	N/A	7.9E-04	Overburden						
												4	19.81	N/A	1.9E+01	Overburden						Very high hydraulic conductivity measurement - difficult to obtain accurate test results of this magnitude.
												5	25.9	N/A	1.5E-05	Limestone						
												6A	38.1	N/A	1.4E-05	Pelite						
												6B	38.1	N/A	2.8E-07	Pelite						
												7	59.45	N/A	4.0E-07	Limestone						
												8	77.75	N/A	1.8E-05	Limestone						
												9	105.2	N/A	1.8E-05	Limestone						
DST	2007	A-SD-07-2	?	South TSF Dam Area	-90	--	--	--	--	--	--	1	3.08	N/A	N/A	Overburden	--	--	--	--	--	
												2	6.4	N/A	5.0E-05	Volcanic ash interbedded with Calcareous Siltstone						
												3	12.55	N/A	3.8E-05	Volcanic ash interbedded with Calcareous Siltstone						
												4	21.6	N/A	4.4E-06	Volcanic ash interbedded with Calcareous Siltstone						
												5	33.8	N/A	3.9E-05	Volcanic ash interbedded with Calcareous Siltstone						
												6	55.15	N/A	5.7E-06	Limestone						
DST	2007	A-SD-07-3	?	South TSF Dam Area	-90	--	--	--	--	--	--	1	2.55	N/A	6.1E-04	Overburden	--	--	--	--	--	
												2	5.2	N/A	N/A	Siltstone						
												3A	14.35	N/A	2.9E-07	Siltstone						
												3B	14.35	N/A	2.1E-06	Siltstone						
												4	24.35	N/A	2.3E-06	Siltstone						
												5	35.65	N/A	4.4E-06	Orthoquartzite						
												6	44.8	N/A	2.4E-05	Orthoquartzite						
												7	57	N/A	2.6E-05	Chert						
												8	69.2	N/A	2.7E-05	Chert						
KP	2008	KP08-01	08CF-344	Open Pit Area	-63	35	--	--	--	--	--	FHT01-02	135.9	137.5	8.2E-06	Andesite	--	--	--	--	--	No standpipe piezometer installed as rods were stuck in the hole.
												FHT01-03	169.5	171.0	8.6E-07	Andesite						Water level during falling head test dropped too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												FHT01-04	186.2	187.8	9.5E-07	Andesite						Water level during falling head test dropped too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												FHT01-05	87.3	195.4	2.6E-08	Andesite						Packer tests were not possible due to the highly fractured/gouged nature of the rock.
KP	2008	KP08-02	08CF-345	Open Pit Area	-70	65	--	--	--	--	--	FHT02-01	83.3	89.9	1.3E-06	Sedimentary and Volcaniclastic	--	--	--	--	--	No standpipe piezometer installed. Static water level estimated.
KP	2008	KP08-03	08CF-328	Open Pit Area	-60	65	--	--	--	--	--	--	--	--	--	--	FHT03-01	25.9	30.8	4.0E-07	Augite Porphyry	
KP	2008	KP08-04	08CF-341	Open Pit Area	-65	63	PT04-01	77.2	91.0	4.9E-07	Andesite	FHT04-01	30.3	33.4	6.1E-06	Andesite	--	--	--	--	--	Standpipe piezometer damaged during casing removal and unrecoverable. Static water level estimated.
							PT04-02	91.0	104.9	4.8E-07	Augite Porphyry	FHT04-02	62.3	65.4	1.3E-05	Andesite						
							PT04-03	104.9	118.7	1.2E-06	Andesite	FHT04-03	65.4	68.4	$>10^{-5}$	Andesite						Water level fell during falling head test too quickly to take readings and it was not possible to fill the rods for a rising head test, indicating high hydraulic conductivity.[5]
							PT04-04	118.7	132.5	2.2E-07	Andesite	FHT04-04	80.6	83.7	$>10^{-5}$	Andesite						Water level fell during falling head test too quickly to take readings and it was not possible to fill the rods for a rising head test, indicating high hydraulic conductivity.[5]
							PT04-05	132.5	146.3	3.9E-07	Andesite	FHT04-05	83.7	86.7	3.8E-05	Andesite						
							PT04-06	201.6	215.4	5.6E-07	Andesite	FHT04-06	417.4	420.5	5.3E-06	Andesite						Static water level estimated.
							PT04-07	215.4	229.2	3.4E-07	Andesite	--	--	--	--	--						
							PT04-08	229.2	243.0	6.7E-07	Andesite	--	--	--	--	--						
							PT04-09	243.0	256.8	2.7E-09	Andesite	--	--	--	--	--						
							PT04-10	256.8	270.7	3.7E-07	Andesite	--	--	--	--	--						
							PT04-11	270.7	284.5	5.6E-07	Andesite	--	--	--	--	--						
							PT04-12	284.5	298.3	2.6E-09	Andesite	--	--	--	--	--						
							PT04-13	298.3	312.1	4.2E-09	Andesite	--	--	--	--	--						
							PT04-14	325.9	339.7	4.3E-07	Andesite	--	--	--	--	--						
							PT04-15	339.7	353.5	4.3E-09	Andesite	--	--	--	--	--						
							PT04-16	381.2	395.0	2.4E-08	Andesite	--	--	--	--	--						
							PT04-17	395.0	408.8	2.0E-08	Andesite	--	--	--	--	--						
							PT04-18	411.6	425.4	6.8E-09	Andesite	--	--	--	--	--						
							PT04-19	422.6	436.4	5.0E-08	Andesite	--	--	--	--	--						
							PT04-20	436.4	450.3	4.3E-07	Andesite	--	--	--	--	--						
							PT04-21	450.3	464.1	4.4E-07	Andesite	--	--	--	--	--						
							PT04-22	464.1	477.9	$<10^{-9}$	Andesite	--	--	--	--	--						No flow into test inverval for the Packer test.
							PT04-23	477.9	491.7	5.1E-07	Andesite	--	--	--	--	--						
KP	2008	KP08-05	08CF-347	Open Pit Area	-65	65	PT05-01	21.7	35.5	$<10^{-9}$	Andesite	RHT05-01	100.1	103.2	9.8E-07	Andesite	--	--	--	--	--	Hole is artesian (~3.4 L/min) so casing was left in hole and no well was installed. No flow into test interval for the Packer test.
							PT05-02	38.3	52.1	4.9E-08	Sedimentary and Volcaniclastic	RHT05-02	115.4	118.4	6.7E-07	Andesite						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
							PT05-03	52.1	65.9	2.2E-08	Sedimentary and Volcaniclastic	RHT05-03	255.6	270.8	3.5E-07	Sedimentary and Volcaniclastic						
							PT05-04	65.9	79.7	5.6E-09	Sedimentary and Volcaniclastic	--	--	--	--	--						
							PT05-05	107.4	121.2	3.0E-09	Andesite	--	--	--	--	--						
							PT05-06	121.2	135.0	3.2E-09	Andesite	--	--	--	--	--						
							PT05-07	135.0	148.8	N/A	Andesite	--	--	--	--	--						Poor Packer test results.
							PT05-08	148.8	162.6	7.5E-09	Andesite	--	--	--	--	--						
							PT05-09	162.6	176.4	N/A	Andesite	--	--	--	--	--						Poor Packer test results.
							PT05-10	176.4	190.2	3.6E-09	Andesite	--	--	--	--	--						
							PT05-11	190.2	204.1	N/A	Andesite	--	--	--	--	--						Poor Packer test results.
							PT05-12	204.1	217.9	1.7E-09	Andesite	--	--	--	--	--						
							PT05-13	217.9	231.7	N/A	Andesite	--	--	--	--	--						Poor Packer test results.
							PT05-14	231.7	245.5	$<10^{-7}$	Sedimentary and Volcaniclastic	--	--	--	--	--						No flow into test inverval for the Packer test.
							PT05-15	245.5	259.3	5.4E-09	Sedimentary and Volcaniclastic	--	--	--	--	--						
							PT05-16	259.3	273.1	3.9E-09	Sedimentary and Volcaniclastic	--	--	--	--	--						
							PT05-17	273.1	287.0	$<10^{-7}$	Sedimentary and Volcaniclastic	--	--	--	--	--						No flow into test inverval for the Packer test.
							PT05-18	287.0	300.8	4.0E-09	Sedimentary and Volcaniclastic	--	--	--	--	--						
							PT05-19	300.8	314.6	6.2E-09	Andesite	--	--	--	--	--						
							PT05-20	314.6	328.4	1.5E-08	Andesite	--	--	--	--	--						
							PT05-21	328.4	342.2	3.3E-09	Andesite	--	--	--	--	--						
							PT05-22	342.2	369.8	6.2E-09	Andesite	--	--	--	--	--						
							PT05-23	369.8	397.5	3.1E-09	Andesite	--	--	--	--	--						
							PT05-24	397.5	420.3	8.1E-09	Andesite	--	--	--	--	--						
KP	2008	KP08-06	08CF-346	Open Pit Area	-65	90	PT06-01	24.7	38.5	N/A	Andesite	FHT06-01	54.7	57.8	1.7E-05	Andesite	--	34.0	37.2	--	Alluvium	Poor Packer test results. Flow rate is ~0.05 L/min (casing is set above standpipe, so flow rate estimated).
												RHT06-01	70.0	73.0	1.8E-06	Andesite						
												FHT06-02	88.2	91.3	8.4E-07	Andesite						
												RHT06-03	103.5	106.5	4.0E-06	Andesite						
												RHT06-04	118.7	121.8	1.1E-05	Andesite						
												RHT06-05	137.0	140.1	1.2E-05	Andesite						
												RHT06-06	152.3	155.3	3.1E-06	Andesite						
												RHT06-07	169.0	172.1	3.1E-06	Granodiorite						
												RHT06-08	182.7	185.8	7.6E-06	Dyke						
												RHT06-09	198.0	201.0	3.4E-06	Andesite						
												RHT06-10	213.2	216.3	4.8E-06	Andesite						
												RHT06-11	228.5	231.5	7.2E-06	Andesite						
KP	2008	KP08-07	08CF-329	Open Pit Area	-64	121	--	--	--	--	--	RHT07-01	236.4	239.4	5.4E-07	Augite Porphyry	--	27.5	30.9	--	Sand	Flow rate <0.005 L/min. Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT07-02	251.6	254.7	1.1E-06	Augite Porphyry						Static water level estimated.
												RHT07-03	266.9	269.9	2.2E-06	Augite Porphyry						Static water level estimated.
KP	2008	KP08-08	08CF-339	Open Pit Area	-62	221	--	--	--	--	--	RHT08-01	39.3	42.4	8.2E-08	Dyke	--	--	--	--	--	No well was installed because Van Ruth Plugs required for the installation were not available and it was considered impractical to have the drill sit and wait for them to arrive. Water level during rising head test rose too slowly to complete the test, h
												RHT08-02	61.7	64.8	1.1E-07	Andesite						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT08-03	77.0	80.0	5.2E-07	Augite Porphyry						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT08-04	92.2	95.3	1.6E-06	Augite Porphyry						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												FHT08-01	171.9	175.0	1.8E-07	Sedimentary and Volcaniclastic						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												FHT08-02	193.2	196.3	1.3E-07	Sedimentary and Volcaniclastic						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
KP	2008	KP08-09	08CF-338	Open Pit Area	-60	240	--	--	--	--	--	RHT09-01	61.0	64.0	$<10^{-9}$	Granodiorite	FHT09-01	47.4	51.0	9.3E-07	Granodiorite	Water level did not rise for RHT09-01, indicating low hydraulic conductivity.[5]
KP	2008	KP08-10	08CF-342	Open Pit Area	-61	327	--	--	--	--	--	FHT10-01	126.2	129.2	7.9E-06	Granodiorite	--	--	--	--	--	No packer tests were conducted as rock was too fractured. No standpipe piezometer was installed because the rods became stuck in the hole and could not be removed. Static water level estimated.
KP	2008	KP08-12	08CF-389	Saddle Area	-90	--	--	--	--	--	--	FHT12-01	9.0	9.1	7.0E-06	Overburden	FHT12-06	44.8	48.8	2.7E-06	Overburden	Bedrock was not reached and hole was ended in overburden.
												FHT12-02	24.3	24.4	2.8E-06	Overburden						
												FHT12-03	35.1	36.6	9.6E-07	Overburden						
												FHT12-04	54.1	54.2	3.2E-05	Overburden						
												FHT12-05	60.9	61.0	3.7E-05	Overburden						
KP	2008	KP08-13	08CF-387	Saddle Area	-90	--	--	--	--	--	--	RHT13-01	22.9	24.4	2.7E-05	Dyke	RHT13-02	21.8	25.5	2.9E-07	Dyke	
KP	2008	KP08-16	08CF-363	Open Pit Area	-90	--	PT16-01	19.8	35.1	FAILED	Andesite	RHT16-01	25.9	29.0	2.0E-07	Andesite	FHT16-01	58.5	62.2	1.0E-09	Andesite	Water leaking from Packer test. Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data. Static water level estimated.
												RHT16-02	35.1	38.1	7.6E-07	Andesite						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data. Static water level estimated.
												RHT16-03	50.3	53.3	1.1E-09	Andesite						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data. Static water level estimated.
KP	2008	KP08-17	08CF-364	Open Pit Area	-90	--	PT17-01	18.3	33.5	$<10^{-9}$	Granodiorite	RHT17-01	27.4	30.5	2.2E-06	Granodiorite	FHT17-01	52.6	55.8	8.6E-09	Granodiorite	No flow into test inverval for the Packer test.
							PT17-02	45.7	54.9	FAILED	Granodiorite	RHT17-02	35.1	36.6	1.4E-07	Granodiorite						Water leaking from Packer test. Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
KP	2008	KP08-20	08CF-336	Waste Dump Area	-90	--	--	--	--	--	--	--	--	--	--	--	FHT20-01	12.2	16.8	$>10^{-5}$	Sand	Water drained out of the standpipe too quickly to fill, could not complete falling head test.[5]
KP	2008	KP08-21	08CF-331	Waste Dump Area	-90	--	--	--	--	--	--	--	--	--	--	--	FHT21-01	43.9	46.9	$>10^{-5}$	Alluvium	No packer tests were conducted as all drilling was in overburden. Could not fill well for falling head test, water level dropped too quickly.[5]
KP	2008	KP08-22	08CF-335	Waste Dump Area	-70	125	--	--	--	--	--	--	--	--	--	--	-	-	-	-	-	No piezometer installed as the hole was dry.
KP	2008	KP08-23	08CF-333	Waste Dump Area	-90	--	PT23-01	11.9	18.0	2.6E-06	Andesite	RHT23-01	64.0	64.0	2.0E-04	Andesite	--	--	--	--	--	No piezometer required due to artesian conditions. Water level re-measured in September at 1.2 m.b.g.s. Casing was left in hole.
							PT23-02	30.2	34.7	FAILED	Andesite	RHT23-02	75.9	75.9	3.1E-05	Andesite						Water leaking from Packer test.
							PT23-03	40.4	46.5	FAILED	Granodiorite	RHT23-03	82.0	85.0	1.5E-07	Andesite						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data. Static water level estimated. Packer system was leaking during test, results not valid.
												RHT23-04	106.0	106.1	2.2E-04	Granodiorite						
												RHT23-05	118.8	121.6	4.5E-06	Andesite						
												RHT23-06	133.8	136.9	6.5E-06	Andesite						

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TABLE 3.2
COPPER FOX METALS INC.
SCHAFT CREEK MINE PROJECT
SUMMARY OF HYDROGEOLOGICAL TESTING

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Consultant	Year	Drillhole ID	Copper Fox Drillhole ID	Location of Drillhole	Dip	Azimuth	Packer Test (Lugeon)					Falling/Rising Head Test					Piezometer Information					Notes
							Test Number	Packer Zone		Hydraulic Conductivity	Geology	Test Number	Test Zone		Hydraulic Conductivity[1]	Geology	Test Number	Completion Zone		Hydraulic Conductivity (Rising/ Falling Head)[1]	Geology	
								From (m)	To (m)	(m/s)			From (m)	To (m)	(m/s)			From (m)	To (m)	(m/s)		
KP	2008	KP08-25	08CF-380	North TSF Dam Area	-90	--	PT25-01	29.3	44.5	$<10^{-9}$	Peridotite	FHT25-01	17.5	17.5	N/A	Silt and Clay	FHT25-02	56.1	59.7	5.8E-10	Peridotite	No flow into test inverval for the Packer test. Falling head test did not produce valid results, drill rods could not be raised to expose a sufficient test zone due to the hole sloughing in.
												RHT25-02	32.3	36.9	1.9E-07	Peridotite						Water level during falling head test fell too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT25-01	56.7	59.7	1.1E-08	Peridotite						Water level during falling head test fell too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
KP	2008	KP08-27	08CF381	North TSF Dam Area	-90	--	PT27-01	22.9	38.1	$<10^{-9}$	Granodiorite	RHT27-01	22.9	25.9	9.9E-07	Granodiorite	RHT27-03	36.9	40.5	5.0E-09	Granodiorite	No flow into test inverval for the Packer test. Water level in piezometer during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT27-02	22.9	38.1	3.8E-07	Granodiorite						
KP	2008	KP08-28	08CF-382	North TSF Dam Area	-90	--	-	-	-	-	-	RHT28-01	19.8	24.4	7.5E-07	Granodiorite	RHT28-03	42.8	46.7	3.3E-07	Granodiorite	Water level in piezometer during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data. Flow rate is 0.0135 L/min.
												RHT28-02	29.0	44.2	7.1E-06	Granodiorite						
KP	2008	KP08-31	08CF-384	Northwest TSF Dam Area	-90	--	PT31-01	22.3	37.5	FAILED	Granodiorite	FHT31-01	9.1	9.1	6.3E-07	Overburden	RHT31-03	45.1	49.4	8.6E-07	Granodiorite	Flow rate is 0.05 L/min. Water level in piezometer during falling head test fell too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.Packer test failed due to water leaking out of the packer system.
												FHT31-02	17.7	20.7	N/A	Granodiorite						Falling head test did not produce valid results.
												RHT31-01	34.4	39.0	1.4E-06	Granodiorite						
												RHT31-02	42.1	48.2	6.9E-07	Granodiorite						
KP	2008	KP08-32	08CF-385	Northwest TSF Dam Area	-90	--	PT32-01	44.1	59.4	1.8E-07	Granodiorite	FHT32-01	12.6	12.7	N/A	Overburden	RHT32-02	63.4	67.1	8.1E-07	Granodiorite	Flow rate is 0.033 L/min. Falling head test did not produce valid results.
												FHT32-02	23.3	23.3	N/A	Overburden						Falling head test did not produce valid results.
												RHT32-01	45.7	48.8	3.6E-06	Granodiorite						
KP	2008	KP08-37A	08CF-374A	South TSF Dam Area	-90	--	--	--	--	--	--	FHT37A-01	11.4	11.4	1.3E-04	Overburden	FHT37A-05	31.1	35.1	3.1E-08	Overburden	
												FHT37A-02	17.5	17.5	6.4E-05	Overburden						
												FHT37A-03	26.6	26.7	6.3E-05	Overburden						
												FHT37A-04	36.0	54.6	7.7E-07	Sedimentary and Volcaniclastic						
												RHT37A-01	42.0	42.1	1.9E-05	Sedimentary and Volcaniclastic						
												RHT37A-02	51.5	54.6	2.1E-07	Sedimentary and Volcaniclastic						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
KP	2008	KP08-37B	08CF-374B	South TSF Dam Area	-90	--	--	--	--	--	--	RHT37B-01	44.5	47.6	8.4E-07	Sedimentary and Volcaniclastic	FHT37B-01	62.5	66.7	3.5E-08	Sedimentary and Volcaniclastic	Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
KP	2008	KP08-38	08CF-375	South TSF Dam Area	-70	270	PT38-01	12.3	23.8	FAILED	Limestone	RHT38-01	13.4	14.6	6.7E-08	Limestone	FHT38-02	26.5	30.2	9.9E-09	Limestone	Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data. Packer system was leaking during test, results not valid.
												RHT38-02	13.1	25.3	5.2E-07	Limestone						
												RHT38-03	40.5	43.6	N/A	Limestone						Rising head test did not produce valid results.
												RHT38-04	46.6	51.2	N/A	Sedimentary and Volcaniclastic						Rising head test did not produce valid results.
												FHT38-01	46.6	51.2	8.0E-07	Sedimentary and Volcaniclastic						
												RHT38-05	2.7	52.7	1.6E-08	Limestone/ Sedimentary and Volcaniclastic						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT38-06	64.9	68.3	1.1E-06	Sedimentary and Volcaniclastic						
												RHT38-07	77.4	82.0	9.8E-07	Sedimentary and Volcaniclastic						
KP	2008	KP08-40	08CF-376	South TSF Dam Area	-90	--	--	--	--	--	--	RHT40-01	13.7	15.2	2.2E-07	Limestone	FHT40-01	26.5	30.3	1.1E-08	Limestone	Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT40-02	19.8	24.4	8.4E-07	Limestone						
KP	2008	KP08-41	08CF-378	South TSF Dam Area	-90	--	PT41-01	22.9	30.0	FAILED	Limestone	FHT41-01	7.9	7.9	2.3E-06	Overburden	FHT41-03	17.1	20.7	4.8E-08	Overburden	Water level during falling head test fell too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data. Packer system was leaking during the test, results not valid.
												FHT41-02	14.0	14.0	1.5E-06	Overburden						Water level during falling head test fell too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT41-01	22.9	29.0	4.8E-08	Limestone						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
KP	2008	KP08-42	08CF-373	South TSF Dam Area	-90	--	--	--	--	--	--	FHT42-01	12.9	12.9	1.5E-05	Overburden	FHT42-02	56.1	59.7	8.4E-09	Sedimentary and Volcaniclastic	Water level during falling head test fell too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT42-01	41.5	44.5	3.1E-07	Sedimentary and Volcaniclastic						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT42-02	44.5	49.1	4.4E-07	Sedimentary and Volcaniclastic						
KP	2008	KP08-45	08CF-379	Northwest TSF Dam Area	-70	270	--	--	--	--	--	RHT45-01	14.0	17.1	1.0E-07	Limestone	FHT45-01	66.1	70.1	1.9E-07	Limestone	Packer tests were attempted but failed due to equipment malfunction. Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data. Static water level estimated.
												RHT45-02	29.3	32.3	2.5E-05	Andesite						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data. Static water level estimated.
												RHT45-03	44.5	47.6	2.4E-05	Andesite						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data. Static water level estimated.
												RHT45-04	59.7	62.8	N/A	Limestone						Rising head test did not produce valid results.
KP	2008	RES08-01A	08CF-340A	Open Pit Area	-90	--	PT-01A-01	21.3	36.6	5.2E-09	Veins	RHT-R01A-01	16.7	16.7	N/A	Veins	FHT-R01A-02	43.9	50.0	4.6E-09	Andesite	Rising head test did not produce valid results. Packer test failed due to loss of water flow through packer system.
												FHT-R01A-01	32.0	38.1	$<10^{-9}$	Veins	RHT[3]	43.9	50.0	3.2E-09	Andesite	Water level remained constant during falling head test, indicating low hydraulic conductivity.[5]
												RHT-R01A-02	32.0	38.1	$\leq 10^{-8}$	Veins						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
KP	2008	RES08-01B	08CF-340B	Open Pit Area	-90	--	--	--	--	--	--	--	--	--	--	--	FHT-R01B-01	9.1	15.2	3.4E-09	Veins	Static water leve estimated.
																	RHT[3]	8.5[4]	15.2	-	Veins	
KP	2008	RES08-02A	08CF-337A	Waste Dump Area	-90	--	PT-R02A-01	32.6	41.8	1.2E-07	Feldspar-Quartz Porphyry	FHT-R02A-01	32.6	41.8	5.8E-08	Feldspar-Quartz Porphyry	FHT-R02A-02	51.8	60.0	2.5E-07	Feldspar-Quartz Porphyry	Water level during falling head test dropped too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
							PT-R02A-02	44.8	52.4	3.0E-08	Feldspar-Quartz Porphyry	RHT-R02A-01	32.6	41.7	9.9E-07	Feldspar-Quartz Porphyry	RHT[3]	51.8	60.0	1.7E-09	Feldspar-Quartz Porphyry	
KP	2008	RES08-02B	08CF-337B	Waste Dump Area	-90	--	--	--	--	--	--	--	--	--	--	--	FHT-R02B-01	23.8	28.0	4.3E-09	Silt and Sand/Clay	Water level during falling head test dropped too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
																	RHT[3]	22.6[4]	28.7[4]	6.9E-09[4]	Silt and Sand/Clay	
																	3 FHT	23.8	28.0	4.2E-07	Silt and Sand/Clay	
KP	2008	RES08-03A	08CF-330A	Waste Dump Area	-90	--	PT-R03A-01	68.6	71.7	FAILED	Granodiorite	--	--	--	--	--	FHT-R03A-01	106.4	117.3	3.7E-07	Granodiorite	Packer system was leaking during test, results not valid.
							PT-R03A-02	70.1	73.2	FAILED	Granodiorite						RHT[3]	106.4	117.3	3.9E-07	Granodiorite	Packer system was leaking during test, results not valid.
							PT-R03A-03	94.5	99.1	1.8E-06	Granodiorite						3 FHT	106.4	117.3	4.1E-07	Granodiorite	
KP	2008	RES08-03B	08CF-330B	Waste Dump Area	-90	--	--	--	--	--	--	--	--	--	--	--	FHT-R03B-01	7.3	10.7	$>10^{-5}$	Sand and Gravel	Could not fill well for falling head test, water level dropped too quickly, indicating high hydraulic conductivity.[5]
																	RHT[3]	7.3	10.7	-	Sand and Gravel	
																	3 FHT	7.3	10.7	1.8E-04	Sand and Gravel	
KP	2008	RES08-04A	08CF-332A	Waste Dump Area	-90	--	PT-R04A-01	24.7	32.3	3.0E-06	Granodiorite	--	--	--	--	--	FHT-R04A-01	86.3	99.4	3.3E-08	Granodiorite	
							PT-R04A-02	36.9	45.6	2.0E-06	Granodiorite											
							PT-R04A-03	46.0	50.6	3.5E-06	Granodiorite											
							PT-R04A-04	55.2	61.3	2.3E-06	Granodiorite											
							PT-R04A-05	70.4	75.0	6.9E-06	Granodiorite						RHT[3]	86.3	99.4	3.5E-08	Granodiorite	
							PT-R04A-06	88.7	99.4	FAILED	Granodiorite											Packer system was leaking during test, results not valid.
							PT-R04A-07	88.7	99.4	7.9E-08	Granodiorite											
KP	2008	RES08-04B	08CF-332B	Waste Dump Area	-90	--	--	--	--	--	--	--	--	--	--	--	FHT-R04B-01	48.2	53.5	9.1E-08	Granodiorite	
																	RHT[3]	48.2	55.2[4]	3.2E-08[4]	Granodiorite	
																	3 FHT	48.2	53.3	1.9E-06	Granodiorite	
KP	2008	RES08-05A	08CF-388A	Saddle Area	-90	--	--	--	--	--	--	FHT14A-01	10.4	10.4	5.6E-09	Overburden	-	21.4	27.4	-	Andesite	Calculated flow rate was ~0.2 L/min. Water level during falling head test dropped too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT14A-01	16.8	18.3	9.4E-07	Andesite						
																	3 FHT	21.4	27.4	3.3E-07	Andesite	
KP	2008	RES08-05B	08CF-388B	Saddle Area	-90	--	--	--	--	--	--	FHT14B-01	7.0	10.1	8.8E-05	Overburden	FHT14B-02	6.4	10.4	2.3E-05	Overburden	
																	3 FHT	6.4	10.4	4.5E-06	Overburden	
KP	2008	RES08-06A	08CF-383A	North TSF Dam Area	-90	--	PT-R06A-01	35.7	50.9	7.2E-09	Granodiorite	FHT-R06A-01	0.8	9.9	9.3E-06	Overburden	RHT-R06A-01	59.4	63.1	3.1E-07	Granodiorite	
												FHT-R06A-02	17.9	18.0	5.6E-09	Overburden	RHT[3]	59.4	63.1	6.5E-08	Granodiorite	Water level during falling head test dropped too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
																	3 FHT	59.4	63.1	3.8E-07	Granodiorite	
KP	2008	RES08-06B	08CF-383B	North TSF Dam Area	-90	--	--	--	--	--	--	--	--	--	--	--	FHT-R06B-01	11.6	15.2	1.9E-05	Overburden	
																	RHT[3]	11.6	15.2	1.9E-05	Overburden	
																	3 FHT	11.6	15.2	1.8E-05	Overburden	
KP	2008	RES08-07A	08CF-377A	South TSF Dam Area	-90	--	PT43A-01	24.7	39.9	FAILED	Limestone	FHT43A-01	10.0	10.1	3.4E-06	Overburden	FHT43A-02	36.3	39.9	1.6E-05	Limestone	Water level during falling head test dropped too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data. Flow rate is ~0.82 L/min. Water flow was observed leaking from the casing during the packer test, results
												RHT43A-01	24.7	39.9	3.5E-07	Limestone						
																	3 FHT	36.3	39.9	2.2E-05	Limestone	
KP	2008	RES08-07B	08CF-377B	South TSF Dam Area	-90	--	--	--	--	--	--	--	--	--	--	--	FHT43B-01	4.5	9.1	3.4E-06	Overburden	Flow rate is ~0.2 L/min.
																	3 FHT	4.5	9.1	1.2E-06	Overburden	
KP	2008	RES08-08A	08CF-386A	Northwest TSF Dam Area	-90	--	PT44A-01	15.2	30.5	$<10^{-9}$	Limestone	FHT44A-01	17.1	17.2	5.7E-07	Granodiorite	FHT44A-02	56.4	59.9	9.9E-08	Granodiorite	No flow into test inverval for the Packer test. Water level during falling head test dropped too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT44A-01	38.3	43.1	1.3E-07	Granodiorite						Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
												RHT44A-02	50.4	50.8	1.7E-06	Granodiorite	RHT[3]	56.4	60.2[4]	1.3E-07[4]	Granodiorite	Water level during rising head test rose too slowly to complete the test, hydraulic conductivity results were extrapolated from existing data.
																	3 FHT	56.8	59.9	2.4E-07	Granodiorite	
KP	2008	RES08-08B	08CF-386B	Northwest TSF Dam Area	-90	--	--	--	--	--	--	--	--	--	--	--	FHT44B-01	7.2	10.7	2.6E-07	Granodiorite	
																	RHT[3]	7.2	10.7	1.4E-07	Granodiorite	
																	3 FHT	4.5	9.1	1.8E-07	Granodiorite	
KP	2010	HG10-01		Schaft Creek Valley	-90	--	--	--	--	--	--	--	--	--	--	--	3 FHT	24.4	28.4	1.0E-03	Alluvium	
KP	2010	HG10-02A		Schaft Creek Valley	-90	--	--	--	--	--	--	--	--	--	--	--	3 FHT	24.1	29.3	1.0E-03	Alluvium	
KP	2010	HG10-02B		Schaft Creek Valley	-90	--	--	--	--	--	--	--	--	--	--	--	3 FHT	10.8	16.8	1.0E-03	Alluvium	
KP	2010	HG10-03		Open Pit	-90	--	--	--	--	--	--	--	--	--	--	--	--	9.1	17.5	N/A	Bedrock	Well was dry.
KP	2010	HG10-04		Schaft Creek Valley	-90	--	--	--	--	--	--	--	--	--	--	--	3 FHT	18.6	23.8	1.0E-03	Alluvium	
KP	2010	HG10-05A		Schaft Creek Valley	-90	--	--	--	--	--	--	--	--	--	--	--	3 RHT	8.5	17.7	1.0E-03	Alluvium	
KP	2010	HG10-05B		Schaft Creek Valley	-90	--	--	--	--	--	--	--	--	--	--	--	3 RHT	37.2	43.0	1.0E-05	Alluvium	
KP	2011	?	2011-CF419	Open Pit - Southwest Wall	-64	270	1	66.6	81.7	1.4E-09	Sedimentary Volcaniclastics	--	--	--	--	--	--	--	--	--	--	Test ended as seal lost after 5 minutes at P2 90PSI, rock is likely fractured water started com
							2	52.9	81.7	3.3E-09	Sedimentary Volcaniclastics											
							3	80.3	95.4	1.1E-09	Sedimentary Volcaniclastics											Test ended as formation not taking water, backflow observed when test was stopped
							4	110.4	136.5	4.2E-10	Sedimentary Volcaniclastics											
							5	137.8	155.6	3.3E-09	Sedimentary Volcaniclastics											
							6	157.0	185.8	NA	Sedimentary Volcaniclastics											Test failed shear pin blew, head pressure greater than 500 PSI, shear pin capacity

\\VAN11\Prj_file\1\01\00329\08\A\Data\Hydrogeology\2011 Baseline Report\[2011 Baseline Data Tables.xlsx]Table 3.2

NOTES:
1. HYDRAULIC CONDUCTIVITIES ESTIMATED USING THE HVORSLEV EQUATION.
2. VERTICAL DEPTH BELOW GROUND SURFACE.
3. TESTS PERFORMED BY RESCAN FOLLOWING WELL DEVELOPMENT.
4. INCORRECT COMPLETION ZONE AND, THEREFORE, HYDRAULIC CONDUCTIVITY RESULT.
5. ASSUMED VALUES OF HYDRAULIC CONDUCTIVITY BASED ON MAXIMUM AND MINIMUM CONDUCTIVITY OBSERVED ON SITE.
6. DST FALLING/RISING HEAD TEST INTERVALS NOT AVAILABLE.

REV	DATE	DESCRIPTION	PREPD	CHK'D	APP'D
0	10NOV'10	ISSUED WITH REPORT VA101-329/8-3	NIB	HRS	KJB

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TABLE 3.3

COPPER FOX METALS INC.
SCHAFT CREEK PROJECT

SUMMARY OF HYDRAULIC CONDUCTIVITY BY GEOLOGIC UNIT TYPE

Print Apr/13/12 11:48:56

Material		Hydraulic Conductivity (m/s)						Standard Deviation	No. of Values
		Minimum	Maximum	Mean	Median	25th percentile	75th percentile		
Overburden[1]		4.3E-09	1.9E+01	4.7E-01	7.0E-06	1.5E-06	8.8E-05	3.0E+00	50
Schaft Creek Valley-Fill Alluvium		1.0E-05	1.0E-03	5.8E-04	1.0E-03	1.0E-05	1.0E-03	5.0E-04	9
Tertiary and Older	Dyke	8.2E-08	2.7E-05	8.6E-06	3.9E-06	2.4E-07	1.2E-05	1.2E-05	4
Late Triassic	Vein Systems	1.0E-09	1.0E-08	4.9E-09	4.3E-09	2.8E-09	6.4E-09	3.8E-09	4
	Peridotite	5.8E-10	1.9E-07	5.0E-08	6.2E-09	9.0E-10	5.6E-08	9.2E-08	4
Stuhini Group	Sedimentary and Volcaniclastic Rocks	4.2E-10	1.9E-05	9.8E-07	4.9E-08	3.8E-09	6.1E-07	3.6E-06	27
	Andesite	1.0E-09	2.0E-04	6.3E-06	4.8E-07	6.2E-09	3.8E-06	2.4E-05	74
	Augite Porphyry	4.0E-07	2.2E-06	9.7E-07	5.4E-07	5.0E-07	1.3E-06	6.8E-07	7
Hickman Batholith	Feldspar-Quartz Porphyry	1.7E-09	2.5E-06	4.6E-07	5.8E-08	3.7E-08	1.1E-07	9.9E-07	6
	Granodiorite	1.0E-09	2.2E-04	6.0E-06	3.8E-07	9.1E-08	1.8E-06	3.2E-05	45
Upper Carboniferous	Limestone	1.0E-09	1.6E-05	1.4E-06	6.7E-08	1.1E-08	2.2E-07	4.4E-06	13
All Rocks[1]		4.2E-10	2.2E-04	5.6E-06	3.9E-07	3.3E-08	2.3E-06	2.1E-05	217

\\VAN11\Prj_file\1\01\00329\08\A\Data\Hydrogeology\2011 Baseline Report\[2011 Baseline Data and Tables(2).xlsx]Table 3.3

NOTES:

1. INCLUDES HYDRAULIC CONDUCTIVITY VALUES FROM DST REPORT (DST, JANUARY 2008).

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	FEB10'10	ISSUED WITH REPORT VA101-329/8-3	AM	HRS	KJB

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TABLE 3.4

COPPER FOX METALS INC.
SCHAFT CREEK PROJECT

SUMMARY OF HYDRAULIC CONDUCTIVITY BY LOCATION

Print Apr/13/12 11:50:45

Location	Hydraulic Conductivity (m/s)						Standard Deviation	No. of Values
	Minimum	Maximum	Mean	Median	25th percentile	75th percentile		
Deposit Area - Open Pit	4.2E-10	3.8E-05	2.3E-06	3.4E-07	4.8E-09	1.1E-06	5.8E-06	99
Schaft Creek Valley - Waste Rock Storage Areas	1.7E-09	1.0E-03	1.6E-04	2.0E-06	6.8E-08	8.4E-06	3.5E-04	35
Saddle Area	2.9E-07	2.7E-05	9.2E-06	9.4E-07	6.2E-07	1.4E-05	1.5E-05	3
Skeeter Creek Valley - North TSF Embankment	5.8E-10	2.6E-05	3.6E-06	3.0E-07	6.8E-08	1.0E-06	7.0E-06	29
Skeeter Creek Valley - Northwest TSF Embankment	1.0E-09	2.5E-05	2.8E-06	4.2E-07	1.3E-07	8.5E-07	7.0E-06	22
Skeeter Creek Valley - South TSF Embankment	8.4E-09	5.0E-05	8.5E-06	8.4E-07	2.8E-07	1.6E-05	1.3E-05	39
Skeeter Creek Valley - TSF Area	5.8E-10	5.0E-05	5.5E-06	4.7E-07	1.4E-07	4.4E-06	1.0E-05	90

\\VAN11\Prj_file\1\01\00329\08\A\Data\Hydrogeology\2011 Baseline Report\[2011 Baseline Data and Tables(2).xlsx]Table 3.4

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	FEB10'10	ISSUED WITH REPORT VA101-329/8-3	AM	HRS	KJB

TABLE 3.5

COPPER FOX METALS INC.
SCHAFT CREEK MINE PROJECT

SUMMARY OF WATER LEVEL ELEVATIONS

17/02/2012 11:27

WELL ID	HG10-01	HG10-02A	HG10-02B	HG10-03	HG10-04	HG10-05A	HG10-05B	RES08-1A	RES08-1B	RES08-2A	RES08-2B	RES08-3A	RES08-3B	RES08-4A	RES08-4B	RES08-5A	RES08-5B	RES08-6A	RES08-6B	RES08-7A	RES08-7B	RES08-8A	RES08-8B
Ground Elevation (masl)	807	825	825	1018	949	887	887	908	908	1028	1028	843	843	865	865	1136	1136	794	794	886	886	829	829
Stick up (m)	0.78	0.70	0.67	NA	0.70	0.98	0.98	1.03	1.31	0.72	0.69	0.51	0.67	0.52	0.83	0.58	0.20	0.67	1.15	0.89	0.89	1.09	1.09
Dip (degrees)	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90
Date																							
16-Aug-07																							
27-Aug-07																							
28-Aug-07																							
01-Sep-07																							
14-Jun-08																							
02-Aug-08															861.20								
28-Aug-08																							
08-Sep-08												839.90	841.70	858.50									
10-Sep-08								906.20	907.40		1024.00												
14-Sep-08										1021.50													
16-Sep-08																		793.85					
17-Sep-08																							
19-Sep-08																							
20-Sep-08																				Art	Art		
21-Sep-08																						827.98	828.43
23-Sep-08																			794.05				
24-Sep-08								906.16	905.83			840.04	841.54		855.87								
25-Sep-08																Art		794.00	793.91			828.10	828.50
26-Sep-08										1024.00	1020.94			855.13			1135.90						
29-Sep-08																				Art	Art		
01-Oct-08																Art	1135.79						
30-Sep-09																		Art	793.95				828.55
1-Oct-09																				Art	Art	828.34	
2-Oct-09												840.56	842.13	856.93	857.55								
3-Oct-09								906.45	905.82	1024.14	1020.68												
22-Apr-10															855.59								
23-Apr-10												840.13	842.15	855.61									
26-Apr-10								907.31	905.49	1021.74													
30-Apr-10																Art							
1-May-10																	1135.89						
2-May-10																				Art	Art		
3-May-10																						827.96	
4-May-10																							828.17
7-May-10																		Art	794.05				
9-May-10											1020.30												
12-May-10										1021.33													
29-Jun-10						884.94	883.94																
30-Jun-10	807.22	824.93	824.70	1001.27	947.40																		
19-Sep-10	807.01	824.62	824.51	1013.42	944.65	884.15	883.40																
20-Sep-10													841.70					Art	793.92			828.79	829.07
21-Sep-10												840.50								Art	Art		
22-Sep-10										1023.98	1019.85			855.92	856.15								
23-Sep-10																Art	1135.63						
24-Sep-10								906.61	906.69														
23-Mar-11															854.83								
24-Mar-11						well dry	882.39						840.97										
25-Mar-11					940.90																		
26-Mar-11																				Art	Art	828.59	828.59
13-Sep-11															856.86								
14-Sep-11																Art				Art	Art		
15-Sep-11	807.35		824.66		948.20	885.55	884.26										1135.75						
16-Sep-11																		Art	793.98			828.51	829.11
17-Sep-11		824.69									1019.51	840.51	842.16										

WELL ID	KP08-01	KP08-02	KP08-03	KP08-04	KP08-05	KP08-06	KP08-07	KP08-08	KP08-09	KP08-10	KP08-12	KP08-13	KP08-16	KP08-17	KP08-20	KP08-21	KP08-23	KP08-25	KP08-27	KP08-28	KP08-31	KP08-32	KP08-37A	KP09-37B	KP08-38	KP08-40	KP08-41	KP08-42	KP08-45
Ground Elevation (masl)	1196.2	1157.2	992	1178.3	982	1076	1040	938	920	994	1150	1142	876	865	835	855	947	824	794	825	858	877	892	893	908	891	885	882	882
Stick up (m)	NA	NA	0.50	NA	NA	0.40	0.48	0.00	0.57	NA	1.54	0.70	1.30	1.17	0.61	0.60	NA	0.82	0.66	1.10	0.70	1.25	0.10	0.10	0.45	0.55	1.00	0.89	0.83
Dip (degrees)	-63	-70	-60	-65	-65	-65	-64	-62	-60	-61	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-70	-90	-90	-90	-70
Date																													
16-Aug-07																													
27-Aug-07																													
28-Aug-07																													
01-Sep-07																													
14-Jun-08																844.40													
02-Aug-08																													
28-Aug-08						Art	Art		902.94																				
08-Sep-08			988.28												833.50														
10-Sep-08								920.16					873.20	861.50							Art								
14-Sep-08																													
16-Sep-08																													
17-Sep-08																							878.20	879.30	898.13			878.70	867.30
19-Sep-08																										887.30			
20-Sep-08																											883.40		
21-Sep-08																				Art		Art							
23-Sep-08											1140.00																		
24-Sep-08			988.28		Art	Art	Art	920.34	902.94								945.80		793.70										
25-Sep-08																		814.20											
26-Sep-08												1135.40																	
29-Sep-08																													
01-Oct-08																													
30-Sep-09																													
1-Oct-09																													
2-Oct-09																													
3-Oct-09																													
22-Apr-10																													
23-Apr-10																													
26-Apr-10																													
30-Apr-10																													
1-May-10																													
2-May-10																													
3-May-10																													
4-May-10																													
7-May-10																													
9-May-10																													
12-May-10																													
29-Jun-10																													
30-Jun-10																													
19-Sep-10																													
20-Sep-10																													
21-Sep-10																													
22-Sep-10																													
23-Sep-10																													
24-Sep-10																													
23-Mar-11																													
24-Mar-11																													
25-Mar-11																													
26-Mar-11																													
13-Sep-11																													
14-Sep-11																													
15-Sep-11																													
16-Sep-11																													
17-Sep-11																													

WELL ID	PO-01-07	PO-02-07	PO-03-07	PO-04-07	PO-05-07	PO-07-07	A-ND-07-01	A-ND-07-02	A-ND-07-03	A-NWD-07-01	A-SD-07-01	A-SD-07-02	A-SD-07-03
Ground Elevation (masl)	929	880	955	1170	1157	1084	820	800	815	900	900	900	900
Stick up (m)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.50	0.80	1.50	0.50
Dip (degrees)	-60.2	-59.2	-59	-55.4	-61.5	-56.5	-90	-90	-90	-90	-90	-90	-90
Date													
16-Aug-07	Art	878.05	954.04	1163.81									
27-Aug-07					1138.67								
28-Aug-07						1031.55							
01-Sep-07							Art	Art	814.80	Art	Art	896.50	Art
14-Jun-08													
02-Aug-08													
28-Aug-08													
08-Sep-08													
10-Sep-08													
14-Sep-08													
16-Sep-08													
17-Sep-08													
19-Sep-08													
20-Sep-08													
21-Sep-08													
23-Sep-08													
24-Sep-08													
25-Sep-08													
26-Sep-08													
29-Sep-08													
01-Oct-08													
30-Sep-09													
1-Oct-09													
2-Oct-09													
3-Oct-09													
22-Apr-10													
23-Apr-10													
26-Apr-10													
30-Apr-10													
1-May-10													
2-May-10													
3-May-10													
4-May-10													
7-May-10													
9-May-10													
12-May-10													
29-Jun-10													
30-Jun-10													
19-Sep-10													
20-Sep-10													
21-Sep-10													
22-Sep-10													
23-Sep-10													
24-Sep-10													
23-Mar-11													
24-Mar-11													
25-Mar-11													
26-Mar-11													
13-Sep-11													
14-Sep-11													
15-Sep-11													
16-Sep-11													
17-Sep-11													

M:\1\01\00329\08\A\Report\3 - 2011 Baseline Hydrogeology Study\Tables\[2011 Baseline Report Tables.xlsx]Table 3.5 ELEVATION

NOTES:

1. ALL WATER LEVEL MEASUREMENTS IN masl.
2. ART = ARTESIAN.
3. NA = STICK UP HEIGHT IS NOT AVAILABLE.
4. WATER LEVEL ELEVATIONS HAVE BEEN CORRECTED FOR INCLINED HOLES.

0	14FEB'12	ISSUED WITH REPORT VA101-329/8-3	NIB	HRS	KJB
REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D

Knight Piésold CONSULTING

TABLE 3.6

COPPER FOX METALS INC
SCHAFT CREEK MINE PROJECT

SUMMARY OF HYDRAULIC CONDUCTIVITY BY HYDROSTRATIGRAPHIC UNIT AND LOCATION

Print Apr/13/12 12:12:13

Location	Hydrostratigraphic Unit	Hydraulic Conductivity (m/s)				
		Minimum	Maximum	Mean	Median	No. of Values
Schaft Creek Valley	Valley Fill Deposits	1.0E-05	1.0E-03	5.8E-04	1.0E-03	9
	Hickman Batholith - Granodiorite	8.6E-09	6.9E-06	1.5E-06	4.1E-07	15
Deposit and Hillslope Areas	Stuhini Group - Andesite	1.0E-09	2.0E-04	6.2E-06	4.4E-07	67
	Stuhini Group - Volcaniclastics	1.0E-09	1.3E-06	1.7E-07	5.4E-09	12
	Stuhini Group - Augite Porphyry	4.0E-07	2.2E-06	9.7E-07	5.4E-07	7
Saddle Area	Unconsolidated Overburden	5.6E-09	8.8E-05	2.2E-05	7.0E-06	9
	Stuhini Group - Andesite	2.9E-07	2.7E-05	7.0E-06	6.4E-07	4
Skeeter Creek Valley	Unconsolidated Overburden	5.6E-09	1.9E+01	6.2E-01	9.3E-06	31
	Upper Carboniferous Limestone	1.0E-09	5.0E-05	1.0E-05	2.2E-06	32
	Stuhini Group - Andesite	2.4E-05	2.5E-05	2.4E-05	2.4E-05	2
	Stuhini Group - Volcaniclastics	8.4E-09	1.9E-05	2.0E-06	6.1E-07	12
	Hickman Batholith - Granodiorite	1.0E-09	1.1E-05	1.1E-06	3.1E-07	37
	Hickman Batholith - Diorite	3.0E-09	4.7E-07	2.3E-07	2.3E-07	2
	Peridotite	5.8E-10	2.6E-05	7.7E-06	6.1E-07	10

\\VAN11\Prj_file\1\01\00329\08\A\Data\Hydrogeology\2011 Baseline Report\[2011 Baseline Data Tables.xlsx]Table 3.6

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	14FEB'12	ISSUED WITH REPORT VA101-329/8-3	NIB	HRS	KJB

Knight Piésold CONSULTING

TABLE 5.1

COPPER FOX METALS INC.
SHAFT CREEK MINE PROJECT

GROUNDWATER SAMPLE LOCATIONS AND SAMPLING HISTORY

13/04/2012 12:02

Schaft Creek Valley	Total Number of Samples	Sample Dates									
		Sep-08	Oct-08	Sep-09	Oct-09	Apr-10	May-10	Jun-10	Sep-10	Mar-11	Sep-11
RES08-3A	5	✓			✓	✓			✓		✓
RES08-3B	6	✓			✓	✓			✓	✓	✓
RES08-4A	2		✓		✓						
RES08-4B	6		✓		✓	✓			✓	✓	✓
HG10-01	3							✓	✓		✓
HG10-02A	3							✓	✓		✓
HG10-02B	3							✓	✓		✓
HG10-04	4							✓	✓	✓	✓
HG10-05A	4							✓	✓	✓	✓
HG10-05B	4							✓	✓	✓	✓
Deposit and Hillslope Areas											
RES08-1A	0										
RES08-1B	0										
RES08-2A	0										
RES08-2B	5	✓			✓		✓		✓		✓
Saddle Area											
RES08-5A	4		✓			✓			✓		✓
RES08-5B	4		✓				✓		✓		✓
Skeeter Creek Valley											
RES08-6A	5	✓		✓			✓		✓		✓
RES08-6B	5	✓		✓			✓		✓		✓
RES08-7A	5				✓		✓		✓	✓	✓
RES08-7B	5				✓		✓		✓	✓	✓
RES08-8A	5				✓		✓		✓	✓	✓
RES08-8B	4				✓		✓		✓		✓

\\VAN11\Prj_file\1\01\00329\08\A\Data\Groundwater and SW Quality\2011 Baseline Report\[GWQ Tables 5.1 & 5.2.xlsx]Table 5.1 Sample Locations&Hist

NOTES:

1. ✓ = WELL WAS SAMPLED.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	2APR'12	ISSUED WITH REPORT VA101-329/8-3	AB	JEM	KJB

Knight Piésold CONSULTING

TABLE 5.2

COPPER FOX METALS INC.
SHAFT CREEK MINE PROJECT

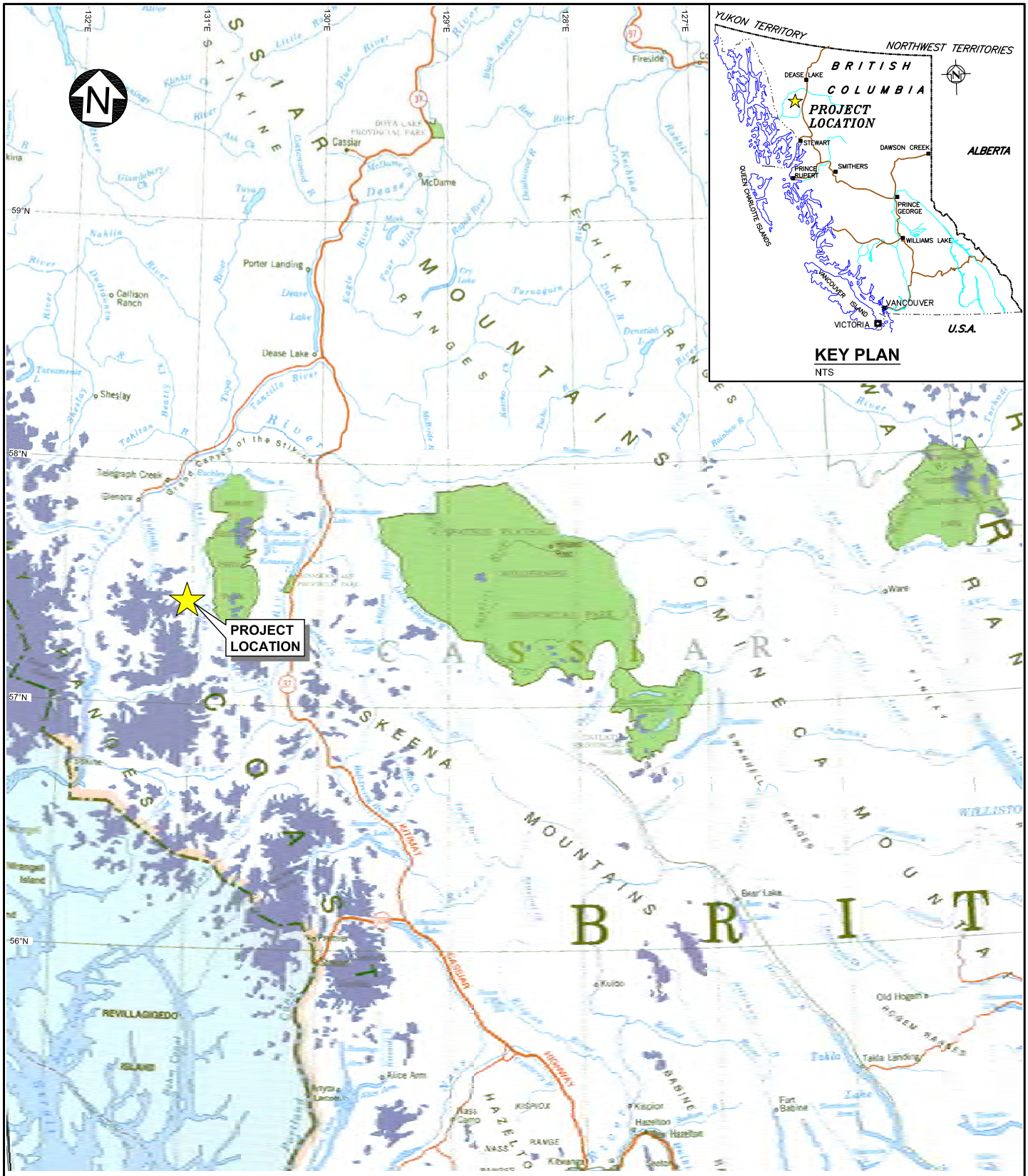
SUMMARY OF WATER QUALITY GUIDELINE EXCEEDANCES

13/04/2012 12:02

Schaft Creek Valley	Total Number of Samples	BCWQG Exceedances	CCME Exceedances	Parameters Exceeded 2008	Parameters Exceeded 2009	Parameters Exceeded 2010	Parameters Exceeded 2011
RES08-03A	5	5	4	Al, Cd, Cu, Fe	Mo, SO_4, U	Cd, Mo, SO_4, Cd, U	Mo, SO_4, U
RES08-03B	6	1	1	Ag, Al, As, Cd, Cu, Fe, Pb, Vn, Zn			
RES08-04A	2	2	2	Ag, Al, Cr, Cu, Fe, Mo,NH_3, pH,Se, V			
RES08-04B	6	6	6		pH, NH_3, Al, Cr, Cu, Mo		
HG10-01	3	3	3			As, Fe	As, Fe, NH_3
HG10-02A	3	0	0				
HG10-02B	3	0	0				
HG10-04	4	0	0				
HG10-05A	4	0	0				
HG10-05B	4	1	1				pH
Deposit and Hillslope Areas							
RES08-01A							
RES08-01B							
RES08-02A							
RES08-02B	5	4	4	Al, As, Cd, Cu, Fe, Pb, Ni, Se, Ag, V, Zn	As	As	As
Saddle Area							
RES08-05A	4	1	1	Al, Cd, Cu, Fe			
RES08-05B	4	4	4	Ag, Al, As, Cd, Cu, Fe, Hg, Mg, Mo, Ni, Se, V, Zn		Cd, Fe	Cu, Fe
Skeeter Creek Valley							
RES08-06A	5	5	1	Ag, Al, As, Cd, Co, Cu, Fe, Mg, Ni, Pb, Se, Zn, V	SO_4	SO_4	SO_4
RES08-06B	5	2	2	Ag, Al, As, Cd, Cu, Fe, Hg, Mg, Mo, Ni, Pb, Se, Zn	pH		
RES08-07A	5	5	0	SO_4	SO_4	SO_4	SO_4
RES08-07B	5	5	0	SO_4	SO_4	SO_4	SO_4
RES08-08A	5	5	0	SO_4	SO_4	SO_4	SO_4
RES08-08B	4	4	4	Fe	Fe	Fe	Fe

\\VAN11\Prj_file\1\01\00329\08\A\Data\Groundwater and SW Quality\2011 Baseline Report\[GWQ Tables 5.1 & 5.2.xlsx]Table 5.2

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	2APR'12	ISSUED WITH REPORT VA101-329/8-3	AB	JEM	KJB



COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

PROJECT LOCATION MAP

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	AMM	WAL/NSD	DF	KJB

Knight Piésold CONSULTING

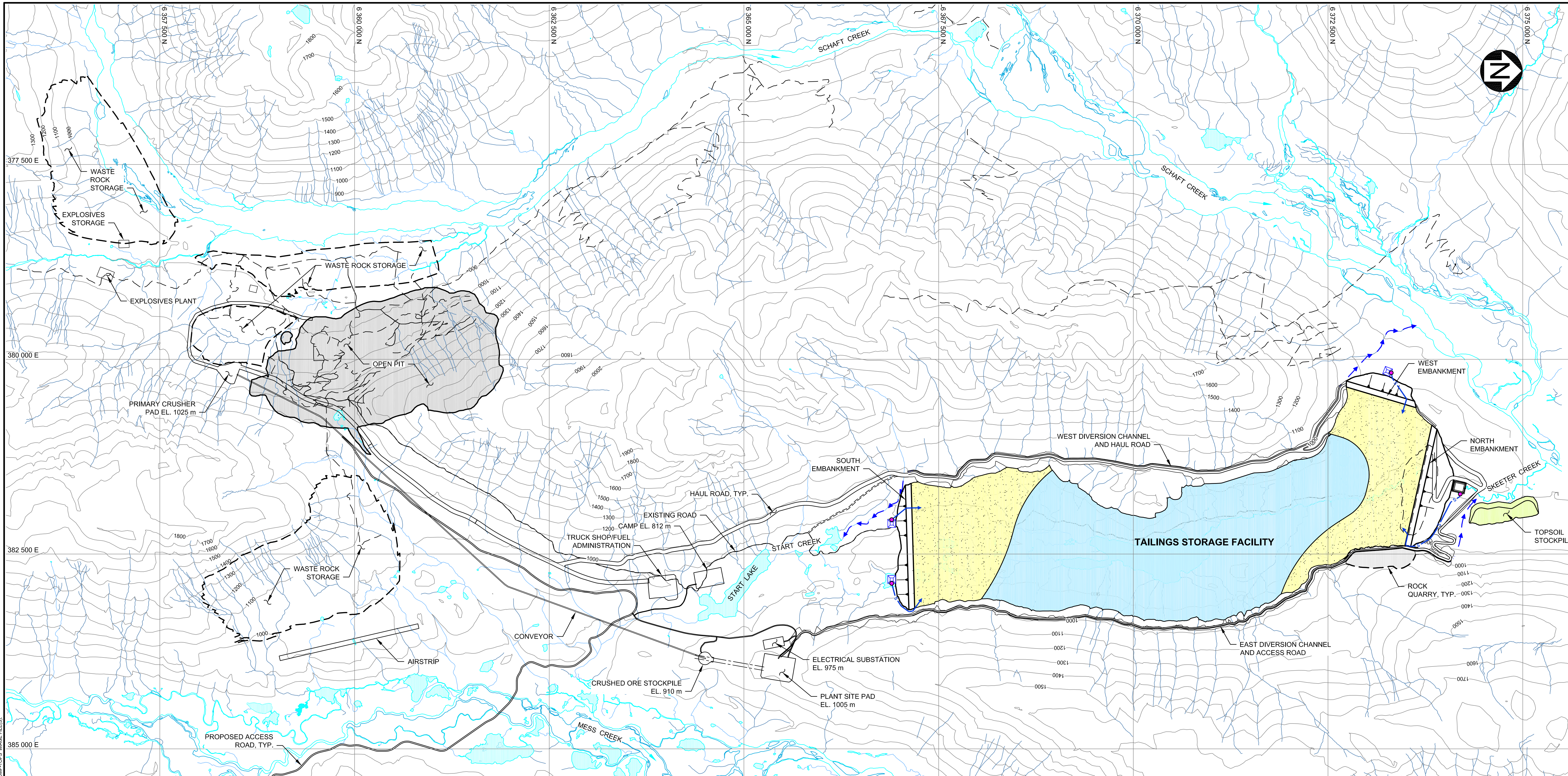
P/A NO. VA101-329/8

REF NO. 3

FIGURE 1.1

REV 0

SAVED: \\k1\101\002\08\A\acad\FIGS\A01_4/11/2012 1:46:03 PM PRINTED: 4/12/2012 8:29:48 AM, 03 REPORT, NDHALIWAL
XREF FILE(S): IMAGE FILE(S): Entire Area



NOTES:

1. COORDINATE GRID IS UTM (NAD83) ZONE 9V.
2. 100 m INTERVAL CONTOURS PROVIDED BY EAGLE MAPPING (2007).
3. OPEN PIT, WASTE ROCK DUMPS AND OTHER PROJECT INFRASTRUCTURE BY OTHERS.

SCALE A 500 250 0 500 1000 1500 2000 2500 m

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

GENERAL ARRANGEMENT OF SCHAFT CREEK PROJECT

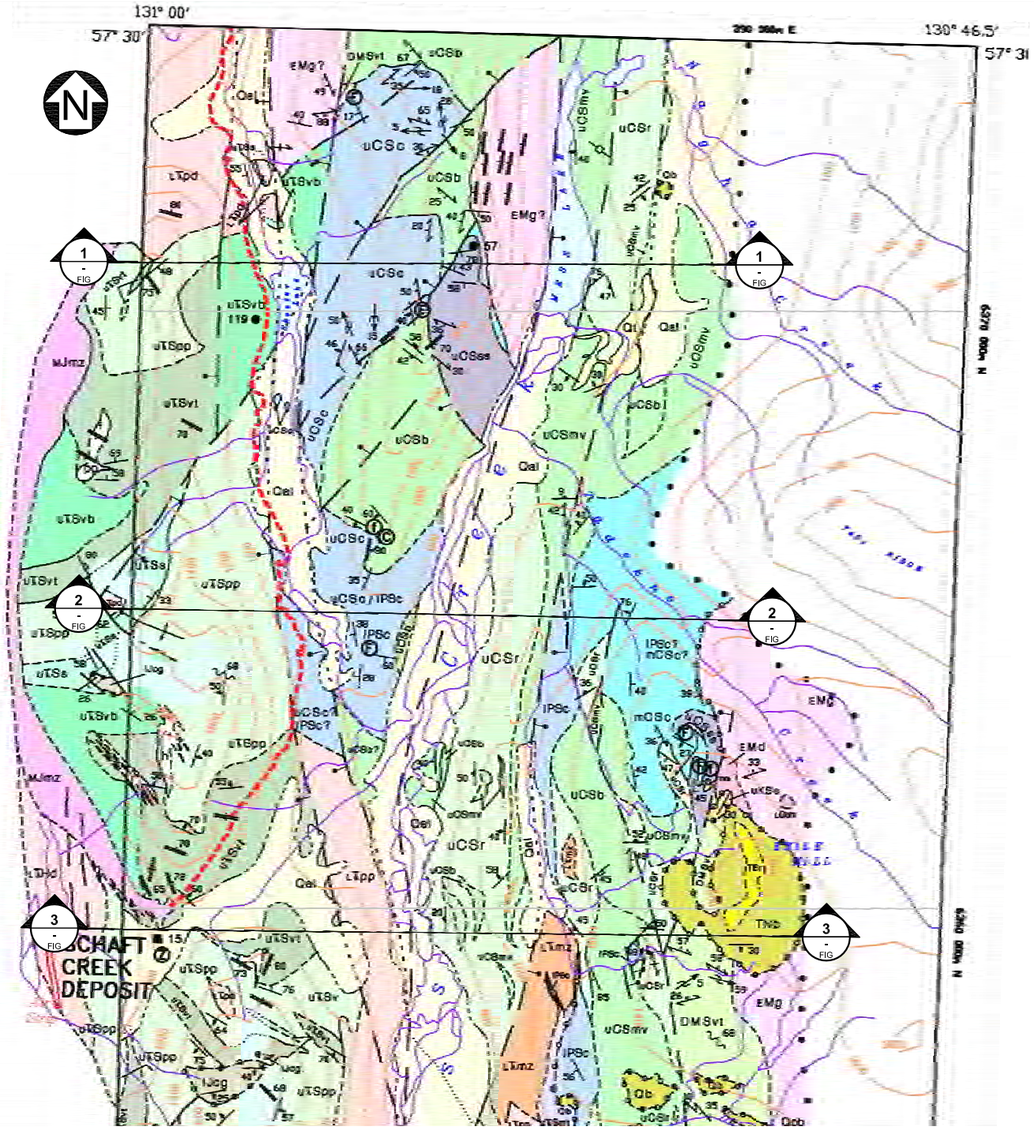
Knight Piésold CONSULTING

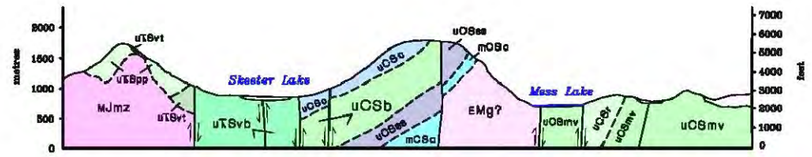
P/A NO. VA101-329/8 | REF NO. 3

FIGURE 1.2 REV 0

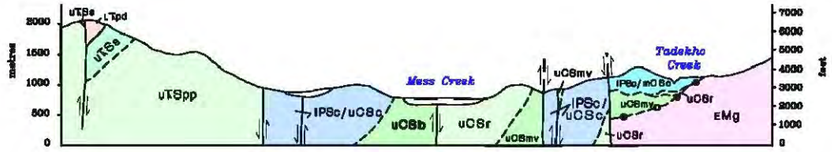
REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	JMF	NSD	DF	KJB

SAVED: M:\1\01\00329\08\A\Acad\FIGS\B26_r0, 4/12/2012 8:55:19 AM, Layout1, NCHALIWAL PRINTED: 4/12/2012 8:53:55 AM
XREF FILE(S): Topo20m; Roads; C-ROAD; Quarry; C-MILL-SITE; Lakes and Rivers; C-DUMP-TOPS IMAGE FILE(S):

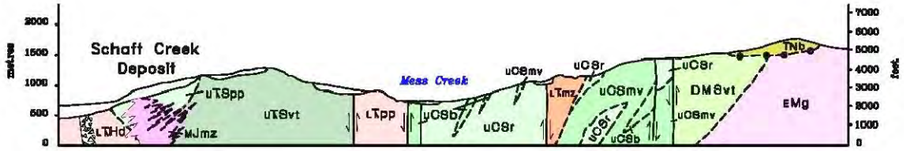




1 - FIG **SECTION**
SCALE A



2 - FIG **SECTION**
SCALE A



3 - FIG **SECTION**
SCALE A

LEGEND:

LAYERED ROCKS

QUATERNARY
- Qc — *Active hotspring, calcareous tufa deposits*

BIG RAVEN FORMATION
- Qbg — Nahta Cone: *Plagioclase-olivine phyric basalt, pyroclastic cone, tephra and lava flows*
- Qal — *Unconsolidated glacial till and poorly sorted alluvium*

PLEISTOCENE
ARCTIC LAKE FORMATION
- Qb — *Olivine-plagioclase-augite basalt, subaerial lava flows, pyroclastic breccia and lenses of alluvium*

TERTIARY- PLIOCENE
SPECTRUM FORMATION
- Tsv — Exhile Hill Veni: *Leucocratic peralkaline rhyolite and dark grey trachyte flows and subvolcanic intrusions*

NIDO FORMATION (KOUNUGU MEMBER)
- Tnb — *Dark gray, aphyric and microporphyritic olivine basalt, subaerial flows, flow breccia and intercalated fluvial gravel*

UPPER CRETACEOUS TO PALEOCENE
SUSTUT GROUP
- uKSs — *Chert-pebble conglomerate, quartzose sandstone, siltstone and carbonaceous shale, coaly layers and carbonaceous plant fragments*

MIDDLE TO UPPER JURASSIC
BOWSER LAKE GROUP
ASHMAN FORMATION
- Jbs — *Greywacke, planar-bedded shale and minor crossbedded sandstone, local chert-pebble conglomerate and granule conglomerate lenses*

LOWER TO MIDDLE JURASSIC
HAZELTON GROUP
- JHu — *Undifferentiated volcanic and associated sedimentary rocks*

SALMON RIVER FORMATION
- Js — *Brecciated and fractured dark green and grey siliceous siltstone*
- Jscg — *Polylithic conglomerate containing sedimentary, intermediate and felsic volcanic and subvolcanic clasts*
- mJms — *Dark grey to black, thin bedded carbonaceous siltstone and fine, rusty-brown biolastic sandstone, minor intermediate to felsic crystal tuff*
- mJlm — *Pillow basalt, breccia and tuff, interbedded white and grey, thin-laminated siliceous siltstone and tuff*

LOWER JURASSIC
UNUK RIVER - BETTY CREEK - MOUNT DILLWORTH FORMATIONS
- LJuv — *Purple, maroon and green, plagioclase and augite phyric andesite, lapilli tuff, crystal tuff and pillowed lava flows*
- LJfc — *Felsic welded-ash tuff, rhyolite lava and ashflow tuff*
- LJsa — *Tan-weathering sandstone, plagioclase crystal tuff, pepwrite flows, siltstone, carbonaceous plant fragments common*
- LJss — *Black, graphitic siltstone, stratiform diagenetic pyrite to several percent*
- Ujcg — *Maroon-weathering, polylithic cobble to boulder conglomerate and coarse sandstone, well bedded, poorly-graded and quartz-rich, contains granitoid, volcanic and sedimentary clasts of Stikine assemblage and Stuhini Group strata*

UPPER TRIASSIC

INTRUSIVE ROCKS

TERTIARY AND OLDER DIKES
- fp, mp — *Aphyric andesite and basalt, (a): mafic plagioclase ± pyroxene porphyry, (pp); lamprophyre, (l); felsic, (f); porphyritic syenite, (sy); basalt, (b)*

MIDDLE JURASSIC
THREE SISTERS PLUTONIC SUITE (179 - 176 Ma)
- MJmz — *Yehiniko Pluton: Pink, medium to coarse-grained, equigranular hornblende-biotite monzonite to granite*
- MJdi — *Dark green, medium-grained seriate-textured diorite, pyroxene gabbro*

EARLY JURASSIC AND YOUNGER
- EJd — *Medium-grained equigranular augite-plagioclase diorite and gabbro*

EARLY JURASSIC
TEXAS CREEK PLUTONIC SUITE (195 - 189 Ma)
- EJmz — *Equigranular, pink, medium grained monzonite, grading to syenite at base*
- EJg — *Hornblende-biotite potassium feldspar megacrystic monzogranite and syenite*

LATE TRIASSIC TO EARLY JURASSIC
COPPER MOUNTAIN PLUTONIC SUITE (210 - 200 Ma)
- LJrs — *Grey and pink, hornblende biotite syenite, orthoclase porphyry with large zoned phenocrysts*
- LJmz — Loon Lake Stock: *Salmon-orange, crowded plagioclase-pyroxene monzonite porphyry, trachytic and equigranular phases*
  Newmont Lake plugs: *Fine-grained and pelassitm felstspar porphyritic monzonite, granodiorite*

MIDDLE TO LATE TRIASSIC
STIKINE PLUTONIC SUITE (226 - 221 Ma)
- LJHg — Hickman Pluton: *Medium to fine-grained, equigranular hornblende diorite, hornblende monzonite*
- LJgd — *Medium-grained equigranular augite diorite and gabbro*
- LJpp — *Pale green, stubby-plagioclase porphyritic hornblende-pyroxene diorite*

EARLY MISSISSIPPIAN
MORE CREEK PLUTONIC SUITE (~ 355 Ma)
- EMg — *Equigranular to quartz-porphyritic biotite granite*
- EMd — *Coarse to medium-grained, hornblende diorite, hornblende quartz monzonite*

LATE DEVONIAN
FORREST KERR PLUTONIC SUITE (~ 370 Ma)
- LDg — *Medium to coarse-grained pink, biotite granite, monzonite and lonalite*
- LDd — *Heterogeneous, medium-grained hornblende diorite, quartz diorite mainly equigranular, gneissic in places*
- LDom — *Coarse-grained gabbro, hornblendite, clinopyroxenite*

DEVONIAN
- DEd — *Foliated to equigranular, green pyroxene quartz diorite, locally chlorite schist*

AGE UNKNOWN
- gd — *Pink, equigranular biotite granite, monzonite, monzodiorite*
- gd — *Aphanitic-altered, granitoid rocks west of Forrest Kerr Creek and small isolated granodiorite plugs*

UPPER TRIASSIC
STUHINI GROUP
- uTrS — *Undifferentiated volcanic and arc-derived sedimentary rocks*

NEWMONT LAKE GRABEN
- uTrSvr — *Felsic and intermediate lapilli and plagioclase crystal tuff and pink flow-layered rhyolite*
- uTrSvic — *Intermediate volcanic conglomerate, sandstone and minor thin bedded siliceous limestone lenses*
- uTrSl — *Algal limestone, laminated, dark grey to black*
- uTrSva — *Maroon hornblende-plagioclase porphyritic andesite breccia flows*
- uTrSvbr — *Maroon lapilli and plagioclase crystal tuff and epiclastic rocks*

MESS LAKE VOLCANIC FACIES
- uTrSpp — *Maroon and dark green pyroxene porphyritic, plagioclase porphyritic and aphyric-basalt flows and fragmental rocks*
- uTrSvt — *Massive to weakly stratified, grey and mauve lapilli and crystal tuff*
- uTrSvb — *Dark grey, massive plagioclase porphyritic basalt flows and coarse-bladed plagioclase and pyroxene porphyry dikes*
- uTrSmt — *Dun-weathering mafic olivine lapilli tuff, includes some serpentinized peridotite*

MORE CREEK SEDIMENTARY FACIES
- uTrSv — *Medium bedded, pale green tuff and epiclastic rocks, orange-weathering augite phyric and aphyric basalt flows and sills*
- uTrSs — *Thick bedded augite-bearing volcaniclastic sandstone, interbeds of sharpstone conglomerate*
- uTrSc — *Limestone, grey to black, sparse crinoid fragments, minor argillaceous limestone and silty shale*
- uTrSsm — *Khaki, well bedded feldspathic sandstone, limestone-bearing conglomerate and thin bedded siltstone*
- uTrSsl — *Massive, thin laminated black and brown calcareous siltstone, interbedded with fine grained orange sandstone*

MIDDLE TRIASSIC
- mTrS — *Black, thin bedded carbonaceous and pyritic silty shale, grey sandstone and siliceous siltstone*

STIKINE ASSEMBLAGE
- STkv — *Undifferentiated Paleozoic foliated volcanic and associated sedimentary rock*

LOWER PERMIAN
- lPsc — *Medium bedded to massive fossiliferous carbonate, deformed, thin layered carbonate of probable Permian age (lPSdc)*
- lPsat — *Deformed, interlayered intermediate siliceous tuff and sedimentary rocks*

CARBONIFEROUS
- Csm — *Grey to light green phyllitic siltstone, graphitic argilite, siliceous phyllite/tuff and thin lenses of dark brown limestone*

UPPER CARBONIFEROUS
- uCSc — *Grey, thin bedded, fossil and dolomitic limestone, minor interbeds of maroon and green tuff and cherty siltstone*
- uCSr — *Pink flow-layered and spherulitic rhyolite, sparsely feldspar porphyritic lava and quartz feldspar-phyric flow breccia*
- uCSmv — *Maroon andesitic feldspar-phyric lapilli and crystal tuff, includes unwelded to weakly welded ash-flow tuff beds*
- uCSb — *Massive amygdaloidal, aphyric to plagioclase and pyroxene-phyric basalt and breccia flows*
- uCScg — *Thick bedded, maroon volcanic conglomerate, clasts are augite and plagioclase-phyric mafic and intermediate volcanic and subvolcanic rocks and limestone, poorly sorted with tuff interbeds*
- uCSss — *Thin bedded, siltstone, poorly bedded tuff, tuffaceous wacke and sandstone, lesser chert*

MID CARBONIFEROUS (SERPUKHOVIAN - BASHKIRIAN)
- mCSc — *Grey, medium bedded to massive bioclastic limestone, locally with buff, silty dolomitic layers*

UPPER DEVONIAN AND LOWER CARBONIFEROUS (MISSISSIPPIAN)
- DMSs — *Undifferentiated foliated sedimentary rocks*
- DMSv — *Undifferentiated basalt and andesite, hyaloclastite, pillowed and flow breccia rocks*
- DMSvf — *Massive to weakly foliated, dark green amygdaloidal basalt and related hyaloclastite, pillowed flows (p) and scoriaceous tephra*
- DMSvr — *Pale pink, quartz-eye rhyolite and aphyric to weakly porphyritic rhyodacite flows and flow breccias, includes orange-weathering, pyritic plagioclase porphyritic subvolcanic bodies*
- DMSfv — *Pale grey and green, intermediate to felsic, fine tuff, aphyric-dacite flows and volcaniclastic rocks*
- DMSvf — *Pale to dark green, well bedded siliceous dust and ash tuff, scoriaceous mafic tuff and minor pyritic felsic welded tuff*

LOWER AND MIDDLE DEVONIAN
- lmDSfv — *Green and grey intermediate to felsic plagioclase crystal tuff, breccia and flow rocks*
- lmDSc — *Deformed grey and buff thin layered to massive coralline marble and limestone*
- lmDSs — *Pale green and grey thin bedded siltstone, saindstone and cherty tuff*
- lmDSsl — *Bright green chlorite and red-purple schistose tuff and minor basalt flows, interbedded dust tuff and thin layered recrystallized limestone*
- lmDSgs — *White and pale green quartz sericite schist, well foliated and tightly crenulated*
- lmDSgs — *Graphitic schist, black siliceous phyllite and chert*

SYMBOLS

- Geological boundary (defined, approximate, assumed)
- Unconformity (defined, assumed)
- Bedding; tops unknown (inclined, vertical)
- Bedding; tops observed (inclined, overturned)
- Igneous flow layering (inclined, vertical)
- Dominant foliation (inclined, vertical)
- Foliation; generation indicated by number of ticks
- Lineation; bedding-cleavage intersection, m=mineral, s=stretching, ss=slickensides
- Crenulation lineation; ages indicated by number of ticks (plunge indicated)
- Joint (inclined, vertical)
- Dike (inclined, vertical)
- Vein (inclined, vertical)
- Axial trace of overturned antiform, synform (arrow indicates plunge)
- Axial trace of upright antiform, synform (arrow indicates plunge)
- Fold axis of minor fold (arrow indicates plunge) m, s and z asymmetry
- Brittle fault zone (inclined, vertical)
- Extension fault; downthrown side indicated (defined, approximate, assumed)
- Contraction fault; teeth indicate upthrust side (defined, approximate, assumed)
- Cross-section line (O — P)
- Limit of mapped area
- Fossil locality (macrofossil, conodont, foraminifera, radiolarian)
- Isotopic age locality (U/Pb, Ar/Ar, K/Ar, Rb/Sr)
- MINFILE occurrence; developed prospect, prospect, showing, number (1040378)
- Surface work; adit, trench
- Topographic contour (200 metre interval)
- Cart track

1 0.5 0 1 2 3 4 5 km
SCALE A

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

GEOLOGY OF SCHAFT CREEK PROJECT AREA

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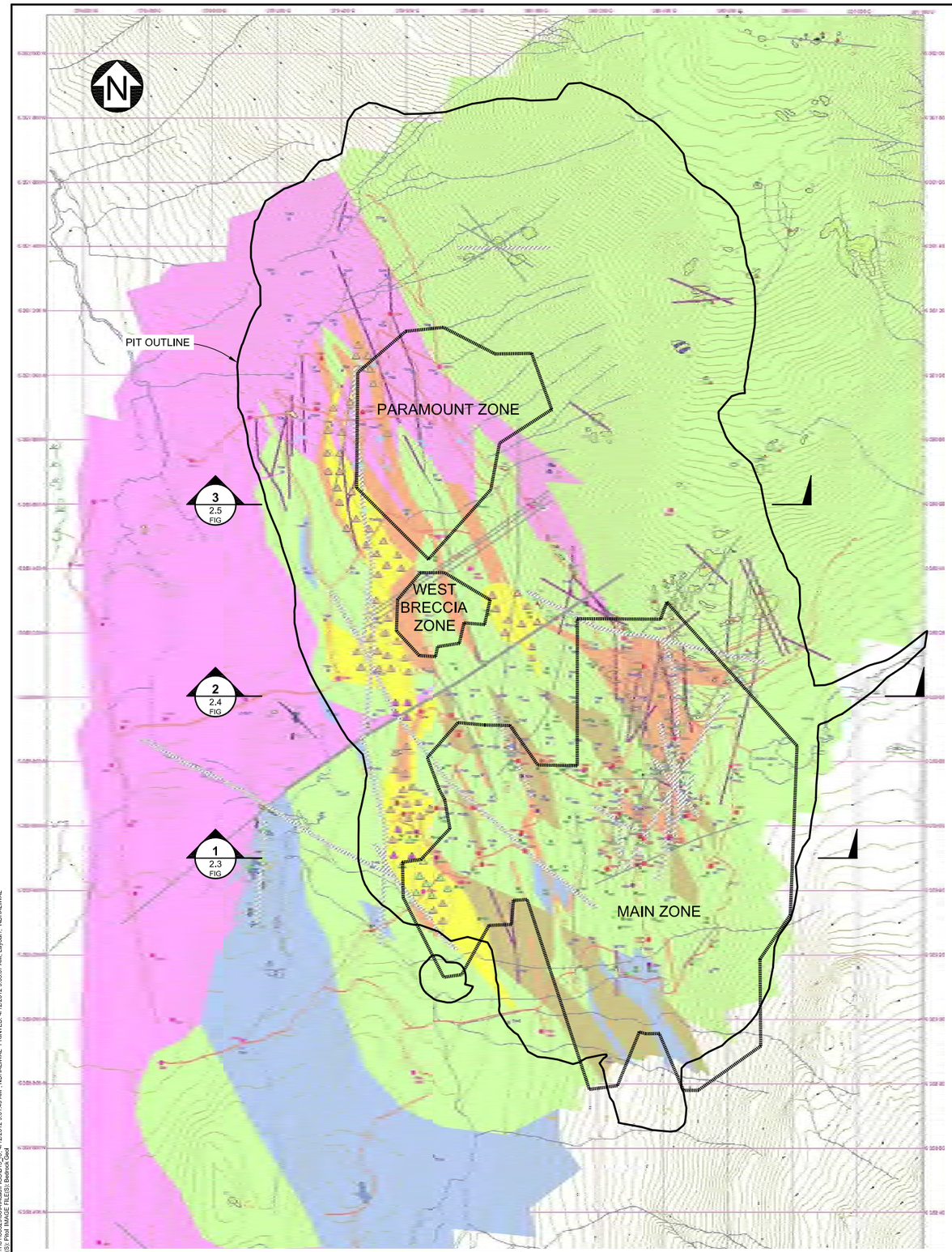
P/A NO. VA101-329/8 | REF NO. 3

FIGURE 2.1 | REV 0



LEGEND

Diamond Drill Holes

- C385 — Copper Fox Metals, 2007: 30 holes, 5,311 meters
- C253 — Copper Fox Metals, 2006: 42 holes, 9,009 meters
- C234 — Copper Fox Metals, 2005: 15 holes, 3,160 meters
- T184 — Teck Corp, 1980-1981: 118 holes, 26,000 meters
- H69 — Hecla Mining Co., 1968-77: 76 holes, 34,500 meters
- [illegible] — Hecla-Paramount, 1968-73: 11 holes, 2,852 meters
- A01 — Asarco, 1966-67: 26 holes, 4,268 meters
- S0 — Silver Standard, pre 1966: 3 holes, 628 meters

Lithology

- TrGDk — Mafic/intermediate Dike. Phyric +aphyric andesite to basalt +- pyroxene. Tertiary and older.
- EJtbx — Tourmaline Breccia, quartz-epidote-chlorite-tourmaline pyrite matrix with xenoliths of feldspar-quartz porphyry, granodiorite and andesitic rocks. Late Triassic to early Jurassic.
- LTvms — Vein systems, includes stockworks, sets, crackle veins of of quartz, chlorite, carbonate and sulphide. Late Triassic early to Jurassic.
- LTHqp — Feldspar-Quartz Porphyry, related to Hickman batholith, late phase. Late Triassic to early Jurassic.
- LTHd — Diorite, related to Hickman Pluton, outer margin. Late Triassic to early Jurassic.
- LTHgr — Hickman batholith, suite of intrusive rocks,monzonite, quartz monzonite, granodiorite. Late Triassic to early Jurassic.
- LTSvs — Volcanoclastics, includes, tuff, lapilli tuff, breccia and derived sediments. Stuhini Group, late Triassic.
- LTSav — Andesite volcanics, Stuhini Group, late Triassic.
- LTSap — Augite Porphyry, lower Stuhini Group, late Triassic.

Breccia Inclusion Lithology

- Andesite - Stuhini Group
- Felsic Intrusive - Hickman Suite
- Feldspar Quartz Porphyry - Hickman Suite

Alteration

- Chlorite Alteration - moderate to strong
- Epidote Alteration - moderate to strong
- Hematite Alteration - moderate to strong
- Malachite Staining - minor to moderate
- Gossan - strong rusting, oxidation

Structure

- Fault Zone-Shear Zone (dip)
- Fault (dip)
- Intense Fracturing

Symbols

- 6T — Outcrop with indicated dominant lithology and ID
- Primary Trails
- River Channels
- Lakes
- Swamps
- NAD 83 UTM Grid
- Buildings
- Runway
- Zone Boundary

SCALE A 150 75 0 250 500 750 m

NOTES:

1. COORDINATE GRID IS UTM NAD83 ZONE 9V
2. 5 m TOPOGRAPHIC CONTOUR SPACING.
3. GEOLOGICAL MAP PROVIDED BY COPPER FOX, OCTOBER 2007.
4. PIT OUTLINE PROVIDED BY MOOSE MOUNTAIN TECHNICAL SERVICES, JANUARY 2008.

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

GEOLOGY OF DEPOSIT AREA

Knight Piésold CONSULTING

P/A NO. VA103-329/8 | REF NO. 3

FIGURE 2.2 | REV 0

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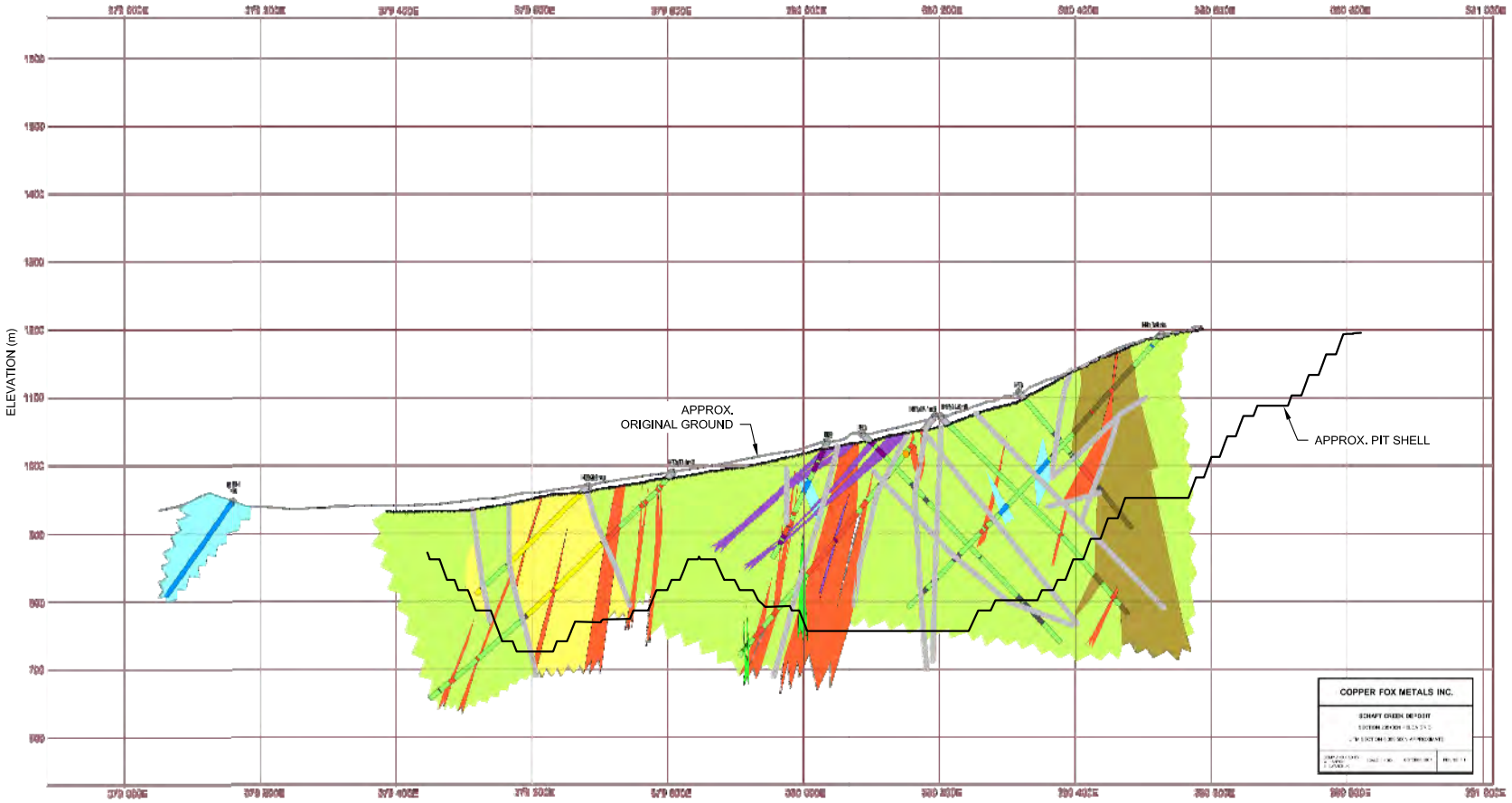

1
3.1
FIG.

SECTION
(6 359 500 N)
SCALE A

SCALE A 100 50 0 100 200 300 400 500 m

NOTES:

1. COORDINATE GRID IS UTM NAD83 ZONE 9V
2. GEOLOGICAL SECTION PROVIDED BY COPPER FOX, OCTOBER 2007.
3. PIT SHELL MODEL PROVIDED BY MOOSE MOUNTAIN TECHNICAL SERVICES, JANUARY 2008.
4. REFER TO FIGURE 4.1 FOR LITHOLOGY LEGEND.

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0	13APR'12	ISSUED WITH REPORT	GM	RP	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

GEOLOGICAL CROSS SECTION 1 OF DEPOSIT AREA

Knight Piésold CONSULTING

P/A NO. VA101-329/8

REF NO. 3

FIGURE 2.3

REV 0

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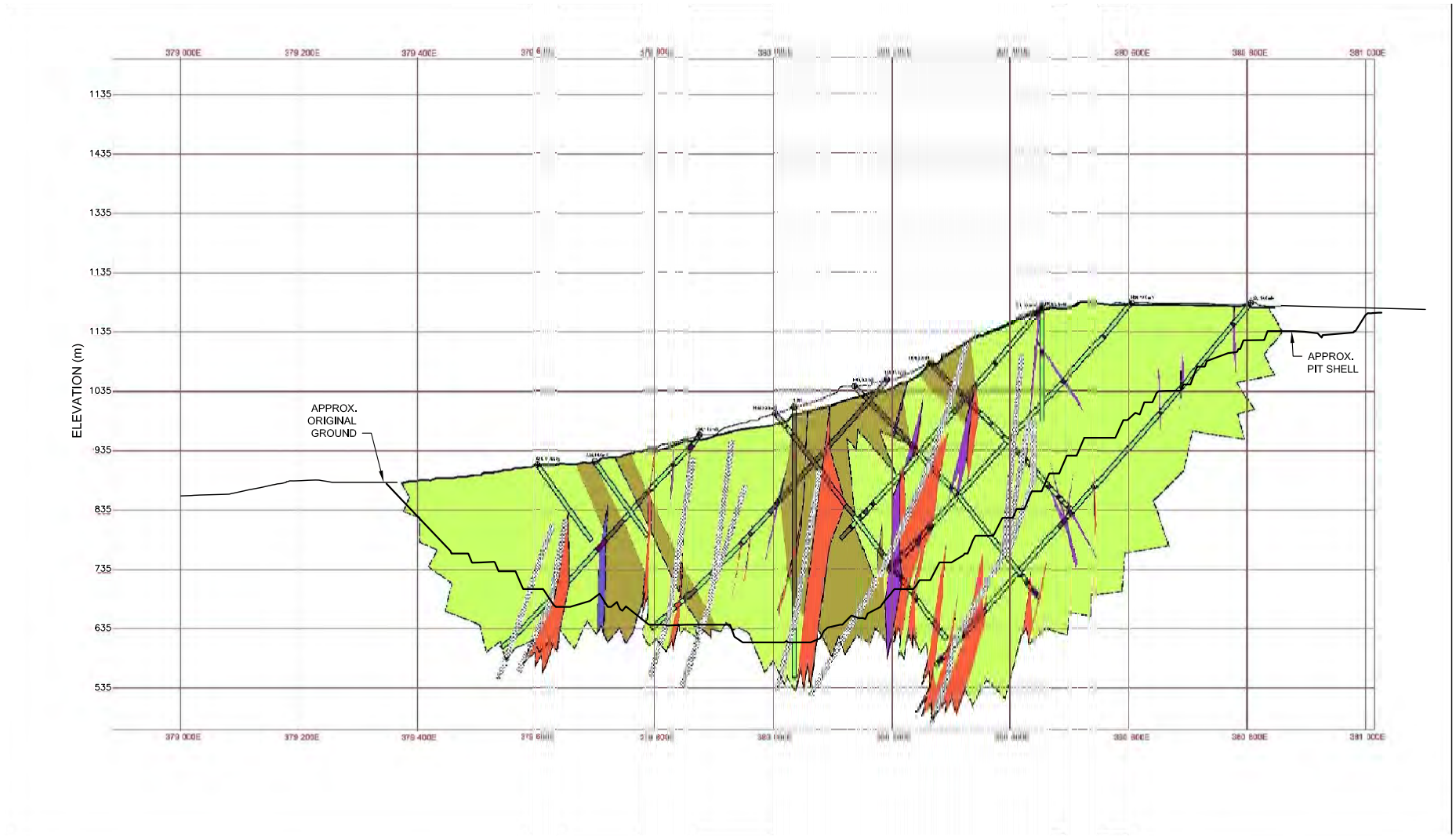

2 / 3.1 FIG **SECTION**
(6 360 000 N)
SCALE A

SCALE A 100 50 0 100 200 300 400 500 m

NOTES:

1. COORDINATE GRID IS UTM NAD83 ZONE 9V
2. GEOLOGICAL SECTION PROVIDED BY COPPER FOX, OCTOBER 2007.
3. PIT SHELL MODEL PROVIDED BY MOOSE MOUNTAIN TECHNICAL SERVICES, JANUARY 2008.
4. REFER TO FIGURE 4.1 FOR LITHOLOGY LEGEND.

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	GM	RP	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

GEOLOGICAL CROSS SECTION 2 OF DEPOSIT AREA

Knight Piésold CONSULTING

P/A NO. VA101-329/8 | REF NO. 3

FIGURE 2.4 | REV 0

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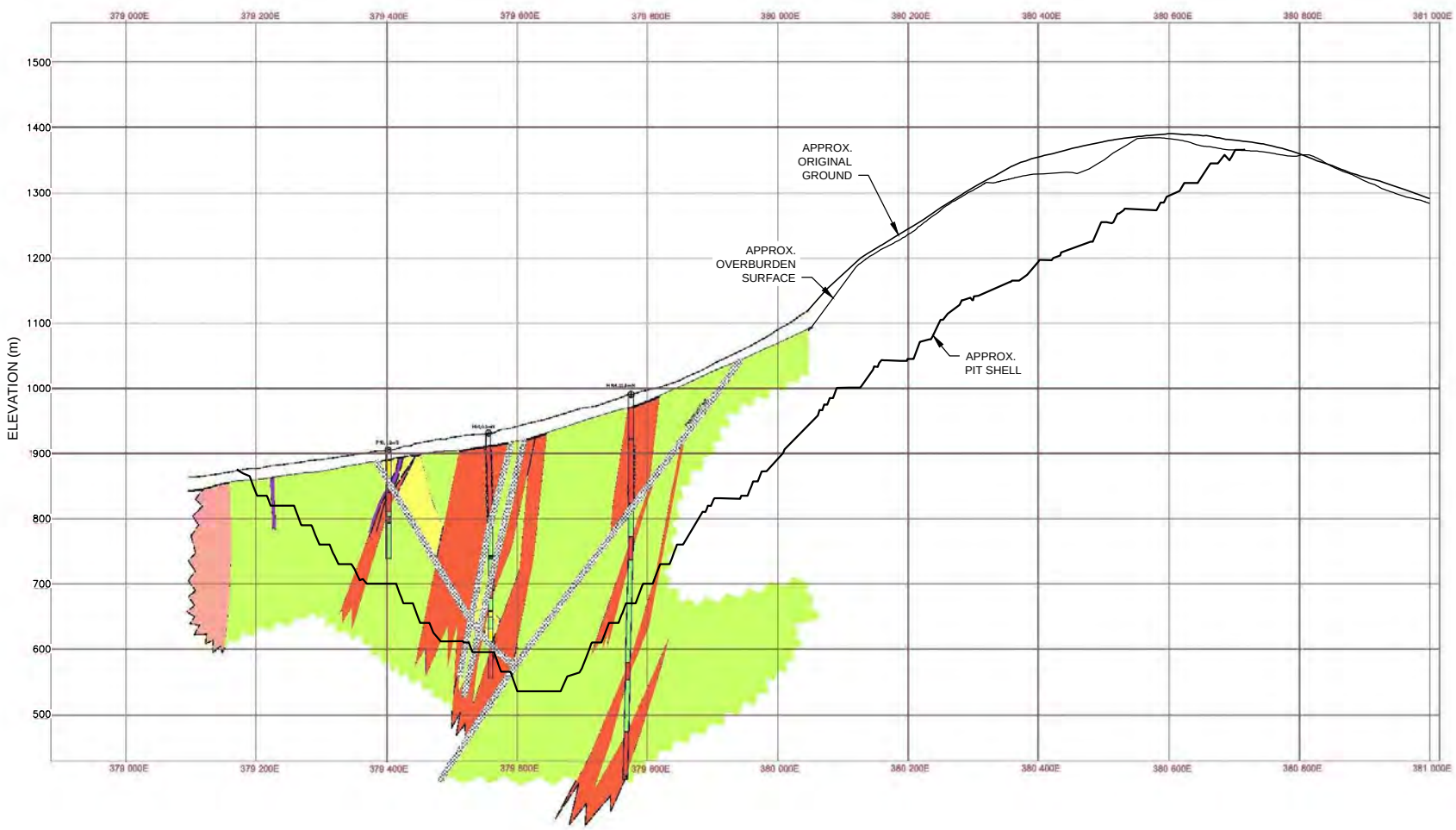


3
3.1
FIG.
SECTION
(6 360 600 N)
SCALE A

100 50 0 100 200 300 400 500 m
SCALE A

NOTES:

1. COORDINATE GRID IS UTM NAD83 ZONE 9V
2. GEOLOGICAL SECTION PROVIDED BY COPPER FOX, OCTOBER 2007.
3. PIT SHELL MODEL PROVIDED BY MOOSE MOUNTAIN TECHNICAL SERVICES, JANUARY 2008.
4. REFER TO FIGURE 4.1 LITHOLOGY LEGEND.

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	GM	RP	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

GEOLOGICAL CROSS SECTION 3 OF DEPOSIT AREA

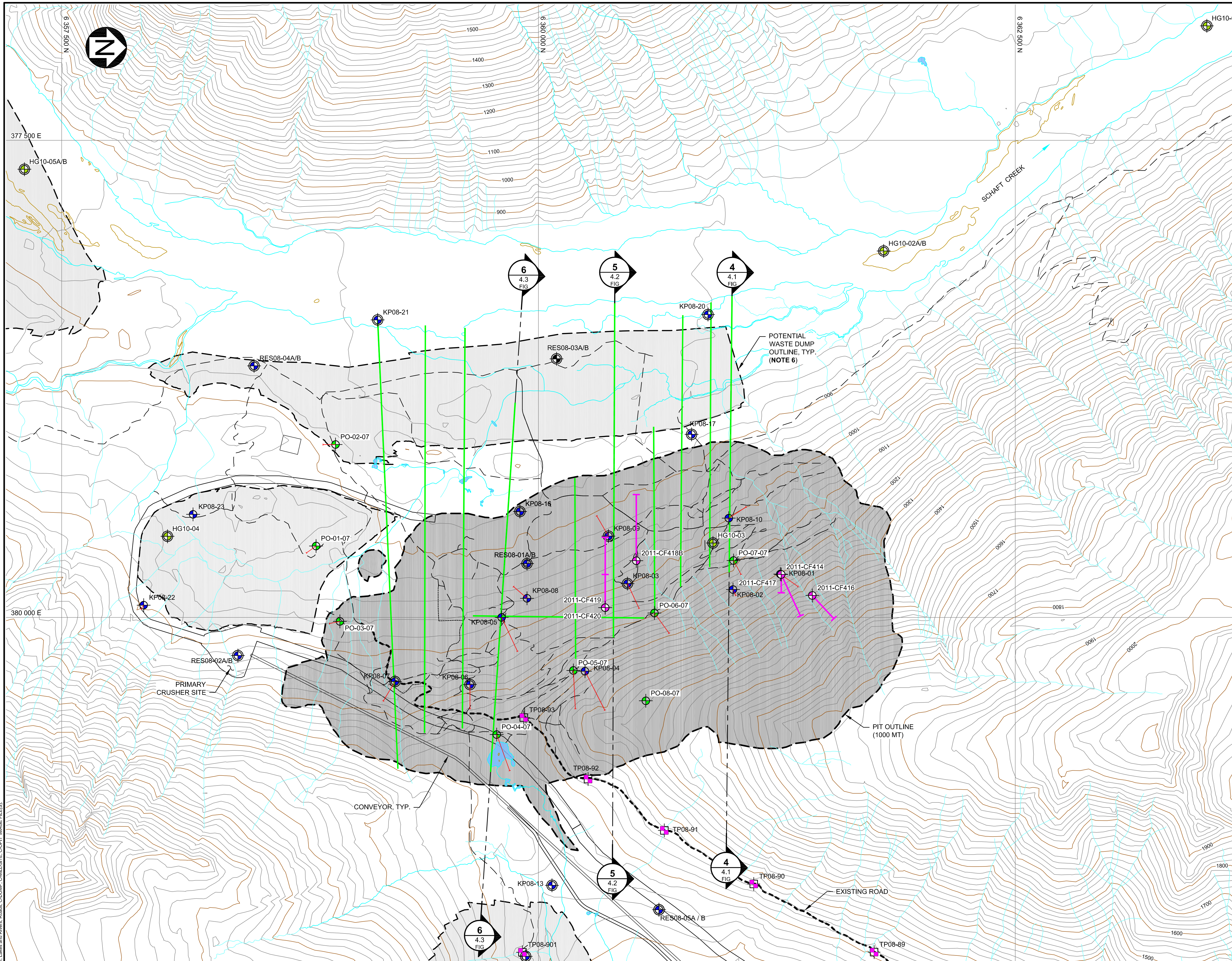
Knight Piésold CONSULTING

P/A NO. VA101-329/8

REF NO. 3

FIGURE 2.5

REV 0



NOTES:

1. COORDINATE GRID IS UTM (NAD83) ZONE 9V.
2. 20 m INTERNAL TRIM MAP PROVIDED BY COPPER FOX (JANUARY 2008).
3. PROPOSED MINE FACILITIES BY WARDROP (2011, 2012).
4. 2007 GEOTECHNICAL DRILL HOLES COMPLETED BY DST; 2008 & 2010 GEOTECHNICAL DRILL HOLES BY KP.
5. 2008 SEISMIC SURVEY COMPLETED BY AGL.
6. WASTE DUMP OUTLINES ARE APPROX. AND WILL BE UPDATED WHEN AVAILABLE.

LEGEND:

- 2007 GEOTECHNICAL DRILL HOLE
- 2008 GEOTECHNICAL DRILL HOLE
- 2008 GEOTECHNICAL DRILL HOLE WITH PIEZOMETER INSTALLED
- 2008 TEST PIT
- 2010 CONTINUED HYDROLOGIC INVESTIGATION
- 2011 GEOTECHNICAL DRILL HOLE
- 2008 SEISMIC REFRACTION SURVEY LINE

SCALE A 200 100 0 200 400 600 800 1000 m

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

DRILL HOLE, PIEZOMETER AND MONITORING WELL LOCATIONS FOR DEPOSIT AREA

Knight Piésold CONSULTING

P/A NO.	REF NO.
VA101-329/8	3

FIGURE 3.1 REV 0

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	AM	RP/WAL	DAY	JKB

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6 365 000 N
6 367 500 N
6 370 000 N
6 372 500 N
6 375 000 N
380 000 E
382 500 E
SCHAFT CREEK
NORTHWEST EMBANKMENT
NORTH EMBANKMENT
SOUTH EMBANKMENT
EXISTING ROAD
EXISTING ACCESS ROAD, TYP.
PLANT SITE
TAILINGS STORAGE FACILITY OUTLINE
NWD1
NWD2
NWD3
ND1
ND2
SD1
SD2
SD3
SD4
SD5
SD6
1 4.4 FIG
2 4.5 FIG
3 4.6 FIG
4 4.7 FIG
5 4.8 FIG
6 4.9 FIG
RES08-08A / B
RES08-07A / B
RES08-06A/B
TP08-63
TP08-64
TP08-65
TP08-66
TP08-67
TP08-68
TP08-69
TP08-70
TP08-71
TP08-72
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AH08-002
AH08-003
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AH08-005
AH08-006
AH08-007
AH08-008
AH08-009
AH08-010
AH08-011
AH08-012
AH08-013
AH08-014
AH08-015
KP08-25
KP08-27
KP08-28
KP08-31
KP08-32
KP08-37A/B
KP08-38
KP08-40
KP08-41
KP08-45
A-ND-07-01
A-ND-07-02
A-ND-07-03
A-NWD-07-01
A-SD-07-01
A-SD-07-02
A-SD-07-03

NOTES:

1. COORDINATE GRID IS UTM (NAD83) ZONE 9V.
2. 20 m INTERNAL TRIM MAP PROVIDED BY KP (JANUARY 2008).
3. PROPOSED MINE FACILITIES IN ACCORDANCE WITH KP PREFEASIBILITY TSF DESIGN (JULY 2008).
4. 2007 GEOTECHNICAL HOLES COMPLETED BY DST.
5. 2008 SEISMIC SURVEY COMPLETED BY AGL.

LEGEND:

- 2007 GEOTECHNICAL HOLE
- 2008 GEOTECHNICAL HOLE
- 2008 GEOTECHNICAL HOLE WITH PIEZOMETER INSTALLED
- EXPLORATION DRILL HOLE WITH PIEZOMETER
- EXPLORATION DRILL HOLE SURVEYED BY ACOUSTIC TELEVIEWER
- 2008 TEST PIT
- 2008 DUTCH AUGER TEST HOLE
- 2008 SEISMIC REFRACTION SURVEY LINE

250 125 0 250 500 750 1000 1250 mm
SCALE A

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DAY	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

DRILL HOLE, PIEZOMETER AND MONITORING WELL LOCATIONS FOR TAILINGS STORAGE FACILITY AREA

Knight Piésold CONSULTING

P/A NO. VA101-329/8

REF NO. 3

FIGURE 3.2

REV 0

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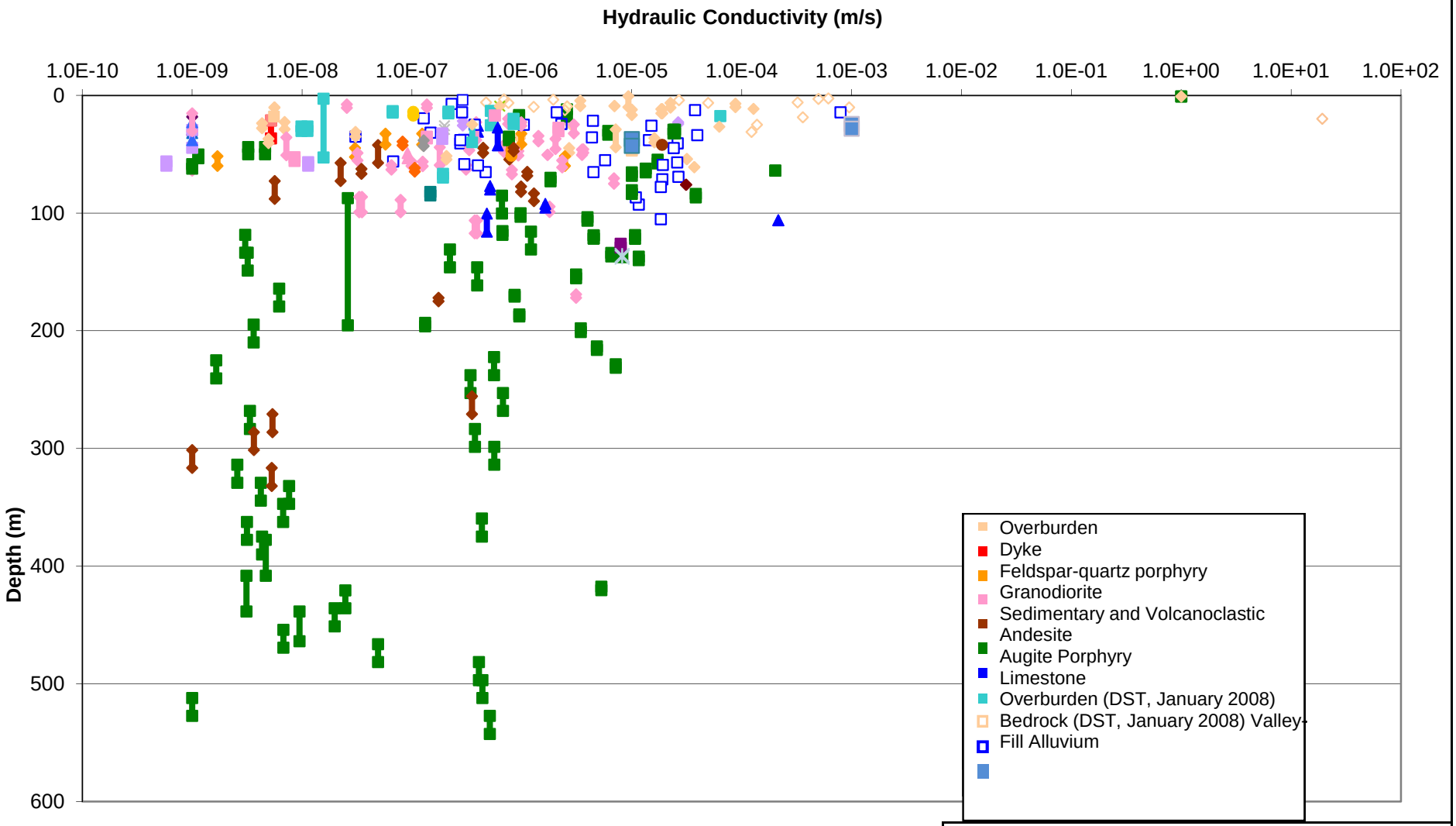

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COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

SUMMARY OF HYDRAULIC CONDUCTIVITY BY DEPTH

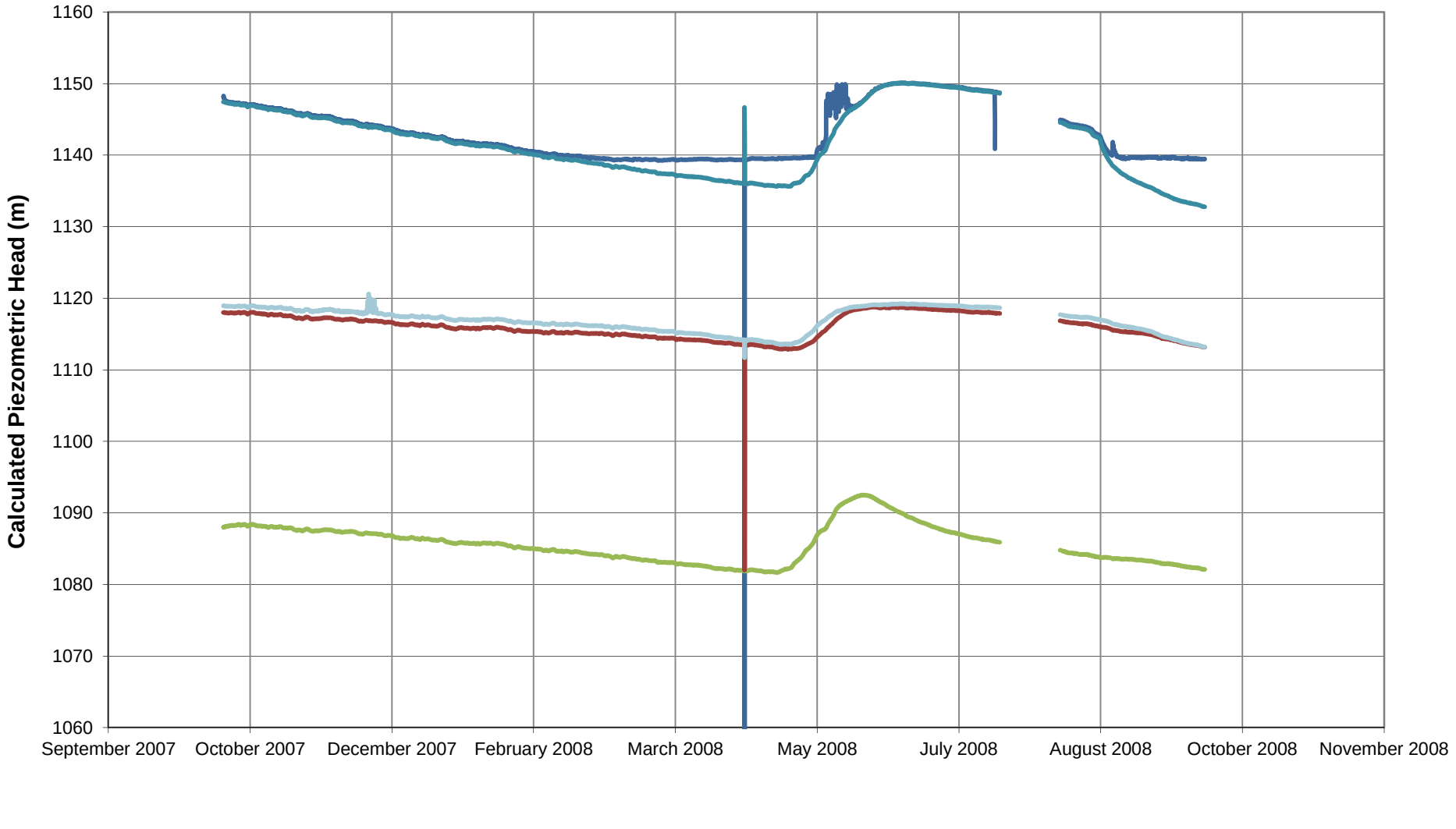
Knight Piésold CONSULTING

P/A NO. VA101-329/8

REF. NO. 3

FIGURE 3.3

REV 0



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0	3DEC'08	ISSUED WITH REPORT	AMM	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

DRILL HOLE PO-05-07 VIBRATING WIRE PIEZOMETERS CALCULATED PIEZOMETRIC HEAD

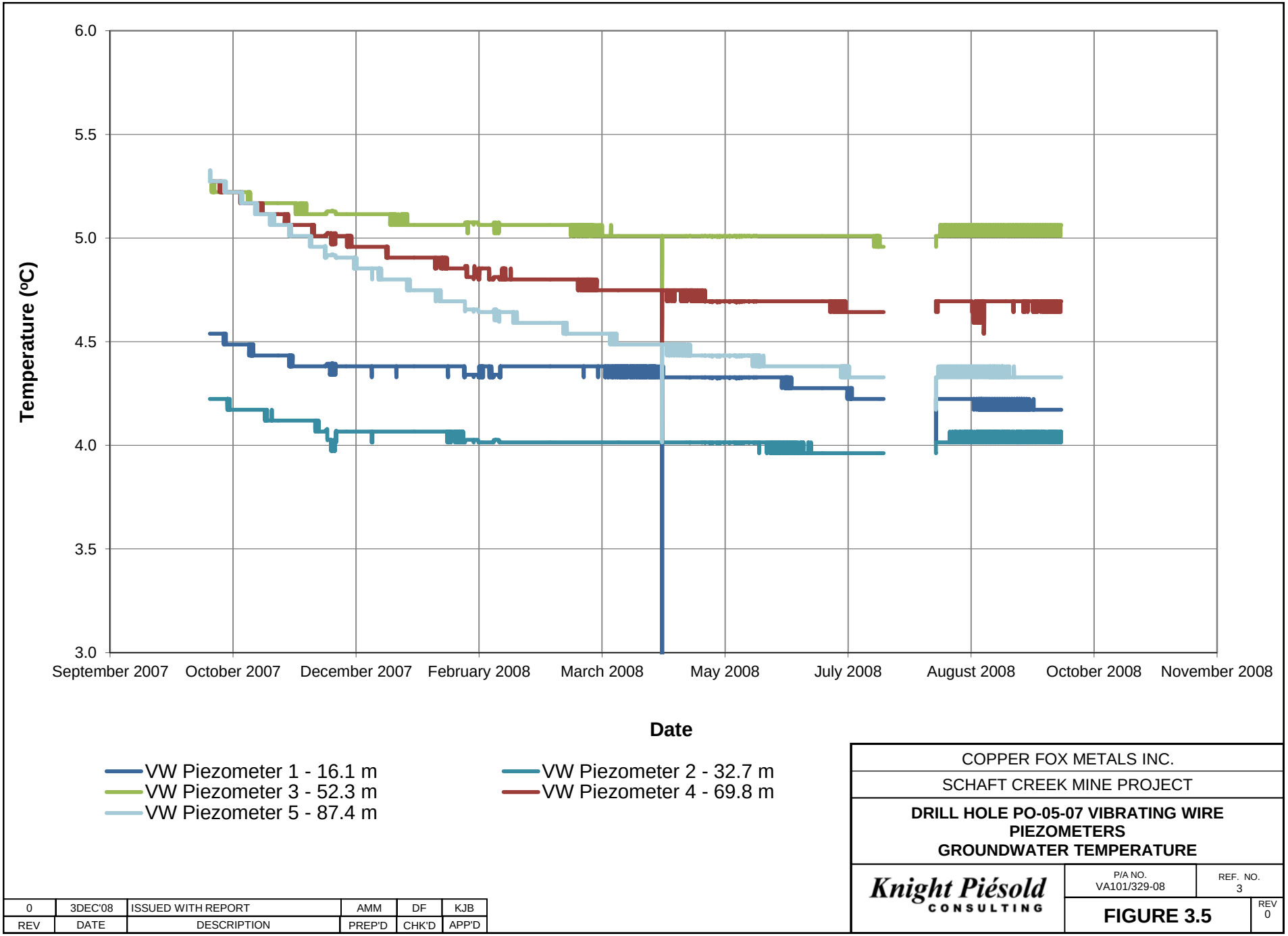
Knight Piésold CONSULTING

P/A NO. VA101/329-8

REF. NO. 3

FIGURE 3.4

REV 0



REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	3DEC'08	ISSUED WITH REPORT	AMM	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

DRILL HOLE PO-05-07 VIBRATING WIRE PIEZOMETERS GROUNDWATER TEMPERATURE

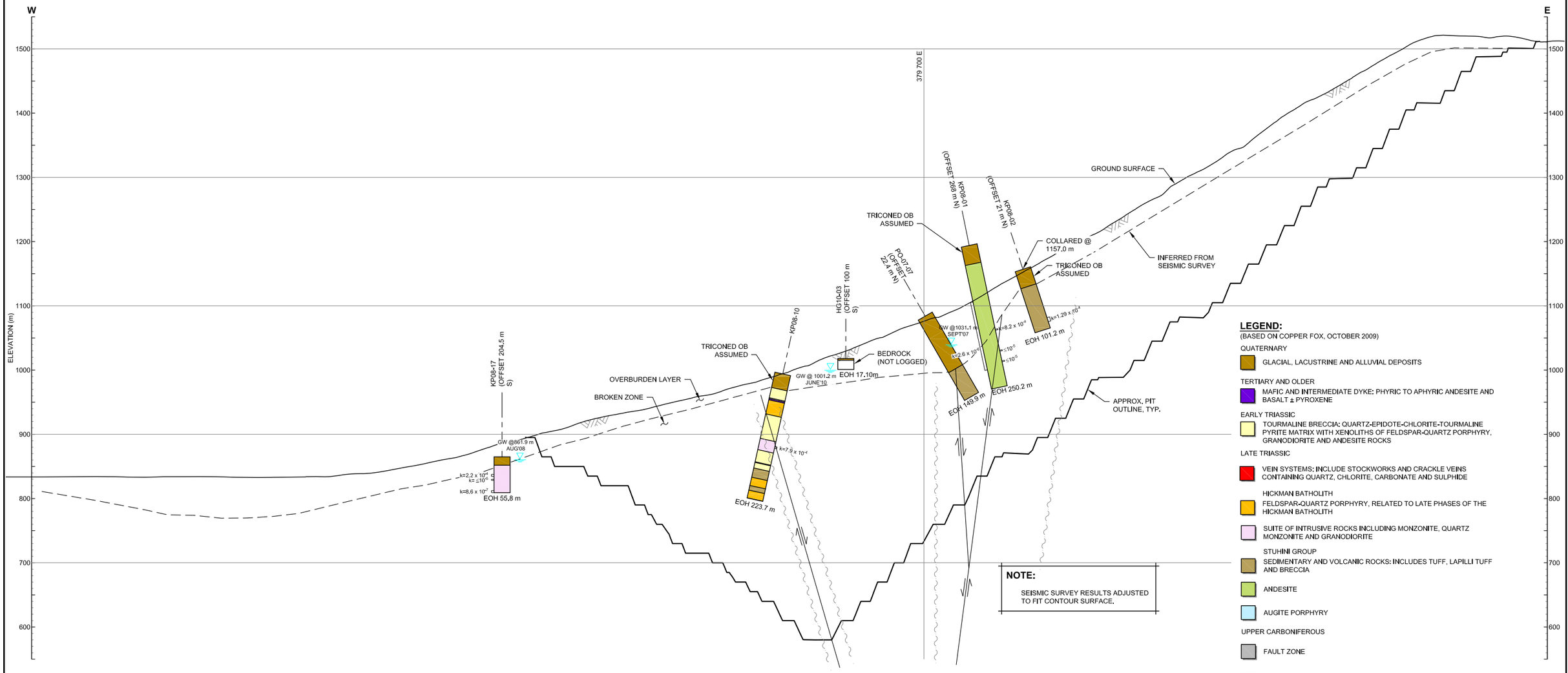
Knight Piésold CONSULTING

P/A NO. VA101/329-08

REF. NO. 3

FIGURE 3.5

REV 0



NOTE:

SEISMIC SURVEY RESULTS ADJUSTED TO FIT CONTOUR SURFACE.

LEGEND:

(BASED ON COPPER FOX, OCTOBER 2009)

QUATERNARY

- GLACIAL, LACUSTRINE AND ALLUVIAL DEPOSITS

TERTIARY AND OLDER

- MAFIC AND INTERMEDIATE DYKE: PHYRIC TO APHYRIC ANDESITE AND BASALT ± PYROXENE

EARLY TRIASSIC

- TOURMALINE BRECCIA: QUARTZ-EPIDOTE-CHLORITE-TOURMALINE PYRITE MATRIX WITH XENOLITHS OF FELDSPAR-QUARTZ PORPHYRY, GRANODIORITE AND ANDESITE ROCKS

LATE TRIASSIC

- VEIN SYSTEMS: INCLUDE STOCKWORKS AND CRACKLE VEINS CONTAINING QUARTZ, CHLORITE, CARBONATE AND SULPHIDE

HICKMAN BATHOLITH

- FELDSPAR-QUARTZ PORPHYRY, RELATED TO LATE PHASES OF THE HICKMAN BATHOLITH
- SUITE OF INTRUSIVE ROCKS INCLUDING MONZONITE, QUARTZ MONZONITE AND GRANODIORITE

STUHINI GROUP

- SEDIMENTARY AND VOLCANIC ROCKS: INCLUDES TUFF, LAPILLI TUFF AND BRECCIA
- ANDESITE
- AUGITE PORPHYRY

UPPER CARBONIFEROUS

- FAULT ZONE
- NO RECOVERY
- TRICONED

GW @ 75 m APR'08 — PIEZOMETER COMPLETION ZONE, MEASURED GROUNDWATER

LEVEL AND DATE OF MEASUREMENT

INFERRED OVERBURDEN / BEDROCK CONTACT (BASED ON SEISMIC REFRACTION DATA)

BROKEN ZONE BOUNDARY

4 / 3.1 FIG — **SECTION**
SEISMIC LINE B
SCALE A

NOTES:

1. CROSS SECTION DEVELOPED USING 2 m CONTOUR PROVIDED BY EAGLE MAPPING (MAY 2007).
2. GROUNDWATER LEVELS MAY VARY SEASONALLY. MEASUREMENT ARE FROM GROUND SURFACE, UNLESS OTHERWISE INDICATED.
3. THE STRATA INDICATED REPRESENT THE MAJOR DEPOSIT TYPES/PARTICLE SIZES ENCOUNTERED IN THE DRILL HOLES. THE GRADATION OF THE SOILS IS ANTICIPATED TO VARY. THE CONTACT BETWEEN DEPOSIT TYPES IS APPROXIMATE; THE TRANSITION MAY BE GRADUAL.
4. THE STRATIGRAPHY BETWEEN DRILL HOLES MAY VARY.
5. PIT OUTLINE PROVIDED BY MOOSE MOUNTAIN (MAY 2008).

SCALE A: 60 30 0 100 200 300 m

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DF	KJB

COPPER FOX METALS INC.

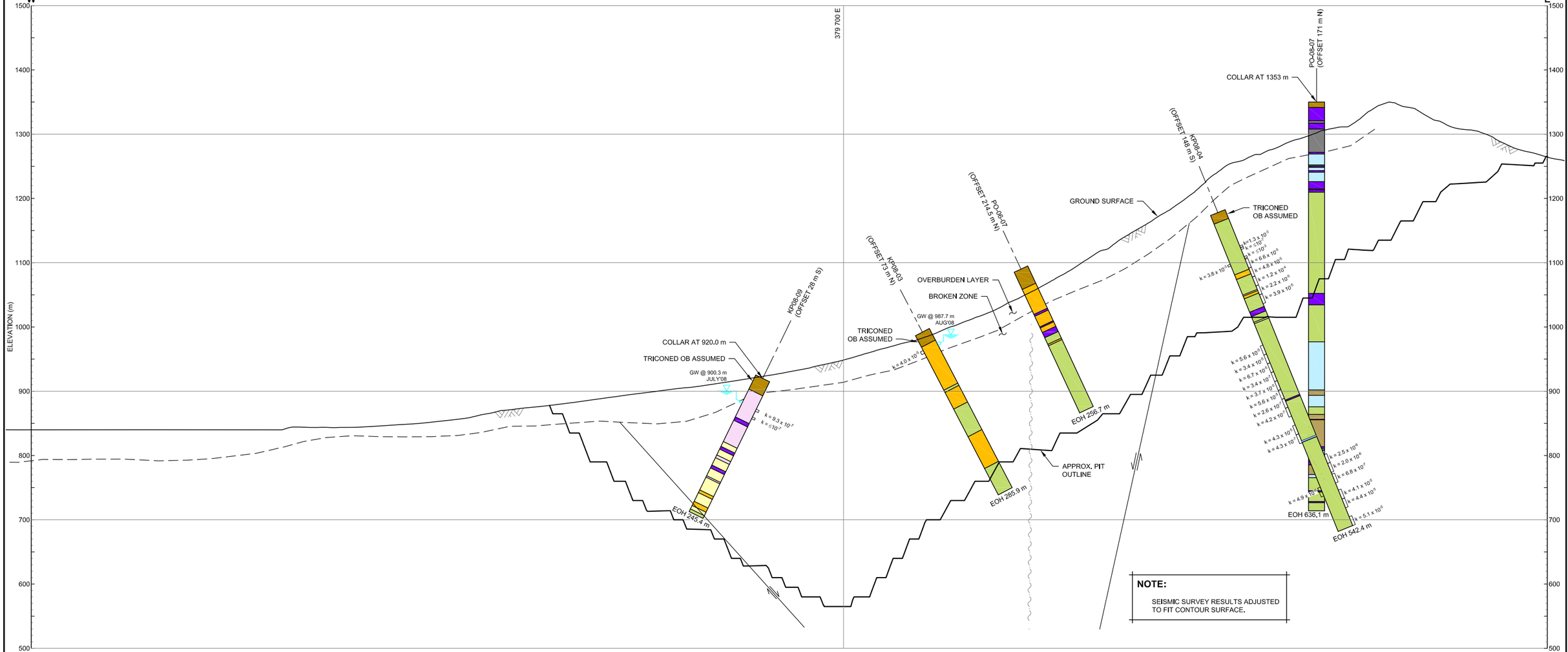
SCHAFT CREEK PROJECT

DEPOSIT AREA CROSS SECTION 4

Knight Piésold CONSULTING

P/A NO. VA101-329/8 | REF NO. 3

FIGURE 4.1 | REV 0



NOTE:

SEISMIC SURVEY RESULTS ADJUSTED TO FIT CONTOUR SURFACE.

LEGEND:

(BASED ON COPPER FOX, OCTOBER 2009)

QUATERNARY
- GLACIAL, LACUSTRINE AND ALLUVIAL DEPOSITS

TERTIARY AND OLDER
- MAFIC AND INTERMEDIATE DYKE: PHYRIC TO APHYRIC ANDESITE AND BASALT ± PYROXENE

EARLY TRIASSIC
- TOURMALINE BRECCIA: QUARTZ-EPIDOTE-CHLORITE-TOURMALINE PYRITE MATRIX WITH XENOLITHS OF FELDSPAR-QUARTZ PORPHYRY, GRANODIORITE AND ANDESITE ROCKS

LATE TRIASSIC
- VEIN SYSTEMS: INCLUDE STOCKWORKS AND CRACKLE VEINS CONTAINING QUARTZ, CHLORITE, CARBONATE AND SULPHIDE

HICKMAN BATHOLITH
- FELDSPAR-QUARTZ PORPHYRY, RELATED TO LATE PHASES OF THE HICKMAN BATHOLITH
- SUITE OF INTRUSIVE ROCKS INCLUDING MONZONITE, QUARTZ MONZONITE AND GRANODIORITE

STUHINI GROUP
- SEDIMENTARY AND VOLCANIC ROCKS: INCLUDES TUFF, LAPILLI TUFF AND BRECCIA
- ANDESITE
- AUGITE PORPHYRY

UPPER CARBONIFEROUS
- FAULT ZONE
- NO RECOVERY
- TRICONED

GW @ 75 m APR'08 — PIEZOMETER COMPLETION ZONE, MEASURED GROUNDWATER

LEVEL AND DATE OF MEASUREMENT

INFERRED OVERBURDEN / BEDROCK CONTACT (BASED ON SEISMIC REFRACTION DATA)

BROKEN ZONE BOUNDARY

5 / 3.1 FIG — **SECTION**
SEISMIC LINE E
SCALE A

NOTES:

1. CROSS SECTION DEVELOPED USING 2 m CONTOUR PROVIDED BY EAGLE MAPPING (MAY 2007).
2. GROUNDWATER LEVELS MAY VARY SEASONALLY. MEASUREMENT ARE FROM GROUND SURFACE, UNLESS OTHERWISE INDICATED.
3. THE STRATA INDICATED REPRESENT THE MAJOR DEPOSIT TYPES/PARTICLE SIZES ENCOUNTERED IN THE DRILL HOLES. THE GRADATION OF THE SOILS IS ANTICIPATED TO VARY. THE CONTACT BETWEEN DEPOSIT TYPES IS APPROXIMATE; THE TRANSITION MAY BE GRADUAL.
4. THE STRATIGRAPHY BETWEEN DRILL HOLES MAY VARY.
5. PIT OUTLINE PROVIDED BY MOOSE MOUNTAIN (MAY 2008).

SCALE A: 60 30 0 100 200 300 m

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

DEPOSIT AREA CROSS SECTION 5

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P/A NO. VA101-329/8 | REF NO. 3 | REV 0

FIGURE 4.2

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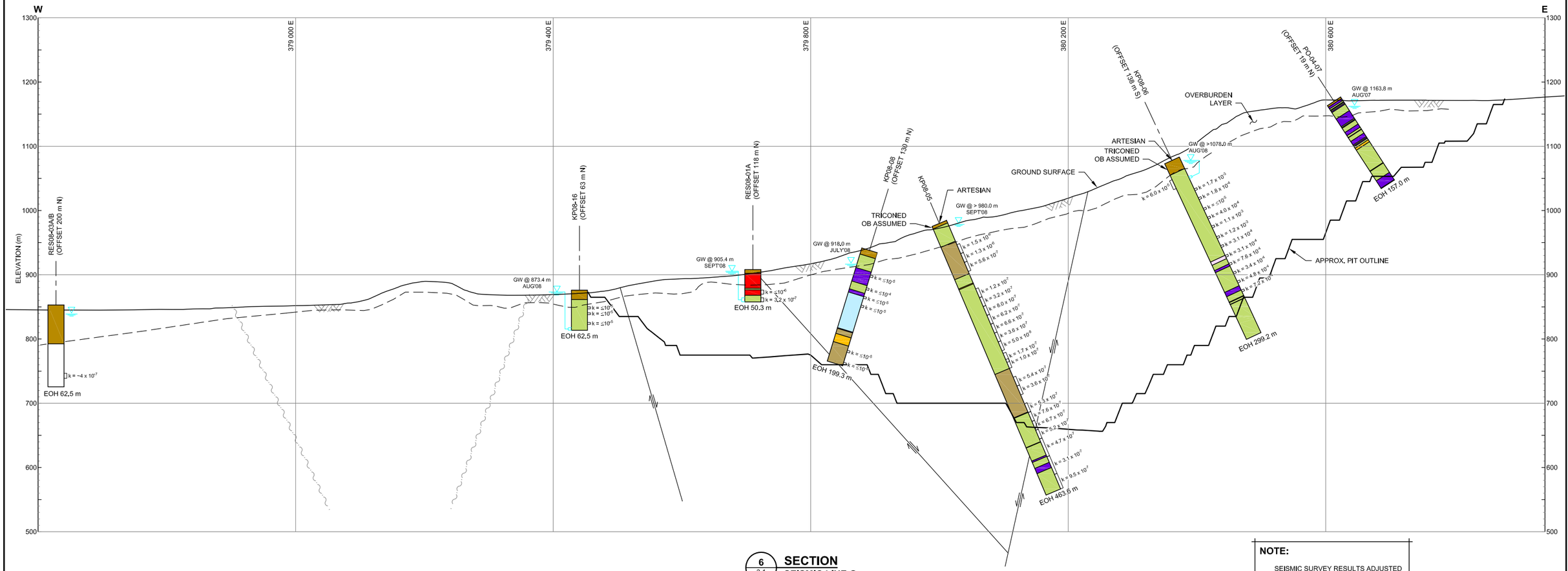

6 / 3.1 FIG **SECTION**
SEISMIC LINE G
SCALE A

NOTE:

SEISMIC SURVEY RESULTS ADJUSTED TO FIT CONTOUR SURFACE.

LEGEND:
(BASED ON COPPER FOX, OCTOBER 2009)

QUATERNARY
- GLACIAL, LACUSTRINE AND ALLUVIAL DEPOSITS

TERTIARY AND OLDER
- MAFIC AND INTERMEDIATE DYKE: PHYRIC TO APHYRIC ANDESITE AND BASALT ± PYROXENE

EARLY TRIASSIC
- TOURMALINE BRECCIA: QUARTZ-EPIDOTE-CHLORITE-TOURMALINE PYRITE MATRIX WITH XENOLITHS OF FELDSPAR-QUARTZ PORPHYRY, GRANODIORITE AND ANDESITE ROCKS

LATE TRIASSIC
- VEIN SYSTEMS: INCLUDE STOCKWORKS AND CRACKLE VEINS CONTAINING QUARTZ, CHLORITE, CARBONATE AND SULPHIDE
- SUITE OF INTRUSIVE ROCKS INCLUDING MONZONITE, QUARTZ MONZONITE AND GRANODIORITE

STUHINI GROUP
- SEDIMENTARY AND VOLCANIC ROCKS: INCLUDES TUFF, LAPILLI TUFF AND BRECCIA
- ANDESITE
- AUGITE PORPHYRY

UPPER CARBONIFEROUS
- FAULT ZONE
- NO RECOVERY
- TRICONED

GW @ 75 m APR'08 — PIEZOMETER COMPLETION ZONE, MEASURED GROUNDWATER

LEVEL AND DATE OF MEASUREMENT

INFERRED OVERBURDEN / BEDROCK CONTACT (BASED ON SEISMIC REFRACTION DATA)

BROKEN ZONE BOUNDARY

NOTES:

1. CROSS SECTION DEVELOPED USING 2 m CONTOUR PROVIDED BY EAGLE MAPPING (MAY 2007).
2. GROUNDWATER LEVELS MAY VARY SEASONALLY. MEASUREMENT ARE FROM GROUND SURFACE, UNLESS OTHERWISE INDICATED.
3. THE STRATA INDICATED REPRESENT THE MAJOR DEPOSIT TYPES/PARTICLE SIZES ENCOUNTERED IN THE DRILL HOLES. THE GRADATION OF THE SOILS IS ANTICIPATED TO VARY. THE CONTACT BETWEEN DEPOSIT TYPES IS APPROXIMATE; THE TRANSITION MAY BE GRADUAL.
4. THE STRATIGRAPHY BETWEEN DRILL HOLES MAY VARY.
5. PIT OUTLINE PROVIDED BY MOOSE MOUNTAIN (MAY 2008).

SCALE A: 60 30 0 100 200 300 m

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

DEPOSIT AREA CROSS SECTION 6

Knight Piésold CONSULTING

P/A NO. VA101-329/8 | REF NO. 3 | REV 0

FIGURE 4.3

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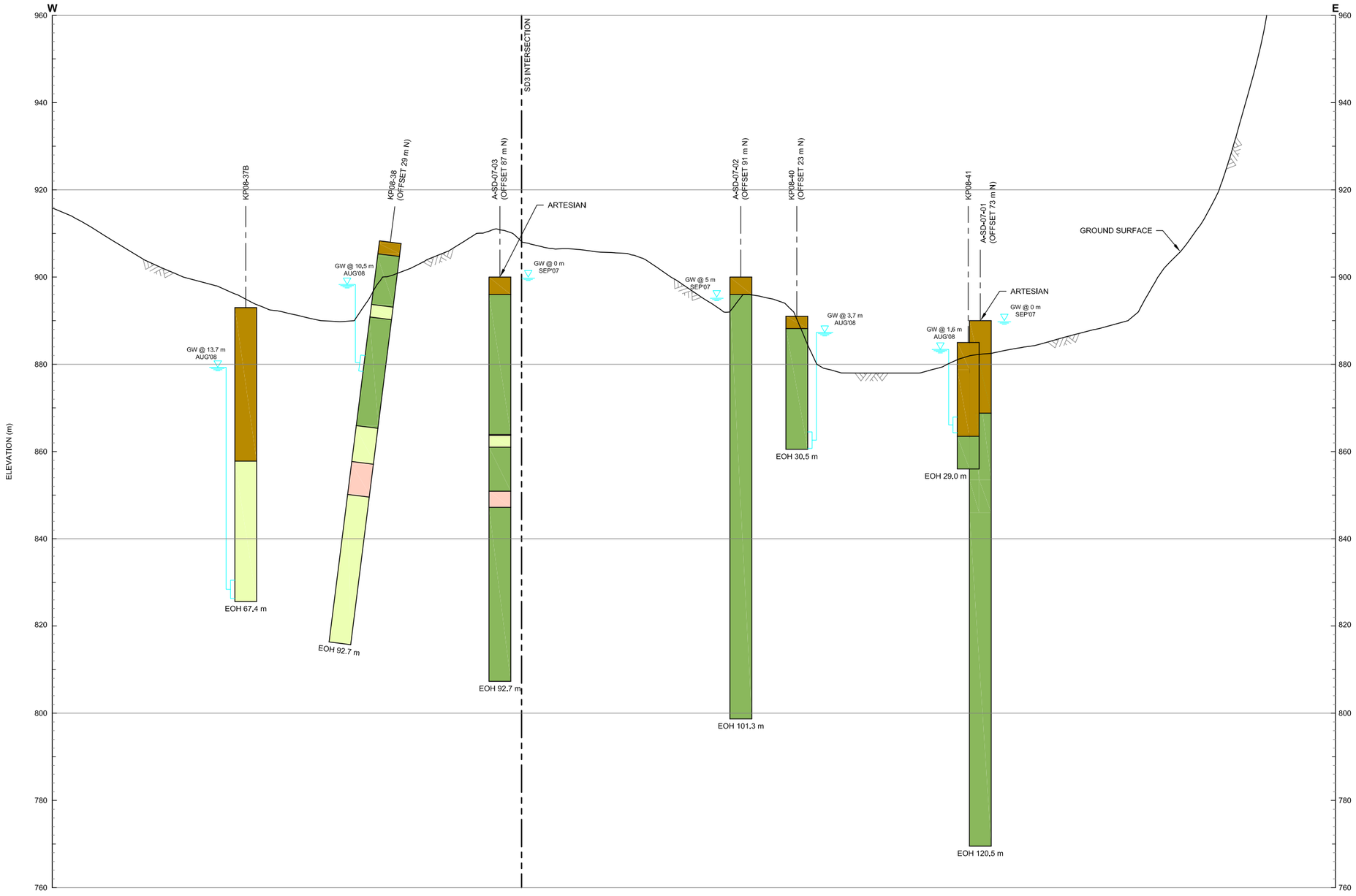

1
3,2
FIG

SECTION
SEISMIC LINE SD1
HORIZONTAL: SCALE A
VERTICAL: SCALE B

LEGEND:
(BASED ON COPPER FOX, OCTOBER 2009)

QUATERNARY
- GLACIAL, LACUSTRINE AND ALLUVIAL DEPOSITS

TERTIARY AND OLDER
- MAFIC AND INTERMEDIATE DYKE: PHYRIC TO APHYRIC ANDESITE AND BASALT ± PYROXENE

EARLY TRIASSIC
- TOURMALINE BRECCIA: QUARTZ-EPIDOTE-CHLORITE-TOURMALINE PYRITE MATRIX WITH XENOLITHS OF FELDSPAR-QUARTZ PORPHYRY, GRANODIORITE AND ANDESITE ROCKS

LATE TRIASSIC
- ULTRAMAFIC ROCKS: DARK GREY PERIDOTITE
- VEIN SYSTEMS: INCLUDE STOCKWORKS AND CRACKLE VEINS CONTAINING QUARTZ, CHLORITE, CARBONATE AND SULPHIDE

HICKMAN BATHOLITH
- FELDSPAR-QUARTZ PORPHYRY, RELATED TO LATE PHASES OF THE HICKMAN BATHOLITH
- DIORITE, OUTER MARGIN OF THE BATHOLITH
- SUITE OF INTRUSIVE ROCKS INCLUDING MONZONITE, QUARTZ MONZONITE AND GRANODIORITE

STUHINI GROUP
- SEDIMENTARY AND VOLCANIC ROCKS: INCLUDES TUFF, LAPILLI TUFF AND BRECCIA
- ANDESITE
- AUGITE PORPHYRY

UPPER CARBONIFEROUS
- LIMESTONE, SILTSTONE, ORTHOQUARTZITE CALCAREOUS SILTSTONE, CALCAREOUS CHERT

- FAULT ZONE
- NO RECOVERY
- TRICONED

GW @ 75 m APR'08 — PIEZOMETER COMPLETION ZONE, MEASURED GROUNDWATER LEVEL AND DATE OF MEASUREMENT

NOTES:

1. CROSS SECTION DEVELOPED USING 2 m CONTOUR PROVIDED BY EAGLE MAPPING (MAY 2007).
2. GROUNDWATER LEVELS MAY VARY SEASONALLY. MEASUREMENT ARE FROM GROUND SURFACE, UNLESS OTHERWISE INDICATED.
3. THE STRATA INDICATED REPRESENT THE MAJOR DEPOSIT TYPES/PARTICLE SIZES ENCOUNTERED IN THE DRILL HOLES. THE GRADATION OF THE SOILS IS ANTICIPATED TO VARY. THE CONTACT BETWEEN DEPOSIT TYPES IS APPROXIMATE; THE TRANSITION MAY BE GRADUAL.
4. THE STRATIGRAPHY BETWEEN DRILL HOLES MAY VARY.

SCALE B: 10 5 0 10 20 30 40 50 m
SCALE A: 50 25 0 50 100 150 200 250 m

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

TAILINGS STORAGE FACILITY AREA
CROSS SECTION 1

Knight Piésold CONSULTING

P/A NO. VA101-329/8 | REF NO. 3

FIGURE 4.4 | REV 0

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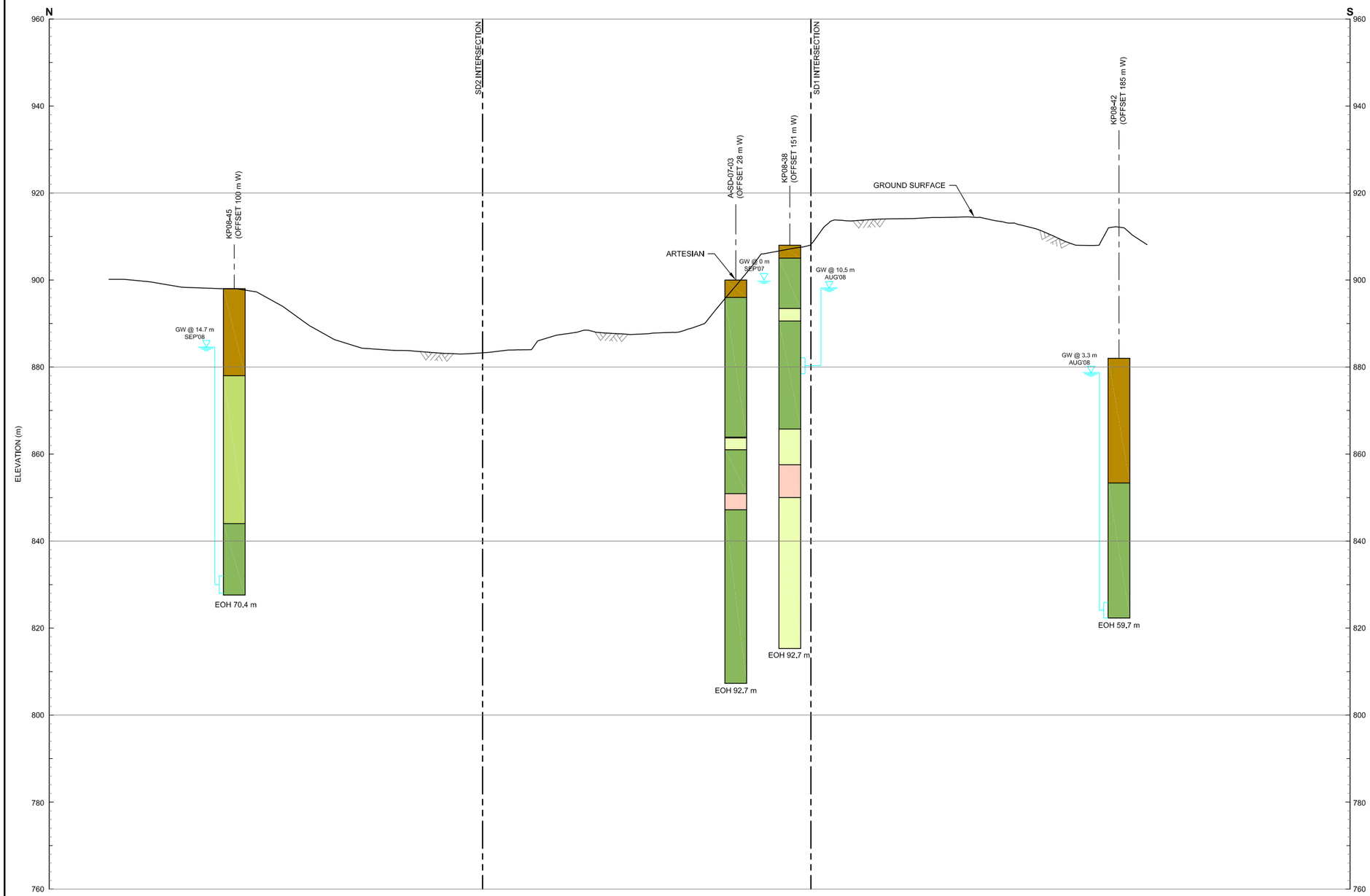

LEGEND:
(BASED ON COPPER FOX, OCTOBER 2009)

QUATERNARY
- GLACIAL, LACUSTRINE AND ALLUVIAL DEPOSITS

TERTIARY AND OLDER
- MAFIC AND INTERMEDIATE DYKE: PHYRIC TO APHYRIC ANDESITE AND BASALT ± PYROXENE

EARLY TRIASSIC
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LATE TRIASSIC
- ULTRAMAFIC ROCKS: DARK GREY PERIDOTITE
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- SUITE OF INTRUSIVE ROCKS INCLUDING MONZONITE, QUARTZ MONZONITE AND GRANODIORITE

STUHINI GROUP
- SEDIMENTARY AND VOLCANIC ROCKS: INCLUDES TUFF, LAPILLI TUFF AND BRECCIA
- ANDESITE
- AUGITE PORPHYRY

UPPER CARBONIFEROUS
- LIMESTONE, SILTSTONE, ORTHOQUARTZITE CALCAREOUS SILTSTONE, CALCAREOUS CHERT

- FAULT ZONE
- NO RECOVERY
- TRICONED

GW @ 75 m
APR'08
PIEZOMETER COMPLETION ZONE, MEASURED GROUNDWATER LEVEL AND DATE OF MEASUREMENT

NOTES:

1. CROSS SECTION DEVELOPED USING 2 m CONTOUR PROVIDED BY EAGLE MAPPING (MAY 2007).
2. GROUNDWATER LEVELS MAY VARY SEASONALLY. MEASUREMENT ARE FROM GROUND SURFACE, UNLESS OTHERWISE INDICATED.
3. THE STRATA INDICATED REPRESENT THE MAJOR DEPOSIT TYPES/PARTICLE SIZES ENCOUNTERED IN THE DRILL HOLES. THE GRADATION OF THE SOILS IS ANTICIPATED TO VARY. THE CONTACT BETWEEN DEPOSIT TYPES IS APPROXIMATE; THE TRANSITION MAY BE GRADUAL.
4. THE STRATIGRAPHY BETWEEN DRILL HOLES MAY VARY.

SCALE B: 10 5 0 10 20 30 40 50 m
SCALE A: 50 25 0 50 100 150 200 250 m

2 / 3.2 FIG **SECTION**
SEISMIC LINE SD3
HORIZONTAL: SCALE A
VERTICAL: SCALE B

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

TAILINGS STORAGE FACILITY AREA
CROSS SECTION 2

Knight Piésold CONSULTING

P/A NO. VA101-329/8 | REF NO. 3

FIGURE 4.5 | REV 0

W

E

ELEVATION (m)

880
860
840
820
800
780
760
740

ND3 INTERSECTION

KP08-28

KP08-27
(OFFSET 33 m N)

KP08-25
(OFFSET 39 m N)

ARTESIAN

GW @ 10.5 m
AUG'08

50
31
44

G=28.5%
S=48.9%
M=14.5%
C=8.1%

G=6.5%
S=48.2%
M=27.9%
C=17.4%

EOH 47.0 m

GROUND SURFACE

ARTESIAN

GW @ 0 m
SEP'08

G=0%, S=7.8%
M=77.3%, C=14.8%

G=29%
S=63.4%
M&C=7.6%

G=11.3%
S=30.5%
M=40.4%
C=17.8%

5
10
24
49

50+

EOH 44,2 m

INFERRED BEDROCK
SURFACE, SEE **NOTE 5.**

29
43
24
42
13
49
27
35
50+
50
29

G=31.1%
S=60.2%
M&C=8.7%

G=33.7%
S=50.6%
M&C=15.7%

G=14.4%, S=26.4%
M=35.2%, C=24%

G=31.2%, S=33.8%
M=18.7%, C=16.2%

GW @ 9.8 m
SEP'08

EOH 59.7 m

LEGEND:

(BASED ON COPPER FOX, OCTOBER 2009)

QUATERNARY

- GLACIAL, LACUSTRINE AND ALLUVIAL DEPOSITS

TERTIARY AND OLDER

- MAFIC AND INTERMEDIATE DYKE: PHYRIC TO APHYRIC ANDESITE AND BASALT ± PYROXENE

EARLY TRIASSIC

- TOURMALINE BRECCIA: QUARTZ-EPIDOTE-CHLORITE-TOURMALINE PYRITE MATRIX WITH XENOLITHS OF FELDSPAR-QUARTZ PORPHYRY, GRANODIORITE AND ANDESITE ROCKS

LATE TRIASSIC

- ULTRAMAFIC ROCKS: DARK GREY PERIDOTITE
- VEIN SYSTEMS: INCLUDE STOCKWORKS AND CRACKLE VEINS CONTAINING QUARTZ, CHLORITE, CARBONATE AND SULPHIDE

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UPPER CARBONIFEROUS

- LIMESTONE, SILTSTONE, ORTHOQUARTZITE CALCAREOUS SILTSTONE, CALCAREOUS CHERT
- FAULT ZONE
- NO RECOVERY
- TRICONED
- CLAY, SILT, ORGANICS } IN QUATERNARY DEPOSITS
- SAND, SAND & GRAVEL
- 50 — SPT N VALUE PROFILE
- k=1,95 x 10⁻⁴ — BOREHOLE PERMEABILITY (cm/s)
- GW @ 75 m APR'08 — PIEZOMETER COMPLETION ZONE, MEASURED GROUNDWATER LEVEL AND DATE OF MEASUREMENT

NOTES:

1. CROSS SECTION DEVELOPED USING 2 m CONTOUR PROVIDED BY EAGLE MAPPING (MAY 2007).
2. GROUNDWATER LEVELS MAY VARY SEASONALLY. MEASUREMENT ARE FROM GROUND SURFACE, UNLESS OTHERWISE INDICATED.
3. THE STRATA INDICATED REPRESENT THE MAJOR DEPOSIT TYPES/PARTICLE SIZES ENCOUNTERED IN THE DRILL HOLES. THE GRADATION OF THE SOILS IS ANTICIPATED TO VARY. THE CONTACT BETWEEN DEPOSIT TYPES IS APPROXIMATE; THE TRANSITION MAY BE GRADUAL.
4. THE STRATIGRAPHY BETWEEN DRILL HOLES MAY VARY.

SCALE B: 6 3 0 10 20 30 m

SCALE A: 30 15 0 50 100 150 m

3
3,2
FIG

SECTION
SEISMIC LINE ND2
HORIZONTAL: SCALE A
VERTICAL: SCALE B

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

TAILINGS STORAGE FACILITY AREA
CROSS SECTION 3

Knight Piésold CONSULTING

P/A NO. VA101-329/8

REF NO. 3

FIGURE 4.6

REV 0

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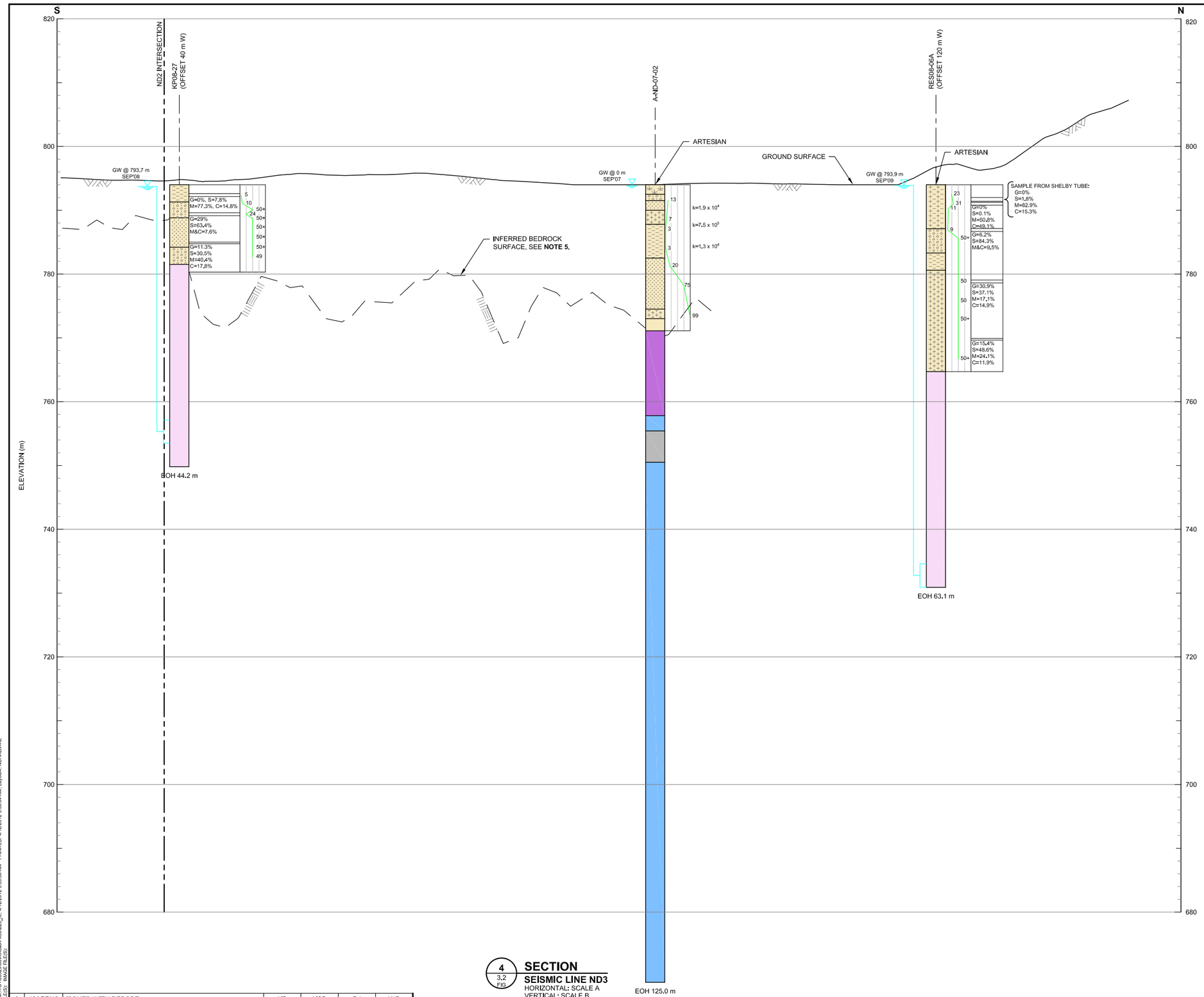

LEGEND:

(BASED ON COPPER FOX, OCTOBER 2009)

QUATERNARY

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- LIMESTONE, SILTSTONE, ORTHOQUARTZITE CALCAREOUS SILTSTONE, CALCAREOUS CHERT

- FAULT ZONE
- NO RECOVERY
- TRICONED
- CLAY, SILT, ORGANICS, SAND, SAND & GRAVEL — IN QUATERNARY DEPOSITS
- 50 — SPT N VALUE PROFILE
- k=1,95 x 10⁴ — BOREHOLE PERMEABILITY (cm/s)
- GW @ 75 m APR'08 — PIEZOMETER COMPLETION ZONE, MEASURED GROUNDWATER LEVEL AND DATE OF MEASUREMENT

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4. THE STRATIGRAPHY BETWEEN DRILL HOLES MAY VARY.

SCALE B: 6 3 0 10 20 30 m

SCALE A: 30 15 0 50 100 150 m

4 / 3.2 FIG — **SECTION**

SEISMIC LINE ND3

HORIZONTAL: SCALE A
VERTICAL: SCALE B

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DJ	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

TAILINGS STORAGE FACILITY AREA
CROSS SECTION 4

Knight Piésold CONSULTING

P/A NO. VA101-329/8 | REF NO. 3

FIGURE 4.7 | REV 0

5 3.2 FIG

SECTION

SEISMIC LINE NWD2
HORIZONTAL: SCALE A
VERTICAL: SCALE B

LEGEND:

(BASED ON COPPER FOX, OCTOBER 2009)

QUATERNARY
- GLACIAL, LACUSTRINE AND ALLUVIAL DEPOSITS

TERTIARY AND OLDER
- MAFIC AND INTERMEDIATE DYKE: PHYRIC TO APHYRIC ANDESITE AND BASALT ± PYROXENE

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- ULTRAMAFIC ROCKS: DARK GREY PERIDOTITE
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HICKMAN BATHOLITH
- FELDSPAR-QUARTZ PORPHYRY, RELATED TO LATE PHASES OF THE HICKMAN BATHOLITH
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STUHINI GROUP
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- ANDESITE
- AUGITE PORPHYRY

UPPER CARBONIFEROUS
- LIMESTONE, SILTSTONE, ORTHOQUARTZITE CALCAREOUS SILTSTONE, CALCAREOUS CHERT

- FAULT ZONE
- NO RECOVERY
- TRICONED

GW @ 75 m APR'08 — PIEZOMETER COMPLETION ZONE, MEASURED GROUNDWATER LEVEL AND DATE OF MEASUREMENT

NOTES:

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4. THE STRATIGRAPHY BETWEEN DRILL HOLES MAY VARY.

SCALE B: 10 5 0 10 20 30 40 50 m
SCALE A: 50 25 0 50 100 150 200 250 m

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

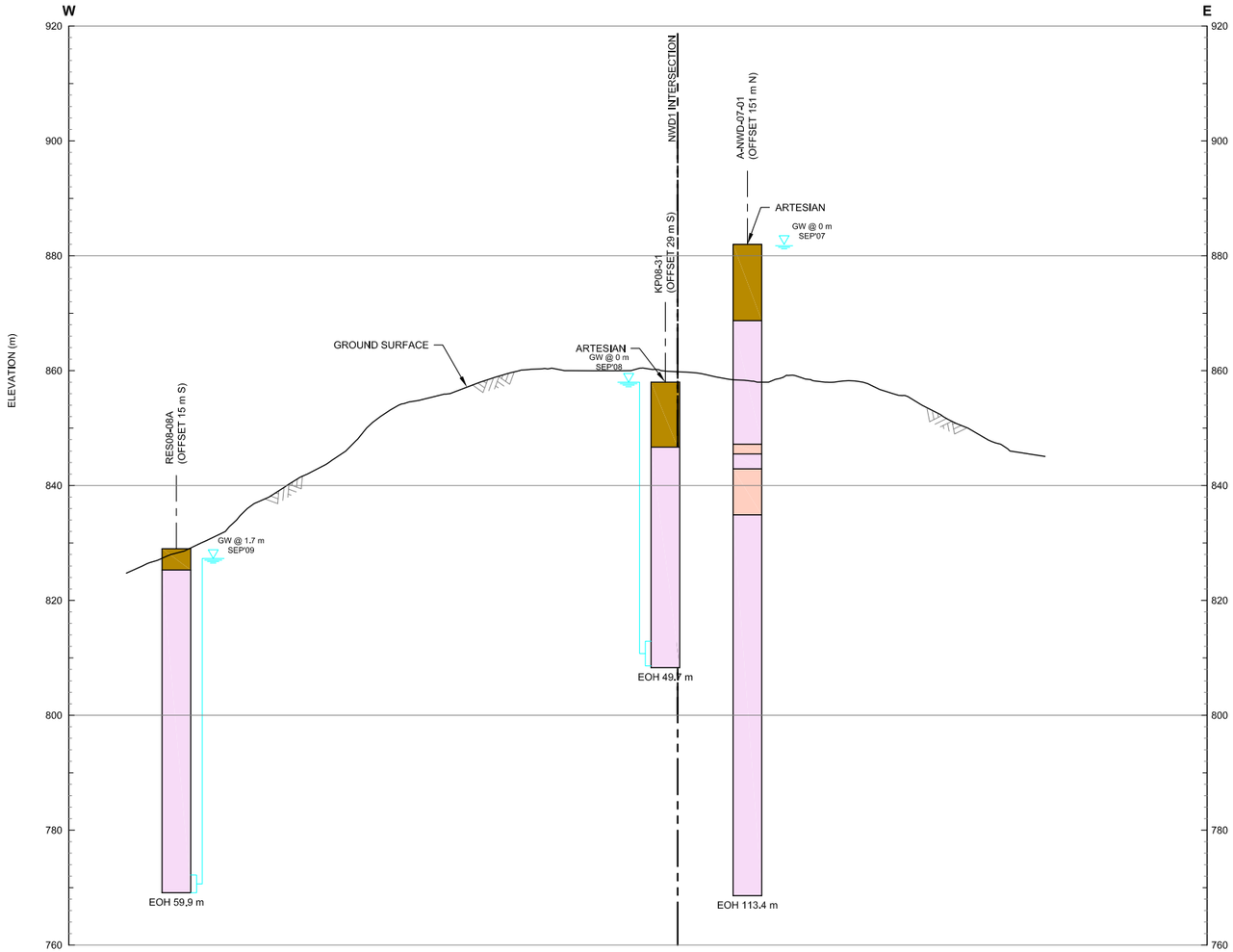
TAILINGS STORAGE FACILITY AREA
CROSS SECTION 5

Knight Piésold CONSULTING

P/A NO.	REF NO.
VA101-329/8	3

FIGURE 4.8 REV 0

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DF	KJB



6 / 3.2 FIG **SECTION**

SEISMIC LINE NWD1

HORIZONTAL: SCALE A
VERTICAL: SCALE B

LEGEND:

(BASED ON COPPER FOX, OCTOBER 2009)

QUATERNARY

- GLACIAL, LACUSTRINE AND ALLUVIAL DEPOSITS

TERTIARY AND OLDER

- MAFIC AND INTERMEDIATE DYKE: PHYRIC TO APHYRIC ANDESITE AND BASALT ± PYROXENE

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STUHINI GROUP

- SEDIMENTARY AND VOLCANIC ROCKS: INCLUDES TUFF, LAPILLI TUFF AND BRECCIA
- ANDESITE
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UPPER CARBONIFEROUS

- LIMESTONE, SILTSTONE, ORTHOQUARTZITE CALCAREOUS SILTSTONE, CALCAREOUS CHERT
- FAULT ZONE
- NO RECOVERY
- TRICONED

GW @ 75 m APR'08 — PIEZOMETER COMPLETION ZONE, MEASURED GROUNDWATER LEVEL AND DATE OF MEASUREMENT

NOTES:

1. CROSS SECTION DEVELOPED USING 2 m CONTOUR PROVIDED BY EAGLE MAPPING (MAY 2007).
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4. THE STRATIGRAPHY BETWEEN DRILL HOLES MAY VARY.

SCALE B: 10 5 0 10 20 30 40 50 m

SCALE A: 50 25 0 50 100 150 200 250 m

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DF	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

TAILINGS STORAGE FACILITY AREA
CROSS SECTION 6

Knight Piésold CONSULTING

P/A NO. VA101-329/8 | REF NO. 3

FIGURE 4.9 | REV 0

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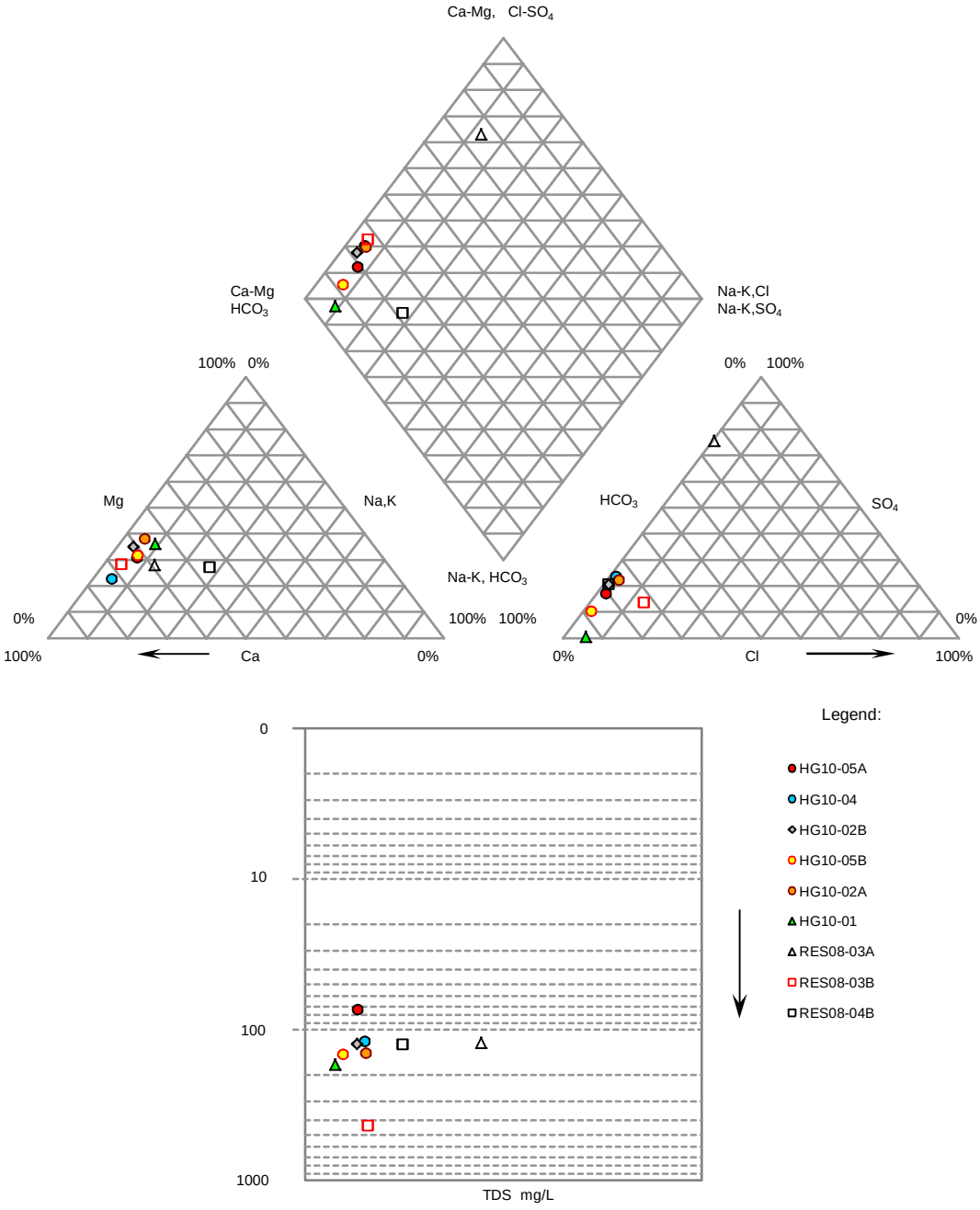


NOTES:

1. PIPER DATA ARE PLOTTED IN %meq/L.
2. DATA USED FOR THESE PLOTS ARE AVERAGE VALUES, BASED ON SAMPLES COLLECTED IN SEPTEMBER AND DECEMBER 2011

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	27FEB'12	ISSUED WITH REPORT	EJH	JEM	KJB

COPPER FOX METALS INC

SCHAFT CREEK MINE PROJECT

SCHAFT CREEK VALLEY PIPER DIAGRAM

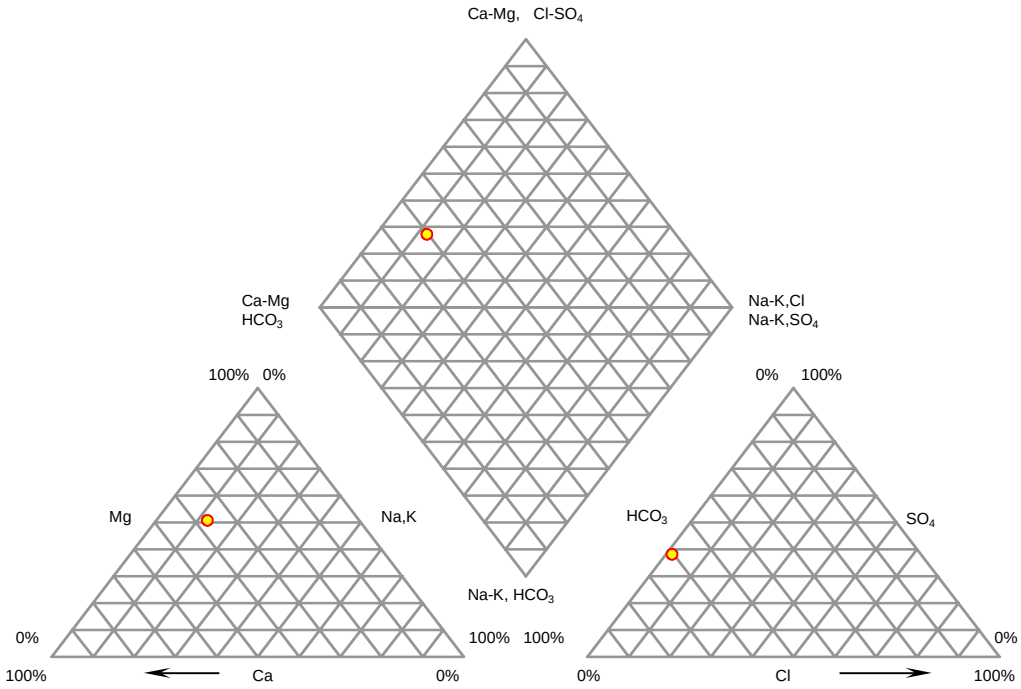
Knight Piésold CONSULTING

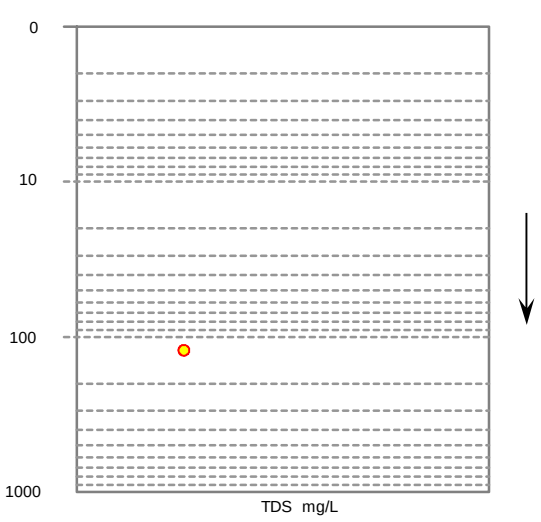
P/A NO. VA101-329/8

REF. NO. 3

FIGURE 5.1

REV 0





Legend:

RES08-02B

NOTES:

1. PIPER DATA ARE PLOTTED IN %meq/L.
2. DATA USED FOR THESE PLOTS ARE AVERAGE VALUES, BASED ON SAMPLES COLLECTED IN SEPTEMBER AND DECEMBER 2011

COOPER FOX METALS INC

SCHAFT CREEK MINE PROJECT

DEPOSIT AND HILLSIDE PIPER DIAGRAM

Knight Piésold CONSULTING

P/A NO. VA101-329/8

REF. NO. 3

FIGURE 5.2

REV 0

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
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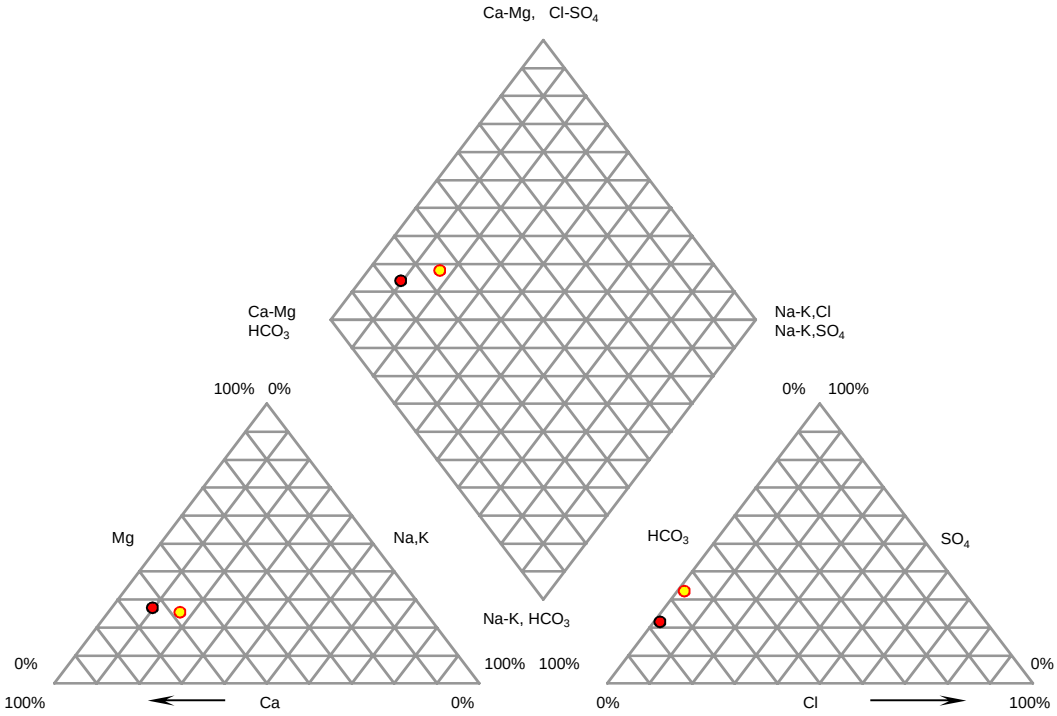
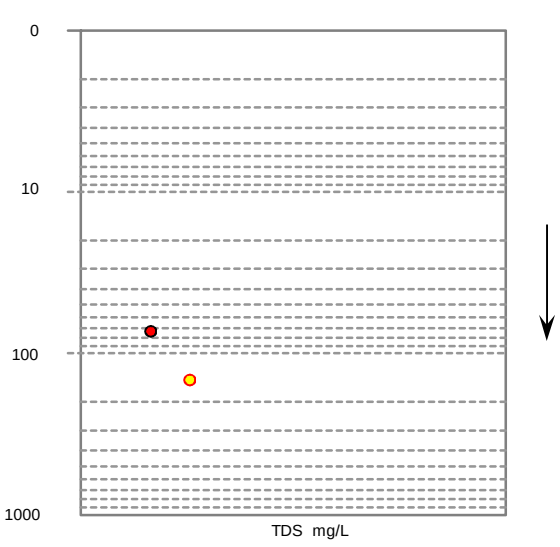




Legend:

- RES08-05B
- RES08-05A

NOTES:

1. PIPER DATA ARE PLOTTED IN %meq/L.
2. DATA USED FOR THESE PLOTS ARE AVERAGE VALUES, BASED ON SAMPLES COLLECTED IN SEPTEMBER AND DECEMBER 2011

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	27FEB'12	ISSUED WITH REPORT	EJH	JEM	KJB

COPPER FOX METALS INC

SCHAFT CREEK MINE PROJECT

SADDLE AREA PIPER DIAGRAM

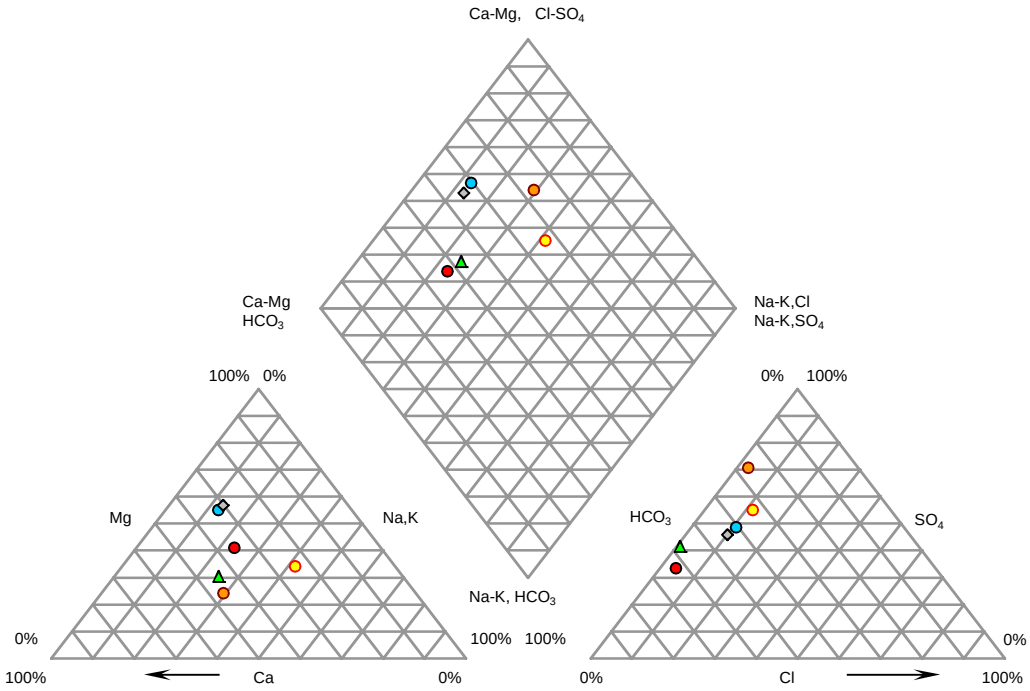
Knight Piésold CONSULTING

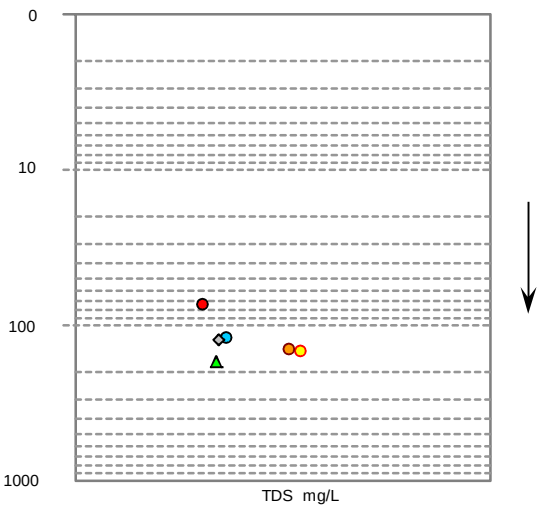
P/A NO. VA101-329/8

REF. NO. 3

FIGURE 5.3

REV 0





Legend:

- RES08-06B
- RES08-07A
- RES08-07B
- RES08-06A
- RES08-08A
- RES08-08B

NOTES:

1. PIPER DATA ARE PLOTTED IN %meq/L.
2. DATA USED FOR THESE PLOTS ARE AVERAGE VALUES, BASED ON SAMPLES COLLECTED IN SEPTEMBER AND DECEMBER 2011

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	27FEB'12	ISSUED WITH REPORT	EJH	JEM	KJB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

SKEETER CREEK VALLEY PIPER DIAGRAM

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P/A NO. VA101-329/8

REF. NO. 3

FIGURE 5.4

REV 0

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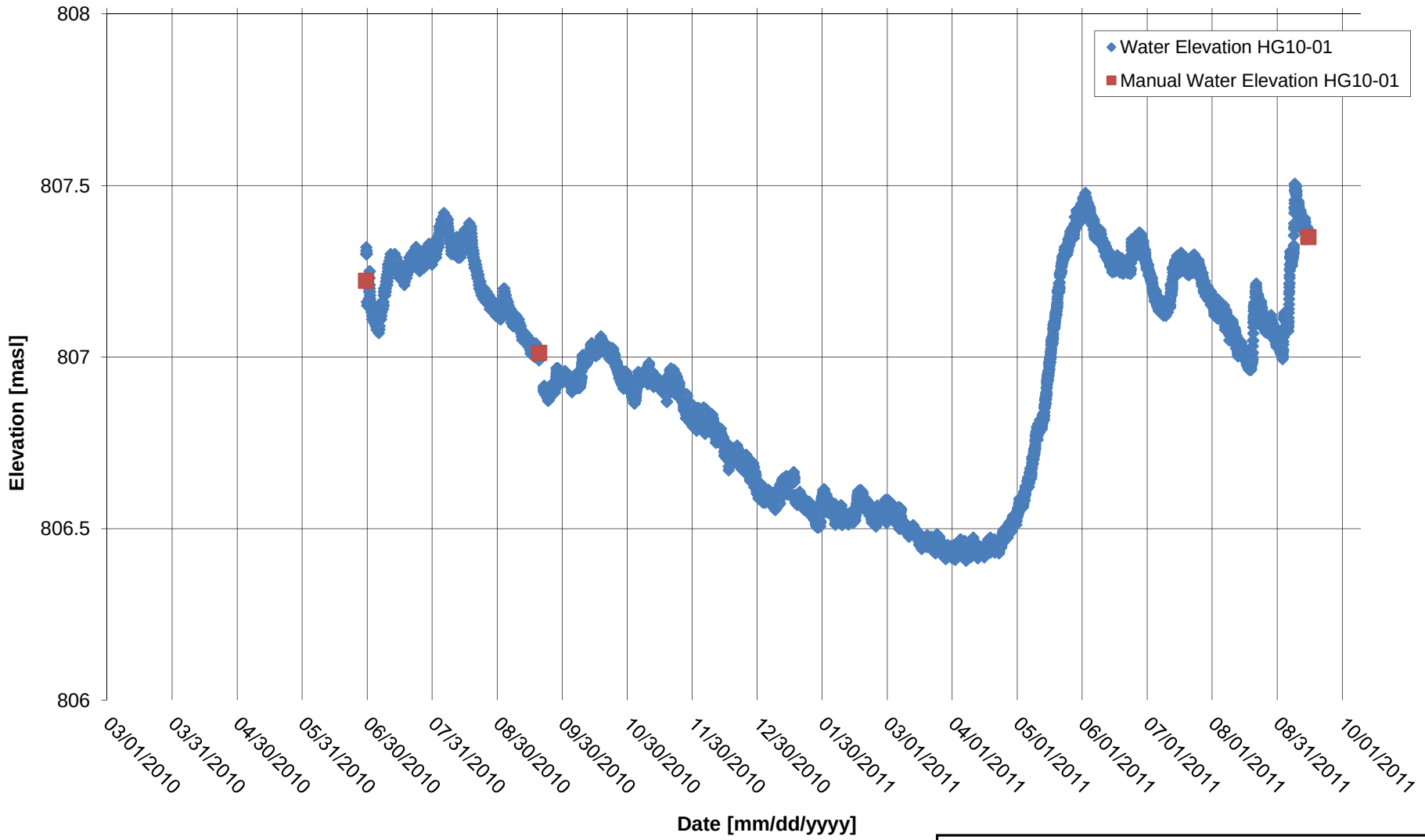
APPENDIX A

WATER LEVEL PLOTS

(Pages A-1 to A-12)



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 807 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. COMPLETION ZONE IS 24.38 TO 28.35 mbgs AND IS IN ALLUVIUM.
3. ARTESIAN CONDITIONS EXIST.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	06FEB'12	ISSUED WITH REPORT - VA101-329/8-3	ALL	CS	KJB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

HG10-01
WATER ELEVATION [masl]

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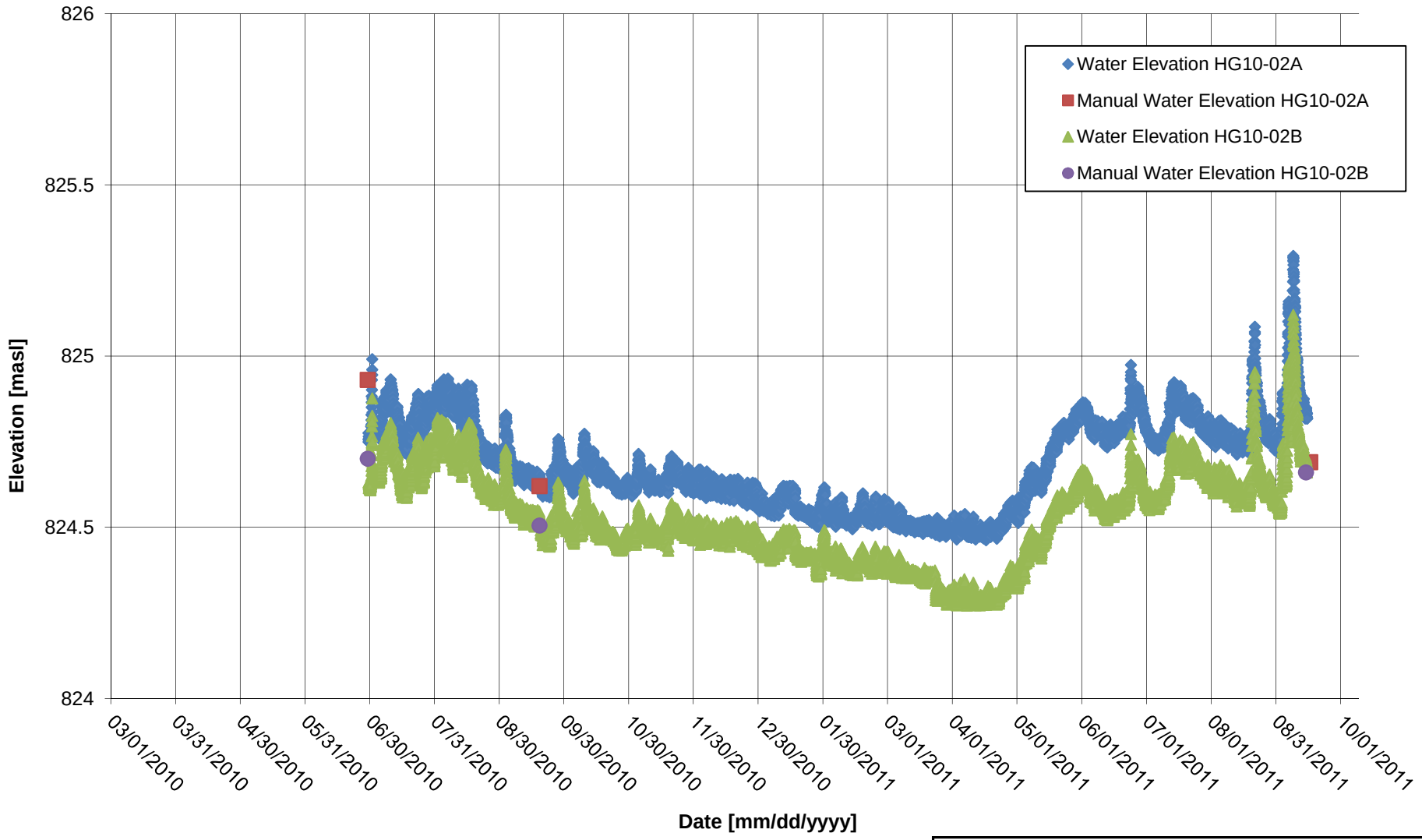
P/A NO. VA101-329/8

REF. NO. 3

FIGURE A.1

REV 0



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 825 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. HG10-02A COMPLETION ZONE IS 24.08 TO 29.26 mbgs.
3. HG10-02B COMPLETION ZONE IS 10.82 TO 16.76 mbgs.
4. BOTH COMPLETION ZONES ARE IN ALLUVIUM.

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

HG10-02A and HG10-02B
WATER ELEVATION [masl]

Knight Piésold CONSULTING

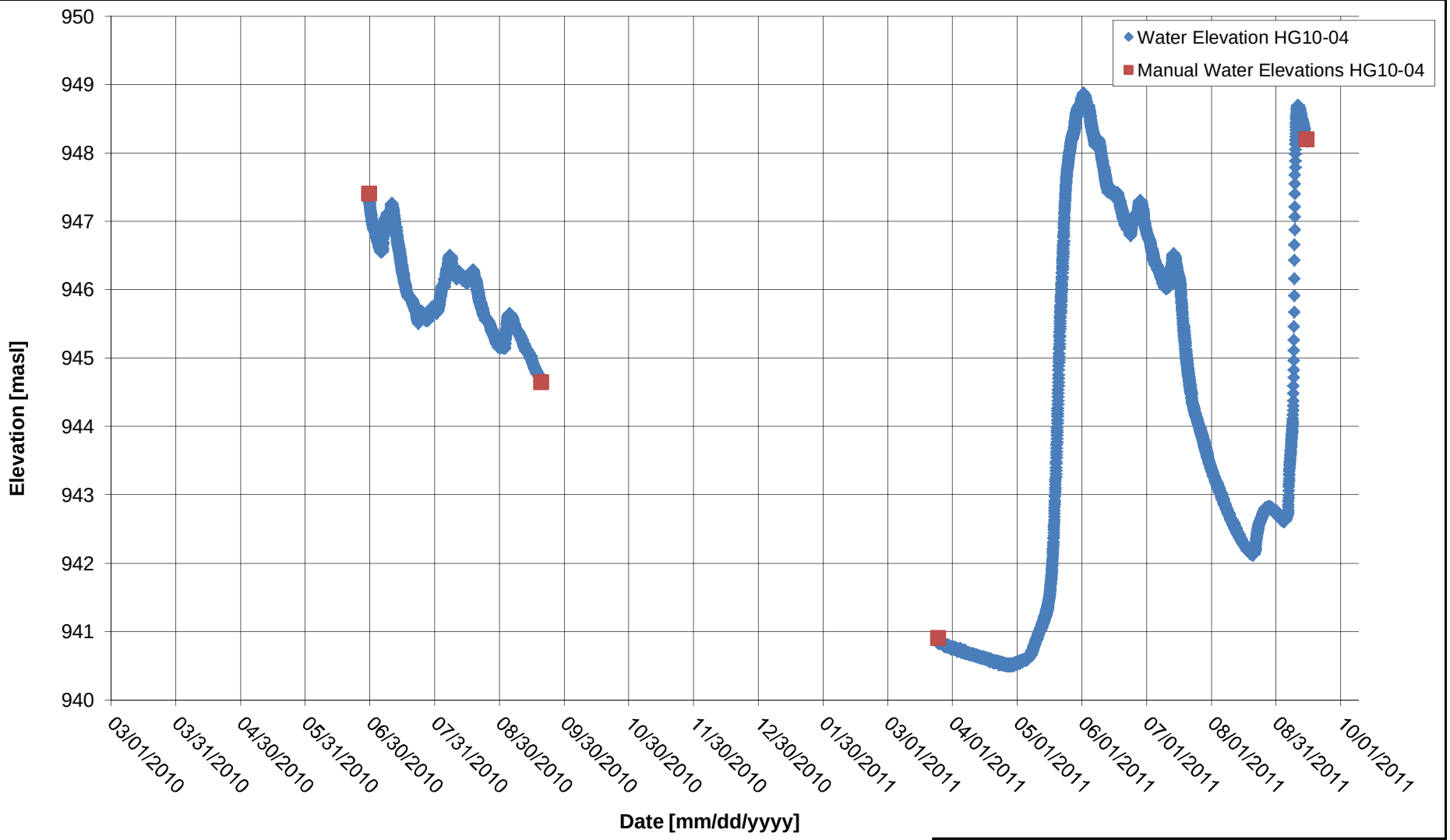
P/A NO. VA101-329/8

REF. NO. 3

FIGURE A.2

REV 0

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	1FEB'12	ISSUED WITH REPORT - VA101-329/8-3	ALL	CS	KJB



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 949 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. COMPLETION ZONE IN ALLUVIUM BETWEEN 18.59 AND 23.77 mbgs.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	1FEB'12	ISSUED WITH REPORT - VA101-329/8-3	ALL	CS	KJB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

HG10-04
WATER ELEVATION [masl]

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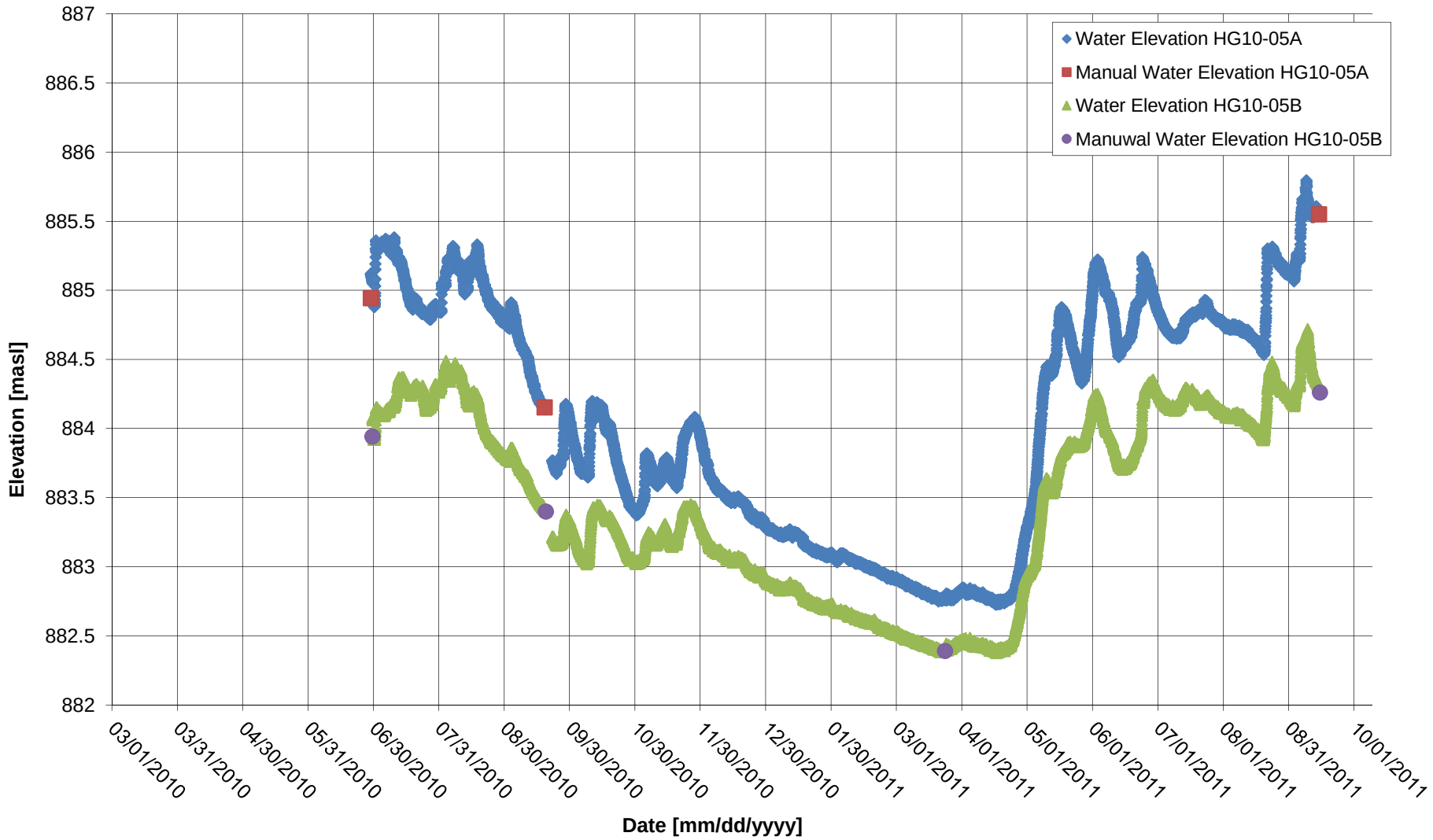
P/A NO. VA101-329/8

REF. NO. 3

FIGURE A.3

REV 0



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 887 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. HG10-05A COMPLETION ZONE BETWEEN 8.53 AND 17.68 mbgs.
3. HG10-05B COMPLETION ZONE BETWEEN 37.18 AND 42.97 mbgs.
4. BOTH COMPLETION ZONES ARE IN ALLUVIUM.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	1FEB'12	ISSUED WITH REPORT - VA101-329/8-3	ALL	CS	KJB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

HG10-05A and HG10-05B
WATER ELEVATION [masl]

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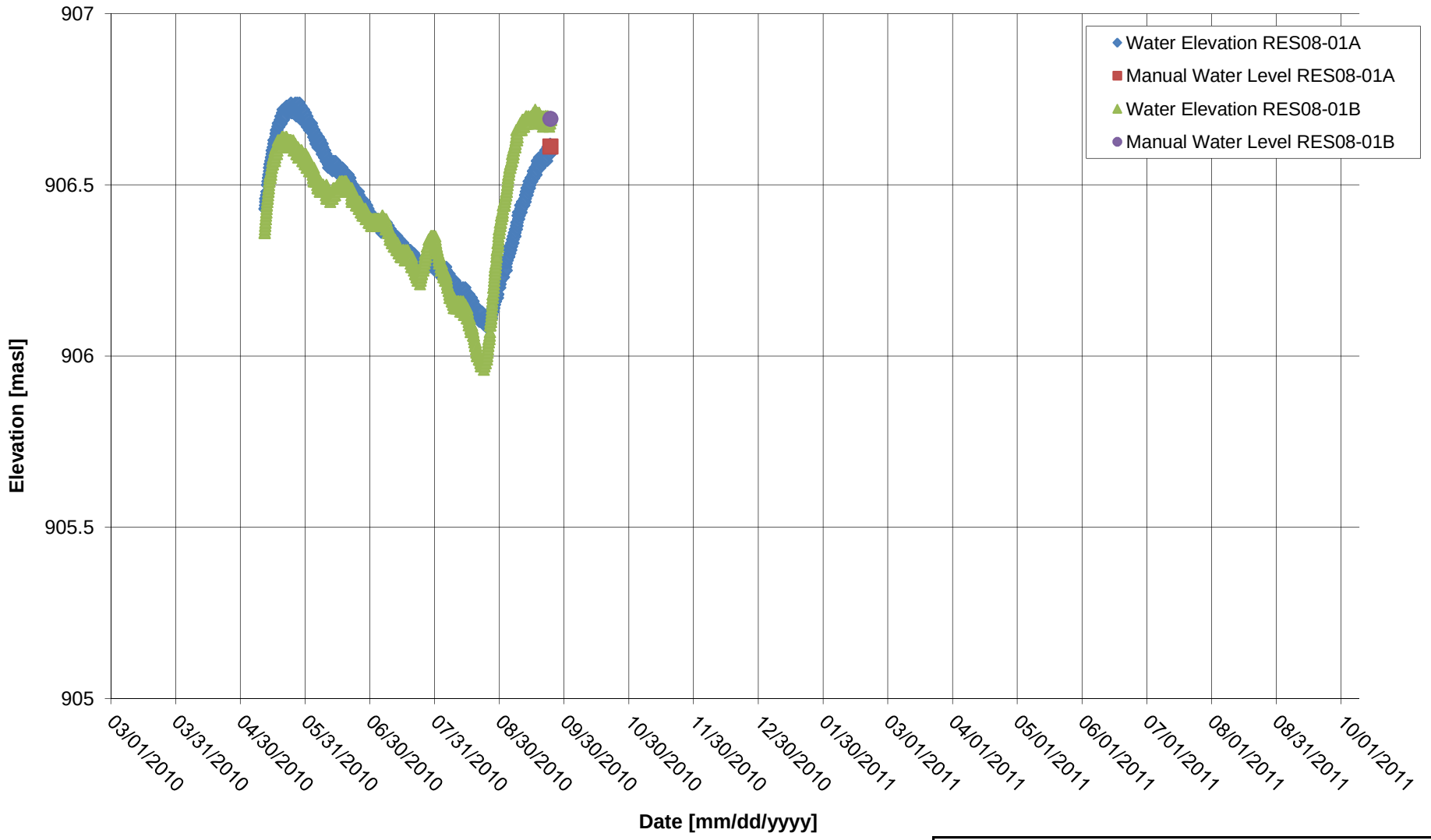
P/A NO. VA101-329/8

REF. NO. 3

FIGURE A.4

REV 0



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 908 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-01A COMPLETION ZONE BETWEEN 43.9 AND 50.0 mbgs.
3. RES08-01B COMPLETION ZONE BETWEEN 9.1 AND 15.2 mbgs.
4. BOTH COMPLETION ZONES ARE IN ANDESITE.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	1FEB'12	ISSUED WITH REPORT - VA101-329/8-3	ALL	CS	KJB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-01A and RES08-01B
WATER ELEVATION [masl]

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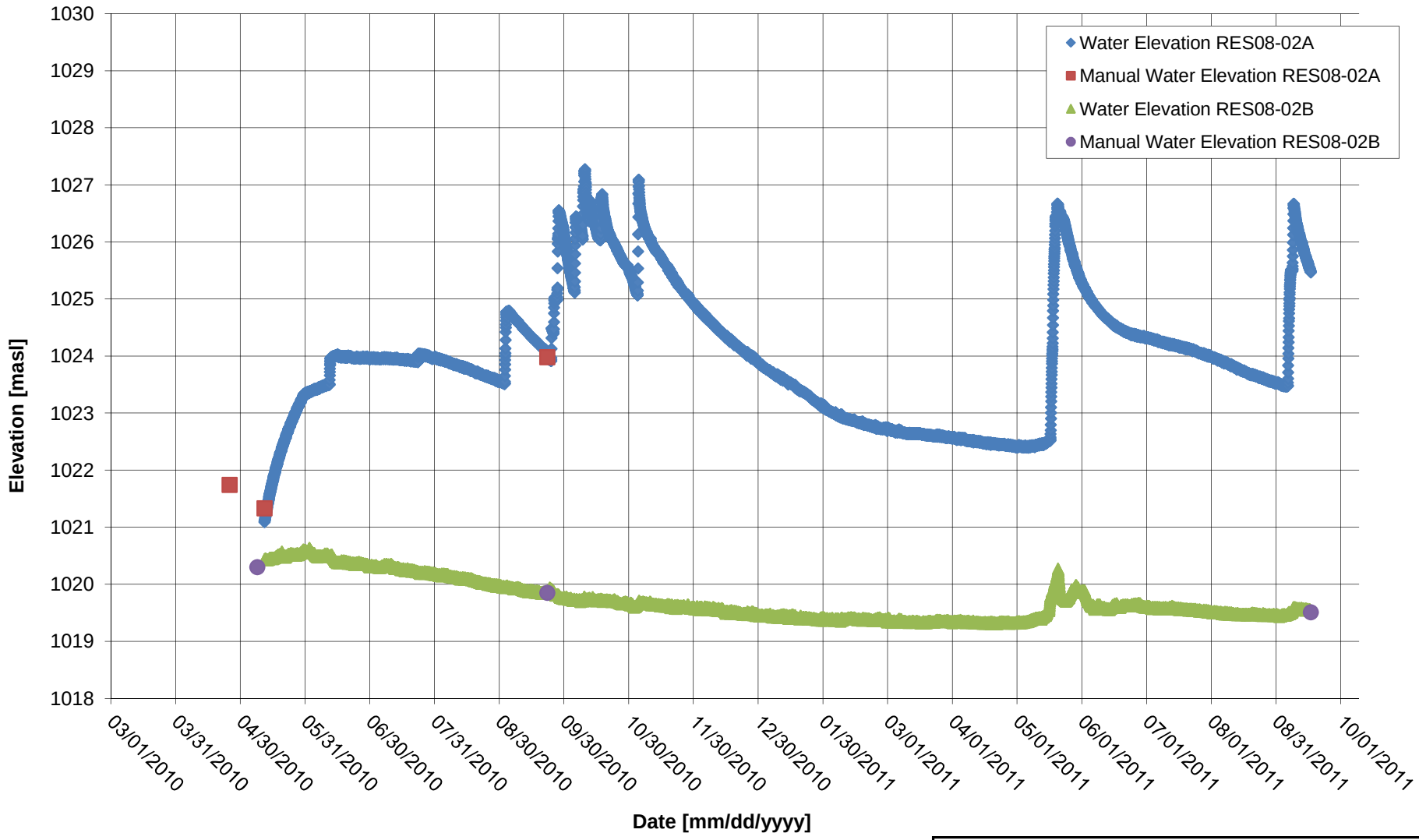
P/A NO. VA101-329/8

REF. NO. 3

FIGURE A.5

REV 0



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 1028 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-02A COMPLETION ZONE IN FELDSPAR QUARTZ PORPHYRY BETWEEN 51.8 AND 60.0 mbgs.
3. RES08-02B COMPLETION ZONE IN OVERBURDEN BETWEEN 23.8 AND 28.0 mbgs.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	1FEB'12	ISSUED WITH REPORT - VA101-329/8-3	ALL	CS	KJB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-02A and RES08-02B
WATER ELEVATION [masl]

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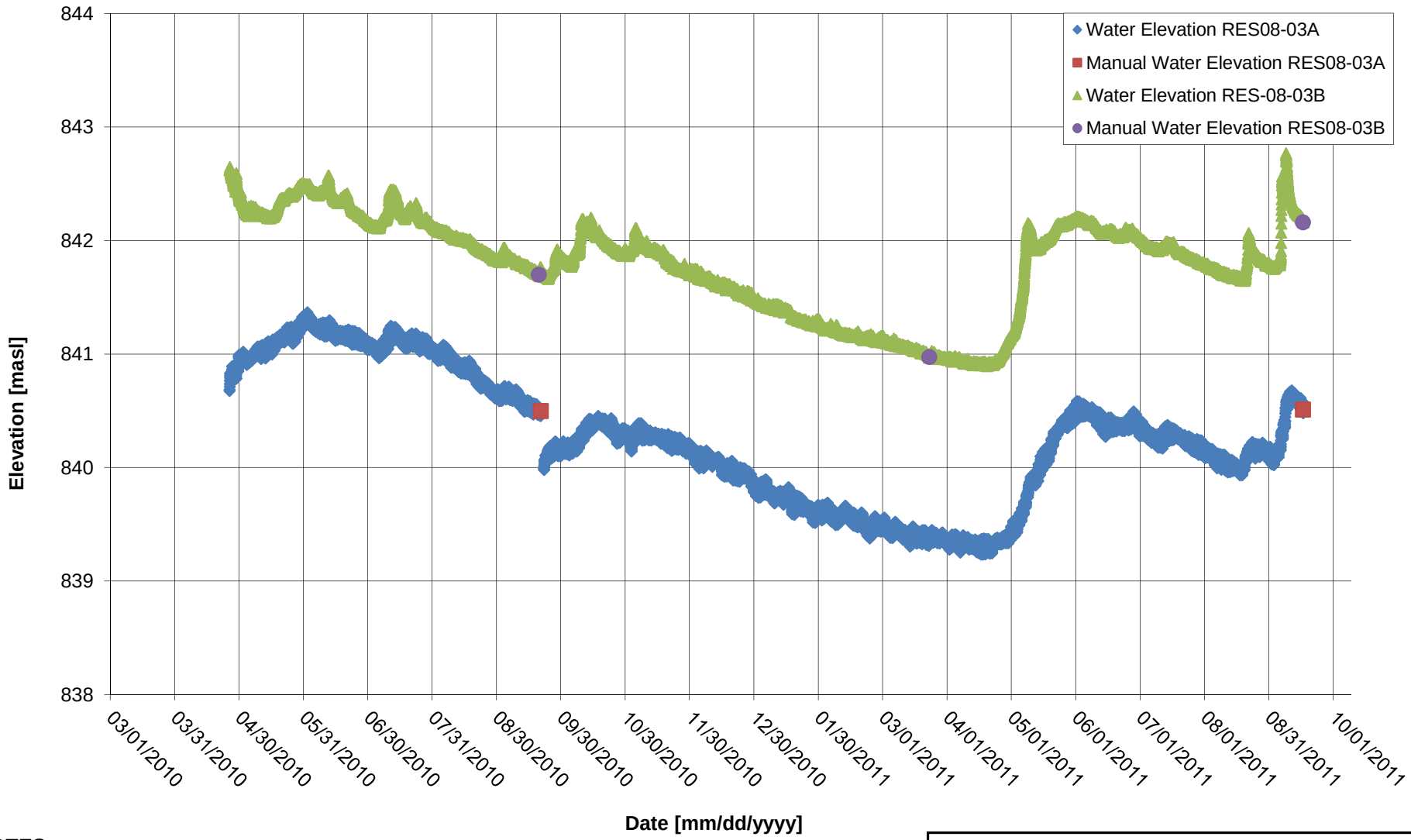
P/A NO. VA101-329/8

REF. NO. 3

FIGURE A.6

REV 0



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 843 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-03A COMPLETION ZONE IS IN GRANODIORITE BETWEEN 106.4 AND 117.3 mbgs.
3. RES08-03B COMPLETION ZONE IS IN OVERBURDEN BETWEEN 7.3 AND 10.7 mbgs.

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-03A and RES08-03B
WATER ELEVATION [masl]

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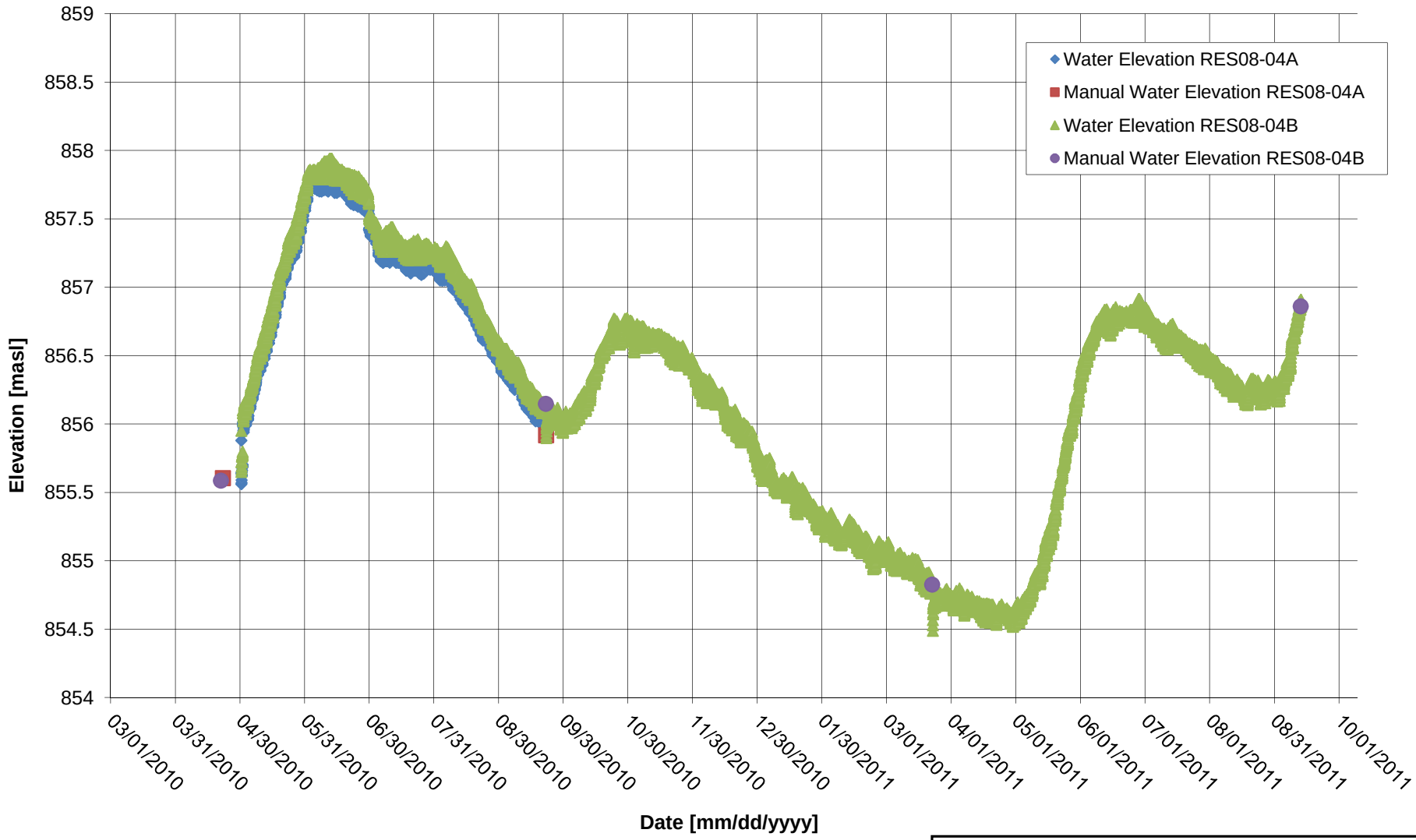
P/A NO. VA101-329/8

REF. NO. 3

FIGURE A.7

REV 0

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	1FEB'12	ISSUED WITH REPORT - VA101-329/8-3	ALL	CS	KJB



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 865 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-04A COMPLETION ZONE IS IN GRANODIORITE BETWEEN 86.3 AND 99.4 mbgs. RES08-04B COMPLETION ZONE IS IN GRANODIORITE BETWEEN 48.2 AND 53.3 mbgs.

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-04A and RES08-04B
WATER ELEVATION [masl]

Knight Piésold CONSULTING

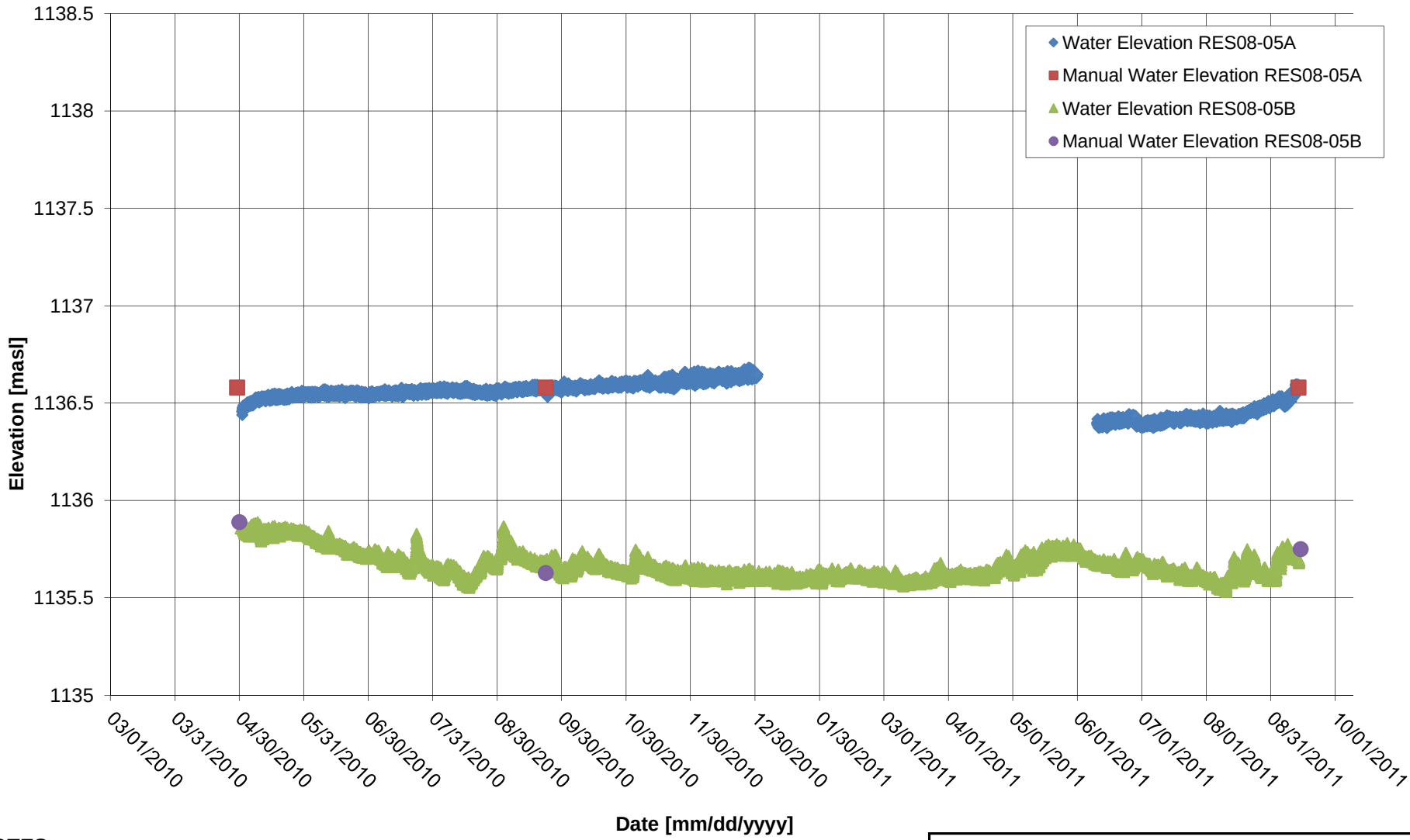
P/A NO. VA101-329/8

REF. NO. 3

FIGURE A.8

REV 0

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	1FEB'12	ISSUED WITH REPORT - VA101-329/8-3	ALL	CS	KJB



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 1136 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-05A COMPLETION ZONE IS IN ANDESITE BETWEEN 21.4 AND 27.4 mbgs.
3. RES08-05B COMPLETION ZONE IS IN OVERBURDEN BETWEEN 6.4 AND 10.4 mbgs.
4. ARTESIAN CONDITIONS OBSERVED IN RES08-05A.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	1FEB'12	ISSUED WITH REPORT - VA101-329/8-3	ALL	CS	KJB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-05A and RES08-05B
WATER ELEVATION [masl]

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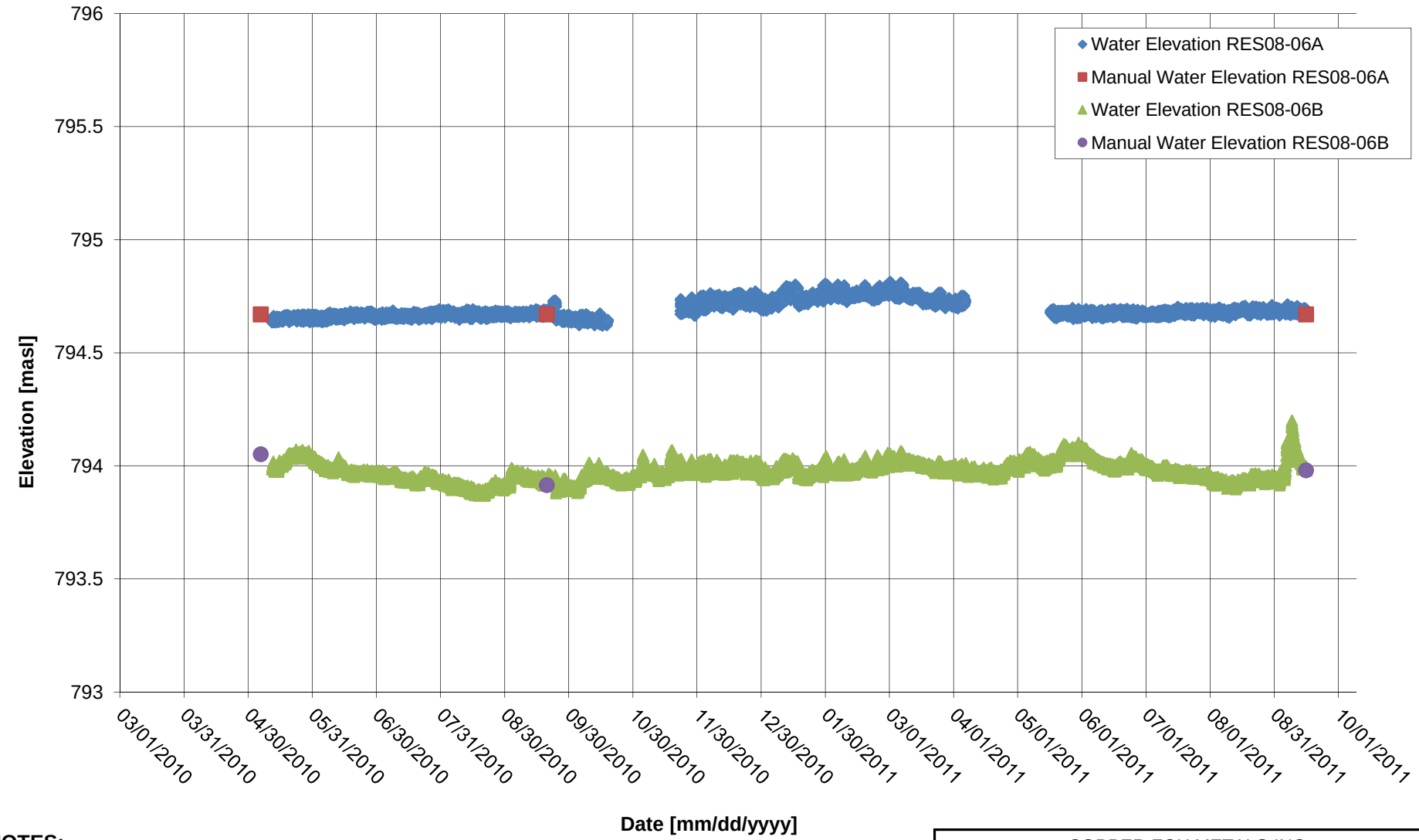
P/A NO. VA101-329/8

REF. NO. 3

FIGURE A.9

REV 0



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 794 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-06A COMPLETION ZONE IS IN GRANODIORITE BETWEEN 59.4 AND 63.1 mbgs.
3. RES08-06B COMPLETION ZONE IS IN OVERBURDEN BETWEEN 11.6 AND 15.2 mbgs.
4. ARTESIAN CONDITIONS EXIST IN RES08-06A.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	1FEB'12	ISSUED WITH REPORT - VA101-329/8-3	ALL	CS	KJB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-06A and RES08-06B
WATER ELEVATION [masl]

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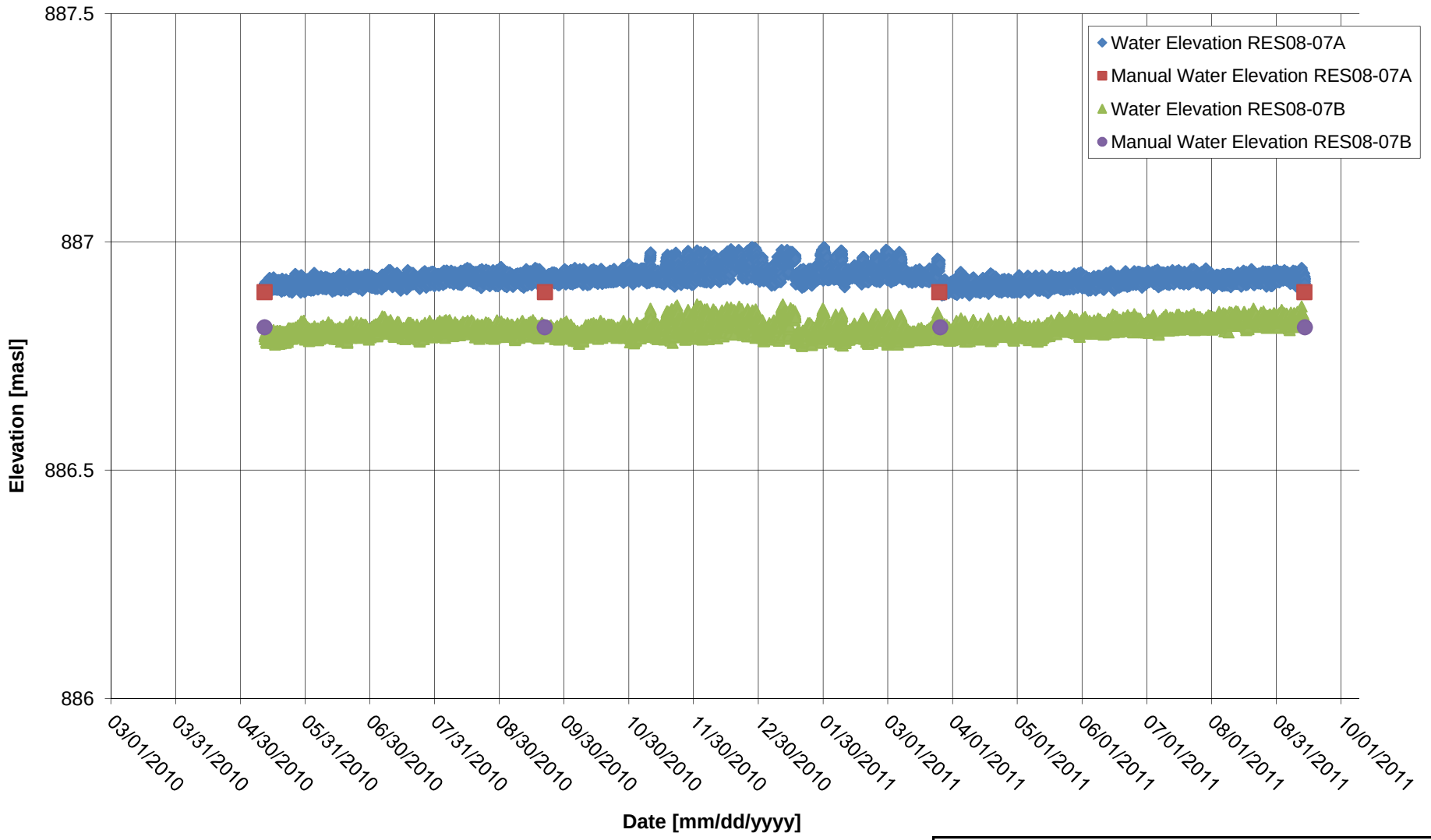
P/A NO. VA101-329/8

REF. NO. 3

FIGURE A.10

REV 0



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 886 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-07A COMPLETION ZONE IS IN LIMESTONE BETWEEN 36.3 AND 39.9 mbgs.
3. RES08-07B COMPLETION ZONE IS IN OVERBURDEN BETWEEN 4.5 AND 9.1 mbgs.
4. ARTESIAN CONDITIONS EXIST IN BOTH RES08-07A AND RES08-07B.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	1FEB'12	ISSUED WITH REPORT - VA101-329/8-3	ALL	CS	KJB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-07A and RES08-07B
WATER ELEVATION [masl]

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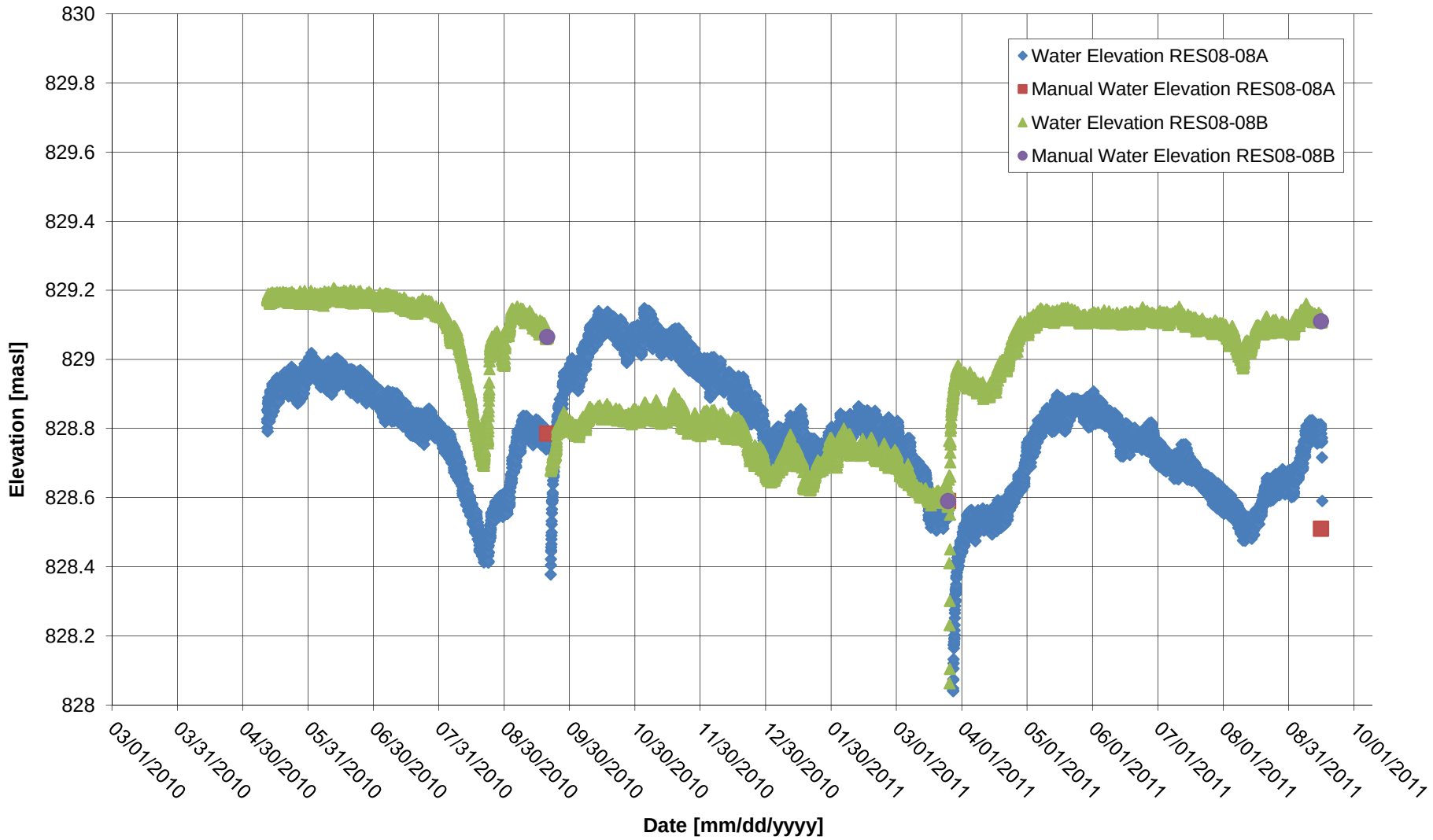
P/A NO. VA101-329/8

REF. NO. 3

FIGURE A.11

REV 0



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 829 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-08A COMPLETION ZONE IS IN GRANODIORITE BETWEEN 56.8 AND 59.9 mbgs.
3. RES08-08B COMPLETION ZONE IS IN GRANODIORITE BETWEEN 4.5 AND 9.8 mbgs.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	1FEB'12	ISSUED WITH REPORT - VA101-329/8-3	ALL	CS	KJB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-08A and RES08-08B
WATER ELEVATION [masl]

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P/A NO. VA101-329/8

REF. NO. 3

FIGURE A.12

REV 0

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APPENDIX B

GROUNDWATER QUALITY DATA

Appendix B1 Analytical Data and Guideline Exceedances
Appendix B2 Quality Assurance/Quality Control

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APPENDIX B1

ANALYITICAL DATA AND GUIDELINE EXCEEDANCES

(Pages B1-1 to B1-5)

SCHAFT CREEK MINE PROJECT
TABLE B1.1 - GUIDELINES

Site ID Date/Time Sampled	BCWQG-MAXIMUM [3]	CEQG-PAL [4]
Physical Tests		
pH	6.5 to 9	6.5 to 9
Dissolved Anions		
Chloride (Dissolved)	600	640
Fluoride (Dissolved)	0.4 to 0.01(-51.73+92.57(Log(H))) [12]	
Sulphate (Dissolved)	100	
Nutrients		
Ammonia (Total as N)	0.681 to 28.7 [13,14]	0.017 to 192 [13,14]
Nitrate (as N)	31.3	13
Nitrite (as N)	0.06 to 0.6 [15]	0.06
Cyanide		
Cyanide (Free)		0.005
Cyanide (WAD)	0.01	
Dissolved Metals		
Aluminum (Dissolved)	0.1 to $e^{(1.209-2.426*[pH]+0.286*[pH]\ ^{(2)})}$ [13]	0.005 to 0.1 [13]
Antimony (Dissolved)	0.02	
Arsenic (Dissolved)	0.005	0.005
Barium (Dissolved)	5	
Beryllium (Dissolved)	0.0053	
Boron (Dissolved)	1.2	
Cadmium (Dissolved)	$10^{(0.86*(log(H)-3.2)}$ /1000 [12]	0.000055 to $10^{(0.86*(log(H)-3.2)}$/1000 [12]
Chromium (Dissolved)	0.0089	0.0089
Cobalt (Dissolved)	0.11	
Copper (Dissolved)	(0.094*H+2)/1000 [12]	0.002 to 0.004 [12]
Iron (Dissolved)	0.35	0.3
Lead (Dissolved)	0.003 to $e^{(1.273*ln(H)-1.460)}$/1000 [12]	0.001 to 0.007 [12]
Manganese (Dissolved)	(0.01102*H)+0.54 [12]	
Mercury (Dissolved)		0.000026
Molybdenum (Dissolved)	2	0.073
Nickel (Dissolved)	0.025 to 0.150 [12]	0.025 to 0.15 [12]
Selenium (Dissolved)		0.001
Silver (Dissolved)	0.0001 to 0.003 [12]	0.0001
Thallium (Dissolved)	0.0003	0.0008
Uranium (Dissolved)	0.3	0.015
Vanadium (Dissolved)	0.006	
Zinc (Dissolved)	(33+0.75*(H-90))/1000 to 0.033 [12]	0.03
Total Metals		
Aluminum (Total)		0.005 to 0.1 [13]
Antimony (Total)	0.02	
Arsenic (Total)	0.005	0.005
Barium (Total)	5	
Beryllium (Total)	0.0053	
Boron (Total)	1.2	
Cadmium (Total)	$10^{(0.86*(log(H)-3.2)}$ /1000 [12]	0.000055 to $10^{(0.86*(log(H)-3.2)}$/1000 [12]
Chromium (Total)	0.0089	0.0089
Cobalt (Total)	0.11	
Copper (Total)	(0.094*H+2)/1000 [12]	0.002 to 0.004 [12]
Iron (Total)	1	0.3
Lead (Total)	0.003 to $e^{(1.273*ln(H)-1.460)}$/1000 [12]	0.001 to 0.007 [12]
Manganese (Total)	(0.01102*H)+0.54 [12]	
Mercury (Total)		0.000026
Molybdenum (Total)	2	0.073
Nickel (Total)	0.025 to 0.150 [12]	0.025 to 0.15 [12]
Selenium (Total)		0.001
Silicon (Total)		
Silver (Total)	0.0001 to 0.003 [12]	0.0001
Thallium (Total)	0.0003	0.0008
Uranium (Total)	0.3	0.015
Vanadium (Total)	0.006	
Zinc (Total)	(33+0.75*(H-90))/1000 to 0.033 [12]	0.03

M:\1\01\00329\08\A\Report\3 - 2011 Baseline Hydrogeology Study\Appendices\B - Groundwater Quality Data\[Appendix B1 - Analytical Data and Guideline Exceedances.xls]B1.1 - GUIDELINES

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM LIMITS (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES - WATER QUALITY GUIDELINE FOR THE PROTECTION OF AQUATIC LIFE (CEQG-PAL) - FRESHWATER.
4. THIS SHADING INDICATES THAT THE VALUE EXCEEDS THE LIMITS OF THE BCWQG - MAXIMUM GUIDELINES.
5. THIS SHADING INDICATES THAT THE VALUED EXCEEDS THE LIMITS OF THE CEQG-PAL.
6. THIS SHADING INDICATES THAT THE VALUE EXCEEDS THE LIMITS OF THE BCWQG-MAXIMUM AND THE CEQG-PAL.
7. HARDNESS (H) DEPENDENT GUIDELINE LIMIT (DISSOLVED).
8. pH DEPENDENT GUIDELINE LIMIT (*IN SITU* VALUE PREFFERED).
9. TEMPERATURE DEPENDENT GUIDELINE LIMIT.
10. CHLORIDE (DISSOLVED) DEPENDENT GUIDELINE LIMIT.

SCHAFT CREEK MINE PROJECT
TABLE B1.2 - SCHAFT CREEK VALLEY

Site ID	MDL	HG10-05A	HG10-05A	HG10-05A	HG10-05B	HG10-05B	HG10-05B	HG10-05B	HG10-04	HG10-04	HG10-04	HG10-04
Date/Time Sampled		29-Jun-10	19-Sep-10	15-Sep-11	29-Jun-10	19-Sep-10	24-Mar-11	15-Sep-11	30-Jun-10	19-Sep-10	25-Mar-11	15-Sep-11
***In Situ* Parameters**												
Conductivity µS/cm		79	72	0.073	114	140	116	0.126	107	109	104	0.105
Oxygen Dissolved %		94.6	84		0.42	1.5	1.1		8.82	50.5	38.2	
Oxygen Dissolved		11.1	10.4	11.6	3.3	0.2	0.17	0.08	65.8	6.72	5.18	4.94
pH pH units		8.49	8.19	8.63	8.6	7.77		8.11	7.23	7.36	6.93	7.5
Redox Potential mV		83.1	47.5		-20.4	49	190		116	241	134	
Specific Conductivity µS/cm		115	112		186	247	200		186	185	187	
Temperature °C		8.65	6.25	6.42	4.36	3.35	2.98		3.18	3.49	3.25	3.27
Total Dissolved Solids			73			153	138			120	118	
Physical Tests												
Acidity to pH 8.3 (as CaCO3)	1	1.2	3.5	1.7	<1	3.3	3.6	<1	2.8	5.6	18.7	2.3
Alkalinity (Total as CaCO3)	1 - 2	54.8	53	49.9	101	99.5	102	103	76.3	80.5	79.4	76.5
Bicarbonate Alkalinity	1 - 2	54.8	53	49.9	101	99.5	102	103	76.3	80.5	79.4	76.5
Carbonate Alkalinity	1 - 2	<2	<2	<2	<1	<2	<2	<2	<2	<2	<2	<2
Color TCU	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Conductivity µS/cm	2	119	118	114	196	201	200	213	178	183	174	184
Hardness as CaCO3 (Dissolved)	0.5 - 0.52	61.2	58.4	55.6	103	105	101	110	95.1	97.1	96.6	96
Hydroxide Alkalinity	1 - 2	<2	<2	<2	<1	<2	<2	<2	<2	<2	<2	<2
pH pH	0.01 - 0.1	8.27	8.11	8.19	8.51	8.19	8.01	8.26	8	7.83	6.87	8.12
Total Dissolved Solids	10 - 40	72	58	52	119	109	112	112	108	99	103	98
Total Suspended Solids	3	<3	<3	<3	<3	<3	19.3	<3	<3	3	<3	<3
Turbidity NTU	0.1	0.45	0.4	3.36	1.43	0.44	0.48	0.37	0.22	0.12	0.24	<0.1
Dissolved Anions												
Bromide (Dissolved)	0.05 - 0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride (Dissolved)	0.5 - 5	<0.5	<0.5	<0.5	0.72	0.56	0.68	0.7	<0.5	<0.5	<0.5	<0.5
Fluoride (Dissolved)	0.02 - 0.2	<0.02	<0.02	0.028	0.052	0.037	0.036	0.048	0.027	<0.02	<0.02	0.03
Sulphate (Dissolved)	0.5 - 5	7.83	6.34	5.77	11.9	7.47	6.28	7.2	16	15.5	15.5	15.4
Nutrients												
Ammonia (Total)	0.005 - 0.025	<0.005	<0.005	<0.005	0.124	0.0854	0.0874	0.101	<0.005	<0.005	<0.005	<0.005
Nitrate (as N)	0.005 - 0.05	0.0305	0.0317	0.03	0.0053	0.007	<0.005	<0.005	0.112	0.0843	0.0796	0.102
Nitrite (as N)	0.001 - 0.01	<0.001	<0.001	<0.001	0.005	0.0026	<0.001	0.0033	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	0.0025 - 0.05	<0.05	0.0317	<0.05	0.11	0.136	0.16	0.11	0.11	0.0843	0.14	0.16
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.05	<0.05	0.167	0.126	0.11	0.114	<0.05	<0.05	<0.05	<0.05
Orthophosphate (Dissolved)	0.001		0.0013	<0.001		0.0057	0.0068	0.0063		0.0016	0.0015	0.0017
Phosphate (Dissolved)	0.002		<0.002	<0.002		0.0039		0.0055		0.0027		0.0022
Phosphate (Total)	0.002 - 0.3	0.0028	<0.002	0.0025	0.0131	0.0058		<0.3	0.0037	0.0028		0.0022
Phosphorus (Nutrient) Dissolved	0.002 - 0.3						<0.3				<0.3	
Phosphorus (Nutrient) Total	0.002 - 0.3						0.0205				<0.002	
Dissolved Metals												
Aluminum (Dissolved)	0.001 - 0.01	0.0208	0.0217	0.0228	0.0163	0.0081	0.0058	0.0051	<0.005	<0.005	<0.005	<0.005
Antimony (Dissolved)	0.0001 - 0.001	<0.0005	<0.0005	<0.0005	0.00089	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (Dissolved)	0.0001 - 0.001	<0.0005	<0.0005	<0.0005	0.00199	0.00169	0.00167	0.00131	<0.0005	<0.0005	<0.0005	<0.0005
Barium (Dissolved)	0.00005 - 0.02	0.084	0.084	0.078	0.135	0.143	0.13	0.14	0.028	0.028	0.026	0.025
Beryllium (Dissolved)	0.0005 - 0.0025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth (Dissolved)	0.0005 - 0.2			<0.2			<0.2	<0.2			<0.2	<0.2
Boron (Dissolved)	0.01 - 0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium (Dissolved)	0.00001 - 0.001	0.000019	0.00002	<0.000017	0.00002	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017
Calcium (Dissolved)	0.02 - 0.1	18.8	18	17	31.5	31.8	30.7	33.2	31.8	32.7	32.5	32.4
Chromium (Dissolved)	0.0005 - 0.0025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0013	<0.001	0.0011	<0.001
Cobalt (Dissolved)	0.0001 - 0.0006	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Copper (Dissolved)	0.0001 - 0.002	<0.001	<0.001	<0.001	0.0016	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (Dissolved)	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	<0.03	<0.03
Lead (Dissolved)	0.00005 - 0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Lithium (Dissolved)	0.005 - 0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium (Dissolved)	0.005 - 0.1	3.44	3.29	3.21	5.98	6.12	5.87	6.44	3.8	3.75	3.76	3.66
Manganese (Dissolved)	0.00005 - 0.0006	0.00066	<0.0003	<0.0003	0.238	0.401	0.444	0.539	<0.0003	<0.0003	<0.0003	<0.0003
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Dissolved)	0.00005 - 0.002	0.0047	0.0044	0.0041	0.0586	0.0187	0.0128	0.0109	0.0021	0.0015	0.0019	0.0019
Nickel (Dissolved)	0.0005 - 0.0025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus (Metal) Dissolved	0.3			<0.3				<0.3				<0.3
Potassium (Dissolved)	0.05 - 2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Selenium (Dissolved)	0.0001 - 0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon (Dissolved)	0.05			1.2			3.73	3.83			2.78	2.81
Silver (Dissolved)	0.00001 - 0.00005	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Sodium (Dissolved)	2	<2	<2	<2	5.1	3.8	3.3	3	2.3	<2	<2	<2
Strontium (Dissolved)	0.0001 - 0.005			0.13			0.192	0.198			0.122	0.116
Thallium (Dissolved)	0.0001 - 0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin (Dissolved)	0.0001 - 0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Titanium (Dissolved)	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0004	0.00055	0.00055	0.00048	0.0112	0.00399	0.00283	0.00201	<0.0002	<0.0002	<0.0002	<0.0002
Vanadium (Dissolved)	0.001 - 0.005	<0.001	<0.001	<0.001	0.0305	0.0063	0.0019	0.0016	<0.001	<0.001	<0.001	<0.001
Zinc (Dissolved)	0.001 - 0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Metals												
Aluminum (Total)	0.001 - 0.01			0.32				0.012				<0.005
Antimony (Total)	0.0001 - 0.001			<0.0005				<0.0005				<0.0005
Arsenic (Total)	0.0001 - 0.001			<0.0005				0.00122				<0.0005
Barium (Total)	0.00005 - 0.02			0.085				0.144				0.027
Beryllium (Total)	0.0005 - 0.0025			<0.001				<0.001				<0.001
Bismuth (Total)	0.0005 - 0.2			<0.2				<0.2				<0.2
Boron (Total)	0.01 - 0.1			<0.1				<0.1				<0.1
Cadmium (Total)	0.000017 - 0.001			<0.000017				<0.000017				<0.000017
Calcium (Total)	0.02 - 0.1			16.9				33.2				32.3
Chromium (Total)	0.0005 - 0.0025			<0.001				<0.001				0.0012
Cobalt (Total)	0.0001 - 0.0006			<0.0003				<0.0003				<0.0003
Copper (Total)	0.0001 - 0.002			<0.001				<0.001				<0.001
Iron (Total)	0.03			0.157				<0.03				<0.03
Lead (Total)	0.00005 - 0.001			<0.0005				<0.0005				<0.0005
Lithium (Total)	0.005 - 0.025			<0.005				<0.005				<0.005
Magnesium (Total)	0.005 - 0.1			3.35				6.54				3.75
Manganese (Total)	0.00005 - 0.0006			0.00302				0.561				<0.0003
Mercury (Total)	0.00001			<0.00001				<0.00001				<0.00001
Molybdenum (Total)	0.00005 - 0.002			0.0047				0.0123				0.0022
Nickel (Total)	0.0005 - 0.0025			<0.001				<0.001				<0.001
Potassium (Total)	0.05 - 2			<2				<2				<2
Selenium (Total)	0.0001 - 0.002			<0.001				<0.001				<0.001
Silicon (Total)	0.05			1.73				3.81				2.78
Silver (Total)	0.00001 - 0.00005			<0.00002				<0.00002				<0.00002
Sodium (Total)	2			<2				3.1				<2
Strontium (Total)	0.0001 - 0.005			0.135				0.205				0.123
Thallium (Total)	0.0001 - 0.0005			<0.0002				<0.0002				<0.0002
Tin (Total)	0.0001 - 0.001			<0.0005				<0.0005				<0.0005
Titanium (Total)	0.01			<0.01				<0.01				<0.01
Uranium (Total)	0.00001 - 0.0004			0.00054				0.00219				<0.0002
Vanadium (Total)	0.001 - 0.005			0.001				0.0017				<0.001
Zinc (Total)	0.001 - 0.005			<0.005				<0.005				<0.005
Organics												
Carbon Organic (Total)	0.5	<0.5	0.76	<0.5	1.39	1.02	1.3	0.63	0.51	0.81	<0.5	<0.5

Site ID	RES08-4B	RES08-4B	RES08-4B	RES08-4B	RES08-4B	RES08-4B	RES08-3A	RES08-3A	RES08-3A	RES08-3A	RES08-3A
Date/Time Sampled	01-Oct-08	04-Oct-09	25-Apr-10	22-Sep-10	23-Mar-11	13-Sep-11	30-Sep-08	02-Oct-09	24-Apr-10	21-Sep-10	17-Sep-11
***In Situ* Parameters**											
Conductivity µS/cm	3193	124	158	157	177	1.84	239	321	590	411	0.8
Oxygen Dissolved %	27	21.3	1.5	1.8	1.1		45.8	1.32	4.6		
Oxygen Dissolved		2.8	0.18	0.24	0.12	0.07		4.01	0.58		1.59
pH pH units	7.66	9.39	8.57	8.63	8.28		7.61	7.74	7.69	7.66	7.33
Redox Potential mV	13.3		111	33.3	145		65.2		143	38.1	
Specific Conductivity µS/cm		212	249	252	285			513	935	665	
Temperature °C	5.24	3.1	5.43	4.79	5.32	5.36	5.21	5.88	5.7	5.09	7.28
Total Dissolved Solids				172	184					432	
Physical Tests											
Acidity to pH 8.3 (as CaCO3)	<1	<1	5.8	<1	3.1	<1	<1	5.5	4.7	3.7	2.9
Alkalinity (Total as CaCO3)	530	129	119	122	120	118	115	111	103	106	104
Bicarbonate Alkalinity	<1	92.5	119	122	120	114	115	111	103	106	104
Carbonate Alkalinity	66.3	36.2	<2	<1	<2	4.5	<1	<2	<2	<2	<2
Color TCU	9.1	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Conductivity µS/cm	2620	219	247	269	271	279	243	534	934	622	1190
Hardness as CaCO3 (Dissolved)	589	106	90.7	96.7	91.7	90.8	109	236	421	286	529
Hydroxide Alkalinity	463	<1	<2	<1	<2	<1	<1	<2	<2	<2	<2
pH pH	11.9	9.05	7.98	8.35	8.15	8.66	8.25	7.9	7.94	8.11	7.99
Total Dissolved Solids	702	141	157	157	164	181	146	351	743	405	943
Total Suspended Solids	134	24.7	<3	<3	<3	<3	21	3.7	3.8	<3	4.7
Turbidity NTU	36.2	17	0.28	0.4	0.98	0.7	13.5	4.03	0.29	0.31	2.92
Dissolved Anions											
Bromide (Dissolved)	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	<0.5
Chloride (Dissolved)	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.32	12.4	5.66	16.5
Fluoride (Dissolved)	<0.2	0.045	0.193	0.218	0.196	0.248	0.031	0.125	0.38	0.277	0.43
Sulphate (Dissolved)	8.7	6.89	18.4	20.7	22.5	23.9	16.6	159	416	205	534
Nutrients											
Ammonia (Total)	0.0166	0.0181	<0.02	<0.005	<0.005	0.0051	<0.005	<0.005	<0.02	0.0061	0.006
Nitrate (as N)	<0.05	0.0236	<0.005	<0.005	<0.005	<0.005	0.121	0.0843	<0.05	0.0225	<0.05
Nitrite (as N)	<0.01	<0.001	<0.001	<0.001	<0.001	0.0024	<0.001	<0.001	<0.01	<0.001	<0.01
Nitrogen (Total)	0.28	0.17	0.13	0.05	0.09	0.1	0.17	0.1	0.07	<0.05	<0.05
Nitrogen Kjeldahl (Total)	0.28	0.15	<0.05	<0.05	0.118	0.116	<0.05	<0.05	<0.05	<0.05	<0.05
Orthophosphate (Dissolved)				0.0049	<0.001	<0.001				0.0021	0.0018
Phosphate (Dissolved)				0.006		<0.002				<0.002	
Phosphate (Total)	0.036	0.0249	0.0054	0.0067		0.006	0.0184	0.006	0.0042	0.0025	
Phosphorus (Nutrient) Dissolved	<0.3	<0.3			<0.3		<0.3	<0.3			<0.002
Phosphorus (Nutrient) Total	<0.3				0.0056		<0.3				0.0059
Dissolved Metals											
Aluminum (Dissolved)	0.308	0.0265	0.011	0.0132	0.0119	0.011	0.0284	0.0054	<0.01	<0.005	<0.01
Antimony (Dissolved)	0.00275	0.00173	<0.001	<0.0005	<0.0005	<0.001	0.00101	0.00061	<0.001	0.00054	<0.001
Arsenic (Dissolved)	0.00084	0.00147	0.001	0.00087	0.00093	<0.001	0.00138	0.00114	0.0016	0.00117	0.0021
Barium (Dissolved)	0.676	0.0942	0.092	0.101	0.099	0.098	0.0882	0.155	0.225	0.17	0.269
Beryllium (Dissolved)	<0.0025	<0.0005	<0.002	<0.001	<0.001	<0.002	<0.0005	<0.0005	<0.002	<0.001	<0.002
Bismuth (Dissolved)	<0.0025	<0.0005			<0.2	<0.2	<0.0005	<0.0005			<0.2
Boron (Dissolved)	<0.05	0.018	<0.1	<0.1	<0.1	<0.1	0.018	0.064	0.14	<0.1	0.19
Cadmium (Dissolved)	0.00012	0.000028	0.000036	0.000018	0.00003	<0.000034	0.000034	<0.00001	0.000041	0.000111	<0.000034
Calcium (Dissolved)	236	32.5	26.7	28.5	26.6	26	33.8	72.4	129	88.9	161
Chromium (Dissolved)	0.0361	0.00329	<0.002	<0.001	<0.001	<0.002	0.00151	0.00104	<0.002	<0.001	<0.002
Cobalt (Dissolved)	<0.0005	<0.0001	<0.0006	<0.0003	<0.0003	<0.0006	0.00015	<0.0001	<0.0006	<0.0003	<0.0006
Copper (Dissolved)	0.0037	0.00924	<0.002	<0.001	<0.001	<0.002	0.00093	0.0005	<0.002	<0.001	<0.002
Iron (Dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.033	<0.03	<0.03	<0.03	<0.03
Lead (Dissolved)	0.00032	0.000054	<0.001	<0.0005	<0.0005	<0.001	<0.00005	<0.00005	<0.001	<0.0005	<0.001
Lithium (Dissolved)	<0.025	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.01
Magnesium (Dissolved)	0.039	6.03	5.84	6.22	6.12	6.29	6.03	13.4	23.9	15.4	30.7
Manganese (Dissolved)	0.00079	0.00273	0.017	0.0248	0.0198	0.0241	0.0183	0.00623	0.00496	0.0005	0.0117
Mercury (Dissolved)	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000014	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Dissolved)	0.0385	0.00885	0.0215	0.0205	0.0236	0.0256	0.0422	0.0623	0.105	0.079	0.127
Nickel (Dissolved)	<0.0025	0.0009	<0.002	<0.001	<0.001	<0.002	0.00144	<0.0005	<0.002	<0.001	<0.002
Phosphorus (Metal) Dissolved						<0.3					
Potassium (Dissolved)	5.91	1.49	<2	<2	<2	<2	0.737	1.1	<2	<2	<2
Selenium (Dissolved)	0.00144	0.00038	<0.002	<0.001	<0.001	<0.002	0.00021	0.00019	<0.002	<0.001	<0.002
Silicon (Dissolved)	2.59	6.76			4.61	4.62	3.55	3.57			4.47
Silver (Dissolved)	<0.00005	<0.00001	<0.00004	<0.00002	<0.00002	<0.00004	<0.00001	<0.00001	<0.00004	<0.00002	<0.00004
Sodium (Dissolved)	19.7	6.2	19.3	22.1	23.4	24.3	4.5	19.5	41.1	24.6	58.1
Strontium (Dissolved)	4	0.731			6.73	6.75	0.384	2.11			7.38
Thallium (Dissolved)	<0.0005	<0.0001	<0.0004	<0.0002	<0.0002	<0.0004	<0.0001	<0.0001	<0.0004	<0.0002	<0.0004
Tin (Dissolved)	0.00267	0.00046	<0.001	<0.0005	<0.0005	<0.001	0.00018	<0.0001	<0.001	<0.0005	<0.001
Titanium (Dissolved)	0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.016
Uranium (Dissolved)	<0.00005	0.0102	0.0181	0.0168	0.0149	0.0154	0.00398	0.0108	0.0172	0.0164	0.0179
Vanadium (Dissolved)	<0.005	0.002	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001	<0.002
Zinc (Dissolved)	<0.005	0.0025	<0.005	<0.005	<0.005	<0.005	0.0031	0.0021	<0.005	<0.005	<0.005
Total Metals											
Aluminum (Total)	1.01					0.031	0.747				
Antimony (Total)	0.00283					<0.001	0.00031				
Arsenic (Total)	0.00189					<0.001	0.00058				
Barium (Total)	0.805					0.102	0.0772				
Beryllium (Total)	<0.0025					<0.002	<0.0005				
Bismuth (Total)	<0.0025					<0.2	<0.0005				
Boron (Total)	<0.05					<0.1	0.014				
Cadmium (Total)	0.0002					<0.000034	0.000366				
Calcium (Total)	303					24.3	38.2				
Chromium (Total)	0.0554					<0.002	0.0105				
Cobalt (Total)	0.00136					<0.0006	0.00128				
Copper (Total)	0.0146					<0.002	0.0052				
Iron (Total)	0.885					<0.03	0.676				
Lead (Total)	0.00201					<0.001	0.000686				
Lithium (Total)	<0.025					<0.01	<0.005				
Magnesium (Total)	1.5					5.97	8.07				
Manganese (Total)	0.0308					0.0232	0.0261				
Mercury (Total)	<0.00001					<0.00001	<0.00001				
Molybdenum (Total)	0.0368					0.0267	0.00874				
Nickel (Total)	0.0172					<0.002	0.0105				
Potassium (Total)	6.24					<2	0.898				
Selenium (Total)	0.00143					<0.002	0.00032				
Silicon (Total)	6.37					4.58	4.8				
Silver (Total)	0.000531					<0.00004	0.000521				
Sodium (Total)	18.2					24.8	2.3				
Strontium (Total)	4.32					6.24	0.154				
Thallium (Total)	<0.0005					<0.0004	<0.0001				
Tin (Total)	0.00191					<0.001	0.0004				
Titanium (Total)	0.038					<0.01	0.033				
Uranium (Total)	0.000147					0.0144	0.000627				
Vanadium (Total)	0.0078					<0.002	0.002				
Zinc (Total)	0.0201					<0.005	0.0081				
Organics											
Carbon Organic (Total)	6.62	9.85	3.7	2.92	2.66	3.03	1	0.91	1.12	0.9	0.96

Site ID	RES08-3B	RES08-3B	RES08-3B	RES08-3B	RES08-3B	RES08-3B	HG10-02A	HG10-02A	HG10-02A	HG10-02B	HG10-02B	HG10-02B	HG10-01	HG10-01	HG10-01
Date/Time Sampled	30-Sep-08	02-Oct-09	23-Apr-10	20-Sep-10	24-Mar-11	17-Sep-11	30-Jun-10	19-Sep-10	17-Sep-11	30-Jun-10	19-Sep-10	15-Sep-11	30-Jun-10	19-Sep-10	15-Sep-11
***In Situ* Parameters**															
Conductivity µS/cm	186	132		118	117	0.133	138	134	0.135	116	112	0.116	160	157	0.177
Oxygen Dissolved %	70.4	47.6	76.3	32.6	47.1		3.73	26.2		3.87	26.4		0.29	1.3	
Oxygen Dissolved		6.02		4.1	6.1	8.85	28.6	3.43	3.53	29.6	3.51	3.51	2.4	0.15	0.15
pH pH units	7.87	7.88	7.98	8.16	7.65	8.03	7.71	7.9	8.18	7.69	7.89	8.02	7.31	7.22	7.72
Redox Potential mV	83.2	257		-165	235		107	161		106	149		-79.7	-81.1	
Specific Conductivity µS/cm		212	205	185	196		230	222		208	190		264	262	
Temperature °C	9.7	5.29	2.97	5.6	4.36	5.31	4	4.12		3.24	3.45		4.66	4.21	4.78
Total Dissolved Solids				123	125			142			124			171	
Physical Tests															
Acidity to pH 8.3 (as CaCO3)	<1	3	2.6	3	2.6	1.4	1.7	3.5	<1	1.7	3.4	1.6	3.3	6.5	1.7
Alkalinity (Total as CaCO3)	92.6	100	84.8	90.4	86.1	101	97.4	97.5	100	86.5	89.7	89.6	146	154	153
Bicarbonate Alkalinity	92.6	100	84.8	90.4	86.1	101	97.4	97.5	100	86.5	89.7	89.6	146	154	153
Carbonate Alkalinity	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Color TCU	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	6.3	6.6	8.2
Conductivity µS/cm	184	211	194	192	193	212	212	220	226	191	195	201	266	291	293
Hardness as CaCO3 (Dissolved)	86.6	103	110	105	100	110	117	116	113	107	104	107	137	145	138
Hydroxide Alkalinity	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
pH pH	8.23	8.15	8.1	8.17	8.11	8.24	8.2	8.17	8.27	8.19	8.17	8.24	8.06	7.9	8.22
Total Dissolved Solids	107	117	107	89	110	107	127	123	129	111	108	110	149	166	182
Total Suspended Solids	357	6.2	<3	<3	7.3	<3	<3	3	6	<3	5	<3	<3	<3	<3
Turbidity NTU	365	5.44	1.32	0.67	8.09	0.2	<0.1	<0.1	0.37	0.24	0.42	0.52	3.02	2.94	2.45
Dissolved Anions															
Bromide (Dissolved)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride (Dissolved)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.27	1.16	1.32	<0.5	<0.5	<0.5	3.31	2.62	3.21
Fluoride (Dissolved)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.028	<0.02	0.033	<0.02	<0.02	0.022	0.065	0.045	0.07
Sulphate (Dissolved)	9.71	8.97	19.3	8.47	15.8	11.8	18	17.2	18.3	14.7	13.9	14.4	<0.5	<0.5	<0.5
Nutrients															
Ammonia (Total)	<0.005	<0.005	<0.02	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0051	<0.005	<0.005	1.76	0.161	1.67
Nitrate (as N)	0.0568	0.0339	0.057	0.032	0.0732	0.0565	0.0815	0.0785	0.0848	0.0554	0.0535	0.0561	<0.005	<0.005	<0.005
Nitrite (as N)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	0.17	<0.05	0.05	<0.05	0.12	0.06	0.07	0.132	0.13	<0.05	0.0535	0.07	1.34	1.83	1.41
Nitrogen Kjeldahl (Total)	0.113	<0.05	<0.05	0.057	<0.05	<0.05	<0.05	0.054	<0.05	<0.05	<0.05	<0.05	1.7	1.83	1.69
Orthophosphate (Dissolved)				0.0012	<0.001	<0.001		0.0026	0.002		0.0032	0.0034		0.0077	0.0115
Phosphate (Dissolved)				<0.002				0.0029			0.0037	0.0035		0.0066	0.0198
Phosphate (Total)	0.446	0.011	0.0095	0.0026			0.0057	0.0027		0.004	0.0042	0.0044	0.0934	0.139	0.154
Phosphorus (Nutrient) Dissolved	<0.3	<0.3			<0.002	<0.002			<0.002						
Phosphorus (Nutrient) Total	0.45				0.0203	<0.002			0.0052						
Dissolved Metals															
Aluminum (Dissolved)	0.0584	0.0026	<0.005	<0.005	<0.005	0.0063	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Antimony (Dissolved)	0.00013	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (Dissolved)	0.00055	0.00047	<0.0005	<0.0005	0.00051	<0.0005	0.00087	0.0009	0.00086	<0.0005	<0.0005	<0.0005	0.00685	0.0053	0.00583
Barium (Dissolved)	0.0501	0.0621	0.063	0.062	0.06	0.065	0.076	0.075	0.07	0.061	0.058	0.058	0.47	0.481	0.445
Beryllium (Dissolved)	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth (Dissolved)	<0.0005	<0.0005			<0.2	<0.2			<0.2			<0.2			<0.2
Boron (Dissolved)	<0.01	0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium (Dissolved)	<0.000017	<0.00001	<0.000017	<0.000017	<0.000017	<0.000017	0.000031	0.000033	<0.000017	<0.000017	<0.000017	<0.000017	0.000039	0.000025	<0.000017
Calcium (Dissolved)	27.3	32.5	35	33.8	31.9	34.9	32.8	32.9	32	31.5	31.2	32.2	38.8	41.7	39.4
Chromium (Dissolved)	0.00101	0.00087	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Dissolved)	<0.0001	<0.0001	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Copper (Dissolved)	0.00096	0.00023	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (Dissolved)	0.074	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	1.06	1.37	1.62
Lead (Dissolved)	0.00007	<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Lithium (Dissolved)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium (Dissolved)	4.47	5.26	5.55	5.02	4.95	5.5	8.48	8.16	7.99	6.79	6.42	6.58	9.63	9.86	9.67
Manganese (Dissolved)	0.00772	0.000209	0.00033	<0.0003	<0.0003	<0.0003	0.00109	<0.0003	<0.0003	0.00126	<0.0003	<0.0003	0.263	0.322	0.343
Mercury (Dissolved)	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Dissolved)	0.00168	0.00142	0.0015	0.0016	0.0015	0.0013	0.0077	0.0073	0.0078	0.0038	0.0034	0.004	0.009	0.0062	0.007
Nickel (Dissolved)	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Phosphorus (Metal) Dissolved												<0.3			<0.3
Potassium (Dissolved)	0.852	0.65	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Selenium (Dissolved)	0.00021	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon (Dissolved)	2.41	2.29			2.23	2.3			3.49			3.17			10.4
Silver (Dissolved)	<0.00001	<0.00001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Sodium (Dissolved)	2.6	<2	<2	<2	<2	<2	3.5	3.3	3.2	<2	<2	<2	7.9	7.9	7.5
Strontium (Dissolved)	0.119	0.12			0.114	0.125			0.228			0.152			0.352
Thallium (Dissolved)	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin (Dissolved)	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Titanium (Dissolved)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.000169	0.000163	<0.0002	<0.0002	<0.0002	<0.0002	0.00092	0.00092	0.00094	0.00041	0.0004	0.00042	0.00503	0.0017	0.00049
Vanadium (Dissolved)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc (Dissolved)	0.0013	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Metals															
Aluminum (Total)	16.6											0.011			0.0058
Antimony (Total)	0.0004											<0.0005			<0.0005
Arsenic (Total)	0.0102											<0.0005			0.00515
Barium (Total)	0.206											0.059			0.466
Beryllium (Total)	<0.0005											<0.001			<0.001
Bismuth (Total)	<0.0005											<0.2			<0.2
Boron (Total)	0.017											<0.1			<0.1
Cadmium (Total)	0.000289											<0.000017			<0.000017
Calcium (Total)	33.9											30.9			39.8
Chromium (Total)	0.047											<0.001			<0.001
Cobalt (Total)	0.0168											<0.0003			<0.0003
Copper (Total)	0.103											<0.001			<0.001
Iron (Total)	16.9											<0.03			1.4
Lead (Total)	0.00493											<0.0005			<0.0005
Lithium (Total)	0.0074											<0.005			<0.005
Magnesium (Total)	21.2											6.48			10
Manganese (Total)	1.13											0.00044			0.366
Mercury (Total)	0.000015											<0.00001			<0.00001
Molybdenum (Total)	0.00213											0.0046			0.0082
Nickel (Total)	0.0558											<0.001			<0.001
Potassium (Total)	3.04											<2			<2
Selenium (Total)	0.00047											<0.001			<0.001
Silicon (Total)	31.9											3.1			10.6
Silver (Total)	0.00012											<0.00002			<0.00002
Sodium (Total)	2.7											<2			8.1
Strontium (Total)	0.13											0.153			0.372
Thallium (Total)	<0.0001											<0.0002			<0.0002
Tin (Total)	0.00029											<0.0005			<0.0005
Titanium (Total)	0.624											<0.01			<0.01
Uranium (Total)	0.000385											0.00046			0.00052
Vanadium (Total)	0.0466											<0.001			<0.001
Zinc (Total)	0.0563											<0.005			<0.005
Organics															
Carbon Organic (Total)	2.32	<0.5	0.57	0.61	<0.5	<0.5	<0.5	0.68	<0.5	<0.5	0.55	<0.5	1.87	1.92	1.83

M:\1\01\00329\08\A\Report\3 - 2011 Baseline Hydrogeology Study\Appendices\B - Groundwater Quality Data\[Appendix B1 - Analytical Data and Guideline Exceedances.xls]B1.2 - SCHAFT CREEK VALLEY

NOTES:
1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.

SCHAFT CREEK MINE PROJECT
TABLE B1.3 - DEPOSIT AREA

Date/Time Sampled	MDL	RES08-2B 29-Sep-08	RES08-2B 04-Oct-09	RES08-2B 09-May-10	RES08-2B 22-Sep-10	RES08-2B 17-Sep-11
***In Situ* Parameters**						
Conductivity µS/cm		152	110	119	124	0.127
Oxygen Dissolved %		19.4	43	0.5	0.8	
Oxygen Dissolved			5.78	0.07	0.16	0.46
pH pH		8.44	8.63	8.84	8.56	8.47
Redox Potential mV		-76.7		-162	-169	
Specific Conductivity µS/cm			189	182	195	
Temperature °C		5.51	3.22	6.06	5.95	6.37
Total Dissolved Solids					122	
Physical Tests						
Acidity to pH 8.3 (as CaCO3)	1	<1	<1	<1	<1	1.3
Alkalinity (Total as CaCO3)	1 - 2	95.5	106	71.8	71.1	76
Bicarbonate Alkalinity	1 - 2	88.9	43.6	71.8	71.1	76
Carbonate Alkalinity	1 - 2	6.7	62	<1	<1	<2
Color TCU	5	9.3	<5	<5	<5	<5
Conductivity µS/cm	2	218	194	172	190	198
Hardness as CaCO3 (Dissolved)	0.5 - 1.1	61.4	79.9	74.9	87	86.4
Hydroxide Alkalinity	1 - 2	<1	<1	<1	<1	<2
pH pH	0.01 - 0.1	8.36	8.62	8.36	8.3	8.28
Total Dissolved Solids	10	137	117	149	119	124
Total Suspended Solids	3 - 9	1040	2030	61.9	12.7	6.7
Turbidity NTU	0.1	1080	543	141	31	12.9
Dissolved Anions						
Bromide (Dissolved)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride (Dissolved)	0.5	0.51	<0.5	<0.5	<0.5	<0.5
Fluoride (Dissolved)	0.02	0.098	0.08	0.09	0.096	0.113
Sulphate (Dissolved)	0.5	31.6	28.2	27.1	26.8	28.5
Nutrients						
Ammonia (Total)	0.005 - 0.02	0.0145	<0.02		0.0097	0.0179
Nitrate (as N)	0.005	0.0088	<0.005	<0.005	<0.005	<0.005
Nitrite (as N)	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	0.05	0.57	0.056	<0.05	<0.05	0.06
Nitrogen Kjeldahl (Total)	0.05	0.563	0.082	<0.05	0.641	<0.05
Orthophosphate (Dissolved)	0.001				0.0028	0.0022
Phosphate (Dissolved)	0.002				0.0024	
Phosphate (Total)	0.002 - 0.1	0.088	1.41	0.125	0.0315	
Phosphorus (Nutrient) Dissolved	0.002 - 0.3	<0.3	<0.3			<0.3
Phosphorus (Nutrient) Total	0.002 - 0.3	1.03				0.0166
Dissolved Metals						
Aluminum (Dissolved)	0.001 - 0.005	0.422	0.0023	<0.005	<0.005	<0.005
Antimony (Dissolved)	0.0001 - 0.0005	0.00057	0.00047	<0.0005	<0.0005	<0.0005
Arsenic (Dissolved)	0.0001 - 0.0005	0.00658	0.0162	0.00639	0.00485	0.00512
Barium (Dissolved)	0.00005 - 0.02	0.0375	0.0508	0.036	0.035	0.034
Beryllium (Dissolved)	0.0005 - 0.0025	<0.0025	<0.0005	<0.001	<0.001	<0.001
Bismuth (Dissolved)	0.0005 - 0.2	<0.0025	<0.0005			<0.2
Boron (Dissolved)	0.01 - 0.1	<0.05	0.049	<0.1	<0.1	<0.1
Cadmium (Dissolved)	0.00001 - 0.000085	<0.000085	<0.00001	0.000018	0.000028	<0.000017
Calcium (Dissolved)	0.02 - 0.1	15.1	17.4	17	19.9	19.3
Chromium (Dissolved)	0.0005 - 0.0025	0.0034	<0.0005	<0.001	<0.001	<0.001
Cobalt (Dissolved)	0.0001 - 0.0005	<0.0005	<0.0001	<0.0003	<0.0003	<0.0003
Copper (Dissolved)	0.0001 - 0.001	0.00398	0.00017	<0.001	<0.001	<0.001
Iron (Dissolved)	0.03	0.524	<0.03	<0.03	0.038	0.032
Lead (Dissolved)	0.00005 - 0.0005	0.00033	<0.00005	<0.0005	<0.0005	<0.0005
Lithium (Dissolved)	0.005 - 0.025	<0.025	<0.005	<0.005	<0.005	<0.005
Magnesium (Dissolved)	0.005 - 0.1	5.73	8.85	7.91	9.06	9.28
Manganese (Dissolved)	0.00005 - 0.0003	0.0287	0.00445	0.0197	0.0197	0.0161
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Dissolved)	0.00005 - 0.001	0.0281	0.0155	0.0081	0.0072	0.0085
Nickel (Dissolved)	0.0005 - 0.0025	<0.0025	0.0012	<0.001	<0.001	<0.001
Potassium (Dissolved)	0.05 - 2	1.99	1.22	<2	<2	<2
Selenium (Dissolved)	0.0001 - 0.001	<0.0005	<0.0001	<0.001	<0.001	<0.001
Silicon (Dissolved)	0.05	6.01	4.34			5.15
Silver (Dissolved)	0.00001 - 0.00005	<0.00005	<0.00001	<0.00002	<0.00002	<0.00002
Sodium (Dissolved)	2	17.9	6.9	7	6.3	6.5
Strontium (Dissolved)	0.0001 - 0.005	0.206	0.237			0.246
Thallium (Dissolved)	0.0001 - 0.0005	<0.0005	<0.0001	<0.0002	<0.0002	<0.0002
Tin (Dissolved)	0.0001 - 0.0005	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005
Titanium (Dissolved)	0.01	0.022	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0002	0.000809	0.000727	<0.0002	<0.0002	<0.0002
Vanadium (Dissolved)	0.001 - 0.005	<0.005	0.0012	<0.001	<0.001	<0.001
Zinc (Dissolved)	0.001 - 0.005	0.0078	0.002	<0.005	<0.005	<0.005
Total Metals						
Aluminum (Total)	0.005	22.8				
Antimony (Total)	0.0005	0.00102				
Arsenic (Total)	0.0005	0.0249				
Barium (Total)	0.00025	0.248				
Beryllium (Total)	0.0025	<0.0025				
Bismuth (Total)	0.0025	<0.0025				
Boron (Total)	0.05	0.06				
Cadmium (Total)	0.000085	0.000417				
Calcium (Total)	0.1	47.9				
Chromium (Total)	0.0025	0.154				
Cobalt (Total)	0.0005	0.0226				
Copper (Total)	0.0005	0.285				
Iron (Total)	0.03	30.9				
Lead (Total)	0.00025	0.0132				
Lithium (Total)	0.025	<0.025				
Magnesium (Total)	0.025	24.5				
Manganese (Total)	0.00025	0.671				
Mercury (Total)	0.00001	0.000012				
Molybdenum (Total)	0.00025	0.0369				
Nickel (Total)	0.0025	0.117				
Potassium (Total)	0.25	4.55				
Selenium (Total)	0.0005	0.0011				
Silicon (Total)	0.05	45.7				
Silver (Total)	0.00005	0.00243				
Sodium (Total)	2	18.1				
Strontium (Total)	0.0005	0.352				
Thallium (Total)	0.0005	<0.0005				
Tin (Total)	0.0005	0.00125				
Titanium (Total)	0.01	1.03				
Uranium (Total)	0.00005	0.00441				
Vanadium (Total)	0.005	0.0945				
Zinc (Total)	0.005	0.1				
Organics						
Carbon Organic (Total)	0.5	8.51	1.44	0.71	0.79	<0.5

M:\1\01\00329\08\A\Report\3 - 2011 Baseline Hydrogeology Study\Appendices\B - Groundwater Quality Data\[Appendix B1 - Analytical Data and Guideline Exceedances.xls]B1.3 - DEPOSIT AREA

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.

SCHAFT CREEK MINE PROJECT
TABLE B1.4 - SADDLE AREA

Site ID	MDL	RES08-5A	RES08-5A	RES08-5A	RES08-5A	RES08-5B	RES08-5B	RES08-5B	RES08-5B
Date/Time Sampled		01-Oct-08	30-Apr-10	23-Sep-10	14-Sep-11	01-Oct-08	01-May-10	23-Sep-10	15-Sep-11
In Situ Parameters									
Conductivity µS/cm			111	109	0.129	252	121	120	0.125
Oxygen Dissolved %			5.2	2.3		7.8	2.6	2.4	
Oxygen Dissolved			0.66	0.28	0.29		0.34	0.31	0.27
pH pH			8.36	8.2	8.33	7.41	7.59	7.4	7.45
Redox Potential mV				-71.3		-286	-62	2.3	
Specific Conductivity µS/cm			179	172	0.195		208	208	
Temperature °C			5.66	5.77	6.17		3.2	3.73	4.11
Total Dissolved Solids				113				130	
Physical Tests									
Acidity to pH 8.3 (as CaCO3)	1	<1	1.6	2.3	1.6	<1	3	5	3.4
Alkalinity (Total as CaCO3)	1 - 2	73	70.8	67.8	75.3	113	91.1	90.9	86.5
Bicarbonate Alkalinity	1 - 2	73	70.8	67.8	75.3	113	91.1	90.9	86.5
Carbonate Alkalinity	1 - 2	<1	<2	<2	<2	<1	<2	<2	<2
Color TCU	5	<5	<5	<5	<5	10.5	<5	7.6	8
Conductivity µS/cm	2	189	208	185	185	243	207	208	201
Hardness as CaCO3 (Dissolved)	0.5 - 1.1	70	93.2	83.3	79.1	106	114	103	94.6
Hydroxide Alkalinity	1 - 2	<1	<2	<2	<2	<1	<2	<2	<2
pH pH	0.01 - 0.1	8.2	8.18	8.2	8.21	8.18	8	7.74	7.85
Total Dissolved Solids	10	113	115	97	106	168	132	114	122
Total Suspended Solids	3	<3	<3	<3	3.3	1030	<3	5.7	<3
Turbidity NTU	0.1	1.03	1.25	1.18	1.03	>4000	43.4	6.8	1.32
Dissolved Anions									
Bromide (Dissolved)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride (Dissolved)	0.5	<0.5	<0.5	<0.5	<0.5	1.37	<0.5	<0.5	<0.5
Fluoride (Dissolved)	0.02	0.069	0.069	0.073	0.083	0.055	0.043	0.045	0.058
Sulphate (Dissolved)	0.5	25.2	22.9	21.8	22.3	21.2	16.3	16	14.8
Nutrients									
Ammonia (Total)	0.005	<0.005		0.0067	<0.005	<0.005		<0.005	0.013
Nitrate (as N)	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite (as N)	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	0.05 - 0.25	<0.05	<0.05	0.05	0.14	<0.3	<0.05	<0.05	0.06
Nitrogen Kjeldahl (Total)	0.05 - 0.25	<0.05	<0.05	0.066	<0.05	<0.25	0.097	0.057	0.085
Orthophosphate (Dissolved)	0.001			<0.001	<0.001			0.0013	0.0011
Phosphate (Dissolved)	0.002			<0.002				<0.002	<0.002
Phosphate (Total)	0.002 - 0.3	0.007	0.0034	0.0026		2.36	0.059	0.0075	0.0052
Phosphorus (Nutrient) Dissolved	0.002 - 0.3	<0.3			<0.3	<0.3			
Phosphorus (Nutrient) Total	0.002 - 0.3	<0.3			0.0034	2.77			
Dissolved Metals									
Aluminum (Dissolved)	0.001 - 0.01	0.346	<0.005	0.005	<0.005	0.164	<0.005	0.0073	0.0139
Antimony (Dissolved)	0.0001 - 0.001	<0.0001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005
Arsenic (Dissolved)	0.0001 - 0.001	0.00067	0.00064	0.00053	0.00064	<0.001	0.00076	0.00063	0.00062
Barium (Dissolved)	0.00005 - 0.02	0.022	0.025	0.024	0.021	0.0351	0.032	0.031	0.028
Beryllium (Dissolved)	0.0005 - 0.005	<0.0005	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001
Bismuth (Dissolved)	0.0005 - 0.2	<0.0005			<0.2	<0.005			<0.2
Boron (Dissolved)	0.01 - 0.1	0.017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium (Dissolved)	0.000017 - 0.00017	0.000035	0.000021	0.000021	<0.000017	0.00025	<0.000017	0.000039	<0.000017
Calcium (Dissolved)	0.02 - 0.2	21.5	30.6	25.8	24.8	32.8	37.8	32.6	30.2
Chromium (Dissolved)	0.0005 - 0.005	0.00054	<0.001	0.0012	<0.001	<0.005	<0.001	<0.001	<0.001
Cobalt (Dissolved)	0.0001 - 0.001	0.00031	<0.0003	<0.0003	<0.0003	<0.001	0.00031	<0.0003	<0.0003
Copper (Dissolved)	0.0001 - 0.001	0.00697	<0.001	<0.001	<0.001	0.0076	<0.001	<0.001	0.0016
Iron (Dissolved)	0.03	0.477	<0.03	<0.03	<0.03	0.224	0.305	0.667	0.384
Lead (Dissolved)	0.00005 - 0.0005	0.000092	<0.0005	<0.0005	0.00124	<0.0005	<0.0005	<0.0005	<0.0005
Lithium (Dissolved)	0.005 - 0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005
Magnesium (Dissolved)	0.005 - 0.1	3.99	4.07	4.6	4.15	5.85	4.67	5.19	4.69
Manganese (Dissolved)	0.00005 - 0.0005	0.0214	0.00288	0.0179	0.00192	0.221	0.226	0.175	0.166
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Dissolved)	0.00005 - 0.001	0.00933	0.0092	0.0112	0.009	0.0674	0.0101	0.0078	0.0068
Nickel (Dissolved)	0.0005 - 0.005	0.00084	<0.001	0.0015	<0.001	<0.005	0.0012	0.0011	0.0012
Phosphorus (Metal) Dissolved	0.3								<0.3
Potassium (Dissolved)	0.05 - 2	0.406	<2	<2	<2	1.08	<2	<2	<2
Selenium (Dissolved)	0.0001 - 0.001	0.00018	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon (Dissolved)	0.05	5.51			4.57	4.92			5.19
Silver (Dissolved)	0.00001 - 0.0001	0.000042	<0.00002	<0.00002	<0.00002	<0.0001	<0.00002	<0.00002	<0.00002
Sodium (Dissolved)	2	9.9	8.2	9.6	7.9	8.3	5.7	5.7	4.8
Strontium (Dissolved)	0.0001 - 0.005	0.1			0.123	0.145			0.133
Thallium (Dissolved)	0.0001 - 0.001	<0.0001	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002
Tin (Dissolved)	0.0001 - 0.001	<0.0001	<0.0005	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005
Titanium (Dissolved)	0.01	0.02	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0002	0.000347	<0.0002	<0.0002	<0.0002	0.00016	<0.0002	<0.0002	<0.0002
Vanadium (Dissolved)	0.001 - 0.01	0.0034	0.0029	0.0027	0.0031	<0.01	0.001	0.001	0.0019
Zinc (Dissolved)	0.001 - 0.01	0.0026	<0.005	0.0074	0.0081	<0.01	<0.005	0.0069	0.0114
Total Metals									
Aluminum (Total)	0.001 - 0.01	0.131				70.7			0.0183
Antimony (Total)	0.0001 - 0.001	<0.0001				<0.001			<0.0005
Arsenic (Total)	0.0001 - 0.001	0.00071				0.0242			0.00059
Barium (Total)	0.00005 - 0.02	0.0194				0.489			0.029
Beryllium (Total)	0.0005 - 0.005	<0.0005				<0.005			<0.001
Bismuth (Total)	0.0005 - 0.2	<0.0005				<0.005			<0.2
Boron (Total)	0.01 - 0.1	0.019				<0.1			<0.1
Cadmium (Total)	0.000017 - 0.00017	0.00003				0.00085			<0.000017
Calcium (Total)	0.02 - 0.2	22.7				92.7			29.4
Chromium (Total)	0.0005 - 0.005	<0.0005				0.119			<0.001
Cobalt (Total)	0.0001 - 0.001	<0.0001				0.0603			<0.0003
Copper (Total)	0.0001 - 0.001	0.00028				1.21			0.0024
Iron (Total)	0.03	0.05				91.2			0.225
Lead (Total)	0.00005 - 0.0005	<0.00005				0.014			<0.0005
Lithium (Total)	0.005 - 0.05	<0.005				<0.05			<0.005
Magnesium (Total)	0.005 - 0.1	4.35				59			4.9
Manganese (Total)	0.00005 - 0.0005	0.00595				2.5			0.13
Mercury (Total)	0.00001	<0.00001				0.000031			<0.00001
Molybdenum (Total)	0.00005 - 0.001	0.00964				0.0753			0.0084
Nickel (Total)	0.0005 - 0.005	<0.0005				0.143			<0.001
Potassium (Total)	0.05 - 2	0.399				5.95			<2
Selenium (Total)	0.0001 - 0.001	0.00027				0.0024			<0.001
Silicon (Total)	0.05	4.98				89.6			5.09
Silver (Total)	0.00001 - 0.0001	<0.00001				0.00827			<0.00002
Sodium (Total)	2	10.4				12.3			5.5
Strontium (Total)	0.0001 - 0.005	0.103				0.327			0.141
Thallium (Total)	0.0001 - 0.001	<0.0001				<0.001			<0.0002
Tin (Total)	0.0001 - 0.001	<0.0001				0.0011			<0.0005
Titanium (Total)	0.01	<0.01				3.83			<0.01
Uranium (Total)	0.00001 - 0.0002	0.000371				0.00107			<0.0002
Vanadium (Total)	0.001 - 0.01	0.0027				0.223			0.0018
Zinc (Total)	0.001 - 0.01	<0.001				0.267			0.0153
Organics									
Carbon Organic (Total)	0.5	<0.5	0.64	1.77	0.58	3.38	1.86	2.2	2.96

M:\1\01\00329\08\A\Report\3 - 2011 Baseline Hydrogeology Study\Appendices\B - Groundwater Quality Data\[Appendix B1 - Analytical Data and Guideline Exceedances.xls]B1.4 - SADDLE AREA

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.

APPENDIX B1 - ANALYTICAL DATA AND GUIDELINE EXCEEDANCES

SCHAFT CREEK MINE PROJECT
TABLE B1.5 - SKEETER CREEK VALLEY

Site ID	MDL	RES08-7A	RES08-7A	RES08-7A	RES08-7A	RES08-7A	RES08-7B	RES08-7B	RES08-7B	RES08-7B	RES08-7B	RES08-8A	RES08-8A	RES08-8A	RES08-8A	RES08-8A	RES08-8B	RES08-8B	RES08-8B	RES08-8B	RES08-6A	RES08-6A	RES08-6A	RES08-6A	RES08-6A	RES08-6B	RES08-6B	RES08-6B	RES08-6B	RES08-6B
Date/Time Sampled		1-Oct-09	2-May-10	21-Sep-10	26-Mar-11	14-Sep-11	1-Oct-09	8-May-10	21-Sep-10	26-Mar-11	14-Sep-11	1-Oct-09	6-May-10	20-Sep-10	26-Mar-11	16-Sep-11	1-Oct-09	4-May-10	20-Sep-10	16-Sep-11	27-Sep-08	30-Sep-09	7-May-10	22-Sep-10	16-Sep-11	27-Sep-08	30-Sep-09	7-May-10	20-Sep-10	16-Sep-11
In Situ Parameters																														
Conductivity µS/cm		398	401	417	414	0.403	380	380	399	388	0.425	327	559	401	450	0.456	286	267	290	0.304	390	454	318	449	0.92	244	269	173	164	0.178
Oxygen Dissolved %		1.1	1.6	1.1	1.8		5.1	1.1	3.7	2.5		1.1	4	2.3	1		11	5.5	4.1		37.2	1.2	1.1	22.1		24.9	1.2	1.3	2.4	
Oxygen Dissolved		0.14	0.2	0.15	0.18	0.4	0.68	0.15	0.46	0.31	0.19	0.14	0.5	0.28	0.12	1.97	1.42	0.66	0.49	0.3		0.93	0.13	2.46	0.52		0.16	0.17	0.31	0.12
pH pH		7.79	7.68	7.45	7.43	7.63	7.88	7.86	7.57	7.57	7.72	8.15	7.74	7.43	7.5	7.86	7.18	7.31	7.06	7.06	8.37	7.55	8.4	8.4	8.03	8.29		8.48	7.98	8.4
Redox Potential mV		-55	-38.4	-33.1	99.7		-18.3	123	138	154		-59.4	84.2	-5.7	-53.8		-100	29.5	-68.5		-82.2	20.7	-169	-206		-114	82	-58.3	108	
Specific Conductivity µS/cm		649	662	655	660		628	633	625	638		513	873	628	719		465	408	435			278	462	633			165	283	269	
Temperature °C		4.77	4.41	5.87	5.48	6.07	4.31	4.04	6.02	4.55	7.43	6	6.16	6.09	5.36	6.81	4.76	6.82	7.61		7.79	4.64	8.61	9.64		5	4.68	4.68	4.58	4.9
Total Dissolved Solids				426	429				407	415				408	469				283				409					174	
Physical Tests																														
Acidity to pH 8.3 (as CaCO3)	1	4.4	3	4.5	9.5	<1	3.8	2.2	3.1	7.3	1.7	3.1	2.9	4	5.1	1.9	7.1	3.8	6	2.8	<1	<1	<1	1.9	1.3	<1	2.5	<1	<1	<1
Alkalinity (Total as CaCO3)	1 - 2	183	186	183	186	193	189	189	189	190	201	111	133	128	128	127	165	147	159	158	112	99.3	97.1	107	143	94.7	107	107	129	103
Bicarbonate Alkalinity	1 - 2	183	186	183	186	193	189	189	185	190	201	111	133	128	128	127	165	147	159	158	107	99.3	97.1	107	143	90.1	107	107	129	103
Carbonate Alkalinity	1 - 2	<2	<2	<1	<2	<2	<2	<2	3.7	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	4.6	<2	<1	<2	<2	4.5	<1	<1	<2	<1
Color TCU	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	23.8	5.6	20.6	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Conductivity µS/cm	2	637	631	645	629	658	610	598	620	601	629	494	819	657	678	673	445	350	447	434	427	437	451	594	972	247	264	265	267	286
Hardness as CaCO3 (Dissolved)	0.5 - 1.1	262	314	301	299	291	253	300	288	288	279	143	311	234	244	229	151	148	173	162	97	102	110	132	192	79.5	84.4	99.7	131	97.4
Hydroxide Alkalinity	1 - 2	<2	<2	<1	<2	<2	<2	<2	<1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<1	<2	<1	<2	<2	<1	<1	<1	<2	<1
pH pH	0.01 - 0.1	8.07	8.12	8.08	8.03	8.19	8.13	8.17	8.2	8.08	8.23	8.12	8.11	8.1	8.19	8.19	7.81	7.88	7.84	8	8.3	8.25	8.32	8.23	8.27	8.38	7.87	8.31	8.27	8.33
Total Dissolved Solids	10	409	420	410	399	411	377	396	369	371	392	324	593	425	445	451	284	224	268	264	277	268	289	363	606	200	165	183	153	206
Total Suspended Solids	3 - 9	8.2	<3	16.7	9.3	3.3	2070	16.9	280	18.8	6.7	557	12.9	18.7	<3	40.7	3.7	<3	<3	<3	452	3.2	8.4	6.7	49.3	2890	53.7	13.9	6.2	68.7
Turbidity NTU	0.1	10.6	1.32	41.8	1.66	5.43	3620	7.02	182	3.54	4.37	235	4.44	5.36	3.3	13.8	5.32	4.07	4.04	3.84	430	3.32	14.9	4.2	29.8	>4000	97	102	6	93.3
Dissolved Anions																														
Bromide (Dissolved)	0.05 - 1.13	<0.05	<0.05	<0.05	<0.71	<0.05	<0.05	<0.05	<0.05	<0.63	<0.05	<0.05	<0.25	<0.05	<1.1	<0.25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride (Dissolved)	0.5 - 5	16.4	16.5	15.7	16.5	17	14.7	14.6	14.7	14.6	14.9	1.29	7	3.65	4.06	4.4	0.65	<0.5	0.78	1.19	9.87	11.1	12.4	17.8	29.3	1.64	2.18	2.72	<0.5	3.28
Fluoride (Dissolved)	0.02 - 0.2	0.524	0.571	0.563	0.559	0.614	0.451	0.479	0.512	0.498	0.55	1.01	1.34	1.37	1.3	1.37	0.68	0.596	0.802	0.716	0.566	0.368	0.476	0.66	1.21	0.162	0.108	0.113	0.061	0.131
Sulphate (Dissolved)	0.5 - 5	137	139	131	141	141	120	122	122	126	126	138	294	202	226	212	72	42.6	75	70.5	94.1	102	110	155	245	37.1	35.5	35.4	13.5	38.5
Nutrients																														
Ammonia (Total)	0.005	0.0241		0.0233	0.0219	0.0272	0.0206		0.0237	0.0236	0.0296	0.0075		0.0067	<0.005	<0.005	<0.005		0.0206	0.0198	0.0159	0.0093		0.0245	0.0125	0.0217	0.0178		0.0163	0.0231
Nitrate (as N)	0.005 - 0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.005	<0.005	<0.025	<0.005	<0.005	<0.005	0.0264	0.0063	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite (as N)	0.001 - 0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0012	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	0.0018	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	0.05 - 0.25	<0.05	<0.05	<0.05	<0.05	0.05	0.073	<0.05	<0.05	0.18	0.11	0.073	<0.05	<0.05	0.05	<0.05	0.05	<0.05	0.06	<0.05	0.23	<0.05	<0.05	0.08	0.2	<0.3	<0.05	<0.05	<0.05	0.08
Nitrogen Kjeldahl (Total)	0.05 - 0.25	<0.05	<0.05	0.05	<0.05	<0.05	0.053	0.052	0.056	0.108	<0.05	0.051	<0.05	<0.05	<0.05	<0.05	0.083	0.119	0.222	<0.05	0.223	<0.05	0.084	0.153	0.171	<0.25	<0.05	<0.05	0.057	<0.05
Orthophosphate (Dissolved)	0.001			<0.001	<0.001	<0.001			<0.001	<0.001	<0.001			<0.001	<0.001	<0.001			0.0018	0.0113				<0.001	<0.001				0.0114	0.0107
Phosphate (Dissolved)	0.002			<0.002					<0.002					<0.002					<0.002										0.0118	
Phosphate (Total)	0.002 - 0.2	0.0065	<0.002	0.0241			1.82	0.0158	0.237			0.11	0.0062	0.0091			0.0503	0.0148	0.0096		0.355	0.0072	0.017	0.0071		2.64	0.081	0.114	0.0202	
Phosphorus (Nutrient) Dissolved	0.002 - 0.3	<0.3			<0.3	<0.002	<0.3			<0.3	<0.3	<0.3			<0.002	<0.002	<0.3			0.0118	<0.3	<0.3			<0.3	<0.3	<0.3			<0.3
Phosphorus (Nutrient) Total	0.002 - 0.3				<0.002	0.0024				0.0076	0.0078				0.0051	0.0115				0.0248	2.27				0.0501	0.4				0.098
Dissolved Metals																														
Aluminum (Dissolved)	0.001 - 0.01	<0.001	<0.005	<0.005	<0.005	<0.005	0.0013	<0.005	<0.005	<0.005	<0.005	<0.001	<0.01	<0.005	<0.005	<0.005	0.0125	0.0134	0.0064	0.01	0.083	0.0038	<0.005	<0.005	<0.01	0.206	0.0031	<0.005	<0.005	<0.005
Antimony (Dissolved)	0.0001 - 0.001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.001	<0.0001	<0.0005	<0.0005	<0.001	0.00123	<0.0001	<0.0005	<0.0005	<0.0005
Arsenic (Dissolved)	0.0001 - 0.001	0.00309	0.00285	0.00187	0.00155	0.00149	0.00135	0.00125	0.00104	0.00103	0.00097	0.00142	0.0018	0.00165	0.00127	0.00168	0.00315	0.00354	0.00152	0.00185	0.0022	0.00193	0.00212	0.0015	<0.001	0.00334	0.00225	0.00236	0.00191	0.00217
Barium (Dissolved)	0.00005 - 0.02	0.0185	0.026	<0.02	<0.02	<0.02	0.0457	0.055	0.046	0.044	0.044	0.0146	0.027	0.026	0.025	0.027	0.0584	0.069	0.062	0.069	0.0413	0.0238	0.027	0.026	<0.02	0.0456	0.0353	0.041	0.042	0.036
Beryllium (Dissolved)	0.0005 - 0.005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.002	<0.001	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.001	<0.005	<0.0005	<0.001	<0.001	<0.002	<0.001	<0.0005	<0.001	<0.001	<0.001
Bismuth (Dissolved)	0.0005 - 0.2	<0.0005			<0.2	<0.2	<0.0005			<0.2	<0.2	<0.0005			<0.2	<0.2	<0.0005			<0.2	<0.005	<0.0005			<0.2	<0.001	<0.0005			<0.2
Boron (Dissolved)	0.01 - 0.1	0.064	<0.1	<0.1	<0.1	<0.1	0.07	<0.1	<0.1	<0.1	<0.1	0.101	0.22	0.17	0.17	0.16	0.097	<0.1	0.11	<0.1	0.11	0.132	0.15	0.17	0.32	0.063	0.082	<0.1	<0.1	<0.1
Cadmium (Dissolved)	0.00001 - 0.00025	<0.00001	<0.000017	<0.000017	<0.000017	<0.000017	<0.00001	<0.000017	<0.000017	0.000027	<0.000017	<0.00015	<0.000034	<0.00025	<0.000017	<0.000017	<0.00005	0.00003	<0.000017	<0.000017	<0.00017	<0.00004	0.000021	<0.000034	<0.000034	<0.000034	0.000019	<0.000017	<0.000017	<0.000017
Calcium (Dissolved)	0.02 - 0.2	49.9	63.2	59.7	58.8	55.7	43.9	56.3	53.2	54.8	51.9	41.3	98.9	71.3	74.2	69	42.3	43.1	49.2	46	20.1	21	23.7	26.5	38.3	20.5	19.5	23.6	35	22.8
Chromium (Dissolved)	0.0005 - 0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.0005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	0.0015	<0.001	<0.005	<0.0005	<0.002	0.0017	<0.002	0.0015	<0.0005	<0.001	<0.001	<0.001
Cobalt (Dissolved)	0.0001 - 0.001	0.00056	0.00057	0.00059	0.00051	0.00059	<0.0001	<0.0003	<0.0003	<0.0003	<0.0003	<0.0001	<0.0006	<0.0003	<0.0003	<0.0003	0.00057	0.00156	0.00045	<0.0003	<0.001	<0.0001	<0.0003	<0.0003	<0.0006	0.00039	<0.0001	<0.0003	<0.0003	<0.0003
Copper (Dissolved)	0.0001 - 0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	0.00014	<0.001	<0.001	<0.001	<0.001	0.00013	<0.002	<0.001	<0.001	<0.001	0.00011	<0.001	<0.001	<0.001	0.0024	0.0001	<0.001	<0.001	<0.002	0.00257	<0.0001	<0.001	<0.001	<0.001
Iron (Dissolved)	0.03	0.088	0.107	0.081	0.076	0.068	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.058	<0.03	0.79	1.18	0.826	1.33	0.083	<0.03	<0.03	<0.03	0.039	0.351	<0.03	<0.03	<0.03	<0.03
Lead (Dissolved)	0.00005 - 0.001	<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00005	<0.001	<0.0005	<0.0005	<0.0005	<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00005	<0.0005	<0.0005	<0.001	<0.0001	<0.00005	<0.0005	<0.0005	<0.0005
Lithium (Dissolved)	0.005 - 0.05	0.0215	0.0201	0.0216	0.0224	0.024	0.0173	0.0168	0.0183	0.0183	0.0196	0.0089	0.014	0.0096	0.0096	0.0087	<0.005	<0.005	0.0055	<0.005	<0.05	0.0108	0.0115	0.0198	0.065	<0.01	<0.005	<0.005	<0.005	<0.005
Magnesium (Dissolved)	0.005 - 0.1	33.3	37.8	36.9	37	37	34.7	38.7	37.7	36.8	36.3	9.73	15.6	13.6	14.2	13.7	11.1	9.79	12.2	11.4	11.4	12	12.4	15.9	23.3	6.87	8.69	9.94	10.5	9.83
Manganese (Dissolved)	0.00005 - 0.0006	0.0615	0.0624	0.0655	0.06	0.0692	0.0514	0.0556	0.0564	0.0556	0.0623	0.0393	0.0608	0.0467	0.0426	0.041	0.448	0.367	0.343	0.358	0.0182	0.0196	0.0177	0.0196	0.0167	0.0241	0.0201	0.0203	0.0375	0.0226
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Dissolved)	0.00005 - 0.002	0.00226	0.0022	0.0026	0.002	0.0021	0.00226	0.0022	0.0023	0.0019	0.0022	0.0359	0.0381	0.0319	0.0259	0.0376	0.0144	0.0154	0.0159	0.0142	0.0562	0.0103	0.0102	0.0113	0.0293	0.0376	0.00596	0.0048	0.0022	0.0048
Nickel (Dissolved)	0.0005 - 0.005	0.00068	<0.001	<0.001	<0.001	<0.001	0.00107	0.0011	0.0012	<0.001	0.0022	0.00156	<0.002	0.0018	<0.001	0.0012	<0.0005	0.0049	0.002	0.0012	0.005	<0.0005	<0.001	0.0027	0.0074	0.0067	<0.0005	<0.001	<0.001	<0.001
Potassium (Dissolved)	0.05 - 2	1.8	2.2	2.1	2.1	2	3.03	3.6	3.2	3.1	3.2	0.958	<2	<2	<2	<2	1.74	<2	2	<2	5.72	5.84	6.8	6	3	4.73	5.97	7.8	3.9	6.6
Selenium (Dissolved)	0.0001 - 0.002	0.00038	<0.001	<0.001	<0.001	<0.001	0.00043	<0.001	<0.001	<0.001	<0.001	0.0001	<0.002	<0.001	<0.001	<0.001	0.00036	<0.001	<0.001	<0.001	<0.001	0.00037	<0.001	<0.001	<0.002	0.00425	<0.0001	<0.001	<0.001	<0.001
Silicon (Dissolved)	0.05	4.25			4.33	4.27	4.37			4.52	4.5	4.4			4.53	4.46	5.64			5.75	4.47	4.51			4.8	5.41	5.08			5.29
Silver (Dissolved)	0.00001 - 0.0001	<0.00001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00001	<0.00004	<0.00002	<0.00002	<0.00002	<0.00001	<0.00002	<0.00002	<0.00002	<0.0001	<0.00001	<0.00002	<0.00002	<0.00004	0.000048	<0.00001	<0.00002	<0.00002	<0.00002
Sodium (Dissolved)	2	30.3	29.7	29.5	30.2	29.4	29	29.4	27.9	29.2	28.5	47.1	83.5	58.5	59.6	55.5	35.9	28.7	34.6	30.1	39.8	48.1	51.4	77.4	166	17.4	17.9	20	8.1	18.2
Strontium (Dissolved)	0.0001 - 0.005	0.725			0.754	0.719	0.664			0.741	0.709	3.01			5.44	5.11	1.73			1.73	0.5	0.661			1.99	0.211	0.322			0.355
Thallium (Dissolved)	0.0001 - 0.001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0004	<0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.001	<0.0001	<0.0002	<0.0002	<0.0004	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002
Tin (Dissolved)	0.0001 - 0.001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	0.00078	<0.001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.001	<0.0001	<0.0005	<0.0005	<0.001	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005
Titanium (Dissolved)	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0004	0.00239	0.00241	0.00236	0.00238	0.00246	0.00179	0.00189	0.00171	0.00176	0.00184	0.0225	0.0243	0.0233	0.0203	0.0241	0.0114	0.0181	0.0143	0.0107	0.00311	0.00224	0.0028	0.00332	0.0118	0.000347	0.000379	0.00045	<0.0002	0.00039
Vanadium (Dissolved)	0.001 - 0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	0.0012	0.0022	<0.001	0.0013	<0.01	<0.001	<0.001	<0.001	<0.002	0.0227	0.0025	0.0016	0.0028	<0.001
Zinc (Dissolved)	0.001 - 0.01	0.0012	<0.005	<0.005	<0.005	<0.005	0.0023	<0.005	<0.005	<0.005	0.0124	<0.001	<0.005	0.0167	0.0149	<0.005	<0.001	<0.005	0.0051	0.0091	<0.01	0.0027	<0.005	0.0058	0.0268	0.0025	<0.001	<0.005	<0.005	<0.005
Total Metals																														
Aluminum (Total)	0.002 - 0.01																				84.9					14.5				
Antimony (Total)	0.0002 - 0.001																				<0.001					0.00104				
Arsenic (Total)	0.0002 - 0.001																				0.0198					0.00552				
Barium (Total)	0.0001 - 0.0005																				0.321					0.137				
Beryllium (Total)	0.001 - 0.005																				<0.005					<0.001				
Bismuth (Total)	0.001 - 0.005																				<0.005					<0.001				
Boron (Total)	0.02 - 0.1																				0.12					0.124				
Cadmium (Total)	0.000034 - 0.00017																				0.00058					0.000291				
Calcium (Total)	0.04 - 0.2																				104					32.7				
Chromium (Total)	0.001 - 0.005																				0.512					0.129				
Cobalt (Total)	0.0002 - 0.001																				0.117					0.0166				
Copper (Total)	0.0002 - 0.001																				0.444					0.0682				
Iron (Total)	0.03																				112					21.1				
Lead (Total)	0.0001 - 0.0005																				0.0142					0.00439				
Lithium (Total)	0.01 - 0.05																				<0.05					0.021				
Magnesium (Total)	0.01 - 0.05																				184					35.4				
Manganese (Total)	0.0001 - 0.0005																				2.59					0.415				
Mercury (Total)	0.00001																				0.000025					0.00003				
Molybdenum (Total)	0.0001 - 0.0005																				0.0371					0.113				
Nickel (Total)	0.001 - 0.005																				1.24					0.182				
Potassium (Total)	0.1 - 0.5																				11.8					5.81				
Selenium (Total)	0.0002 - 0.001																				0.0041					0.00067				
Silicon (Total)	0.05																				101					36.4				
Silver (Total)	0.00002 - 0.0001																				0.00684					0.00758				
Sodium (Total)	2																				23.3					49.4				
Strontium (Total)	0.0002 - 0.001																				0.471					0.602				
Thallium (Total)	0.0002 - 0.001																				<0.001					<0.0002				
Tin (Total)	0.0002 - 0.001																				<0.001					0.00226				
Titanium (Total)	0.01																				5.23					0.683				
Uranium (Total)	0.00002 - 0.0001																				0.00161					0.00434				
Vanadium (Total)	0.002 - 0.01																				0.332					0.0514				
Zinc (Total)	0.002 - 0.01																				0.254					0.0843				
Organics																														
Carbon Organic (Total)	0.5	<0.5	0.51	0.6	0.5	<0.5	1.09	0.68	0.91	1.37	0.76	1.55	0.61	0.75	<0.5	0.5	2.74	3.62	2.23	2.61	4.34	<0.5	0.69	1.77	1.56	1.39	<0.5	0.62	1.02	<0.5

M:\1\01\00329\08\A\Report\3 - 2011 Baseline Hydrogeology Study\Appendices\B - Groundwater Quality Data\[Appendix B1 - Analytical Data and Guideline Exceedances.xls]B1.5 - SKEETER CREEK VALLEY

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.

Knight Piésold
CONSULTING

APPENDIX B2

QUALITY ASSURANCE/QUALITY CONTROL

(Pages B2-1 to B2-15)

APPENDIX B2 - QUALITY ASSURANCE / QUALITY CONTROL

B2.1 INTRODUCTION

The objective of the QA/QC program is to verify that the data are obtained in a scientifically defensible, repeatable and well documented manner. The QA/QC program uses standard methods and protocols for the collection of groundwater quality samples. The following methods and protocols were carried out as per the QA/QC program:

- Regular calibration and maintenance of all field equipment.
- Collection and preparation of field blanks, travel blanks, and duplicate samples for approximately 10% of overall samples.
- Employment of a fully accredited analytical laboratory for the analysis of all the groundwater quality samples.
- Determination of analytical precision and accuracy through the interpretation of the analysis reports for blank samples and blind duplicates.

B2.2 FIELD AND TRAVEL BLANKS

Field blank samples are laboratory certified deionized water samples collected using the same sampling procedures and equipment as the water quality samples. They are used to identify sample contamination from the sampling equipment and/or procedures. Travel blanks are provided by the laboratory to determine if the samples were contaminated during shipment.

The field and travel blanks used during the 2008 groundwater sampling program were in exceedance of the method of detection limit (MDL) for bicarbonate alkalinity (as $CaCO_3$) and total alkalinity (as $CaCO_3$) with values of 1.2 mg/L and 1.6 mg/L respectively. Alkalinity results for the samples collected had a minimum detectable value of 73 mg/L for both bicarbonate alkalinity (as $CaCO_3$) and total alkalinity (as $CaCO_3$). The exceedances were noted in Appendix B5 and were determined to have no effect on the sample set.

No parameters in the field or travel blanks collected during 2009 groundwater sampling were in exceedance of the MDLs.

Field and travel blanks exceeded the MDL for acidity for data collected since the start of this project (2005 – 2010). Acidity was in exceedance because of the low pH of the deionized water. The exceedance for acidity has no effect on the sample set.

A summary of the laboratory results from the field and travel blanks is provided in Table B1.1.

B2.3 BLIND DUPLICATES

A blind duplicate is a replicate sample collected in the field at a known location and submitted to the laboratory for analysis under an alias. The blind duplicate is used to verify the laboratory is providing reproducible results. Relative percent difference (RPD) calculations are applied to the laboratory results to determine the precision of the test results. Results are considered adequate if the RPD between the sample and the duplicate is less than 25% for concentrations that are 5 times greater than the MDL.

The 2008 sample from RES08-06A exceeded the RPD criteria above for the following parameters:

1. Dissolved Barium – RPD of 32%, and
2. Dissolved Molybdenum – RPD of 46%

These parameters were excluded from the 2008 data set.

The blind duplicate analyses completed for the 2009, 2010 and 2011 samples had adequate RPD values.

A summary of the blind duplicate analyses are presented in Tables B2.2 through B2.7.

B2.4 ION BALANCE

An ion charge balance is used to detect errors associated with analyses of the major ionic species in water samples. The major cations in water are typically calcium, magnesium, potassium, and sodium, and the major anions are typically bicarbonate, sulphate, and chloride. A charge balance error greater than 10% could indicate an analytical error or an unaccounted major ionic species.

Data collected in 2008 and 2009 had ion balance errors exceeding 10% for samples RES08-01A, RES08-01B, RES08-02B, and RES08-04A. This is likely caused by elevated pH values from improper well installations. Water samples are no longer collected from these wells. Samples collected in 2010 and 2011 had acceptable ion balances.

A summary of the ion balances is provided in Table B2.8.

B2.5 SUMMARY

The quality assurance/quality control identified two parameters measured in the 2008 sample set that were considered to be potentially erroneous. These parameters are dissolved barium and molybdenum. In the duplicate sample for RES08-06A, the relative percent difference for dissolved barium and molybdenum is greater than 25% and consequently has not been considered in the baseline analysis. Ion balances completed on both data sets exceed the 10% charge balance error. Data controls implemented in 2010 using the Knight Piésold web based data management system FULCRUM to calculate ion balances immediately upon receipt of the sample set has aided with identifying data quality issues in a timely period. There are no balance errors for the 2010 data.

SCHAFT CREEK MINE PROJECT
TABLE B2.1-BLANK SAMPLES

Sample ID	EQUIPMENT BLANK	FD-08	FIELD BLANK	FIELD BLANK	TRAVEL BLANK	FIELD BLANK	EQUIPMENT BLANK	EQUIP BLANK	TRAVEL BLANK	FIELD BLANK	TRAVEL BLANK
Date Sampled	3-Aug-08	8-Sep-08	2-Oct-09	23-Apr-10	29-Jun-10	30-Jun-10	30-Jun-10	22-Sep-10	22-Sep-10	23-Mar-11	26-Mar-11
In Situ Parameters											
pH (In Situ) pH		7.2									
Specific Conductivity (In Situ) µS/cm		2060									
Temperature (In Situ) °C		8.4									
Physical Tests											
Acidity to pH 8.3 (as CaCO3)	<1	**1.5**	<1	<1	**2.4**	**2.2**	**2.5**	**3.5**	**3.2**	**2.9**	**2**
Alkalinity (Total as CaCO3)	<2	113	<2	<2	<2	<2	<2	<2	<2	<2	<2
Bicarbonate Alkalinity	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Carbonate Alkalinity	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	<20	<20									
Color TCU	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Conductivity µS/cm	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Hardness (Dissolved)			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hardness (Total)	<0.5	967									
Hydroxide Alkalinity	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
pH pH	5.57	5.63	5.56	5.95	5.59	5.6	5.9	5.79	5.79	5.45	5.72
Specific Conductivity µS/cm											
Total Dissolved Solids	<10	1710	<10	<10	<10	<10	<10	<10	<10	<10	<10
Total Suspended Solids	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Turbidity NTU	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Anions											
Bromide (Dissolved)			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromide (Total)	<0.05	<0.05									
Chloride (Dissolved)		8.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloride (Total)	<0.5	<0.5									
Fluoride (Dissolved)			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluoride (Total)	<0.02	<0.02									
Sulphate (Dissolved)		1130	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate (Total)	<0.5	<0.5									
Nutrients											
Ammonia (Total)	**0.0121**	<0.005	<0.005	<0.02	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate (as N)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite (as N)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	<0.05	**0.1**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen Kjeldahl (Total)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Orthophosphate (Dissolved)								<0.001	<0.001	<0.001	<0.001
Phosphate (Dissolved)								<0.002	<0.002		
Phosphate (Total)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		
Phosphorus (Dissolved)	<0.3		<0.3							<0.002	<0.3
Phosphorus (Total)	<0.3	<0.3								<0.002	<0.002
Cyanide											
Cyanide (Total)	<0.001	<0.001									
Dissolved Metals											
Aluminum (Dissolved)	<0.001	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Antimony (Dissolved)	<0.0001	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (Dissolved)	<0.0001	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Barium (Dissolved)	**0.000606**	0.0134	<0.00005	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Beryllium (Dissolved)	<0.0005		<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth (Dissolved)	<0.0005		<0.0005							<0.2	<0.2
Boron (Dissolved)	<0.01	<0.05	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium (Dissolved)	<0.000017	<0.00025	<0.00001	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017
Calcium (Dissolved)	<0.02	361	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Dissolved)	<0.0005	<0.0025	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Dissolved)	<0.0001	0.00328	<0.0001	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Copper (Dissolved)	**0.00021**	0.0848	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (Dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Lead (Dissolved)	<0.00005		<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Lithium (Dissolved)	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium (Dissolved)	<0.005	15.8	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese (Dissolved)	<0.00005	1.79	<0.00005	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Mercury (Dissolved)	<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Dissolved)	<0.00005	0.378	<0.00005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel (Dissolved)	<0.0005	0.0036	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Potassium (Dissolved)	<0.05	16.6	<0.05	<2	<2	<2	<2	<2	<2	<2	<2
Selenium (Dissolved)	<0.0001	<0.0005	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon (Dissolved)	<0.05		<0.05							<0.05	<0.05
Silver (Dissolved)	<0.00001		<0.00001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Sodium (Dissolved)	<2	88.6	<2	<2	<2	<2	<2	<2	<2	<2	<2
Strontium (Dissolved)	<0.0001	0.699	<0.0001							<0.005	<0.005
Thallium (Dissolved)	<0.0001		<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin (Dissolved)	<0.0001		<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Titanium (Dissolved)	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	<0.00001		<0.00001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vanadium (Dissolved)	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc (Dissolved)	<0.001	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Metals											
Aluminum (Total)	<0.001	<0.005									
Antimony (Total)	<0.0001	<0.0005									
Arsenic (Total)	<0.0001	<0.0005									
Barium (Total)	**0.00303**	0.0133									
Beryllium (Total)	<0.0005	<0.0005									
Bismuth (Total)	<0.0005	<0.0005									
Boron (Total)	<0.01	<0.05									
Cadmium (Total)	<0.000017	0.00027									
Calcium (Total)	<0.02	365									
Chromium (Total)	<0.0005	<0.0025									
Cobalt (Total)	<0.0001	0.00325									
Copper (Total)	**0.00016**	0.117									
Iron (Total)	<0.03	0.218									
Lead (Total)	<0.00005	<0.00005									
Lithium (Total)	<0.005	<0.005									
Magnesium (Total)	<0.005	15.6									
Manganese (Total)	<0.00005	1.79									
Mercury (Total)	<0.00001	<0.00001									
Molybdenum (Total)	<0.00005	0.377									
Nickel (Total)	<0.0005	0.0036									
Phosphorus (Total) mg/dm2.day											
Potassium (Total)	<0.05	16.4									
Selenium (Total)	<0.0001	<0.0005									
Silicon (Total)	<0.05	<0.05									
Silver (Total)	<0.00001	<0.00001									
Sodium (Total)	<2	90.7									
Strontium (Total)	<0.0001	0.705									
Thallium (Total)	<0.0001	<0.0001									
Tin (Total)	<0.0001	<0.0001									
Titanium (Total)	<0.01	<0.01									
Uranium (Total)	<0.00001	<0.00001									
Vanadium (Total)	<0.001	<0.001									
Zinc (Total)	<0.001	<0.005									
Organics											
Carbon Organic (Total)	<0.5	**2.71**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Percent of sample > MDL	**5.56%**	**6.00%**	**0.00%**	**0.00%**	**1.96%**	**1.96%**	**1.96%**	**1.89%**	**1.89%**	**1.79%**	**1.79%**

M:\1\01\00329\08\A\Report\3 - 2011 Baseline Hydrogeology Study\Appendices\B - Groundwater Quality Data\[Appendix B2 Tables.xls]B2.1-BLANK SAMPLES

NOTES:
1. UNIT ARE mg/L UNLESS OTHERWISE STATED
2. BOLD INDICATES THE RESULT EXCEEDS THE MDL FOR THAT ANALYTE
3. MDL EXCEEDANCE CALCULATION DOES NOT UNCLUDE pH; WILL ALWAYS BE ABOVE THE MDL

SCHAFT CREEK MINE PROJECT
TABLE B2.2-DUPLICATE SAMPLE HG10-02B

Site Date Sampled	MDL 15/Sep/2011	HG10-02B 15/Sep/2011	Duplicate 15/Sep/2011	RPD (%)
Physical Tests				
Acidity to pH 8.3 (as CaCO3)	1	1.6	1.6	
Alkalinity (Total as CaCO3)	2	89.6	88.7	1.01%
Bicarbonate Alkalinity	2	89.6	88.7	1.01%
Carbonate Alkalinity	2	<2	<2	
Color TCU	5	<5	<5	
Conductivity µS/cm	2	201	200	0.50%
Hardness as CaCO3 (Dissolved)	0.5	107	106	0.94%
Hydroxide Alkalinity	2	<2	<2	
pH pH	0.1	8.24	8.23	0.12%
Total Dissolved Solids	10	110	105	4.65%
Total Suspended Solids	3	<3	<3	
Turbidity NTU	0.1	0.52	0.57	9.17%
Dissolved Anions				
Bromide (Dissolved)	0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	<0.5	<0.5	
Fluoride (Dissolved)	0.02	0.022	0.022	
Sulphate (Dissolved)	0.5	14.4	14.4	0.00%
Nutrients				
Ammonia (Total)	0.005	<0.005	<0.005	
Nitrate (as N)	0.005	0.0561	0.0533	5.12%
Nitrite (as N)	0.001	<0.001	<0.001	
Nitrogen (Total)	0.05	0.07	0.13	
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.05	
Orthophosphate (Dissolved)	0.001	0.0034	0.0033	
Phosphate (Dissolved)	0.002	0.0035	0.0037	
Phosphate (Total)	0.002	0.0044	0.0042	
Dissolved Metals				
Aluminum (Dissolved)	0.005	<0.005	<0.005	
Antimony (Dissolved)	0.0005	<0.0005	<0.0005	
Arsenic (Dissolved)	0.0005	<0.0005	<0.0005	
Barium (Dissolved)	0.02	0.058	0.057	
Beryllium (Dissolved)	0.001	<0.001	<0.001	
Bismuth (Dissolved)	0.2	<0.2	<0.2	
Boron (Dissolved)	0.1	<0.1	<0.1	
Cadmium (Dissolved)	0.000017	<0.000017	<0.000017	
Calcium (Dissolved)	0.1	32.2	31.7	1.56%
Chromium (Dissolved)	0.001	<0.001	<0.001	
Cobalt (Dissolved)	0.0003	<0.0003	<0.0003	
Copper (Dissolved)	0.001	<0.001	<0.001	
Iron (Dissolved)	0.03	<0.03	<0.03	
Lead (Dissolved)	0.0005	<0.0005	<0.0005	
Lithium (Dissolved)	0.005	<0.005	<0.005	
Magnesium (Dissolved)	0.1	6.58	6.43	2.31%
Manganese (Dissolved)	0.0003	<0.0003	<0.0003	
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	
Molybdenum (Dissolved)	0.001	0.004	0.0039	
Nickel (Dissolved)	0.001	<0.001	<0.001	
Phosphorus (Metal) Dissolved	0.3	<0.3	<0.3	
Potassium (Dissolved)	2	<2	<2	
Selenium (Dissolved)	0.001	<0.001	<0.001	
Silicon (Dissolved)	0.05	3.17	3.14	0.95%
Silver (Dissolved)	0.00002	<0.00002	<0.00002	
Sodium (Dissolved)	2	<2	<2	
Strontium (Dissolved)	0.005	0.152	0.15	1.32%
Thallium (Dissolved)	0.0002	<0.0002	<0.0002	
Tin (Dissolved)	0.0005	<0.0005	<0.0005	
Titanium (Dissolved)	0.01	<0.01	<0.01	
Uranium (Dissolved)	0.0002	0.00042	0.00042	
Vanadium (Dissolved)	0.001	<0.001	<0.001	
Zinc (Dissolved)	0.005	<0.005	<0.005	
Total Metals				
Aluminum (Total)	0.005	0.011	0.0106	
Antimony (Total)	0.0005	<0.0005	<0.0005	
Arsenic (Total)	0.0005	<0.0005	<0.0005	
Barium (Total)	0.02	0.059	0.059	
Beryllium (Total)	0.001	<0.001	<0.001	
Bismuth (Total)	0.2	<0.2	<0.2	
Boron (Total)	0.1	<0.1	<0.1	
Cadmium (Total)	0.000017	<0.000017	<0.000017	
Calcium (Total)	0.1	30.9	31.7	2.56%
Chromium (Total)	0.001	<0.001	<0.001	
Cobalt (Total)	0.0003	<0.0003	<0.0003	
Copper (Total)	0.001	<0.001	<0.001	
Iron (Total)	0.03	<0.03	<0.03	
Lead (Total)	0.0005	<0.0005	<0.0005	
Lithium (Total)	0.005	<0.005	<0.005	
Magnesium (Total)	0.1	6.48	6.56	1.23%
Manganese (Total)	0.0003	0.00044	0.00047	
Mercury (Total)	0.00001	<0.00001	<0.00001	
Molybdenum (Total)	0.001	0.0046	0.0046	
Nickel (Total)	0.001	<0.001	<0.001	
Potassium (Total)	2	<2	<2	
Selenium (Total)	0.001	<0.001	<0.001	
Silicon (Total)	0.05	3.1	3.13	0.96%
Silver (Total)	0.00002	<0.00002	<0.00002	
Sodium (Total)	2	<2	<2	
Strontium (Total)	0.005	0.153	0.156	1.94%
Thallium (Total)	0.0002	<0.0002	<0.0002	
Tin (Total)	0.0005	<0.0005	<0.0005	
Titanium (Total)	0.01	<0.01	<0.01	
Uranium (Total)	0.0002	0.00046	0.00046	
Vanadium (Total)	0.001	<0.001	<0.001	
Zinc (Total)	0.005	<0.005	<0.005	
Organics				
Carbon Organic (Total)	0.5	<0.5	<0.5	

M:\1\01\00329\08A\Report\3 - 2011 Baseline Hydrogeology Study\Appendices\B - Groundwater Quality Data\[Appendix B2 Tables.xls]B2.2-DUPLICATE SAMPLE HG10-02B

NOTES:
1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAN 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.3-DUPLICATE SAMPLE HG10-05A

Site Date Sampled	MDL 29/Jun/2010	HG10-05A 29/Jun/2010	Duplicate 29/Jun/2010	RPD (%)
In Situ Parameters				
Physical Tests				
Acidity to pH 8.3 (as CaCO3)	1	1.2	2.2	
Alkalinity (Total as CaCO3)	2	54.8	56.2	2.52%
Bicarbonate Alkalinity	2	54.8	56.2	2.52%
Carbonate Alkalinity	2	<2	<2	
Color TCU	5	<5	<5	
Conductivity µS/cm	2	119	120	0.84%
Hardness as CaCO3 (Dissolved)	0.5	61.2	62.6	2.26%
Hydroxide Alkalinity	2	<2	<2	
pH pH	0.1	8.27	8.11	1.95%
Total Dissolved Solids	10	72	73	1.38%
Total Suspended Solids	3	<3	<3	
Turbidity NTU	0.1	0.45	0.43	
Dissolved Anions				
Bromide (Dissolved)	0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	<0.5	<0.5	
Fluoride (Dissolved)	0.02	<0.02	<0.022	
Sulphate (Dissolved)	0.5	7.83	8.36	6.55%
Nutrients				
Ammonia (Total)	0.005	<0.005	<0.005	
Nitrate (as N)	0.005	0.0305	0.0386	23.44%
Nitrite (as N)	0.001	<0.001	<0.001	
Nitrogen (Total)	0.05	<0.05	<0.05	
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.05	
Phosphate (Total)	0.002	0.0028	0.0021	
Dissolved Metals				
Aluminum (Dissolved)	0.005	0.0208	0.0215	
Antimony (Dissolved)	0.0005	<0.0005	<0.0005	
Arsenic (Dissolved)	0.0005	<0.0005	<0.0005	
Barium (Dissolved)	0.02	0.084	0.087	
Beryllium (Dissolved)	0.001	<0.001	<0.001	
Boron (Dissolved)	0.1	<0.1	<0.1	
Cadmium (Dissolved)	0.000017	0.000019	0.000017	
Calcium (Dissolved)	0.1	18.8	19.2	2.11%
Chromium (Dissolved)	0.001	<0.001	<0.001	
Cobalt (Dissolved)	0.0003	<0.0003	<0.0003	
Copper (Dissolved)	0.001	<0.001	<0.001	
Iron (Dissolved)	0.03	<0.03	<0.03	
Lead (Dissolved)	0.0005	<0.0005	<0.0005	
Lithium (Dissolved)	0.005	<0.005	<0.005	
Magnesium (Dissolved)	0.1	3.44	3.57	3.71%
Manganese (Dissolved)	0.0003	0.00066	0.00074	
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	
Molybdenum (Dissolved)	0.001	0.0047	0.0047	
Nickel (Dissolved)	0.001	<0.001	<0.001	
Potassium (Dissolved)	2	<2	<2	
Selenium (Dissolved)	0.001	<0.001	<0.001	
Silver (Dissolved)	0.00002	<0.00002	<0.00002	
Sodium (Dissolved)	2	<2	<2	
Thallium (Dissolved)	0.0002	<0.0002	<0.0002	
Tin (Dissolved)	0.0005	<0.0005	<0.0005	
Titanium (Dissolved)	0.01	<0.01	<0.01	
Uranium (Dissolved)	0.0002	0.00055	0.00059	
Vanadium (Dissolved)	0.001	<0.001	<0.001	
Zinc (Dissolved)	0.005	<0.005	<0.005	
Organics				
Carbon Organic (Total)	0.5	<0.5	<0.5	

M:\1\01\00329\08\A\Report\3 - 2011 Baseline Hydrogeology Study\Appendices\B - Groundwater Quality Data\[Appendix B2 Tables.xls]B2.3-DUPLICATE SAMPLE HG10-05A

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.4-DUPLICATE SAMPLE RES08-3A

Site	MDL	RES08-3A	Duplicate	RPD
Date Sampled	**24/Apr/2010**	**24/Apr/2010**	**24/Apr/2010**	**(%)**
In Situ Parameters				
Physical Tests				
Acidity to pH 8.3 (as CaCO3)	1	4.7	5	
Alkalinity (Total as CaCO3)	2	103	105	1.92%
Bicarbonate Alkalinity	2	103	105	1.92%
Carbonate Alkalinity	2	<2	<2	
Color TCU	5	<5	<5	
Conductivity µS/cm	2	934	929	0.54%
Hardness as CaCO3 (Dissolved)	0.5	421	428	1.65%
Hydroxide Alkalinity	2	<2	<2	
pH pH	0.1	7.94	7.88	0.76%
Total Dissolved Solids	13	743	750	0.94%
Total Suspended Solids	3	3.8	3	
Turbidity NTU	0.1	0.29	0.29	
Dissolved Anions				
Bromide (Dissolved)	0.5	<0.5	<0.5	
Chloride (Dissolved)	5	12.4	12.5	
Fluoride (Dissolved)	0.2	0.38	0.29	
Sulphate (Dissolved)	5	416	417	0.24%
Nutrients				
Ammonia (Total)	0.02	<0.02	<0.02	
Nitrate (as N)	0.05	<0.05	<0.05	
Nitrite (as N)	0.01	<0.01	<0.01	
Nitrogen (Total)	0.05	0.07	0.08	
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.05	
Phosphate (Total)	0.002	0.0042	0.0037	
Cyanide				
Dissolved Metals				
Aluminum (Dissolved)	0.01	<0.01	<0.01	
Antimony (Dissolved)	0.001	<0.001	<0.001	
Arsenic (Dissolved)	0.001	0.0016	0.0016	
Barium (Dissolved)	0.02	0.225	0.227	0.88%
Beryllium (Dissolved)	0.002	<0.002	<0.002	
Boron (Dissolved)	0.1	0.14	0.14	
Cadmium (Dissolved)	0.000034	0.000041	0.00005	
Calcium (Dissolved)	0.1	129	131	1.54%
Chromium (Dissolved)	0.002	<0.002	<0.002	
Cobalt (Dissolved)	0.0006	<0.0006	<0.0006	
Copper (Dissolved)	0.002	<0.002	<0.002	
Iron (Dissolved)	0.03	<0.03	<0.03	
Lead (Dissolved)	0.001	<0.001	<0.001	
Lithium (Dissolved)	0.01	<0.01	<0.01	
Magnesium (Dissolved)	0.1	23.9	24.2	1.25%
Manganese (Dissolved)	0.0006	0.00496	0.00489	1.42%
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	
Molybdenum (Dissolved)	0.002	0.105	0.104	0.96%
Nickel (Dissolved)	0.002	<0.002	<0.002	
Potassium (Dissolved)	2	<2	<2	
Selenium (Dissolved)	0.002	<0.002	<0.002	
Silver (Dissolved)	0.00004	<0.00004	<0.00004	
Sodium (Dissolved)	2	41.1	42.1	2.40%
Thallium (Dissolved)	0.0004	<0.0004	<0.0004	
Tin (Dissolved)	0.001	<0.001	<0.001	
Titanium (Dissolved)	0.01	<0.01	<0.01	
Uranium (Dissolved)	0.0004	0.0172	0.0173	0.58%
Vanadium (Dissolved)	0.002	<0.002	<0.002	
Zinc (Dissolved)	0.005	<0.005	<0.005	
Organics				
Carbon Organic (Total)	0.5	1.12	1.39	

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.5-DUPLICATE SAMPLE RES08-3B

Site Date Sampled	MDL 02/Oct/2009	RES08-3B 02/Oct/2009	Duplicate 02/Oct/2009	RPD (%)
Physical Tests				
Acidity to pH 8.3 (as CaCO3)	1	3	2.6	
Alkalinity (Total as CaCO3)	2	100	103	2.96%
Bicarbonate Alkalinity	2	100	103	2.96%
Carbonate Alkalinity	2	<2	<2	
Color TCU	5	<5	<5	
Conductivity µS/cm	2	211	208	1.43%
Hardness as CaCO3 (Dissolved)	0.5	103	104	0.97%
Hydroxide Alkalinity	2	<2	<2	
pH pH	0.1	8.15	8.16	0.12%
Total Dissolved Solids	10	117	113	3.48%
Total Suspended Solids	3	6.2	6.2	
Turbidity NTU	0.1	5.44	4.62	16.30%
Dissolved Anions				
Bromide (Dissolved)	0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	<0.5	<0.5	
Fluoride (Dissolved)	0.02	<0.02	<0.02	
Sulphate (Dissolved)	0.5	8.97	8.87	1.12%
Nutrients				
Ammonia (Total)	0.005	<0.005	<0.005	
Nitrate (as N)	0.005	0.0339	0.031	8.94%
Nitrite (as N)	0.001	<0.001	<0.001	
Nitrogen (Total)	0.05	<0.05	<0.05	
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.05	
Phosphate (Total)	0.002	0.011	0.0091	
Phosphorus (Nutrient) Dissolved	0.3	<0.3	<0.3	
Dissolved Metals				
Aluminum (Dissolved)	0.001	0.0026	0.0026	
Antimony (Dissolved)	0.0001	<0.0001	<0.0001	
Arsenic (Dissolved)	0.0001	0.00047	0.00048	
Barium (Dissolved)	0.00005	0.0621	0.0629	1.28%
Beryllium (Dissolved)	0.0005	<0.0005	<0.0005	
Bismuth (Dissolved)	0.0005	<0.0005	<0.0005	
Boron (Dissolved)	0.01	0.01	0.011	
Cadmium (Dissolved)	0.00001	<0.00001	<0.00001	
Calcium (Dissolved)	0.02	32.5	32.9	1.22%
Chromium (Dissolved)	0.0005	0.00087	0.00087	
Cobalt (Dissolved)	0.0001	<0.0001	<0.0001	
Copper (Dissolved)	0.0001	0.00023	0.0002	
Iron (Dissolved)	0.03	<0.03	<0.03	
Lead (Dissolved)	0.00005	<0.00005	<0.00005	
Lithium (Dissolved)	0.005	<0.005	<0.005	
Magnesium (Dissolved)	0.005	5.26	5.37	2.07%
Manganese (Dissolved)	0.00005	0.000209	0.000214	
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	
Molybdenum (Dissolved)	0.00005	0.00142	0.00146	2.78%
Nickel (Dissolved)	0.0005	<0.0005	<0.0005	
Potassium (Dissolved)	0.05	0.65	0.645	0.77%
Selenium (Dissolved)	0.0001	<0.0001	<0.0001	
Silicon (Dissolved)	0.05	2.29	2.29	0.00%
Silver (Dissolved)	0.00001	<0.00001	<0.00001	
Sodium (Dissolved)	2	<2	<2	
Strontium (Dissolved)	0.0001	0.12	0.122	1.65%
Thallium (Dissolved)	0.0001	<0.0001	<0.0001	
Tin (Dissolved)	0.0001	<0.0001	<0.0001	
Titanium (Dissolved)	0.01	<0.01	<0.01	
Uranium (Dissolved)	0.00001	0.000163	0.00016	1.86%
Vanadium (Dissolved)	0.001	<0.001	<0.001	
Zinc (Dissolved)	0.001	<0.001	<0.001	
Organics				
Carbon Organic (Total)	0.5	<0.5	<0.5	

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.6-DUPLICATE SAMPLE RES08-4B

Site Date Sampled	MDL 22/Sep/2010	RES08-4B 22/Sep/2010	Duplicate 22/Sep/2010	RPD (%)	MDL 23/Mar/2011	RES08-4B 23/Mar/2011	Duplicate 23/Mar/2011	RPD (%)
Physical Tests								
Acidity to pH 8.3 (as CaCO3)	1	<1	<1		1	3.1	3.4	
Alkalinity (Total as CaCO3)	1	122	123	0.82%	2	120	136	12.50%
Bicarbonate Alkalinity	1	122	118	3.33%	2	120	136	12.50%
Carbonate Alkalinity	1	<1	<4.8		2	<2	<2	
Color TCU	5	<5	<5		5	<5	<5	
Conductivity µS/cm	2	269	266	1.12%	2	271	279	2.91%
Hardness as CaCO3 (Dissolved)	0.5	96.7	96.3	0.41%	0.5	91.7	92.6	0.98%
Hydroxide Alkalinity	1	<1	<1		2	<2	<2	
pH pH	0.1	8.35	8.4	0.60%	0.1	8.15	8.16	0.12%
Total Dissolved Solids	10	157	159	1.27%	10	164	173	5.34%
Total Suspended Solids	3	<3	<3		3	<3	<3	
Turbidity NTU	0.1	0.4	0.4		0.1	0.98	0.37	
Dissolved Anions								
Bromide (Dissolved)	0.05	<0.05	<0.05		0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	<0.5	<0.5		0.5	<0.5	<0.5	
Fluoride (Dissolved)	0.02	0.218	0.214	1.85%	0.02	0.196	0.201	2.52%
Sulphate (Dissolved)	0.5	20.7	20.6	0.48%	0.5	22.5	22.7	0.88%
Nutrients								
Ammonia (Total)	0.005	<0.005	<0.005		0.005	<0.005	<0.005	
Nitrate (as N)	0.005	<0.005	<0.005		0.005	<0.005	<0.005	
Nitrite (as N)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Nitrogen (Total)	0.05	0.05	0.05		0.05	0.09	0.08	
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.051		0.05	0.118	0.089	
Orthophosphate (Dissolved)	0.001	0.0049	0.0052		0.001	<0.001	<0.0024	
Phosphorus (Nutrient) Dissolved					0.002	<0.3	<0.0029	
Phosphorus (Nutrient) Total					0.002	0.0056	0.0059	
Dissolved Metals								
Aluminum (Dissolved)	0.005	0.0132	0.0126		0.005	0.0119	0.0111	
Antimony (Dissolved)	0.0005	<0.0005	<0.0005		0.0005	<0.0005	<0.0005	
Arsenic (Dissolved)	0.0005	0.00087	0.00085		0.0005	0.00093	0.00093	
Barium (Dissolved)	0.02	0.101	0.1	1.00%	0.02	0.099	0.098	
Beryllium (Dissolved)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Bismuth (Dissolved)					0.2	<0.2	<0.2	
Boron (Dissolved)	0.1	<0.1	<0.1		0.1	<0.1	<0.1	
Cadmium (Dissolved)	0.000017	0.000018	0.000017		0.000017	0.00003	0.000037	
Calcium (Dissolved)	0.1	28.5	28.4	0.35%	0.1	26.6	26.9	1.12%
Chromium (Dissolved)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Cobalt (Dissolved)	0.0003	<0.0003	<0.0003		0.0003	<0.0003	<0.0003	
Copper (Dissolved)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Iron (Dissolved)	0.03	<0.03	<0.03		0.03	<0.03	<0.03	
Lead (Dissolved)	0.0005	<0.0005	<0.0005		0.0005	<0.0005	<0.0005	
Lithium (Dissolved)	0.005	<0.005	<0.005		0.005	<0.005	<0.005	
Magnesium (Dissolved)	0.1	6.22	6.17	0.81%	0.1	6.12	6.18	0.98%
Manganese (Dissolved)	0.0003	0.0248	0.0242	2.45%	0.0003	0.0198	0.0205	3.47%
Mercury (Dissolved)	0.00001	<0.00001	<0.00001		0.00001	<0.00001	<0.00001	
Molybdenum (Dissolved)	0.001	0.0205	0.0199	2.97%	0.001	0.0236	0.0244	3.33%
Nickel (Dissolved)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Potassium (Dissolved)	2	<2	<2		2	<2	<2	
Selenium (Dissolved)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Silicon (Dissolved)					0.05	4.61	4.54	1.53%
Silver (Dissolved)	0.00002	<0.00002	<0.00002		0.00002	<0.00002	<0.00002	
Sodium (Dissolved)	2	22.1	21.6	2.29%	2	23.4	23.5	0.43%
Strontium (Dissolved)					0.005	6.73	6.83	1.47%
Thallium (Dissolved)	0.0002	<0.0002	<0.0002		0.0002	<0.0002	<0.0002	
Tin (Dissolved)	0.0005	<0.0005	<0.0005		0.0005	<0.0005	<0.0005	
Titanium (Dissolved)	0.01	<0.01	<0.01		0.01	<0.01	<0.01	
Uranium (Dissolved)	0.0002	0.0168	0.0166	1.20%	0.0002	0.0149	0.0152	1.99%
Vanadium (Dissolved)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Zinc (Dissolved)	0.005	<0.005	<0.005		0.005	<0.005	<0.005	
Organics								
Carbon Organic (Total)	0.5	2.92	2.95	1.02%	0.5	2.66	2.68	0.75%

M:\1\01\00329\08\A\Report\3 - 2011 Baseline Hydrogeology Study\Appendices\B - Groundwater Quality Data\[Appendix B2 Tables.xls]B2.6-DUPLICATE SAMPLE RES08-4B

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.7-DUPLICATE SAMPLE RES08-6A

Site Date Sampled	MDL 27/Sep/2008	RES08-6A 27/Sep/2008	Duplicate 27/Sep/2008	RPD (%)
Physical Tests				
Acidity to pH 8.3 (as CaCO3)	1	<1	<1	
Alkalinity (Total as CaCO3)	1	112	108	3.64%
Bicarbonate Alkalinity	1	107	103	3.81%
Carbonate Alkalinity	1	4.6	5.3	
Color TCU	5	<5	<5	
Conductivity µS/cm	2	427	421	1.42%
Hardness as CaCO3 (Dissolved)	0.5	97	92	5.29%
Hydroxide Alkalinity	1	<1	<1	
pH pH	0.01	8.3	8.23	0.85%
Total Dissolved Solids	10	277	266	4.05%
Total Suspended Solids	3	452	418	7.82%
Turbidity NTU	0.1	430	448	4.10%
Dissolved Anions				
Bromide (Dissolved)	0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	9.87	9.69	1.84%
Fluoride (Dissolved)	0.02	0.566	0.515	9.44%
Sulphate (Dissolved)	0.5	94.1	93.3	0.85%
Nutrients				
Ammonia (Total)	0.005	0.0159	0.0173	
Nitrate (as N)	0.005	0.0063	0.0054	
Nitrite (as N)	0.001	0.0018	0.0013	
Nitrogen (Total)	0.05	0.23	0.14	
Nitrogen Kjeldahl (Total)	0.05	0.223	0.129	
Phosphate (Total)	0.02	0.355	0.339	4.61%
Phosphorus (Nutrient) Dissolved	0.3	<0.3	<0.3	
Phosphorus (Nutrient) Total	0.3	2.27	0.4	
Dissolved Metals				
Aluminum (Dissolved)	0.002	0.083	0.0808	2.69%
Antimony (Dissolved)	0.0002	<0.001	<0.00062	
Arsenic (Dissolved)	0.0002	0.0022	0.00199	
Barium (Dissolved)	0.0001	0.0413	0.0572	**32.28%**
Beryllium (Dissolved)	0.001	<0.005	<0.001	
Bismuth (Dissolved)	0.001	<0.005	<0.001	
Boron (Dissolved)	0.02	0.11	0.116	
Cadmium (Dissolved)	0.000034	<0.00017	<0.000034	
Calcium (Dissolved)	0.04	20.1	18.2	9.92%
Chromium (Dissolved)	0.001	<0.005	<0.001	
Cobalt (Dissolved)	0.0002	<0.001	<0.0002	
Copper (Dissolved)	0.0002	0.0024	0.00147	
Iron (Dissolved)	0.03	0.083	0.099	
Lead (Dissolved)	0.0001	<0.0005	<0.0001	
Lithium (Dissolved)	0.01	<0.05	<0.01	
Magnesium (Dissolved)	0.01	11.4	11.3	0.88%
Manganese (Dissolved)	0.0001	0.0182	0.0177	2.79%
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	
Molybdenum (Dissolved)	0.0001	0.0562	0.0899	**46.13%**
Nickel (Dissolved)	0.001	0.005	0.0044	
Potassium (Dissolved)	0.1	5.72	4.64	20.85%
Selenium (Dissolved)	0.0002	<0.001	<0.0003	
Silicon (Dissolved)	0.05	4.47	4.49	0.45%
Silver (Dissolved)	0.00002	<0.0001	<0.00002	
Sodium (Dissolved)	2	39.8	45.7	13.80%
Strontium (Dissolved)	0.0002	0.5	0.519	3.73%
Thallium (Dissolved)	0.0002	<0.001	<0.0002	
Tin (Dissolved)	0.0002	<0.001	<0.00061	
Titanium (Dissolved)	0.01	<0.01	<0.01	
Uranium (Dissolved)	0.00002	0.00311	0.00333	6.83%
Vanadium (Dissolved)	0.002	<0.01	<0.002	
Zinc (Dissolved)	0.002	<0.01	<0.0034	
Total Metals				
Aluminum (Total)	0.002	84.9	12.9	**147.24%**
Antimony (Total)	0.0002	<0.001	<0.00096	
Arsenic (Total)	0.0002	0.0198	0.00531	**115.41%**
Barium (Total)	0.0001	0.321	0.131	**84.07%**
Beryllium (Total)	0.001	<0.005	<0.001	
Bismuth (Total)	0.001	<0.005	<0.001	
Boron (Total)	0.02	0.12	0.123	
Cadmium (Total)	0.000034	0.00058	0.000323	
Calcium (Total)	0.04	104	32.5	**104.76%**
Chromium (Total)	0.001	0.512	0.116	**126.11%**
Cobalt (Total)	0.0002	0.117	0.0151	**154.28%**
Copper (Total)	0.0002	0.444	0.0644	**149.33%**
Iron (Total)	0.03	112	18.3	**143.82%**
Lead (Total)	0.0001	0.0142	0.00442	**105.05%**
Lithium (Total)	0.01	<0.05	<0.02	
Magnesium (Total)	0.01	184	34.1	**137.46%**
Manganese (Total)	0.0001	2.59	0.389	**147.77%**
Mercury (Total)	0.00001	0.000025	0.000016	
Molybdenum (Total)	0.0001	0.0371	0.108	**97.73%**
Nickel (Total)	0.001	1.24	0.168	**152.27%**
Potassium (Total)	0.1	11.8	5.51	**72.67%**
Selenium (Total)	0.0002	0.0041	0.00078	
Silicon (Total)	0.05	101	31.7	**104.45%**
Silver (Total)	0.00002	0.00684	0.00668	2.37%
Sodium (Total)	2	23.3	49.5	**71.98%**
Strontium (Total)	0.0002	0.471	0.617	**26.84%**
Thallium (Total)	0.0002	<0.001	<0.0002	
Tin (Total)	0.0002	<0.001	<0.00197	
Titanium (Total)	0.01	5.23	0.554	**161.69%**
Uranium (Total)	0.00002	0.00161	0.00435	**91.95%**
Vanadium (Total)	0.002	0.332	0.046	**151.32%**
Zinc (Total)	0.002	0.254	0.0773	**106.67%**
Organics				
Carbon Organic (Total)	0.5	4.34	4.86	11.30%

M:\1\01\00329\08\A\Report\3 - 2011 Baseline Hydrogeology Study\Appendices\B - Groundwater Quality Data\[Appendix B2 Tables.xls]B2.7-DUPLICATE SAMPLE RES08-6A

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAN 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.8-ION BALANCE

	HG10-05B	HG10-05B	HG10-05B	HG10-05A	HG10-05A	HG10-04	HG10-04	HG10-04	HG10-02B	HG10-02B	HG10-02A	HG10-02A
Date Sampled	29-Jun-10	19-Sep-10	24-Mar-11	29-Jun-10	19-Sep-10	30-Jun-10	19-Sep-10	25-Mar-11	30-Jun-10	19-Sep-10	30-Jun-10	19-Sep-10
Time Sampled	3:35 PM	12:23 PM	8:00 AM	5:22 PM	1:16 PM	2:23 PM	3:31 PM	2:30 PM	8:15 AM	10:00 AM	7:23 AM	10:00 AM
Anions												
Bicarbonate Alkalinity	-1.66	-1.63	-1.67	-0.8984	-0.8689	-1.25	-1.32	-1.3	-1.42	-1.47	-1.6	-1.6
Hydroxide Alkalinity	-0.05879	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176
Chloride (Dissolved)	-0.02031	-0.0158	-0.01918	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141	-0.03582	-0.03272
Fluoride (Dissolved)	-0.002737	-0.001948	-0.001895	-0.001053	-0.001053	-0.001421	-0.001053	-0.001053	-0.001053	-0.001053	-0.001474	-0.001053
Sulphate (Dissolved)	-0.2477	-0.1555	-0.1307	-0.163	-0.132	-0.3331	-0.3227	-0.3227	-0.306	-0.2894	-0.3747	-0.3581
Nitrate (as N)	-0.0000855	-0.0001129	-0.0000806	-0.0004919	-0.0005113	-0.001806	-0.00136	-0.001284	-0.0008935	-0.0008629	-0.001315	-0.001266
Nitrite (as N)	-0.0001087	-0.0000565	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217
Phosphate (Dissolved)	0	-0.0001232	0	0	-0.0000632	0	-0.0000853	0	0	-0.0001168	0	-0.0000916
Sum of Anions	-1.99	-1.92	-1.94	-1.19	-1.13	-1.72	-1.78	-1.76	-1.86	-1.89	-2.13	-2.11
Cations												
Aluminum (Dissolved)	0.00181	0.000901	0.000645	0.00231	0.00241	0.000556	0.000556	0.000556	0.000556	0.000556	0.000556	0.000556
Calcium (Dissolved)	1.57	1.59	1.53	0.938	0.898	1.59	1.63	1.62	1.57	1.56	1.64	1.64
Copper (Dissolved)	0.0000504	0.0000315	0.0000315	0.0000315	0.0000315	0.0000315	0.0000315	0.0000315	0.0000315	0.0000315	0.0000315	0.0000315
Iron (Dissolved)	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107
Magnesium (Dissolved)	0.492	0.504	0.483	0.283	0.271	0.313	0.309	0.309	0.559	0.528	0.698	0.671
Manganese (Dissolved)	0.00866	0.0146	0.0162	0.000024	0.0000109	0.0000109	0.0000109	0.0000109	0.0000459	0.0000109	0.0000397	0.0000109
Potassium (Dissolved)	0.0512	0.0512	0.0512	0.0512	0.0512	0.0512	0.0512	0.0512	0.0512	0.0512	0.0512	0.0512
Sodium (Dissolved)	0.222	0.165	0.144	0.087	0.087	0.1	0.087	0.087	0.087	0.087	0.152	0.144
Zinc (Dissolved)	0.000153	0.000153	0.000153	0.000153	0.000153	0.000153	0.000153	0.000153	0.000153	0.000153	0.000153	0.000153
Sum of Cations	2.35	2.33	2.23	1.36	1.31	2.06	2.08	2.07	2.27	2.23	2.54	2.51
Error %	8.24	9.55	6.89	6.57	7.22	8.96	7.83	8.16	9.92	8.13	8.82	8.6

M:\1\01\00329\08\A\Report\3 - 2011 Baseline Hydrogeology Study\Appendices\B - Groundwater Quality Data\[Appendix B2 Tables.xls]B2.8-ION BALANCE

NOTE:

1. UNITS ARE mg/L, UNLESS OTHERWISE STATED

SCHAFT CREEK MINE PROJECT
TABLE B2.8-ION BALANCE

	HG10-02A	HG10-01	HG10-01	RES08-02B	RES08-02B	RES08-02B	RES08-02B	RES08-02B	RES08-03A	RES08-03A	RES08-03A	RES08-03A
Date Sampled	17-Sep-11	30-Jun-10	19-Sep-10	29-Sep-08	04-Oct-09	09-May-10	22-Sep-10	17-Sep-11	30-Sep-08	02-Oct-09	24-Apr-10	21-Sep-10
Time Sampled	1:00 PM	10:30 AM	3:35 PM	10:21 AM	8:50 AM	12:12 PM	4:45 PM		10:23 AM	1:18 PM	2:55 PM	5:34 PM
Anions												
Bicarbonate Alkalinity	-1.64	-2.39	-2.52	-1.46	-0.7148	-1.18	-1.17	-1.25	-1.89	-1.82	-1.69	-1.74
Hydroxide Alkalinity	-0.1176	-0.1176	-0.1176	-0.05879	-0.05879	-0.05879	-0.05879	-0.1176	-0.05879	-0.1176	-0.1176	-0.1176
Chloride (Dissolved)	-0.03723	-0.09336	-0.0739	-0.01439	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141	-0.1219	-0.3498	-0.1596
Fluoride (Dissolved)	-0.001737	-0.003421	-0.002369	-0.005158	-0.004211	-0.004737	-0.005053	-0.005948	-0.001632	-0.00658	-0.02	-0.01458
Sulphate (Dissolved)	-0.381	-0.01041	-0.01041	-0.6579	-0.5871	-0.5642	-0.5579	-0.5933	-0.3456	-3.31	-8.66	-4.27
Nitrate (as N)	-0.001368	-0.0000806	-0.0000806	-0.0001419	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.001952	-0.00136	-0.0008065	-0.0003629
Nitrite (as N)	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0002174	-0.0000217
Phosphate (Dissolved)	0	0	-0.0002084	0	0	0	-0.0000758	0	0	0	0	-0.0000632
Sum of Anions	-2.18	-2.61	-2.72	-2.2	-1.38	-1.82	-1.81	-1.98	-2.31	-5.38	-10.8	-6.3
Cations												
Aluminum (Dissolved)	0.000556	0.000556	0.000556	0.0469	0.000256	0.000556	0.000556	0.000556	0.00316	0.0006	0.00111	0.000556
Calcium (Dissolved)	1.6	1.94	2.08	0.754	0.868	0.848	0.993	0.963	1.69	3.61	6.44	4.44
Copper (Dissolved)	0.0000315	0.0000315	0.0000315	0.000125	0.00000535	0.0000315	0.0000315	0.0000315	0.0000293	0.0000157	0.0000629	0.0000315
Iron (Dissolved)	0.00107	0.038	0.0491	0.0188	0.00107	0.00107	0.00136	0.00115	0.00118	0.00107	0.00107	0.00107
Magnesium (Dissolved)	0.657	0.792	0.811	0.472	0.728	0.651	0.746	0.764	0.496	1.1	1.97	1.27
Manganese (Dissolved)	0.0000109	0.00957	0.0117	0.00104	0.000162	0.000717	0.000717	0.000586	0.000666	0.000227	0.000181	0.0000182
Potassium (Dissolved)	0.0512	0.0512	0.0512	0.0509	0.0312	0.0512	0.0512	0.0512	0.0188	0.0281	0.0512	0.0512
Sodium (Dissolved)	0.139	0.344	0.344	0.779	0.3	0.304	0.274	0.283	0.196	0.848	1.79	1.07
Zinc (Dissolved)	0.000153	0.000153	0.000153	0.000238	0.0000612	0.000153	0.000153	0.000153	0.0000948	0.0000642	0.000153	0.000153
Sum of Cations	2.45	3.18	3.35	2.12	1.93	1.86	2.07	2.06	2.41	5.59	10.3	6.83
Error %	5.84	9.68	**10.3**	-1.7	**16.6**	0.946	6.74	2.04	1.99	1.92	-2.77	4.04

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NOTE:

1. UNITS ARE mg/L, UNLES

SCHAFT CREEK MINE PROJECT
TABLE B2.8-ION BALANCE

	RES08-03A	RES08-03B	RES08-03B	RES08-03B	RES08-03B	RES08-03B	RES08-03B	RES08-04B	RES08-04B	RES08-04B	RES08-04B	RES08-04B
Date Sampled	17-Sep-11	30-Sep-08	02-Oct-09	23-Apr-10	20-Sep-10	24-Mar-11	17-Sep-11	01-Oct-08	04-Oct-09	25-Apr-10	22-Sep-10	23-Mar-11
Time Sampled	10:50 AM	10:26 AM	10:12 AM	12:10 PM	4:48 PM	10:18 AM		10:29 AM	11:36 AM	5:24 PM	11:12 AM	11:52 AM
Anions												
Bicarbonate Alkalinity	-1.7	-1.52	-1.64	-1.39	-1.48	-1.41	-1.66	-0.01639	-1.52	-1.95	-2	-1.97
Hydroxide Alkalinity	-0.1176	-0.05879	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-27.2	-0.05879	-0.1176	-0.05879	-0.1176
Chloride (Dissolved)	-0.4654	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141	-0.141	-0.0141	-0.0141	-0.0141	-0.0141
Fluoride (Dissolved)	-0.02263	-0.001053	-0.001053	-0.001053	-0.001053	-0.001053	-0.001053	-0.01053	-0.002369	-0.01016	-0.01147	-0.01032
Sulphate (Dissolved)	-11.1	-0.2022	-0.1867	-0.4018	-0.1763	-0.3289	-0.2457	-0.1811	-0.1434	-0.3831	-0.431	-0.4684
Nitrate (as N)	-0.0008065	-0.0009161	-0.0005468	-0.0009194	-0.0005161	-0.001181	-0.0009113	-0.0008065	-0.0003806	-0.0000806	-0.0000806	-0.0000806
Nitrite (as N)	-0.0002174	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0002174	-0.0000217	-0.0000217	-0.0000217	-0.0000217
Phosphate (Dissolved)	0	0	0	0	-0.0000632	0	0	0	0	0	-0.0001895	0
Sum of Anions	-13.4	-1.8	-1.96	-1.93	-1.79	-1.87	-2.04	-27.6	-1.74	-2.48	-2.52	-2.58
Cations												
Aluminum (Dissolved)	0.00111	0.00649	0.000289	0.000556	0.000556	0.000556	0.0007	0.0342	0.00295	0.00122	0.00147	0.00132
Calcium (Dissolved)	8.03	1.36	1.62	1.75	1.69	1.59	1.74	11.8	1.62	1.33	1.42	1.33
Copper (Dissolved)	0.0000629	0.0000302	0.00000724	0.0000315	0.0000315	0.0000315	0.0000315	0.000116	0.000291	0.0000629	0.0000315	0.0000315
Iron (Dissolved)	0.00107	0.00265	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107
Magnesium (Dissolved)	2.53	0.368	0.433	0.457	0.413	0.407	0.453	0.00321	0.496	0.481	0.512	0.504
Manganese (Dissolved)	0.000426	0.000281	0.00000761	0.000012	0.0000109	0.0000109	0.0000109	0.0000288	0.0000994	0.000619	0.000903	0.000721
Potassium (Dissolved)	0.0512	0.0218	0.0166	0.0512	0.0512	0.0512	0.0512	0.151	0.0381	0.0512	0.0512	0.0512
Sodium (Dissolved)	2.53	0.113	0.087	0.087	0.087	0.087	0.087	0.857	0.27	0.84	0.961	1.02
Zinc (Dissolved)	0.000153	0.0000397	0.0000306	0.000153	0.000153	0.000153	0.000153	0.000153	0.0000764	0.000153	0.000153	0.000153
Sum of Cations	13.1	1.87	2.16	2.35	2.24	2.14	2.33	12.8	2.43	2.71	2.95	2.91
Error %	-0.9892	2.05	4.81	9.87	**11.2**	6.59	6.72	-36.4	**16.5**	4.44	7.91	5.98

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NOTE:

1. UNITS ARE mg/L, UNLES

SCHAFT CREEK MINE PROJECT
TABLE B2.8-ION BALANCE

	RES08-05A	RES08-05A	RES08-05A	RES08-05A	RES08-05B	RES08-05B	RES08-05B	RES08-06A	RES08-06A	RES08-06A	RES08-06A	RES08-06A
Date Sampled	01-Oct-08	30-Apr-10	23-Sep-10	14-Sep-11	01-Oct-08	01-May-10	23-Sep-10	27-Sep-08	30-Sep-09	07-May-10	22-Sep-10	16-Sep-11
Time Sampled		12:00 PM	4:05 PM	10:25 AM	10:31 AM	12:47 PM	10:49 AM		4:00 PM	5:10 PM	1:15 PM	
Anions												
Bicarbonate Alkalinity	-1.2	-1.16	-1.11	-1.23	-1.85	-1.49	-1.49	-1.75	-1.63	-1.59	-1.75	-2.34
Hydroxide Alkalinity	-0.05879	-0.1176	-0.1176	-0.1176	-0.05879	-0.1176	-0.1176	-0.05879	-0.1176	-0.05879	-0.1176	-0.1176
Chloride (Dissolved)	-0.0141	-0.0141	-0.0141	-0.0141	-0.03864	-0.0141	-0.0141	-0.2784	-0.3131	-0.3498	-0.5021	-0.8264
Fluoride (Dissolved)	-0.003632	-0.003632	-0.003842	-0.004369	-0.002895	-0.002263	-0.002369	-0.02979	-0.01937	-0.02505	-0.03474	-0.06369
Sulphate (Dissolved)	-0.5246	-0.4768	-0.4539	-0.4643	-0.4414	-0.3394	-0.3331	-1.96	-2.12	-2.29	-3.23	-5.1
Nitrate (as N)	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0001016	-0.0000806	-0.0000806	-0.0000806	-0.0008065
Nitrite (as N)	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000391	-0.0000217	-0.0000217	-0.0000217	-0.0002174
Phosphate (Dissolved)	0	0	-0.0000632	0	0	0	-0.0000632	0	0	0	-0.0000632	0
Sum of Anions	-1.8	-1.77	-1.7	-1.83	-2.39	-1.96	-1.96	-4.08	-4.2	-4.31	-5.63	-8.45
Cations												
Aluminum (Dissolved)	0.0385	0.000556	0.000556	0.000556	0.0182	0.000556	0.000812	0.00923	0.000423	0.000556	0.000556	0.00111
Calcium (Dissolved)	1.07	1.53	1.29	1.24	1.64	1.89	1.63	1	1.05	1.18	1.32	1.91
Copper (Dissolved)	0.000219	0.0000315	0.0000315	0.0000315	0.000239	0.0000315	0.0000315	0.0000755	0.00000315	0.0000315	0.0000315	0.0000629
Iron (Dissolved)	0.0171	0.00107	0.00107	0.00107	0.00802	0.0109	0.0239	0.00297	0.00107	0.00107	0.00107	0.0014
Magnesium (Dissolved)	0.328	0.335	0.379	0.341	0.481	0.384	0.427	0.938	0.987	1.02	1.31	1.92
Manganese (Dissolved)	0.000779	0.000105	0.000652	0.0000699	0.00805	0.00823	0.00637	0.000663	0.000714	0.000644	0.000714	0.000608
Potassium (Dissolved)	0.0104	0.0512	0.0512	0.0512	0.0276	0.0512	0.0512	0.146	0.149	0.174	0.153	0.0767
Sodium (Dissolved)	0.431	0.357	0.418	0.344	0.361	0.248	0.248	1.73	2.09	2.24	3.37	7.22
Zinc (Dissolved)	0.0000795	0.000153	0.000226	0.000248	0.000306	0.000153	0.000211	0.000306	0.0000826	0.000153	0.000177	0.000819
Sum of Cations	1.9	2.28	2.14	1.98	2.54	2.59	2.39	3.83	4.28	4.62	6.16	11.1
Error %	2.57	**12.4**	**11.5**	3.88	3.09	13.8	9.9	-3.16	0.921	3.39	4.42	**13.7**

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NOTE:

1. UNITS ARE mg/L, UNLES

SCHAFT CREEK MINE PROJECT
TABLE B2.8-ION BALANCE

	RES08-06B	RES08-06B	RES08-06B	RES08-06B	RES08-06B	RES08-07A	RES08-07A	RES08-07A	RES08-07A	RES08-07A	RES08-07B	RES08-07B
Date Sampled	27-Sep-08	30-Sep-09	07-May-10	20-Sep-10	16-Sep-11	01-Oct-09	02-May-10	21-Sep-10	26-Mar-11	14-Sep-11	01-Oct-09	08-May-10
Time Sampled	10:35 AM	11:15 AM	9:34 AM	8:11 AM	9:30 AM	5:12 PM	12:40 PM	12:15 PM	11:30 AM	11:15 AM	5:17 PM	4:56 PM
Anions												
Bicarbonate Alkalinity	-1.48	-1.75	-1.75	-2.11	-1.69	-3	-3.05	-3	-3.05	-3.16	-3.1	-3.1
Hydroxide Alkalinity	-0.05879	-0.05879	-0.05879	-0.1176	-0.05879	-0.1176	-0.1176	-0.05879	-0.1176	-0.1176	-0.1176	-0.1176
Chloride (Dissolved)	-0.04626	-0.06149	-0.07672	-0.0141	-0.09252	-0.4626	-0.4654	-0.4428	-0.4654	-0.4795	-0.4146	-0.4118
Fluoride (Dissolved)	-0.008527	-0.005685	-0.005948	-0.003211	-0.006895	-0.02758	-0.03006	-0.02963	-0.02942	-0.03232	-0.02374	-0.02521
Sulphate (Dissolved)	-0.7724	-0.7391	-0.737	-0.2811	-0.8015	-2.85	-2.89	-2.73	-2.94	-2.94	-2.5	-2.54
Nitrate (as N)	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806
Nitrite (as N)	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217
Phosphate (Dissolved)	0	0	0	-0.0003726	0	0	0	-0.0000632	0	0	0	0
Sum of Anions	-2.37	-2.62	-2.63	-2.53	-2.65	-6.46	-6.55	-6.26	-6.6	-6.73	-6.16	-6.19
Cations												
Aluminum (Dissolved)	0.0229	0.000345	0.000556	0.000556	0.000556	0.000111	0.000556	0.000556	0.000556	0.000556	0.000145	0.000556
Calcium (Dissolved)	1.02	0.973	1.18	1.75	1.14	2.49	3.15	2.98	2.93	2.78	2.19	2.81
Copper (Dissolved)	0.0000809	0.00000315	0.0000315	0.0000315	0.0000315	0.00000315	0.0000315	0.0000315	0.0000315	0.0000315	0.00000441	0.0000315
Iron (Dissolved)	0.0126	0.00107	0.00107	0.00107	0.00107	0.00315	0.00383	0.0029	0.00272	0.00244	0.00107	0.00107
Magnesium (Dissolved)	0.565	0.715	0.818	0.864	0.809	2.74	3.11	3.04	3.04	3.04	2.86	3.18
Manganese (Dissolved)	0.000877	0.000732	0.000739	0.00137	0.000823	0.00224	0.00227	0.00238	0.00218	0.00252	0.00187	0.00202
Potassium (Dissolved)	0.121	0.153	0.199	0.0997	0.169	0.046	0.0563	0.0537	0.0537	0.0512	0.0775	0.0921
Sodium (Dissolved)	0.757	0.779	0.87	0.352	0.792	1.32	1.29	1.28	1.31	1.28	1.26	1.28
Zinc (Dissolved)	0.0000764	0.0000306	0.000153	0.000153	0.000153	0.0000367	0.000153	0.000153	0.000153	0.000153	0.0000703	0.000153
Sum of Cations	2.5	2.62	3.07	3.07	2.91	6.6	7.61	7.36	7.34	7.16	6.39	7.37
Error %	2.74	0.134	7.74	9.69	4.73	1.1	7.48	8.06	5.28	3.08	1.87	8.64

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NOTE:

1. UNITS ARE mg/L, UNLES

SCHAFT CREEK MINE PROJECT
TABLE B2.8-ION BALANCE

	RES08-07B	RES08-07B	RES08-07B	RES08-08A	RES08-08A	RES08-08A	RES08-08A	RES08-08A	RES08-08B	RES08-08B	RES08-08B	RES08-08B
Date Sampled	21-Sep-10	26-Mar-11	14-Sep-11	01-Oct-09	06-May-10	20-Sep-10	26-Mar-11	16-Sep-11	01-Oct-09	04-May-10	20-Sep-10	16-Sep-11
Time Sampled	8:47 AM	7:50 AM	8:30 AM	12:47 PM	2:40 PM	3:49 PM	9:07 AM	1:55 PM	10:55 AM	5:00 PM	5:56 PM	9:45 AM
Anions												
Bicarbonate Alkalinity	-3.03	-3.11	-3.3	-1.82	-2.18	-2.1	-2.1	-2.08	-2.7	-2.41	-2.61	-2.59
Hydroxide Alkalinity	-0.05879	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176
Chloride (Dissolved)	-0.4146	-0.4118	-0.4203	-0.03639	-0.1974	-0.103	-0.1145	-0.1241	-0.01833	-0.0141	-0.022	-0.03357
Fluoride (Dissolved)	-0.02695	-0.02621	-0.02895	-0.05316	-0.07053	-0.07211	-0.06843	-0.07211	-0.03579	-0.03137	-0.04221	-0.03769
Sulphate (Dissolved)	-2.54	-2.62	-2.62	-2.87	-6.12	-4.21	-4.71	-4.41	-1.5	-0.8869	-1.56	-1.47
Nitrate (as N)	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0004032	-0.0000806	-0.0000806	-0.0004032	-0.0000806	-0.0000806	-0.0000806	-0.0004258
Nitrite (as N)	-0.0000217	-0.0000217	-0.0000261	-0.0000217	-0.0001087	-0.0000217	-0.0000217	-0.0001087	-0.0000217	-0.0000217	-0.0000217	-0.0000217
Phosphate (Dissolved)	-0.0000632	0	0	0	0	-0.0000632	0	0	0	0	-0.0000632	0
Sum of Anions	-6.07	-6.29	-6.49	-4.9	-8.69	-6.6	-7.11	-6.8	-4.37	-3.46	-4.35	-4.25
Cations												
Aluminum (Dissolved)	0.000556	0.000556	0.000556	0.000111	0.00111	0.000556	0.000556	0.000556	0.00139	0.00149	0.000712	0.00111
Calcium (Dissolved)	2.65	2.73	2.59	2.06	4.94	3.56	3.7	3.44	2.11	2.15	2.46	2.3
Copper (Dissolved)	0.0000315	0.0000315	0.0000315	0.00000409	0.0000629	0.0000315	0.0000315	0.0000315	0.00000346	0.0000315	0.0000315	0.0000315
Iron (Dissolved)	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00208	0.00107	0.0283	0.0423	0.0296	0.0476
Magnesium (Dissolved)	3.1	3.03	2.99	0.801	1.28	1.12	1.17	1.13	0.913	0.806	1	0.938
Manganese (Dissolved)	0.00205	0.00202	0.00227	0.00143	0.00221	0.0017	0.00155	0.00149	0.0163	0.0134	0.0125	0.013
Potassium (Dissolved)	0.0818	0.0793	0.0818	0.0245	0.0512	0.0512	0.0512	0.0512	0.0445	0.0512	0.0512	0.0512
Sodium (Dissolved)	1.21	1.27	1.24	2.05	3.63	2.54	2.59	2.41	1.56	1.25	1.51	1.31
Zinc (Dissolved)	0.000153	0.000153	0.000379	0.0000306	0.000153	0.000511	0.000456	0.000153	0.0000306	0.000153	0.000156	0.000278
Sum of Cations	7.05	7.11	6.91	4.94	9.91	7.28	7.52	7.03	4.67	4.31	5.06	4.66
Error %	7.43	6.18	3.13	0.416	6.56	4.84	2.77	1.66	3.34	**11**	7.56	4.62

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NOTE:

1. UNITS ARE mg/L, UNLES

MEMORANDUM

To:	Mr. Shane Uren	Date:	January 10, 2013
Copy To:	Mr. Jonathan Olsen	File No.:	VA101-329/11-A.01
From:	Chris Mitchell	Cont. No.:	VA12-02195
Re:	Addendum to Schaft Creek 2011 Baseline Hydrogeology Study – Groundwater Levels		

1.0 Introduction

The purpose of this memorandum is to provide and summarise the groundwater level data that have been collected since the "2011 Baseline Hydrogeology Study Rev 0" was issued on April 13, 2012 (Ref. No. VA101-329/8-3), up to and including the data collected during the field visits in September 2012. No additional drill holes, piezometers or monitoring wells have been installed since the 2011 report was issued, and no further hydrogeologic testing was undertaken during this period. This memorandum summarises the groundwater level data only.

2.0 Groundwater Levels

In 2010 water level pressure transducers were installed in the following groundwater monitoring wells constructed in 2008 and 2010:

Schaft Creek Valley:	RES08-03A/B
	RES08-04A/B
	HG10-01
	HG10-02A/B
	HG-10-04
	HG10-05A/B
Deposit and Hillslope Areas:	RES08-01A/B
	RES08-02A/B
Saddle Area:	RES08-05A/B
Skeeter Creek Valley:	RES08-06A/B
	RES08-07A/B
	RES08-08A/B

Figures 3.1 and 3.2 in Appendix A show the locations of the piezometers and monitoring wells installed in the Deposit Area (including Schaft Creek Valley and the Saddle Area) and the Tailings Storage Facility Area, respectively. The transducers were set at a minimum depth of 5 m below the groundwater level and have recorded the water level every hour. These pressure transducers were downloaded in March, June, and September 2012 during the water quality sampling field visits. Time series plots of the water level elevations, originally presented in Appendix A of the 2011 Baseline Hydrogeology Study, have been updated with the additional available data, and are provided with this memorandum in Appendix B (Figures A.1 to A.12).

Water levels in the monitoring wells and piezometers have also been measured by hand using an electronic water level meter. All of the available hand measured water levels are included in the time plots and are presented separately in Table 1. Table 1 also includes any water levels measured by hand at additional wells (i.e. those wells not installed with piezometers).

A summary of groundwater levels in the Schaft Creek Project area, presented for the four separate geographical areas, is provided below. The data downloaded in 2012 indicate that there have been no significant changes to the trends identified in the 2011 Baseline Hydrogeology Study.

2.1 Schaft Creek Valley

Groundwater levels in the Schaft Creek Valley are near ground surface. Depth to water in the valley-fill material generally decreases going downstream from HG10-05 to HG10-01, with artesian conditions existing during part of the year (approximately May to September) at HG10-01, and occasionally during the summer months at HG10-02A and B, and at HG10-04. Seasonal fluctuations of the groundwater levels range from ~8.5 m at HG10-04 (south of the proposed open pit) to less than 1 m at HG10-02A and B.

Groundwater levels are generally lowest in late March/April during base flow conditions then sharply increase in late April/May in response to freshet. Groundwater levels also tend to rise, sometimes sharply (e.g. at H10-04 and H10-05A and B), in late summer and early fall, which is likely in response to rainfall events.

2.2 Deposit and Hillslope Areas

Groundwater levels in monitoring wells and piezometers located in the deposit and hillslope areas generally range from artesian in the overburden within the deposit area (KP08-05, KP08-06 and KP08-07, Table 1) to ~9 mbgs. Deeper groundwater levels, up to ~20 mbgs were encountered at KP08-08 and KP08-09 (Table 1).

With the exception of RES08-02A, which is characterized by large responses to freshet and fall storms (typically fluctuating ~4 m yearly), measured groundwater levels fluctuate by ~1 m through the year (from pressure transducer data). Groundwater levels measured manually indicate that levels in KP08-09 may fluctuate by up to ~6 m throughout the year (Table 1). Groundwater levels are typically lowest in April and increase in response to freshet and rain events in the summer and fall.

Water level monitoring in RES08-01A and B shows a general decrease in water elevation from May to August, with August levels often being lower than the pre-freshet levels recorded in April. An increase in elevation from August through to September is also typical in these wells, following which levels tend to gradually decline during the winter months.

2.3 Saddle Area

With the exception of RES08-05A, groundwater levels range from just below ground surface to ~20 m below ground surface in the overburden (based on water levels measured in RES08-05B and KP08-12, respectively). The water level in RES08-05B varies by less than 0.5 m throughout the year (Figure A.9), whereas KP08-12 fluctuates by ~10 m, with the highest water level being measured in September and the lowest in June (Table 1).

Groundwater in the andesite bedrock is under artesian conditions at RES08-05A, but is ~7 m below ground surface in KP08-13. RES08-05 is located along a hillslope and, as indicated in the 2011 Baseline Hydrogeology Study, artesian conditions may be created by a hydraulic connection with groundwater in the up-gradient bedrock in the hillslope.

2.4 Skeeter Creek Valley

Groundwater levels in the Skeeter Creek Valley range from artesian to ~15 m below ground surface. Artesian conditions were observed in numerous piezometers/monitoring wells at each proposed TSF embankment site (as shown in Figures A.10 to A.12 and Table 1).

The wells installed with pressure transducers (RES08-06A/B, RES08-07A/B, and RES08-08A/B) indicate that there is little variability in groundwater levels in this area throughout the year, with levels typically fluctuating by less than 0.5 m.

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If you have any comments or concerns, please do not hesitate to contact the undersigned

Signed: _____
Chris Mitchell, E.I.T., Staff Engineer

Reviewed: _____
Louise Walker, C.WEM. – Project Scientist

Approved: _____
for: Ken Brouwer, P.Eng., President

Attachments:

Table 1 Rev 1	Summary of Water Level Elevations (updated 2012)
Appendix A	Figures 3.1 and 3.2 from VA101-329/8-3
Appendix B	Water Elevation Plots (updated 2012)

/cm

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TABLE 1

COPPER FOX METALS INC.
SCHAFT CREEK PROJECT

SUMMARY OF WATER LEVEL ELEVATIONS

WELL ID	HG10-01	HG10-02A	HG10-02B	HG10-03	HG10-04	HG10-05A	HG10-05B	RES08-1A	RES08-1B	RES08-2A	RES08-2B	RES08-3A	RES08-3B	RES08-4A	RES08-4B	RES08-5A	RES08-5B	RES08-6A	RES08-6B	RES08-7A	RES08-7B	RES08-8A	RES08-8B	KP08-01	KP08-02	KP08-03	KP08-04	KP08-05	KP08-06	KP08-07	KP08-08	KP08-09	KP08-10	KP08-12	KP08-13	KP08-16	KP08-17	KP08-20	KP08-21	KP08-23	KP08-25	KP08-27	KP08-28
Ground Elevation (masl)	807	825	825	1018	949	887	887	908	908	1028	1028	843	843	865	865	1136	1136	794	794	886	886	829	829	1196.2	1157.2	992	1178.3	982	1076	1040	938	920	994	1150	1142	876	865	835	855	947	824	794	825
Stick up (m)	0.78	0.70	0.67	NA	0.79	0.98	0.98	0.85	0.90	0.78	0.82	0.51	0.67	0.52	0.83	0.66	0.30	0.67	1.15	0.89	0.89	1.09	1.09	NA	NA	0.46	NA	NA	0.51	0.27	0.00	0.57	NA	1.54	0.70	0.46	0.75	0.47	0.55	0.79	0.82	0.07	0.98
Dip (degrees)	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90	-63	-70	-60	-65	-65	-65	-64	-62	-60	-61	-90	-90	-90	-90	-90	-90	-90	-90	-90	-90
Date																																											
16-Aug-07																																											
27-Aug-07																																											
28-Aug-07																																											
01-Sep-07																																											
14-Jun-08																																							844.40				
02-Aug-08															861.20																													
28-Aug-08																													Art	Art		902.94												
08-Sep-08												839.90	841.70	858.50												988.28												833.50						
10-Sep-08								906.20	907.40		1024.00																				920.16				873.20	861.50								
14-Sep-08										1021.50																																		
16-Sep-08																		793.85																										
17-Sep-08																																												
19-Sep-08																																												
20-Sep-08																				Art	Art																							
21-Sep-08																						827.98	828.43																					Art
23-Sep-08																			794.05															1140.00										
24-Sep-08								905.98	905.42			840.04	841.54		855.87											988.28		Art	Art	Art	Art	920.34	902.94								945.80		793.70		
25-Sep-08																Art		794.00	793.91			828.10	828.50																		814.20			
26-Sep-08										1024.06	1021.07			855.13			1135.90																	1135.40									
29-Sep-08																				Art	Art																							
01-Oct-08																Art	1135.89																										
30-Sep-09																		Art	793.95				828.55																				
1-Oct-09																				Art	Art	828.34																						
2-Oct-09												840.56	842.13	856.93	857.55																													
3-Oct-09								906.27	905.41	1024.20	1020.81																																		
22-Apr-10															855.59																													
23-Apr-10												840.13	842.15	855.61																														
26-Apr-10								907.13	905.08	1021.80																																			
30-Apr-10																Art																												
1-May-10																	1135.99																										
2-May-10																				Art	Art																							
3-May-10																						827.96																						
4-May-10																							828.17																					
7-May-10																		Art	794.05																									
9-May-10											1020.43																																
12-May-10										1021.39																																		
29-Jun-10						884.94	883.94																																					
30-Jun-10	807.22	824.93	824.70	1001.27	947.40																																						
19-Sep-10	807.01	824.62	824.51	1013.42	944.74	884.15	883.40																																					
20-Sep-10													841.70					Art	793.92			828.79	829.07																					
21-Sep-10												840.50								Art	Art																							
22-Sep-10										1024.04	1019.98			855.92	856.15																													
23-Sep-10																Art	1135.73																											
24-Sep-10								906.43	906.28																																			
23-Mar-11															854.83																													
24-Mar-11						well dry	882.39						840.97																																
25-Mar-11					940.99																																							
26-Mar-11																				Art	Art	828.59	828.59																						
13-Sep-11															856.86																													
14-Sep-11																Art				Art	Art																							
15-Sep-11	807.35		824.66		948.29	885.55	884.26										1135.85																										
16-Sep-11																		Art	793.98			828.51	829.11																					
17-Sep-11		824.69									1019.64	840.51	842.16																														
14-Mar-12															855.35																													
15-Mar-12												839.55	841.15																														
16-Mar-12	806.51	824.51	824.45																																									
17-Mar-12																			793.99	Art	Art																							
18-Mar-12																						828.64	829.09																					
21-Jun-12				Dry								840.44	842.16	Destroyed	857.32											988.25			1076.46	1038.68		897.97		1131.01	1135.67	874.06	864.85	825.17	853.32	947.07				
22-Jun-12					949.02			906.26	906.31	1024.29	1019.73							Art	794.08			828.97	829.20																					
23-Jun-12	807.44	824.80	824.72			885.50	884.01									Art (<1L/min)	1135.86			Art (<1L/min)	Art (<1L/min)																							
25-Jun-12																																									823.74	794.07	825.98
21-Sep-12						885.46	883.69								857.22																													
22-Sep-12	807.07	824.69	824.56		942.90					Not Located	Not Located	840.51	842.12				1135.79		793.96																										
23-Sep-12																Art		794.42		Art	Art	828.75	828.61																					
25-Sep-12				Dry				906.025	906.09																	987.59			Art	Art		897.32		1140.94	Could not land safely	873.46	863.91	833.27	845.36	Not Located	Could not land safely	Art	Art

\\van11\prj_file\1\01\00329\11\A\Correspondence\Outgoing\VA12-02195\[Water Level Measurements (Incl Table 1) - Working File.xlsx]TABLE 1 - WL ELEVATIONS

NOTES:

1. ALL WATER LEVEL MEASUREMENTS IN masl.
2. ART = ARTESIAN.
3. NA = STICK UP HEIGHT IS NOT AVAILABLE.
4. WATER LEVEL ELEVATIONS HAVE BEEN CORRECTED FOR INCLINED HOLES.
5. MANUAL MEASUREMENT OF RES08-08A ON SEPTEMBER 16, 2011 AND RES08-08B ON SEPTEMBER 23, 2012 ARE POSSIBLE MEASUREMENT ERRORS AND ARE NOT PLOTTED

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	18DEC'12	ISSUED WITH VA12-02195	CM	LW	KB

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TABLE 1

COPPER FOX METALS INC.
SCHAFT CREEK PROJECT

SUMMARY OF WATER LEVEL ELEVATIONS

10/01/2013 15:56

WELL ID	KP08-31	KP08-32	KP08-37A	KP09-37B	KP08-38	KP08-40	KP08-41	KP08-42	KP08-45	PO-01-07	PO-02-07	PO-03-07	PO-04-07	PO-05-07	PO-07-07	A-ND-07-01	A-ND-07-02	A-ND-07-03	A-NWD-07-01	A-SD-07-01	A-SD-07-02
Ground Elevation (masl)	858	877	892	893	908	891	885	882	882	929	880	955	1170	1157	1084	820	800	815	900	900	900
Stick up (m)	0.81	0.79	0.93	0.10	0.45	0.55	0.91	0.89	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.50	0.80	1.50
Dip (degrees)	-90	-90	-90	-90	-70	-90	-90	-90	-70	-60.2	-59.2	-59	-55.4	-61.5	-56.5	-90	-90	-90	-90	-90	-90
Date																					
16-Aug-07										Art	878.05	954.04	1163.81								
27-Aug-07														1138.67							
28-Aug-07															1031.55						
01-Sep-07																Art	Art	814.80	Art	Art	896.50
14-Jun-08																					
02-Aug-08																					
28-Aug-08																					
08-Sep-08																					
10-Sep-08	Art																				
14-Sep-08																					
16-Sep-08																					
17-Sep-08			878.20	879.30	898.13			878.70	867.30												
19-Sep-08						887.30															
20-Sep-08							883.40														
21-Sep-08		Art																			
23-Sep-08																					
24-Sep-08																					
25-Sep-08																					
26-Sep-08																					
29-Sep-08																					
01-Oct-08																					
30-Sep-09																					
1-Oct-09																					
2-Oct-09																					
3-Oct-09																					
22-Apr-10																					
23-Apr-10																					
26-Apr-10																					
30-Apr-10																					
1-May-10																					
2-May-10																					
3-May-10																					
4-May-10																					
7-May-10																					
9-May-10																					
12-May-10																					
29-Jun-10																					
30-Jun-10																					
19-Sep-10																					
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24-Sep-10																					
23-Mar-11																					
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26-Mar-11																					
13-Sep-11																					
14-Sep-11																					
15-Sep-11																					
16-Sep-11																					
17-Sep-11																					
14-Mar-12																					
15-Mar-12																					
16-Mar-12																					
17-Mar-12																					
18-Mar-12																					
21-Jun-12																					
22-Jun-12																					
23-Jun-12																					
25-Jun-12	858.81	877.79	879.63		Not Located	Not Located	884.92	Destroyed	869.46										Art (<1L/min)		
21-Sep-12																					
22-Sep-12																					
23-Sep-12																					
25-Sep-12	Art	Art	879.03		Not Located	Not Located	883.619	Destroyed	866.80										Art		

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APPENDIX A

FIGURES 3.1 AND 3.2 FROM VA101-329/8-3

(Pages A-1 to A-2)

6 357 500 N
6 360 000 N
6 362 500 N
377 500 E
380 000 E
HG10-01
HG10-05A/B
HG10-02A/B
SCHAFT CREEK
6 4.3 FIG
5 4.2 FIG
4 4.1 FIG
KP08-21
KP08-20
RES08-04A/B
RES08-03A/B
POTENTIAL WASTE DUMP OUTLINE, TYP. (NOTE 6)
PO-02-07
KP08-17
KP08-23
HG10-04
KP08-16
PO-01-07
KP08-09
HG10-03
KP08-10
RES08-01A/B
2011-CF418B
PO-07-07
2011-CF414
KP08-01
KP08-03
2011-CF417
KP08-02
2011-CF416
KP08-22
KP08-08
2011-CF419
PO-06-07
2011-CF420
KP08-05
PO-03-07
RES08-02A/B
PRIMARY CRUSHER SITE
KP08-07
KP08-06
PO-05-07
KP08-04
PO-08-07
TP08-93
PO-04-07
PIT OUTLINE (1000 MT)
TP08-92
CONVEYOR, TYP.
TP08-91
TP08-90
EXISTING ROAD
KP08-13
RES08-05A / B
TP08-89
TP08-901
KP08-12

NOTES:

1. COORDINATE GRID IS UTM (NAD83) ZONE 9V.
2. 20 m INTERNAL TRIM MAP PROVIDED BY COPPER FOX (JANUARY 2008).
3. PROPOSED MINE FACILITIES BY WARDROP (2011, 2012).
4. 2007 GEOTECHNICAL DRILL HOLES COMPLETED BY DST; 2008 & 2010 GEOTECHNICAL DRILL HOLES BY KP.
5. 2008 SEISMIC SURVEY COMPLETED BY AGL.
6. WASTE DUMP OUTLINES ARE APPROX. AND WILL BE UPDATED WHEN AVAILABLE.

LEGEND:

- 2007 GEOTECHNICAL DRILL HOLE
- 2008 GEOTECHNICAL DRILL HOLE
- 2008 GEOTECHNICAL DRILL HOLE WITH PIEZOMETER INSTALLED
- 2008 TEST PIT
- 2010 CONTINUED HYDROLOGIC INVESTIGATION
- 2011 GEOTECHNICAL DRILL HOLE
- 2008 SEISMIC REFRACTION SURVEY LINE

SCALE A 200 100 0 200 400 600 800 1000 m

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	AM	RP/WAL	DAY	JKB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

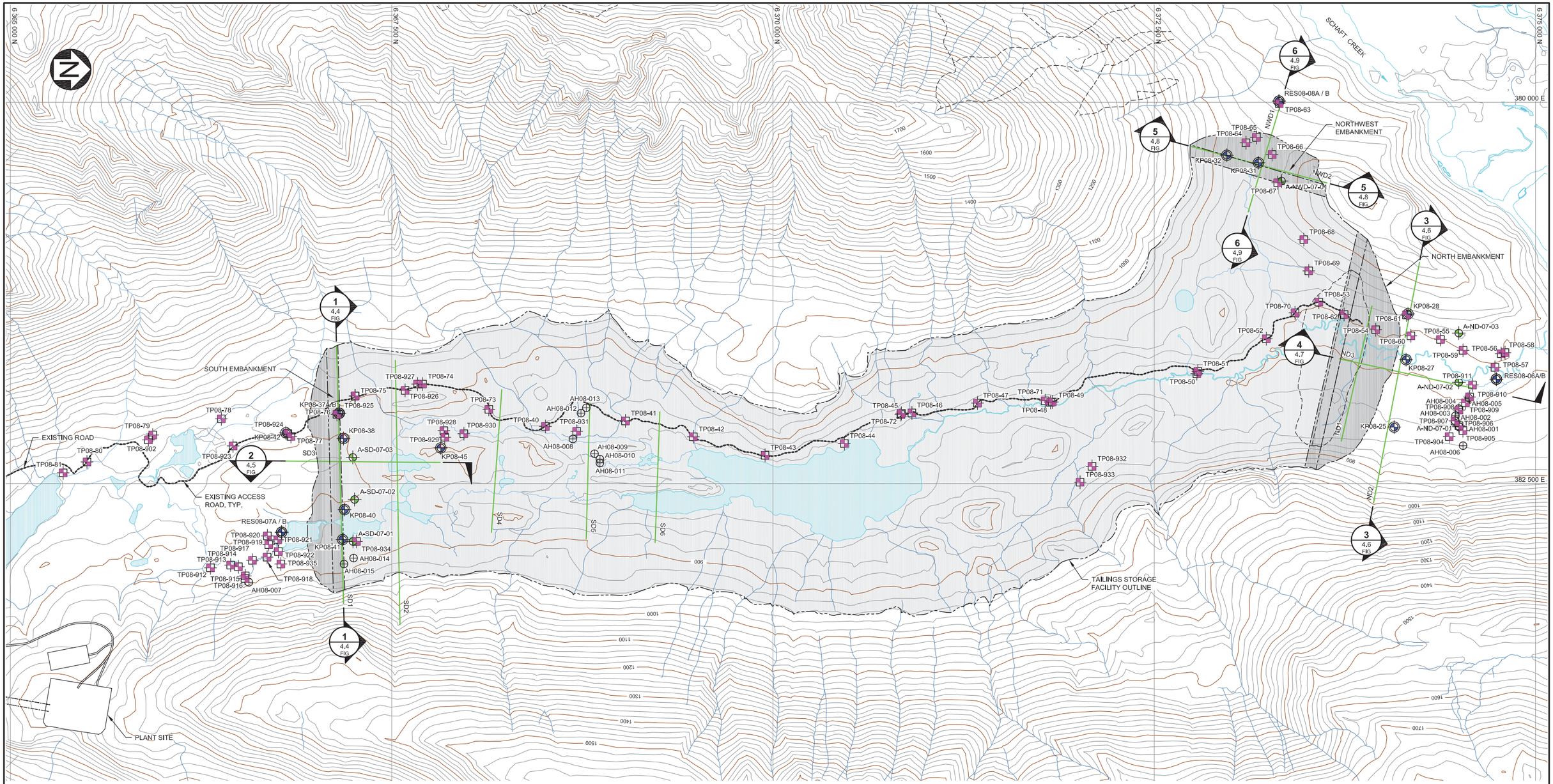
DRILL HOLE, PIEZOMETER AND MONITORING WELL LOCATIONS FOR DEPOSIT AREA

Knight Piésold CONSULTING

P/A NO. VA101-329/8 | REF NO. 3 | REV 0

FIGURE 3.1

SAVED: M:\101\00329\08\A\Acad\FIGS\B14_c0_4/12/2012 9:35:50 AM PRINTED: 4/12/2012 9:37:21 AM Layout1 NDHALIWAL
XREF FILES: Topo20m Lakes and Rivers Roads C-DUMP C-MILLSITE C-OPIT BASE FILES



NOTES:

1. COORDINATE GRID IS UTM (NAD83) ZONE 9V.
2. 20 m INTERNAL TRIM MAP PROVIDED BY KP (JANUARY 2008).
3. PROPOSED MINE FACILITIES IN ACCORDANCE WITH KP PREFEASIBILITY TSF DESIGN (JULY 2008).
4. 2007 GEOTECHNICAL HOLES COMPLETED BY DST.
5. 2008 SEISMIC SURVEY COMPLETED BY AGL.

LEGEND:

- 2007 GEOTECHNICAL HOLE
- 2008 GEOTECHNICAL HOLE
- 2008 GEOTECHNICAL HOLE WITH PIEZOMETER INSTALLED
- EXPLORATION DRILL HOLE WITH PIEZOMETER
- EXPLORATION DRILL HOLE SURVEYED BY ACOUSTIC TELEVIEWER
- 2008 TEST PIT
- 2008 DUTCH AUGER TEST HOLE
- 2008 SEISMIC REFRACTION SURVEY LINE

250 125 0 250 500 750 1000 1250 mm
SCALE A

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DAY	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

DRILL HOLE, PIEZOMETER AND MONITORING WELL LOCATIONS FOR TAILINGS STORAGE FACILITY AREA

Knight Piésold CONSULTING

P/A NO. VA101-329/8 | REF NO. 3

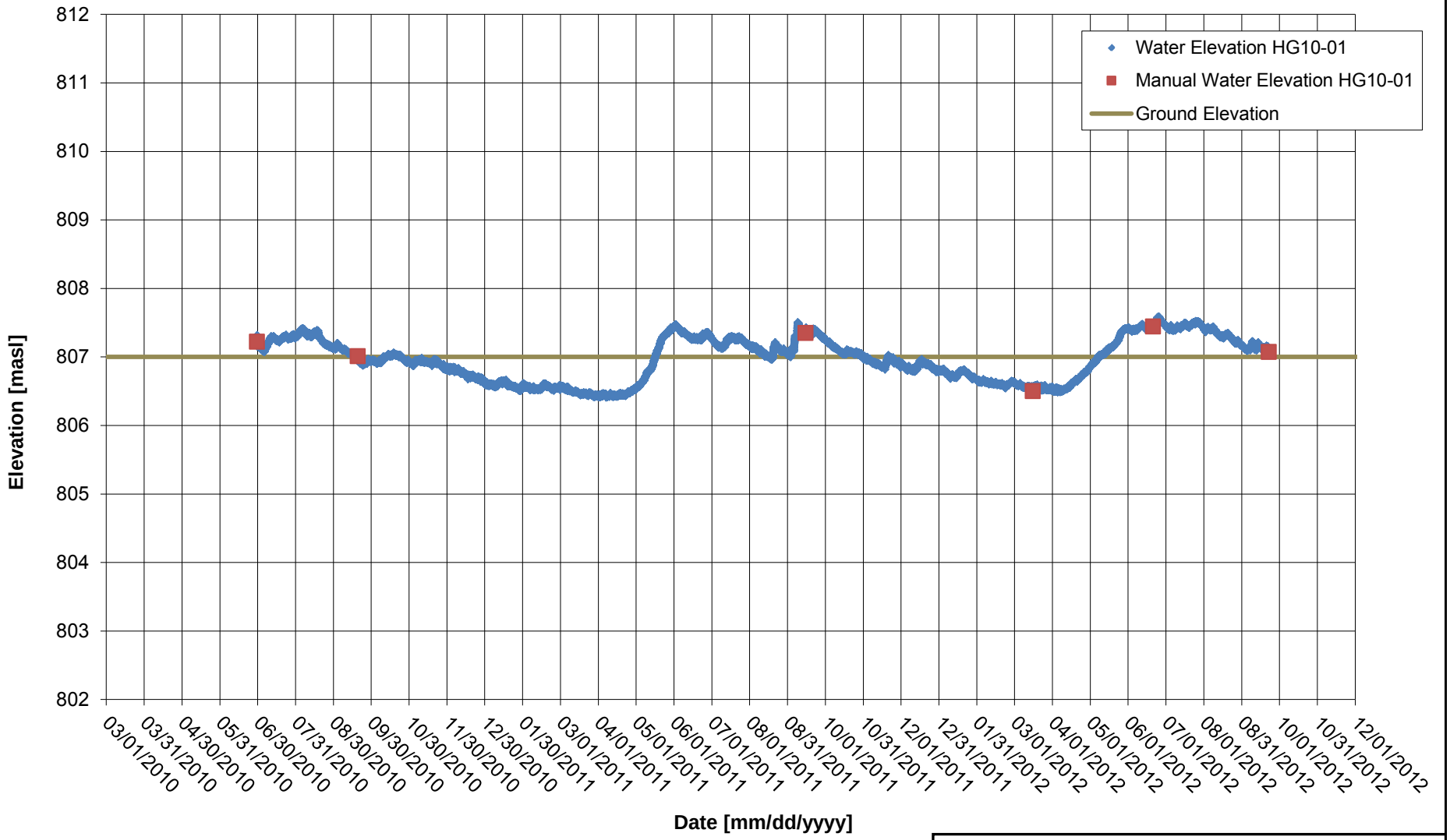
FIGURE 3.2 | REV 0

Knight Piésold
CONSULTING

APPENDIX B

WATER ELEVATION PLOTS (UPDATED 2012)

(Pages B-1 to B-12)



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 807 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. COMPLETION ZONE IS 24.38 TO 28.35 mbgs AND IS IN ALLUVIUM.
3. ARTESIAN CONDITIONS EXIST.

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

HG10-01
WATER ELEVATION [masl]

Knight Piésold CONSULTING

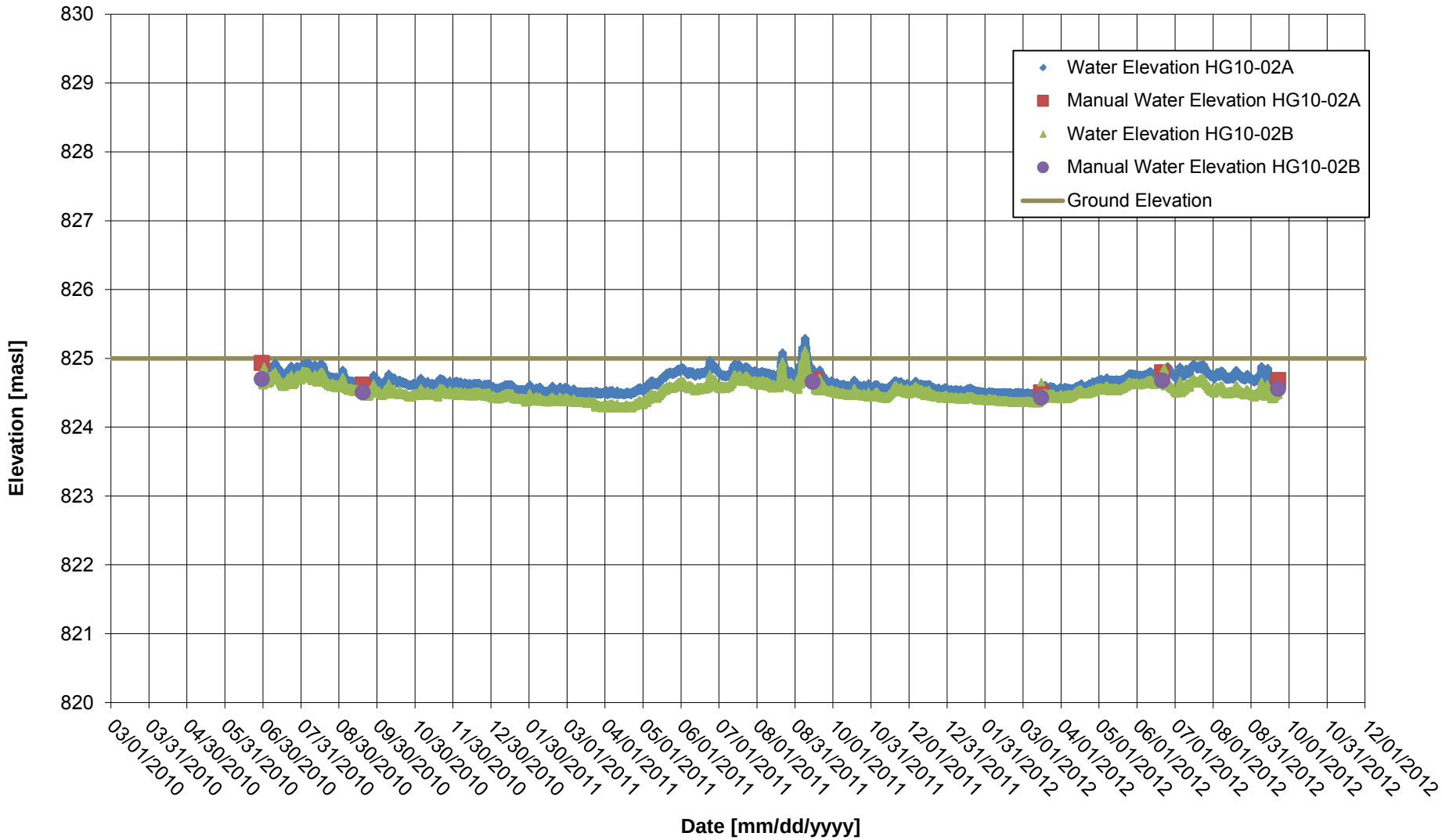
P/A NO. VA101-329/11

REF. NO. VA12-02195

FIGURE A.1

REV 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	17DEC'12	ISSUED WITH MEMO VA12-02195	CM	LW	KB



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 825 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. HG10-02A COMPLETION ZONE IS 24.08 TO 29.26 mbgs.
3. HG10-02B COMPLETION ZONE IS 10.82 TO 16.76 mbgs.
4. BOTH COMPLETION ZONES ARE IN ALLUVIUM.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	17DEC'12	ISSUED WITH MEMO VA12-02195	CM	LW	KB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

HG10-02A and HG10-02B
WATER ELEVATION [masl]

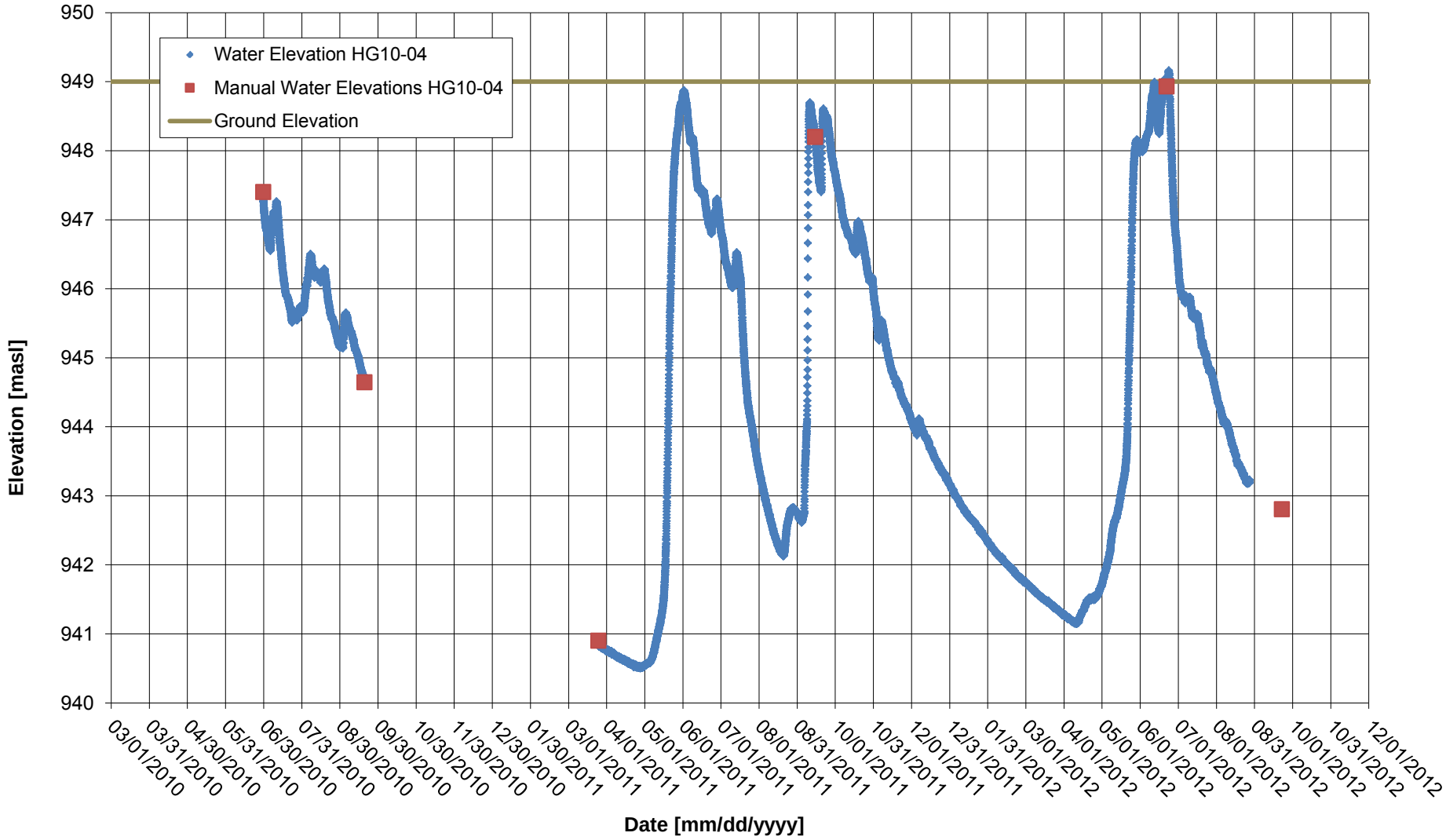
Knight Piésold CONSULTING

P/A NO. VA101-329/11

REF. NO. VA12-02195

FIGURE A.2

REV 1



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 949 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. COMPLETION ZONE IN ALLUVIUM BETWEEN 18.59 AND 23.77 mbgs.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	17DEC'12	ISSUED WITH MEMO VA12-02195	CM	LW	KB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

HG10-04
WATER ELEVATION [masl]

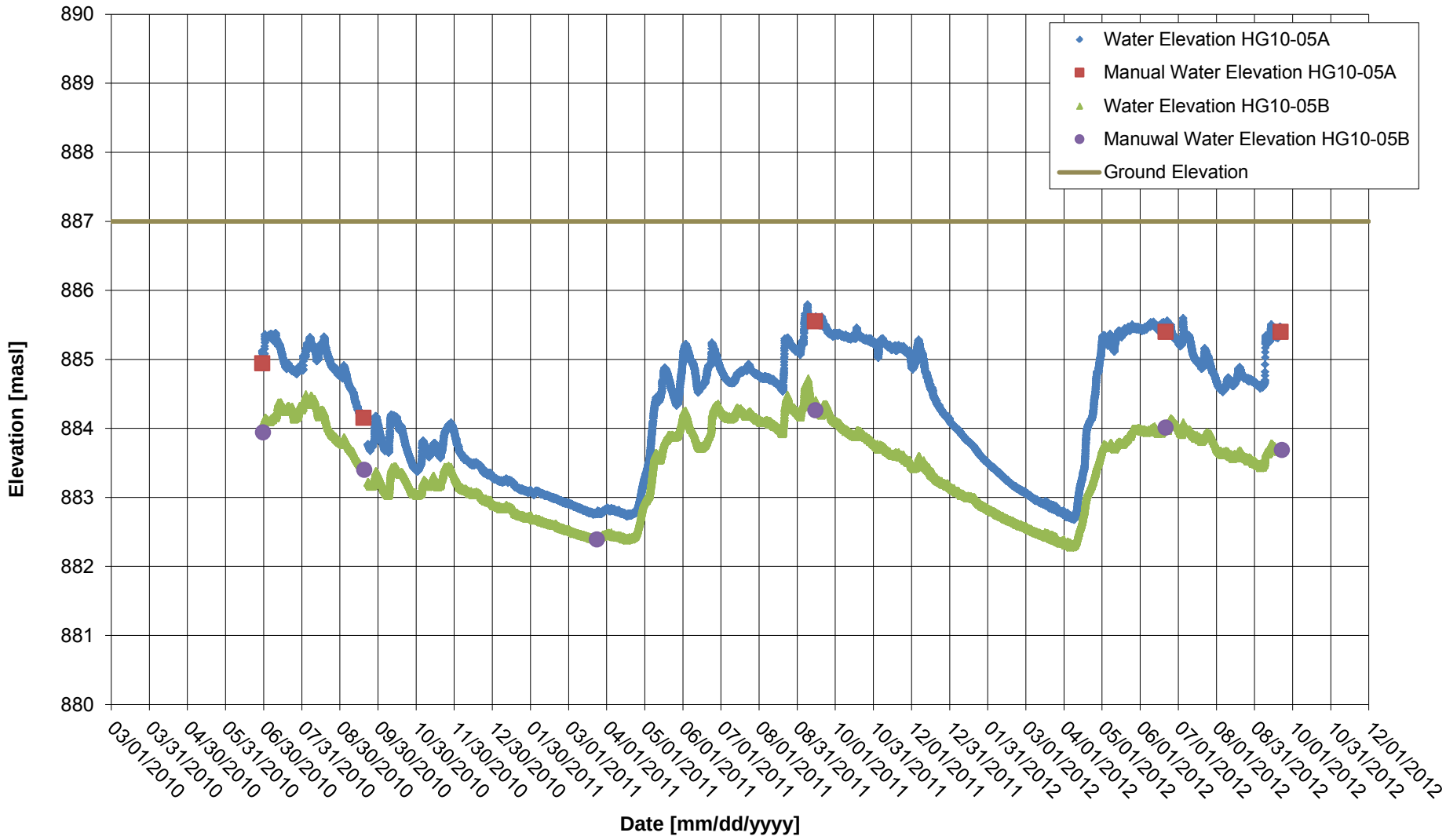
Knight Piésold CONSULTING

P/A NO. VA101-329/11

REF. NO. VA12-02195

FIGURE A.3

REV 1



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 887 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. HG10-05A COMPLETION ZONE BETWEEN 8.53 AND 17.68 mbgs.
3. HG10-05B COMPLETION ZONE BETWEEN 37.18 AND 42.97 mbgs.
4. BOTH COMPLETION ZONES ARE IN ALLUVIUM.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	17DEC'12	ISSUED WITH MEMO VA12-02195	CM	LW	KB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

HG10-05A and HG10-05B
WATER ELEVATION [masl]

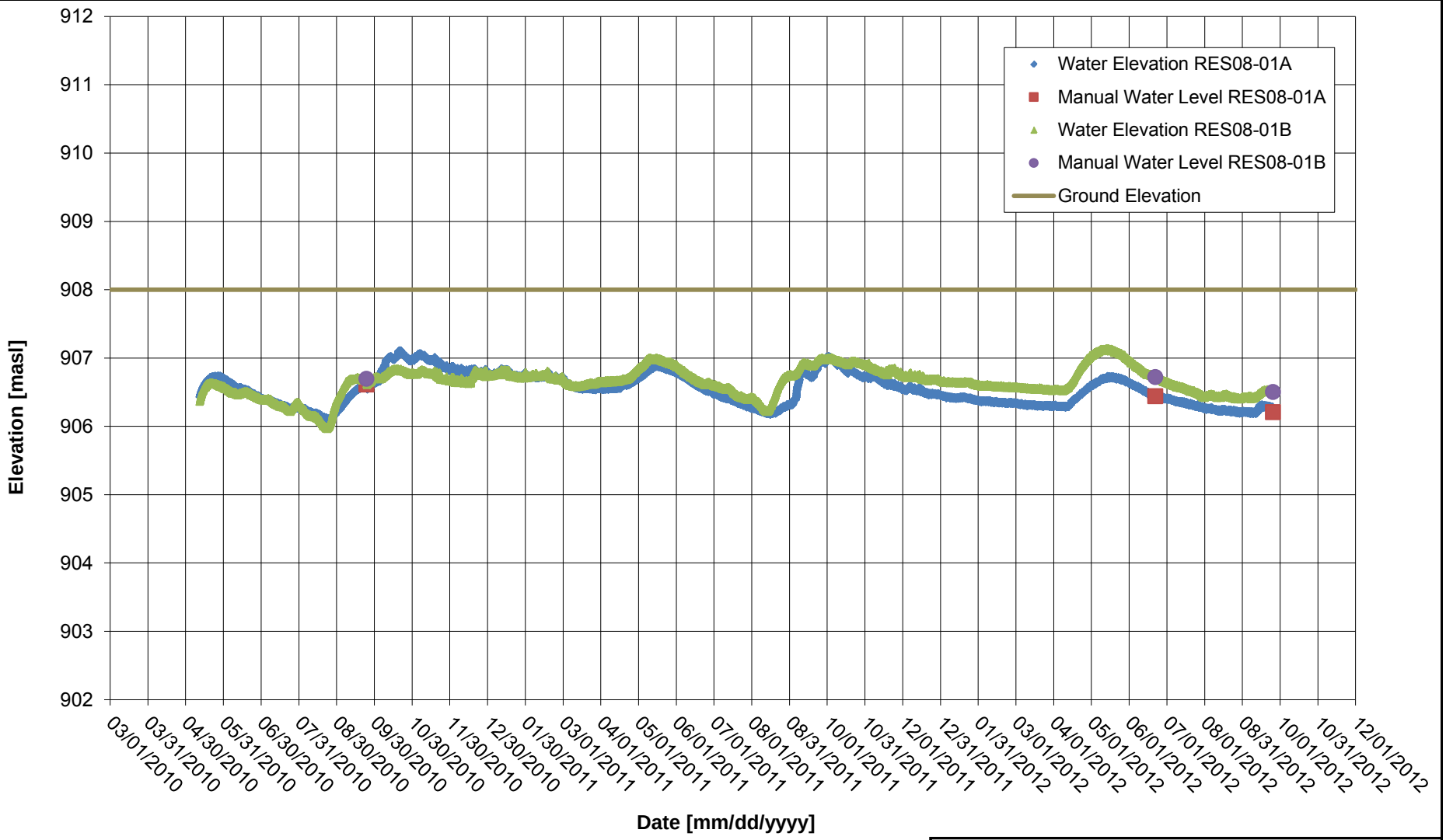
Knight Piésold CONSULTING

P/A NO. VA101-329/11

REF. NO. VA12-02195

FIGURE A.4

REV 1



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 908 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-01A COMPLETION ZONE BETWEEN 43.9 AND 50.0 mbgs.
3. RES08-01B COMPLETION ZONE BETWEEN 9.1 AND 15.2 mbgs.
4. BOTH COMPLETION ZONES ARE IN ANDESITE.
5. TRANSDUCER DEPTH ADJUSTED AT RES08-01A ON JUNE 22, 2012.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	17DEC'12	ISSUED WITH MEMO VA12-02195	CM	LW	KB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-01A and RES08-01B
WATER ELEVATION [masl]

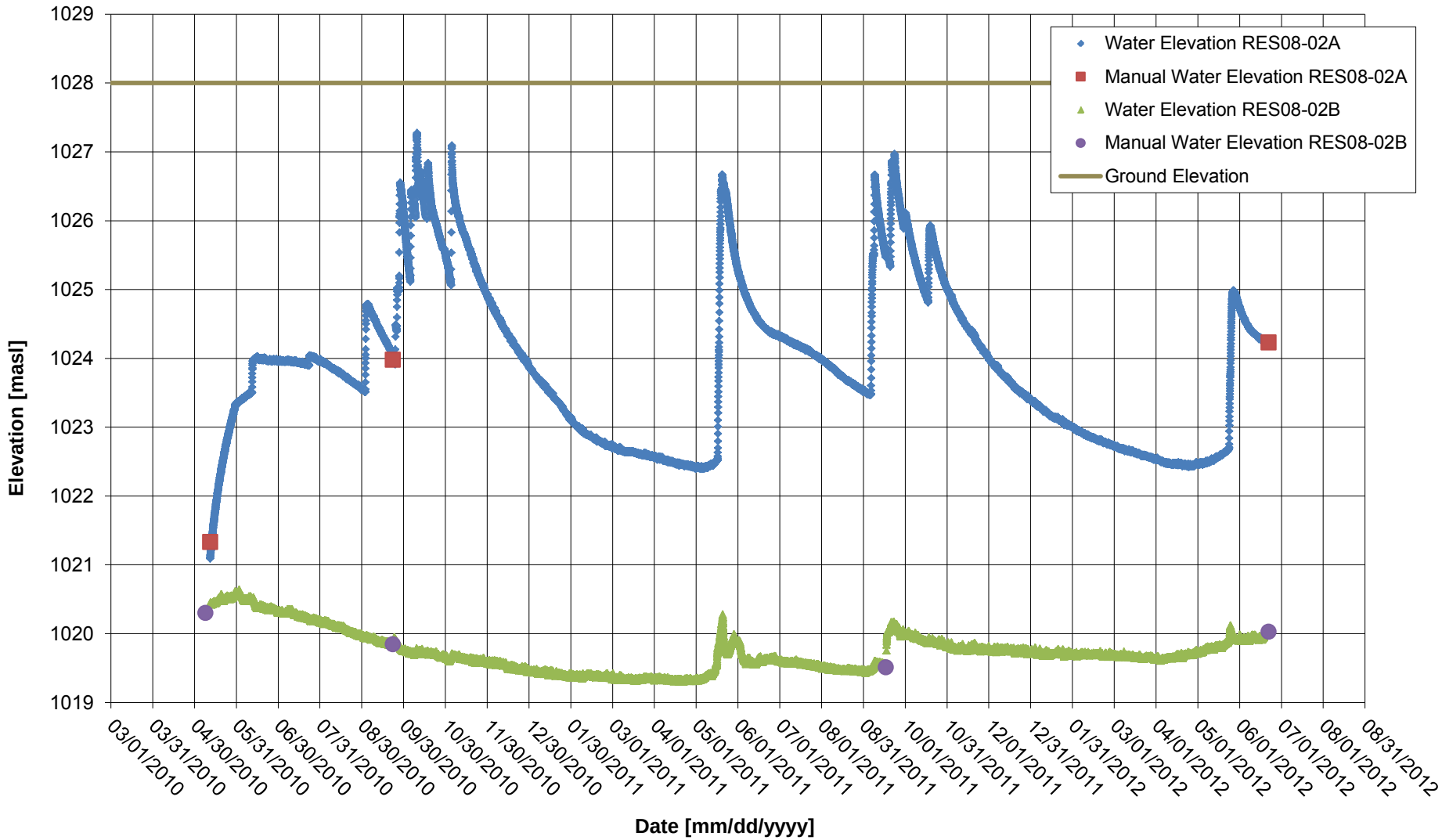
Knight Piésold CONSULTING

P/A NO. VA101-329/11

REF. NO. VA12-02195

FIGURE A.5

REV 1



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 1028 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-02A COMPLETION ZONE IN FELDSPAR QUARTZ PORPHYRY BETWEEN 51.8 AND 60.0 mbgs.
3. RES08-02B COMPLETION ZONE IN OVERBURDEN BETWEEN 23.8 AND 28.0 mbgs.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	17DEC'12	ISSUED WITH MEMO VA12-02195	CM	LW	KB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-02A and RES08-02B
WATER ELEVATION [masl]

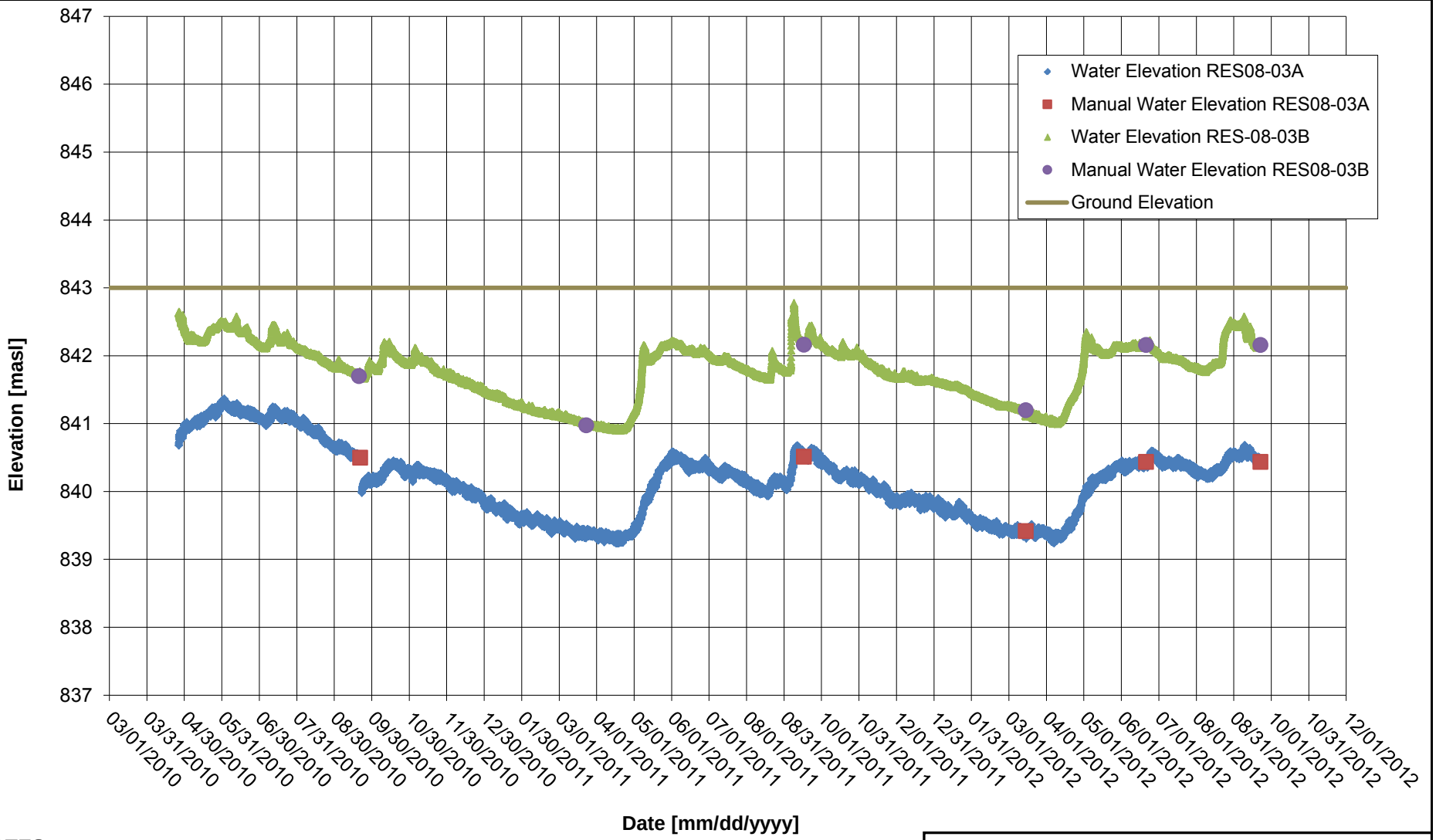
Knight Piésold CONSULTING

P/A NO. VA101-329/11

REF. NO. VA12-02195

FIGURE A.6

REV 1



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 843 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-03A COMPLETION ZONE IS IN GRANODIORITE BETWEEN 106.4 AND 117.3 mbgs.
3. RES08-03B COMPLETION ZONE IS IN OVERBURDEN BETWEEN 7.3 AND 10.7 mbgs.

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-03A and RES08-03B
WATER ELEVATION [masl]

Knight Piésold CONSULTING

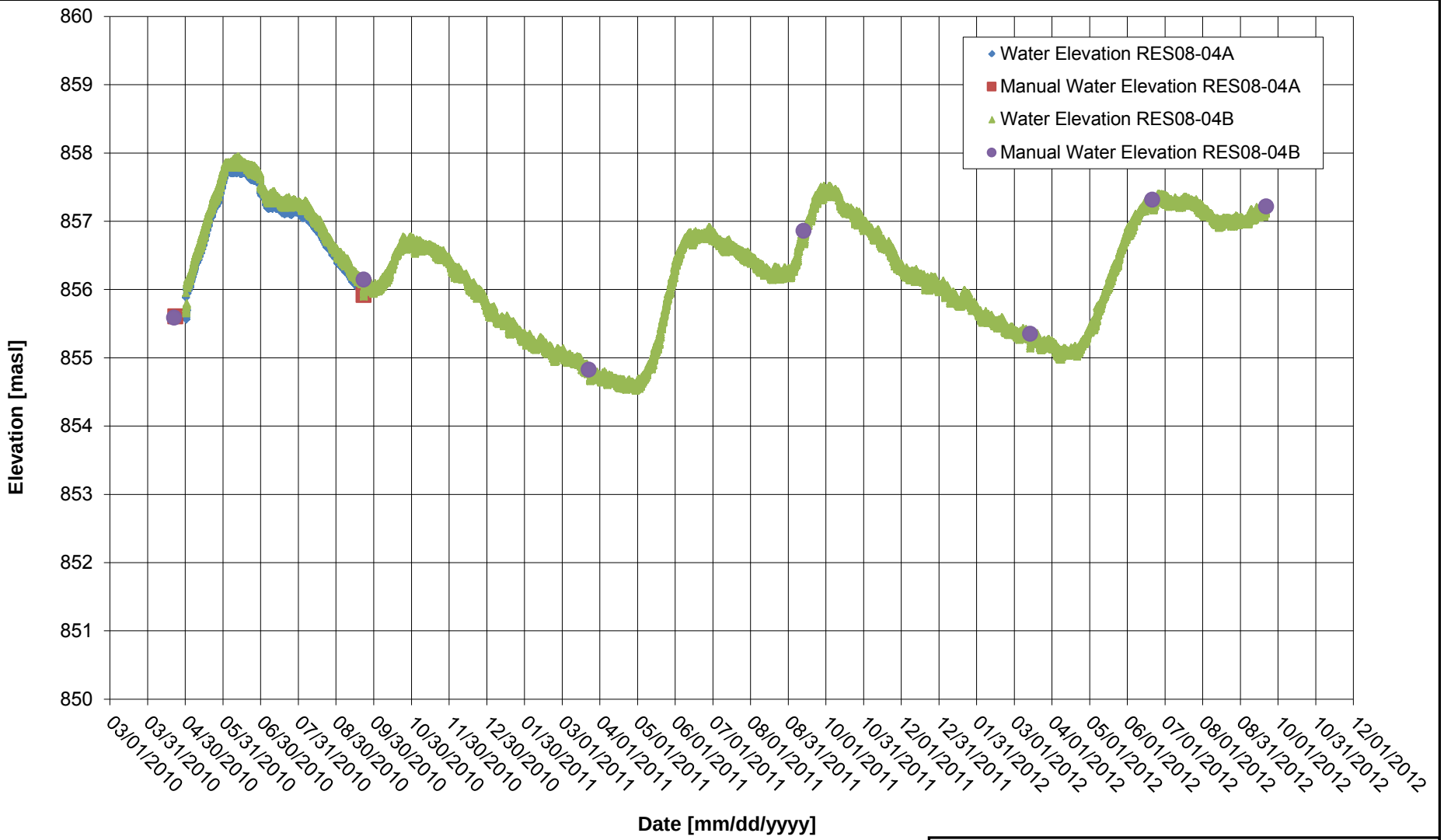
P/A NO. VA101-329/11

REF. NO. VA12-02195

FIGURE A.7

REV 1

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	17DEC'17	ISSUED WITH MEMO VA12-02195	CM	LW	KB



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 865 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-04A COMPLETION ZONE IS IN GRANODIORITE BETWEEN 86.3 AND 99.4 mbgs.
3. RES08-04B COMPLETION ZONE IS IN GRANODIORITE BETWEEN 48.2 AND 53.3 mbgs.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	17DEC'12	ISSUED WITH MEMO VA12-02195	CM	LW	KB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-04A and RES08-04B
WATER ELEVATION [masl]

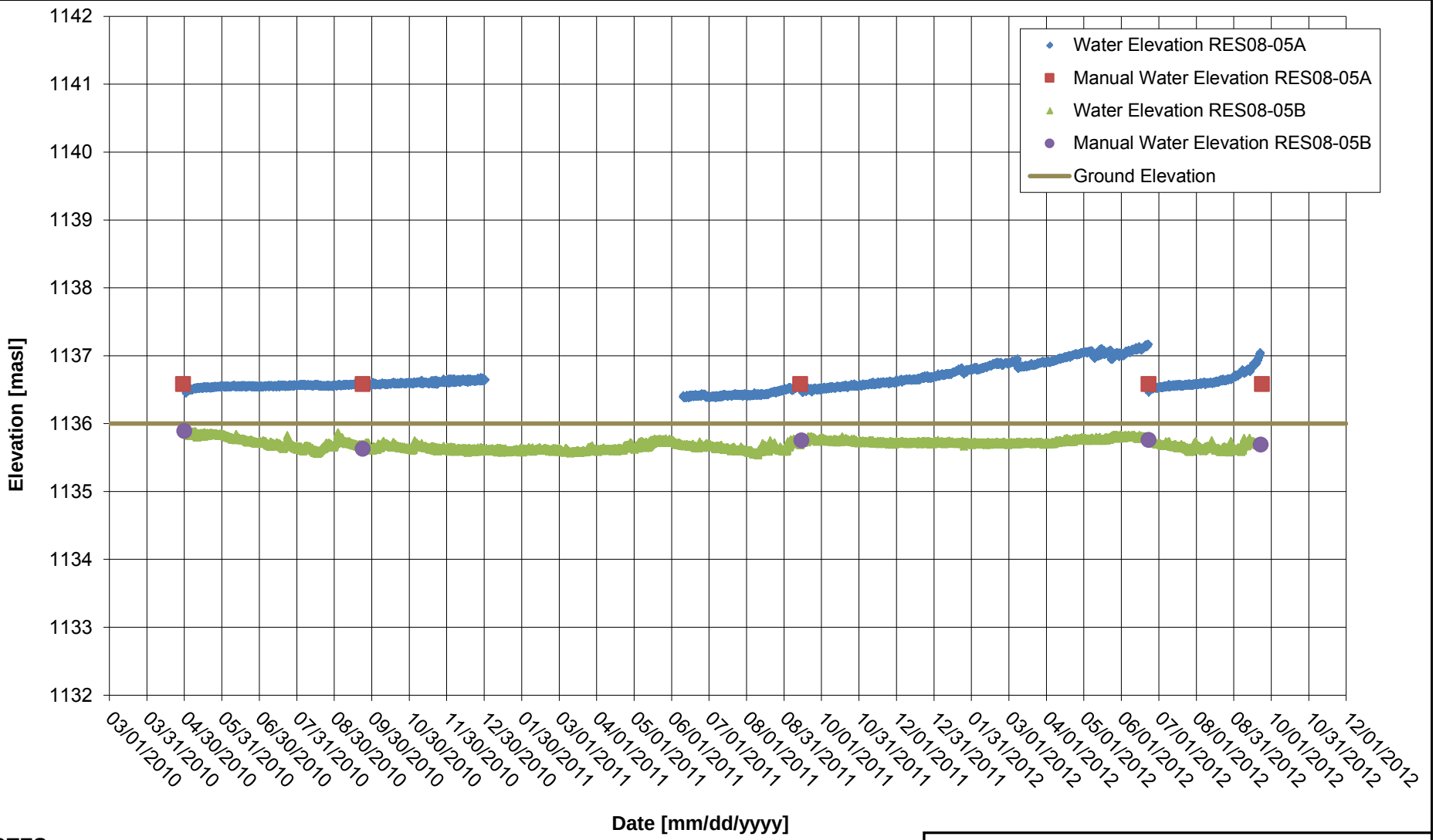
Knight Piésold CONSULTING

P/A NO. VA101-329/11

REF. NO. VA12-02195

FIGURE A.8

REV 1



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 1136 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-05A COMPLETION ZONE IS IN ANDESITE BETWEEN 21.4 AND 27.4 mbgs.
3. RES08-05B COMPLETION ZONE IS IN OVERBURDEN BETWEEN 6.4 AND 10.4 mbgs.
4. ARTESIAN CONDITIONS OBSERVED IN RES08-05A. MANUAL MEASUREMENTS INDICATE TOP OF STICK UP.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	17DEC'12	ISSUED WITH MEMO VA12-02195	CM	LW	KB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-05A and RES08-05B
WATER ELEVATION [masl]

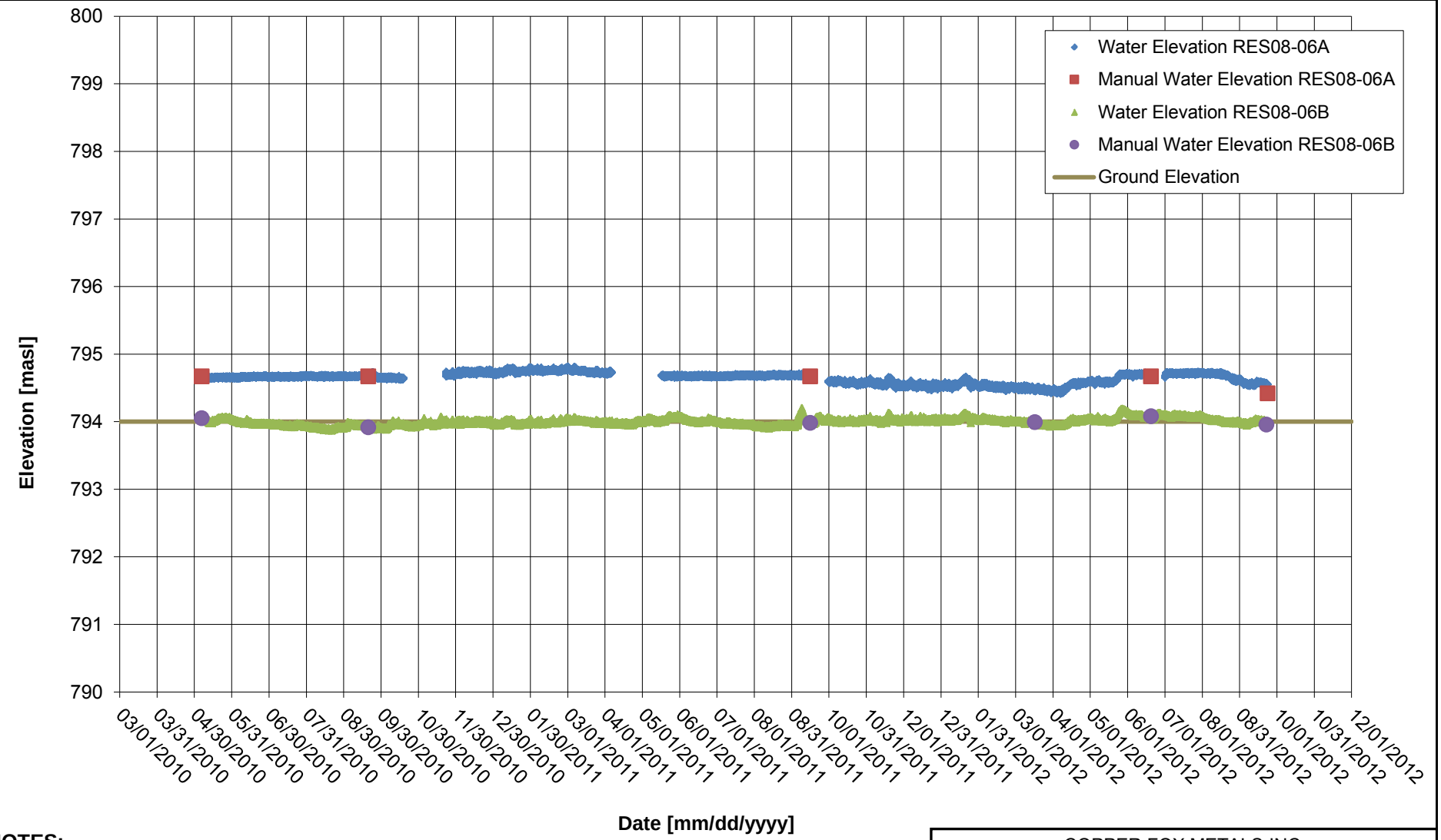
Knight Piésold CONSULTING

P/A NO. VA101-329/11

REF. NO. VA12-02195

FIGURE A.9

REV 1



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 794 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-06A COMPLETION ZONE IS IN GRANODIORITE BETWEEN 59.4 AND 63.1 mbgs.
3. RES08-06B COMPLETION ZONE IS IN OVERBURDEN BETWEEN 11.6 AND 15.2 mbgs.
4. ARTESIAN CONDITIONS EXIST IN RES08-06A.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	17DEC'12	ISSUED WITH MEMO VA12-02195	CM	LW	KB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-06A and RES08-06B
WATER ELEVATION [masl]

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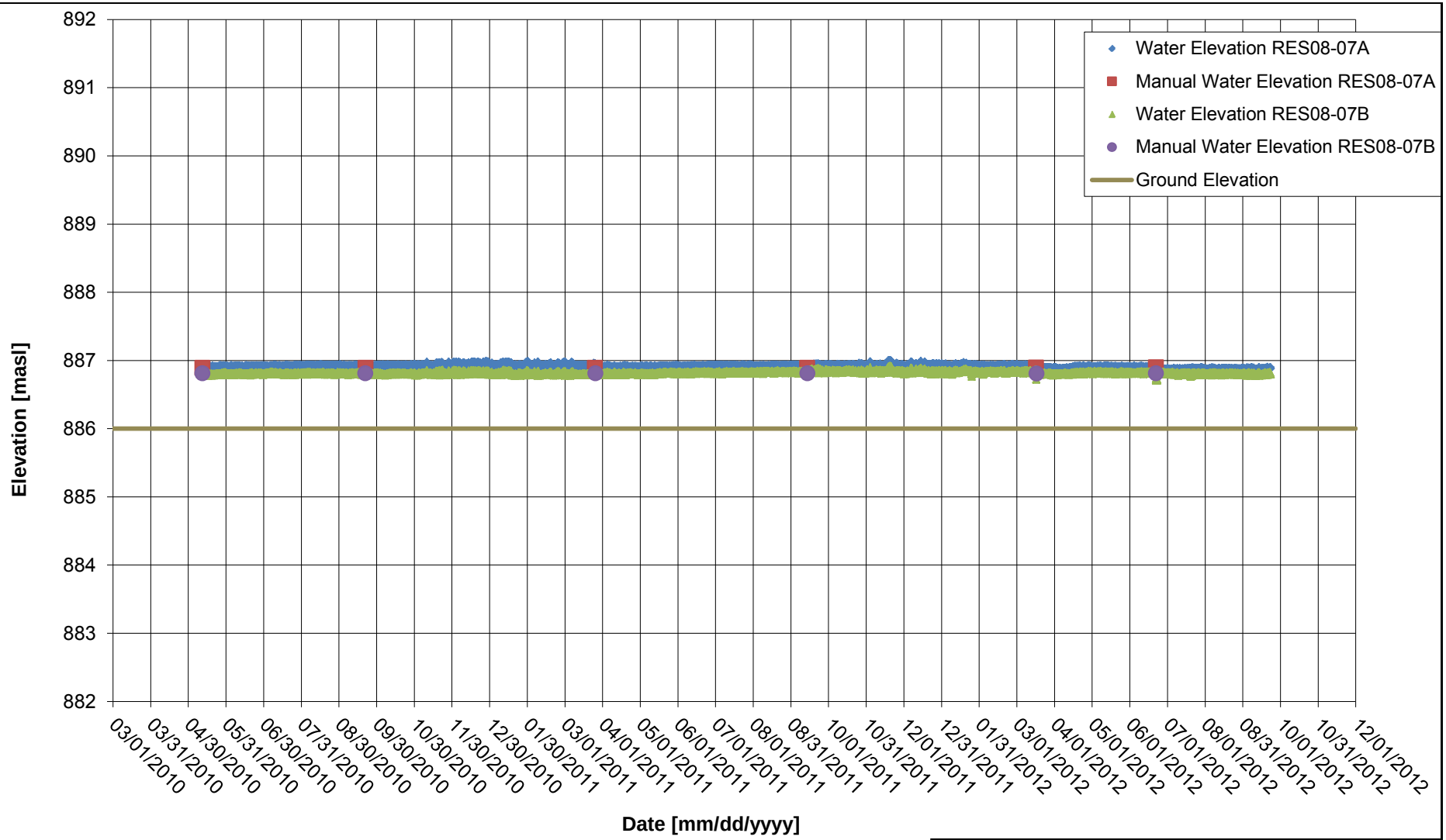
P/A NO. VA101-329/11

REF. NO. VA12-02195

FIGURE A.10

REV 1



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 886 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-07A COMPLETION ZONE IS IN LIMESTONE BETWEEN 36.3 AND 39.9 mbgs.
3. RES08-07B COMPLETION ZONE IS IN OVERBURDEN BETWEEN 4.5 AND 9.1 mbgs.
4. ARTESIAN CONDITIONS EXIST IN BOTH RES08-07A AND RES08-07B. MANUAL MEASUREMENTS INDICATE TOP OF STICK UP.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	17DEC'12	ISSUED WITH MEMO VA12-02195	CM	LW	KB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-07A and RES08-07B
WATER ELEVATION [masl]

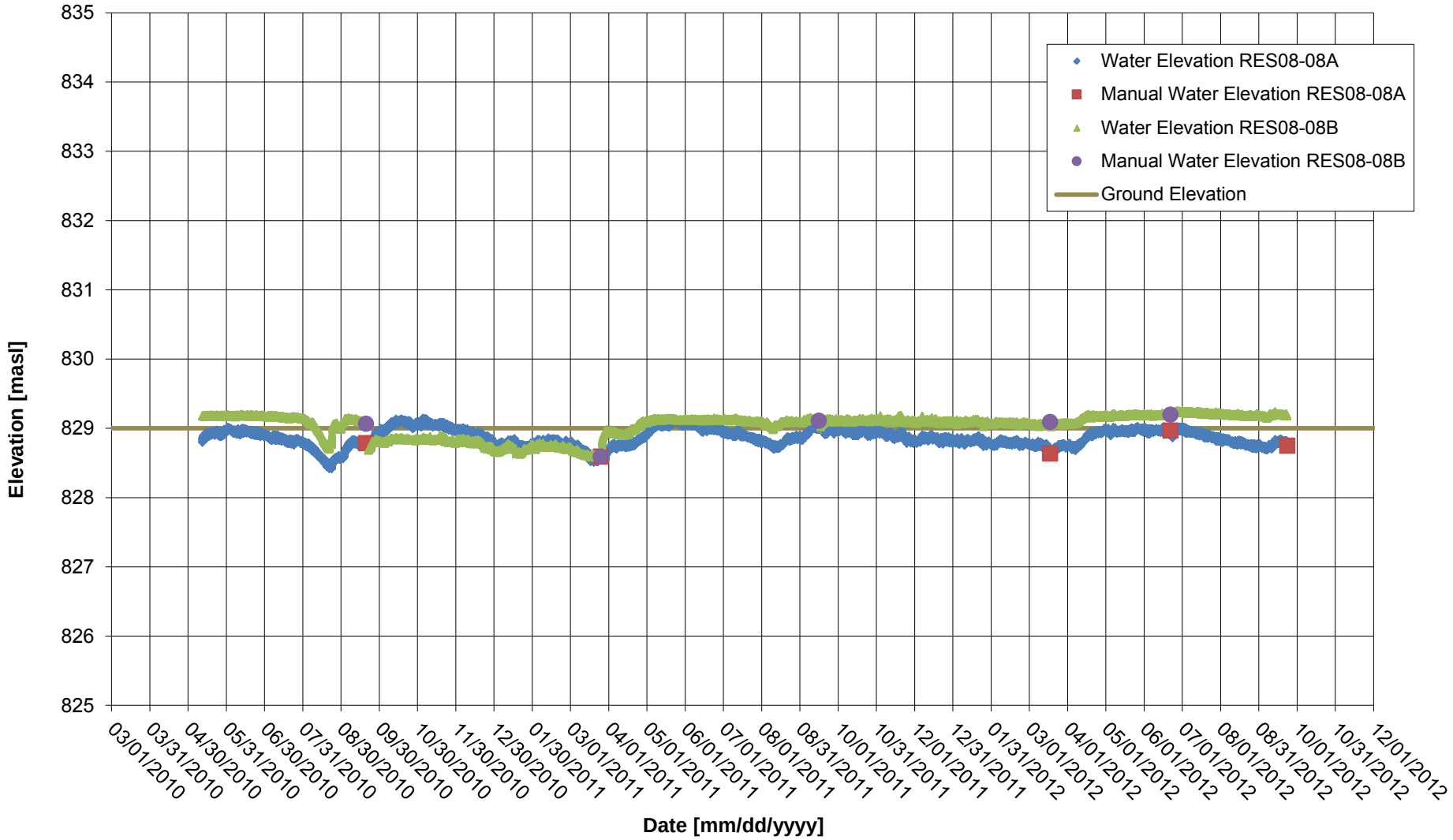
Knight Piésold CONSULTING

P/A NO. VA101-329/11

REF. NO. VA12-02195

FIGURE A.11

REV 1



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 829 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-08A COMPLETION ZONE IS IN GRANODIORITE BETWEEN 56.8 AND 59.9 mbgs.
3. RES08-08B COMPLETION ZONE IS IN GRANODIORITE BETWEEN 4.5 AND 9.8 mbgs.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
1	17DEC'12	ISSUED WITH MEMO VA12-01295	CM	LW	KB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-08A and RES08-08B
WATER ELEVATION [masl]

Knight Piésold CONSULTING

P/A NO. VA101-329/11

REF. NO. VA12-02195

FIGURE A.12

REV 1

MEMORANDUM

To:	Mr. Shane Uren	Date:	February 1, 2013
Copy To:	Mr. Jonathan Olsen	File No.:	VA101-329/13-A.01
From:	Chris Mitchell	Cont. No.:	VA13-00012
Re:	ADDENDUM TO SCHAFT CREEK 2011 BASELINE HYDROGEOLOGY STUDY – GROUNDWATER QUALITY		

1.0 INTRODUCTION

The purpose of this memorandum is to provide and summarise the groundwater quality data that have been collected for the Schaft Creek Project (the Project) since the "2011 Baseline Hydrogeology Study Rev 0" was issued on April 13, 2012 (Ref. No. VA101-329/8-3), up to and including the data collected during the field visits in September 2012. No additional drill holes, piezometers or monitoring wells have been installed since the 2011 report was issued, and no further hydrogeologic testing was undertaken during this period. This memorandum summarises the groundwater quality data only.

2.0 GROUNDWATER QUALITY

The following groundwater monitoring wells were constructed in 2008 and 2010:

Schaft Creek Valley:	RES08-03A/B RES08-04A/B HG10-01 HG10-02A/B HG-10-04 HG10-05A/B
Deposit and Hillslope Areas:	RES08-01A/B RES08-02A/B
Saddle Area:	RES08-05A/B
Skeeter Creek Valley:	RES08-06A/B RES08-07A/B RES08-08A/B

The locations of the piezometers and monitoring wells installed in the Deposit Area (including Schaft Creek Valley and the Saddle Area) and the Tailings Storage Facility Area are shown on Figures 3.1 and 3.2 (Appendix A), respectively. Three water quality sampling field visits were made in March, June, and September 2012. Guideline exceedance issues, originally presented in Appendix B1 of the 2011 Baseline Hydrogeology Study, have been updated with the additional available data, and are provided with this memorandum (Appendix B1). Quality Assurance and Quality Control data are presented in Appendix B2.

Analytical and in situ data, and aquatic life guideline exceedance information for the Project groundwater samples are provided in Appendix B1. A summary of the groundwater sampling history for each area is provided in Table 2.1, and guideline exceedances are summarized in Table 2.2. Both tables are updated versions of Tables 5.1 and 5.2, originally issued with the 2011 Baseline Hydrogeology Study. Table 2.2 provides dissolved metals exceedances only, and does not refer to any exceedances of guidelines for total metals. Note also that some of the guideline exceedances prior to 2012 have been updated since the 2011 Baseline Hydrogeology Study was issued. Tables 2.1 and 2.2 provided here, supersede Tables 5.1 and 5.2 issued with the 2011 Baseline Hydrogeology Study.

A piper diagram illustrating the major ions present in the groundwater samples is provided for each Project area on Figures 2.1 to 2.4. These diagrams were created using average values for each monitoring well (using only samples that had acceptable ion balances).

A summary of groundwater quality in the Schaft Creek Project area, presented for the four separate geographical areas, is provided below. The data collected in 2012 indicate that there have been no significant changes to the trends identified in the 2011 Baseline Hydrogeology Study.

2.1 Schaft Creek Valley

Groundwater in the Schaft Creek Valley-fill aquifer is slightly basic to basic, moderately hard to hard, alkaline, and has a mean temperature of 4.8°C. Groundwater from Schaft Creek Valley is predominately calcium-bicarbonate type, as shown on Figure 2.1. However, water from RES08-03A is calcium-sulphate type and water from RES08-04B does not have a dominant cation, but is dominant in bicarbonate. Groundwater samples from RES08-03A are atypical for the Schaft Creek Valley.

In the 2012 data, aquatic life guideline exceedances occur in samples collected from three of the nine wells sampled in the Schaft Creek Valley (RES08-04B, RES08-03A, HG10-01). Similar exceedances occur in groundwater collected from these three wells during previous years (see Table 2.2). Dissolved zinc (RES08-03A), and in situ pH (RES08-04B) were the only parameters to exceed aquatic life guidelines in 2012, which had not previously exceeded guidelines in other sampling years; both were minor exceedances.

Aquatic life guideline exceedances occur in samples collected between 2008 and 2012 (all available water quality data) from HG10-05B (vanadium), RES08-04B (fluoride, cadmium, uranium, pH), RES08-03A (fluoride, sulphate, cadmium, molybdenum, uranium, zinc), and HG10-01 (ammonia, arsenic, iron). Excluding total metals exceedances, which are not considered representative of the groundwater chemistry, there are no aquatic life guideline exceedances in the samples from HG10-05A, HG10-04, RES08-03B, HG10-02A, and HG10-02B. Aquatic life guideline exceedances for the entire period of record from 2008 to 2012 are summarized below (listed from south to north, up the valley):

- HG10-05B:
  - Vanadium exceeds the 0.006 mg/L BCWQG aquatic life limit in two of the four samples from this well (0.0305 mg/L on June 29, 2010 and 0.0063 mg/L on Sep 19, 2010). Vanadium in all other sampling locations in the Schaft Creek Valley was below the limits of detection.
- RES08-04B:
  - Fluoride exceeds the 0.12 mg/L CCME limit in all samples from 2010 onward with concentrations ranging from 0.193 mg/L to 0.264 mg/L.
  - Cadmium exceeds both the CCME and BCWQG limits on April 25, 2010 with a concentration of 0.000036 mg/L.
  - Uranium exceeds the 0.015 mg/L CCME limit in three of the seven samples with concentrations ranging from 0.0154 mg/L to 0.0181 mg/L, close to the CCME guideline.
  - pH exceeds the BCWQG and CCME limits of pH 9 in the samples collected on June 21, 2012 and September 21, 2012 (pH 9.29 and pH 9.49 respectively).
- RES08-03A:
  - Fluoride exceeds the 0.12 mg/L CCME limit from October 2009 to September 2011 with concentrations ranging from 0.125 mg/L to 0.43 mg/L.
  - Sulphate exceeds the 100 mg/L BCWQG limit from October 2009 to September 2011 with concentrations ranging from 159 mg/L to 534 mg/L.
  - Cadmium exceeds both the CCME and BCWQG limits on April 25, 2010 and March 15, 2012 with concentrations of 0.00011 mg/L and 0.00042 mg/L, respectively.
  - Molybdenum exceeds the 0.073 mg/L CCME limit in three of the eight samples (collected between April 2010 and September 2011) with concentrations ranging from 0.079 mg/L to 0.127 mg/L. Concentrations in all other samples ranged from 0.00406 mg/L to 0.0623 mg/L.
  - Uranium exceeds the 0.015 mg/L CCME limit in the same three samples as the molybdenum exceedances, with concentrations ranging from 0.0164 mg/L to 0.0179 mg/L. Concentrations in all other samples ranged from 0.00375 mg/L to 0.0108 mg/L.
  - Zinc exceeds the 0.03 mg/L CCME limit in the sample from March 15, 2012 with a concentration of 0.0396 mg/L.

- HG10-01:
  - Ammonia exceeds the CCME limit on samples collected September 15, 2011 and March 16, 2012 with concentrations of 1.67 mg/L and 1.66 mg/L, respectively.
  - Arsenic exceeds the 0.005 mg/L CCME and BCWQG limits in all of the samples collected with concentrations ranging from 0.0053 mg/L to 0.00685 mg/L. This is in contrast to dissolved arsenic across the rest of the Schaft Creek Valley, which was generally found only in very low concentrations in groundwater samples.
  - Iron also exceeds both the 0.03 mg/L CCME limit and the 0.05 mg/L BCWQG limit in all samples with concentrations ranging from 1.06 mg/L to 1.74 mg/L. This is in contrast to dissolved iron across the rest of the Schaft Creek Valley, which was rarely detected in groundwater samples.

2.2 Deposit Area

All wells in the deposit area (RES08-01A/B and RES08-02A/B) were redeveloped in the spring of 2010 to decrease turbidity. Only RES08-02B was successfully redeveloped and therefore the remaining wells have been removed from the groundwater sampling program and the data are not used for groundwater characterization. The discussion below relates to samples collected from RES08-02B after the well was successfully redeveloped (2010 to 2012). The 2012 water quality sampling revealed no additional parameters that exceed aquatic life guidelines that had not previously exceeded guidelines in other sampling years.

Groundwater in the deposit area is basic, moderately hard, alkaline, and has a mean temperature of 6.0°C. Groundwater from RES08-02B is characterized as having a calcium-magnesium-bicarbonate type hydrochemical facies, as shown on the piper diagram on Figure 2.2. The pH ranges from 8.28 to 8.84, alkalinity ranges from 71 mg/L $CaCO_3$ to 77 mg/L $CaCO_3$, and hardness ranges from 75 mg/L $CaCO_3$ to 93 mg/L $CaCO_3$. Total dissolved solids (TDS) and specific conductivity range from 119 mg/L to 149 mg/L and 172 µS/cm to 198 µS/cm, respectively.

Dissolved metals are low in the samples from RES08-02B. Arsenic is the only parameter to exceed the 0.005 mg/L CCME and BCWQG guideline limits with exceedances ranging from 0.00512 mg/L to 0.00639 mg/L. This limit is exceeded in all samples except the September 22, 2010 sample, which was just below the guideline limit at 0.00485 mg/L. No other exceedances were found after the redevelopment of the well.

2.3 Saddle Area

Groundwater in the saddle area is slightly basic, moderately hard, alkaline, and has a mean temperature of 5.1°C. Groundwater is characterized as having a calcium-bicarbonate type hydrochemical facies, as shown on the piper diagram on Figure 2.3. The pH is similar in both the deep well (RES08-05A) and shallow well (RES08-05B) ranging from 7.01 to 8.46. Hardness and alkalinity are greater in the shallow well water quality samples; the mean hardness is 99.8 mg/L $CaCO_3$ in the shallow well and 80.6 mg/L $CaCO_3$ in the deep well. Average alkalinity is 89.9 mg/L $CaCO_3$ in the shallow well and 73.0 mg/L $CaCO_3$ in the deep well. TDS ranges from 97 mg/L to 168 mg/L and specific conductivity ranges from 116 µS/cm to 243 µS/cm.

There were no aquatic life guideline exceedances in the groundwater quality samples collected during 2012. A summary of the exceedances in the previous sampling years is provided below.

RES08-05A and RES08-05B were redeveloped in the spring of 2010 to decrease the turbidity and suspended solids. The samples collected prior to redevelopment (October 2008) are not discussed here. Dissolved metals do not exceed aquatic life guideline limits in any of the post redevelopment samples from RES08-05A. Cadmium and iron exceed guideline limits in some of the post-redevelopment samples from RES08-05B. Cadmium concentrations are generally below guidelines, but one sample collected on September 23, 2010 exceeds the CCME and BCWQG limit, with a measured concentration of 0.000039 mg/L. Iron concentrations in RES08-05B range from below detection to 0.667 mg/L; all samples collected prior to 2012 exceed the 0.3 mg/L CCME limit and two exceed the 0.35 mg/L BCWQG limit as well. Samples collected in 2012 had no exceedances.

2.4 Skeeter Creek Valley

Groundwater in the Skeeter Creek Valley is neutral to basic, hard, alkaline, and has an average temperature of 5.8°C. Groundwater from RES08-06A and RES08-06B is characterized as having a calcium-magnesium-sulphate type hydrochemical facies. Groundwater from RES08-07A and RES08-07B is magnesium-bicarbonate-sulphate type, and RES08-08A is sulphate type without a dominant cation. Groundwater from RES08-08B is bicarbonate type without a dominant cation.

All of the wells in the Skeeter Creek Valley area were redeveloped in the spring of 2010 in order to reduce suspended solids and turbidity issues. Samples taken at RES08-06A/B during September 2008 are not included in the discussion below as the wells were suspected to be contaminated during installation. Well development in all other wells was successful and the corresponding data have been included in the groundwater quality assessment for the Skeeter Creek Valley.

No new parameters exceeded aquatic life guideline values in the 2012 groundwater samples that were not identified as exceedances in previous years. Parameters exceeding guidelines for each well were the same in 2012 as they were in 2011 (see Table 2.2). The discussion below includes all data collected from the Skeeter Creek Valley monitoring wells between 2009 and 2012.

The pH values are similar in both the shallow and deep well samples ranging from 7.01 to 8.53. Hardness ranges from 79.5 mg/L $CaCO_3$ to 314 mg/L $CaCO_3$, and is lowest in the RES08-06A/B wells, where the mean concentration is 114.0 mg/L $CaCO_3$. Average hardness in RES08-08A/B and RES08-07A/B is 184.5 mg/L $CaCO_3$ and 289.6 mg/L $CaCO_3$, respectively. Bicarbonate alkalinity ranges from 90.1 mg/L $CaCO_3$ to 201 mg/L $CaCO_3$, showing variability through the valley similar to hardness. TDS and specific conductivity show similar trends as hardness and alkalinity, with TDS ranging from 153 mg/L to 615 mg/L and specific conductivity ranging from 165 µS/cm to 972 µS/cm.

Fluoride exceedances of aquatic life guidelines consistently occur in all of the monitoring wells in the Skeeter Creek Valley (2009 to 2012), with the exception of the 2009 and 2010 samples from RES08-06B. Sulphate exceedances consistently occur in all of the Skeeter Creek Valley wells except RES08-06B and RES08-08B. Additionally, exceedances commonly occur for uranium (RES08-08A) and iron (RES08-08B). The parameters exceeding aquatic life guidelines are summarized below:

Dissolved metals guideline exceedances are:

- RES08-07A:
  - Fluoride exceeds the 0.12 mg/L CCME limit in all samples collected since 2009 with concentrations ranging from 0.524 mg/L to 0.623 mg/L.
  - Sulphate exceeds the 100 mg/L BCWQG limit in all samples with concentrations ranging from 131 mg/L to 141 mg/L.
- RES08-07B:
  - Fluoride exceeds the 0.12 mg/L CCME limit in all samples collected since 2009 with concentrations ranging from 0.451 mg/L to 0.557 mg/L.
  - Sulphate exceeds the 100 mg/L BCWQG limit in all samples with concentrations ranging from 120 mg/L to 128 mg/L.
- RES08-08A:
  - Fluoride exceeds the 0.12 mg/L CCME limit in all samples collected since 2009 with concentrations ranging from 1.01 mg/L to 1.37 mg/L.
  - Sulphate exceeds the 100 mg/L BCWQG limit in all samples with concentrations ranging from 133 mg/L to 294 mg/L.
  - Uranium exceeds the 0.015 mg/L CCME limit in all samples collected since 2009 with concentrations ranging from 0.0203 mg/L to 0.0249 mg/L.
- RES08-08B:
  - Fluoride exceeds the 0.12 mg/L CCME limit in all samples collected since 2009 with concentrations ranging from 0.46 mg/L to 0.802 mg/L.
  - Iron exceeds both the 0.3 mg/L CCME and 0.35 mg/L BCWQG limits in all samples with concentrations ranging from 0.79 mg/L to 5.22 mg/L.

- RES08-06A:
  - Fluoride exceeds the 0.12 mg/L CCME limit in all samples with concentrations ranging from 0.13 mg/L to 1.72 mg/L; the BCWQG limit was also exceeded in the June 22, 2012 sample.
  - Sulphate exceeds the 100 mg/L BCWQG limit in five of the six samples collected since 2009 with concentrations ranging from 102 mg/L to 289 mg/L. The concentration in September 2012 was 22.2 mg/L.
- RES08-06B:
  - Fluoride exceeds the 0.12 mg/L CCME limit in four of the seven samples collected since 2009 (all of the samples taken in 2011 and 2012) with concentrations ranging from 0.131 mg/L to 0.167 mg/L. Concentrations in all other samples ranged from 0.061 mg/L to 0.113 mg/L.

3.0 SUMMARY

The water throughout the study area is moderately hard to hard and alkaline with pH that is slightly basic to basic. Groundwater in the Schaft Creek Project area is classified as fresh with total dissolved solids concentrations less than 1000 mg/L. All monitoring locations have high buffering capacity with alkalinity values consistently greater than 43 mg/L $CaCO_3$ and ranging upwards to 201 mg/L $CaCO_3$. The groundwater type in Schaft Creek Valley, the Deposit Area, and Saddle Area is mainly calcium-magnesium-bicarbonate type. Skeeter Creek Valley groundwater ranges from magnesium type to no dominant cation type, and bicarbonate to sulphate water.

Aquatic life guideline exceedances exist for ammonia, arsenic, cadmium, fluoride, iron, molybdenum, sulphate, uranium, vanadium, and zinc but these issues are not pervasive. It should also be noted that arsenic concentrations in all of the samples that exceed guidelines are near the guideline limit and that uranium and fluoride concentrations only exceed the more stringent CCME limit; they are well below the BCWQG limit. Guideline exceedances vary with location within the Project area.

Vanadium is the only parameter to exceed guidelines in the southern portion of the Schaft Creek Valley. Sulphate, cadmium, fluoride, molybdenum, uranium, and zinc exceed guideline limits in the central part of the valley. Further north, ammonia, arsenic, and iron exceed guidelines.

Sulphate and fluoride consistently exceed guidelines in all sample areas in the Skeeter Creek Valley, while iron and uranium exceedances commonly occur in the wells close to the proposed West Embankment.

Arsenic exceedances were consistent in the well sampled in the deposit area.

Cadmium and iron were the only parameters to exceed guideline limits in the Saddle Area; these exceedances were not pervasive.

Additional data collection will enhance the understanding of the natural variability and similarities in water quality throughout the Project area.

If you have any comments or concerns, please do not hesitate to contact the undersigned.

Signed: _____
Chris Mitchell, E.I.T. – Staff Engineer

Reviewed: _____
Louise Walker, C.WEM. – Project Scientist

Approved: _____
for: Ken Brouwer, P.Eng. – President

Attachments:

Table 2.1 Rev 0	Groundwater Sample Locations and Sampling History
Table 2.2 Rev 0	Summary of Water Quality Guideline Exceedances
Figure 2.1 Rev 0	Trilinear Piper Plot of Groundwater Chemistry – Schaft Creek Valley
Figure 2.2 Rev 0	Trilinear Piper Plot of Groundwater Chemistry – Deposit
Figure 2.3 Rev 0	Trilinear Piper Plot of Groundwater Chemistry – Saddle Area
Figure 2.4 Rev 0	Trilinear Piper Plot of Groundwater Chemistry – Skeeter Creek Valley
Appendix A	Figures 3.1 and 3.2 from VA101-329/8-3
Appendix B	Groundwater Quality Data
Appendix B1	Analytical and Guideline Exceedances
Appendix B2	Quality Assurance/Quality Control

/cm

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TABLE 2.1

COPPER FOX METALS INC.
SCHAFT CREEK PROJECT

GROUNDWATER SAMPLE LOCATIONS AND SAMPLING HISTORY

Print Feb/01/2013 11:22:22

Schaft Creek Valley	Total Number of Samples	Sample Dates												
		Sep-08	Oct-08	Sep-09	Oct-09	Apr-10	May-10	Jun-10	Sep-10	Mar-11	Sep-11	Mar-12	Jun-12	Sep-12
RES08-3A	8	✓			✓	✓			✓		✓	✓	✓	✓
RES08-3B	9	✓			✓	✓			✓	✓	✓	✓	✓	✓
RES08-4A	2		✓		✓									
RES08-4B	9		✓		✓	✓			✓	✓	✓	✓	✓	✓
HG10-01	6							✓	✓		✓	✓	✓	✓
HG10-02A	6							✓	✓		✓	✓	✓	✓
HG10-02B	6							✓	✓		✓	✓	✓	✓
HG10-04	6							✓	✓	✓	✓		✓	✓
HG10-05A	6							✓	✓	✓	✓		✓	✓
HG10-05B	6							✓	✓	✓	✓		✓	✓
Deposit and Hillslope Areas														
RES08-1A	2	✓			✓									
RES08-1B	2	✓			✓									
RES08-2A	2	✓			✓									
RES08-2B	6	✓			✓		✓		✓		✓		✓	
Saddle Area														
RES08-5A	6		✓			✓			✓		✓		✓	✓
RES08-5B	6		✓				✓		✓		✓		✓	✓
Skeeter Creek Valley														
RES08-6A	7	✓		✓			✓		✓		✓		✓	✓
RES08-6B	8	✓		✓			✓		✓		✓	✓	✓	✓
RES08-7A	8				✓		✓		✓	✓	✓	✓	✓	✓
RES08-7B	8				✓		✓		✓	✓	✓	✓	✓	✓
RES08-8A	8				✓		✓		✓	✓	✓	✓	✓	✓
RES08-8B	7				✓		✓		✓		✓	✓	✓	✓

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum to 2011 Hydrogeo Study\Attachments\[GWQ Tables 2.1 & 2.2.xlsx]Table 2.1 Sample Locations&Hist

NOTES:

1. ✓ = WELL WAS SAMPLED.
2. ✓ = WELL WAS SAMPLED BUT DATA CONSIDERED UNRELIABLE / UNSUITABLE FOR WATER QUALITY ANALYSIS.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	14JAN'13	ISSUED WITH MEMO VA13-00012	CM	LW	KJB

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TABLE 2.2

COPPER FOX METALS INC.
SCHAFT CREEK PROJECT

SUMMARY OF WATER QUALITY GUIDELINE EXCEEDANCES

Print Feb/01/2013 11:22:22

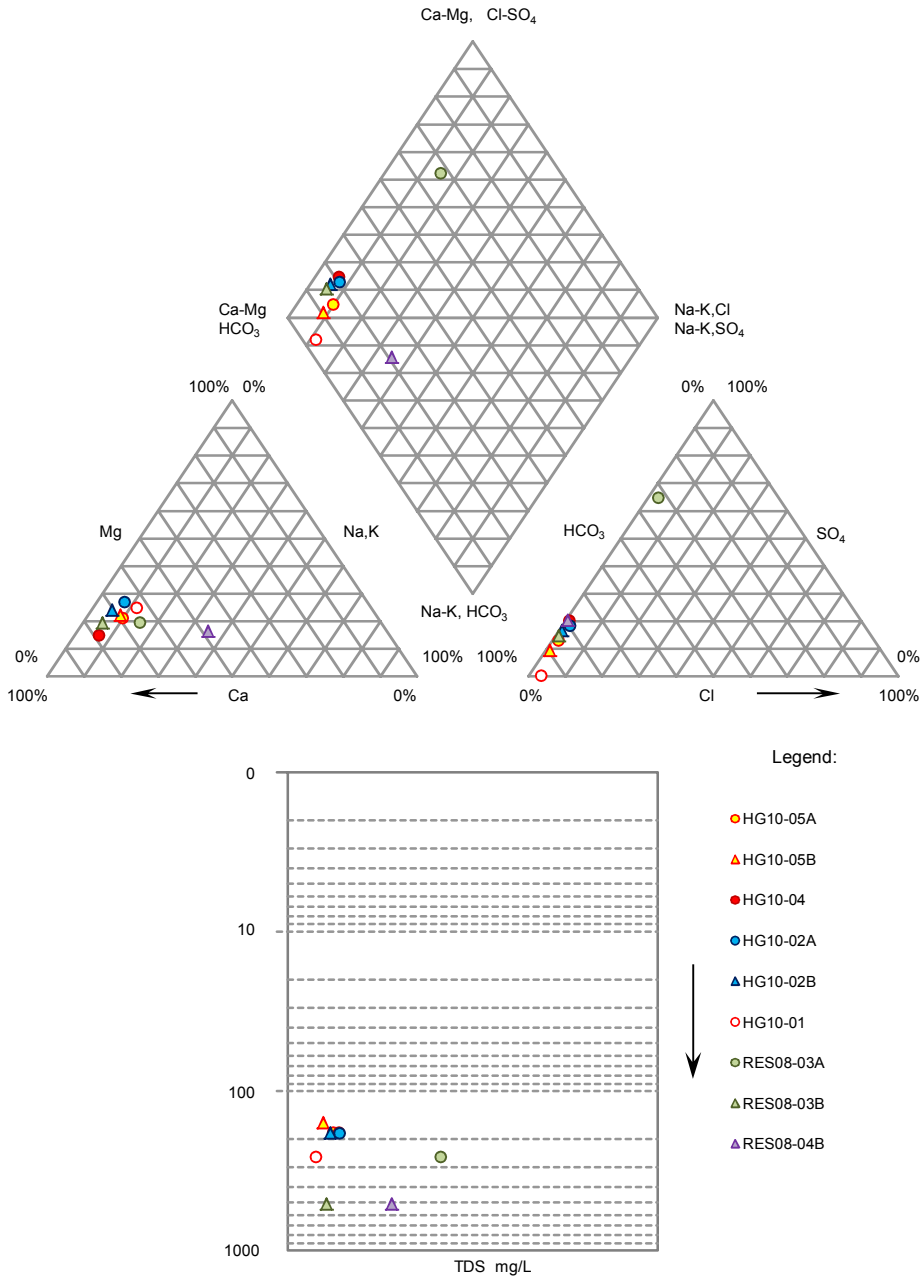
Schaft Creek Valley	Total Number of Samples	BCWQG Exceedances	CCME Exceedances	Parameters Exceeded 2008	Parameters Exceeded 2009	Parameters Exceeded 2010	Parameters Exceeded 2011	Parameters Exceeded 2012
RES08-03A	8	5	5		F, SO4*	F, SO_4, Cd, Mo, U	F, SO_4, Mo, U	Cd, Zn
RES08-03B	9	0	0					
RES08-04B	9	5	9	DATA UNSUITABLE	DATA UNSUITABLE	F, Cd, U	F, U	pH, F
HG10-01	6	6	6			As, Fe	As, Fe, NH_3	As, Fe, NH_3
HG10-02A	6	0	0					
HG10-02B	6	0	0					
HG10-04	6	0	0					
HG10-05A	6	0	0					
HG10-05B	6	2	0			V		
Deposit and Hillslope Areas								
RES08-01A	2			DATA UNSUITABLE	DATA UNSUITABLE			
RES08-01B	2			DATA UNSUITABLE	DATA UNSUITABLE			
RES08-02A	2			DATA UNSUITABLE	DATA UNSUITABLE			
RES08-02B	6	5	5	Al, As, Cu, Fe*	As*	As	As	As
Saddle Area								
RES08-05A	8	1	1	Al, Cd, Cu, Fe*				
RES08-05B	8	3	4	Al, Cd, Cu*		Cd, Fe	Fe	
Skeeter Creek Valley								
RES08-06A	7	5	7	F, Cu*	F, SO_4*	F, SO_4	F, SO_4	F, SO_4
RES08-06B	8	1	5	F, Al, Cu, Fe, Se, V*			F	F
RES08-07A	8	8	8		F, SO_4*	F, SO_4	F, SO_4	F, SO_4
RES08-07B	8	8	8		F, SO_4*	F, SO_4	F, SO_4	F, SO_4
RES08-08A	8	8	8		F, SO_4, U*	F, SO_4, U	F, SO_4, U	F, SO_4, U
RES08-08B	7	7	7		F, Fe*	F, Fe	F, Fe	F, Fe

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum to 2011 Hydrogeo Study\Attachments\[GWQ Tables 2.1 & 2.2.xlsx]Table 2.2

NOTES:

1. DATA UNSUITABLE = WELL WAS SAMPLED BUT DATA CONSIDERED UNRELIABLE / UNSUITABLE FOR WATER QUALITY ANALYSIS.
2. * = DATA COLLECTED PRIOR TO WELL REDEVELOPMENT.
3. ONLY DISSOLVED METALS EXCEEDANCES ARE SHOWN ON TABLE.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	14JAN'13	ISSUED WITH MEMO VA13-00012	CM	LW	KJB



NOTES:

1. PIPER DATA ARE PLOTTED IN %meq/L.
2. VALUES BASED ON ALL SUITABLE SAMPLES COLLECTED BETWEEN SEPTEMBER 2008 AND SEPTEMBER 2012.
3. RES08-04B SAMPLES PRIOR TO WELL REDEVELOPMENT REMOVED DUE TO CONTAMINATION DURING WELL INSTALLATION.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	22JAN'13	ISSUED WITH MEMO VA13-00012	CM	LW	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

TRILINEAR PIPER PLOT OF GROUNDWATER CHEMISTRY - SCHAFT CREEK VALLEY

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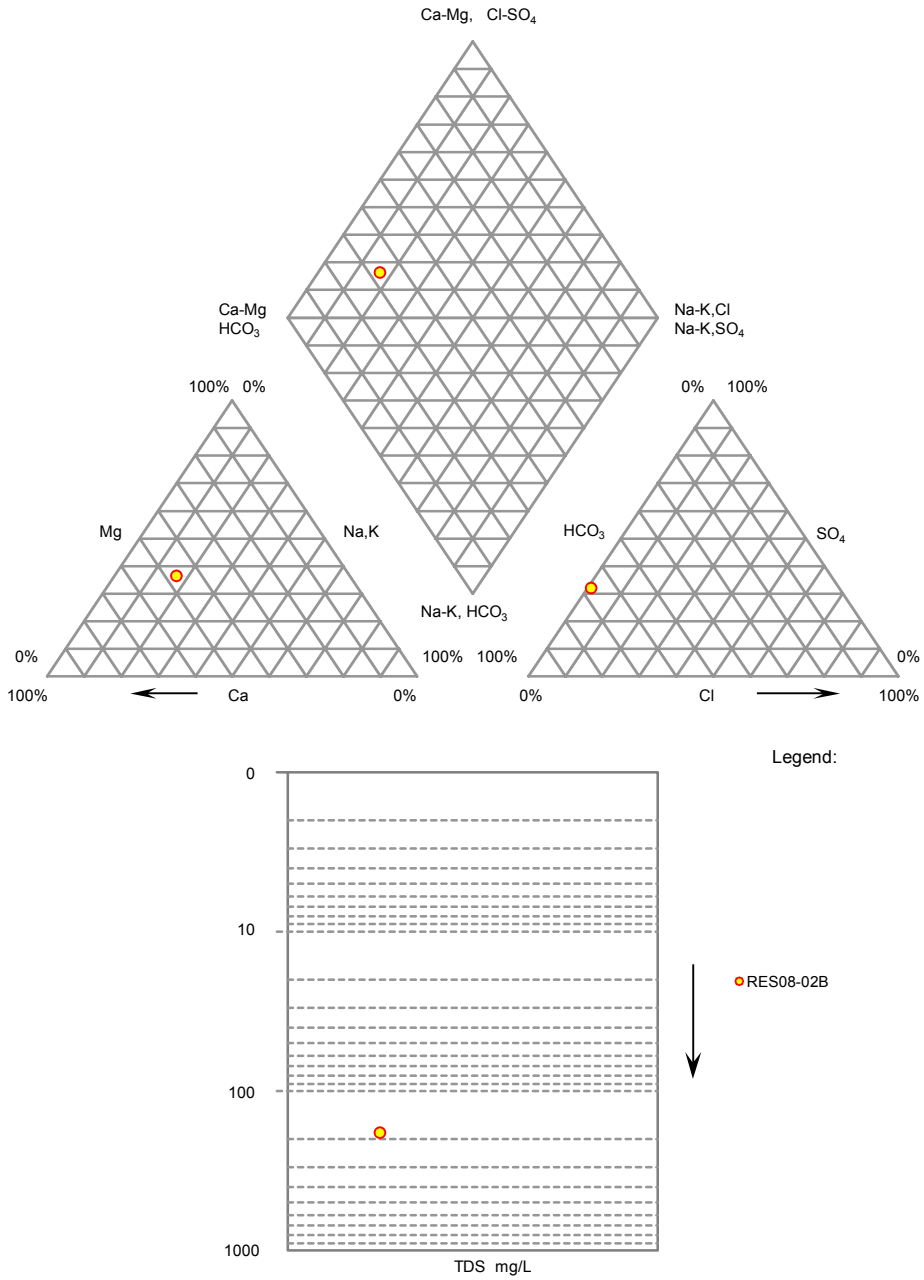
P/A NO. VA101-329/13

REF. NO. VA13-00012

FIGURE 2.1

REV 0



NOTES:

1. PIPER DATA ARE PLOTTED IN %meq/L.
2. VALUES BASED ON ALL AVAILABLE SAMPLES COLLECTED BETWEEN MAY 2010 AND SEPTEMBER 2012.

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

TRILINEAR PIPER PLOT OF GROUNDWATER CHEMISTRY- DEPOSIT

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P/A NO. VA101-329/13

REF. NO. VA13-00012

FIGURE 2.2

REV 0

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
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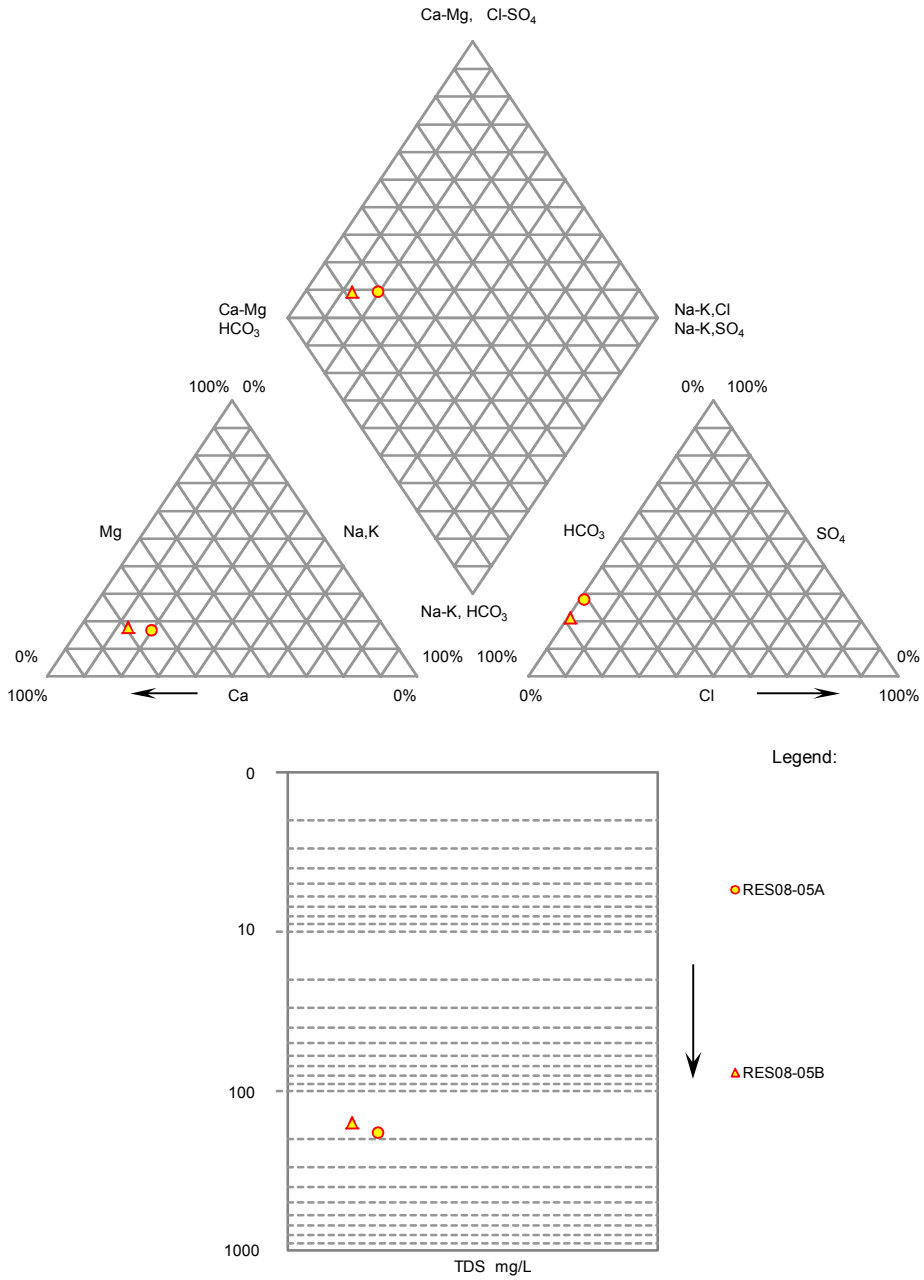

NOTES:

1. PIPER DATA ARE PLOTTED IN %meq/L.
2. VALUES BASED ON ALL AVAILABLE SAMPLES COLLECTED BETWEEN APRIL 2010 AND SEPTEMBER 2012.

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

TRILINEAR PIPER PLOT OF GROUNDWATER CHEMISTRY - SADDLE AREA

Knight Piésold CONSULTING

P/A NO. VA101-329/13

REF. NO. VA13-00012

FIGURE 2.3

REV 0

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
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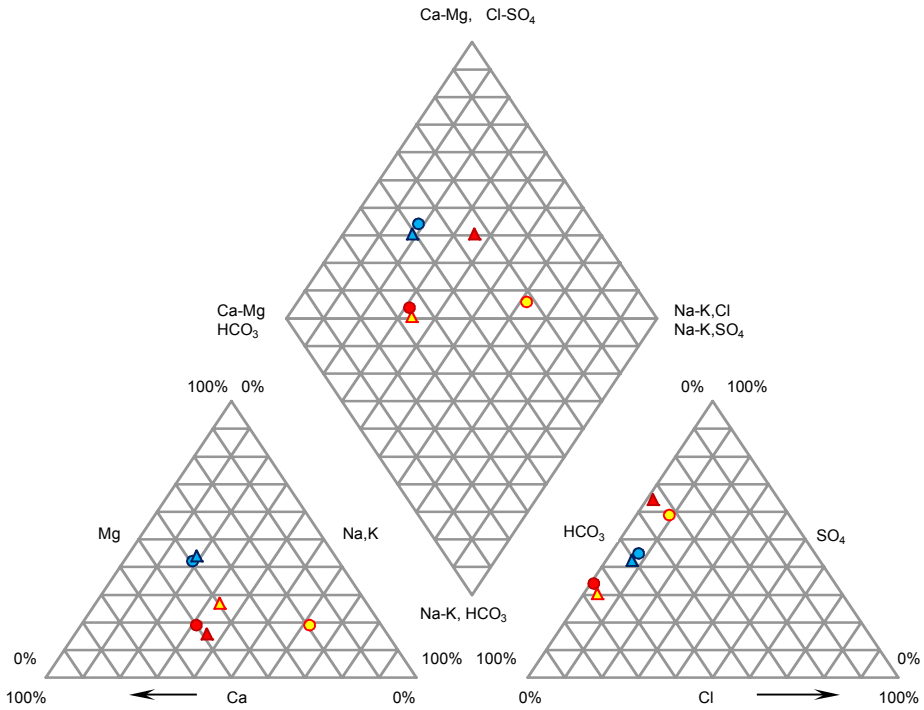

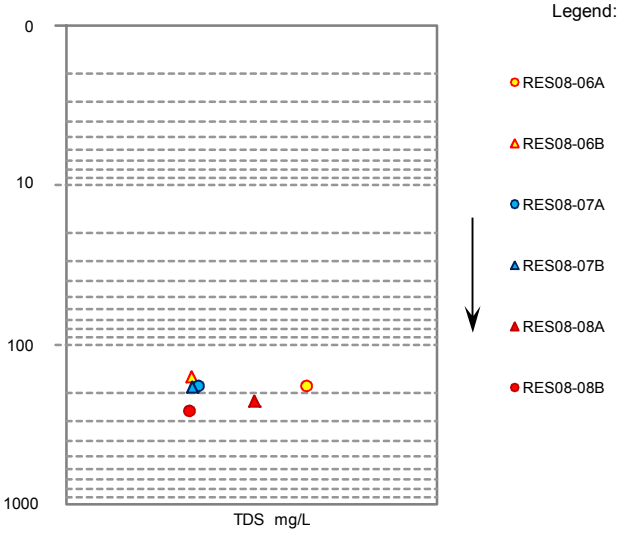

NOTES:
1. PIPER DATA ARE PLOTTED IN %meq/L.
2. VALUES BASED ON ALL AVAILABLE SAMPLES COLLECTED BETWEEN SEPTEMBER 2009 AND SEPTEMBER 2012.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	22JAN'13	ISSUED WITH MEMO VA13-00012	CM	LW	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

TRILINEAR PIPER PLOT OF GROUNDWATER CHEMISTRY - SKEETER CREEK VALLEY

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P/A NO. VA101-329/13

REF. NO. VA13-00012

FIGURE 2.4

REV 0

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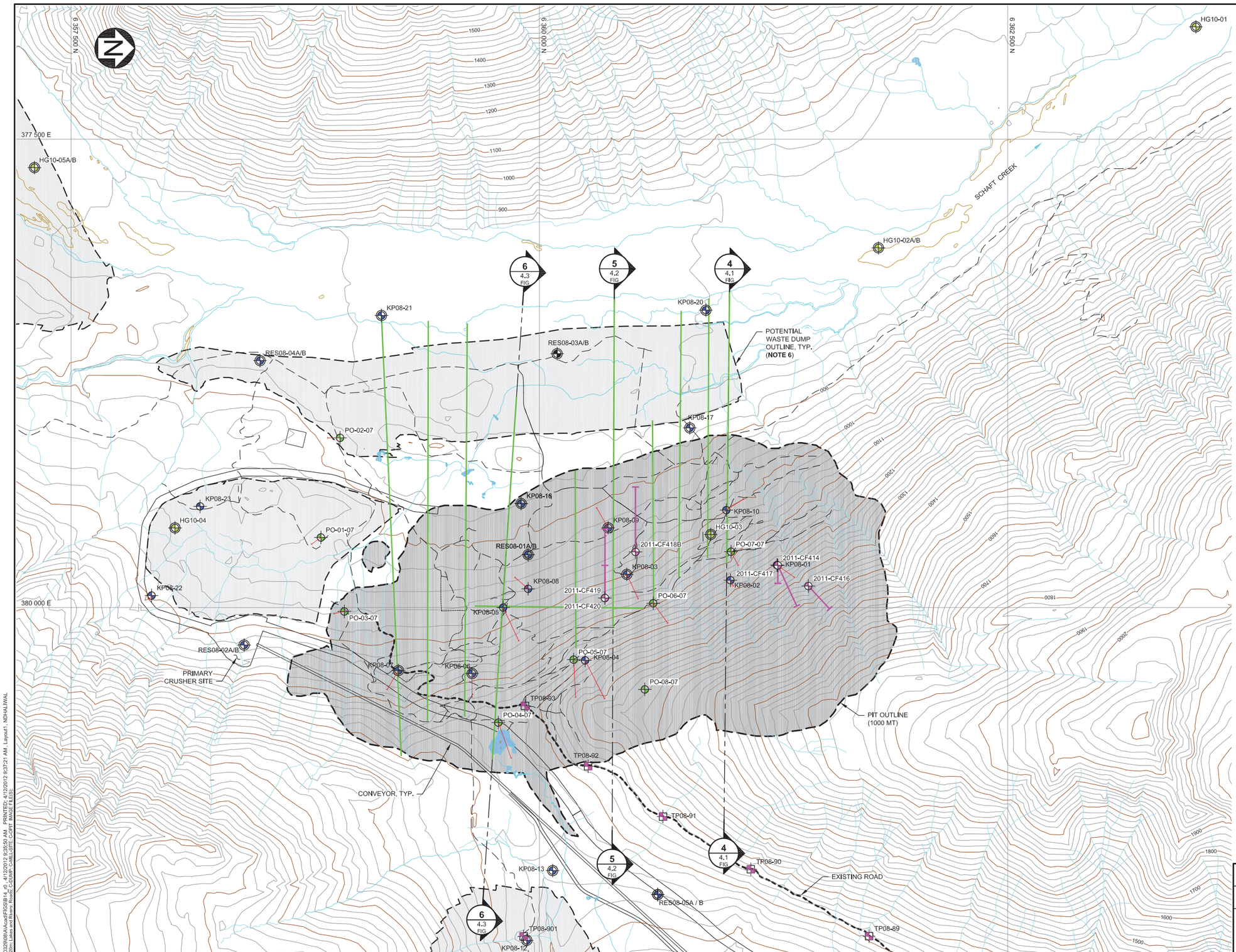
APPENDIX A

FIGURES 3.1 AND 3.2 FROM VA101-329/8-3

(Pages A-1 to A-2)



NOTES:

1. COORDINATE GRID IS UTM (NAD83) ZONE 9V.
2. 20 m INTERNAL TRIM MAP PROVIDED BY COPPER FOX (JANUARY 2008).
3. PROPOSED MINE FACILITIES BY WARDROP (2011, 2012).
4. 2007 GEOTECHNICAL DRILL HOLES COMPLETED BY DST; 2008 & 2010 GEOTECHNICAL DRILL HOLES BY KP.
5. 2008 SEISMIC SURVEY COMPLETED BY AGL.
6. WASTE DUMP OUTLINES ARE APPROX. AND WILL BE UPDATED WHEN AVAILABLE.

LEGEND:

- 2007 GEOTECHNICAL DRILL HOLE
- 2008 GEOTECHNICAL DRILL HOLE
- 2008 GEOTECHNICAL DRILL HOLE WITH PIEZOMETER INSTALLED
- 2008 TEST PIT
- 2010 CONTINUED HYDROLOGIC INVESTIGATION
- 2011 GEOTECHNICAL DRILL HOLE
- 2008 SEISMIC REFRACTION SURVEY LINE

SCALE A: 200 100 0 200 400 600 800 1000 m

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	AM	RP/WAL	DAY	JKB

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SCHAFT CREEK PROJECT

DRILL HOLE, PIEZOMETER AND MONITORING WELL LOCATIONS FOR DEPOSIT AREA

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P/A NO. VA101-329/8 | REF NO. 3

FIGURE 3.1 | REV 0

6 365 000 N
6 367 500 N
6 370 000 N
6 372 500 N
6 375 000 N
380 000 E
382 500 E

SCHAFT CREEK
NORTHWEST EMBANKMENT
NORTH EMBANKMENT
SOUTH EMBANKMENT
TAILINGS STORAGE FACILITY OUTLINE
EXISTING ROAD
EXISTING ACCESS ROAD, TYP.
PLANT SITE
NWD1
NWD2
NWD3
ND1
ND2
SD1
SD2
SD3
SD4
SD5
SD6

1 4.4 FIG
2 4.5 FIG
3 4.6 FIG
4 4.7 FIG
5 4.8 FIG
6 4.9 FIG

TP08-63, TP08-64, TP08-65, TP08-66, TP08-67, TP08-68, TP08-69, TP08-70, TP08-71, TP08-72, TP08-73, TP08-74, TP08-75, TP08-76, TP08-77, TP08-78, TP08-79, TP08-80, TP08-81, TP08-902, TP08-904, TP08-905, TP08-906, TP08-907, TP08-908, TP08-909, TP08-910, TP08-911, TP08-912, TP08-913, TP08-914, TP08-915, TP08-916, TP08-917, TP08-918, TP08-919, TP08-920, TP08-921, TP08-922, TP08-923, TP08-924, TP08-925, TP08-926, TP08-927, TP08-928, TP08-929, TP08-930, TP08-931, TP08-932, TP08-933, TP08-934, TP08-935
KP08-25, KP08-27, KP08-28, KP08-31, KP08-32, KP08-37A/B, KP08-38, KP08-40, KP08-41, KP08-42, KP08-45
AH08-002, AH08-003, AH08-004, AH08-005, AH08-006, AH08-007, AH08-008, AH08-009, AH08-010, AH08-011, AH08-012, AH08-013, AH08-014, AH08-015, AH08-001
A-ND-07-01, A-ND-07-02, A-ND-07-03, A-NWD-07-01, A-SD-07-01, A-SD-07-02, A-SD-07-03
RES08-06A/B, RES08-07A / B, RES08-08A / B

NOTES:

1. COORDINATE GRID IS UTM (NAD83) ZONE 9V.
2. 20 m INTERNAL TRIM MAP PROVIDED BY KP (JANUARY 2008).
3. PROPOSED MINE FACILITIES IN ACCORDANCE WITH KP PREFEASIBILITY TSF DESIGN (JULY 2008).
4. 2007 GEOTECHNICAL HOLES COMPLETED BY DST.
5. 2008 SEISMIC SURVEY COMPLETED BY AGL.

LEGEND:

- 2007 GEOTECHNICAL HOLE
- 2008 GEOTECHNICAL HOLE
- 2008 GEOTECHNICAL HOLE WITH PIEZOMETER INSTALLED
- EXPLORATION DRILL HOLE WITH PIEZOMETER
- EXPLORATION DRILL HOLE SURVEYED BY ACOUSTIC TELEVIEWER
- 2008 TEST PIT
- 2008 DUTCH AUGER TEST HOLE
- 2008 SEISMIC REFRACTION SURVEY LINE

250 125 0 250 500 750 1000 1250 mm
SCALE A

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
0	13APR'12	ISSUED WITH REPORT	NB	NSD	DAY	KJB

COPPER FOX METALS INC.

SCHAFT CREEK PROJECT

DRILL HOLE, PIEZOMETER AND MONITORING WELL LOCATIONS FOR TAILINGS STORAGE FACILITY AREA

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P/A NO. VA101-329/8 | REF NO. 3

FIGURE 3.2 | REV 0

SAVED: M:\1\01\00329\08\A\acad\FIGS\B15_0_4\12\2012 9:38:07 AM PRINTED: 4/12/2012 9:41:31 AM Layout1: N2HALLIWAL
XREF FILES: Topo20m, Lakes and Rivers, C-Path, C-Outline, C-Infill-Site IMAGE FILES:

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APPENDIX B

GROUNDWATER QUALITY DATA

Appendix B1 Analytical and Guideline Exceedances
Appendix B2 Quality Assurance/Quality Control

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APPENDIX B1

ANALYTICAL AND GUIDELINE EXCEEDANCES

(Pages B1-1 to B1-10)

APPENDIX B1 - ANALYTICAL DATA AND GUIDELINE EXCEEDANCES

SCHAFT CREEK MINE PROJECT
TABLE B1.1 - GUIDELINES

Site ID Date/Time Sampled	BCWQG-MAXIMUM [3]	CEQG-PAL[4]
Physical Tests		
pH	6.5 to 9	6.5 to 9
Dissolved Anions		
Chloride (Dissolved)	600	640
Fluoride (Dissolved)	0.4 to 0.01(-51.73+92.57(Log(H))) [7]	0.12
Sulphate (Dissolved)	100	
Nutrients		
Ammonia (Total as N)	0.681 to 28.7 [8,9]	0.017 to 192 [8,9]
Nitrate (as N)	31.3	13
Nitrite (as N)	0.06 to 0.6 [10]	0.06
Cyanide		
Cyanide (Free)		0.005
Cyanide (WAD)	0.01	
Metals		
Aluminum	0.1 to $e^{(1.209-2.426*[pH]+0.286*[pH]\ ^{[(2)]})}$ (8,11)	0.005 to 0.1 [8]
Antimony	0.02	
Arsenic	0.005	0.005
Barium	5	
Beryllium	0.0053	
Boron	1.2	
Cadmium	$10^{(0.86*(\log(H)-3.2)}$ /1000 [7]	10(0.86*(log(H)-3.2)/1000 to 0.000055 [7]
Chromium	0.0089	0.0089
Cobalt	0.11	
Copper	(0.094*H+2)/1000 [7]	0.002 to 0.004 [7]
Iron	0.35 [11] / 1 [12]	0.3
Lead	0.003 to $e^{(1.273*\ln(H)-1.460)}$/1000 [7]	0.001 to 0.007 [7]
Manganese	(0.01102*H)+0.54 [7]	
Mercury		0.000026
Molybdenum	2	0.073
Nickel	0.025 to 0.150 [7]	0.025 to 0.15 [7]
Selenium		0.001
Silver	0.0001 to 0.003 [7]	0.0001
Thallium	0.0003	0.0008
Uranium	0.3	0.015
Vanadium	0.006	
Zinc	(33+0.75*(H-90))/1000 to 0.033 [7]	0.03

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum to 2011 Hydrogeo Study\Attachments\Appendix B\[Appendix B1 - Analytical Data and Guideline Exceedances.xls]B1.1 - GUIDELINES

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BRITISH COLUMBIA WATER QUALITY GUIDELINES (APPROVED AND WORKING) - MAXIMUM LIMITS (BCWQG-MAX) - FRESHWATER AQUATIC LIFE.
3. CANADIAN ENVIRONMENTAL QUALITY GUIDELINES - WATER QUALITY GUIDELINE FOR THE PROTECTION OF AQUATIC LIFE (CEQG-PAL) - FRESHWATER.
4. THIS SHADING INDICATES THAT THE VALUE EXCEEDS THE LIMITS OF THE BCWQG - MAXIMUM GUIDELINES.
5. THIS SHADING INDICATES THAT THE VALUED EXCEEDS THE LIMITS OF THE CEQG-PAL.
6. THIS SHADING INDICATES THAT THE VALUE EXCEEDS THE LIMITS OF THE BCWQG-MAXIMUM AND THE CEQG-PAL.
7. HARDNESS (H) DEPENDENT GUIDELINE LIMIT (DISSOLVED).
8. pH DEPENDENT GUIDELINE LIMIT (*IN SITU* VALUE PREFFERED).
9. TEMPERATURE DEPENDENT GUIDELINE LIMIT.
10. CHLORIDE (DISSOLVED) DEPENDENT GUIDELINE LIMIT.
11. APPLICAPLE TO DISSOLVED CONCENTRATIONS ONLY.
12. APPLICAPLE TO TOTAL CONCENTRATIONS ONLY.

APPENDIX B1 - ANALYTICAL DATA AND GUIDELINE EXCEEDANCES

SCHAFT CREEK MINE PROJECT
TABLE B1.2 - SCHAFT CREEK VALLEY

Site ID	MDL	HG10-05A	HG10-05A	HG10-05A	HG10-05A	HG10-05A	HG10-05B	HG10-05B	HG10-05B	HG10-05B	HG10-05B	HG10-05B	HG10-04	HG10-04	HG10-04	HG10-04	HG10-04	HG10-04
Date/Time Sampled		29-Jun-10	19-Sep-10	15-Sep-11	23-Jun-12	21-Sep-12	29-Jun-10	19-Sep-10	24-Mar-11	15-Sep-11	23-Jun-12	21-Sep-12	30-Jun-10	19-Sep-10	25-Mar-11	15-Sep-11	22-Jun-12	22-Sep-12
***In Situ* Parameters**																		
Conductivity µS/cm		79	72	73	104	93	114	140	116	126	189	138	107	109	104	105	111	197
Oxygen Dissolved %		94.6	84		81.7	94.3	0.42	1.5	1.1		9.2	4.3	8.82	50.5	38.2		70.8	60
Oxygen Dissolved		11.1	10.4	11.6		11.5	3.3	0.2	0.17	0.08	1.19	0.54	65.8	6.72	5.18	4.94	9.47	7.89
pH pH units		8.49	8.19	8.63	7.26	8.55	8.6	7.77		8.11	7.67	8.18	7.23	7.36	6.93	7.5	7.49	7.38
Redox Potential mV		83.1	47.5			32.2	-20.4	49	190			-135	116	241	134			181
Specific Conductivity µS/cm		115	112		61	60	186	247	200		107	85	186	185	187		188	118
Temperature °C		8.65	6.25	6.42	4.3	6.75	4.36	3.35	2.98		3.59	5.13	3.18	3.49	3.25	3.27	3.29	3.84
Total Dissolved Solids			73			61		153	138			89		120	118			125
Physical Tests																		
Acidity to pH 8.3 (as CaCO3)	1	1.2	3.5	1.7	2.6	1.2	<1	3.3	3.6	<1	3.4	<1	2.8	5.6	18.7	2.3	3.2	2.7
Alkalinity (Total as CaCO3)	1 - 2	54.8	53	49.9	56.4	43.2	101	99.5	102	103	103	96.4	76.3	80.5	79.4	76.5	82.2	82.2
Bicarbonate Alkalinity	1 - 2	54.8	53	49.9		43.2	101	99.5	102	103		96.4	76.3	80.5	79.4	76.5		82.2
Carbonate Alkalinity	1 - 2	<2	<2	<2		<2	<1	<2	<2	<2		<2	<2	<2	<2	<2		<2
Color TCU	5	<5	<5	<5		<5	<5	<5	<5	<5		<5	<5	<5	<5	<5		<5
Conductivity µS/cm	2	119	118	114	117	93.1	196	201	200	213	200	193	178	183	174	184	189	187
Hardness as CaCO3 (Dissolved)	0.5 - 0.52	61.2	58.4	55.6	61.3	47.2	103	105	101	110	110	101	95.1	97.1	96.6	96	106	94.6
Hydroxide Alkalinity	1 - 2	<2	<2	<2		<2	<1	<2	<2	<2		<2	<2	<2	<2	<2		<2
pH pH	0.01 - 0.1	8.27	8.11	8.19	8.24	8.26	8.51	8.19	8.01	8.26	8.18	8.28	8	7.83	6.87	8.12	8.22	8.09
Total Dissolved Solids	10 - 40	72	58	52	68	53	119	109	112	112	119	109	108	99	103	98	114	109
Total Suspended Solids	3	<3	<3	<3	5.6	63.7	<3	<3	19.3	<3	<3	8.2	<3	3	<3	<3	<3	4.1
Turbidity NTU	0.1	0.45	0.4	3.36		6.35	1.43	0.44	0.48	0.37		2.77	0.22	0.12	0.24	<0.1		0.49
Dissolved Anions																		
Bromide (Dissolved)	0.05 - 0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride (Dissolved)	0.5 - 5	<0.5	<0.5	<0.5	<0.5	<0.5	0.72	0.56	0.68	0.7	0.89	0.69	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoride (Dissolved)	0.02 - 0.2	<0.02	<0.02	0.028	0.035	0.027	0.052	0.037	0.036	0.048	0.049	0.045	0.027	<0.02	<0.02	0.03	0.029	0.027
Sulphate (Dissolved)	0.5 - 5	7.83	6.34	5.77	6.16	4.22	11.9	7.47	6.28	7.2	8.6	8.39	16	15.5	15.5	15.4	16.9	16.4
Nutrients																		
Ammonia (Total)	0.005 - 0.025	<0.005	<0.005	<0.005	<0.02	<0.005	0.124	0.0854	0.0874	0.101	0.071	0.057	<0.005	<0.005	<0.005	<0.005	<0.02	0.0053
Nitrate (as N)	0.005 - 0.05	0.0305	0.0317	0.03	0.0577	0.0273	0.0053	0.007	<0.005	<0.005	0.0182	0.0295	0.112	0.0843	0.0796	0.102	0.0916	0.101
Nitrite (as N)	0.001 - 0.01	<0.001	<0.001	<0.001	0.0014	<0.001	0.005	0.0026	<0.001	0.0033	0.0051	0.0041	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	0.0025 - 0.05	<0.05	0.0317	<0.05		0.083	0.11	0.136	0.16	0.11		0.204	0.11	0.0843	0.14	0.16		0.101
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.05	<0.05		0.056	0.167	0.126	0.11	0.114		0.17	<0.05	<0.05	<0.05	<0.05		<0.05
Orthophosphate (Dissolved)	0.001		0.0013	<0.001		<0.001		0.0057	0.0068	0.0063		0.0076		0.0016	0.0015	0.0017		0.0013
Phosphate (Dissolved)	0.002		<0.002	<0.002		0.0038		0.0039		0.0055		0.0075		0.0027		0.0022		0.0024
Phosphate (Total)	0.002 - 0.3	0.0028	<0.002	0.0025		0.0000447	0.0131	0.0058		<0.3		0.0000216	0.0037	0.0028		0.0022		0.0000066
Phosphorus (Nutrient) Dissolved	0.002 - 0.3								<0.3						<0.3			
Phosphorus (Nutrient) Total	0.002 - 0.3								0.0205						<0.002			
Dissolved Metals																		
Aluminum (Dissolved)	0.001 - 0.01	0.0208	0.0217	0.0228	0.0178	0.0259	0.0163	0.0081	0.0058	0.0051	0.0057	0.0059	<0.005	<0.005	<0.005	<0.005	0.0043	0.0026
Antimony (Dissolved)	0.0001 - 0.001	<0.0005	<0.0005	<0.0005	0.0001	<0.0001	0.00089	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001
Arsenic (Dissolved)	0.0001 - 0.001	<0.0005	<0.0005	<0.0005	0.00034	0.0004	0.00199	0.00169	0.00167	0.00131	0.00125	0.00114	<0.0005	<0.0005	<0.0005	<0.0005	0.00035	0.00036
Barium (Dissolved)	0.00005 - 0.02	0.084	0.084	0.078	0.0819	0.0607	0.135	0.143	0.13	0.14	0.13	0.116	0.028	0.028	0.026	0.025	0.0283	0.0268
Beryllium (Dissolved)	0.0005 - 0.0025	<0.001	<0.001	<0.001	<0.0005	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0001
Bismuth (Dissolved)	0.0005 - 0.2			<0.2	<0.0005	<0.0005			<0.2	<0.2	<0.0005	<0.0005			<0.2	<0.2	<0.0005	<0.0005
Boron (Dissolved)	0.01 - 0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	0.023	0.02	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01
Cadmium (Dissolved)	0.00001 - 0.001	0.000019	0.00002	<0.000017	<0.00005	<0.00001	0.00002	<0.000017	<0.000017	<0.000017	<0.00005	<0.00001	<0.000017	<0.000017	<0.000017	<0.000017	<0.00005	<0.00001
Calcium (Dissolved)	0.02 - 0.1	18.8	18	17	18.6	14.4	31.5	31.8	30.7	33.2	33.3	30.5	31.8	32.7	32.5	32.4	35.7	31.8
Chromium (Dissolved)	0.0005 - 0.0025	<0.001	<0.001	<0.001	<0.0005	0.00284	<0.001	<0.001	<0.001	<0.001	<0.0005	0.00018	0.0013	<0.001	0.0011	<0.001	0.00089	0.0018
Cobalt (Dissolved)	0.0001 - 0.0006	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0003	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0003	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001
Copper (Dissolved)	0.0001 - 0.002	<0.001	<0.001	<0.001	<0.0005	0.00037	0.0016	<0.001	<0.001	<0.001	<0.0005	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.0005	0.00063
Iron (Dissolved)	0.03	<0.03	<0.03	<0.03	<0.03	<0.01	<0.03	<0.03	<0.03	<0.03	<0.03	0.025	<0.03	0.03	<0.03	<0.03	<0.03	<0.01
Lead (Dissolved)	0.00005 - 0.001	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	0.000148	0.000085
Lithium (Dissolved)	0.005 - 0.025	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005
Magnesium (Dissolved)	0.005 - 0.1	3.44	3.29	3.21	3.61	2.75	5.98	6.12	5.87	6.44	6.56	6.07	3.8	3.75	3.76	3.66	4.07	3.71
Manganese (Dissolved)	0.00005 - 0.0006	0.00066	<0.0003	<0.0003	0.000141	0.000937	0.238	0.401	0.444	0.539	0.363	0.312	<0.0003	<0.0003	<0.0003	<0.0003	0.000051	0.000363
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001
Molybdenum (Dissolved)	0.00005 - 0.002	0.0047	0.0044	0.0041	0.00445	0.00399	0.0586	0.0187	0.0128	0.0109	0.0113	0.0106	0.0021	0.0015	0.0019	0.0019	0.00192	0.00216
Nickel (Dissolved)	0.0005 - 0.0025	<0.001	<0.001	<0.001	<0.0005	0.00146	<0.001	<0.001	<0.001	<0.001	<0.0005	0.0007	<0.001	<0.001	<0.001	<0.001	<0.0005	0.00088
Phosphorus (Metal) Dissolved	0.3			<0.3	<0.3	<0.3				<0.3	<0.3	<0.3				<0.3	<0.3	<0.3
Potassium (Dissolved)	0.05 - 2	<2	<2	<2	<2	0.565	<2	<2	<2	<2	<2	0.81	<2	<2	<2	<2	<2	0.364
Selenium (Dissolved)	0.0001 - 0.002	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	0.00047
Silicon (Dissolved)	0.05			1.2	1.18	1.18			3.73	3.83	3.78	3.72			2.78	2.81	2.83	2.77
Silver (Dissolved)	0.00001 - 0.00005	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001
Sodium (Dissolved)	2	<2	<2	<2	<2	0.872	5.1	3.8	3.3	3	3.2	2.9	2.3	<2	<2	<2	<2	1.66
Strontium (Dissolved)	0.0001 - 0.005			0.13	0.128	0.108			0.192	0.198	0.212	0.197			0.122	0.116	0.134	0.121
Thallium (Dissolved)	0.0001 - 0.0005	<0.0002	<0.0002	<0.0002	<0.0001	<0.00001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.00001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.00001
Tin (Dissolved)	0.0001 - 0.001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001
Titanium (Dissolved)	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0004	0.00055	0.00055	0.00048	0.000555	0.000473	0.0112	0.00399	0.00283	0.00201	0.00191	0.00175	<0.0002	<0.0002	<0.0002	<0.0002	0.000055	0.000049
Vanadium (Dissolved)	0.001 - 0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.0305	0.0063	0.0019	0.0016	0.0018	0.0015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc (Dissolved)	0.001 - 0.005	<0.005	<0.005	<0.005	<0.003	0.0015	<0.005	<0.005	<0.005	<0.005	0.0032	0.004	<0.005	<0.005	<0.005	<0.005	<0.003	0.0022
Total Metals																		
Aluminum (Total)	0.001 - 0.01			0.32						0.012						<0.005		
Antimony (Total)	0.0001 - 0.001			<0.0005						<0.0005						<0.0005		
Arsenic (Total)	0.0001 - 0.001			<0.0005						0.00122						<0.0005		
Barium (Total)	0.00005 - 0.02			0.085						0.144						0.027		
Beryllium (Total)	0.0005 - 0.0025			<0.001						<0.001						<0.001		
Bismuth (Total)	0.0005 - 0.2			<0.2						<0.2						<0.2		
Boron (Total)	0.01 - 0.1			<0.1						<0.1						<0.1		
Cadmium (Total)	0.000017 - 0.001			<0.000017						<0.000017						<0.000017		
Calcium (Total)	0.02 - 0.1			16.9						33.2						32.3		
Chromium (Total)	0.0005 - 0.0025			<0.001						<0.001						0.0012		
Cobalt (Total)	0.0001 - 0.0006			<0.0003						<0.0003						<0.0003		
Copper (Total)	0.0001 - 0.002			<0.001						<0.001						<0.001		
Iron (Total)	0.03			0.157						<0.03						<0.03		
Lead (Total)	0.00005 - 0.001			<0.0005						<0.0005						<0.0005		
Lithium (Total)	0.005 - 0.025			<0.005						<0.005						<0.005		
Magnesium (Total)	0.005 - 0.1			3.35						6.54						3.75		
Manganese (Total)	0.00005 - 0.0006			0.00302						0.561						<0.0003		
Mercury (Total)	0.00001			<0.00001						<0.00001						<0.00001		
Molybdenum (Total)	0.00005 - 0.002			0.0047						0.0123						0.0022		
Nickel (Total)	0.0005 - 0.0025			<0.001						<0.001						<0.001		
Potassium (Total)	0.05 - 2			<2						<2						<2		
Selenium (Total)	0.0001 - 0.002			<0.001						<0.001						<0.001		
Silicon (Total)	0.05			1.73						3.81						2.78		
Silver (Total)	0.00001 - 0.00005			<0.00002						<0.00002						<0.00002		
Sodium (Total)	2			<2						3.1						<2		
Strontium (Total)	0.0001 - 0.005			0.135						0.205						0.123		
Thallium (Total)	0.0001 - 0.0005			<0.0002						<0.0002						<0.0002		
Tin (Total)	0.0001 - 0.001			<0.0005						<0.0005						<0.0005		
Titanium (Total)	0.01			<0.01						<0.01						<0.01		
Uranium (Total)	0.00001 - 0.0004			0.00054						0.00219						<0.0002		
Vanadium (Total)	0.001 - 0.005			0.001						0.0017						<0.001		
Zinc (Total)	0.001 - 0.005			<0.005						<0.005						<0.005		
Organics																		
Carbon Organic (Total)	0.5	<0.5	0.76	<0.5	<0.5	<0.5	1.39	1.02	1.3	0.63	0.52	0.5	0.51	0.81	<0.5	<0.5	<0.5	<0.5

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum to 2011 Hydrogeo Study\Attachments\Appendix B\[Appendix B1 - Analytical Data and Guideline Exceedances.xls]B1.2 - SCHAFT CREEK VALLEY

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.
3. * = SAMPLE COLLECTED PRIOR TO WELL REDEVELOPMENT
4. RED TEXT = DATA CONSIDERED UNRELIABLE / UNSUITABLE FOR WATER QUALITY ANALYSIS

APPENDIX B1 - ANALYTICAL DATA AND GUIDELINE EXCEEDANCES

SCHAFT CREEK MINE PROJECT
TABLE B1.2 - SCHAFT CREEK VALLEY

Site ID	MDL	RES08-4B*	RES08-4B*	RES08-4B	RES08-4B	RES08-4B	RES08-4B	RES08-4B	RES08-4B	RES08-4B	RES08-3A*	RES08-3A*	RES08-3A	RES08-3A	RES08-3A	RES08-3A	RES08-3A	RES08-3A
Date/Time Sampled		01-Oct-08	04-Oct-09	25-Apr-10	22-Sep-10	23-Mar-11	13-Sep-11	14-Mar-12	21-Jun-12	21-Sep-12	30-Sep-08	02-Oct-09	24-Apr-10	21-Sep-10	17-Sep-11	15-Mar-12	21-Jun-12	22-Sep-12
***In Situ* Parameters**																		
Conductivity µS/cm		3193	124	158	157	177	184	181	305	311	239	321	590	411	800	137	219	252
Oxygen Dissolved %		27	21.3	1.5	1.8	1.1		1.3	42.4	1.5	45.8	1.32	4.6			42.2	83.6	49
Oxygen Dissolved			2.8	0.18	0.24	0.12	0.07	0.17	5.4	0.2		4.01	0.58		1.59	5.33	10.6	6.23
pH pH units		7.66	9.39	8.57	8.63	8.28			9.29	9.49	7.61	7.74	7.69	7.66	7.33	7.47	8	7.56
Redox Potential mV		13.3		111	33.3	145				-177	65.2		143	38.1				160
Specific Conductivity µS/cm			212	249	252	285		293	187	190		513	935	665		220	137	153
Temperature °C		5.24	3.1	5.43	4.79	5.32	5.36	5.1	4.77	4.54	5.21	5.88	5.7	5.09	7.28	5.42	5.31	5.1
Total Dissolved Solids					172	184				202				432				163
Physical Tests																		
Acidity to pH 8.3 (as CaCO3)	1	<1	<1	5.8	<1	3.1	<1	<1	<1	<1	<1	5.5	4.7	3.7	2.9	2.1	3.7	1.5
Alkalinity (Total as CaCO3)	1 - 2	530	129	119	122	120	118	148	147	113	115	111	103	106	104	117	114	117
Bicarbonate Alkalinity	1 - 2	<1	92.5	119	122	120	114	118		109	115	111	103	106	104	117		117
Carbonate Alkalinity	1 - 2	66.3	36.2	<2	<1	<2	4.5	30.1		4.4	<1	<2	<2	<2	<2	<1		<2
Color TCU	5	9.1	<5	<5	<5	<5	<5	<5		<5	<5	<5	<5	<5	<5	<5		<5
Conductivity µS/cm	2	2620	219	247	269	271	279	306	305	255	243	534	934	622	1190	238	246	240
Hardness as CaCO3 (Dissolved)	0.5 - 0.52	589	106	90.7	96.7	91.7	90.8	108	110	116	109	236	421	286	529	125	142	129
Hydroxide Alkalinity	1 - 2	463	<1	<2	<1	<2	<1	<1		<1	<1	<2	<2	<2	<2	<1		<2
pH pH	0.01 - 0.1	11.9	9.05	7.98	8.35	8.15	8.66	8.83	8.67	8.65	8.25	7.9	7.94	8.11	7.99	8.14	8.2	8.23
Total Dissolved Solids	10 - 40	702	141	157	157	164	181	190	196	159	146	351	743	405	943	140	149	138
Total Suspended Solids	3	134	24.7	<3	<3	<3	<3	<3	<3	<3	21	3.7	3.8	<3	4.7	7.3	4.3	<3
Turbidity NTU	0.1	36.2	17	0.28	0.4	0.98	0.7	0.68		0.46	13.5	4.03	0.29	0.31	2.92	7.05		0.29
Dissolved Anions																		
Bromide (Dissolved)	0.05 - 0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	<0.5	<0.05	<0.05	<0.05
Chloride (Dissolved)	0.5 - 5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.32	12.4	5.66	16.5	<0.5	<0.5	<0.5
Fluoride (Dissolved)	0.02 - 0.2	<0.2	0.045	0.193	0.218	0.196	0.248	0.264	0.25	0.241	0.031	0.125	0.38	0.277	0.43	0.027	0.03	0.022
Sulphate (Dissolved)	0.5 - 5	8.7	6.89	18.4	20.7	22.5	23.9	25.9	27.1	27	16.6	159	416	205	534	15.8	21.5	14.7
Nutrients																		
Ammonia (Total)	0.005 - 0.025	0.0166	0.0181	<0.02	<0.005	<0.005	0.0051	0.0097	<0.02	0.014	<0.005	<0.005	<0.02	0.0061	0.006	<0.005	<0.02	<0.005
Nitrate (as N)	0.005 - 0.05	<0.05	0.0236	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.121	0.0843	<0.05	0.0225	<0.05	0.186	0.171	0.148
Nitrite (as N)	0.001 - 0.01	<0.01	<0.001	<0.001	<0.001	<0.001	0.0024	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.001	<0.001	<0.001
Nitrogen (Total)	0.0025 - 0.05	0.28	0.17	0.13	0.05	0.09	0.1	0.0955		0.138	0.17	0.1	0.07	<0.05	<0.05	0.186		0.148
Nitrogen Kjeldahl (Total)	0.05	0.28	0.15	<0.05	<0.05	0.118	0.116	0.096		0.138	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05
Orthophosphate (Dissolved)	0.001				0.0049	<0.001	<0.001	0.0072		0.0033				0.0021	0.0018	<0.001		<0.001
Phosphate (Dissolved)	0.002				0.006		<0.002			0.0054				<0.002				0.0021
Phosphate (Total)	0.002 - 0.3	0.036	0.0249	0.0054	0.0067		0.006			8.1E-06	0.0184	0.006	0.0042	0.0025				3.6E-06
Phosphorus (Nutrient) Dissolved	0.002 - 0.3	<0.3	<0.3			<0.3		0.0077			<0.3	<0.3			<0.002	<0.3		
Phosphorus (Nutrient) Total	0.002 - 0.3	<0.3				0.0056		0.0097			<0.3				0.0059	0.008		
Dissolved Metals																		
Aluminum (Dissolved)	0.001 - 0.01	0.308	0.0265	0.011	0.0132	0.0119	0.011	0.0148	0.0111	0.022	0.0284	0.0054	<0.01	<0.005	<0.01	<0.003	<0.003	0.0022
Antimony (Dissolved)	0.0001 - 0.001	0.00275	0.00173	<0.001	<0.0005	<0.0005	<0.001	0.00021	0.00027	0.00033	0.00101	0.00061	<0.001	0.00054	<0.001	0.00012	0.00015	0.0001
Arsenic (Dissolved)	0.0001 - 0.001	0.00084	0.00147	0.001	0.00087	0.00093	<0.001	0.00076	0.00094	0.00098	0.00138	0.00114	0.0016	0.00117	0.0021	0.00028	0.0003	0.00027
Barium (Dissolved)	0.00005 - 0.02	0.676	0.0942	0.092	0.101	0.099	0.098	0.123	0.181	0.204	0.0882	0.155	0.225	0.17	0.269	0.0481	0.0519	0.0472
Beryllium (Dissolved)	0.0005 - 0.0025	<0.0025	<0.0005	<0.002	<0.001	<0.001	<0.002	<0.0001	<0.0005	<0.0001	<0.0005	<0.0005	<0.002	<0.001	<0.002	<0.0001	<0.0005	<0.0001
Bismuth (Dissolved)	0.0005 - 0.2	<0.0025	<0.0005			<0.2	<0.2	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			<0.2	<0.0005	<0.0005	<0.0005
Boron (Dissolved)	0.01 - 0.1	<0.05	0.018	<0.1	<0.1	<0.1	<0.1	0.086	0.089	0.091	0.018	0.064	0.14	<0.1	0.19	0.011	0.013	0.013
Cadmium (Dissolved)	0.00001 - 0.001	0.00012	0.000028	0.000036	0.000018	0.00003	<0.000034	0.000012	<0.00005	<0.00001	0.000034	<0.00001	0.000041	0.000111	<0.000034	0.000042	<0.00005	<0.00001
Calcium (Dissolved)	0.02 - 0.1	236	32.5	26.7	28.5	26.6	26	31.9	33.9	36.7	33.8	72.4	129	88.9	161	38.7	44.4	40
Chromium (Dissolved)	0.0005 - 0.0025	0.0361	0.00329	<0.002	<0.001	<0.001	<0.002	0.00015	<0.0005	0.00022	0.00151	0.00104	<0.002	<0.001	<0.002	0.0011	0.00098	0.00158
Cobalt (Dissolved)	0.0001 - 0.0006	<0.0005	<0.0001	<0.0006	<0.0003	<0.0003	<0.0006	<0.0001	<0.0001	<0.0001	0.00015	<0.0001	<0.0006	<0.0003	<0.0006	<0.0001	<0.0001	<0.0001
Copper (Dissolved)	0.0001 - 0.002	0.0037	0.00924	<0.002	<0.001	<0.001	<0.002	<0.0005	<0.0005	0.00024	0.00093	0.0005	<0.002	<0.001	<0.002	0.00079	0.00086	0.00113
Iron (Dissolved)	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.01	0.033	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.01
Lead (Dissolved)	0.00005 - 0.001	0.00032	0.000054	<0.001	<0.0005	<0.0005	<0.001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.001	<0.0005	<0.001	<0.00005	<0.00005	0.000118
Lithium (Dissolved)	0.005 - 0.025	<0.025	<0.005	<0.01	<0.005	<0.005	<0.01	0.00505	0.0056	0.00591	<0.005	<0.005	<0.01	<0.005	<0.01	<0.0005	<0.005	<0.0005
Magnesium (Dissolved)	0.005 - 0.1	0.039	6.03	5.84	6.22	6.12	6.29	6.8	6.17	5.95	6.03	13.4	23.9	15.4	30.7	6.74	7.59	7.07
Manganese (Dissolved)	0.00005 - 0.0006	0.00079	0.00273	0.017	0.0248	0.0198	0.0241	0.0177	0.00645	0.00708	0.0183	0.00623	0.00496	0.0005	0.0117	0.000551	0.00042	0.000535
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	0.000014	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001
Molybdenum (Dissolved)	0.00005 - 0.002	0.0385	0.00885	0.0215	0.0205	0.0236	0.0256	0.0238	0.0254	0.0234	0.0422	0.0623	0.105	0.079	0.127	0.00406	0.00739	0.00433
Nickel (Dissolved)	0.0005 - 0.0025	<0.0025	0.0009	<0.002	<0.001	<0.001	<0.002	<0.0005	<0.0005	0.00051	0.00144	<0.0005	<0.002	<0.001	<0.002	0.00067	0.00054	0.00081
Phosphorus (Metal) Dissolved	0.3						<0.3		<0.3	<0.3							<0.3	<0.3
Potassium (Dissolved)	0.05 - 2	5.91	1.49	<2	<2	<2	<2	1.5	2	1.94	0.737	1.1	<2	<2	<2	0.676	<2	0.676
Selenium (Dissolved)	0.0001 - 0.002	0.00144	0.00038	<0.002	<0.001	<0.001	<0.002	<0.0001	<0.001	<0.0001	0.00021	0.00019	<0.002	<0.001	<0.002	0.00025	<0.001	0.00022
Silicon (Dissolved)	0.05	2.59	6.76			4.61	4.62	4.74	4.62	4.91	3.55	3.57			4.47	3.44	3.53	3.46
Silver (Dissolved)	0.00001 - 0.00005	<0.00005	<0.00001	<0.00004	<0.00002	<0.00002	<0.00004	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00004	<0.00002	<0.00004	<0.00001	<0.00001	<0.00001
Sodium (Dissolved)	2	19.7	6.2	19.3	22.1	23.4	24.3	24.6	28	26.1	4.5	19.5	41.1	24.6	58.1	1.86	2.3	1.89
Strontium (Dissolved)	0.0001 - 0.005	4	0.731			6.73	6.75	6.95	7.84	7.14	0.384	2.11			7.38	0.135	0.172	0.148
Thallium (Dissolved)	0.0001 - 0.0005	<0.0005	<0.0001	<0.0004	<0.0002	<0.0002	<0.0004	<0.00001	<0.0001	<0.00001	<0.0001	<0.0001	<0.0004	<0.0002	<0.0004	<0.00001	<0.0001	<0.00001
Tin (Dissolved)	0.0001 - 0.001	0.00267	0.00046	<0.001	<0.0005	<0.0005	<0.001	<0.0001	<0.0001	<0.0001	0.00018	<0.0001	<0.001	<0.0005	<0.001	<0.0001	<0.0001	<0.0001
Titanium (Dissolved)	0.01	0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.016	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0004	<0.00005	0.0102	0.0181	0.0168	0.0149	0.0154	0.0149	0.0136	0.0131	0.00398	0.0108	0.0172	0.0164	0.0179	0.000375	0.000891	0.000438
Vanadium (Dissolved)	0.001 - 0.005	<0.005	0.002	<0.002	<0.001	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001
Zinc (Dissolved)	0.001 - 0.005	<0.005	0.0025	<0.005	<0.005	<0.005	<0.005	0.0032	<0.003	0.0021	0.0031	0.0021	<0.005	<0.005	<0.005	0.0396	0.0039	0.0022
Total Metals																		
Aluminum (Total)	0.001 - 0.01	1.01					0.031				0.747							
Antimony (Total)	0.0001 - 0.001	0.00283					<0.001				0.00031							
Arsenic (Total)	0.0001 - 0.001	0.00189					<0.001				0.00058							
Barium (Total)	0.00005 - 0.02	0.805					0.102				0.0772							
Beryllium (Total)	0.0005 - 0.0025	<0.0025					<0.002				<0.0005							
Bismuth (Total)	0.0005 - 0.2	<0.0025					<0.2				<0.0005							
Boron (Total)	0.01 - 0.1	<0.05					<0.1				0.014							
Cadmium (Total)	0.000017 - 0.001	0.0002					<0.000034				0.000366							
Calcium (Total)	0.02 - 0.1	303					24.3				38.2							
Chromium (Total)	0.0005 - 0.0025	0.0554					<0.002				0.0105							
Cobalt (Total)	0.0001 - 0.0006	0.00136					<0.0006				0.00128							
Copper (Total)	0.0001 - 0.002	0.0146					<0.002				0.0052							
Iron (Total)	0.03	0.885					<0.03				0.676							
Lead (Total)	0.00005 - 0.001	0.00201					<0.001				0.000686							
Lithium (Total)	0.005 - 0.025	<0.025					<0.01				<0.005							
Magnesium (Total)	0.005 - 0.1	1.5					5.97				8.07							
Manganese (Total)	0.00005 - 0.0006	0.0308					0.0232				0.0261							
Mercury (Total)	0.00001	<0.00001					<0.00001				<0.00001							
Molybdenum (Total)	0.00005 - 0.002	0.0368					0.0267				0.00874							
Nickel (Total)	0.0005 - 0.0025	0.0172					<0.002				0.0105							
Potassium (Total)	0.05 - 2	6.24					<2				0.898							
Selenium (Total)	0.0001 - 0.002	0.00143					<0.002				0.00032							
Silicon (Total)	0.05	6.37					4.58				4.8							
Silver (Total)	0.00001 - 0.00005	0.000531					<0.00004				0.000521							
Sodium (Total)	2	18.2					24.8				2.3							
Strontium (Total)	0.0001 - 0.005	4.32					6.24				0.154							
Thallium (Total)	0.0001 - 0.0005	<0.0005					<0.0004				<0.0001							
Tin (Total)	0.0001 - 0.001	0.00191					<0.001				0.0004							
Titanium (Total)	0.01	0.038					<0.01				0.033							
Uranium (Total)	0.00001 - 0.0004	0.000147					0.0144				0.000627							
Vanadium (Total)	0.001 - 0.005	0.0078					<0.002				0.002							
Zinc (Total)	0.001 - 0.005	0.0201					<0.005				0.0081							
Organics																		
Carbon Organic (Total)	0.5	6.62	9.85	3.7	2.92	2.66	3.03	2.75	2.19	2.3	1	0.91	1.12	0.9	0.96	1.04	0.84	0.53

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.
3. * = SAMPLE COLLECTED PRIOR TO WELL REDEVELOPMENT
4. RED TEXT = DATA CONSIDERED UNRELIABLE / UNSUITABLE FOR WATER QUALITY ANALYSIS

APPENDIX B1 - ANALYTICAL DATA AND GUIDELINE EXCEEDANCES

SCHAFT CREEK MINE PROJECT
TABLE B1.2 - SCHAFT CREEK VALLEY

Site ID	MDL	RES08-3B*	RES08-3B*	RES08-3B	RES08-3B	RES08-3B	RES08-3B	RES08-3B	RES08-3B	RES08-3B	HG10-02A	HG10-02A	HG10-02A	HG10-02A	HG10-02A	HG10-02A
Date/Time Sampled		30-Sep-08	02-Oct-09	23-Apr-10	20-Sep-10	24-Mar-11	17-Sep-11	15-Mar-12	21-Jun-12	22-Sep-12	30-Jun-10	19-Sep-10	17-Sep-11	16-Mar-12	23-Jun-12	22-Sep-12
***In Situ* Parameters**																
Conductivity µS/cm		186	132		118	117	133	113	250	225	138	134	135	109	202	224
Oxygen Dissolved %		70.4	47.6	76.3	32.6	47.1		72.9	120	66	3.73	26.2		27.9	65.6	27.4
Oxygen Dissolved			6.02		4.1	6.1	8.85	9.37	15.3	8.08	28.6	3.43	3.53	3.54	8.52	3.58
pH pH units		7.87	7.88	7.98	8.16	7.65	8.03	8.03	8.33	7.95	7.71	7.9	8.18	8.05	7.03	7.73
Redox Potential mV		83.2	257		-165	235				147	107	161				59.5
Specific Conductivity µS/cm			212	205	185	196		186	154	145	230	222		184	128	134
Temperature °C		9.7	5.29	2.97	5.6	4.36	5.31	4.72	4.84	6.64	4	4.12		3.69	4.22	4.14
Total Dissolved Solids					123	125				146		142				144
Physical Tests																
Acidity to pH 8.3 (as CaCO3)	1	<1	3	2.6	3	2.6	1.4	1.2	<1	<1	1.7	3.5	<1	<1	<1	1.7
Alkalinity (Total as CaCO3)	1 - 2	92.6	100	84.8	90.4	86.1	101	94	121	108	97.4	97.5	100	93.9	100	97.3
Bicarbonate Alkalinity	1 - 2	92.6	100	84.8	90.4	86.1	101	94		108	97.4	97.5	100	93.9		97.3
Carbonate Alkalinity	1 - 2	<1	<2	<2	<2	<2	<2	<2		<2	<2	<2	<2	<2		<2
Color TCU	5	<5	<5	<5	<5	<5	<5	<5		<5	<5	<5	<5	<5		<5
Conductivity µS/cm	2	184	211	194	192	193	212	199	241	219	212	220	226	220	212	217
Hardness as CaCO3 (Dissolved)	0.5 - 0.52	86.6	103	110	105	100	110	100	145	118	117	116	113	109	120	114
Hydroxide Alkalinity	1 - 2	<1	<2	<2	<2	<2	<2	<2		<2	<2	<2	<2	<2		<2
pH pH	0.01 - 0.1	8.23	8.15	8.1	8.17	8.11	8.24	8.21	8.29	8.27	8.2	8.17	8.27	8.27	8.2	8.2
Total Dissolved Solids	10 - 40	107	117	107	89	110	107	113	146	118	127	123	129	126	128	129
Total Suspended Solids	3	357	6.2	<3	<3	7.3	<3	3.3	23.6	13.7	<3	3	6	<3	<3	62.3
Turbidity NTU	0.1	365	5.44	1.32	0.67	8.09	0.2	1.04		1.16	<0.1	<0.1	0.37	0.23		1.49
Dissolved Anions																
Bromide (Dissolved)	0.05 - 0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride (Dissolved)	0.5 - 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.27	1.16	1.32	1.27	1.28	1.3
Fluoride (Dissolved)	0.02 - 0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.028	<0.02	0.033	0.031	0.031	0.03
Sulphate (Dissolved)	0.5 - 5	9.71	8.97	19.3	8.47	15.8	11.8	16.5	15.9	11	18	17.2	18.3	18	18	18.1
Nutrients																
Ammonia (Total)	0.005 - 0.025	<0.005	<0.005	<0.02	<0.005	<0.005	<0.005	<0.005	<0.02	<0.005	<0.005	<0.005	<0.005	<0.005	<0.02	<0.005
Nitrate (as N)	0.005 - 0.05	0.0568	0.0339	0.057	0.032	0.0732	0.0565	0.0618	0.0615	0.0467	0.0815	0.0785	0.0848	0.0912	0.0907	0.0954
Nitrite (as N)	0.001 - 0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	0.0025 - 0.05	0.17	<0.05	0.05	<0.05	0.12	0.06	0.0618		<0.05	0.07	0.132	0.13	0.0912		0.095
Nitrogen Kjeldahl (Total)	0.05	0.113	<0.05	<0.05	0.057	<0.05	<0.05	<0.05		<0.05	<0.05	0.054	<0.05	<0.05		<0.05
Orthophosphate (Dissolved)	0.001				0.0012	<0.001	<0.001	0.002		0.0012		0.0026	0.002	0.0029		0.0022
Phosphate (Dissolved)	0.002				<0.002					<0.002		0.0029				0.0026
Phosphate (Total)	0.002 - 0.3	0.446	0.011	0.0095	0.0026					0.0000106	0.0057	0.0027				0.0000949
Phosphorus (Nutrient) Dissolved	0.002 - 0.3	<0.3	<0.3			<0.002	<0.002	<0.002					<0.002	0.0029		
Phosphorus (Nutrient) Total	0.002 - 0.3	0.45				0.0203	<0.002	0.0063					0.0052	0.0025		
Dissolved Metals																
Aluminum (Dissolved)	0.001 - 0.01	0.0584	0.0026	<0.005	<0.005	<0.005	0.0063	0.0033	0.0031	0.0028	<0.005	<0.005	<0.005	<0.003	<0.003	0.0028
Antimony (Dissolved)	0.0001 - 0.001	0.00013	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Arsenic (Dissolved)	0.0001 - 0.001	0.00055	0.00047	<0.0005	<0.0005	0.00051	<0.0005	0.00047	0.00044	0.00043	0.00087	0.0009	0.00086	0.00085	0.00091	0.00087
Barium (Dissolved)	0.00005 - 0.02	0.0501	0.0621	0.063	0.062	0.06	0.065	0.0607	0.0761	0.0688	0.076	0.075	0.07	0.0713	0.0756	0.0705
Beryllium (Dissolved)	0.0005 - 0.0025	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0005	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.0005	<0.0001
Bismuth (Dissolved)	0.0005 - 0.2	<0.0005	<0.0005			<0.2	<0.2	<0.0005	<0.0005	<0.0005			<0.2	<0.0005	<0.0005	<0.0005
Boron (Dissolved)	0.01 - 0.1	<0.01	0.01	<0.1	<0.1	<0.1	<0.1	<0.01	0.01	0.011	<0.1	<0.1	<0.1	0.027	0.033	0.033
Cadmium (Dissolved)	0.00001 - 0.001	<0.000017	<0.00001	<0.000017	<0.000017	<0.000017	<0.000017	<0.00001	<0.00005	<0.00001	0.000031	0.000033	<0.000017	<0.00001	<0.00005	0.000011
Calcium (Dissolved)	0.02 - 0.1	27.3	32.5	35	33.8	31.9	34.9	32.2	46.6	37.7	32.8	32.9	32	31.2	34.2	32.3
Chromium (Dissolved)	0.0005 - 0.0025	0.00101	0.00087	<0.001	<0.001	<0.001	<0.001	0.00116	0.00156	0.00132	<0.001	<0.001	<0.001	0.00075	0.00082	0.00128
Cobalt (Dissolved)	0.0001 - 0.0006	<0.0001	<0.0001	<0.0003	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0001	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0001
Copper (Dissolved)	0.0001 - 0.002	0.00096	0.00023	<0.001	<0.001	<0.001	<0.001	0.0006	<0.0005	0.00066	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.00041
Iron (Dissolved)	0.03	0.074	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.01	<0.03	<0.03	<0.03	<0.03	<0.03	<0.01
Lead (Dissolved)	0.00005 - 0.001	0.00007	<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	0.000082	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00005
Lithium (Dissolved)	0.005 - 0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.0005	<0.005	<0.0005
Magnesium (Dissolved)	0.005 - 0.1	4.47	5.26	5.55	5.02	4.95	5.5	4.82	7.07	5.9	8.48	8.16	7.99	7.63	8.41	8.04
Manganese (Dissolved)	0.00005 - 0.0006	0.00772	0.000209	0.00033	<0.0003	<0.0003	<0.0003	0.000108	0.000365	0.000301	0.00109	<0.0003	<0.0003	<0.00005	0.000144	0.00071
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001
Molybdenum (Dissolved)	0.00005 - 0.002	0.00168	0.00142	0.0015	0.0016	0.0015	0.0013	0.00145	0.00165	0.00144	0.0077	0.0073	0.0078	0.00767	0.00801	0.00809
Nickel (Dissolved)	0.0005 - 0.0025	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.00061	0.00096	0.00071	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.0009
Phosphorus (Metal) Dissolved	0.3								<0.3	<0.3					<0.3	<0.3
Potassium (Dissolved)	0.05 - 2	0.852	0.65	<2	<2	<2	<2	0.606	<2	0.647	<2	<2	<2	0.88	<2	0.887
Selenium (Dissolved)	0.0001 - 0.002	0.00021	<0.0001	<0.001	<0.001	<0.001	<0.001	0.00028	<0.001	0.00023	<0.001	<0.001	<0.001	0.00027	<0.001	0.00027
Silicon (Dissolved)	0.05	2.41	2.29			2.23	2.3	2.11	2.37	2.43			3.49	3.39	3.52	3.54
Silver (Dissolved)	0.00001 - 0.00005	<0.00001	<0.00001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001
Sodium (Dissolved)	2	2.6	<2	<2	<2	<2	<2	1.18	<2	1.23	3.5	3.3	3.2	3.03	3.3	3
Strontium (Dissolved)	0.0001 - 0.005	0.119	0.12			0.114	0.125	0.109	0.147	0.13			0.228	0.213	0.228	0.235
Thallium (Dissolved)	0.0001 - 0.0005	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.00001	<0.0001	<0.00001	<0.0002	<0.0002	<0.0002	<0.00001	<0.0001	<0.00001
Tin (Dissolved)	0.0001 - 0.001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Titanium (Dissolved)	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0004	0.000169	0.000163	<0.0002	<0.0002	<0.0002	<0.0002	0.000143	0.0002	0.00016	0.00092	0.00092	0.00094	0.000961	0.000976	0.000992
Vanadium (Dissolved)	0.001 - 0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc (Dissolved)	0.001 - 0.005	0.0013	<0.001	<0.005	<0.005	<0.005	<0.005	0.0053	<0.003	0.0041	<0.005	<0.005	<0.005	<0.003	0.0043	0.0032
Total Metals																
Aluminum (Total)	0.001 - 0.01	16.6														
Antimony (Total)	0.0001 - 0.001	0.0004														
Arsenic (Total)	0.0001 - 0.001	0.0102														
Barium (Total)	0.00005 - 0.02	0.206														
Beryllium (Total)	0.0005 - 0.0025	<0.0005														
Bismuth (Total)	0.0005 - 0.2	<0.0005														
Boron (Total)	0.01 - 0.1	0.017														
Cadmium (Total)	0.000017 - 0.001	0.000289														
Calcium (Total)	0.02 - 0.1	33.9														
Chromium (Total)	0.0005 - 0.0025	0.047														
Cobalt (Total)	0.0001 - 0.0006	0.0168														
Copper (Total)	0.0001 - 0.002	0.103														
Iron (Total)	0.03	16.9														
Lead (Total)	0.00005 - 0.001	0.00493														
Lithium (Total)	0.005 - 0.025	0.0074														
Magnesium (Total)	0.005 - 0.1	21.2														
Manganese (Total)	0.00005 - 0.0006	1.13														
Mercury (Total)	0.00001	0.000015														
Molybdenum (Total)	0.00005 - 0.002	0.00213														
Nickel (Total)	0.0005 - 0.0025	0.0558														
Potassium (Total)	0.05 - 2	3.04														
Selenium (Total)	0.0001 - 0.002	0.00047														
Silicon (Total)	0.05	31.9														
Silver (Total)	0.00001 - 0.00005	0.00012														
Sodium (Total)	2	2.7														
Strontium (Total)	0.0001 - 0.005	0.13														
Thallium (Total)	0.0001 - 0.0005	<0.0001														
Tin (Total)	0.0001 - 0.001	0.00029														
Titanium (Total)	0.01	0.624														
Uranium (Total)	0.00001 - 0.0004	0.000385														
Vanadium (Total)	0.001 - 0.005	0.0466														
Zinc (Total)	0.001 - 0.005	0.0563														
Organics																
Carbon Organic (Total)	0.5	2.32	<0.5	0.57	0.61	<0.5	<0.5	0.51	<0.5	<0.5	<0.5	0.68	<0.5	<0.5	<0.5	<0.5

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.
3. * = SAMPLE COLLECTED PRIOR TO WELL REDEVELOPMENT
4. RED TEXT = DATA CONSIDERED UNRELIABLE / UNSUITABLE FOR WATER QUALITY ANALYSIS

APPENDIX B1 - ANALYTICAL DATA AND GUIDELINE EXCEEDANCES

SCHAFT CREEK MINE PROJECT
TABLE B1.2 - SCHAFT CREEK VALLEY

Site ID	MDL	HG10-02B	HG10-02B	HG10-02B	HG10-02B	HG10-02B	HG10-02B	HG10-01	HG10-01	HG10-01	HG10-01	HG10-01	HG10-01
Date/Time Sampled		30-Jun-10	19-Sep-10	15-Sep-11	16-Mar-12	23-Jun-12	22-Sep-12	30-Jun-10	19-Sep-10	15-Sep-11	16-Mar-12	23-Jun-12	22-Sep-12
***In Situ* Parameters**													
Conductivity µS/cm		116	112	116	95	187	170	160	157	177	158	282	292
Oxygen Dissolved %		3.87	26.4		26.4	30.7	27.6	0.29	1.3		0.5	25.3	0.8
Oxygen Dissolved		29.6	3.51	3.51	3.57	4.07	3.61	2.4	0.15	0.15	0.05	3.26	0.11
pH pH units		7.69	7.89	8.02	7.74	7.93	7.83	7.31	7.22	7.72	7.58	6.82	7.46
Redox Potential mV		106	149				42	-79.7	-81.1				-117
Specific Conductivity µS/cm		208	190		164	119	100	264	262		261	175	181
Temperature °C		3.24	3.45		2.94	3.54	4.05	4.66	4.21	4.78	4.48	5.12	4.79
Total Dissolved Solids			124				107		171				191
Physical Tests													
Acidity to pH 8.3 (as CaCO3)	1	1.7	3.4	1.6	<1	<1	1.9	3.3	6.5	1.7	2.6	2.7	3
Alkalinity (Total as CaCO3)	1 - 2	86.5	89.7	89.6	91.9	89.9	93.7	146	154	153	155	158	157
Bicarbonate Alkalinity	1 - 2	86.5	89.7	89.6	91.9		93.7	146	154	153	155		157
Carbonate Alkalinity	1 - 2	<2	<2	<2	<2		<2	<2	<2	<2	<2		<2
Color TCU	5	<5	<5	<5	<5		<5	6.3	6.6	8.2	6.2		7
Conductivity µS/cm	2	191	195	201	196	191	195	266	291	293	287	281	282
Hardness as CaCO3 (Dissolved)	0.5 - 0.52	107	104	107	98.6	111	105	137	145	138	133	149	141
Hydroxide Alkalinity	1 - 2	<2	<2	<2	<2		<2	<2	<2	<2	<2		<2
pH pH	0.01 - 0.1	8.19	8.17	8.24	8.23	8.2	8.2	8.06	7.9	8.22	8.13	7.97	8.15
Total Dissolved Solids	10 - 40	111	108	110	110	113	117	149	166	182	167	165	163
Total Suspended Solids	3	<3	5	<3	<3	<3	22.5	<3	<3	<3	<3	3.6	68.1
Turbidity NTU	0.1	0.24	0.42	0.52	0.51		3.84	3.02	2.94	2.45	3.31		4.81
Dissolved Anions													
Bromide (Dissolved)	0.05 - 0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride (Dissolved)	0.5 - 5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.31	2.62	3.21	2.74	2.93	2.96
Fluoride (Dissolved)	0.02 - 0.2	<0.02	<0.02	0.022	0.022	0.022	<0.02	0.065	0.045	0.07	0.065	0.073	0.071
Sulphate (Dissolved)	0.5 - 5	14.7	13.9	14.4	14.4	14.7	14.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nutrients													
Ammonia (Total)	0.005 - 0.025	0.0051	<0.005	<0.005	0.0266	<0.02	<0.005	1.76	0.161	1.67	1.66	1.65	1.74
Nitrate (as N)	0.005 - 0.05	0.0554	0.0535	0.0561	0.0621	0.0609	0.0667	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite (as N)	0.001 - 0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	0.0025 - 0.05	<0.05	0.0535	0.07	0.0621		0.067	1.34	1.83	1.41	1.48		1.72
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.05	<0.05	<0.05		<0.05	1.7	1.83	1.69	1.48		1.72
Orthophosphate (Dissolved)	0.001		0.0032	0.0034	0.0042		0.0034		0.0077	0.0115	0.0159		0.003
Phosphate (Dissolved)	0.002		0.0037	0.0035			0.0034		0.0066	0.0198			0.0057
Phosphate (Total)	0.002 - 0.3	0.004	0.0042	0.0044			0.0000255	0.0934	0.139	0.154			0.000296
Phosphorus (Nutrient) Dissolved	0.002 - 0.3				0.0045						0.0154		
Phosphorus (Nutrient) Total	0.002 - 0.3				0.0044						0.182		
Dissolved Metals													
Aluminum (Dissolved)	0.001 - 0.01	<0.005	<0.005	<0.005	<0.003	<0.003	0.002	<0.005	<0.005	<0.005	<0.003	<0.003	0.0016
Antimony (Dissolved)	0.0001 - 0.001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Arsenic (Dissolved)	0.0001 - 0.001	<0.0005	<0.0005	<0.0005	0.0003	0.00033	0.00032	0.00685	0.0053	0.00583	0.00554	0.00578	0.00562
Barium (Dissolved)	0.00005 - 0.02	0.061	0.058	0.058	0.0555	0.0593	0.0551	0.47	0.481	0.445	0.4	0.488	0.463
Beryllium (Dissolved)	0.0005 - 0.0025	<0.001	<0.001	<0.001	<0.0001	<0.0005	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.0005	<0.0001
Bismuth (Dissolved)	0.0005 - 0.2			<0.2	<0.0005	<0.0005	<0.0005			<0.2	<0.0005	<0.0005	<0.0005
Boron (Dissolved)	0.01 - 0.1	<0.1	<0.1	<0.1	0.013	0.018	0.017	<0.1	<0.1	<0.1	0.047	0.057	0.057
Cadmium (Dissolved)	0.00001 - 0.001	<0.000017	<0.000017	<0.000017	<0.00001	<0.00005	<0.00001	0.000039	0.000025	<0.000017	<0.00001	<0.00005	<0.00001
Calcium (Dissolved)	0.02 - 0.1	31.5	31.2	32.2	29.7	33.1	31.4	38.8	41.7	39.4	38.5	42.9	40.5
Chromium (Dissolved)	0.0005 - 0.0025	<0.001	<0.001	<0.001	0.0005	0.0005	0.0006	<0.001	<0.001	<0.001	0.00019	<0.0005	0.00029
Cobalt (Dissolved)	0.0001 - 0.0006	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0001	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0001
Copper (Dissolved)	0.0001 - 0.002	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0002	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0002
Iron (Dissolved)	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.01	1.06	1.37	1.62	1.53	1.74	1.59
Lead (Dissolved)	0.00005 - 0.001	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00005	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00005
Lithium (Dissolved)	0.005 - 0.025	<0.005	<0.005	<0.005	<0.0005	<0.005	<0.0005	<0.005	<0.005	<0.005	<0.0005	<0.005	<0.0005
Magnesium (Dissolved)	0.005 - 0.1	6.79	6.42	6.58	5.97	6.83	6.57	9.63	9.86	9.67	9.02	10.2	9.7
Manganese (Dissolved)	0.00005 - 0.0006	0.00126	<0.0003	<0.0003	0.000118	0.00012	0.000491	0.263	0.322	0.343	0.327	0.33	0.335
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001
Molybdenum (Dissolved)	0.00005 - 0.002	0.0038	0.0034	0.004	0.00379	0.00428	0.00397	0.009	0.0062	0.007	0.00762	0.0073	0.00695
Nickel (Dissolved)	0.0005 - 0.0025	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
Phosphorus (Metal) Dissolved	0.3			<0.3		<0.3	<0.3			<0.3		<0.3	<0.3
Potassium (Dissolved)	0.05 - 2	<2	<2	<2	0.647	<2	0.641	<2	<2	<2	0.726	<2	0.729
Selenium (Dissolved)	0.0001 - 0.002	<0.001	<0.001	<0.001	0.00023	<0.001	0.00023	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.0001
Silicon (Dissolved)	0.05			3.17	2.96	3.18	3.21			10.4	9.93	10.6	10.8
Silver (Dissolved)	0.00001 - 0.00005	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001
Sodium (Dissolved)	2	<2	<2	<2	1.73	<2	1.65	7.9	7.9	7.5	6.9	7.8	6.93
Strontium (Dissolved)	0.0001 - 0.005			0.152	0.138	0.165	0.148			0.352	0.322	0.356	0.35
Thallium (Dissolved)	0.0001 - 0.0005	<0.0002	<0.0002	<0.0002	<0.00001	<0.0001	<0.00001	<0.0002	<0.0002	<0.0002	<0.00001	<0.0001	<0.00001
Tin (Dissolved)	0.0001 - 0.001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Titanium (Dissolved)	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0004	0.00041	0.0004	0.00042	0.000424	0.000456	0.000432	0.00503	0.0017	0.00049	0.000308	0.000277	0.000273
Vanadium (Dissolved)	0.001 - 0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc (Dissolved)	0.001 - 0.005	<0.005	<0.005	<0.005	<0.003	<0.003	0.001	<0.005	<0.005	<0.005	<0.003	0.0032	0.0014
Total Metals													
Aluminum (Total)	0.001 - 0.01			0.011						0.0058			
Antimony (Total)	0.0001 - 0.001			<0.0005						<0.0005			
Arsenic (Total)	0.0001 - 0.001			<0.0005						0.00515			
Barium (Total)	0.00005 - 0.02			0.059						0.466			
Beryllium (Total)	0.0005 - 0.0025			<0.001						<0.001			
Bismuth (Total)	0.0005 - 0.2			<0.2						<0.2			
Boron (Total)	0.01 - 0.1			<0.1						<0.1			
Cadmium (Total)	0.000017 - 0.001			<0.000017						<0.000017			
Calcium (Total)	0.02 - 0.1			30.9						39.8			
Chromium (Total)	0.0005 - 0.0025			<0.001						<0.001			
Cobalt (Total)	0.0001 - 0.0006			<0.0003						<0.0003			
Copper (Total)	0.0001 - 0.002			<0.001						<0.001			
Iron (Total)	0.03			<0.03						1.4			
Lead (Total)	0.00005 - 0.001			<0.0005						<0.0005			
Lithium (Total)	0.005 - 0.025			<0.005						<0.005			
Magnesium (Total)	0.005 - 0.1			6.48						10			
Manganese (Total)	0.00005 - 0.0006			0.00044						0.366			
Mercury (Total)	0.00001			<0.00001						<0.00001			
Molybdenum (Total)	0.00005 - 0.002			0.0046						0.0082			
Nickel (Total)	0.0005 - 0.0025			<0.001						<0.001			
Potassium (Total)	0.05 - 2			<2						<2			
Selenium (Total)	0.0001 - 0.002			<0.001						<0.001			
Silicon (Total)	0.05			3.1						10.6			
Silver (Total)	0.00001 - 0.00005			<0.00002						<0.00002			
Sodium (Total)	2			<2						8.1			
Strontium (Total)	0.0001 - 0.005			0.153						0.372			
Thallium (Total)	0.0001 - 0.0005			<0.0002						<0.0002			
Tin (Total)	0.0001 - 0.001			<0.0005						<0.0005			
Titanium (Total)	0.01			<0.01						<0.01			
Uranium (Total)	0.00001 - 0.0004			0.00046						0.00052			
Vanadium (Total)	0.001 - 0.005			<0.001						<0.001			
Zinc (Total)	0.001 - 0.005			<0.005						<0.005			
Organics													
Carbon Organic (Total)	0.5	<0.5	0.55	<0.5	<0.5	<0.5	<0.5	1.87	1.92	1.83	1.85	1.69	1.31

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.
3. * = SAMPLE COLLECTED PRIOR TO WELL REDEVELOPMENT
4. RED TEXT = DATA CONSIDERED UNRELIABLE / UNSUITABLE FOR WATER QUALITY ANALYSIS

APPENDIX B1 - ANALYTICAL DATA AND GUIDELINE EXCEEDANCES

SCHAFT CREEK MINE PROJECT
TABLE B1.3 - DEPOSIT AREA

Date/Time Sampled	MDL	RES08-1A 30-Sep-08	RES08-1A 04-Oct-09	RES08-1B 30-Sep-08	RES08-1B 04-Oct-09	RES08-2A 29-Sep-08	RES08-2A 04-Oct-09	RES08-2B* 29-Sep-08	RES08-2B* 04-Oct-09	RES08-2B 09-May-10	RES08-2B 22-Sep-10	RES08-2B 17-Sep-11	RES08-2B 22-Jun-12
***In Situ* Parameters**													
Conductivity µS/cm		16600	10319	4034	10104		4500	152	110	119	124	127	135
Oxygen Dissolved %		62.7			38.1	55	64	19.4	43	0.5	0.8		2.4
Oxygen Dissolved			4.88		4.64		8.39		5.78	0.07	0.16	0.46	0.29
pH pH		13.3	13.5	12.7	13.5	13.3	12.7	8.44	8.63	8.84	8.56	8.47	8.66
Redox Potential mV		-107		-73.3		-82.9		-76.7		-162	-169		
Specific Conductivity µS/cm					16674		8198		189	182	195		197
Temperature °C		4.7	7.39	5.64	4.37	5.46	3.42	5.51	3.22	6.06	5.95	6.37	8.63
Total Dissolved Solids											122		
Physical Tests													
Acidity to pH 8.3 (as CaCO3)	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.3	<1
Alkalinity (Total as CaCO3)	1 - 2	3480	705	321	734	3440	529	95.5	106	71.8	71.1	76	76.6
Bicarbonate Alkalinity	1 - 2	<17	<1	<1	<1	<13	<1	88.9	43.6	71.8	71.1	76	
Carbonate Alkalinity	1 - 2	106	25.9	73.9	64.1	132	168	6.7	62	<1	<1	<2	
Color TCU	5	11.7	9.7	13.7	<5	36.2	<5	9.3	<5	<5	<5	<5	
Conductivity µS/cm	2	14500	15700	3550	4570	13200	2660	218	194	172	190	198	195
Hardness as CaCO3 (Dissolved)	0.5 - 1.1	1680	1460	960	688	1900	379	61.4	79.9	74.9	87	86.4	93.1
Hydroxide Alkalinity	1 - 2	3380	679	247	670	3310	361	<1	<1	<1	<1	<2	
pH pH	0.01 - 0.1	12.5	12.5	11.7	12	12.3	11.9	8.36	8.62	8.36	8.3	8.28	8.3
Total Dissolved Solids	10	3960	3700	2210	1840	3990	708	137	117	149	119	124	123
Total Suspended Solids	3 - 9	25.5	75.8	384	1050	260	27.8	1040	2030	61.9	12.7	6.7	3.6
Turbidity NTU	0.1	17.2	73.7	218	585	140	41.3	1080	543	141	31	12.9	
Dissolved Anions													
Bromide (Dissolved)	0.05	<0.5	<2.5	<0.5	<2.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride (Dissolved)	0.5	<5	<25	9.5	<25	5.7	<5	0.51	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoride (Dissolved)	0.02	<0.2	0.116	<0.2	0.184	0.24	<0.2	0.098	0.08	0.09	0.096	0.113	0.113
Sulphate (Dissolved)	0.5	217	162	1160	566	477	36.2	31.6	28.2	27.1	26.8	28.5	28.1
Nutrients													
Ammonia (Total)	0.005 - 0.02	0.0962	0.0884	0.0832	0.0977	0.117	0.0911	0.0145	<0.02		0.0097	0.0179	0.031
Nitrate (as N)	0.005	<0.05	<0.25	<0.05	<0.25	0.151	<0.05	0.0088	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite (as N)	0.001	<0.01	<0.05	<0.01	<0.05	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	0.05	<5	2.32	<5	1.03	<5	0.42	0.57	0.056	<0.05	<0.05	0.06	
Nitrogen Kjeldahl (Total)	0.05	0.726	1.08	0.416	0.734	1.24	0.408	0.563	0.082	<0.05	0.641	<0.05	
Orthophosphate (Dissolved)	0.001										0.0028	0.0022	
Phosphate (Dissolved)	0.002										0.0024		
Phosphate (Total)	0.002 - 0.1	0.0128	0.062	0.233	0.395	0.169	0.101	0.088	1.41	0.125	0.0315		
Phosphorus (Nutrient) Dissolved	0.002 - 0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3			<0.3	
Phosphorus (Nutrient) Total	0.002 - 0.3	<0.3		0.86		<0.3		1.03				0.0166	
Dissolved Metals													
Aluminum (Dissolved)	0.001 - 0.005	0.023	0.013	0.0649	0.0145	0.494	0.174	0.422	0.0023	<0.005	<0.005	<0.005	0.0041
Antimony (Dissolved)	0.0001 - 0.0005	<0.001	<0.001	0.00059	<0.0005	<0.001	0.00127	0.00057	0.00047	<0.0005	<0.0005	<0.0005	<0.0001
Arsenic (Dissolved)	0.0001 - 0.0005	<0.001	<0.001	0.00055	<0.0005	<0.001	0.00047	0.00658	0.0162	0.00639	0.00485	0.00512	0.0054
Barium (Dissolved)	0.00005 - 0.02	0.562	0.652	0.11	0.133	0.48	0.337	0.0375	0.0508	0.036	0.035	0.034	0.0373
Beryllium (Dissolved)	0.0005 - 0.0025	<0.005	<0.005	<0.0025	<0.0025	<0.005	<0.001	<0.0025	<0.0005	<0.001	<0.001	<0.001	<0.0005
Bismuth (Dissolved)	0.0005 - 0.2	<0.005	<0.005	<0.0025	<0.0025	<0.005	<0.001	<0.0025	<0.0005			<0.2	<0.0005
Boron (Dissolved)	0.01 - 0.1	<0.1	<0.1	0.055	<0.05	<0.1	<0.02	<0.05	0.049	<0.1	<0.1	<0.1	0.048
Cadmium (Dissolved)	0.00001 - 0.000085	0.00025	<0.0001	<0.001	<0.0011	<0.001	<0.00025	<0.000085	<0.00001	0.000018	0.000028	<0.000017	<0.00005
Calcium (Dissolved)	0.02 - 0.1	675	586	384	275	761	152	15.1	17.4	17	19.9	19.3	20.7
Chromium (Dissolved)	0.0005 - 0.0025	0.164	0.14	0.0533	0.042	0.701	0.0512	0.0034	<0.0005	<0.001	<0.001	<0.001	<0.0005
Cobalt (Dissolved)	0.0001 - 0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.0002	<0.0005	<0.0001	<0.0003	<0.0003	<0.0003	<0.0001
Copper (Dissolved)	0.0001 - 0.001	0.007	0.0179	0.00311	0.0161	0.0042	0.00632	0.00398	0.00017	<0.001	<0.001	<0.001	<0.0005
Iron (Dissolved)	0.03	<0.03	<0.03	0.042	<0.03	<0.03	<0.03	0.524	<0.03	<0.03	0.038	0.032	0.036
Lead (Dissolved)	0.00005 - 0.0005	0.0042	0.00338	<0.00025	<0.00025	0.00367	0.00014	0.00033	<0.00005	<0.0005	<0.0005	<0.0005	0.000151
Lithium (Dissolved)	0.005 - 0.025	0.51	0.475	0.051	<0.025	0.25	0.048	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium (Dissolved)	0.005 - 0.1	<0.05	<0.05	0.157	0.045	0.123	0.05	5.73	8.85	7.91	9.06	9.28	10
Manganese (Dissolved)	0.00005 - 0.0003	<0.0005	0.00344	0.00079	<0.00025	0.00261	0.00015	0.0287	0.00445	0.0197	0.0197	0.0161	0.0169
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005
Molybdenum (Dissolved)	0.00005 - 0.001	0.126	0.106	0.26	0.489	0.317	0.103	0.0281	0.0155	0.0081	0.0072	0.0085	0.00766
Nickel (Dissolved)	0.0005 - 0.0025	<0.005	<0.005	<0.0025	0.0025	<0.005	<0.001	<0.0025	0.0012	<0.001	<0.001	<0.001	0.00113
Potassium (Dissolved)	0.05 - 2	203	191	31.1	22.9	302	48.7	1.99	1.22	<2	<2	<2	<2
Selenium (Dissolved)	0.0001 - 0.001	<0.001	<0.001	0.00275	0.00141	0.0191	0.00144	<0.0005	<0.0001	<0.001	<0.001	<0.001	<0.001
Silicon (Dissolved)	0.05	0.283	0.34	1.35	0.843	0.48	1.23	6.01	4.34			5.15	5.15
Silver (Dissolved)	0.00001 - 0.00005	<0.0001	<0.0001	<0.00005	<0.00005	<0.0001	<0.00002	<0.00005	<0.00001	<0.00002	<0.00002	<0.00002	<0.00001
Sodium (Dissolved)	2	915	992	351	346	728	123	17.9	6.9	7	6.3	6.5	6.3
Strontium (Dissolved)	0.0001 - 0.005	33.4	37.1	11.2	10.3	19.1	4.49	0.206	0.237			0.246	0.229
Thallium (Dissolved)	0.0001 - 0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.0002	<0.0005	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001
Tin (Dissolved)	0.0001 - 0.0005	<0.001	<0.001	<0.0005	<0.0005	0.001	0.00203	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.0001
Titanium (Dissolved)	0.01	<0.01	<0.01	0.012	<0.01	0.01	<0.01	0.022	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0002	<0.0001	<0.0001	<0.00005	<0.00005	0.00011	<0.00002	0.000809	0.000727	<0.0002	<0.0002	<0.0002	0.000063
Vanadium (Dissolved)	0.001 - 0.005	<0.01	<0.01	<0.005	<0.005	<0.01	<0.002	<0.005	0.0012	<0.001	<0.001	<0.001	<0.001
Zinc (Dissolved)	0.001 - 0.005	0.014	<0.01	<0.005	<0.005	0.02	0.0175	0.0078	0.002	<0.005	<0.005	<0.005	0.0102
Total Metals													
Aluminum (Total)	0.005	0.184		24.9		2.93		22.8					
Antimony (Total)	0.0005	<0.001		0.0132		0.0028		0.00102					
Arsenic (Total)	0.0005	<0.001		0.0247		0.0031		0.0249					
Barium (Total)	0.00025	1.56		0.589		1.7		0.248					
Beryllium (Total)	0.0025	<0.005		<0.0025		<0.005		<0.0025					
Bismuth (Total)	0.0025	<0.005		<0.0025		<0.005		<0.0025					
Boron (Total)	0.05	<0.1		0.149		<0.1		0.06					
Cadmium (Total)	0.000085	<0.00017		<0.0015		<0.001		0.000417					
Calcium (Total)	0.1	685		507		815		47.9					
Chromium (Total)	0.0025	0.17		0.0918		0.738		0.154					
Cobalt (Total)	0.0005	<0.001		0.0174		0.0025		0.0226					
Copper (Total)	0.0005	0.0128		0.28		0.0367		0.285					
Iron (Total)	0.03	0.17		24.4		3.18		30.9					
Lead (Total)	0.00025	0.00506		0.0233		0.00747		0.0132					
Lithium (Total)	0.025	0.536		0.065		0.26		<0.025					
Magnesium (Total)	0.025	0.238		51.2		2.18		24.5					
Manganese (Total)	0.00025	0.00973		0.761		0.104		0.671					
Mercury (Total)	0.00001	<0.00001		0.00003		<0.00001		0.000012					
Molybdenum (Total)	0.00025	0.125		0.346		0.319		0.0369					
Nickel (Total)	0.0025	<0.005		0.031		0.0082		0.117					
Potassium (Total)	0.25	215		33.1		308		4.55					
Selenium (Total)	0.0005	<0.001		0.00629		0.0185		0.0011					
Silicon (Total)	0.05	0.55		48.9		7.68		45.7					
Silver (Total)	0.00005	0.00028		0.00165		0.00054		0.00243					
Sodium (Total)	2	945		330		727		18.1					
Strontium (Total)	0.0005	34.4		11.4		19.7		0.352					
Thallium (Total)	0.0005	<0.001		<0.0005		<0.001		<0.0005					
Tin (Total)	0.0005	<0.001		0.00833		0.0041		0.00125					
Titanium (Total)	0.01	0.018		0.519		0.186		1.03					
Uranium (Total)	0.00005	<0.0001		0.00298		0.0002		0.00441					
Vanadium (Total)	0.005	<0.01		0.0546		0.011		0.0945					
Zinc (Total)	0.005	0.016		0.238		0.082		0.1					
Organics													
Carbon Organic (Total)	0.5	21.9	30	41.5	62.5	22.9	8.44	8.51	1.44	0.71	0.79	<0.5	<0.5

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.
3. * = SAMPLE COLLECTED PRIOR TO WELL REDEVELOPMENT
4. RED TEXT = DATA CONSIDERED UNRELIABLE / UNSUITABLE FOR WATER QUALITY ANALYSIS

SCHAFT CREEK MINE PROJECT
TABLE B1.4 - SADDLE AREA

Site ID	MDL	RES08-5A*	RES08-5A	RES08-5A	RES08-5A	RES08-5A	RES08-5A	RES08-5B*	RES08-5B	RES08-5B	RES08-5B	RES08-5B	RES08-5B
Date/Time Sampled		01-Oct-08	30-Apr-10	23-Sep-10	14-Sep-11	23-Jun-12	23-Sep-12	01-Oct-08	01-May-10	23-Sep-10	15-Sep-11	23-Jun-12	22-Sep-12
In Situ Parameters													
Conductivity µS/cm			111	109	129	117	184	252	121	120	125	125	191
Oxygen Dissolved %			5.2	2.3		2.2	1.6	7.8	2.6	2.4		6.9	2.1
Oxygen Dissolved			0.66	0.28	0.29	0.24	0.21		0.34	0.31	0.27	0.85	0.27
pH pH			8.36	8.2	8.33	8.4	8.28	7.41	7.59	7.4	7.45	8.46	8.1
Redox Potential mV				-71.3			161	-286	-62	2.3			-49.3
Specific Conductivity µS/cm			179	172	195	180	116		208	208		191	116
Temperature °C			5.66	5.77	6.17	6.47	5.04		3.2	3.73	4.11	6.77	4.54
Total Dissolved Solids				113			122			130			125
Physical Tests													
Acidity to pH 8.3 (as CaCO3)	1	<1	1.6	2.3	1.6	11	3	<1	3	5	3.4	<1	1.4
Alkalinity (Total as CaCO3)	1 - 2	73	70.8	67.8	75.3	77.2	73.8	113	91.1	90.9	86.5	80.4	77.2
Bicarbonate Alkalinity	1 - 2	73	70.8	67.8	75.3		73.8	113	91.1	90.9	86.5		77.2
Carbonate Alkalinity	1 - 2	<1	<2	<2	<2		<2	<1	<2	<2	<2		<2
Color TCU	5	<5	<5	<5	<5		<5	10.5	<5	7.6	8		<5
Conductivity µS/cm	2	189	208	185	185	178	177	243	207	208	201	187	190
Hardness as CaCO3 (Dissolved)	0.5 - 1.1	70	93.2	83.3	79.1	81.9	76.3	106	114	103	94.6	94	87.2
Hydroxide Alkalinity	1 - 2	<1	<2	<2	<2		<2	<1	<2	<2	<2		<2
pH pH	0.01 - 0.1	8.2	8.18	8.2	8.21	7.01	8.24	8.18	8	7.74	7.85	8.19	8.24
Total Dissolved Solids	10	113	115	97	106	103	111	168	132	114	122	118	117
Total Suspended Solids	3	<3	<3	<3	3.3	<3	<3	1030	<3	5.7	<3	<3	6
Turbidity NTU	0.1	1.03	1.25	1.18	1.03		0.54	>4000	43.4	6.8	1.32		0.74
Dissolved Anions													
Bromide (Dissolved)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride (Dissolved)	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.37	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoride (Dissolved)	0.02	0.069	0.069	0.073	0.083	0.082	0.081	0.055	0.043	0.045	0.058	0.068	0.067
Sulphate (Dissolved)	0.5	25.2	22.9	21.8	22.3	22.3	22.5	21.2	16.3	16	14.8	22.9	22.8
Nutrients													
Ammonia (Total)	0.005	<0.005		0.0067	<0.005	<0.02	<0.005	<0.005		<0.005	0.013	<0.02	<0.005
Nitrate (as N)	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite (as N)	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	0.05 - 0.25	<0.05	<0.05	0.05	0.14		<0.05	<0.3	<0.05	<0.05	0.06		<0.05
Nitrogen Kjeldahl (Total)	0.05 - 0.25	<0.05	<0.05	0.066	<0.05		<0.05	<0.25	0.097	0.057	0.085		<0.05
Orthophosphate (Dissolved)	0.001			<0.001	<0.001		<0.001			0.0013	0.0011		0.0021
Phosphate (Dissolved)	0.002			<0.002			<0.002			<0.002	<0.002		0.0025
Phosphate (Total)	0.002 - 0.3	0.007	0.0034	0.0026			0.0000022	2.36	0.059	0.0075	0.0052		0.0000088
Phosphorus (Nutrient) Dissolved	0.002 - 0.3	<0.3			<0.3			<0.3					
Phosphorus (Nutrient) Total	0.002 - 0.3	<0.3			0.0034			2.77					
Dissolved Metals													
Aluminum (Dissolved)	0.001 - 0.01	0.346	<0.005	0.005	<0.005	0.015	0.0017	0.164	<0.005	0.0073	0.0139	0.0043	0.0028
Antimony (Dissolved)	0.0001 - 0.001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001
Arsenic (Dissolved)	0.0001 - 0.001	0.00067	0.00064	0.00053	0.00064	0.00064	0.00061	<0.001	0.00076	0.00063	0.00062	0.00082	0.00082
Barium (Dissolved)	0.00005 - 0.02	0.022	0.025	0.024	0.021	0.0236	0.0204	0.0351	0.032	0.031	0.028	0.0256	0.0238
Beryllium (Dissolved)	0.0005 - 0.005	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0001	<0.005	<0.001	<0.001	<0.001	<0.0005	<0.0001
Bismuth (Dissolved)	0.0005 - 0.2	<0.0005			<0.2	<0.0005	<0.0005	<0.005			<0.2	<0.0005	<0.0005
Boron (Dissolved)	0.01 - 0.1	0.017	<0.1	<0.1	<0.1	0.018	0.019	<0.1	<0.1	<0.1	<0.1	0.017	0.017
Cadmium (Dissolved)	0.000017 - 0.00017	0.000035	0.000021	0.000021	<0.000017	<0.00005	<0.00001	0.00025	<0.000017	0.000039	<0.000017	<0.00005	0.000013
Calcium (Dissolved)	0.02 - 0.2	21.5	30.6	25.8	24.8	25.7	23.9	32.8	37.8	32.6	30.2	29.3	26.8
Chromium (Dissolved)	0.0005 - 0.005	0.00054	<0.001	0.0012	<0.001	<0.0005	0.00013	<0.005	<0.001	<0.001	<0.001	<0.0005	<0.0001
Cobalt (Dissolved)	0.0001 - 0.001	0.00031	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.001	0.00031	<0.0003	<0.0003	<0.0001	<0.0001
Copper (Dissolved)	0.0001 - 0.001	0.00697	<0.001	<0.001	<0.001	0.00056	0.00074	0.0076	<0.001	<0.001	0.0016	<0.0005	0.00041
Iron (Dissolved)	0.03	0.477	<0.03	<0.03	<0.03	<0.03	<0.01	0.224	0.305	0.667	0.384	<0.03	0.011
Lead (Dissolved)	0.00005 - 0.0005	0.000092	<0.0005	<0.0005	0.00124	0.000378	<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	0.000107	<0.00005
Lithium (Dissolved)	0.005 - 0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.0005
Magnesium (Dissolved)	0.005 - 0.1	3.99	4.07	4.6	4.15	4.29	4.07	5.85	4.67	5.19	4.69	5.05	4.9
Manganese (Dissolved)	0.00005 - 0.0005	0.0214	0.00288	0.0179	0.00192	0.00136	0.00141	0.221	0.226	0.175	0.166	0.0217	0.0163
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001
Molybdenum (Dissolved)	0.00005 - 0.001	0.00933	0.0092	0.0112	0.009	0.0095	0.00891	0.0674	0.0101	0.0078	0.0068	0.0114	0.0111
Nickel (Dissolved)	0.0005 - 0.005	0.00084	<0.001	0.0015	<0.001	<0.0005	<0.0005	<0.005	0.0012	0.0011	0.0012	<0.0005	<0.0005
Phosphorus (Metal) Dissolved	0.3					<0.3	<0.3				<0.3	<0.3	<0.3
Potassium (Dissolved)	0.05 - 2	0.406	<2	<2	<2	<2	0.33	1.08	<2	<2	<2	<2	0.68
Selenium (Dissolved)	0.0001 - 0.001	0.00018	<0.001	<0.001	<0.001	<0.001	0.00021	<0.001	<0.001	<0.001	<0.001	<0.001	0.00019
Silicon (Dissolved)	0.05	5.51			4.57	4.57	4.55	4.92			5.19	4.3	4.39
Silver (Dissolved)	0.00001 - 0.0001	0.000042	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.0001	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001
Sodium (Dissolved)	2	9.9	8.2	9.6	7.9	8.1	7.5	8.3	5.7	5.7	4.8	6.2	5.6
Strontium (Dissolved)	0.0001 - 0.005	0.1			0.123	0.132	0.12	0.145			0.133	0.13	0.129
Thallium (Dissolved)	0.0001 - 0.001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0001	<0.00001	<0.001	<0.0002	<0.0002	<0.0002	<0.0001	<0.00001
Tin (Dissolved)	0.0001 - 0.001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001
Titanium (Dissolved)	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0002	0.000347	<0.0002	<0.0002	<0.0002	0.000186	0.000186	0.00016	<0.0002	<0.0002	<0.0002	0.000163	0.000161
Vanadium (Dissolved)	0.001 - 0.01	0.0034	0.0029	0.0027	0.0031	0.0032	0.0032	<0.01	0.001	0.001	0.0019	0.0012	0.0012
Zinc (Dissolved)	0.001 - 0.01	0.0026	<0.005	0.0074	0.0081	0.0041	<0.001	<0.01	<0.005	0.0069	0.0114	<0.003	0.0053
Total Metals													
Aluminum (Total)	0.001 - 0.01	0.131						70.7			0.0183		
Antimony (Total)	0.0001 - 0.001	<0.0001						<0.001			<0.0005		
Arsenic (Total)	0.0001 - 0.001	0.00071						0.0242			0.00059		
Barium (Total)	0.00005 - 0.02	0.0194						0.489			0.029		
Beryllium (Total)	0.0005 - 0.005	<0.0005						<0.005			<0.001		
Bismuth (Total)	0.0005 - 0.2	<0.0005						<0.005			<0.2		
Boron (Total)	0.01 - 0.1	0.019						<0.1			<0.1		
Cadmium (Total)	0.000017 - 0.00017	0.00003						0.00085			<0.000017		
Calcium (Total)	0.02 - 0.2	22.7						92.7			29.4		
Chromium (Total)	0.0005 - 0.005	<0.0005						0.119			<0.001		
Cobalt (Total)	0.0001 - 0.001	<0.0001						0.0603			<0.0003		
Copper (Total)	0.0001 - 0.001	0.00028						1.21			0.0024		
Iron (Total)	0.03	0.05						91.2			0.225		
Lead (Total)	0.00005 - 0.0005	<0.00005						0.014			<0.0005		
Lithium (Total)	0.005 - 0.05	<0.005						<0.05			<0.005		
Magnesium (Total)	0.005 - 0.1	4.35						59			4.9		
Manganese (Total)	0.00005 - 0.0005	0.00595						2.5			0.13		
Mercury (Total)	0.00001	<0.00001						0.000031			<0.00001		
Molybdenum (Total)	0.00005 - 0.001	0.00964						0.0753			0.0084		
Nickel (Total)	0.0005 - 0.005	<0.0005						0.143			<0.001		
Potassium (Total)	0.05 - 2	0.399						5.95			<2		
Selenium (Total)	0.0001 - 0.001	0.00027						0.0024			<0.001		
Silicon (Total)	0.05	4.98						89.6			5.09		
Silver (Total)	0.00001 - 0.0001	<0.00001						0.00827			<0.00002		
Sodium (Total)	2	10.4						12.3			5.5		
Strontium (Total)	0.0001 - 0.005	0.103						0.327			0.141		
Thallium (Total)	0.0001 - 0.001	<0.0001						<0.001			<0.0002		
Tin (Total)	0.0001 - 0.001	<0.0001						0.0011			<0.0005		
Titanium (Total)	0.01	<0.01						3.83			<0.01		
Uranium (Total)	0.00001 - 0.0002	0.000371						0.00107			<0.0002		
Vanadium (Total)	0.001 - 0.01	0.0027						0.223			0.0018		
Zinc (Total)	0.001 - 0.01	<0.001						0.267			0.0153		
Organics													
Carbon Organic (Total)	0.5	<0.5	0.64	1.77	0.58	<0.5	0.51	3.38	1.86	2.2	2.96	<0.5	<0.5

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum to 2011 Hydrogeo Study\Attachments\Appendix B\[Appendix B1 - Analytical Data and Guideline Exceedances.xls]B1.4 - SADDLE AREA

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.
3. * = SAMPLE COLLECTED PRIOR TO WELL REDEVELOPMENT

APPENDIX B1 - ANALYTICAL DATA AND GUIDELINE EXCEEDANCES

SCHAFT CREEK MINE PROJECT
TABLE B1.5 - SKEETER CREEK VALLEY

Site ID	MDL	RES08-7A*	RES08-7A	RES08-7A	RES08-7A	RES08-7A	RES08-7A	RES08-7A	RES08-7A	RES08-7B*	RES08-7B	RES08-7B	RES08-7B	RES08-7B	RES08-7B	RES08-7B	RES08-7B
Date/Time Sampled		1-Oct-09	2-May-10	21-Sep-10	26-Mar-11	14-Sep-11	17-Mar-12	23-Jun-12	23-Sep-12	1-Oct-09	8-May-10	21-Sep-10	26-Mar-11	14-Sep-11	17-Mar-12	23-Jun-12	23-Sep-12
In Situ Parameters																	
Conductivity µS/cm		398	401	417	414	403	339	405	654	380	380	399	388	425	239	399	637
Oxygen Dissolved %		1.1	1.6	1.1	1.8		2	2.9	2.8	5.1	1.1	3.7	2.5		70.1	4.8	4.9
Oxygen Dissolved		0.14	0.2	0.15	0.18	0.4	0.26	0.37	0.34	0.68	0.15	0.46	0.31	0.19	7.84	0.57	0.6
pH pH		7.79	7.68	7.45	7.43	7.63		7.73	7.6	7.88	7.86	7.57	7.57	7.72		7.93	7.68
Redox Potential mV		-55	-38.4	-33.1	99.7				126	-18.3	123	138	154				183
Specific Conductivity µS/cm		649	662	655	660		538	630	406	628	633	625	638		415	598	402
Temperature °C		4.77	4.41	5.87	5.48	6.07	5.54	6.42	5.15	4.31	4.04	6.02	4.55	7.43	3.75	7.53	5.68
Total Dissolved Solids				426	429				425			407	415				414
Physical Tests																	
Acidity to pH 8.3 (as CaCO3)	1	4.4	3	4.5	9.5	<1	1.1	2	1.1	3.8	2.2	3.1	7.3	1.7	1	1.7	<1
Alkalinity (Total as CaCO3)	1 - 2	183	186	183	186	193	181	190	187	189	189	189	190	201	194	196	184
Bicarbonate Alkalinity	1 - 2	183	186	183	186	193	181		187	189	189	185	190	201	194		184
Carbonate Alkalinity	1 - 2	<2	<2	<1	<2	<2	<2		<2	<2	<2	3.7	<2	<2	<2		<1
Color TCU	5	<5	<5	<5	<5	<5	<5		<5	<5	<5	<5	<5	<5	<5		<5
Conductivity µS/cm	2	637	631	645	629	658	645	628	636	610	598	620	601	629	620	604	612
Hardness as CaCO3 (Dissolved)	0.5 - 1.1	262	314	301	299	291	295	310	301	253	300	288	288	279	293	274	285
Hydroxide Alkalinity	1 - 2	<2	<2	<1	<2	<2	<2		<2	<2	<2	<1	<2	<2	<2		<1
pH pH	0.01 - 0.1	8.07	8.12	8.08	8.03	8.19	8.23	8.1	8.27	8.13	8.17	8.2	8.08	8.23	8.25	8.14	8.31
Total Dissolved Solids	10	409	420	410	399	411	412	409	421	377	396	369	371	392	380	395	402
Total Suspended Solids	3 - 9	8.2	<3	16.7	9.3	3.3	<3	<3	<3	2070	16.9	280	18.8	6.7	<3	<3	3.7
Turbidity NTU	0.1	10.6	1.32	41.8	1.66	5.43	3.32		1.53	3620	7.02	182	3.54	4.37	0.74		2.51
Dissolved Anions																	
Bromide (Dissolved)	0.05 - 1.13	<0.05	<0.05	<0.05	<0.71	<0.05	<0.05	<0.05	<0.25	<0.05	<0.05	<0.05	<0.63	<0.05	<0.05	<0.05	<0.05
Chloride (Dissolved)	0.5 - 5	16.4	16.5	15.7	16.5	17	17	17	17.3	14.7	14.6	14.7	14.6	14.9	14.8	14.8	14.9
Fluoride (Dissolved)	0.02 - 0.2	0.524	0.571	0.563	0.559	0.614	0.623	0.61	0.61	0.451	0.479	0.512	0.498	0.55	0.557	0.554	0.553
Sulphate (Dissolved)	0.5 - 5	137	139	131	141	141	140	139	140	120	122	122	126	126	126	127	128
Nutrients																	
Ammonia (Total)	0.005	0.0241		0.0233	0.0219	0.0272	0.0349	<0.02	0.0274	0.0206		0.0237	0.0236	0.0296	0.0284	<0.02	0.023
Nitrate (as N)	0.005 - 0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite (as N)	0.001 - 0.01	<0.001	<0.001	<0.001	<0.001	<0.001	0.0015	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001
Nitrogen (Total)	0.05 - 0.25	<0.05	<0.05	<0.05		0.05	0.168		<0.056	0.073	<0.05	<0.05	0.18	0.11	<0.0025		<0.05
Nitrogen Kjeldahl (Total)	0.05 - 0.25	<0.05	<0.05	0.05	<0.05	<0.05	0.167		<0.05	0.053	0.052	0.056	0.108	<0.05	<0.05		<0.05
Orthophosphate (Dissolved)	0.001			<0.001	<0.001	<0.001	<0.001		<0.001			<0.001	<0.001	<0.001	0.0014		0.0013
Phosphate (Dissolved)	0.002			<0.002					<0.002			<0.002					<0.002
Phosphate (Total)	0.002 - 0.2	0.0065	<0.002	0.0241					<0.000002	1.82	0.0158	0.237					0.0000039
Phosphorus (Nutrient) Dissolved	0.002 - 0.3	<0.3			<0.3	<0.002	<0.002			<0.3			<0.3	<0.3	<0.3		
Phosphorus (Nutrient) Total	0.002 - 0.3				<0.002	0.0024	0.0035						0.0076	0.0078	0.0025		
Dissolved Metals																	
Aluminum (Dissolved)	0.001 - 0.01	<0.001	<0.005	<0.005	<0.005	<0.005	<0.003	<0.003	0.0012	0.0013	<0.005	<0.005	<0.005	<0.005	<0.003	<0.003	0.0014
Antimony (Dissolved)	0.0001 - 0.001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	0.00012	0.0001	0.00011	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Arsenic (Dissolved)	0.0001 - 0.001	0.00309	0.00285	0.00187	0.00155	0.00149	0.00123	0.00141	0.00131	0.00135	0.00125	0.00104	0.00103	0.00097	0.00086	0.00092	0.00089
Barium (Dissolved)	0.00005 - 0.02	0.0185	0.026	<0.02	<0.02	<0.02	0.0206	0.0194	0.0192	0.0457	0.055	0.046	0.044	0.044	0.0435	0.0454	0.0441
Beryllium (Dissolved)	0.0005 - 0.005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0005	<0.0001	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0005	<0.0001
Bismuth (Dissolved)	0.0005 - 0.2	<0.0005			<0.2	<0.2	<0.0005	<0.0005	<0.0005	<0.0005			<0.2	<0.2	<0.0005	<0.0005	<0.0005
Boron (Dissolved)	0.01 - 0.1	0.064	<0.1	<0.1	<0.1	<0.1	0.051	0.059	0.065	0.07	<0.1	<0.1	<0.1	<0.1	0.054	0.055	0.068
Cadmium (Dissolved)	0.00001 - 0.00025	<0.00001	<0.000017	<0.000017	<0.000017	<0.000017	<0.00001	<0.00005	<0.00001	<0.00001	<0.000017	<0.000017	0.000027	<0.000017	0.000014	<0.00005	<0.00001
Calcium (Dissolved)	0.02 - 0.2	49.9	63.2	59.7	58.8	55.7	57.1	59.2	55.8	43.9	56.3	53.2	54.8	51.9	53.3	50.2	50.1
Chromium (Dissolved)	0.0005 - 0.005	<0.001	<0.001	<0.001	<0.001	<0.001	0.00023	<0.0005	0.00041	<0.001	<0.002	<0.001	<0.001	<0.001	0.00011	<0.0005	0.00024
Cobalt (Dissolved)	0.0001 - 0.001	0.00056	0.00057	0.00059	0.00051	0.00059	0.00057	0.00057	0.00051	<0.0001	<0.0003	<0.0003	<0.0003	<0.0003	0.00014	0.00014	0.00012
Copper (Dissolved)	0.0001 - 0.002	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.00051	0.00014	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.00029
Iron (Dissolved)	0.03	0.088	0.107	0.081	0.076	0.068	0.059	0.066	0.055	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.01
Lead (Dissolved)	0.00005 - 0.001	<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00005	0.000506	<0.00005	<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	<0.00005	0.000265	<0.00005
Lithium (Dissolved)	0.005 - 0.05	0.0215	0.0201	0.0216	0.0224	0.024	0.0231	0.0236	0.0239	0.0173	0.0168	0.0183	0.0183	0.0196	0.0195	0.0172	0.0196
Magnesium (Dissolved)	0.005 - 0.1	33.3	37.8	36.9	37	37	37.1	39.3	39.3	34.7	38.7	37.7	36.8	36.3	38.7	36.1	38.9
Manganese (Dissolved)	0.00005 - 0.0006	0.0615	0.0624	0.0655	0.06	0.0692	0.0669	0.0662	0.065	0.0514	0.0556	0.0564	0.0556	0.0623	0.0572	0.0586	0.0568
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001
Molybdenum (Dissolved)	0.00005 - 0.002	0.00226	0.0022	0.0026	0.002	0.0021	0.0022	0.00217	0.00225	0.00226	0.0022	0.0023	0.0019	0.0022	0.00198	0.0019	0.00204
Nickel (Dissolved)	0.0005 - 0.005	0.00068	<0.001	<0.001	<0.001	<0.001	0.00075	0.00073	0.00084	0.00107	0.0011	0.0012	<0.001	0.0022	0.00089	0.00097	0.001
Potassium (Dissolved)	0.05 - 2	1.8	2.2	2.1	2.1	2	1.97	2.1	1.93	3.03	3.6	3.2	3.1	3.2	2.94	3	2.97
Selenium (Dissolved)	0.0001 - 0.002	0.00038	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.0001	0.00043	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.0001
Silicon (Dissolved)	0.05	4.25			4.33	4.27	4.4	4.28	4.36	4.37			4.52	4.5	4.54	4.45	4.43
Silver (Dissolved)	0.00001 - 0.0001	<0.00001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001
Sodium (Dissolved)	2	30.3	29.7	29.5	30.2	29.4	27.9	30.2	26.8	29	29.4	27.9	29.2	28.5	26.1	28	25.4
Strontium (Dissolved)	0.0001 - 0.005	0.725			0.754	0.719	0.667	0.748	0.707	0.664			0.741	0.709	0.655	0.647	0.702
Thallium (Dissolved)	0.0001 - 0.001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	0.000035	<0.0001	0.000038	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.00001	<0.0001	<0.00001
Tin (Dissolved)	0.0001 - 0.001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Titanium (Dissolved)	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0004	0.00239	0.00241	0.00236	0.00238	0.00246	0.00259	0.0026	0.00266	0.00179	0.00189	0.00171	0.00176	0.00184	0.00188	0.00172	0.00189
Vanadium (Dissolved)	0.001 - 0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc (Dissolved)	0.001 - 0.01	0.0012	<0.005	<0.005	<0.005	<0.005	0.005	<0.003	0.0031	0.0023	<0.005	<0.005	<0.005	0.0124	0.0077	<0.003	0.0022
Total Metals																	
Aluminum (Total)	0.002 - 0.01																
Antimony (Total)	0.0002 - 0.001																
Arsenic (Total)	0.0002 - 0.001																
Barium (Total)	0.0001 - 0.0005																
Beryllium (Total)	0.001 - 0.005																
Bismuth (Total)	0.001 - 0.005																
Boron (Total)	0.02 - 0.1																
Cadmium (Total)	0.000034 - 0.00017																
Calcium (Total)	0.04 - 0.2																
Chromium (Total)	0.001 - 0.005																
Cobalt (Total)	0.0002 - 0.001																
Copper (Total)	0.0002 - 0.001																
Iron (Total)	0.03																
Lead (Total)	0.0001 - 0.0005																
Lithium (Total)	0.01 - 0.05																
Magnesium (Total)	0.01 - 0.05																
Manganese (Total)	0.0001 - 0.0005																
Mercury (Total)	0.00001																
Molybdenum (Total)	0.0001 - 0.0005																
Nickel (Total)	0.001 - 0.005																
Potassium (Total)	0.1 - 0.5																
Selenium (Total)	0.0002 - 0.001																
Silicon (Total)	0.05																
Silver (Total)	0.00002 - 0.0001																
Sodium (Total)	2																
Strontium (Total)	0.0002 - 0.001																
Thallium (Total)	0.0002 - 0.001																
Tin (Total)	0.0002 - 0.001																
Titanium (Total)	0.01																
Uranium (Total)	0.00002 - 0.0001																
Vanadium (Total)	0.002 - 0.01																
Zinc (Total)	0.002 - 0.01																
Organics																	
Carbon Organic (Total)	0.5	<0.5	0.51	0.6	0.5	<0.5	1.6	<0.5	<0.5	1.09	0.68	0.91	1.37	0.76	0.58	0.58	<0.5

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum to 2011 Hydrogeo Study\Attachments\Appendix B\[Appendix B1 - Analytical Data and Guideline Exceedances.xls]B1.5 - SKEETER CREEK VALLEY

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.
3. * = SAMPLE COLLECTED PRIOR TO WELL REDEVELOPMENT

SCHAFT CREEK MINE PROJECT
TABLE B1.5 - SKEETER CREEK VALLEY

Site ID	MDL	RES08-8A*	RES08-8A	RES08-8A	RES08-8A	RES08-8A	RES08-8A	RES08-8A	RES08-8A	RES08-8B*	RES08-8B	RES08-8B	RES08-8B	RES08-8B	RES08-8B	RES08-8B
Date/Time Sampled		1-Oct-09	6-May-10	20-Sep-10	26-Mar-11	16-Sep-11	18-Mar-12	22-Jun-12	23-Sep-12	1-Oct-09	4-May-10	20-Sep-10	16-Sep-11	18-Mar-12	22-Jun-12	23-Sep-12
In Situ Parameters																
Conductivity µS/cm		327	559	401	450	456	298	499	499	286	267	290	304	168	384	432
Oxygen Dissolved %		1.1	4	2.3	1		1.3	17.6	0.5	11	5.5	4.1		3.6	15.6	6.3
Oxygen Dissolved		0.14	0.5	0.28	0.12	1.97	0.17	2.24	0.06	1.42	0.66	0.49	0.3	0.45	2	0.75
pH pH		8.15	7.74	7.43	7.5	7.86		7.94	7.71	7.18	7.31	7.06	7.06	7.01	7.22	7.12
Redox Potential mV		-59.4	84.2	-5.7	-53.8				-188	-100	29.5	-68.5				-134
Specific Conductivity µS/cm		513	873	628	719		497	308	311	465	408	435		273	235	286
Temperature °C		6	6.16	6.09	5.36	6.81	5.02	5.14	5.16	4.76	6.82	7.61		5.04	7.66	7.26
Total Dissolved Solids				408	469				326			283				286
Physical Tests																
Acidity to pH 8.3 (as CaCO3)	1	3.1	2.9	4	5.1	1.9	1.5	2.9	<1	7.1	3.8	6	2.8	4.2	7.4	7.2
Alkalinity (Total as CaCO3)	1 - 2	111	133	128	128	127	126	128	121	165	147	159	158	127	146	156
Bicarbonate Alkalinity	1 - 2	111	133	128	128	127	126		121	165	147	159	158	127		156
Carbonate Alkalinity	1 - 2	<2	<2	<2	<2	<2	<2		<1	<2	<2	<2	<2	<2		<2
Color TCU	5	<5	<5	<5	<5	<5	<5		<5	<5	23.8	5.6	20.6	73.6		12.5
Conductivity µS/cm	2	494	819	657	678	673	520	515	485	445	350	447	434	314	379	427
Hardness as CaCO3 (Dissolved)	0.5 - 1.1	143	311	234	244	229	176	196	171	151	148	173	162	130	138	161
Hydroxide Alkalinity	1 - 2	<2	<2	<2	<2	<2	<2		<1	<2	<2	<2	<2	<2		<2
pH pH	0.01 - 0.1	8.12	8.11	8.1	8.19	8.19	8.2	8.22	8.53	7.81	7.88	7.84	8	7.84	7.86	8.12
Total Dissolved Solids	10	324	593	425	445	451	337	339	329	284	224	268	264	202	251	281
Total Suspended Solids	3 - 9	557	12.9	18.7	<3	40.7	8.7	8.3	64.5	3.7	<3	<3	<3	8.7	5.6	10.7
Turbidity NTU	0.1	235	4.44	5.36	3.3	13.8	4.48		3.3	5.32	4.07	4.04	3.84	14		9.76
Dissolved Anions																
Bromide (Dissolved)	0.05 - 1.13	<0.05	<0.25	<0.05	<1.1	<0.25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.05	<0.05
Chloride (Dissolved)	0.5 - 5	1.29	7	3.65	4.06	4.4	1.96	1.93	1.72	0.65	<0.5	0.78	1.19	<2.5	0.61	0.88
Fluoride (Dissolved)	0.02 - 0.2	1.01	1.34	1.37	1.3	1.37	1.14	1.15	1.07	0.68	0.596	0.802	0.716	0.46	0.611	0.802
Sulphate (Dissolved)	0.5 - 5	138	294	202	226	212	139	140	133	72	42.6	75	70.5	36.4	59.9	82.2
Nutrients																
Ammonia (Total)	0.005	0.0075		0.0067	<0.005	<0.005	<0.005	0.068	0.0096	<0.005		0.0206	0.0198	0.0184	<0.02	0.0264
Nitrate (as N)	0.005 - 0.05	<0.005	<0.025	<0.005	<0.005	<0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.0264	<0.025	<0.005	<0.005
Nitrite (as N)	0.001 - 0.01	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001
Nitrogen (Total)	0.05 - 0.25	0.073	<0.05	<0.05	0.05	<0.05	0.0536		0.208	0.05	<0.05	0.06	<0.05	0.143		0.176
Nitrogen Kjeldahl (Total)	0.05 - 0.25	0.051	<0.05	<0.05	<0.05	<0.05	0.054		0.208	0.083	0.119	0.222	<0.05	0.143		0.176
Orthophosphate (Dissolved)	0.001			<0.001	<0.001	<0.001	<0.001		<0.001			0.0018	0.0113	0.0093		0.0034
Phosphate (Dissolved)	0.002			<0.002					<0.002			<0.002				0.0032
Phosphate (Total)	0.002 - 0.2	0.11	0.0062	0.0091					0.0000719	0.0503	0.0148	0.0096				0.0000237
Phosphorus (Nutrient) Dissolved	0.002 - 0.3	<0.3			<0.002	<0.002	<0.002			<0.3			0.0118	0.0057		
Phosphorus (Nutrient) Total	0.002 - 0.3				0.0051	0.0115	0.0048						0.0248	0.0195		
Dissolved Metals																
Aluminum (Dissolved)	0.001 - 0.01	<0.001	<0.01	<0.005	<0.005	<0.005	<0.003	<0.003	0.002	0.0125	0.0134	0.0064	0.01	0.0187	0.0162	0.008
Antimony (Dissolved)	0.0001 - 0.001	<0.0001	<0.001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Arsenic (Dissolved)	0.0001 - 0.001	0.00142	0.0018	0.00165	0.00127	0.00168	0.00149	0.00153	0.00101	0.00315	0.00354	0.00152	0.00185	0.00084	0.00082	0.00041
Barium (Dissolved)	0.00005 - 0.02	0.0146	0.027	0.026	0.025	0.027	0.0221	0.0243	0.027	0.0584	0.069	0.062	0.069	0.0933	0.102	0.0993
Beryllium (Dissolved)	0.0005 - 0.005	<0.0005	<0.002	<0.001	<0.001	<0.001	<0.0001	<0.0005	<0.0001	<0.0005	<0.001	<0.001	<0.001	<0.0001	<0.0005	<0.0001
Bismuth (Dissolved)	0.0005 - 0.2	<0.0005			<0.2	<0.2	<0.0005	<0.0005	<0.0005	<0.0005			<0.2	<0.0005	<0.0005	<0.0005
Boron (Dissolved)	0.01 - 0.1	0.101	0.22	0.17	0.17	0.16	0.102	0.119	0.109	0.097	<0.1	0.11	<0.1	0.037	0.058	0.092
Cadmium (Dissolved)	0.00001 - 0.00025	<0.00015	<0.000034	<0.00025	<0.000017	<0.000017	<0.00001	<0.00005	<0.00001	<0.00005	0.00003	<0.000017	<0.000017	<0.00001	<0.00005	<0.00001
Calcium (Dissolved)	0.02 - 0.2	41.3	98.9	71.3	74.2	69	51.8	57.4	49.2	42.3	43.1	49.2	46	40	40.8	46.2
Chromium (Dissolved)	0.0005 - 0.005	<0.0005	<0.002	<0.001	<0.001	<0.001	0.00017	<0.0005	0.00026	<0.001	<0.002	0.0015	<0.001	0.0009	0.00059	0.00093
Cobalt (Dissolved)	0.0001 - 0.001	<0.0001	<0.0006	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0001	0.00057	0.00156	0.00045	<0.0003	0.00016	0.00016	0.00013
Copper (Dissolved)	0.0001 - 0.002	0.00013	<0.002	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0002	0.00011	<0.001	<0.001	<0.001	<0.0005	0.00062	<0.0002
Iron (Dissolved)	0.03	<0.03	<0.03	<0.03	0.058	<0.03	<0.03	<0.03	0.043	0.79	1.18	0.826	1.33	5.22	4.03	1.87
Lead (Dissolved)	0.00005 - 0.001	<0.00005	<0.001	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00005
Lithium (Dissolved)	0.005 - 0.05	0.0089	0.014	0.0096	0.0096	0.0087	0.0056	0.0067	0.00507	<0.005	<0.005	0.0055	<0.005	0.00245	<0.005	0.00509
Magnesium (Dissolved)	0.005 - 0.1	9.73	15.6	13.6	14.2	13.7	11.3	12.8	11.6	11.1	9.79	12.2	11.4	7.19	8.7	11
Manganese (Dissolved)	0.00005 - 0.0006	0.0393	0.0608	0.0467	0.0426	0.041	0.041	0.049	0.0573	0.448	0.367	0.343	0.358	0.49	0.458	0.382
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001
Molybdenum (Dissolved)	0.00005 - 0.002	0.0359	0.0381	0.0319	0.0259	0.0376	0.0257	0.0266	0.0239	0.0144	0.0154	0.0159	0.0142	0.00777	0.0105	0.0147
Nickel (Dissolved)	0.0005 - 0.005	0.00156	<0.002	0.0018	<0.001	0.0012	0.00078	0.00072	0.00075	<0.0005	0.0049	0.002	0.0012	0.0006	<0.0005	0.00118
Potassium (Dissolved)	0.05 - 2	0.958	<2	<2	<2	<2	1.07	<2	1.2	1.74	<2	2	<2	1.08	<2	1.7
Selenium (Dissolved)	0.0001 - 0.002	0.0001	<0.002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.0001	0.00036	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.0001
Silicon (Dissolved)	0.05	4.4			4.53	4.46	4.01	4.33	4.09	5.64			5.75	5.08	5.15	5.66
Silver (Dissolved)	0.00001 - 0.0001	<0.00001	<0.00004	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001	<0.00001	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001
Sodium (Dissolved)	2	47.1	83.5	58.5	59.6	55.5	38.5	41.3	35.6	35.9	28.7	34.6	30.1	20.6	30.3	31
Strontium (Dissolved)	0.0001 - 0.005	3.01			5.44	5.11	3.14	3.57	2.96	1.73			1.73	0.986	1.33	1.74
Thallium (Dissolved)	0.0001 - 0.001	<0.0001	<0.0004	<0.0002	<0.0002	<0.0002	<0.00001	<0.0001	<0.00001	<0.0001	<0.0002	<0.0002	<0.0002	<0.00001	<0.0001	<0.00001
Tin (Dissolved)	0.0001 - 0.001	0.00078	<0.001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Titanium (Dissolved)	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0004	0.0225	0.0243	0.0233	0.0203	0.0241	0.0226	0.0249	0.0236	0.0114	0.0181	0.0143	0.0107	0.00761	0.0109	0.013
Vanadium (Dissolved)	0.001 - 0.01	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0012	0.0022	<0.001	0.0013	0.0025	0.0017	<0.001
Zinc (Dissolved)	0.001 - 0.01	<0.001	<0.005	0.0167	0.0149	<0.005	0.0139	<0.003	0.0019	<0.001	<0.005	0.0051	0.0091	<0.003	0.0033	0.0041
Total Metals																
Aluminum (Total)	0.002 - 0.01															
Antimony (Total)	0.0002 - 0.001															
Arsenic (Total)	0.0002 - 0.001															
Barium (Total)	0.0001 - 0.0005															
Beryllium (Total)	0.001 - 0.005															
Bismuth (Total)	0.001 - 0.005															
Boron (Total)	0.02 - 0.1															
Cadmium (Total)	0.000034 - 0.00017															
Calcium (Total)	0.04 - 0.2															
Chromium (Total)	0.001 - 0.005															
Cobalt (Total)	0.0002 - 0.001															
Copper (Total)	0.0002 - 0.001															
Iron (Total)	0.03															
Lead (Total)	0.0001 - 0.0005															
Lithium (Total)	0.01 - 0.05															
Magnesium (Total)	0.01 - 0.05															
Manganese (Total)	0.0001 - 0.0005															
Mercury (Total)	0.00001															
Molybdenum (Total)	0.0001 - 0.0005															
Nickel (Total)	0.001 - 0.005															
Potassium (Total)	0.1 - 0.5															
Selenium (Total)	0.0002 - 0.001															
Silicon (Total)	0.05															
Silver (Total)	0.00002 - 0.0001															
Sodium (Total)	2															
Strontium (Total)	0.0002 - 0.001															
Thallium (Total)	0.0002 - 0.001															
Tin (Total)	0.0002 - 0.001															
Titanium (Total)	0.01															
Uranium (Total)	0.00002 - 0.0001															
Vanadium (Total)	0.002 - 0.01															
Zinc (Total)	0.002 - 0.01															
Organics																
Carbon Organic (Total)	0.5	1.55	0.61	0.75	<0.5	0.5	1.07	0.7	1.53	2.74	3.62	2.23	2.61	4	3.43	2.42

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.
3. * = SAMPLE COLLECTED PRIOR TO WELL REDEVELOPMENT

APPENDIX B1 - ANALYTICAL DATA AND GUIDELINE EXCEEDANCES

SCHAFT CREEK MINE PROJECT
TABLE B1.5 - SKEETER CREEK VALLEY

Site ID	MDL	RES08-6A*	RES08-6A*	RES08-6A	RES08-6A	RES08-6A	RES08-6A	RES08-6A	RES08-6B*	RES08-6B*	RES08-6B	RES08-6B	RES08-6B	RES08-6B	RES08-6B	RES08-6B
Date/Time Sampled		27-Sep-08	30-Sep-09	7-May-10	22-Sep-10	16-Sep-11	22-Jun-12	23-Sep-12	27-Sep-08	30-Sep-09	7-May-10	20-Sep-10	16-Sep-11	17-Mar-12	22-Jun-12	22-Sep-12
In Situ Parameters																
Conductivity µS/cm		390	454	318	449	920	774	794	244	269	173	164	178	168	282	307
Oxygen Dissolved %		37.2	1.2	1.1	22.1		20.4	3.2	24.9	1.2	1.3	2.4		1.2	27.3	1.2
Oxygen Dissolved			0.93	0.13	2.46	0.52	2.29	0.39		0.16	0.17	0.31	0.12	0.16	3.46	0.14
pH pH		8.37	7.55	8.4	8.4	8.03	8.23	8.08	8.29		8.48	7.98	8.4		8.52	8.31
Redox Potential mV		-82.2	20.7	-169	-206			-168	-114	82	-58.3	108				-61.4
Specific Conductivity µS/cm			278	462	633		533	524		165	283	269		275	177	192
Temperature °C		7.79	4.64	8.61	9.64		9.41	7.2	5	4.68	4.68	4.58	4.9	4.7	5.03	5.35
Total Dissolved Solids					409			516				174				200
Physical Tests																
Acidity to pH 8.3 (as CaCO3)	1	<1	<1	<1	1.9	1.3	2.5	14	<1	2.5	<1	<1	<1	<1	<1	1.2
Alkalinity (Total as CaCO3)	1 - 2	112	99.3	97.1	107	143	147	133	94.7	107	107	129	103	102	90.4	93.3
Bicarbonate Alkalinity	1 - 2	107	99.3	97.1	107	143		133	90.1	107	107	129	103	102		93.3
Carbonate Alkalinity	1 - 2	4.6	<2	<1	<2	<2		<2	4.5	<1	<1	<2	<1	<1		<2
Color TCU	5	<5	<5	<5	<5	<5		<5	<5	<5	<5	<5	<5	<5		<5
Conductivity µS/cm	2	427	437	451	594	972	910	764	247	264	265	267	286	291	291	295
Hardness as CaCO3 (Dissolved)	0.5 - 1.1	97	102	110	132	192	173	141	79.5	84.4	99.7	131	97.4	88.2	91.5	90.8
Hydroxide Alkalinity	1 - 2	<1	<2	<1	<2	<2		<2	<1	<1	<1	<2	<1	<1		<2
pH pH	0.01 - 0.1	8.3	8.25	8.32	8.23	8.27	8.2	7.46	8.38	7.87	8.31	8.27	8.33		8.34	8.23
Total Dissolved Solids	10	277	268	289	363	606	615	502	200	165	183	153	206	178	177	182
Total Suspended Solids	3 - 9	452	3.2	8.4	6.7	49.3	8.9	18.1	2890	53.7	13.9	6.2	68.7	4.7	<3	34.7
Turbidity NTU	0.1	430	3.32	14.9	4.2	29.8		7.85	>4000	97	102	6	93.3	11.7		4.58
Dissolved Anions																
Bromide (Dissolved)	0.05 - 1.13	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chloride (Dissolved)	0.5 - 5	9.87	11.1	12.4	17.8	29.3	35.3	2.62	1.64	2.18	2.72	<0.5	3.28	4.13	5.18	5.21
Fluoride (Dissolved)	0.02 - 0.2	0.566	0.368	0.476	0.66	1.21	1.72	0.13	0.162	0.108	0.113	0.061	0.131	0.15	0.167	0.165
Sulphate (Dissolved)	0.5 - 5	94.1	102	110	155	245	289	22.2	37.1	35.5	35.4	13.5	38.5	44.1	53.4	53.5
Nutrients																
Ammonia (Total)	0.005	0.0159	0.0093		0.0245	0.0125	<0.02	0.0087	0.0217	0.0178		0.0163	0.0231	0.0206	<0.02	0.0212
Nitrate (as N)	0.005 - 0.05	0.0063	<0.005	<0.005	<0.005	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite (as N)	0.001 - 0.01	0.0018	<0.001	<0.001	<0.001	<0.01	0.011	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	0.05 - 0.25	0.23	<0.05	<0.05	0.08	0.2		0.125	<0.3	<0.05	<0.05	<0.05	0.08	<0.0025		0.064
Nitrogen Kjeldahl (Total)	0.05 - 0.25	0.223	<0.05	0.084	0.153	0.171		0.123	<0.25	<0.05	<0.05	0.057	<0.05	<0.05		0.064
Orthophosphate (Dissolved)	0.001				<0.001	<0.001		<0.001				0.0114	0.0107	0.0116		0.013
Phosphate (Dissolved)	0.002				<0.002			0.0023				0.0118				0.0125
Phosphate (Total)	0.002 - 0.2	0.355	0.0072	0.017	0.0071			0.0000235	2.64	0.081	0.114	0.0202				0.0000478
Phosphorus (Nutrient) Dissolved	0.002 - 0.3	<0.3	<0.3			<0.3			<0.3	<0.3			<0.3	0.0116		
Phosphorus (Nutrient) Total	0.002 - 0.3	2.27				0.0501			0.4				0.098	0.0238		
Dissolved Metals																
Aluminum (Dissolved)	0.001 - 0.01	0.083	0.0038	<0.005	<0.005	<0.01	0.0074	0.0037	0.206	0.0031	<0.005	<0.005	<0.005	<0.003	0.0034	0.0046
Antimony (Dissolved)	0.0001 - 0.001	<0.001	<0.0001	<0.0005	<0.0005	<0.001	<0.0001	<0.0001	0.00123	<0.0001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Arsenic (Dissolved)	0.0001 - 0.001	0.0022	0.00193	0.00212	0.0015	<0.001	0.00117	0.00104	0.00334	0.00225	0.00236	0.00191	0.00217	0.00204	0.00236	0.00229
Barium (Dissolved)	0.00005 - 0.02	0.0413	0.0238	0.027	0.026	<0.02	0.0205	0.0183	0.0456	0.0353	0.041	0.042	0.036	0.0354	0.0357	0.0337
Beryllium (Dissolved)	0.0005 - 0.005	<0.005	<0.0005	<0.001	<0.001	<0.002	<0.0005	<0.0001	<0.001	<0.0005	<0.001	<0.001	<0.001	<0.0001	<0.0005	<0.0001
Bismuth (Dissolved)	0.0005 - 0.2	<0.005	<0.0005			<0.2	<0.0005	<0.0005	<0.001	<0.0005			<0.2	<0.0005	<0.0005	<0.0005
Boron (Dissolved)	0.01 - 0.1	0.11	0.132	0.15	0.17	0.32	0.263	0.241	0.063	0.082	<0.1	<0.1	<0.1	0.066	0.099	0.099
Cadmium (Dissolved)	0.00001 - 0.00025	<0.00017	<0.00004	<0.000017	0.000021	<0.000034	<0.00005	<0.00001	<0.000034	0.000019	<0.000017	<0.000017	<0.000017	<0.00001	<0.00005	<0.00001
Calcium (Dissolved)	0.02 - 0.2	20.1	21	23.7	26.5	38.3	34.8	27.9	20.5	19.5	23.6	35	22.8	20.1	20.6	20.5
Chromium (Dissolved)	0.0005 - 0.005	<0.005	<0.0005	<0.002	0.0017	<0.002	0.00131	0.00093	0.0015	<0.0005	<0.001	<0.001	<0.001	<0.0001	<0.0005	0.00038
Cobalt (Dissolved)	0.0001 - 0.001	<0.001	<0.0001	<0.0003	<0.0003	<0.0006	0.00013	0.00012	0.00039	<0.0001	<0.0003	<0.0003	<0.0003	<0.0001	<0.0001	<0.0001
Copper (Dissolved)	0.0001 - 0.002	0.0024	0.0001	<0.001	<0.001	<0.002	<0.0005	<0.0002	0.00257	<0.0001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0002
Iron (Dissolved)	0.03	0.083	<0.03	<0.03	<0.03	0.039	0.045	0.036	0.351	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.036
Lead (Dissolved)	0.00005 - 0.001	<0.0005	<0.00005	<0.0005	<0.0005	<0.001	<0.00005	0.000093	<0.0001	<0.00005	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00005
Lithium (Dissolved)	0.005 - 0.05	<0.05	0.0108	0.0115	0.0198	0.065	0.0564	0.0423	<0.01	<0.005	<0.005	<0.005	<0.005	<0.0005	<0.005	0.00051
Magnesium (Dissolved)	0.005 - 0.1	11.4	12	12.4	15.9	23.3	21	17.3	6.87	8.69	9.94	10.5	9.83	9.2	9.7	9.65
Manganese (Dissolved)	0.00005 - 0.0006	0.0182	0.0196	0.0177	0.0196	0.0167	0.0166	0.0213	0.0241	0.0201	0.0203	0.0375	0.0226	0.0213	0.0187	0.0178
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00005	<0.00001
Molybdenum (Dissolved)	0.00005 - 0.002	0.0562	0.0103	0.0102	0.0113	0.0293	0.0254	0.0199	0.0376	0.00596	0.0048	0.0022	0.0048	0.00503	0.00653	0.00636
Nickel (Dissolved)	0.0005 - 0.005	0.005	<0.0005	<0.001	0.0027	0.0074	0.00225	0.00211	0.0067	<0.0005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
Potassium (Dissolved)	0.05 - 2	5.72	5.84	6.8	6	3	3.5	3.59	4.73	5.97	7.8	3.9	6.6	6.21	7.7	6.87
Selenium (Dissolved)	0.0001 - 0.002	<0.001	0.00037	<0.001	<0.001	<0.002	<0.001	<0.0001	0.00425	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.0001
Silicon (Dissolved)	0.05	4.47	4.51			4.8	4.82	4.87	5.41	5.08			5.29	4.7	4.78	5.01
Silver (Dissolved)	0.00001 - 0.0001	<0.0001	<0.00001	<0.00002	<0.00002	<0.00004	<0.00001	<0.00001	0.000048	<0.00001	<0.00002	<0.00002	<0.00002	<0.00001	<0.00001	<0.00001
Sodium (Dissolved)	2	39.8	48.1	51.4	77.4	166	154	107	17.4	17.9	20	8.1	18.2	19.2	24.8	22.9
Strontium (Dissolved)	0.0001 - 0.005	0.5	0.661			1.99	1.78	1.39	0.211	0.322			0.355	0.345	0.373	0.363
Thallium (Dissolved)	0.0001 - 0.001	<0.001	<0.0001	<0.0002	<0.0002	<0.0004	<0.0001	<0.00001	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.00001	<0.0001	<0.00001
Tin (Dissolved)	0.0001 - 0.001	<0.001	<0.0001	<0.0005	<0.0005	<0.001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005	<0.0001	<0.0001	<0.0001
Titanium (Dissolved)	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	0.00001 - 0.0004	0.00311	0.00224	0.0028	0.00332	0.0118	0.00999	0.00713	0.000347	0.000379	0.00045	<0.0002	0.00039	0.000498	0.000551	0.000572
Vanadium (Dissolved)	0.001 - 0.01	<0.01	<0.001	<0.001	<0.001	<0.002	<0.001	<0.001	0.0227	0.0025	0.0016	0.0028	<0.001	<0.001	<0.001	<0.001
Zinc (Dissolved)	0.001 - 0.01	<0.01	0.0027	<0.005	0.0058	0.0268	<0.003	<0.001	0.0025	<0.001	<0.005	<0.005	<0.005	<0.003	<0.003	0.0027
Total Metals																
Aluminum (Total)	0.002 - 0.01	84.9							14.5							
Antimony (Total)	0.0002 - 0.001	<0.001							0.00104							
Arsenic (Total)	0.0002 - 0.001	0.0198							0.00552							
Barium (Total)	0.0001 - 0.0005	0.321							0.137							
Beryllium (Total)	0.001 - 0.005	<0.005							<0.001							
Bismuth (Total)	0.001 - 0.005	<0.005							<0.001							
Boron (Total)	0.02 - 0.1	0.12							0.124							
Cadmium (Total)	0.000034 - 0.00017	0.00058							0.000291							
Calcium (Total)	0.04 - 0.2	104							32.7							
Chromium (Total)	0.001 - 0.005	0.512							0.129							
Cobalt (Total)	0.0002 - 0.001	0.117							0.0166							
Copper (Total)	0.0002 - 0.001	0.444							0.0682							
Iron (Total)	0.03	112							21.1							
Lead (Total)	0.0001 - 0.0005	0.0142							0.00439							
Lithium (Total)	0.01 - 0.05	<0.05							0.021							
Magnesium (Total)	0.01 - 0.05	184							35.4							
Manganese (Total)	0.0001 - 0.0005	2.59							0.415							
Mercury (Total)	0.00001	0.000025							0.00003							
Molybdenum (Total)	0.0001 - 0.0005	0.0371							0.113							
Nickel (Total)	0.001 - 0.005	1.24							0.182							
Potassium (Total)	0.1 - 0.5	11.8							5.81							
Selenium (Total)	0.0002 - 0.001	0.0041							0.00067							
Silicon (Total)	0.05	101							36.4							
Silver (Total)	0.00002 - 0.0001	0.00684							0.00758							
Sodium (Total)	2	23.3							49.4							
Strontium (Total)	0.0002 - 0.001	0.471							0.602							
Thallium (Total)	0.0002 - 0.001	<0.001							<0.0002							
Tin (Total)	0.0002 - 0.001	<0.001							0.00226							
Titanium (Total)	0.01	5.23							0.683							
Uranium (Total)	0.00002 - 0.0001	0.00161							0.00434							
Vanadium (Total)	0.002 - 0.01	0.332							0.0514							
Zinc (Total)	0.002 - 0.01	0.254							0.0843							
Organics																
Carbon Organic (Total)	0.5	4.34	<0.5	0.69	1.77	1.56	3.24	1.14	1.39	<0.5	0.62	1.02	<0.5	0.52	<0.5	<0.5

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. REFER TO TABLE B1.1 FOR DETAILED FOOTNOTES ON CELL SHADING.
3. * = SAMPLE COLLECTED PRIOR TO WELL REDEVELOPMENT

Knight Piésold
CONSULTING

APPENDIX B2

QUALITY ASSURANCE/QUALITY CONTROL

(Pages B2-1 to B2-24)

APPENDIX B2 - QUALITY ASSURANCE / QUALITY CONTROL

B2.1 INTRODUCTION

The objective of the QA/QC program is to verify that the data are obtained in a scientifically defensible, repeatable and well documented manner. The QA/QC program uses standard methods and protocols for the collection of groundwater quality samples. The following methods and protocols were carried out as per the QA/QC program:

- Regular calibration and maintenance of all field equipment.
- Collection and preparation of field blanks, travel blanks, and duplicate samples for approximately 10% of overall samples.
- Employment of a fully accredited analytical laboratory for the analysis of all the groundwater quality samples.
- Determination of analytical precision and accuracy through the interpretation of the analysis reports for blank samples and blind duplicates.

B2.2 FIELD AND TRAVEL BLANKS

Field blank samples are laboratory certified deionized water samples collected using the same sampling procedures and equipment as the water quality samples. They are used to identify sample contamination from the sampling equipment and/or procedures. Travel blanks are provided by the laboratory to determine if the samples were contaminated during shipment.

The field and travel blanks used during the 2008 groundwater sampling program were in exceedance of the method of detection limit (MDL) for bicarbonate alkalinity (as $CaCO_3$) and total alkalinity (as $CaCO_3$) with values of 1.2 mg/L and 1.6 mg/L respectively. Alkalinity results for the samples collected had a minimum detectable value of 73 mg/L for both bicarbonate alkalinity (as $CaCO_3$) and total alkalinity (as $CaCO_3$). The exceedances were determined to have no effect on the sample set.

No parameters in the field or travel blanks collected during 2009 groundwater sampling were in exceedance of the MDLs.

Field and travel blanks exceeded the MDL for acidity for data collected since the start of this project (2005 - 2012). Acidity was in exceedance because of the low pH of the deionized water. The exceedance for acidity has no effect on the sample set.

A summary of the laboratory results from the field and travel blanks is provided in Table B2.1.

B2.3 BLIND DUPLICATES

A blind duplicate is a replicate sample collected in the field at a known location and submitted to the laboratory for analysis under an alias. The blind duplicate is used to verify the laboratory is providing reproducible results. Relative percent difference (RPD) calculations are applied to the laboratory results to determine the precision of the test results. Results are considered adequate if the RPD between the sample and the duplicate is less than 25% for concentrations that are 5 times greater than the MDL.

The 2008 sample from RES08-06A exceeded the RPD criteria above for the following parameters:

1. Dissolved Barium – RPD of 32%, and
2. Dissolved Molybdenum – RPD of 46%.

These parameters were excluded from the 2008 data set.

The blind duplicate analyses completed for the 2009, 2010, 2011, and 2012 samples had adequate RPD values.

A summary of the blind duplicate analyses are presented in Tables B2.2 through B2.10.

B2.4 ION BALANCE

An ion charge balance is used to detect errors associated with analyses of the major ionic species in water samples. The major cations in water are typically calcium, magnesium, potassium, and sodium, and the major anions are typically bicarbonate, sulphate, and chloride. A charge balance error greater than 10% could indicate an analytical error or an unaccounted major ionic species.

Data collected in 2008 and 2009 had ion balance errors exceeding 10% for samples RES08-01A, RES08-01B, RES08-02B, and RES08-04A. This is likely caused by elevated pH values from improper well installations. Water samples are no longer collected from these wells. Samples collected in 2010 and 2011 had acceptable ion balances.

Seven of the fifteen samples collected during the June 2012 groundwater sampling trip exhibited ion balance errors equal to or exceeding 10%: HG10-01 (10%), HG10-02A (10%), HG10-02B (11%), HG10-04 (12%), HG10-05B (12%), RES08-03A (11%), and RES08-03B (12%). Elevated ion balance error could be due to a laboratory analysis error, magnified in calculations. However, the ion balance for each of these locations was positive, indicating that more cations than anions have been accounted for. All of the samples collected at these locations also displayed high or very high quantities of a particular cation (calcium, and sodium in some cases) with some very low anion concentrations (nitrate, and in some cases chloride) below the MDL. The combination of these factors could explain why a positive ion balance greater than or equal to 10% was recorded in these locations. Samples from all other groundwater locations from this sampling event exhibited ion balances between +3% and +9%.

An additional three samples collected in 2012 exhibited ion balance errors exceeding 10%: RES08-04B (12% on March 14, 2012 and 18% on September 21, 2012), and RES08-06A (45% on September 23, 2012). Errors associated with samples collected at RES08-04B are likely caused by elevated pH values. The RES08-06A sample from September 23, 2012 has a low concentration of sulphate which causes the high error in the ion balance. This sample was omitted from the piper plots for RES08-06A.

A summary of the ion balances is provided in Table B2.11.

B2.5 SUMMARY

The quality assurance/quality control identified two parameters measured in the 2008 sample set that were considered to be potentially erroneous. These parameters are dissolved barium and molybdenum. In the duplicate sample for RES08-06A, the relative percent difference for dissolved barium and

molybdenum is greater than 25% and consequently has not been considered in the baseline analysis. In a few cases, calculated ion balances exceed the 10% charge balance error. Data controls implemented in 2010 using the Knight Piésold web-based data management system FULCRUM to calculate ion balances immediately upon receipt of the sample set has aided with identifying data quality issues in a timely period. There were no balance errors for the 2010 and 2011 data. Some ion balances from 2012 samples exceed 10% error. These errors are attributed to high pH or variability of high and low concentrations of anions and cations.

SCHAFT CREEK MINE PROJECT
TABLE B2.1-BLANK SAMPLES

Sample ID	EQUIPMENT BLANK	FD-08	FIELD BLANK	FIELD BLANK	TRAVEL BLANK	FIELD BLANK	EQUIPMENT BLANK	EQUIP BLANK	TRAVEL BLANK
Date Sampled	3-Aug-08	8-Sep-08	2-Oct-09	23-Apr-10	29-Jun-10	30-Jun-10	30-Jun-10	22-Sep-10	22-Sep-10
In Situ Parameters									
pH (In Situ) pH		7.2							
Specific Conductivity (In Situ) µS/cm		2060							
Temperature (In Situ) °C		8.4							
Physical Tests									
Acidity to pH 8.3 (as CaCO3)	<1	**1.5**	<1	<1	**2.4**	**2.2**	**2.5**	**3.5**	**3.2**
Alkalinity (Total as CaCO3)	<2	113	<2	<2	<2	<2	<2	<2	<2
Bicarbonate Alkalinity	<2	<2	<2	<2	<2	<2	<2	<2	<2
Carbonate Alkalinity	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chemical Oxygen Demand	<20	<20							
Color TCU	<5	<5	<5	<5	<5	<5	<5	<5	<5
Conductivity µS/cm	<2	<2	<2	<2	<2	<2	<2	<2	<2
Hardness (Dissolved)			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hardness (Total)	<0.5	967							
Hydroxide Alkalinity	<2	<2	<2	<2	<2	<2	<2	<2	<2
pH pH	5.57	5.63	5.56	5.95	5.59	5.6	5.9	5.79	5.79
Specific Conductivity µS/cm									
Total Dissolved Solids	<10	1710	<10	<10	<10	<10	<10	<10	<10
Total Suspended Solids	<3	<3	<3	<3	<3	<3	<3	<3	<3
Turbidity NTU	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Anions									
Bromide (Dissolved)			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromide (Total)	<0.05	<0.05							
Chloride (Dissolved)		8.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloride (Total)	<0.5	<0.5							
Fluoride (Dissolved)			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluoride (Total)	<0.02	<0.02							
Sulphate (Dissolved)		1130	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate (Total)	<0.5	<0.5							
Nutrients									
Ammonia (Total)	**0.0121**	<0.005	<0.005	<0.02	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate (as N)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite (as N)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	<0.05	**0.1**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nitrogen Kjeldahl (Total)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Orthophosphate (Dissolved)								<0.001	<0.001
Phosphate (Dissolved)								<0.002	<0.002
Phosphate (Total)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Phosphorus (Dissolved)	<0.3		<0.3						
Phosphorus (Total)	<0.3	<0.3							
Cyanide									
Cyanide (Total)	<0.001	<0.001							
Dissolved Metals									
Aluminum (Dissolved)	<0.001	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Antimony (Dissolved)	<0.0001	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (Dissolved)	<0.0001	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Barium (Dissolved)	**0.000606**	0.0134	<0.00005	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Beryllium (Dissolved)	<0.0005		<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bismuth (Dissolved)	<0.0005		<0.0005						
Boron (Dissolved)	<0.01	<0.05	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium (Dissolved)	<0.000017	<0.00025	<0.00001	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017
Calcium (Dissolved)	<0.02	361	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (Dissolved)	<0.0005	<0.0025	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Dissolved)	<0.0001	0.00328	<0.0001	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Copper (Dissolved)	**0.00021**	0.0848	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron (Dissolved)	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Lead (Dissolved)	<0.00005		<0.00005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Lithium (Dissolved)	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium (Dissolved)	<0.005	15.8	<0.005	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Manganese (Dissolved)	<0.00005	1.79	<0.00005	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Mercury (Dissolved)	<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum (Dissolved)	<0.00005	0.378	<0.00005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel (Dissolved)	<0.0005	0.0036	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Potassium (Dissolved)	<0.05	16.6	<0.05	<2	<2	<2	<2	<2	<2
Selenium (Dissolved)	<0.0001	<0.0005	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon (Dissolved)	<0.05		<0.05						
Silver (Dissolved)	<0.00001		<0.00001	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Sodium (Dissolved)	<2	88.6	<2	<2	<2	<2	<2	<2	<2
Strontium (Dissolved)	<0.0001	0.699	<0.0001						
Thallium (Dissolved)	<0.0001		<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Tin (Dissolved)	<0.0001		<0.0001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Titanium (Dissolved)	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Uranium (Dissolved)	<0.00001		<0.00001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vanadium (Dissolved)	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc (Dissolved)	<0.001	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Metals									
Aluminum (Total)	<0.001	<0.005							
Antimony (Total)	<0.0001	<0.0005							
Arsenic (Total)	<0.0001	<0.0005							
Barium (Total)	**0.00303**	0.0133							
Beryllium (Total)	<0.0005	<0.0005							
Bismuth (Total)	<0.0005	<0.0005							
Boron (Total)	<0.01	<0.05							
Cadmium (Total)	<0.000017	0.00027							
Calcium (Total)	<0.02	365							
Chromium (Total)	<0.0005	<0.0025							
Cobalt (Total)	<0.0001	0.00325							
Copper (Total)	**0.00016**	0.117							
Iron (Total)	<0.03	0.218							
Lead (Total)	<0.00005	<0.00005							
Lithium (Total)	<0.005	<0.005							
Magnesium (Total)	<0.005	15.6							
Manganese (Total)	<0.00005	1.79							
Mercury (Total)	<0.00001	<0.00001							
Molybdenum (Total)	<0.00005	0.377							
Nickel (Total)	<0.0005	0.0036							
Phosphorus (Total) mg/dm2.day									
Potassium (Total)	<0.05	16.4							
Selenium (Total)	<0.0001	<0.0005							
Silicon (Total)	<0.05	<0.05							
Silver (Total)	<0.00001	<0.00001							
Sodium (Total)	<2	90.7							
Strontium (Total)	<0.0001	0.705							
Thallium (Total)	<0.0001	<0.0001							
Tin (Total)	<0.0001	<0.0001							
Titanium (Total)	<0.01	<0.01							
Uranium (Total)	<0.00001	<0.00001							
Vanadium (Total)	<0.001	<0.001							
Zinc (Total)	<0.001	<0.005							
Organics									
Carbon Organic (Total)	<0.5	**2.71**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Percent of samples > MDL	**5.56%**	**6.00%**	**0.00%**	**0.00%**	**1.96%**	**1.96%**	**1.96%**	**1.89%**	**1.89%**

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum to 2011 Hydrogeo Study\Attachments\Appendix B\[Appendix B2 Tables.xls]B2.1-BLANK SAMPLES

NOTES:

1. UNIT ARE mg/L UNLESS OTHERWISE STATED
2. BOLD INDICATES THE RESULT EXCEEDS THE MDL FOR THAT ANALYTE
3. MDL EXCEEDANCE CALCULATION DOES NOT INCLUDE pH; WILL ALWAYS BE ABOVE THE MDL

SCHAFT CREEK MINE PROJECT
TABLE B2.1-BLANK SAMPLES

Sample ID	FIELD BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	TRAVEL BLANK	FIELD BLANK	TRAVEL BLANK	FIELD BLANK	TRAVEL BLANK	FIELD BLANK
Date Sampled	23-Mar-11	26-Mar-11	15-Sep-11	17-Sep-11	14-Mar-12	18-Mar-12	25-Jun-12	25-Jun-12	21-Sep-12	23-Sep-12
In Situ Parameters										
pH (In Situ) pH										
Specific Conductivity (In Situ) µS/cm										
Temperature (In Situ) °C										
Physical Tests										
Acidity to pH 8.3 (as CaCO3)	**2.9**	**2**	**3**		**2**	**2**	**1.8**	**1.8**	**3**	**3.8**
Alkalinity (Total as CaCO3)	<2	<2	<2		<2	<2	<2	<2	<2	<2
Bicarbonate Alkalinity	<2	<2	<2		<2	<2			<2	<2
Carbonate Alkalinity	<2	<2	<2		<2	<2			<2	<2
Chemical Oxygen Demand										
Color TCU	<5	<5	<5		<5	<5			<5	<5
Conductivity µS/cm	<2	<2	<2		<2	<2	<2	<2	<2	<2
Hardness (Dissolved)	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5		<0.5
Hardness (Total)										
Hydroxide Alkalinity	<2	<2	<2		<2	<2			<2	<2
pH pH	5.45	5.72	5.57		5.64	5.98	6.03	5.97	6.29	5.81
Specific Conductivity µS/cm										
Total Dissolved Solids	<10	<10	<10		<10	<10	<10	<10	<10	<10
Total Suspended Solids	<3	<3	<3		<3	<3	<3	<3	<3	<3
Turbidity NTU	<0.1	<0.1	<0.1		<0.1	<0.1			<0.1	<0.1
Dissolved Anions										
Bromide (Dissolved)	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromide (Total)										
Chloride (Dissolved)	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloride (Total)										
Fluoride (Dissolved)	<0.02	<0.02	<0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluoride (Total)										
Sulphate (Dissolved)	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate (Total)										
Nutrients										
Ammonia (Total)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.02	<0.02	**0.0055**	<0.005
Nitrate (as N)	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite (as N)	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrogen (Total)	<0.05	<0.05	<0.05		<0.0025	<0.0025			<0.05	<0.05
Nitrogen Kjeldahl (Total)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			<0.05	<0.05
Orthophosphate (Dissolved)	<0.001	<0.001	<0.001		<0.001	<0.001			<0.001	<0.001
Phosphate (Dissolved)			<0.002						<0.002	<0.002
Phosphate (Total)			<0.002						<0.000002	<0.000002
Phosphorus (Dissolved)	<0.002	<0.3			<0.002	<0.002				
Phosphorus (Total)	<0.002	<0.002			<0.002	<0.002				
Cyanide										
Cyanide (Total)										
Dissolved Metals										
Aluminum (Dissolved)	<0.005	<0.005			<0.003	<0.003	<0.003	<0.003		<0.001
Antimony (Dissolved)	<0.0005	<0.0005			<0.0001	<0.0001	<0.0001	<0.0001		<0.0001
Arsenic (Dissolved)	<0.0005	<0.0005			<0.0001	<0.0001	<0.0001	<0.0001		<0.0001
Barium (Dissolved)	<0.02	<0.02			<0.00005	<0.00005	<0.00005	<0.00005		<0.00005
Beryllium (Dissolved)	<0.001	<0.001			<0.0001	<0.0001	<0.0005	<0.0005		<0.0001
Bismuth (Dissolved)	<0.2	<0.2			<0.0005	<0.0005	<0.0005	<0.0005		<0.0005
Boron (Dissolved)	<0.1	<0.1			<0.01	<0.01	<0.01	<0.01		<0.01
Cadmium (Dissolved)	<0.000017	<0.000017			<0.00001	<0.00001	<0.00005	<0.00005		<0.00001
Calcium (Dissolved)	<0.1	<0.1			<0.05	<0.05	<0.05	<0.05		<0.05
Chromium (Dissolved)	<0.001	<0.001			<0.0001	<0.0001	<0.0005	<0.0005		<0.0001
Cobalt (Dissolved)	<0.0003	<0.0003			<0.0001	<0.0001	<0.0001	<0.0001		<0.0001
Copper (Dissolved)	<0.001	<0.001			<0.0005	<0.0005	<0.0005	<0.0005		<0.0002
Iron (Dissolved)	<0.03	<0.03			<0.03	<0.03	<0.03	<0.03		<0.01
Lead (Dissolved)	<0.0005	<0.0005			<0.00005	<0.00005	<0.00005	<0.00005		<0.00005
Lithium (Dissolved)	<0.005	<0.005			<0.0005	<0.0005	<0.005	<0.005		<0.0005
Magnesium (Dissolved)	<0.1	<0.1			<0.1	<0.1	<0.1	<0.1		<0.1
Manganese (Dissolved)	<0.0003	<0.0003			<0.00005	<0.00005	<0.00005	<0.00005		<0.00005
Mercury (Dissolved)	<0.00001	<0.00001			<0.00001	<0.00001	<0.00005	<0.00005		<0.00001
Molybdenum (Dissolved)	<0.001	<0.001			<0.00005	<0.00005	<0.00005	<0.00005		<0.00005
Nickel (Dissolved)	<0.001	<0.001			<0.0005	<0.0005	<0.0005	<0.0005		<0.0005
Potassium (Dissolved)	<2	<2			<0.05	<0.05	<2	<2		<0.05
Selenium (Dissolved)	<0.001	<0.001			<0.0001	<0.0001	<0.001	<0.001		<0.0001
Silicon (Dissolved)	<0.05	<0.05			<0.05	<0.05	<0.05	<0.05		<0.05
Silver (Dissolved)	<0.00002	<0.00002			<0.00001	<0.00001	<0.00001	<0.00001		<0.00001
Sodium (Dissolved)	<2	<2			<0.05	<0.05	<2	<2		<0.05
Strontium (Dissolved)	<0.005	<0.005			<0.0001	<0.0001	<0.0002	<0.0002		<0.0002
Thallium (Dissolved)	<0.0002	<0.0002			<0.00001	<0.00001	<0.0001	<0.0001		<0.00001
Tin (Dissolved)	<0.0005	<0.0005			<0.0001	<0.0001	<0.0001	<0.0001		<0.0001
Titanium (Dissolved)	<0.01	<0.01			<0.01	<0.01	<0.01	<0.01		<0.01
Uranium (Dissolved)	<0.0002	<0.0002			<0.00001	<0.00001	<0.00001	<0.00001		<0.00001
Vanadium (Dissolved)	<0.001	<0.001			<0.001	<0.001	<0.001	<0.001		<0.001
Zinc (Dissolved)	<0.005	<0.005			<0.003	<0.003	<0.003	<0.003		<0.001
Total Metals										
Aluminum (Total)			<0.005							
Antimony (Total)			<0.0005							
Arsenic (Total)			<0.0005							
Barium (Total)			<0.02							
Beryllium (Total)			<0.001							
Bismuth (Total)			<0.2							
Boron (Total)			<0.1							
Cadmium (Total)			<0.000017							
Calcium (Total)			<0.1							
Chromium (Total)			<0.001							
Cobalt (Total)			<0.0003							
Copper (Total)			<0.001							
Iron (Total)			<0.03							
Lead (Total)			<0.0005							
Lithium (Total)			<0.005							
Magnesium (Total)			<0.1							
Manganese (Total)			<0.0003							
Mercury (Total)			<0.00001							
Molybdenum (Total)			<0.001							
Nickel (Total)			<0.001							
Phosphorus (Total) mg/dm2.day										
Potassium (Total)			<2							
Selenium (Total)			<0.001							
Silicon (Total)			<0.05							
Silver (Total)			<0.00002							
Sodium (Total)			<2							
Strontium (Total)			<0.005							
Thallium (Total)			<0.0002							
Tin (Total)			<0.0005							
Titanium (Total)			<0.01							
Uranium (Total)			<0.0002							
Vanadium (Total)			<0.001							
Zinc (Total)			<0.005							
Organics										
Carbon Organic (Total)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Percent of samples > MDL	**1.79%**	**1.79%**	**1.82%**	**0.00%**	**1.79%**	**1.79%**	**2.13%**	**2.13%**	**8.70%**	**1.75%**

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NOTES:

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3. MDL EXCEEDANCE CALCULATION DOES N

SCHAFT CREEK MINE PROJECT
TABLE B2.2-DUPLICATE SAMPLE HG10-02B

Site Date Sampled	MDL 15/Sep/2011	HG10-02B 15/Sep/2011	Duplicate 15/Sep/2011	RPD (%)
Physical Tests				
Acidity to pH 8.3 (as CaCO3)	1	1.6	1.6	
Alkalinity (Total as CaCO3)	2	89.6	88.7	1.01%
Bicarbonate Alkalinity	2	89.6	88.7	1.01%
Carbonate Alkalinity	2	<2	<2	
Color TCU	5	<5	<5	
Conductivity µS/cm	2	201	200	0.50%
Hardness as CaCO3 (Dissolved)	0.5	107	106	0.94%
Hydroxide Alkalinity	2	<2	<2	
pH pH	0.1	8.24	8.23	0.12%
Total Dissolved Solids	10	110	105	4.65%
Total Suspended Solids	3	<3	<3	
Turbidity NTU	0.1	0.52	0.57	9.17%
Dissolved Anions				
Bromide (Dissolved)	0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	<0.5	<0.5	
Fluoride (Dissolved)	0.02	0.022	0.022	
Sulphate (Dissolved)	0.5	14.4	14.4	0.00%
Nutrients				
Ammonia (Total)	0.005	<0.005	<0.005	
Nitrate (as N)	0.005	0.0561	0.0533	5.12%
Nitrite (as N)	0.001	<0.001	<0.001	
Nitrogen (Total)	0.05	0.07	0.13	
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.05	
Orthophosphate (Dissolved)	0.001	0.0034	0.0033	
Phosphate (Dissolved)	0.002	0.0035	0.0037	
Phosphate (Total)	0.002	0.0044	0.0042	
Dissolved Metals				
Aluminum (Dissolved)	0.005	<0.005	<0.005	
Antimony (Dissolved)	0.0005	<0.0005	<0.0005	
Arsenic (Dissolved)	0.0005	<0.0005	<0.0005	
Barium (Dissolved)	0.02	0.058	0.057	
Beryllium (Dissolved)	0.001	<0.001	<0.001	
Bismuth (Dissolved)	0.2	<0.2	<0.2	
Boron (Dissolved)	0.1	<0.1	<0.1	
Cadmium (Dissolved)	0.000017	<0.000017	<0.000017	
Calcium (Dissolved)	0.1	32.2	31.7	1.56%
Chromium (Dissolved)	0.001	<0.001	<0.001	
Cobalt (Dissolved)	0.0003	<0.0003	<0.0003	
Copper (Dissolved)	0.001	<0.001	<0.001	
Iron (Dissolved)	0.03	<0.03	<0.03	
Lead (Dissolved)	0.0005	<0.0005	<0.0005	
Lithium (Dissolved)	0.005	<0.005	<0.005	
Magnesium (Dissolved)	0.1	6.58	6.43	2.31%
Manganese (Dissolved)	0.0003	<0.0003	<0.0003	
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	
Molybdenum (Dissolved)	0.001	0.004	0.0039	
Nickel (Dissolved)	0.001	<0.001	<0.001	
Phosphorus (Metal) Dissolved	0.3	<0.3	<0.3	
Potassium (Dissolved)	2	<2	<2	
Selenium (Dissolved)	0.001	<0.001	<0.001	
Silicon (Dissolved)	0.05	3.17	3.14	0.95%
Silver (Dissolved)	0.00002	<0.00002	<0.00002	
Sodium (Dissolved)	2	<2	<2	
Strontium (Dissolved)	0.005	0.152	0.15	1.32%
Thallium (Dissolved)	0.0002	<0.0002	<0.0002	
Tin (Dissolved)	0.0005	<0.0005	<0.0005	
Titanium (Dissolved)	0.01	<0.01	<0.01	
Uranium (Dissolved)	0.0002	0.00042	0.00042	
Vanadium (Dissolved)	0.001	<0.001	<0.001	
Zinc (Dissolved)	0.005	<0.005	<0.005	
Total Metals				
Aluminum (Total)	0.005	0.011	0.0106	
Antimony (Total)	0.0005	<0.0005	<0.0005	
Arsenic (Total)	0.0005	<0.0005	<0.0005	
Barium (Total)	0.02	0.059	0.059	
Beryllium (Total)	0.001	<0.001	<0.001	
Bismuth (Total)	0.2	<0.2	<0.2	
Boron (Total)	0.1	<0.1	<0.1	
Cadmium (Total)	0.000017	<0.000017	<0.000017	
Calcium (Total)	0.1	30.9	31.7	2.56%
Chromium (Total)	0.001	<0.001	<0.001	
Cobalt (Total)	0.0003	<0.0003	<0.0003	
Copper (Total)	0.001	<0.001	<0.001	
Iron (Total)	0.03	<0.03	<0.03	
Lead (Total)	0.0005	<0.0005	<0.0005	
Lithium (Total)	0.005	<0.005	<0.005	
Magnesium (Total)	0.1	6.48	6.56	1.23%
Manganese (Total)	0.0003	0.00044	0.00047	
Mercury (Total)	0.00001	<0.00001	<0.00001	
Molybdenum (Total)	0.001	0.0046	0.0046	
Nickel (Total)	0.001	<0.001	<0.001	
Potassium (Total)	2	<2	<2	
Selenium (Total)	0.001	<0.001	<0.001	
Silicon (Total)	0.05	3.1	3.13	0.96%
Silver (Total)	0.00002	<0.00002	<0.00002	
Sodium (Total)	2	<2	<2	
Strontium (Total)	0.005	0.153	0.156	1.94%
Thallium (Total)	0.0002	<0.0002	<0.0002	
Tin (Total)	0.0005	<0.0005	<0.0005	
Titanium (Total)	0.01	<0.01	<0.01	
Uranium (Total)	0.0002	0.00046	0.00046	
Vanadium (Total)	0.001	<0.001	<0.001	
Zinc (Total)	0.005	<0.005	<0.005	
Organics				
Carbon Organic (Total)	0.5	<0.5	<0.5	

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NOTES:
1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.3-DUPLICATE SAMPLE HG10-04

Site Date Sampled	MDL 22/Sep/2012	HG10-04 22/Sep/2012	Duplicate 22/Sep/2012	RPD (%)
Physical Tests				
Acidity to pH 8.3 (as CaCO3)	1	2.7	3.7	
Alkalinity (Total as CaCO3)	2	82.2	83.1	1.09%
Bicarbonate Alkalinity	2	82.2	83.1	1.09%
Carbonate Alkalinity	2	<2	<2	
Color TCU	5	<5	<5	
Conductivity µS/cm	2	187	185	1.08%
Hardness as CaCO3 (Dissolved)	0.5	94.6	97.6	3.12%
Hydroxide Alkalinity	2	<2	<2	
pH pH	0.1	8.09	7.99	1.24%
Total Dissolved Solids	10	109	107	1.85%
Total Suspended Solids	3	4.1	5.7	
Turbidity NTU	0.1	0.49	0.47	
Dissolved Anions				
Bromide (Dissolved)	0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	<0.5	<0.5	
Fluoride (Dissolved)	0.02	0.027	0.027	
Sulphate (Dissolved)	0.5	16.4	16.3	0.61%
Nutrients				
Ammonia (Total)	0.005	0.0053	0.005	
Nitrate (as N)	0.005	0.101	0.1	1.00%
Nitrite (as N)	0.001	<0.001	<0.001	
Nitrogen (Total)	0.05	0.101	0.1	
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.05	
Orthophosphate (Dissolved)	0.001	0.0013	0.0019	
Phosphate (Dissolved)	0.002	0.0024	0.0026	
Phosphate (Total)	0.000002	0.0000066	0.0000079	
Dissolved Metals				
Aluminum (Dissolved)	0.001	0.0026	0.0024	
Antimony (Dissolved)	0.0001	<0.0001	<0.0001	
Arsenic (Dissolved)	0.0001	0.00036	0.00035	
Barium (Dissolved)	0.00005	0.0268	0.0267	
Beryllium (Dissolved)	0.0001	<0.0001	<0.0001	0.37%
Bismuth (Dissolved)	0.0005	<0.0005	<0.0005	
Boron (Dissolved)	0.01	<0.01	<0.01	
Cadmium (Dissolved)	0.00001	<0.00001	<0.00001	
Calcium (Dissolved)	0.05	31.8	32.7	
Chromium (Dissolved)	0.0001	0.0018	0.00191	2.79%
Cobalt (Dissolved)	0.0001	<0.0001	<0.0001	5.93%
Copper (Dissolved)	0.0002	0.00063	0.00064	
Iron (Dissolved)	0.01	<0.01	<0.01	
Lead (Dissolved)	0.00005	0.000085	0.000078	
Lithium (Dissolved)	0.0005	<0.0005	<0.0005	
Magnesium (Dissolved)	0.1	3.71	3.85	
Manganese (Dissolved)	0.00005	0.000363	0.000296	3.70%
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	20.33%
Molybdenum (Dissolved)	0.00005	0.00216	0.00215	
Nickel (Dissolved)	0.0005	0.00088	0.00089	0.46%
Phosphorus (Metal) Dissolved	0.3	<0.3	<0.3	
Potassium (Dissolved)	0.05	0.364	0.367	
Selenium (Dissolved)	0.0001	0.00047	0.00047	0.82%
Silicon (Dissolved)	0.05	2.77	2.85	
Silver (Dissolved)	0.00001	<0.00001	<0.00001	2.85%
Sodium (Dissolved)	0.05	1.66	1.65	
Strontium (Dissolved)	0.0002	0.121	0.119	0.60%
Thallium (Dissolved)	0.00001	<0.00001	<0.00001	1.67%
Tin (Dissolved)	0.0001	<0.0001	<0.0001	
Titanium (Dissolved)	0.01	<0.01	<0.01	
Uranium (Dissolved)	0.00001	0.000049	0.00005	
Vanadium (Dissolved)	0.001	<0.001	<0.001	
Zinc (Dissolved)	0.001	0.0022	0.0017	
Organics				
Carbon Organic (Total)	0.5	<0.5	<0.5	

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.4-DUPLICATE SAMPLE HG10-05A

Site Date Sampled	MDL 29/Jun/2010	HG10-05A 29/Jun/2010	Duplicate 29/Jun/2010	RPD (%)
Physical Tests				
Acidity to pH 8.3 (as CaCO3)	1	1.2	2.2	
Alkalinity (Total as CaCO3)	2	54.8	56.2	2.52%
Bicarbonate Alkalinity	2	54.8	56.2	2.52%
Carbonate Alkalinity	2	<2	<2	
Color TCU	5	<5	<5	
Conductivity µS/cm	2	119	120	0.84%
Hardness as CaCO3 (Dissolved)	0.5	61.2	62.6	2.26%
Hydroxide Alkalinity	2	<2	<2	
pH pH	0.1	8.27	8.11	1.95%
Total Dissolved Solids	10	72	73	1.38%
Total Suspended Solids	3	<3	<3	
Turbidity NTU	0.1	0.45	0.43	
Dissolved Anions				
Bromide (Dissolved)	0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	<0.5	<0.5	
Fluoride (Dissolved)	0.02	<0.02	<0.022	
Sulphate (Dissolved)	0.5	7.83	8.36	6.55%
Nutrients				
Ammonia (Total)	0.005	<0.005	<0.005	
Nitrate (as N)	0.005	0.0305	0.0386	23.44%
Nitrite (as N)	0.001	<0.001	<0.001	
Nitrogen (Total)	0.05	<0.05	<0.05	
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.05	
Phosphate (Total)	0.002	0.0028	0.0021	
Dissolved Metals				
Aluminum (Dissolved)	0.005	0.0208	0.0215	
Antimony (Dissolved)	0.0005	<0.0005	<0.0005	
Arsenic (Dissolved)	0.0005	<0.0005	<0.0005	
Barium (Dissolved)	0.02	0.084	0.087	
Beryllium (Dissolved)	0.001	<0.001	<0.001	
Boron (Dissolved)	0.1	<0.1	<0.1	
Cadmium (Dissolved)	0.000017	0.000019	0.000017	
Calcium (Dissolved)	0.1	18.8	19.2	2.11%
Chromium (Dissolved)	0.001	<0.001	<0.001	
Cobalt (Dissolved)	0.0003	<0.0003	<0.0003	
Copper (Dissolved)	0.001	<0.001	<0.001	
Iron (Dissolved)	0.03	<0.03	<0.03	
Lead (Dissolved)	0.0005	<0.0005	<0.0005	
Lithium (Dissolved)	0.005	<0.005	<0.005	
Magnesium (Dissolved)	0.1	3.44	3.57	3.71%
Manganese (Dissolved)	0.0003	0.00066	0.00074	
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	
Molybdenum (Dissolved)	0.001	0.0047	0.0047	
Nickel (Dissolved)	0.001	<0.001	<0.001	
Potassium (Dissolved)	2	<2	<2	
Selenium (Dissolved)	0.001	<0.001	<0.001	
Silver (Dissolved)	0.00002	<0.00002	<0.00002	
Sodium (Dissolved)	2	<2	<2	
Thallium (Dissolved)	0.0002	<0.0002	<0.0002	
Tin (Dissolved)	0.0005	<0.0005	<0.0005	
Titanium (Dissolved)	0.01	<0.01	<0.01	
Uranium (Dissolved)	0.0002	0.00055	0.00059	
Vanadium (Dissolved)	0.001	<0.001	<0.001	
Zinc (Dissolved)	0.005	<0.005	<0.005	
Organics				
Carbon Organic (Total)	0.5	<0.5	<0.5	

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.5-DUPLICATE SAMPLE HG10-05B

Site Date Sampled	MDL 21/Sep/2012	HG10-05B 21/Sep/2012	Duplicate 21/Sep/2012	RPD (%)
Physical Tests				
Acidity to pH 8.3 (as CaCO3)	1	<1	<1	
Alkalinity (Total as CaCO3)	2	96.4	93.2	3.38%
Bicarbonate Alkalinity	2	96.4	93.2	3.38%
Carbonate Alkalinity	2	<2	<2	
Color TCU	5	<5	<5	
Conductivity µS/cm	2	193	193	0.00%
Hardness as CaCO3 (Dissolved)	0.5	101	100	1.00%
Hydroxide Alkalinity	2	<2	<2	
pH pH	0.1	8.28	8.27	0.12%
Total Dissolved Solids	10	109	108	0.92%
Total Suspended Solids	3	8.2	6.2	
Turbidity NTU	0.1	2.77	2.38	15.15%
Dissolved Anions				
Bromide (Dissolved)	0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	0.69	0.71	
Fluoride (Dissolved)	0.02	0.045	0.044	
Sulphate (Dissolved)	0.5	8.39	8.38	0.12%
Nutrients				
Ammonia (Total)	0.005	0.057	0.005	
Nitrate (as N)	0.005	0.0295	0.0239	
Nitrite (as N)	0.001	0.0041	0.0021	
Nitrogen (Total)	0.05	0.204	0.154	
Nitrogen Kjeldahl (Total)	0.05	0.17	0.128	
Orthophosphate (Dissolved)	0.001	0.0076	0.0042	
Phosphate (Dissolved)	0.002	0.0075	0.0061	
Phosphate (Total)	0.000002	0.0000216	0.0000147	**38.02%**
Dissolved Metals				
Aluminum (Dissolved)	0.001	0.0059	0.0082	**32.62%**
Antimony (Dissolved)	0.0001	<0.0001	<0.0001	
Arsenic (Dissolved)	0.0001	0.00114	0.00116	1.74%
Barium (Dissolved)	0.00005	0.116	0.115	0.87%
Beryllium (Dissolved)	0.0001	<0.0001	<0.0001	
Bismuth (Dissolved)	0.0005	<0.0005	<0.0005	
Boron (Dissolved)	0.01	0.02	0.02	
Cadmium (Dissolved)	0.00001	<0.00001	<0.00001	
Calcium (Dissolved)	0.05	30.5	30.2	0.99%
Chromium (Dissolved)	0.0001	0.00018	0.00018	
Cobalt (Dissolved)	0.0001	<0.0001	<0.0001	
Copper (Dissolved)	0.0002	<0.0002	<0.0002	
Iron (Dissolved)	0.01	0.025	0.03	
Lead (Dissolved)	0.00005	<0.00005	<0.00005	
Lithium (Dissolved)	0.0005	<0.0005	<0.0005	
Magnesium (Dissolved)	0.1	6.07	6	1.16%
Manganese (Dissolved)	0.00005	0.312	0.313	0.32%
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	
Molybdenum (Dissolved)	0.00005	0.0106	0.0105	0.95%
Nickel (Dissolved)	0.0005	0.0007	0.00067	
Phosphorus (Metal) Dissolved	0.3	<0.3	<0.3	
Potassium (Dissolved)	0.05	0.81	0.821	1.35%
Selenium (Dissolved)	0.0001	<0.0001	<0.0001	
Silicon (Dissolved)	0.05	3.72	3.65	1.90%
Silver (Dissolved)	0.00001	<0.00001	<0.00001	
Sodium (Dissolved)	0.05	2.9	2.85	1.74%
Strontium (Dissolved)	0.0002	0.197	0.193	2.05%
Thallium (Dissolved)	0.00001	<0.00001	<0.00001	
Tin (Dissolved)	0.0001	<0.0001	<0.0001	
Titanium (Dissolved)	0.01	<0.01	<0.01	
Uranium (Dissolved)	0.00001	0.00175	0.0018	2.82%
Vanadium (Dissolved)	0.001	0.0015	0.0015	
Zinc (Dissolved)	0.001	0.004	0.0037	
Organics				
Carbon Organic (Total)	0.5	0.5	0.53	

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.6-DUPLICATE SAMPLE RES08-3A

Site Date Sampled	MDL 24/Apr/2010	RES08-3A 24/Apr/2010	Duplicate 24/Apr/2010	RPD (%)	MDL 21/Jun/2012	RES08-3A 21/Jun/2012	Duplicate 21/Jun/2012	RPD (%)
Physical Tests								
Acidity to pH 8.3 (as CaCO3)	1	4.7	5		1	3.7	4.1	
Alkalinity (Total as CaCO3)	2	103	105	1.92%	2	114	117	2.60%
Conductivity µS/cm	2	934	929	0.54%	2	246	246	0.00%
Hardness as CaCO3 (Dissolved)	0.5	421	428	1.65%	0.5	142	142	0.00%
pH pH	0.1	7.94	7.88	0.76%	0.1	8.2	8.17	0.37%
Total Dissolved Solids	13	743	750	0.94%	10	149	152	1.99%
Total Suspended Solids	3	3.8	3		3	4.3	4.3	
Dissolved Anions								
Bromide (Dissolved)	0.5	<0.5	<0.5		0.05	<0.05	<0.05	
Chloride (Dissolved)	5	12.4	12.5		0.5	<0.5	<0.5	
Fluoride (Dissolved)	0.2	0.38	0.29		0.02	0.03	0.029	
Sulphate (Dissolved)	5	416	417	0.24%	0.5	21.5	21.1	1.88%
Nutrients								
Ammonia (Total)	0.02	<0.02	<0.02		0.02	<0.02	<0.02	
Nitrate (as N)	0.05	<0.05	<0.05		0.005	0.171	0.17	0.59%
Nitrite (as N)	0.01	<0.01	<0.01		0.001	<0.001	<0.001	
Dissolved Metals								
Aluminum (Dissolved)	0.01	<0.01	<0.01		0.003	<0.003	<0.003	
Antimony (Dissolved)	0.001	<0.001	<0.001		0.0001	0.00015	0.00017	
Arsenic (Dissolved)	0.001	0.0016	0.0016		0.0001	0.0003	0.00032	
Barium (Dissolved)	0.02	0.225	0.227	0.88%	0.00005	0.0519	0.0518	0.19%
Beryllium (Dissolved)	0.002	<0.002	<0.002		0.0005	<0.0005	<0.0005	
Bismuth (Dissolved)					0.0005	<0.0005	<0.0005	
Boron (Dissolved)	0.1	0.14	0.14		0.01	0.013	0.014	
Cadmium (Dissolved)	0.000034	0.000041	0.00005		0.00005	<0.00005	<0.00005	
Calcium (Dissolved)	0.1	129	131	1.54%	0.05	44.4	44.3	0.23%
Chromium (Dissolved)	0.002	<0.002	<0.002		0.0005	0.00098	0.00099	
Cobalt (Dissolved)	0.0006	<0.0006	<0.0006		0.0001	<0.0001	<0.0001	
Copper (Dissolved)	0.002	<0.002	<0.002		0.0005	0.00086	0.00078	
Iron (Dissolved)	0.03	<0.03	<0.03		0.03	<0.03	<0.03	
Lead (Dissolved)	0.001	<0.001	<0.001		0.00005	<0.00005	<0.00005	
Lithium (Dissolved)	0.01	<0.01	<0.01		0.005	<0.005	<0.005	
Magnesium (Dissolved)	0.1	23.9	24.2	1.25%	0.1	7.59	7.57	0.26%
Manganese (Dissolved)	0.0006	0.00496	0.00489	1.42%	0.00005	0.00042	0.000417	0.72%
Mercury (Dissolved)	0.00001	<0.00001	<0.00001		0.00005	<0.00005	<0.00005	
Molybdenum (Dissolved)	0.002	0.105	0.104	0.96%	0.00005	0.00739	0.00876	16.97%
Nickel (Dissolved)	0.002	<0.002	<0.002		0.0005	0.00054	0.00054	
Phosphorus (Metal) Dissolved					0.3	<0.3	<0.3	
Potassium (Dissolved)	2	<2	<2		2	<2	<2	
Selenium (Dissolved)	0.002	<0.002	<0.002		0.001	<0.001	<0.001	
Silicon (Dissolved)					0.05	3.53	3.5	0.85%
Silver (Dissolved)	0.00004	<0.00004	<0.00004		0.00001	<0.00001	<0.00001	
Sodium (Dissolved)	2	41.1	42.1	2.40%	2	2.3	2.3	
Strontium (Dissolved)					0.0002	0.172	0.199	14.56%
Thallium (Dissolved)	0.0004	<0.0004	<0.0004		0.0001	<0.0001	<0.0001	
Tin (Dissolved)	0.001	<0.001	<0.001		0.0001	<0.0001	<0.0001	
Titanium (Dissolved)	0.01	<0.01	<0.01		0.01	<0.01	<0.01	
Uranium (Dissolved)	0.0004	0.0172	0.0173	0.58%	0.00001	0.000891	0.00104	15.43%
Vanadium (Dissolved)	0.002	<0.002	<0.002		0.001	<0.001	<0.001	
Zinc (Dissolved)	0.005	<0.005	<0.005		0.003	0.0039	0.0034	
Organics								
Carbon Organic (Total)	0.5	1.12	1.39		0.5	0.84	0.81	

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.7-DUPLICATE SAMPLE RES08-3B

Site	MDL	RES08-3B	Duplicate	RPD
Date Sampled	**02/Oct/2009**	**02/Oct/2009**	**02/Oct/2009**	**(%)**
Physical Tests				
Acidity to pH 8.3 (as CaCO3)	1	3	2.6	
Alkalinity (Total as CaCO3)	2	100	103	2.96%
Bicarbonate Alkalinity	2	100	103	2.96%
Carbonate Alkalinity	2	<2	<2	
Color TCU	5	<5	<5	
Conductivity µS/cm	2	211	208	1.43%
Hardness as CaCO3 (Dissolved)	0.5	103	104	0.97%
Hydroxide Alkalinity	2	<2	<2	
pH pH	0.1	8.15	8.16	0.12%
Total Dissolved Solids	10	117	113	3.48%
Total Suspended Solids	3	6.2	6.2	
Turbidity NTU	0.1	5.44	4.62	16.30%
Dissolved Anions				
Bromide (Dissolved)	0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	<0.5	<0.5	
Fluoride (Dissolved)	0.02	<0.02	<0.02	
Sulphate (Dissolved)	0.5	8.97	8.87	1.12%
Nutrients				
Ammonia (Total)	0.005	<0.005	<0.005	
Nitrate (as N)	0.005	0.0339	0.031	8.94%
Nitrite (as N)	0.001	<0.001	<0.001	
Nitrogen (Total)	0.05	<0.05	<0.05	
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.05	
Phosphate (Total)	0.002	0.011	0.0091	
Phosphorus (Nutrient) Dissolved	0.3	<0.3	<0.3	
Dissolved Metals				
Aluminum (Dissolved)	0.001	0.0026	0.0026	
Antimony (Dissolved)	0.0001	<0.0001	<0.0001	
Arsenic (Dissolved)	0.0001	0.00047	0.00048	
Barium (Dissolved)	0.00005	0.0621	0.0629	1.28%
Beryllium (Dissolved)	0.0005	<0.0005	<0.0005	
Bismuth (Dissolved)	0.0005	<0.0005	<0.0005	
Boron (Dissolved)	0.01	0.01	0.011	
Cadmium (Dissolved)	0.00001	<0.00001	<0.00001	
Calcium (Dissolved)	0.02	32.5	32.9	1.22%
Chromium (Dissolved)	0.0005	0.00087	0.00087	
Cobalt (Dissolved)	0.0001	<0.0001	<0.0001	
Copper (Dissolved)	0.0001	0.00023	0.0002	
Iron (Dissolved)	0.03	<0.03	<0.03	
Lead (Dissolved)	0.00005	<0.00005	<0.00005	
Lithium (Dissolved)	0.005	<0.005	<0.005	
Magnesium (Dissolved)	0.005	5.26	5.37	2.07%
Manganese (Dissolved)	0.00005	0.000209	0.000214	
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	
Molybdenum (Dissolved)	0.00005	0.00142	0.00146	2.78%
Nickel (Dissolved)	0.0005	<0.0005	<0.0005	
Potassium (Dissolved)	0.05	0.65	0.645	0.77%
Selenium (Dissolved)	0.0001	<0.0001	<0.0001	
Silicon (Dissolved)	0.05	2.29	2.29	0.00%
Silver (Dissolved)	0.00001	<0.00001	<0.00001	
Sodium (Dissolved)	2	<2	<2	
Strontium (Dissolved)	0.0001	0.12	0.122	1.65%
Thallium (Dissolved)	0.0001	<0.0001	<0.0001	
Tin (Dissolved)	0.0001	<0.0001	<0.0001	
Titanium (Dissolved)	0.01	<0.01	<0.01	
Uranium (Dissolved)	0.00001	0.000163	0.00016	1.86%
Vanadium (Dissolved)	0.001	<0.001	<0.001	
Zinc (Dissolved)	0.001	<0.001	<0.001	
Organics				
Carbon Organic (Total)	0.5	<0.5	<0.5	

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.8-DUPLICATE SAMPLE RES08-4B

Site	MDL	RES08-4B	Duplicate	RPD	MDL	RES08-4B	Duplicate	RPD
Date Sampled	22/Sep/2010	22/Sep/2010	22/Sep/2010	(%)	23/Mar/2011	23/Mar/2011	23/Mar/2011	(%)
Physical Tests								
Acidity to pH 8.3 (as CaCO3)	1	<1	<1		1	3.1	3.4	
Alkalinity (Total as CaCO3)	1	122	123	0.82%	2	120	136	12.50%
Bicarbonate Alkalinity	1	122	118	3.33%	2	120	136	12.50%
Carbonate Alkalinity	1	<1	<4.8		2	<2	<2	
Color TCU	5	<5	<5		5	<5	<5	
Conductivity µS/cm	2	269	266	1.12%	2	271	279	2.91%
Hardness as CaCO3 (Dissolved)	0.5	96.7	96.3	0.41%	0.5	91.7	92.6	0.98%
Hydroxide Alkalinity	1	<1	<1		2	<2	<2	
pH pH	0.1	8.35	8.4	0.60%	0.1	8.15	8.16	0.12%
Total Dissolved Solids	10	157	159	1.27%	10	164	173	5.34%
Total Suspended Solids	3	<3	<3		3	<3	<3	
Turbidity NTU	0.1	0.4	0.4		0.1	0.98	0.37	
Dissolved Anions								
Bromide (Dissolved)	0.05	<0.05	<0.05		0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	<0.5	<0.5		0.5	<0.5	<0.5	
Fluoride (Dissolved)	0.02	0.218	0.214	1.85%	0.02	0.196	0.201	2.52%
Sulphate (Dissolved)	0.5	20.7	20.6	0.48%	0.5	22.5	22.7	0.88%
Nutrients								
Ammonia (Total)	0.005	<0.005	<0.005		0.005	<0.005	<0.005	
Nitrate (as N)	0.005	<0.005	<0.005		0.005	<0.005	<0.005	
Nitrite (as N)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Nitrogen (Total)	0.05	0.05	0.05		0.05	0.09	0.08	
Nitrogen Kjeldahl (Total)	0.05	<0.05	<0.051		0.05	0.118	0.089	
Orthophosphate (Dissolved)	0.001	0.0049	0.0052		0.001	<0.001	<0.0024	
Phosphorus (Nutrient) Dissolved					0.002	<0.3	<0.0029	
Phosphorus (Nutrient) Total					0.002	0.0056	0.0059	
Dissolved Metals								
Aluminum (Dissolved)	0.005	0.0132	0.0126		0.005	0.0119	0.0111	
Antimony (Dissolved)	0.0005	<0.0005	<0.0005		0.0005	<0.0005	<0.0005	
Arsenic (Dissolved)	0.0005	0.00087	0.00085		0.0005	0.00093	0.00093	
Barium (Dissolved)	0.02	0.101	0.1	1.00%	0.02	0.099	0.098	
Beryllium (Dissolved)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Bismuth (Dissolved)					0.2	<0.2	<0.2	
Boron (Dissolved)	0.1	<0.1	<0.1		0.1	<0.1	<0.1	
Cadmium (Dissolved)	0.000017	0.000018	0.000017		0.000017	0.00003	0.000037	
Calcium (Dissolved)	0.1	28.5	28.4	0.35%	0.1	26.6	26.9	1.12%
Chromium (Dissolved)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Cobalt (Dissolved)	0.0003	<0.0003	<0.0003		0.0003	<0.0003	<0.0003	
Copper (Dissolved)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Iron (Dissolved)	0.03	<0.03	<0.03		0.03	<0.03	<0.03	
Lead (Dissolved)	0.0005	<0.0005	<0.0005		0.0005	<0.0005	<0.0005	
Lithium (Dissolved)	0.005	<0.005	<0.005		0.005	<0.005	<0.005	
Magnesium (Dissolved)	0.1	6.22	6.17	0.81%	0.1	6.12	6.18	0.98%
Manganese (Dissolved)	0.0003	0.0248	0.0242	2.45%	0.0003	0.0198	0.0205	3.47%
Mercury (Dissolved)	0.00001	<0.00001	<0.00001		0.00001	<0.00001	<0.00001	
Molybdenum (Dissolved)	0.001	0.0205	0.0199	2.97%	0.001	0.0236	0.0244	3.33%
Nickel (Dissolved)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Potassium (Dissolved)	2	<2	<2		2	<2	<2	
Selenium (Dissolved)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Silicon (Dissolved)					0.05	4.61	4.54	1.53%
Silver (Dissolved)	0.00002	<0.00002	<0.00002		0.00002	<0.00002	<0.00002	
Sodium (Dissolved)	2	22.1	21.6	2.29%	2	23.4	23.5	0.43%
Strontium (Dissolved)					0.005	6.73	6.83	1.47%
Thallium (Dissolved)	0.0002	<0.0002	<0.0002		0.0002	<0.0002	<0.0002	
Tin (Dissolved)	0.0005	<0.0005	<0.0005		0.0005	<0.0005	<0.0005	
Titanium (Dissolved)	0.01	<0.01	<0.01		0.01	<0.01	<0.01	
Uranium (Dissolved)	0.0002	0.0168	0.0166	1.20%	0.0002	0.0149	0.0152	1.99%
Vanadium (Dissolved)	0.001	<0.001	<0.001		0.001	<0.001	<0.001	
Zinc (Dissolved)	0.005	<0.005	<0.005		0.005	<0.005	<0.005	
Organics								
Carbon Organic (Total)	0.5	2.92	2.95	1.02%	0.5	2.66	2.68	0.75%

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum to 2011 Hydrogeo Study\Attachments\Appendix B\[Appendix B2 Tables.xls]B2.8-DUPLICATE SAMPLE RES08-4B

NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.9-DUPLICATE SAMPLE RES08-6A

Site Date Sampled	MDL 27/Sep/2008	RES08-6A 27/Sep/2008	Duplicate 27/Sep/2008	RPD (%)
Physical Tests				
Acidity to pH 8.3 (as CaCO3)	1	<1	<1	
Alkalinity (Total as CaCO3)	1	112	108	3.64%
Bicarbonate Alkalinity	1	107	103	3.81%
Carbonate Alkalinity	1	4.6	5.3	
Color TCU	5	<5	<5	
Conductivity µS/cm	2	427	421	1.42%
Hardness as CaCO3 (Dissolved)	0.5	97	92	5.29%
Hydroxide Alkalinity	1	<1	<1	
pH pH	0.01	8.3	8.23	0.85%
Total Dissolved Solids	10	277	266	4.05%
Total Suspended Solids	3	452	418	7.82%
Turbidity NTU	0.1	430	448	4.10%
Dissolved Anions				
Bromide (Dissolved)	0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	9.87	9.69	1.84%
Fluoride (Dissolved)	0.02	0.566	0.515	9.44%
Sulphate (Dissolved)	0.5	94.1	93.3	0.85%
Nutrients				
Ammonia (Total)	0.005	0.0159	0.0173	
Nitrate (as N)	0.005	0.0063	0.0054	
Nitrite (as N)	0.001	0.0018	0.0013	
Nitrogen (Total)	0.05	0.23	0.14	
Nitrogen Kjeldahl (Total)	0.05	0.223	0.129	
Phosphate (Total)	0.02	0.355	0.339	4.61%
Phosphorus (Nutrient) Dissolved	0.3	<0.3	<0.3	
Phosphorus (Nutrient) Total	0.3	2.27	0.4	
Dissolved Metals				
Aluminum (Dissolved)	0.002	0.083	0.0808	2.69%
Antimony (Dissolved)	0.0002	<0.001	<0.00062	
Arsenic (Dissolved)	0.0002	0.0022	0.00199	
Barium (Dissolved)	0.0001	0.0413	0.0572	**32.28%**
Beryllium (Dissolved)	0.001	<0.005	<0.001	
Bismuth (Dissolved)	0.001	<0.005	<0.001	
Boron (Dissolved)	0.02	0.11	0.116	
Cadmium (Dissolved)	0.000034	<0.00017	<0.000034	
Calcium (Dissolved)	0.04	20.1	18.2	9.92%
Chromium (Dissolved)	0.001	<0.005	<0.001	
Cobalt (Dissolved)	0.0002	<0.001	<0.0002	
Copper (Dissolved)	0.0002	0.0024	0.00147	
Iron (Dissolved)	0.03	0.083	0.099	
Lead (Dissolved)	0.0001	<0.0005	<0.0001	
Lithium (Dissolved)	0.01	<0.05	<0.01	
Magnesium (Dissolved)	0.01	11.4	11.3	0.88%
Manganese (Dissolved)	0.0001	0.0182	0.0177	2.79%
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	
Molybdenum (Dissolved)	0.0001	0.0562	0.0899	**46.13%**
Nickel (Dissolved)	0.001	0.005	0.0044	
Potassium (Dissolved)	0.1	5.72	4.64	20.85%
Selenium (Dissolved)	0.0002	<0.001	<0.0003	
Silicon (Dissolved)	0.05	4.47	4.49	0.45%

SCHAFT CREEK MINE PROJECT
TABLE B2.9-DUPLICATE SAMPLE RES08-6A

Site Date Sampled	MDL 27/Sep/2008	RES08-6A 27/Sep/2008	Duplicate 27/Sep/2008	RPD (%)
Physical Tests				
Silver (Dissolved)	0.00002	<0.0001	<0.00002	
Sodium (Dissolved)	2	39.8	45.7	13.80%
Strontium (Dissolved)	0.0002	0.5	0.519	3.73%
Thallium (Dissolved)	0.0002	<0.001	<0.0002	
Tin (Dissolved)	0.0002	<0.001	<0.00061	
Titanium (Dissolved)	0.01	<0.01	<0.01	
Uranium (Dissolved)	0.00002	0.00311	0.00333	6.83%
Vanadium (Dissolved)	0.002	<0.01	<0.002	
Zinc (Dissolved)	0.002	<0.01	<0.0034	
Total Metals				
Aluminum (Total)	0.002	84.9	12.9	**147.24%**
Antimony (Total)	0.0002	<0.001	<0.00096	
Arsenic (Total)	0.0002	0.0198	0.00531	**115.41%**
Barium (Total)	0.0001	0.321	0.131	**84.07%**
Beryllium (Total)	0.001	<0.005	<0.001	
Bismuth (Total)	0.001	<0.005	<0.001	
Boron (Total)	0.02	0.12	0.123	
Cadmium (Total)	0.000034	0.00058	0.000323	
Calcium (Total)	0.04	104	32.5	**104.76%**
Chromium (Total)	0.001	0.512	0.116	**126.11%**
Cobalt (Total)	0.0002	0.117	0.0151	**154.28%**
Copper (Total)	0.0002	0.444	0.0644	**149.33%**
Iron (Total)	0.03	112	18.3	**143.82%**
Lead (Total)	0.0001	0.0142	0.00442	**105.05%**
Lithium (Total)	0.01	<0.05	<0.02	
Magnesium (Total)	0.01	184	34.1	**137.46%**
Manganese (Total)	0.0001	2.59	0.389	**147.77%**
Mercury (Total)	0.00001	0.000025	0.000016	
Molybdenum (Total)	0.0001	0.0371	0.108	**97.73%**
Nickel (Total)	0.001	1.24	0.168	**152.27%**
Potassium (Total)	0.1	11.8	5.51	**72.67%**
Selenium (Total)	0.0002	0.0041	0.00078	
Silicon (Total)	0.05	101	31.7	**104.45%**
Silver (Total)	0.00002	0.00684	0.00668	2.37%
Sodium (Total)	2	23.3	49.5	**71.98%**
Strontium (Total)	0.0002	0.471	0.617	**26.84%**
Thallium (Total)	0.0002	<0.001	<0.0002	
Tin (Total)	0.0002	<0.001	<0.00197	
Titanium (Total)	0.01	5.23	0.554	**161.69%**
Uranium (Total)	0.00002	0.00161	0.00435	**91.95%**
Vanadium (Total)	0.002	0.332	0.046	**151.32%**
Zinc (Total)	0.002	0.254	0.0773	**106.67%**
Organics				
Carbon Organic (Total)	0.5	4.34	4.86	11.30%

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.10-DUPLICATE SAMPLE RES08-7B

Site	MDL	RES08-7B	Duplicate	RPD
Date Sampled	**23/Jun/2012**	**23/Jun/2012**	**23/Jun/2012**	**(%)**
Physical Tests				
Acidity to pH 8.3 (as CaCO3)	1	1.7	2	
Alkalinity (Total as CaCO3)	2	196	195	0.51%
Conductivity µS/cm	2	604	602	0.33%
Hardness as CaCO3 (Dissolved)	0.5	274	270	1.47%
pH pH	0.1	8.14	8.12	0.25%
Total Dissolved Solids	10	395	392	0.76%
Total Suspended Solids	3	<3	<3	
Dissolved Anions				
Bromide (Dissolved)	0.05	<0.05	<0.05	
Chloride (Dissolved)	0.5	14.8	14.8	0.00%
Fluoride (Dissolved)	0.02	0.554	0.556	0.36%
Sulphate (Dissolved)	0.5	127	127	0.00%
Nutrients				
Ammonia (Total)	0.02	<0.02	<0.02	
Nitrate (as N)	0.005	<0.005	<0.005	
Nitrite (as N)	0.001	<0.001	<0.001	
Dissolved Metals				
Aluminum (Dissolved)	0.003	<0.003	<0.003	
Antimony (Dissolved)	0.0001	<0.0001	<0.0001	
Arsenic (Dissolved)	0.0001	0.00092	0.00086	6.74%
Barium (Dissolved)	0.00005	0.0454	0.0452	0.44%
Beryllium (Dissolved)	0.0005	<0.0005	<0.0005	
Bismuth (Dissolved)	0.0005	<0.0005	<0.0005	
Boron (Dissolved)	0.01	0.055	0.065	16.67%
Cadmium (Dissolved)	0.00005	<0.00005	<0.00005	
Calcium (Dissolved)	0.05	50.2	49.9	0.60%
Chromium (Dissolved)	0.0005	<0.0005	<0.0005	
Cobalt (Dissolved)	0.0001	0.00014	0.00015	
Copper (Dissolved)	0.0005	<0.0005	<0.0005	
Iron (Dissolved)	0.03	<0.03	<0.03	
Lead (Dissolved)	0.00005	0.000265	0.000273	2.97%
Lithium (Dissolved)	0.005	0.0172	0.0198	
Magnesium (Dissolved)	0.1	36.1	35.4	1.96%
Manganese (Dissolved)	0.00005	0.0586	0.0584	0.34%
Mercury (Dissolved)	0.00005	<0.00005	<0.00005	
Molybdenum (Dissolved)	0.00005	0.0019	0.00217	13.27%
Nickel (Dissolved)	0.0005	0.00097	0.00092	
Phosphorus (Metal) Dissolved	0.3	<0.3	<0.3	
Potassium (Dissolved)	2	3	3	
Selenium (Dissolved)	0.001	<0.001	<0.001	
Silicon (Dissolved)	0.05	4.45	4.4	1.13%
Silver (Dissolved)	0.00001	<0.00001	<0.00001	
Sodium (Dissolved)	2	28	28	0.00%
Strontium (Dissolved)	0.0002	0.647	0.731	12.19%
Thallium (Dissolved)	0.0001	<0.0001	<0.0001	
Tin (Dissolved)	0.0001	<0.0001	<0.0001	
Titanium (Dissolved)	0.01	<0.01	<0.01	
Uranium (Dissolved)	0.00001	0.00172	0.00189	9.42%
Vanadium (Dissolved)	0.001	<0.001	<0.001	
Zinc (Dissolved)	0.003	<0.003	<0.0031	
Organics				
Carbon Organic (Total)	0.5	0.58	0.58	

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NOTES:

1. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.
2. BOLD RED INDICATES THAT THE RPD (RELATIVE PERCENT DIFFERENCE) EXCEEDS THE 25% DATA QUALITY OBJECTIVE FOR ANALYTICAL VALUES GREATER THAT 5 TIMES THE MDL.

SCHAFT CREEK MINE PROJECT
TABLE B2.11-ION BALANCE

Date Sampled	HG10-05B 29-Jun-10	HG10-05B 19-Sep-10	HG10-05B 24-Mar-11	HG10-05B 15-Sep-11	HG10-05B 23-Jun-12	HG10-05B 21-Sep-12	HG10-05A 29-Jun-10	HG10-05A 19-Sep-10	HG10-05A 15-Sep-11	HG10-05A 23-Jun-12	HG10-05A 21-Sep-12	HG10-04 30-Jun-10	HG10-04 19-Sep-10	HG10-04 25-Mar-11
Time Sampled	3:35 PM	12:23 PM	8:00 AM	9:50 AM	9:45 AM	3:50 PM	5:22 PM	1:16 PM	8:30 AM	10:30 AM	5:00 PM	2:23 PM	3:31 PM	2:30 PM
Anions														
Bicarbonate Alkalinity	-1.66	-1.63	-1.67	-1.69	-1.67	-1.58	-0.8984	-0.8689	-0.818	-0.94	-0.7082	-1.25	-1.32	-1.3
Hydroxide Alkalinity	-0.05879	-0.1176	-0.1176	-0.1176		-0.1176	-0.1176	-0.1176	-0.1176		-0.1176	-0.1176	-0.1176	-0.1176
Chloride (Dissolved)	-0.02031	-0.0158	-0.01918	-0.01974	-0.0251	-0.01946	-0.0141	-0.0141	-0.0141	-0.00705	-0.0141	-0.0141	-0.0141	-0.0141
Fluoride (Dissolved)	-0.002737	-0.001948	-0.001895	-0.002527	-0.00258	-0.002369	-0.001053	-0.001053	-0.001474	-0.00184	-0.001421	-0.001421	-0.001053	-0.001053
Sulphate (Dissolved)	-0.2477	-0.1555	-0.1307	-0.1499	-0.179	-0.1747	-0.163	-0.132	-0.1201	-0.128	-0.08786	-0.3331	-0.3227	-0.3227
Nitrate (as N)	-0.0000855	-0.0001129	-0.0000806	-0.0000806	-0.000587	-0.0004758	-0.0004919	-0.0005113	-0.0004839	-0.00186	-0.0004403	-0.001806	-0.00136	-0.001284
Nitrite (as N)	-0.0001087	-0.0000565	-0.0000217	-0.0000717		-0.0000891	-0.0000217	-0.0000217	-0.0000217		-0.0000217	-0.0000217	-0.0000217	-0.0000217
Phosphate (Dissolved)	0	-0.0001232	0	-0.0001737		-0.0002368	0	-0.0000632	-0.0000632		-0.00012	0	-0.0000853	0
Sum of Anions	-1.99	-1.92	-1.94	-1.98	-1.87	-1.89	-1.19	-1.13	-1.07	-1.08	-0.9298	-1.72	-1.78	-1.76
Cations														
Aluminum (Dissolved)	0.00181	0.000901	0.000645	0.000567	0.000634	0.000656	0.00231	0.00241	0.00254	0.00198	0.00288	0.000556	0.000556	0.000556
Calcium (Dissolved)	1.57	1.59	1.53	1.66	1.66	1.52	0.938	0.898	0.848	0.928	0.719	1.59	1.63	1.62
Copper (Dissolved)	0.0000504	0.0000315	0.0000315	0.0000315	0.00000787	0.00000629	0.0000315	0.0000315	0.0000315	0.00000787	0.0000116	0.0000315	0.0000315	0.0000315
Iron (Dissolved)	0.00107	0.00107	0.00107	0.00107	0.000537	0.000895	0.00107	0.00107	0.00107	0.000537	0.000358	0.00107	0.00107	0.00107
Magnesium (Dissolved)	0.492	0.504	0.483	0.53	0.54	0.499	0.283	0.271	0.264	0.297	0.226	0.313	0.309	0.309
Manganese (Dissolved)	0.00866	0.0146	0.0162	0.0196	0.0132	0.0114	0.000024	0.0000109	0.0000109	0.00000513	0.0000341	0.0000109	0.0000109	0.0000109
Potassium (Dissolved)	0.0512	0.0512	0.0512	0.0512	0.000634	0.0207	0.0512	0.0512	0.0512	0.0256	0.0145	0.0512	0.0512	0.0512
Sodium (Dissolved)	0.222	0.165	0.144	0.13	0.139	0.126	0.087	0.087	0.087	0.0435	0.0379	0.1	0.087	0.087
Zinc (Dissolved)	0.000153	0.000153	0.000153	0.000153	0.000101	0.000122	0.000153	0.000153	0.000153	0.0000472	0.0000459	0.000153	0.000153	0.000153
Sum of Cations	2.35	2.33	2.23	2.39	2.37	2.18	1.36	1.31	1.25	1.29	1	2.06	2.08	2.07
Error %	8.24	9.55	6.89	9.43	**11.7**	6.97	6.57	7.22	7.83	9.16	3.68	8.96	7.83	8.16

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum to 2011 Hydrogeo Study\Attachments\Appendix B\[Appendix B2 Tables.xls]B2.11-ION BALANCE

NOTES:

1. UNITS ARE mg/L, UNLESS OTHERWISE STATED
2. ION BALANCE WAS DONE USING ALKALINITY (as $CaCO_3$) INSTEAD OF BICARBONATE ALKALINITY FOR JUNE 2012 SAMPLES.
3. BOLD TEXT INDICATES AN ERROR GREATER THAN 10%.

SCHAFT CREEK MINE PROJECT
TABLE B2.11-ION BALANCE

	HG10-04	HG10-04	HG10-04	HG10-02B	HG10-02B	HG10-02B	HG10-02B	HG10-02B	HG10-02B	HG10-02A	HG10-02A	HG10-02A	HG10-02A	HG10-02A
Date Sampled	15-Sep-11	22-Jun-12	22-Sep-12	30-Jun-10	19-Sep-10	15-Sep-11	16-Mar-12	23-Jun-12	22-Sep-12	30-Jun-10	19-Sep-10	17-Sep-11	16-Mar-12	23-Jun-12
Time Sampled	10:30 AM	5:25 PM	3:10 PM	8:15 AM	10:00 AM	2:30 PM	10:37 AM	12:45 PM	12:05 PM	7:23 AM	10:00 AM	1:00 PM	12:03 PM	12:10 PM
Anions														
Bicarbonate Alkalinity	-1.25	-1.37	-1.35	-1.42	-1.47	-1.47	-1.51	-1.5	-1.54	-1.6	-1.6	-1.64	-1.54	-1.67
Hydroxide Alkalinity	-0.1176		-0.1176	-0.1176	-0.1176	-0.1176	-0.1176		-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	
Chloride (Dissolved)	-0.0141	-0.00705	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141	-0.00705	-0.0141	-0.03582	-0.03272	-0.03723	-0.03582	-0.0361
Fluoride (Dissolved)	-0.001579	-0.00153	-0.001421	-0.001053	-0.001053	-0.001158	-0.001158	-0.00116	-0.001053	-0.001474	-0.001053	-0.001737	-0.001632	-0.00163
Sulphate (Dissolved)	-0.3206	-0.352	-0.3414	-0.306	-0.2894	-0.2998	-0.2998	-0.306	-0.3019	-0.3747	-0.3581	-0.381	-0.3747	-0.375
Nitrate (as N)	-0.001645	-0.00293	-0.001629	-0.0008935	-0.0008629	-0.0009048	-0.001002	-0.00196	-0.001076	-0.001315	-0.001266	-0.001368	-0.001471	-0.00293
Nitrite (as N)	-0.0000217		-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217		-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	
Phosphate (Dissolved)	-0.0000695		-0.0000758	0	-0.0001168	-0.0001105	0		-0.0001074	0	-0.0000916	0	0	
Sum of Anions	-1.71	-1.73	-1.83	-1.86	-1.89	-1.9	-1.94	-1.81	-1.98	-2.13	-2.11	-2.18	-2.07	-2.08
Cations														
Aluminum (Dissolved)	0.000556	0.000478	0.000289	0.000556	0.000556	0.000556	0.000334	0.000167	0.000222	0.000556	0.000556	0.000556	0.000334	0.000167
Calcium (Dissolved)	1.62	1.78	1.59	1.57	1.56	1.61	1.48	1.65	1.57	1.64	1.64	1.6	1.56	1.71
Copper (Dissolved)	0.0000315	0.00000787	0.0000198	0.0000315	0.0000315	0.0000315	0.0000157	0.00000787	0.00000629	0.0000315	0.0000315	0.0000315	0.0000157	0.00000787
Iron (Dissolved)	0.00107	0.000537	0.000358	0.00107	0.00107	0.00107	0.00107	0.000537	0.000358	0.00107	0.00107	0.00107	0.00107	0.000537
Magnesium (Dissolved)	0.301	0.335	0.305	0.559	0.528	0.541	0.491	0.562	0.541	0.698	0.671	0.657	0.628	0.692
Manganese (Dissolved)	0.0000109	0.00000186	0.0000132	0.0000459	0.0000109	0.0000109	0.0000043	0.00000437	0.0000179	0.0000397	0.0000109	0.0000109	0.00000182	0.00000524
Potassium (Dissolved)	0.0512	0.0256	0.00931	0.0512	0.0512	0.0512	0.0165	0.0256	0.0164	0.0512	0.0512	0.0512	0.0225	0.0256
Sodium (Dissolved)	0.087	0.0435	0.0722	0.087	0.087	0.087	0.0753	0.0435	0.0718	0.152	0.144	0.139	0.132	0.144
Zinc (Dissolved)	0.000153	0.0000472	0.0000673	0.000153	0.000153	0.000153	0.0000917	0.0000472	0.0000306	0.000153	0.000153	0.000153	0.0000917	0.000135
Sum of Cations	2.06	2.19	1.98	2.27	2.23	2.29	2.06	2.28	2.2	2.54	2.51	2.45	2.34	2.57
Error %	9.44	**11.6**	3.97	9.92	8.13	9.23	3.01	**11.5**	5.36	8.82	8.6	5.84	6.18	**10.5**

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum to 2011 Hydrogeo Study\Attachments\Appendix B\[Appendix B2 Tables.xls]B2.11-ION BALANCE

NOTES:

1. UNITS ARE mg/L, UNLESS OTHERWISE STATED
2. ION BALANCE WAS DONE USING ALKALINITY (as $CaCO_3$) INSTEAD OF BICARBONATE ALKALINITY FOR JUNE 2012 SAMPLES.
3. BOLD TEXT INDICATES AN ERROR GREATER THAN 10%.

SCHAFT CREEK MINE PROJECT
TABLE B2.11-ION BALANCE

	HG10-02A	HG10-01	HG10-01	HG10-01	HG10-01	HG10-01	HG10-01	RES08-02B	RES08-02B	RES08-02B	RES08-02B	RES08-02B	RES08-02B	RES08-03A
Date Sampled	22-Sep-12	30-Jun-10	19-Sep-10	15-Sep-11	16-Mar-12	23-Jun-12	22-Sep-12	29-Sep-08	04-Oct-09	09-May-10	22-Sep-10	17-Sep-11	22-Jun-12	30-Sep-08
Time Sampled	10:55 AM	10:30 AM	3:35 PM	1:30 PM	2:51 PM	3:10 PM	2:03 PM	10:21 AM	8:50 AM	12:12 PM	4:45 PM		1:00 PM	10:23 AM
Anions														
Bicarbonate Alkalinity	-1.6	-2.39	-2.52	-2.51	-2.54	-2.63	-2.57	-1.46	-0.7148	-1.18	-1.17	-1.25	-1.28	-1.89
Hydroxide Alkalinity	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176		-0.1176	-0.05879	-0.05879	-0.05879	-0.05879	-0.1176		-0.05879
Chloride (Dissolved)	-0.03667	-0.09336	-0.0739	-0.09054	-0.07729	-0.0826	-0.08349	-0.01439	-0.0141	-0.0141	-0.0141	-0.0141	-0.00705	-0.0141
Fluoride (Dissolved)	-0.001579	-0.003421	-0.002369	-0.003685	-0.003421	-0.00384	-0.003737	-0.005158	-0.004211	-0.004737	-0.005053	-0.005948	-0.00595	-0.001632
Sulphate (Dissolved)	-0.3768	-0.01041	-0.01041	-0.01041	-0.01041	-0.00521	-0.01041	-0.6579	-0.5871	-0.5642	-0.5579	-0.5933	-0.585	-0.3456
Nitrate (as N)	-0.001539	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0001419	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.001952
Nitrite (as N)	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217		-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217		-0.0000217
Phosphate (Dissolved)	-0.0000821	0	-0.0002084	-0.0006253	0		-0.00018	0	0	0	-0.0000758	0		0
Sum of Anions	-2.13	-2.61	-2.72	-2.73	-2.75	-2.72	-2.79	-2.2	-1.38	-1.82	-1.81	-1.98	-1.87	-2.31
Cations														
Aluminum (Dissolved)	0.000311	0.000556	0.000556	0.000556	0.000334	0.000167	0.000178	0.0469	0.000256	0.000556	0.000556	0.000556	0.000456	0.00316
Calcium (Dissolved)	1.61	1.94	2.08	1.97	1.92	2.14	2.02	0.754	0.868	0.848	0.993	0.963	11.03	1.69
Copper (Dissolved)	0.0000129	0.0000315	0.0000315	0.0000315	0.0000157	0.00000787	0.00000629	0.000125	0.00000535	0.0000315	0.0000315	0.0000315	0.00000787	0.0000293
Iron (Dissolved)	0.000358	0.038	0.0491	0.058	0.0548	0.0623	0.0569	0.0188	0.00107	0.00107	0.00136	0.00115	0.00129	0.00118
Magnesium (Dissolved)	0.662	0.792	0.811	0.796	0.742	0.839	0.798	0.472	0.728	0.651	0.746	0.764	0.823	0.496
Manganese (Dissolved)	0.0000258	0.00957	0.0117	0.0125	0.0119	0.012	0.0122	0.00104	0.000162	0.000717	0.000717	0.000586	0.000615	0.000666
Potassium (Dissolved)	0.0227	0.0512	0.0512	0.0512	0.0186	0.0256	0.0186	0.0509	0.0312	0.0512	0.0512	0.0512	0.0256	0.0188
Sodium (Dissolved)	0.13	0.344	0.344	0.326	0.3	0.339	0.301	0.779	0.3	0.304	0.274	0.283	0.274	0.196
Zinc (Dissolved)	0.0000978	0.000153	0.000153	0.000153	0.0000917	0.000101	0.0000428	0.000238	0.0000612	0.000153	0.000153	0.000153	0.000321	0.0000948
Sum of Cations	2.43	3.18	3.35	3.21	3.05	3.34	3.21	2.12	1.93	1.86	2.07	2.06	2.16	2.41
Error %	6.39	9.68	**10.3**	8.1	5.16	**10.3**	7.03	-1.7	**16.6**	0.946	6.74	2.04	7.13	1.99

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum to 2011 Hydrogeo Study\Attachments\Appendix B\[Appendix B2 Tables.xls]B2.11-ION BALANCE

NOTES:

1. UNITS ARE mg/L, UNLESS OTHERWISE STATED
2. ION BALANCE WAS DONE USING ALKALINITY (as $CaCO_3$) INSTEAD OF BICARBONATE ALKALINITY FOR JUNE 2012 SAMPLES.
3. BOLD TEXT INDICATES AN ERROR GREATER THAN 10%.

SCHAFT CREEK MINE PROJECT
TABLE B2.11-ION BALANCE

	RES08-03A	RES08-03A	RES08-03A	RES08-03A	RES08-03A	RES08-03A	RES08-03A	RES08-03B	RES08-03B	RES08-03B	RES08-03B	RES08-03B	RES08-03B	RES08-03B
Date Sampled	02-Oct-09	24-Apr-10	21-Sep-10	17-Sep-11	15-Mar-12	21-Jun-12	22-Sep-12	30-Sep-08	02-Oct-09	23-Apr-10	20-Sep-10	24-Mar-11	17-Sep-11	15-Mar-12
Time Sampled	1:18 PM	2:55 PM	5:34 PM	10:50 AM	4:14 PM	3:00 PM	1:00 PM	10:26 AM	10:12 AM	12:10 PM	4:48 PM	10:18 AM		12:51 PM
Anions														
Bicarbonate Alkalinity	-1.82	-1.69	-1.74	-1.7	-1.92	-1.9	-1.92	-1.52	-1.64	-1.39	-1.48	-1.41	-1.66	-1.54
Hydroxide Alkalinity	-0.1176	-0.1176	-0.1176	-0.1176	-0.05879		-0.1176	-0.05879	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176
Chloride (Dissolved)	-0.1219	-0.3498	-0.1596	-0.4654	-0.0141	-0.00705	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141
Fluoride (Dissolved)	-0.00658	-0.02	-0.01458	-0.02263	-0.001421	-0.00158	-0.001158	-0.001053	-0.001053	-0.001053	-0.001053	-0.001053	-0.001053	-0.001053
Sulphate (Dissolved)	-3.31	-8.66	-4.27	-11.1	-0.3289	-0.448	-0.306	-0.2022	-0.1867	-0.4018	-0.1763	-0.3289	-0.2457	-0.3435
Nitrate (as N)	-0.00136	-0.0008065	-0.0003629	-0.0008065	-0.003	-0.00552	-0.002387	-0.0009161	-0.0005468	-0.0009194	-0.0005161	-0.001181	-0.0009113	-0.0009968
Nitrite (as N)	-0.0000217	-0.0002174	-0.0000217	-0.0002174	-0.0000217		-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217
Phosphate (Dissolved)	0	0	-0.0000632	0	0		-0.0000663	0	0	0	-0.0000632	0	0	0
Sum of Anions	-5.38	-10.8	-6.3	-13.4	-2.33	-2.36	-2.36	-1.8	-1.96	-1.93	-1.79	-1.87	-2.04	-2.02
Cations														
Aluminum (Dissolved)	0.0006	0.00111	0.000556	0.00111	0.000334	0.000167	0.000245	0.00649	0.000289	0.000556	0.000556	0.000556	0.0007	0.000367
Calcium (Dissolved)	3.61	6.44	4.44	8.03	1.93	2.22	2	1.36	1.62	1.75	1.69	1.59	1.74	1.61
Copper (Dissolved)	0.0000157	0.0000629	0.0000315	0.0000629	0.0000249	0.0000271	0.0000356	0.0000302	0.00000724	0.0000315	0.0000315	0.0000315	0.0000315	0.0000189
Iron (Dissolved)	0.00107	0.00107	0.00107	0.00107	0.00107	0.000269	0.000358	0.00265	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107
Magnesium (Dissolved)	1.1	1.97	1.27	2.53	0.555	0.625	0.582	0.368	0.433	0.457	0.413	0.407	0.453	0.397
Manganese (Dissolved)	0.000227	0.000181	0.0000182	0.000426	0.0000201	0.0000153	0.0000195	0.000281	0.00000761	0.000012	0.0000109	0.0000109	0.0000109	0.00000393
Potassium (Dissolved)	0.0281	0.0512	0.0512	0.0512	0.0173	0.0256	0.0173	0.0218	0.0166	0.0512	0.0512	0.0512	0.0512	0.0155
Sodium (Dissolved)	0.848	1.79	1.07	2.53	0.0809	0.1	0.0822	0.113	0.087	0.087	0.087	0.087	0.087	0.0513
Zinc (Dissolved)	0.0000642	0.000153	0.000153	0.000153	0.00121	0.000123	0.0000673	0.0000397	0.0000306	0.000153	0.000153	0.000153	0.000153	0.000162
Sum of Cations	5.59	10.3	6.83	13.1	2.59	2.97	2.68	1.87	2.16	2.35	2.24	2.14	2.33	2.08
Error %	1.92	-2.77	4.04	-0.9892	5.29	**11.4**	6.36	2.05	4.81	9.87	**11.2**	6.59	6.72	1.42

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NOTES:

1. UNITS ARE mg/L, UNLESS OTHERWISE STATED
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3. BOLD TEXT INDICATES AN ERROR GREATER THAN 10%.

SCHAFT CREEK MINE PROJECT
TABLE B2.11-ION BALANCE

	RES08-03B	RES08-03B	RES08-04B	RES08-04B	RES08-04B	RES08-04B	RES08-04B	RES08-04B	RES08-04B	RES08-04B	RES08-04B	RES08-05A	RES08-05A	RES08-05A
Date Sampled	21-Jun-12	22-Sep-12	01-Oct-08	04-Oct-09	25-Apr-10	22-Sep-10	23-Mar-11	13-Sep-11	14-Mar-12	21-Jun-12	21-Sep-12	01-Oct-08	30-Apr-10	23-Sep-10
Time Sampled	3:50 PM	1:45 PM	10:29 AM	11:36 AM	5:24 PM	11:12 AM	11:52 AM		5:45 PM	10:10 AM	1:45 PM		12:00 PM	4:05 PM
Anions														
Bicarbonate Alkalinity	-2.02	-1.77	-0.01639	-1.52	-1.95	-2	-1.97	-1.87	-1.93	-2.45	-1.79	-1.2	-1.16	-1.11
Hydroxide Alkalinity		-0.1176	-27.2	-0.05879	-0.1176	-0.05879	-0.1176	-0.05879	-0.05879		-0.05879	-0.05879	-0.1176	-0.1176
Chloride (Dissolved)	-0.00705	-0.0141	-0.141	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141	-0.0141	-0.00705	-0.0141	-0.0141	-0.0141	-0.0141
Fluoride (Dissolved)	-0.000526	-0.001053	-0.01053	-0.002369	-0.01016	-0.01147	-0.01032	-0.01305	-0.0139	-0.00132	-0.01269	-0.003632	-0.003632	-0.003842
Sulphate (Dissolved)	-0.331	-0.229	-0.1811	-0.1434	-0.3831	-0.431	-0.4684	-0.4976	-0.5392	-0.564	-0.5621	-0.5246	-0.4768	-0.4539
Nitrate (as N)	-0.00198	-0.0007532	-0.0008065	-0.0003806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806
Nitrite (as N)		-0.0000217	-0.0002174	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000522	-0.0000217		-0.0000217	-0.0000217	-0.0000217	-0.0000217
Phosphate (Dissolved)		-0.0000632	0	0	0	-0.0001895	0	-0.0000632	0		-0.0001705	0	0	-0.0000632
Sum of Anions	-2.36	-2.13	-27.6	-1.74	-2.48	-2.52	-2.58	-2.45	-2.56	-3.02	-2.44	-1.8	-1.77	-1.7
Cations														
Aluminum (Dissolved)	0.000345	0.000311	0.0342	0.00295	0.00122	0.00147	0.00132	0.00122	0.00165	0.00123	0.00245	0.0385	0.000556	0.000556
Calcium (Dissolved)	2.33	1.88	11.8	1.62	1.33	1.42	1.33	1.3	1.59	1.69	1.83	1.07	1.53	1.29
Copper (Dissolved)	0.00000787	0.0000208	0.000116	0.000291	0.0000629	0.0000315	0.0000315	0.0000629	0.0000157	0.00000787	0.00000755	0.000219	0.0000315	0.0000315
Iron (Dissolved)	0.000269	0.000358	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.000269	0.000358	0.0171	0.00107	0.00107
Magnesium (Dissolved)	0.582	0.485	0.00321	0.496	0.481	0.512	0.504	0.518	0.56	0.508	0.49	0.328	0.335	0.379
Manganese (Dissolved)	0.0000133	0.000011	0.0000288	0.0000994	0.000619	0.000903	0.000721	0.000877	0.000644	0.000235	0.000258	0.000779	0.000105	0.000652
Potassium (Dissolved)	0.0256	0.0165	0.151	0.0381	0.0512	0.0512	0.0512	0.0512	0.0384	0.0256	0.0496	0.0104	0.0512	0.0512
Sodium (Dissolved)	0.0435	0.0535	0.857	0.27	0.84	0.961	1.02	1.06	1.07	1.22	1.14	0.431	0.357	0.418
Zinc (Dissolved)	0.0000472	0.000125	0.000153	0.0000764	0.000153	0.000153	0.000153	0.000153	0.0000978	0.0000472	0.0000642	0.0000795	0.000153	0.000226
Sum of Cations	2.98	2.44	12.8	2.43	2.71	2.95	2.91	2.93	3.26	3.44	3.51	1.9	2.28	2.14
Error %	**11.6**	6.64	-36.4	**16.5**	4.44	7.91	5.98	8.89	**12.1**	6.53	**18.1**	2.57	**12.4**	**11.5**

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NOTES:

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SCHAFT CREEK MINE PROJECT
TABLE B2.11-ION BALANCE

	RES08-05A	RES08-05A	RES08-05A	RES08-05B	RES08-05B	RES08-05B	RES08-05B	RES08-05B	RES08-05B	RES08-06A	RES08-06A	RES08-06A	RES08-06A	RES08-06A
Date Sampled	14-Sep-11	23-Jun-12	23-Sep-12	01-Oct-08	01-May-10	23-Sep-10	15-Sep-11	23-Jun-12	22-Sep-12	27-Sep-08	30-Sep-09	07-May-10	22-Sep-10	16-Sep-11
Time Sampled	10:25 AM	10:45 AM	4:28 PM	10:31 AM	12:47 PM	10:49 AM		12:30 PM	4:50 PM		4:00 PM	5:10 PM	1:15 PM	
Anions														
Bicarbonate Alkalinity	-1.23	-1.29	-1.21	-1.85	-1.49	-1.49	-1.42	-1.34	-1.27	-1.75	-1.63	-1.59	-1.75	-2.34
Hydroxide Alkalinity	-0.1176		-0.1176	-0.05879	-0.1176	-0.1176	-0.1176		-0.1176	-0.05879	-0.1176	-0.05879	-0.1176	-0.1176
Chloride (Dissolved)	-0.0141	-0.00705	-0.0141	-0.03864	-0.0141	-0.0141	-0.0141	-0.00705	-0.0141	-0.2784	-0.3131	-0.3498	-0.5021	-0.8264
Fluoride (Dissolved)	-0.004369	0.00432	-0.004264	-0.002895	-0.002263	-0.002369	-0.003053	-0.00358	-0.003527	-0.02979	-0.01937	-0.02505	-0.03474	-0.06369
Sulphate (Dissolved)	-0.4643	0.464	-0.4684	-0.4414	-0.3394	-0.3331	-0.3081	-0.477	-0.4747	-1.96	-2.12	-2.29	-3.23	-5.1
Nitrate (as N)	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0001016	-0.0000806	-0.0000806	-0.0000806	-0.0008065
Nitrite (as N)	-0.0000217		-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217		-0.0000217	-0.0000391	-0.0000217	-0.0000217	-0.0000217	-0.0002174
Phosphate (Dissolved)	0		-0.0000632	0	0	-0.0000632	-0.0000632		-0.0000789	0	0	0	-0.0000632	0
Sum of Anions	-1.83	-1.76	-1.81	-2.39	-1.96	-1.96	-1.86	-1.82	-1.88	-4.08	-4.2	-4.31	-5.63	-8.45
Cations														
Aluminum (Dissolved)	0.000556	0.00167	0.000189	0.0182	0.000556	0.000812	0.00155	0.000478	0.000311	0.00923	0.000423	0.000556	0.000556	0.00111
Calcium (Dissolved)	1.24	1.28	1.19	1.64	1.89	1.63	1.51	1.46	1.34	1	1.05	1.18	1.32	1.91
Copper (Dissolved)	0.0000315		0.0000233	0.000239	0.0000315	0.0000315	0.0000504		0.0000129	0.0000755	0.00000315	0.0000315	0.0000315	0.0000629
Iron (Dissolved)	0.00107		0.000358	0.00802	0.0109	0.0239	0.0138		0.000394	0.00297	0.00107	0.00107	0.00107	0.0014
Magnesium (Dissolved)	0.341	0.353	0.335	0.481	0.384	0.427	0.386	0.416	0.403	0.938	0.987	1.02	1.31	1.92
Manganese (Dissolved)	0.0000699	0.0000495	0.0000513	0.00805	0.00823	0.00637	0.00604	0.00079	0.000593	0.000663	0.000714	0.000644	0.000714	0.000608
Potassium (Dissolved)	0.0512	0.0256	0.00844	0.0276	0.0512	0.0512	0.0512	0.0256	0.0174	0.146	0.149	0.174	0.153	0.0767
Sodium (Dissolved)	0.344	0.352	0.326	0.361	0.248	0.248	0.209	0.27	0.244	1.73	2.09	2.24	3.37	7.22
Zinc (Dissolved)	0.000248	0.000129	0.0000306	0.000306	0.000153	0.000211	0.000349	0.0000472	0.000162	0.000306	0.0000826	0.000153	0.000177	0.000819
Sum of Cations	1.98	2.01	1.86	2.54	2.59	2.39	2.18	2.17	2.01	3.83	4.28	4.62	6.16	11.1
Error %	3.88	6.77	1.24	3.09	13.8	9.9	7.79	8.74	3.24	-3.16	0.921	3.39	4.42	**13.7**

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SCHAFT CREEK MINE PROJECT
TABLE B2.11-ION BALANCE

	RES08-06A	RES08-06A	RES08-06B	RES08-06B	RES08-06B	RES08-06B	RES08-06B	RES08-06B	RES08-06B	RES08-06B	RES08-07A	RES08-07A	RES08-07A	RES08-07A
Date Sampled	22-Jun-12	23-Sep-12	27-Sep-08	30-Sep-09	07-May-10	20-Sep-10	16-Sep-11	17-Mar-12	22-Jun-12	22-Sep-12	01-Oct-09	02-May-10	21-Sep-10	26-Mar-11
Time Sampled	11:30 AM	5:05 PM	10:35 AM	11:15 AM	9:34 AM	8:11 AM	9:30 AM	4:16 PM	12:20 PM	4:25 PM	5:12 PM	12:40 PM	12:15 PM	11:30 AM
Anions														
Bicarbonate Alkalinity	-2.45	-2.18	-1.48	-1.75	-1.75	-2.11	-1.69	-1.67	-1.51	-1.53	-3	-3.05	-3	-3.05
Hydroxide Alkalinity		-0.1176	-0.05879	-0.05879	-0.05879	-0.1176	-0.05879	-0.05879		-0.1176	-0.1176	-0.1176	-0.05879	-0.1176
Chloride (Dissolved)	-0.9957	-0.0739	-0.04626	-0.06149	-0.07672	-0.0141	-0.09252	-0.1165	-0.146	-0.147	-0.4626	-0.4654	-0.4428	-0.4654
Fluoride (Dissolved)	-0.09053	-0.006843	-0.008527	-0.005685	-0.005948	-0.003211	-0.006895	-0.007895	-0.00879	-0.008685	-0.02758	-0.03006	-0.02963	-0.02942
Sulphate (Dissolved)	-6.02	-0.4622	-0.7724	-0.7391	-0.737	-0.2811	-0.8015	-0.9181	-1.11	-1.11	-2.85	-2.89	-2.73	-2.94
Nitrate (as N)	-0.0008065	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806
Nitrite (as N)		-0.0000261	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217		-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217
Phosphate (Dissolved)		-0.0000726	0	0	0	-0.0003726	0	0		-0.0003947	0	0	-0.0000632	0
Sum of Anions	-9.46	-2.84	-2.37	-2.62	-2.63	-2.53	-2.65	-2.77	-2.76	-2.91	-6.46	-6.55	-6.26	-6.6
Cations														
Aluminum (Dissolved)	0.000823	0.000411	0.0229	0.000345	0.000556	0.000556	0.000556	0.000334	0.000378	0.000511	0.000111	0.000556	0.000556	0.000556
Calcium (Dissolved)	1.74	1.39	1.02	0.973	1.18	1.75	1.14	1	1.03	1.02	2.49	3.15	2.98	2.93
Copper (Dissolved)	0.00000787	0.00000629	0.0000809	0.00000315	0.0000315	0.0000315	0.0000315	0.0000157	0.00000787	0.00000629	0.00000315	0.0000315	0.0000315	0.0000315
Iron (Dissolved)	0.000806	0.00129	0.0126	0.00107	0.00107	0.00107	0.00107	0.00107	0.000269	0.00129	0.00315	0.00383	0.0029	0.00272
Magnesium (Dissolved)	1.73	1.42	0.565	0.715	0.818	0.864	0.809	0.757	0.798	0.794	2.74	3.11	3.04	3.04
Manganese (Dissolved)	0.000604	0.000775	0.000877	0.000732	0.000739	0.00137	0.000823	0.000775	0.000681	0.000648	0.00224	0.00227	0.00238	0.00218
Potassium (Dissolved)	0.0895	0.0918	0.121	0.153	0.199	0.0997	0.169	0.159	0.197	0.176	0.046	0.0563	0.0537	0.0537
Sodium (Dissolved)	6.7	4.65	0.757	0.779	0.87	0.352	0.792	0.835	1.08	0.996	1.32	1.29	1.28	1.31
Zinc (Dissolved)	0.0000472	0.0000306	0.0000764	0.0000306	0.000153	0.000153	0.000153	0.0000917	0.0000472	0.0000826	0.0000367	0.000153	0.000153	0.000153
Sum of Cations	10.3	7.55	2.5	2.62	3.07	3.07	2.91	2.75	3.1	2.99	6.6	7.61	7.36	7.34
Error %	4.00	**45.3**	2.74	0.134	7.74	9.69	4.73	-0.3276	5.75	1.27	1.1	7.48	8.06	5.28

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SCHAFT CREEK MINE PROJECT
TABLE B2.11-ION BALANCE

	RES08-07A	RES08-07A	RES08-07A	RES08-07A	RES08-07B	RES08-07B	RES08-07B	RES08-07B	RES08-07B	RES08-07B	RES08-07B	RES08-07B	RES08-08A	RES08-08A
Date Sampled	14-Sep-11	17-Mar-12	23-Jun-12	23-Sep-12	01-Oct-09	08-May-10	21-Sep-10	26-Mar-11	14-Sep-11	17-Mar-12	23-Jun-12	23-Sep-12	01-Oct-09	06-May-10
Time Sampled	11:15 AM	12:21 PM	3:15 PM	12:35 PM	5:17 PM	4:56 PM	8:47 AM	7:50 AM	8:30 AM	2:00 PM	5:00 PM	1:52 PM	12:47 PM	2:40 PM
Anions														
Bicarbonate Alkalinity	-3.16	-2.97	-3.17	-3.07	-3.1	-3.1	-3.03	-3.11	-3.3	-3.18	-3.27	-3.02	-1.82	-2.18
Hydroxide Alkalinity	-0.1176	-0.1176		-0.1176	-0.1176	-0.1176	-0.05879	-0.1176	-0.1176	-0.1176		-0.05879	-0.1176	-0.1176
Chloride (Dissolved)	-0.4795	-0.4795	-0.4795	-0.488	-0.4146	-0.4118	-0.4146	-0.4118	-0.4203	-0.4175	-4.17	-0.4203	-0.03639	-0.1974
Fluoride (Dissolved)	-0.03232	-0.03279	-0.03211	-0.03211	-0.02374	-0.02521	-0.02695	-0.02621	-0.02895	-0.02932	-0.02916	-0.02911	-0.05316	-0.07053
Sulphate (Dissolved)	-2.94	-2.91	-2.89	-2.91	-2.5	-2.54	-2.54	-2.62	-2.62	-2.62	-2.64	-2.66	-2.87	-6.12
Nitrate (as N)	-0.0000806	-0.0000806	-0.0000806	-0.0004032	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0004032
Nitrite (as N)	-0.0000217	-0.0000326		-0.0001087	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000261	-0.0000217		-0.0000217	-0.0000217	-0.0001087
Phosphate (Dissolved)	0	0		-0.0000632	0	0	-0.0000632	0	0	0		-0.0000632	0	0
Sum of Anions	-6.73	-6.51	-6.54	-6.62	-6.16	-6.19	-6.07	-6.29	-6.49	-6.36	-6.33	-6.19	-4.9	-8.69
Cations														
Aluminum (Dissolved)	0.000556	0.000334	0.000167	0.000133	0.000145	0.000556	0.000556	0.000556	0.000556	0.000334	0.000167	0.000156	0.000111	0.00111
Calcium (Dissolved)	2.78	2.85	2.95	2.78	2.19	2.81	2.65	2.73	2.59	2.66	2.51	2.5	2.06	4.94
Copper (Dissolved)	0.0000315	0.0000157	7.87E-07	0.0000161	0.00000441	0.0000315	0.0000315	0.0000315	0.0000315	0.0000157	0.00000787	0.00000913	0.00000409	0.0000629
Iron (Dissolved)	0.00244	0.00211	0.00118	0.00197	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.000269	0.000358	0.00107	0.00107
Magnesium (Dissolved)	3.04	3.05	3.23	3.23	2.86	3.18	3.1	3.03	2.99	3.18	2.97	3.2	0.801	1.28
Manganese (Dissolved)	0.00252	0.00244	0.00241	0.00237	0.00187	0.00202	0.00205	0.00202	0.00227	0.00208	0.00213	0.00207	0.00143	0.00221
Potassium (Dissolved)	0.0512	0.0504	0.0537	0.0494	0.0775	0.0921	0.0818	0.0793	0.0818	0.0752	0.0767	0.076	0.0245	0.0512
Sodium (Dissolved)	1.28	1.21	1.31	1.17	1.26	1.28	1.21	1.27	1.24	1.14	1.22	1.1	2.05	3.63
Zinc (Dissolved)	0.000153	0.000153	0.0000472	0.0000948	0.0000703	0.000153	0.000153	0.000153	0.000379	0.000235	0.0000472	0.0000673	0.0000306	0.000153
Sum of Cations	7.16	7.17	7.56	7.23	6.39	7.37	7.05	7.11	6.91	7.06	6.77	6.88	4.94	9.91
Error %	3.08	4.79	7.21	4.44	1.87	8.64	7.43	6.18	3.13	5.17	3.38	5.28	0.416	6.56

M:\1\01\00329\13\A\Correspondence\VA13-00012 - GWQ Addendum to 2011 Hydrogeo Study\Attachments\Appendix B\[Appendix B2 Tables.xls]B2.11-ION BALANCE

NOTES:

1. UNITS ARE mg/L, UNLESS OTHERWISE STATED
2. ION BALANCE WAS DONE USING ALKALINITY (as $CaCO_3$) INSTEAD OF BICARBONATE ALKALINITY FOR JUNE 2012 SAMPLES.
3. BOLD TEXT INDICATES AN ERROR GREATER THAN 10%.

SCHAFT CREEK MINE PROJECT
TABLE B2.11-ION BALANCE

	RES08-08A	RES08-08A	RES08-08A	RES08-08A	RES08-08A	RES08-08A	RES08-08B	RES08-08B	RES08-08B	RES08-08B	RES08-08B	RES08-08B	RES08-08B
Date Sampled	20-Sep-10	26-Mar-11	16-Sep-11	18-Mar-12	22-Jun-12	23-Sep-12	01-Oct-09	04-May-10	20-Sep-10	16-Sep-11	18-Mar-12	22-Jun-12	23-Sep-12
Time Sampled	3:49 PM	9:07 AM	1:55 PM	1:33 PM	3:20 PM	12:35 PM	10:55 AM	5:00 PM	5:56 PM	9:45 AM	11:30 AM	4:45 PM	1:50 PM
Anions													
Bicarbonate Alkalinity	-2.1	-2.1	-2.08	-2.07	-2.33	-1.98	-2.7	-2.41	-2.61	-2.59	-2.08	-2.43	-2.56
Hydroxide Alkalinity	-0.1176	-0.1176	-0.1176	-0.1176		-0.05879	-0.1176	-0.1176	-0.1176	-0.1176	-0.1176		-0.1176
Chloride (Dissolved)	-0.103	-0.1145	-0.1241	-0.05528	-0.05444	-0.04851	-0.01833	-0.0141	-0.022	-0.03357	-0.07052	-0.01721	-0.02482
Fluoride (Dissolved)	-0.07211	-0.06843	-0.07211	-0.06001	-0.06053	-0.05632	-0.03579	-0.03137	-0.04221	-0.03769	-0.02421	-0.03216	-0.04221
Sulphate (Dissolved)	-4.21	-4.71	-4.41	-2.89	-2.91	-2.77	-1.5	-0.8869	-1.56	-1.47	-0.7578	-1.25	-1.71
Nitrate (as N)	-0.0000806	-0.0000806	-0.0004032	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0000806	-0.0004258	-0.0004032	-0.0000806	-0.0000806
Nitrite (as N)	-0.0000217	-0.0000217	-0.0001087	-0.0000217		-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0000217	-0.0001087		-0.0000217
Phosphate (Dissolved)	-0.0000632	0	0	0		-0.0000632	0	0	-0.0000632	0	0		-0.0001011
Sum of Anions	-6.6	-7.11	-6.8	-5.19	-5.3	-4.91	-4.37	-3.46	-4.35	-4.25	-3.05	-3.7	-4.45
Cations													
Aluminum (Dissolved)	0.000556	0.000556	0.000556	0.000334	0.000167	0.000222	0.00139	0.00149	0.000712	0.00111	0.00208	0.0018	0.000889
Calcium (Dissolved)	3.56	3.7	3.44	2.58	2.86	2.46	2.11	2.15	2.46	2.3	2	2.04	2.31
Copper (Dissolved)	0.0000315	0.0000315	0.0000315	0.0000157	0.00000787	0.00000629	0.00000346	0.0000315	0.0000315	0.0000315	0.0000157	0.0000195	0.00000629
Iron (Dissolved)	0.00107	0.00208	0.00107	0.00107	0.000269	0.00154	0.0283	0.0423	0.0296	0.0476	0.187	0.0722	0.067
Magnesium (Dissolved)	1.12	1.17	1.13	0.93	1.05	0.955	0.913	0.806	1	0.938	0.592	0.716	0.905
Manganese (Dissolved)	0.0017	0.00155	0.00149	0.00149	0.00178	0.00209	0.0163	0.0134	0.0125	0.013	0.0178	0.0167	0.0139
Potassium (Dissolved)	0.0512	0.0512	0.0512	0.0274	0.0256	0.0307	0.0445	0.0512	0.0512	0.0512	0.0276	0.0256	0.0435
Sodium (Dissolved)	2.54	2.59	2.41	1.67	1.8	1.55	1.56	1.25	1.51	1.31	0.896	1.32	1.35
Zinc (Dissolved)	0.000511	0.000456	0.000153	0.000425	0.0000472	0.0000581	0.0000306	0.000153	0.000156	0.000278	0.0000917	0.000104	0.000125
Sum of Cations	7.28	7.52	7.03	5.21	5.74	5	4.67	4.31	5.06	4.66	3.72	4.1	4.69
Error %	4.84	2.77	1.66	0.171	3.96	0.866	3.34	**11**	7.56	4.62	9.92	5.11	2.58

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3. BOLD TEXT INDICATES AN ERROR GREATER THAN 10%.

MEMORANDUM

To:	Mr. Shane Uren	Date:	May 21, 2013
Copy To:	Mr. Jonathan Olsen	File No.:	VA101-329/13-A.01
From:	Cindy Starzyk	Cont. No.:	VA13-01042
Re:	Addendum to Schaft Creek 2011 Baseline Hydrogeology Study – Status of Monitoring Well RES08-02A		

1.0 INTRODUCTION

The purpose of this memorandum is to provide an update to the hydrogeologic data presented in the "2011 Baseline Hydrogeology Study" issued on April 13, 2012 (Ref. No. VA101-329/8-3) and the subsequent addendum issued on January 10, 2013 (Ref. No. VA12-02195) summarizing groundwater level data collected since the 2011 Baseline Hydrogeology study was written. This memorandum discusses the status of monitoring well RES08-02A.

2.0 GROUNDWATER LEVELS

Monitoring well RES08-02A was noted to be damaged during a site investigation conducted in April 2010. The surface seal of the well may be damaged and water level measurements within this well may not represent subsurface conditions at the well screen depth. The monitoring well is located within the deposit and hillslope area of the Schaft Creek Mine Project.

The integrity of monitoring well RES08-02A is considered questionable based on the rapid rise of the water level in the well in response to spring freshet and fall rain events. This rapid response is not observed within monitoring well RES08-02B, which is screened at a shallower depth at the same location. Water levels calculated from pressure transducer data recorded at RES08-02A and RES08-02B are shown on Figure A.6 of Appendix A of the 2011 Baseline Hydrogeology Study, and are provided in this memorandum for reference.

Manual water levels measured at RES08-02A and RES08-02B during site visits conducted prior to the noted well damage, in September 2008 and October 2009, indicate that the vertical hydraulic gradient between the two well screens is upward. The vertical hydraulic gradient calculated using transducer data after RES08-02A was noted to be damaged is also upward. Since the calculated direction of the vertical hydraulic gradient remains the same before and after the potential well damage, the interpretation of groundwater flow presented in the 2011 Baseline Hydrogeology report (Section 4.4.4) remains unchanged.

Monitoring well RES08-02A is not being actively sampled for water quality analysis because it was determined to be contaminated by installation materials following an assessment of groundwater quality.

The integrity of the well will be investigated in a future site visit.

3.0 CLOSURE

Please contact the undersigned if you have any comments or concerns.

Signed:

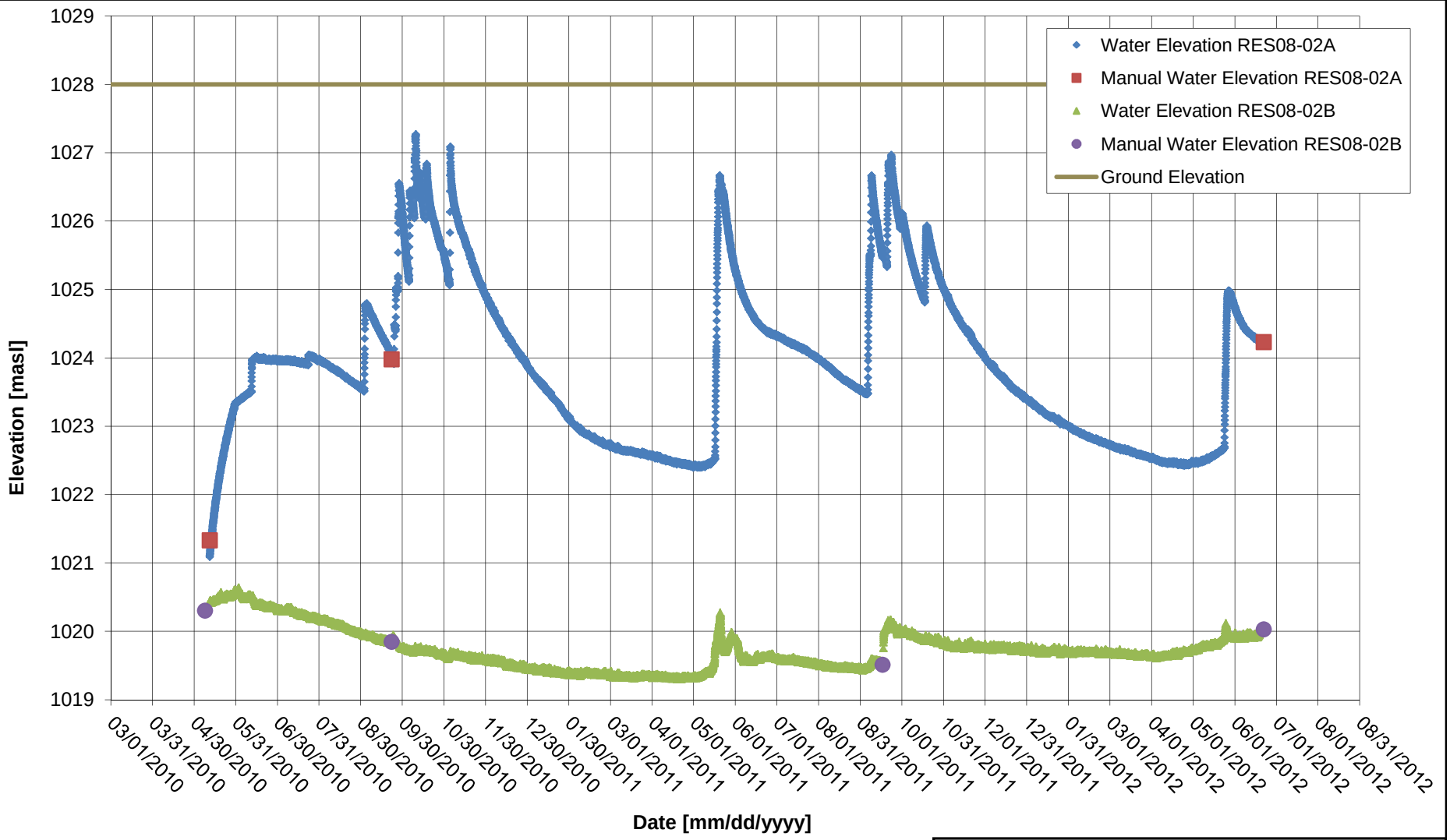
Cindy Starzyk, Ph.D. - Geological Engineering

Approved:

Ken Brouwer, P.Eng. - President

Attachments:
Figure 1 Rev 2 RES08-2A and RES08-2B Water Elevation [masl]

/cas



NOTES:

1. GROUND ELEVATION IS APPROXIMATELY 1028 masl BASED ON ELEVATION ESTIMATED FROM DRILLHOLE LOCATION AND TOPOGRAPHIC MAPS.
2. RES08-02A COMPLETION ZONE IN FELDSPAR QUARTZ PORPHYRY BETWEEN 51.8 AND 60.0 mbgs. THE WELL IS SUSPECTED TO BE DAMAGED AND WATER LEVELS MAY NOT BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THE WELL SCREEN DEPTH.
3. RES08-02B COMPLETION ZONE IN OVERBURDEN BETWEEN 23.8 AND 28.0 mbgs.

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
2	21MAY'13	ISSUED WITH MEMO	CM	CAS	KB

COPPER FOX METALS INC.

SCHAFT CREEK MINE PROJECT

RES08-02A and RES08-02B
WATER ELEVATION [masl]

Knight Piésold CONSULTING

P/A NO. VA101-329/13

REF. NO. VA13-01042

FIGURE 1

REV 2