

**APPENDIX 14-A**  
**2007-2011 WATER QUALITY BASELINE**

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Seabridge Gold Inc.

# KSM PROJECT

## 2007 to 2011 Baseline Water Quality Report

SEABRIDGE GOLD



# KSM PROJECT

## 2007 TO 2011 BASELINE

## WATER QUALITY REPORT

August 2012  
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Prepared for:

**SEABRIDGE GOLD**

Seabridge Gold Inc.

Prepared by:



Rescan™ Environmental Services Ltd.  
Vancouver, British Columbia

# **Executive Summary**

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The 2007 to 2011 KSM Project surface water quality baseline program was designed to collect baseline water quality data for streams, rivers, and lakes within the Project study area. At each site, water quality samples were collected to characterize the natural spatial and temporal variation present in these systems.

## Stream Water Quality

Weekly, monthly, and quarterly water quality samples were collected at key stream sites related to the proposed mining area and the tailing management facility (TMF). Fifty-one stream and river sampling sites were sampled within the Mitchell/Sulphurets/Unuk, Teigen/Snowbank/Bell-Irving, and Treaty/Bell-Irving River watersheds. Two reference streams were included and site selection incorporated Project design updates.

Streams in the Project area were typically near-neutral to slightly alkaline, with moderately hard to soft waters. Turbidity and total suspended solids (TSS) concentrations were largely associated with the hydrological regime with increased sediment loads during freshet and the fall period of high rainfall. Due to the mineralization of the Project area, peaks in TSS resulted in elevated metal concentrations. Streams were rich in total phosphorus; however, very little bioavailable orthophosphate was observed. Low total organic carbon (TOC) concentrations were observed at most streams. The exception to the typical stream characteristics was the upper Mitchell Creek watershed where naturally occurring acidity and poorly buffered conditions were observed. These sites were more influenced by groundwater seepage and naturally occurring acid rock drainage (ARD) than seasonal TSS concentrations. High flow periods typically diluted metal concentrations at the acidic sites.

Concentrations of metals were generally highest at those sites close to the deposit areas in Mitchell and Sulphurets creeks. The lowest metal concentrations were typically observed in the Teigen/Bell-Irving watershed. Concentrations of many metals naturally exceeded provincial and federal water quality guidelines for the protection of aquatic life, reflecting the naturally high mineral content of the KSM Project waters. Guideline exceedances were most commonly observed for total and dissolved aluminum, total cadmium, total and dissolved iron, total lead, total selenium, and total zinc. Dissolved metals which are more biologically available generally contributed substantively less to the total metal load than particle-associated metals. The exceptions were the acidic Mitchell Creek sites where most metals were primarily in the dissolved phase, and for antimony, cadmium, molybdenum, selenium, and uranium that were predominantly in the dissolved phase at all sites. The spatial and temporal trends observed for metal concentrations were similar among baseline years.

## Lake Water Quality

Annual water quality sampling was performed at four lakes from 2008 to 2010 in August or September. Sulphurets and Knipple Glacier lakes are higher altitude, glacier-fed lakes, while West Teigen and Todedada lakes are lower altitude, with vegetated riparian zones. Sulphurets and Knipple Glacier lakes were characterized by high levels of suspended solids and high concentrations of particulate metals. Concentrations were frequently higher than water quality guidelines and were greatest in Sulphurets Lake, which is near the deposit area. Total and dissolved aluminum, total copper, total cadmium, total chromium, and total iron frequently exceeded guidelines at Sulphurets and Knipple Glacier lakes. West Teigen Lake and Todedada Lake were characterized by lower suspended solid concentrations, higher concentrations of total organic carbon, and lower concentrations of metals.

# KSM PROJECT

## 2007 TO 2011 BASELINE

## WATER QUALITY REPORT

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# **1. Introduction**

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The objective of the KSM Project surface water quality baseline is to characterize the spatial and temporal background conditions of water quality in lakes, rivers, and streams within the vicinity of the proposed Project. The Project surface water quality baseline program was initiated in 2007 and continued through 2011 incorporating Project design updates. This report presents the cumulative results of the surface water quality baseline and includes data from previous baseline reports (Rescan 2009, 2010, 2011) and data collected during the 2011 field season. The 2011 stream water quality results are presented in Appendix 1-1.

## **1.1 PROJECT PROPOSER**

Seabridge Gold Inc. (Seabridge) is the proponent for the proposed KSM Project (the Project), a gold, copper, silver, molybdenum mine.

## **1.2 PROJECT LOCATION**

The Project is located in the coastal mountains of northwestern British Columbia. It is approximately 950 km northwest of Vancouver and 65 km northwest of Stewart, within 30 km of the British Columbia-Alaska border (Figure 1.2-1).

## **1.3 PROJECT OVERVIEW**

The Project is located in two geographical areas: the Mine Site and Processing and Tailing Management Area (PTMA), connected by twin 23-km tunnels, the Mitchell-Treaty Twinned Tunnels (Figure 1.3-1). The Mine Site is located south of the closed Eskay Creek Mine, within the Mitchell, McTagg, and Sulphurets Creek valleys. Sulphurets Creek is a main tributary of the Unuk River, which flows to the Pacific Ocean. The PTMA is located in the upper tributaries of Teigen and Treaty creeks. Both creeks are tributaries of the Bell-Irving River, which flows to the Nass River and into the Pacific Ocean. The PTMA is located about 19 km southwest of Bell II on Highway 37.

The Mine Site will be accessed by a new road, the Coulter Creek Access Road, which will be built from km 70 on the Eskay Creek Mine Road. This road will follow Coulter and Sulphurets creeks to the Mine Site. The PTMA will also be accessed by a new road, the Treaty Creek Access Road, the first 3-km segment of which is a forest service road off of Highway 37. The Treaty Creek Access Road will parallel Treaty Creek.

Four deposits will be mined at the KSM Project—Kerr, Sulphurets, Mitchell, and Iron Cap—using a combination of open pit and underground mining methods. Waste rock will be stored in engineered rock storage facilities located in the Mitchell and McTagg valleys at the Mine Site. Ore will be crushed and transported through one of the Mitchell-Treaty Twinned Tunnels to the PTMA. This tunnel will also be used to route the electrical power transmission lines. The second tunnel will be used to transport personnel and bulk materials. The Process Plant will process up to 130,000 tpd of ore to produce a daily average of 1,200 t of concentrate. Tailing will be pumped to the Tailing Management Facility from the Process Plant. Copper concentrate will be trucked from the PTMA along highways 37 and 37A to the Port of Stewart, which is approximately 170 km away via road.

The mine operating life is estimated at 51.5 years. Approximately 1,800 people will be employed annually during the Operation Phase. Project Construction will take about five years, and the capital cost of the Project is approximately US\$5.3 billion.



Figure 1.2-1

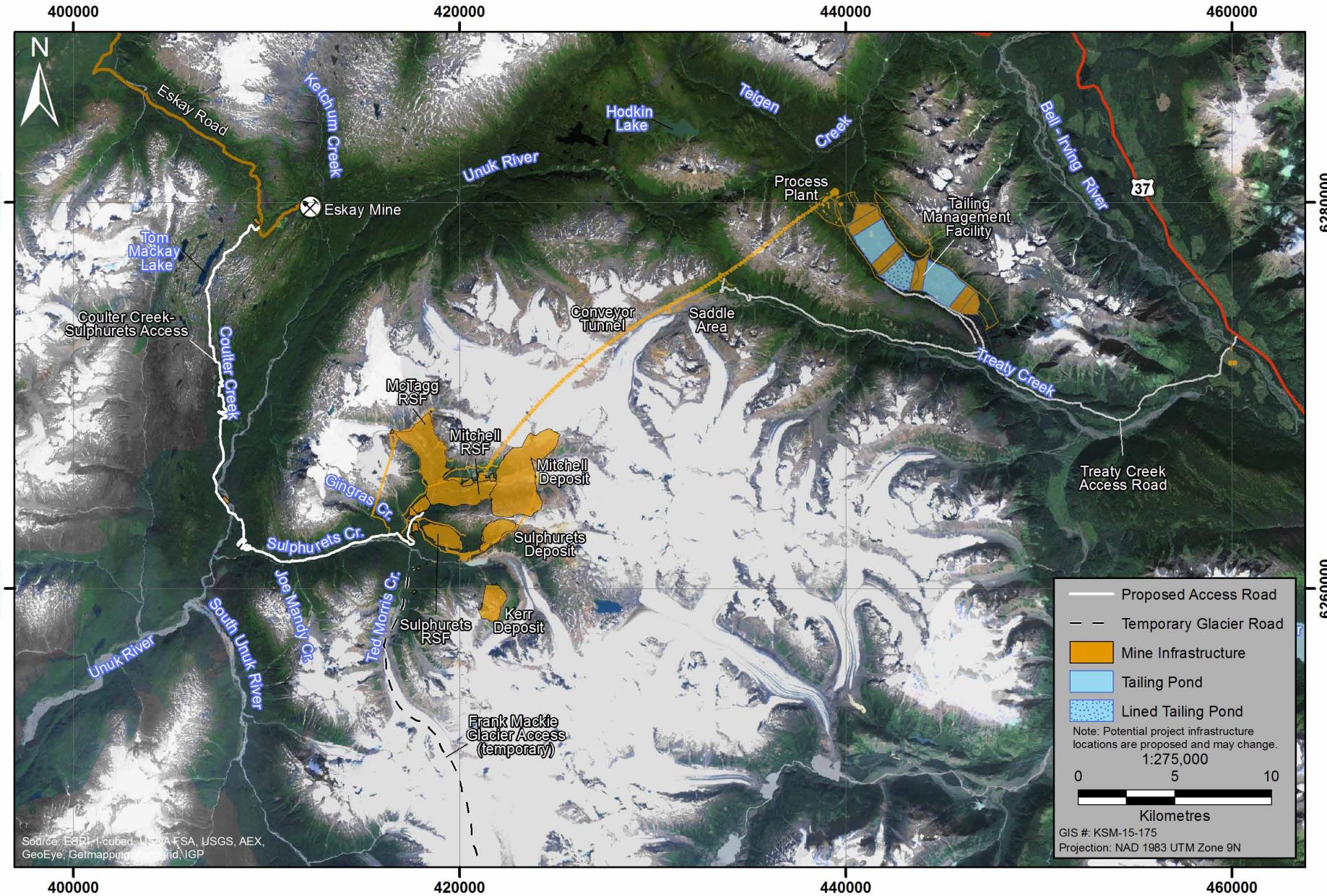


Figure 1.3-1

## **2. Objectives**

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Surface water quality baseline information has been collected from the KSM Project-related water courses since 2007. Sampling sites have been adapted from year to year to reflect updated Project designs and feedback receiving from working group meetings. The objective of this baseline study is to characterize the spatial and temporal background conditions of water quality in lakes, rivers, and streams within the vicinity of the proposed Project.

This 2007 to 2011 surface water quality baseline report provides a summary of monitoring and baseline data at stream and lake sites within the proposed receiving environments to support the proposed Project design, predictive surface water quality modelling, environmental effects assessment, and monitoring programs. This report includes data from previous baseline reports (Rescan 2009, 2010, 2011) and data collected during the 2011 field season. The cumulative surface water quality baseline data are presented in Section 4 and the 2011 surface water quality baseline figures are presented in Appendix 1-1.

## **3. Methodology**

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### **3.1 STUDY DESIGN**

The baseline stream water quality program focussed on the watercourses that could potentially be affected by mining development and operation: Bell-Irving River, Bowser River, Gingras Creek, Mitchell/McTagg creeks, Sulphurets Creek, Teigen Creek, Treaty Creek, and Unuk River. The study design was reviewed in 2009 and 2010 by the working group. Fifty-one stream and river sampling sites spanning ten watersheds, and including two reference sites (South Unuk River and Scott Creek), were included in the 2007 to 2011 stream water quality program. Four lakes, including two reference lakes, were sampled from 2008 to 2010 (Figure 3.1-1).

Sites in the Bell-Irving River, Teigen Creek, and Treaty Creek watersheds were selected to address the potential effects of the proposed process plant, the TMF, and associated access roads options. Sites in McTagg Creek, Mitchell Creek, Sulphurets Creek, Bowser River, and Unuk River were selected to examine the area potentially influenced by the proposed Mining Area and associated access roads. Three sites added in 2011 (SF1, IC1, and TRC0) were at the sides or toes of glaciers and assessed the contribution of streams from the surrounding slopes at the head of Mitchell and Treaty creeks and from glacial melt water. A detailed list of study sites and rationales is provided in Table 3.1-1.

The majority of stream water quality samples were collected either monthly or quarterly (Table 3.1-1). Quarterly sampling was carried out in March, June, August, and November. To characterize water quality during the most variable period of the year, weekly freshet sampling was conducted in 2008 and 2009 at eight stream sites following discussions with the appropriate regulatory authorities. Annual sampling was conducted at a historical Eskay Creek Mine monitoring site (ECM7) and at the four lake sites. Avalanche risk, unsafe helicopter access, and unsafe ground access (i.e., ice and water depth conditions) limited sampling at select sites in the winter. A summary of sampling frequency is provided in Table 3.1-2.

### **3.2 STREAM WATER QUALITY**

#### **3.2.1 Sampling**

Single stream water quality samples were collected at sites, with duplicate samples collected at 10% of the sites during any one sampling trip (see Section 3.2.3). Samples were collected in clean, labelled bottles. At stream sites, field sampling personnel wore nitrile gloves and collected water samples while facing upstream by submerging the bottles until they were almost full, leaving sufficient room for the addition of any necessary preservatives (Plate 3.2-1). Dissolved metal samples were filtered and preserved at ALS Environmental Services, Burnaby, British Columbia, to avoid risk of contamination in the field. Where safe wading conditions existed, water samples were collected in mid-stream; however, for larger rivers it was necessary to collect samples closer to the shore. At these sites, care was used to avoid back eddies and areas of turbulence that could have elevated levels of suspended material. After preservation, samples were stored in a dark, cool place until shipment. Table 3.2-1 summarizes the sample container, preservation and handling requirements for water quality samples.

*In situ* measurements of temperature, pH, and conductivity were collected in the field using a handheld pH/conductivity meter during each site visit (Plate 3.2-2).

**Table 3.1-1. Baseline Water Quality Sampling Sites, KSM Project, 2007 to 2011**

Watershed	Site ID	Easting	Northing	Rationale	Sampling Frequency
					Weekly Monthly Quarterly Annually
<b>STREAMS</b>					
Bell-Irving River	BIR1*			Upstream reference site on Bell-Irving River, upstream of confluence with Teigen Creek.	x
	BIR2*			Far-field monitoring site on Bell-Irving River, downstream of confluence with Treaty Creek.	x
Bowser River	BR1			Bowser River, proximal to southern end of Frank Mackie Glacier Road. (discontinued 2009)	x
Gingras Creek	GC1*x			Near-field monitoring site on Gingras Creek.	x x
Mitchell & McTagg Creeks	IC1*			Near-field monitoring site on north side of glacier, groundwater seep from Iron Cap Deposit.	x
	SF1*			Near-field monitoring site on south side of glacier, groundwater seep from Snowfields Deposit.	x
	MC1A-US*			Near-field monitoring site on Mitchell Creek at toe of glacier.	x
	MC1A			Near-field monitoring site on Mitchell Creek 200 m from toe of glacier. (discontinued 2010)	x
	MC1*x			Near-field monitoring site on Mitchell Creek, downstream of Mitchell and Iron Cap Deposits.	x x
	MC2*			Near-field monitoring site on Mitchell Creek, just before confluence with Sulphurets Creek.	x
	MCT1			Near-field monitoring site on McTagg Creek, upper NE fork, potential receiving environment for seepage from McTagg RSF. (discontinued 2009)	x
	MCT2			Near-field monitoring site on McTagg Creek, upper NW fork, potential receiving environment for seepage from McTagg RSF. (discontinued 2009)	x
	MCT*			Near-field monitoring site on McTagg Creek, below confluence of two forks, potential receiving environment for seepage from McTagg RSF.	x
	MCTR**x			Near-field monitoring site on McTagg Creek, before confluence with Mitchell Creek.	x x x
Scott Creek	SCR*†x			Reference stream for TMF area.	x
South Unuk River	SUNR**x			Reference stream for Mining Area.	x
Sulphurets Creek	SCT*x			Ted Morris Creek, tributary to Sulphurets Creek, proximal to Frank Mackie Glacier Road.	x
	SC1*†x			Near-field monitoring site on Sulphurets Creek before the confluence with Mitchell Creek, downstream of Kerr Deposit, downstream of Sulphurets Lake.	x x
	SC2**x			Near-field monitoring site on Sulphurets Creek, downstream of the confluence with Mitchell Creek, upstream of the fish barrier.	x
	SC3**x			Mid-field monitoring site on Sulphurets Creek, downstream of the fish barrier.	x x

*(continued)*

**Table 3.1-1. Baseline Water Quality Sampling Sites, KSM Project, 2007 to 2011 (continued)**

Watershed	Site ID	Easting	Northing	Rationale	Sampling Frequency
					Weekly Monthly Quarterly Annually
<b>STREAMS</b>					
Teigen Creek	STE1 <sup>x</sup>			Near-field monitoring site, South Teigen Creek, under footprint of proposed TMF. (discontinued 2009)	
	STE1A <sup>*</sup>			Near-field monitoring site on South Teigen Creek, under footprint of proposed TMF.	x
	STE2 <sup>*†x</sup>			Near-field monitoring site on South Teigen Creek, potential receiving environment for TMF discharge or potential seepage from TMF.	x x
	STE3 <sup>*</sup>			Mid-field monitoring site on South Teigen Creek, just before confluence with Teigen Creek.	x x
	UNK1 <sup>x</sup>			Near-field monitoring site, proximal to proposed plant site. (discontinued 2009)	x
	UNK2 <sup>x</sup>			Near-field monitoring site, potential receiving environment from TMF alternative. (discontinued 2009)	x
	TEC1 <sup>*x</sup>			Upstream reference on Teigen Creek, upstream of confluence with South Teigen Creek. Reference site for TEC2.	x x
	TEC1B <sup>*</sup>			Upstream reference on Teigen Creek, just upstream of confluence with South Teigen Creek.	x
	TEC2 <sup>*†x</sup>			Mid-field monitoring site on Teigen Creek, downstream of confluence with South Teigen Creek.	x x
	HLO			Near-field monitoring site at Hodkin Lake outflow, potential access road. (discontinued 2008)	x
Treaty Creek	SNO1 <sup>x</sup>			Upstream reference on Snowbank Creek, upstream of confluence with Teigen Creek. Reference site for SNO2. (discontinued 2009)	x
	SNO2 <sup>*x</sup>			Mid-field monitoring site on Snowbank Creek, downstream of confluence with Teigen Creek.	x
	TRC0			Upstream reference on Treaty Creek at the toe of the glacier.	x
	TRC1 <sup>*x</sup>			Upstream reference on Treaty Creek.	x
	TRC1B <sup>*</sup>			Upstream reference on Treaty Creek, just upstream of confluence with North Treaty Creek.	x
	TRC2 <sup>*†x</sup>			Mid-field monitoring site on Treaty Creek, downstream of confluence with North Treaty Creek.	x x x
	TRC3 <sup>*x</sup>			Mid-field monitoring site on Treaty Creek.	x
	NTR1 <sup>*x</sup>			Near-field monitoring site on North Treaty Creek, under footprint of TMF.	x
	NTR1A <sup>*</sup>			Near-field monitoring site on North Treaty Creek, potential receiving environment of TMF discharge and seepage from TMF dam.	x
	NTR2 <sup>*†x</sup>			Near-field monitoring site on North Treaty Creek, just before confluence with Treaty Creek.	x x x

(continued)

**Table 3.1-1. Baseline Water Quality Sampling Sites, KSM Project, 2007 to 2011 (completed)**

Watershed	Site ID	Easting	Northing	Rationale	Sampling Frequency
					Weekly Monthly Quarterly Annually
<b>STREAMS</b>					
Unuk River	EUR1			Near-field monitoring site on East Unuk River, proposed plant site. (discontinued 2008)	x
	EUR2 <sup>x</sup>			Near-field monitoring site on East Unuk River, effluent discharge from TMF alternative site. (discontinued 2009)	x x
	ECM7			Long-term Eskay Creek Mine upstream control site. (discontinued 2009)	x
	ECM8 <sup>x</sup>			Long-term Eskay Creek Mine monitoring site, downstream of confluence with Ketchum Creek. (discontinued 2009)	x
	CC1 <sup>*x</sup>			Near-field monitoring site on Coulter Creek before confluence with Unuk River, proximal to Coulter Creek Access Road.	x
	UR0			Near-field monitoring site, effluent discharge from TMF alternative site. (discontinued 2008)	x
	UR1A <sup>*x</sup>			Upstream reference on Unuk River, before confluence with Sulphurets Creek. Reference for UR1.	x x
	UR1 <sup>*x</sup>			Mid-field monitoring site on Unuk River, downstream of confluence with Sulphurets Creek.	x x
	UR2 <sup>**x</sup>			Far-field monitoring site on Unuk River, just before international border.	x x x
<b>Total number of stream sites</b>	<b>51</b>				
<b>LAKES</b>					
Sulphurets Creek	SUL <sup>*x</sup>			Mining Area lake, proximal to Sulphurets and Kerr Pits, upstream of Sulphurets Creek, potential receiving environment for diversion tunnels.	x
Bowser River	KGL <sup>x</sup>			Reference lake for SUL. (discontinued 2009)	x
Teigen Creek	LAL <sup>x</sup>			TMF area lake. (discontinued 2009)	x
Scott Creek	TDL <sup>x</sup>			Reference lake for LAL. (discontinued 2009)	x
<b>Total number of lake sites</b>	<b>4</b>				

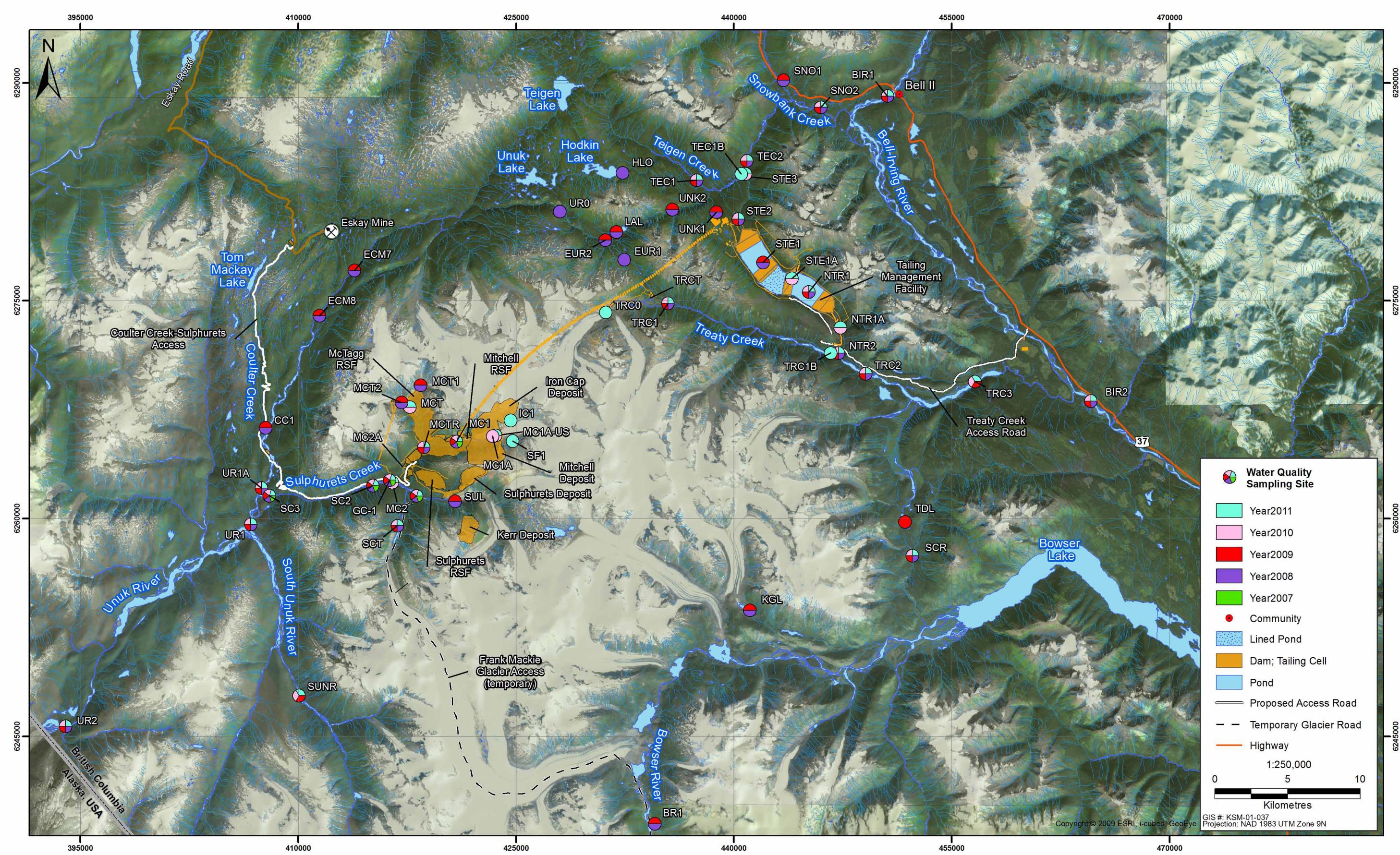
\* indicates 2012 water quality sampling site

† indicates site was sampled for toxicity (2009)

x indicates site was sampled for aquatic resources (2008-2010)

# indicates site was sampled for water quantity (2008-2011)

Sites were discontinued when sufficient data were collected or due to Project design updates.

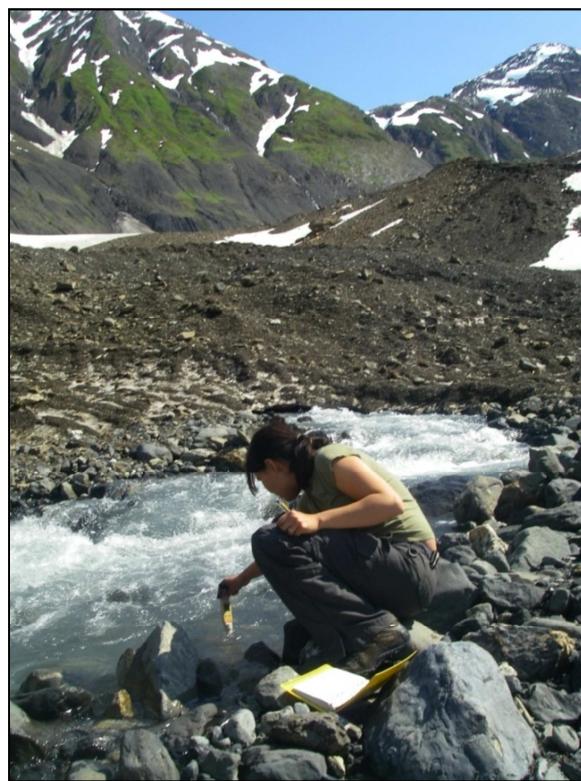


**Table 3.1-2. Baseline Surface Water Quality Sampling Dates, KSM Project, 2007 to 2011**

Note: bold, italicized values include one or more QA/QC replicate(s)



*Plate 3.2-1. Stream water quality sampling.*



*Plate 3.2-2. In situ field measurements.*

**Table 3.2-1. Container, Preservation and Handling Requirements for Water Quality Samples**

Analyte	Container	Preservative	Handling
Physical/ Anions/ Nutrients	1 L plastic	None	ship in cooler with ice packs; store at 4°C
Total Organic Carbon	125 mL amber glass	hydrochloric acid	ship in cooler with ice packs; store at 4°C
Dissolved Metals	250 mL plastic	nitric acid (lab)	ship in cooler with ice packs; store at 4°C
Total Metals	250 mL plastic	nitric acid	ship in cooler with ice packs; store at 4°C
Ammonia, total Kjeldahl nitrogen	250 mL amber glass	sulphuric acid	ship in cooler with ice packs; store at 4°C
Total Cyanide	1 L plastic	sodium hydroxide	ship in cooler with ice packs; store at 4°C

### 3.2.2 Analysis

Water quality samples were analyzed for general variables (e.g., pH, alkalinity, turbidity), major anions, nutrients, cyanides, total organic carbon, and total and dissolved metals. In addition to total cyanide, thiocyanate, and weak acid dissociable (WAD) cyanide were analyzed beginning in 2009 to gain an understanding of the naturally occurring cyanide components in select streams near the proposed TMF. These samples were collected in North Treaty Creek (NTR1A), South Teigen Creek (STE2), Treaty Creek (TRC3), and a reference stream (SUNR). Water quality samples were analyzed at the lowest available detection limit by ALS Environmental Services in Burnaby, BC. A list of the water quality parameters analyzed is presented in Table 3.2-2 along with the range of realized analytical detection limits.

In addition to physical and general water quality parameters, other parameters with BC provincial or federal freshwater aquatic life guidelines were graphed (see Section 4.1). The water quality guidelines used for this report are compiled in Appendix 3.2-1. For analysis and graphing purposes, values below the realized detection limit were replaced with half the realized detection limit (Table 3.2-2). More than one detection limit was realized for some parameters during the course of the 2007-2011 sampling program. Generally, detection limits decreased over time due to improved analytical methods; however, higher detection limits occurred when dilution of a sample was required by the analytical laboratory to compensate for high total dissolved solids.

The hydrological regime is a factor in KSM Project stream water quality. The hydrological regime affected water quality in two ways: 1) it increased discharge during freshet and heavy rainfall events and diluted concentrations of major ions and TDS; and 2) it increased the sediment load and transport during freshet and heavy rainfall events leading to increased concentrations of TSS and associated metals. Twelve water quality sampling sites were also monitored by a hydrometric station providing a measurement of daily discharge ( $Q$ ;  $\text{m}^3/\text{s}$ ). Select water quality parameters from the 2008 to 2011 data, including pH, total suspended solids (TSS), total dissolved solids (TDS), and metals that commonly exceeded guidelines, were graphed for the sampling date that corresponded with winter low flow (October to May), spring peak flow (freshet; May to July), and fall peak flow (heavy rainfall events; August to October). The surface water hydrology of the KSM Project is reported separately (Rescan 2012).

Mean values were calculated for samples collected within one calendar year, including QA/QC replicates, and used for comparisons to water quality guidelines. Where applicable, water quality parameters were compared to the Canadian Council of Ministers of the Environment (CCME) and approved and working British Columbia Ministry of the Environment (BC MOE) water quality guidelines for the protection of freshwater aquatic life (BC MOE 2006a, 2006b; CCME 2011). Long-term or chronic 30-day mean guidelines were used in all comparisons. The BC provincial and federal water quality guidelines presented in this report represent environmental benchmarks that provide protection for freshwater aquatic life and that can be used for the development of site-specific water quality

objectives (BC MOE 2006b). These guidelines are developed using the precautionary principle and include conservative safety factors. Comparisons to guidelines were used to assess the baseline water quality data from watercourses in the Project area and to identify when natural background concentrations were higher than guideline values. This assessment is needed to establish realistic targets for water management (BC MOE 2006b); however, it should be noted that the guidelines do not have any legal standing (BC MOE 2006a).

**Table 3.2-2. Water Quality Parameters and Detection Limits, KSM Project, 2007 to 2011**

Parameter	Unit	Detection Limit	Parameter	Unit	Detection Limit
<b>Physical Parameters and Dissolved Anions</b>			<b>Total and Dissolved Metals</b>		
Colour	CU	0.5 to 5	Aluminum	mg/L	0.0002 to 0.027
Conductivity	$\mu\text{S}/\text{cm}$	2 to 5	Antimony	mg/L	0.00002 to 0.0005
pH	pH units	0.01 to 0.1	Arsenic	mg/L	0.00002 to 0.0005
Total Suspended Solids	mg/L	3 to 23	Barium	mg/L	0.00002 to 0.00025
Turbidity	NTU	0.1	Beryllium	mg/L	0.00001 to 0.0025
Total Dissolved Solids	mg/L	10 to 13	Bismuth	mg/L	0.000005 to 0.0025
Hardness (as $\text{CaCO}_3$ )	mg/L	0.5 to 2	Boron	mg/L	0.01 to 0.05
Alkalinity, Bicarbonate (as $\text{CaCO}_3$ )	mg/L	0.5 to 2	Cadmium	mg/L	0.000005 to 0.000085
Alkalinity, Carbonate (as $\text{CaCO}_3$ )	mg/L	0.5 to 2	Calcium	mg/L	0.02 to 0.1
Alkalinity, Hydroxide (as $\text{CaCO}_3$ )	mg/L	1 to 2	Chromium	mg/L	0.0001 to 0.004
Total Alkalinity (as $\text{CaCO}_3$ )	mg/L	0.05 to 2	Cobalt	mg/L	0.000005 to 0.0005
Acidity	mg/L	1	Copper	mg/L	0.00005 to 0.0012
Bromide	mg/L	0.05 to 2.5	Iron	mg/L	0.001 to 0.03
Chloride	mg/L	0.5 to 25	Lead	mg/L	0.000005 to 0.0005
Fluoride	mg/L	0.02 to 1	Lithium	mg/L	0.0005 to 0.025
Sulphate	mg/L	0.5 to 25	Magnesium	mg/L	0.005 to 0.5
<b>Nutrients</b>			Manganese	mg/L	0.00005 to 0.00025
Ammonia (as N)	mg/L	0.005 to 0.05	Mercury	mg/L	0.00001 to 0.0001
Nitrate (as N)	mg/L	0.002 to 0.25	Molybdenum	mg/L	0.00005 to 0.00025
Nitrite (as N)	mg/L	0.001 - 0.05	Nickel	mg/L	0.00002 to 0.005
Total Kjeldahl Nitrogen	mg/L	0.02 to 0.1	Phosphorus	mg/L	0.002 to 0.3
Total Nitrogen	mg/L	0.0025 to 0.06	Potassium	mg/L	0.00005 to 2
Total Phosphate (as P)	mg/L	0.002 to 2	Selenium	mg/L	0.00004 to 0.001
Ortho Phosphate (as P)	mg/L	0.001 to 0.05	Silicon	mg/L	0.05 to 0.1
<b>Cyanides</b>			Silver	mg/L	0.00001 to 0.005
Total Cyanide	mg/L	0.001 to 0.00417	Sodium	mg/L	0.05 to 2
Cyanide, Weak Acid Dissociable (WAD)	mg/L	0.001 to 0.002	Strontium	mg/L	0.00005 to 0.0005
Thiocyanate (SCN)	mg/L	0.5	Thallium	mg/L	0.00001 to 0.002
<b>Organic Carbon</b>			Tin	mg/L	0.00001 to 0.0005
Total Organic Carbon	mg/L	0.2 to 0.5	Titanium	mg/L	0.0005 to 0.01
			Uranium	mg/L	0.00001 to 0.00005
			Vanadium	mg/L	0.001 to 0.005
			Zinc	mg/L	0.001 to 0.01

*Notes:*

CU = colour unit

NTU = nephelometric turbidity unit

### 3.2.3 Quality Assurance and Quality Control (QA/QC)

Each stream sampling survey included QA/QC measures to detect potential sample contamination and natural heterogeneity. This included the use of travel and field blanks and sample replication. The travel blank bottles were filled with distilled deionized water in the laboratory and remained closed throughout the field trip. This protocol allowed assessment of contamination associated with the laboratory procedures or during shipping. The field blank bottles were also filled with distilled deionized water, but were opened in the field and preserved as required for certain analyses.

This protocol allowed assessment of potential contamination associated with field sampling (airborne contamination, contamination of the lid/bottle, etc.), preservation procedures, and shipping. Detected concentrations of water quality parameters (concentrations above the method detection limit - MDL) were noted for both travel and field blanks and indicated possible contamination.

For QA/QC purposes, 10% of the water samples were randomly collected as duplicates to assess the magnitude and potential causes of variability between samples. These duplicate samples were submitted blind (i.e., no sample identifier) to the analytical laboratory. For each pair of QA/QC field duplicate water samples, the relative percent differences (RPD) were calculated:

$$\text{where: } RPD = 100 | rep1 - rep2 | / [(rep1 + rep2) / 2]$$

The RPD between the duplicates is a measure of the variability inherent in field sampling (environmental heterogeneity, sampler handling leading to contamination, potential laboratory errors). Water quality variables where one or both values were less than five times the MDL were not included in the RPD calculations because variability near the MDL is too high according to the BC Field Sampling Manual (BC MOE 2003). Also, RPD values less than 20% were not considered notable. The BC provincial government recommends that any field duplicates with RPD values exceeding 20% should be noted and data should be interpreted accordingly. The results of RPD calculations were examined to detect patterns of high variation for multiple variables within sample pairs, indicating possible contamination during field sampling.

## 3.3 LAKE WATER QUALITY

### 3.3.1 Sampling

Lake water quality samples were twice collected annually per lake in either August or September between 2008 and 2010 at a deep zone of each lake. An inflatable zodiac boat fitted with a motor was used as a sampling platform. Water quality samples were collected at 1 m below the surface and from the middle of the water column (determined with a hand-held depth device) using an acid-washed, Teflon-lined 5 L GO-FLO water sampler. Field samplers wore nitrile gloves while collecting samples.

### 3.3.2 Analysis

Lake water samples were analyzed for the same variables as stream water samples using the same types of bottles and preservatives (Table 3.2-1 and Table 3.2-2).

In addition to physical and general water quality parameters, other parameters with BC provincial or federal freshwater aquatic life guidelines were graphed (see Section 4.2). The water quality guidelines used for this report are compiled in Appendix 3.2-1. For analysis and graphing purposes, values below the realized detection limit were replaced with half the realized detection limit (Table 3.2-2). More than one detection limit was realized for some parameters during the course of the 2007-2011 sampling program. Generally, detection limits decreased over time due to improved analytical methods; however, higher detection limits occurred when dilution of a sample was required by the analytical laboratory to compensate for high total dissolved solids.

Samples collected within one calendar year, including QA/QC replicates, were averaged and used for comparisons to water quality guidelines. Where applicable, water quality parameters were compared to the Canadian Council of Ministers of the Environment (CCME) and approved and working British Columbia Ministry of the Environment (BC MOE) water quality guidelines for the protection of freshwater aquatic life (BC MOE 2006a, 2006b; CCME 2011). Long-term or chronic 30-day average guidelines were used in all comparisons. The BC provincial and federal water quality guidelines presented in this report represent environmental benchmarks that provide protection for freshwater aquatic life and that can be used for the development of site-specific water quality objectives (BC MOE 2006b). These guidelines are developed using the precautionary principle and include conservative safety factors. Comparisons to guidelines were used to assess the baseline water quality data from watercourses in the Project area and to identify when natural background concentrations were higher than guideline values. This assessment is needed to establish realistic targets for water management (BC MOE 2006b); however, it should be noted that the guidelines do not have any legal standing (BC MOE 2006a).

### **3.3.3 Quality Assurance/Quality Control**

One equipment blank and one set of field duplicates were collected in 2009. The lake QA/QC data were assessed in the same manner as stream QA/QC data.

## 4. Results

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Stream and lake water quality results compared to the most recent CCME and BC chronic (30-day mean) guidelines (BC MOE 2006a, 2006b; CCME 2011) are discussed in Section 4.1 and 4.2. Stream and lake water quality analytical data are presented in Appendices 4-1 and 4-2.

### 4.1 STREAM WATER QUALITY

Stream water quality parameters were graphed and presented in Figures 4.1-1 to 4.1-32. The annual mean of data collected between 2007 and 2011 at each site is presented graphically, with ranges indicated as standard error. The hydrological regime was an important factor influencing the water quality of streams in the KSM Project area. The discussion of the control of hydrology on stream water quality, particularly during freshet, fall heavy rainfall events, and winter low flows, is discussed in Section 4.1.9.

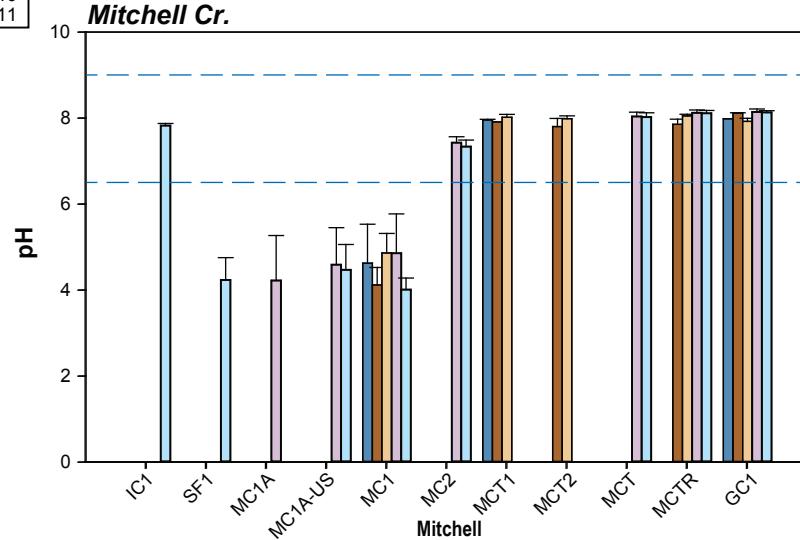
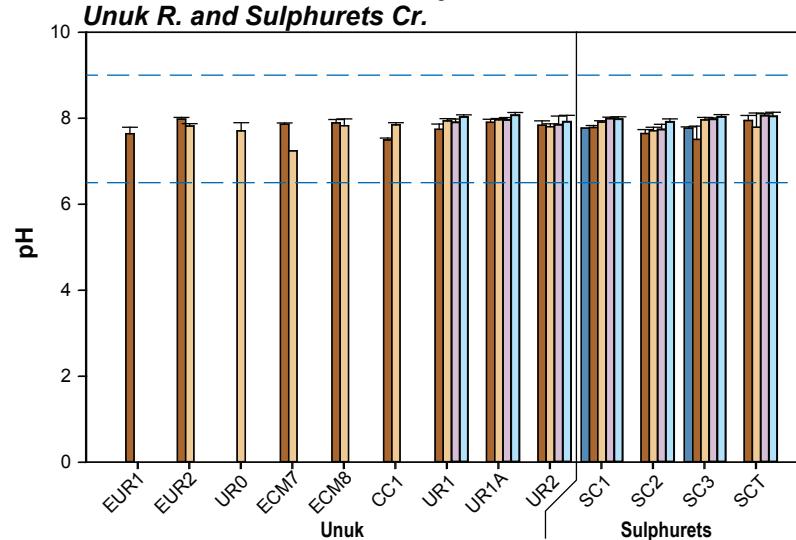
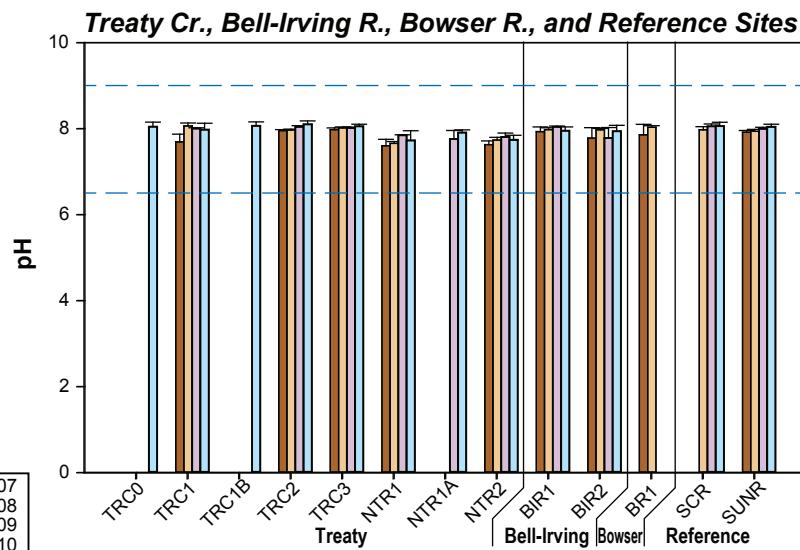
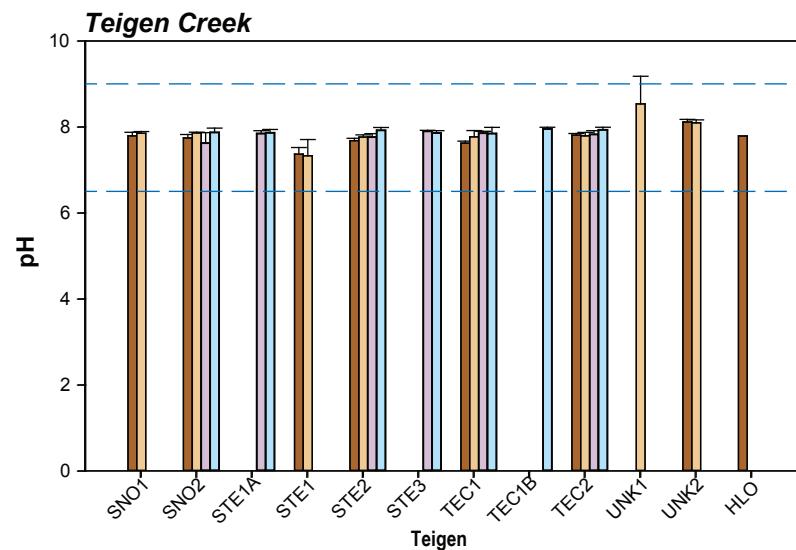
#### 4.1.1 Physical Parameters

Most streams in the KSM Project area were near-neutral to slightly alkaline, with moderately hard to soft waters, and with low sensitivity to acid inputs (Figures 4.1-1 to 4.1-3). The exception was the upper Mitchell Creek watershed where acidic, poorly buffered conditions were observed.

The pH ranged from 6.41 to 8.69. In the upper Mitchell Creek watershed, annual mean acidic pH values were observed at the south side of the Mitchell glacier (SF1; mean pH = 4.23), at the toe of the Mitchell glacier (MC1A and MC1A-US; mean pH = 4.22 to 4.59), and at the upstream Mitchell Creek site (MC1; mean pH = 4.01 to 4.86). Little variability was observed from 2007 to 2011 with respect to annual mean pH at all KSM Project stream sites (Figure 4.1-1). Two pH values in Teigen and Mitchell watersheds were measured as 9.82 and 9.58 in 2009 and 2010, indicating either contamination of the general parameter bottle or analytical error.

Total alkalinity was present predominantly as bicarbonate and indicated that most streams were moderately-buffered with low sensitivity to acid inputs (Saffran and Trew 1996). Total alkalinity greater than 40 mg CaCO<sub>3</sub>/L was observed in most near-neutral stream and river sites. Lower total alkalinity was present in the tributaries, including Coulter (CC1), South Teigen (STE1A, STE1, STE2, and STE3) and North Treaty (NTR1, NTR1A, and NTR2) creeks, and in the stream on the north side of the Mitchell glacier, IC1. In the acidic upper Mitchell watershed (SF1, MC1A, MC1A-US, and MC1), annual mean total alkalinity was low, ranging from below the analytical detection limit to 7.64 mg CaCO<sub>3</sub>/L. Intra-annual ranges reflected seasonal hydrological controls on alkalinity; however, annual means were relatively constant from 2007 to 2011 for most sites (Figure 4.1-2). The exception was Sulphurets Creek where total alkalinity was observed to increase with time at SC1, SC2, and SC3.

For most streams, hardness and TDS concentrations (Figures 4.1-3 and 4.1-4) followed similar spatial and temporal patterns as alkalinity, and followed the hydrological regime with lower concentrations observed during high flow periods. These parameters were highest in the highly mineralized Mitchell watershed, including the stream on the south side of the Mitchell glacier (SF1), but were also elevated in the Sulphurets watershed. Hardness and TDS increased steadily in Sulphurets Creek (SC1, SC2, and SC3) and in the reference Scott Creek (SCR) between 2007 and 2011. Large inter- and intra-annual variability was occasionally observed, especially in the Mitchell watershed. The lowest hardness and TDS concentrations were observed in the Teigen watershed and the highest concentrations were observed in the Mitchell watershed. Hardness at all sites ranged from 13.1 mg/L (UNK1, July 2009) to 742 mg/L (MC1, June 2008). TDS concentrations ranged from 4.3 mg/L (TEC2, June 2008) to 1,130 mg/L (MC1A-US, October 2010).

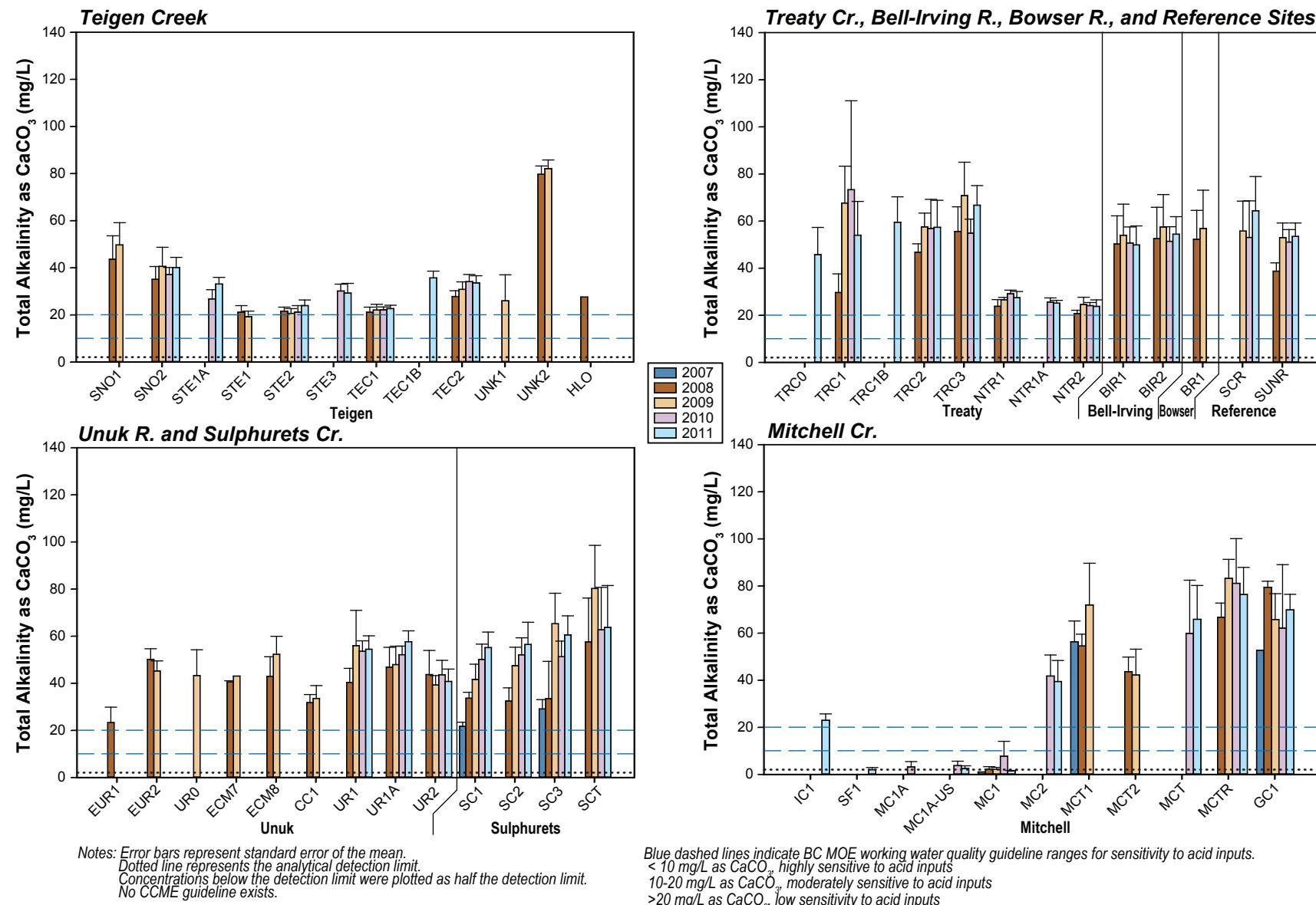


Notes: Error bars represent standard error of the mean.

Blue dashed lines indicate the upper (pH=9) and lower (pH=6.5) limits of the CCME and BC MOE water quality guideline for pH.

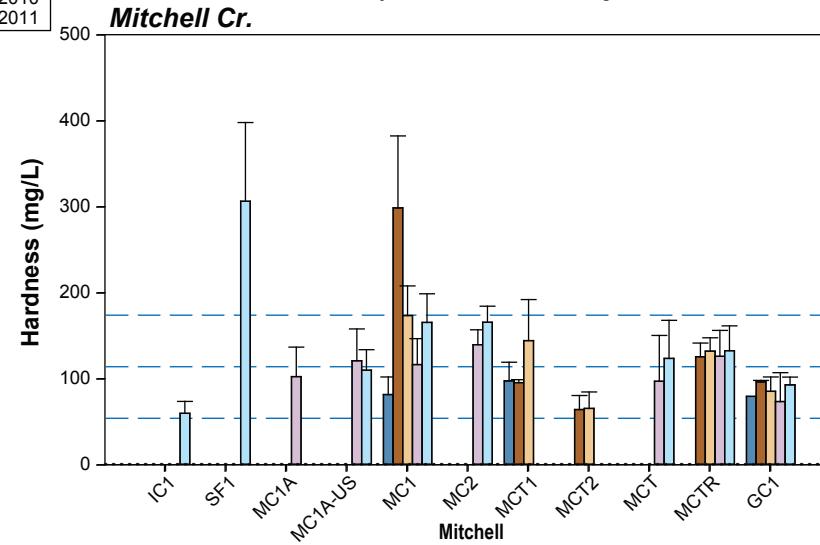
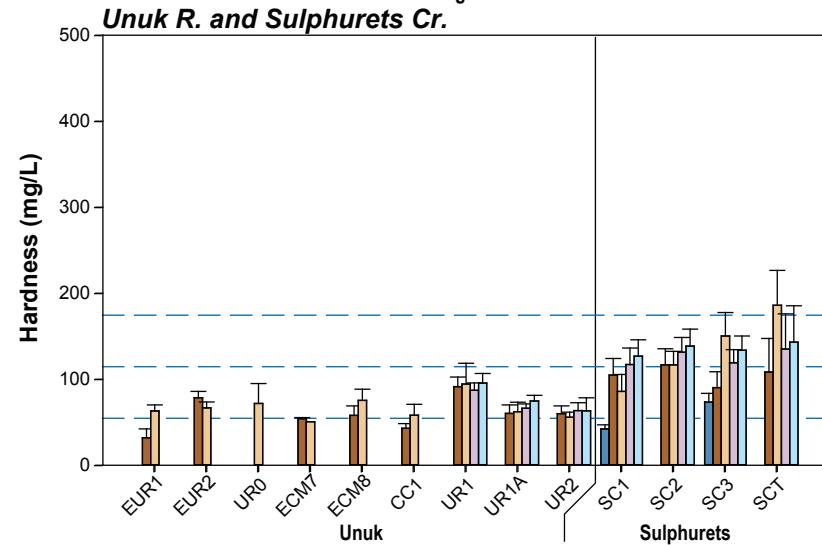
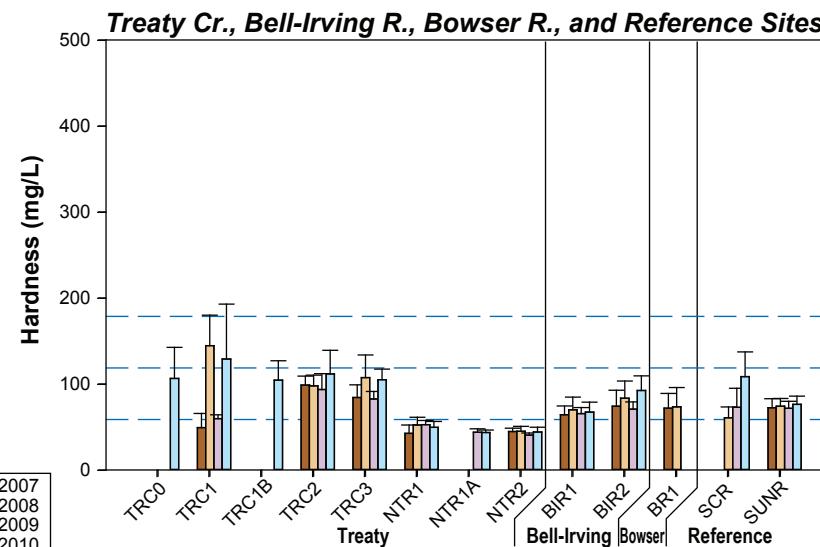
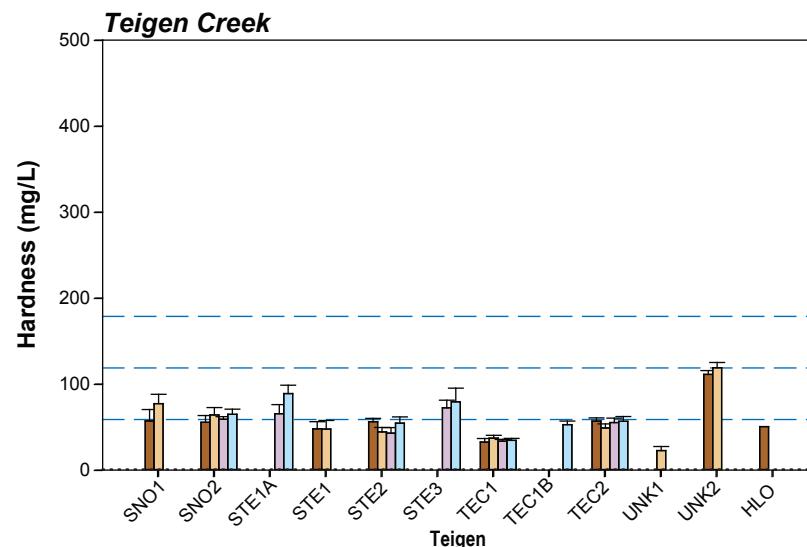
Mean Annual pH in KSM Project Streams,  
2007 to 2011

Figure 4.1-1



Mean Annual Total Alkalinity in KSM Project Streams,  
2007 to 2011

Figure 4.1-2



Notes: Error bars represent standard error of the mean.

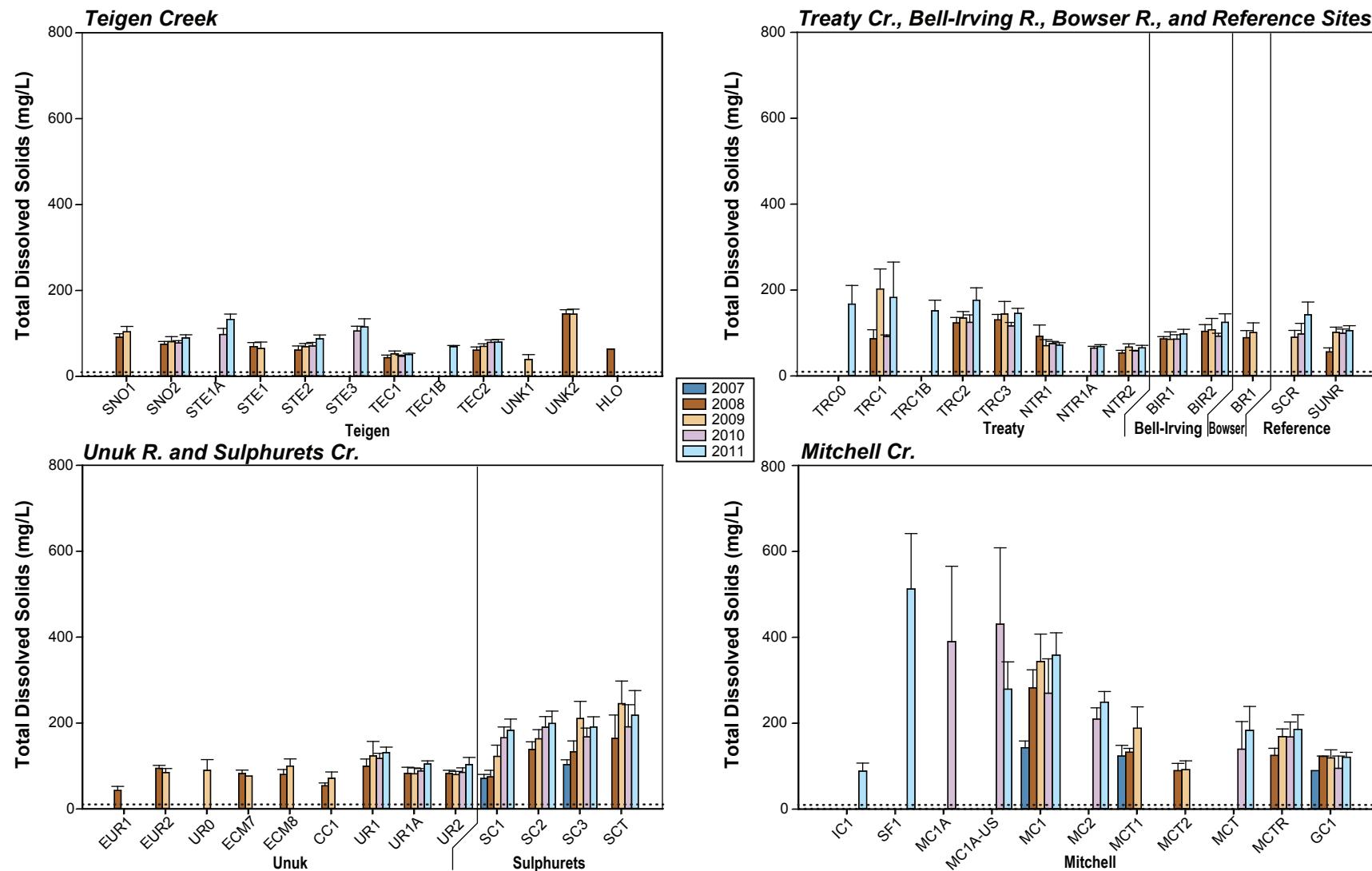
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

No CCME or BC MOE guidelines exist.

Blue dashed lines indicate classification ranges for hardness concentrations (Briggs et al. 1977).  
< 60 mg/L, soft; 61-120 mg/L, moderately hard; 121-180 mg/L, hard; > 180 mg/L, very hard.

Figure 4.1-3



Notes: Error bars represent standard error of the mean.

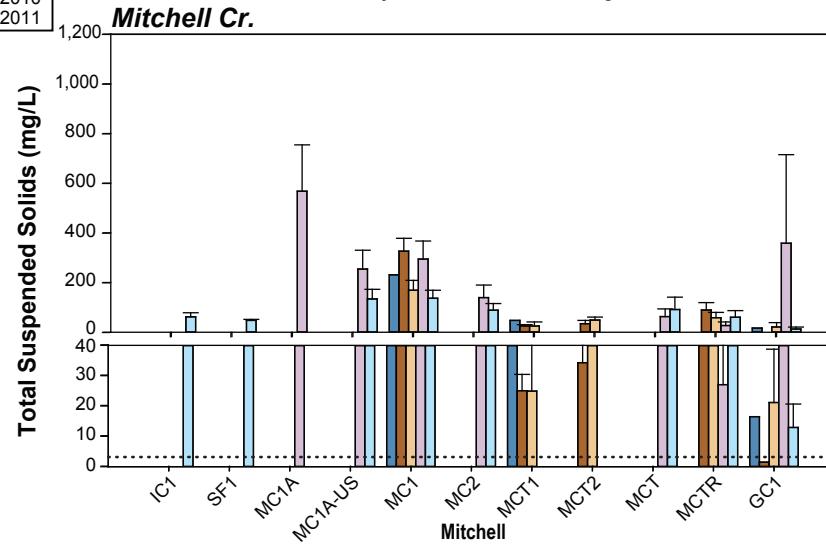
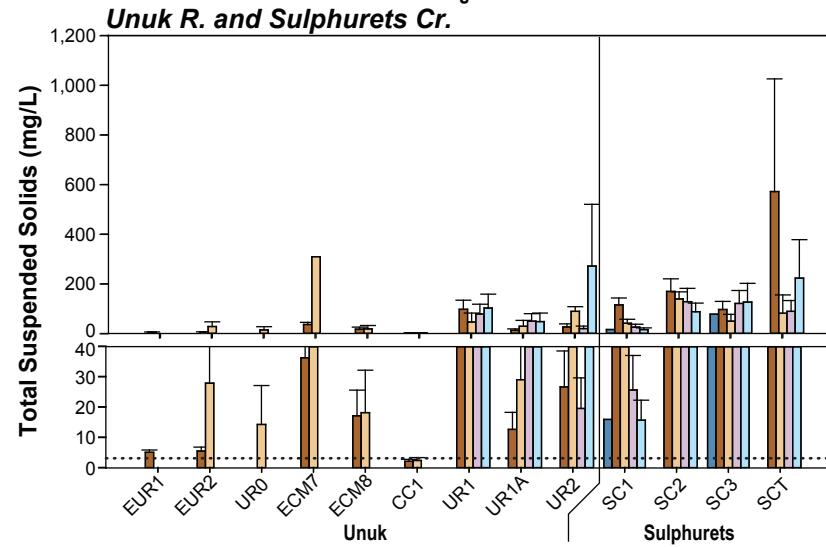
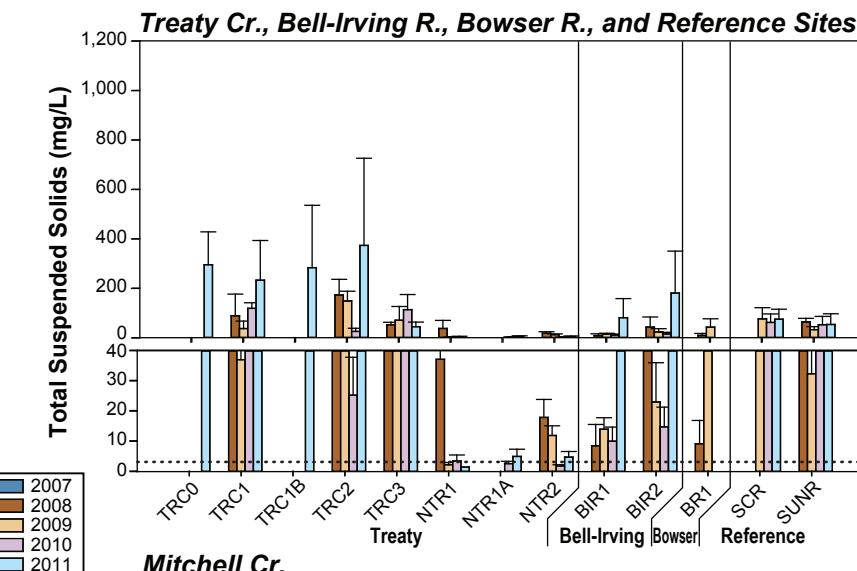
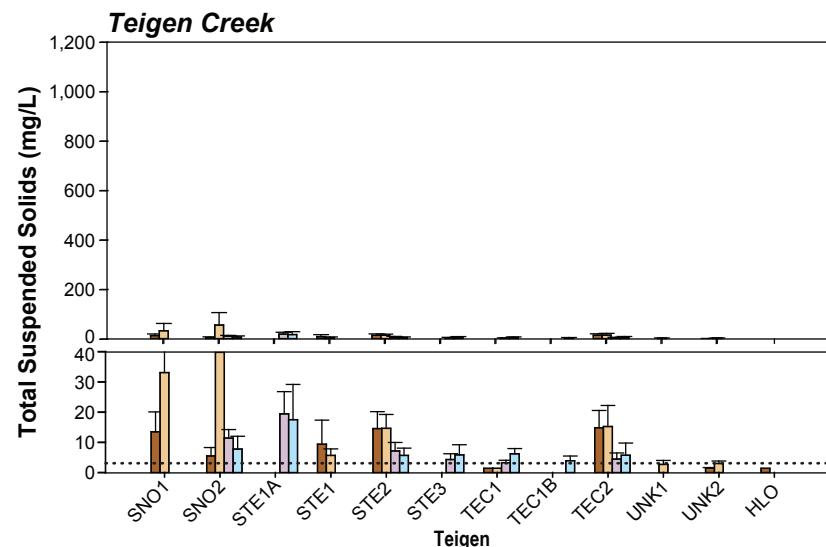
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Water quality guidelines for dissolved solids are dependent on background levels.

**Mean Annual Total Dissolved Solids in KSM Project Streams,  
2007 to 2011**

Figure 4.1-4



Notes: Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

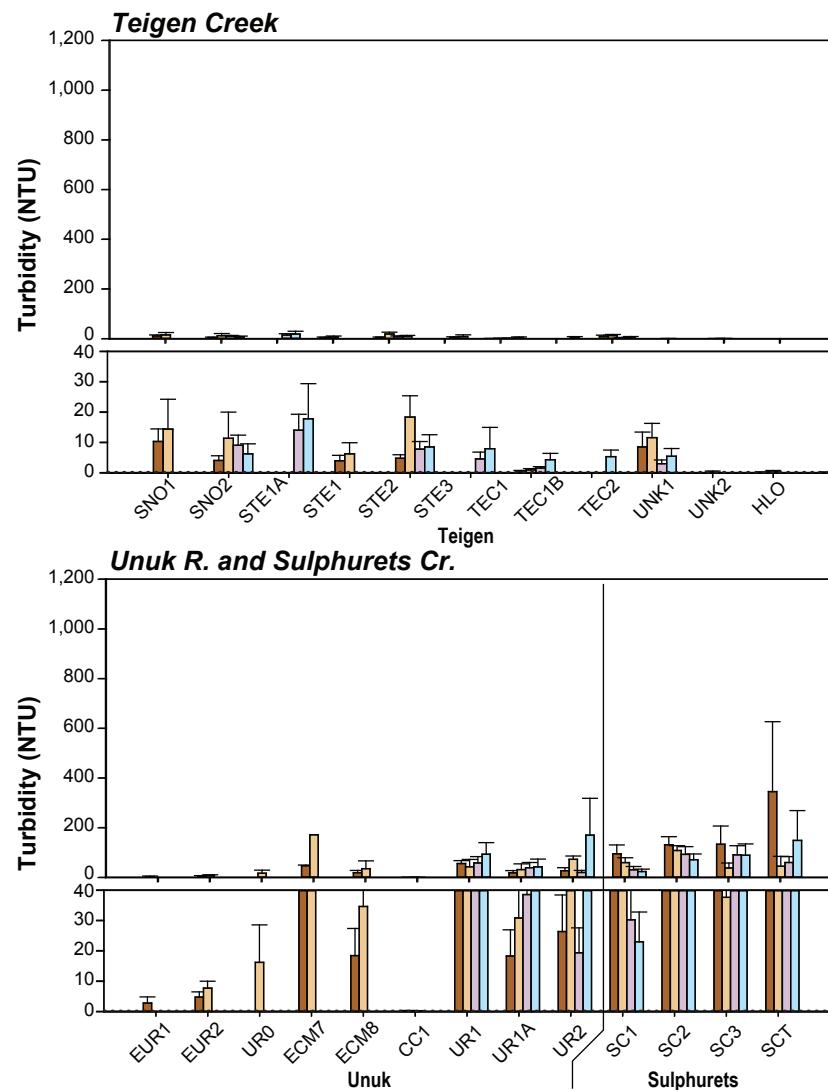
Concentrations below the detection limit were plotted as half the detection limit.

Water quality guidelines for suspended solids are dependent on background levels.

Figure 4.1-5

### Mean Annual Total Suspended Solids in KSM Project Streams, 2007 to 2011

Figure 4.1-5

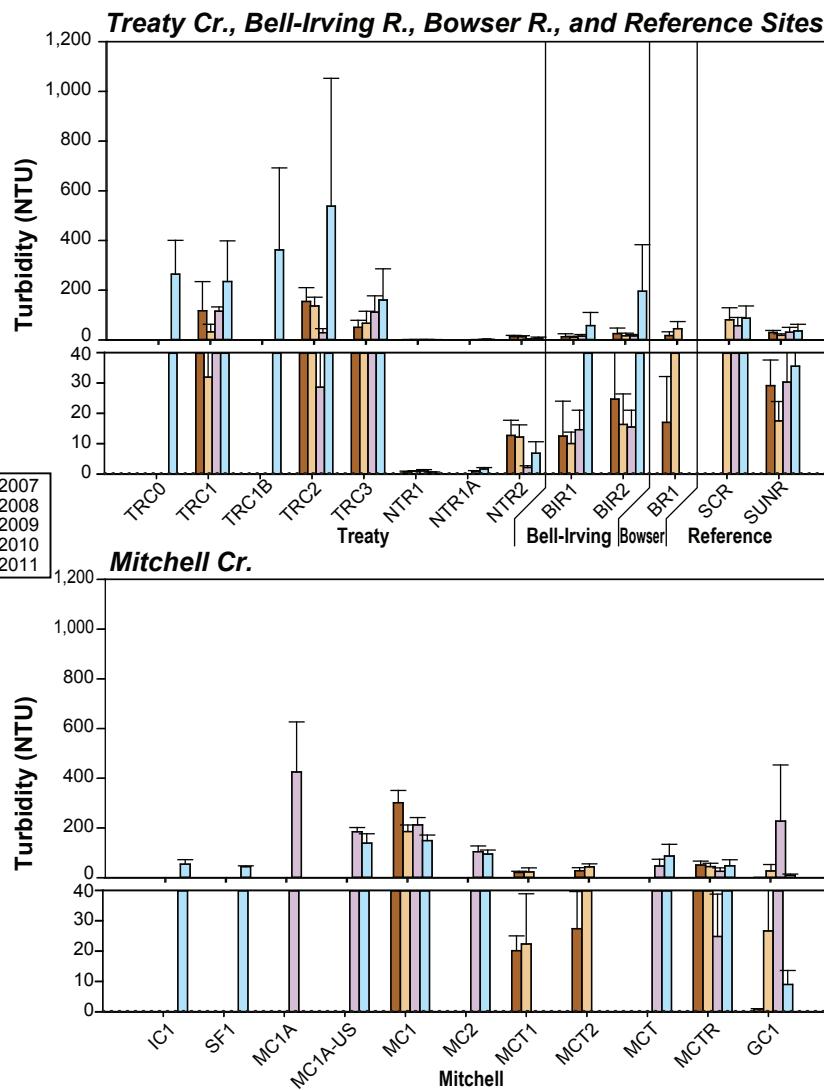


Notes: Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

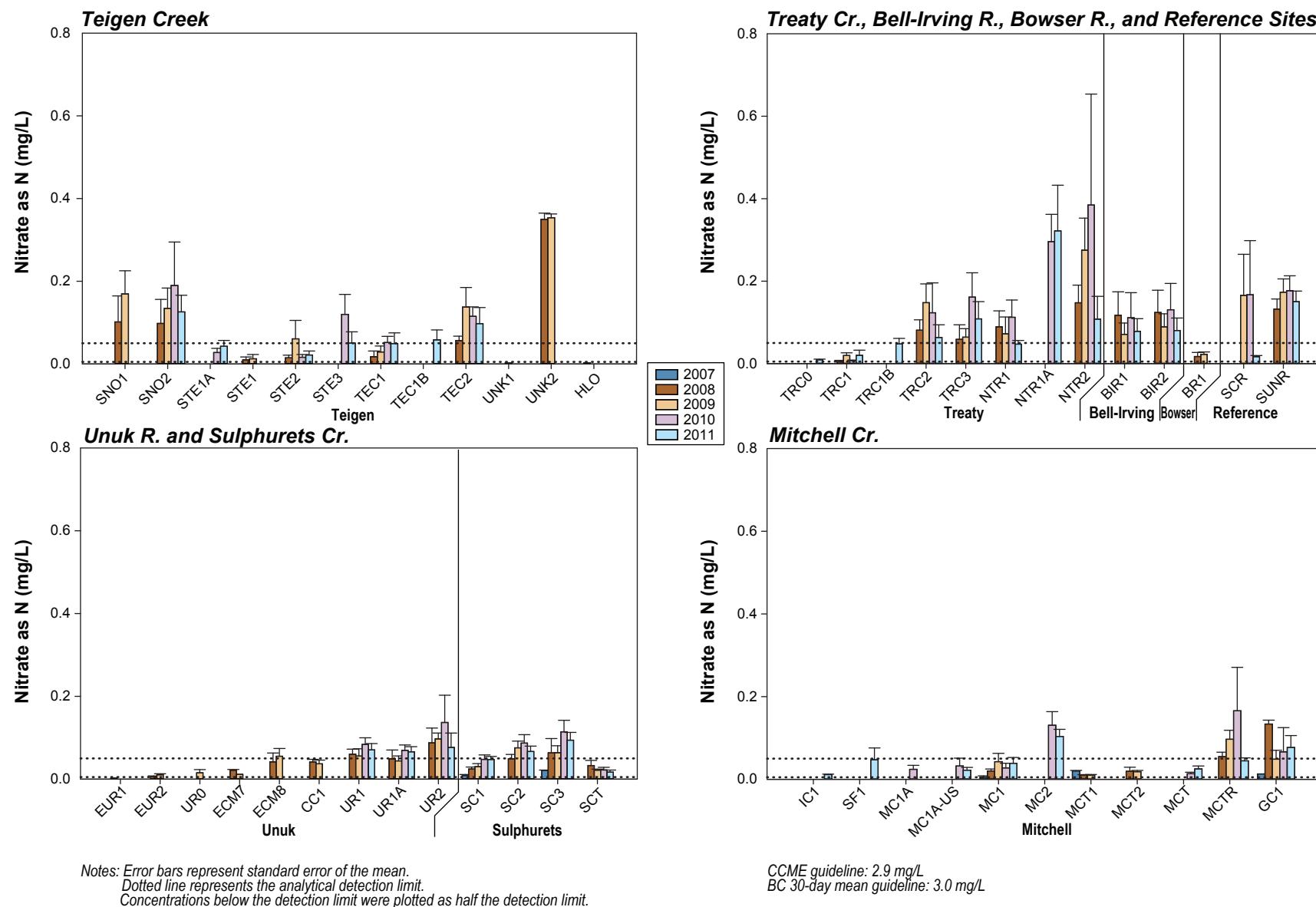
Concentrations below the detection limit were plotted as half the detection limit.

Water quality guidelines for turbidity are dependent on background levels.



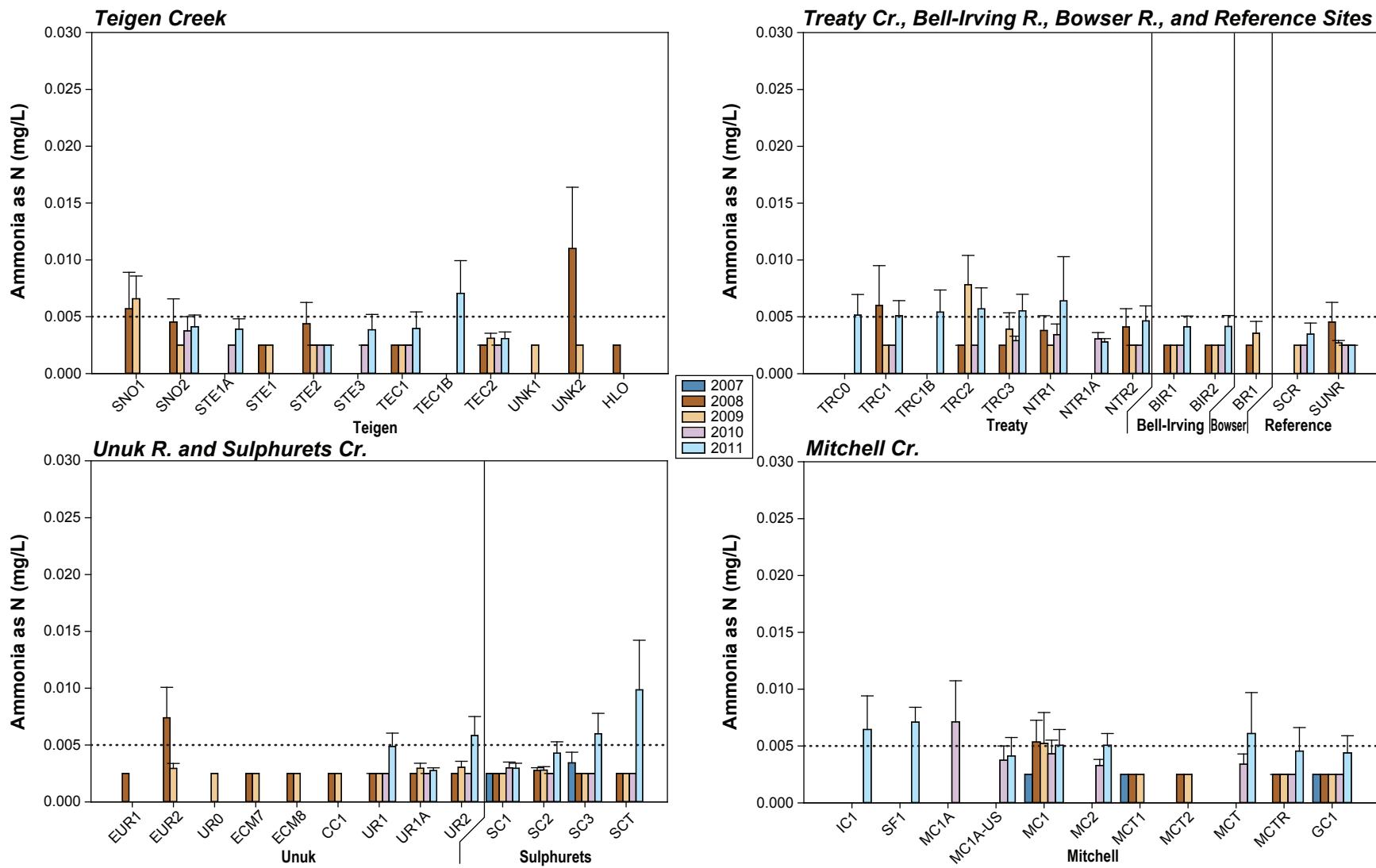
Mean Annual Turbidity in KSM Project Streams,  
2007 to 2011

Figure 4.1-6



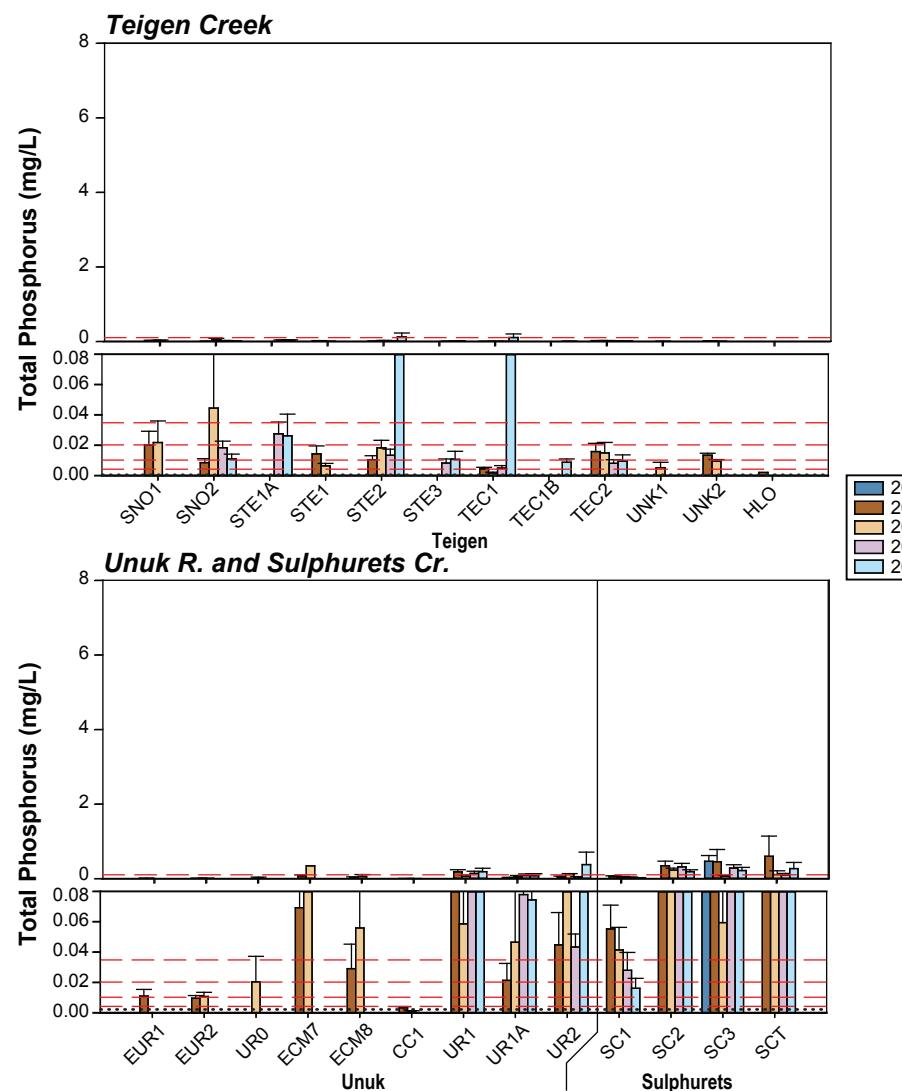
Mean Annual Nitrate in KSM Project Streams,  
2007 to 2011

Figure 4.1-7



Mean Annual Ammonia in KSM Project Streams,  
2007 to 2011

Figure 4.1-8



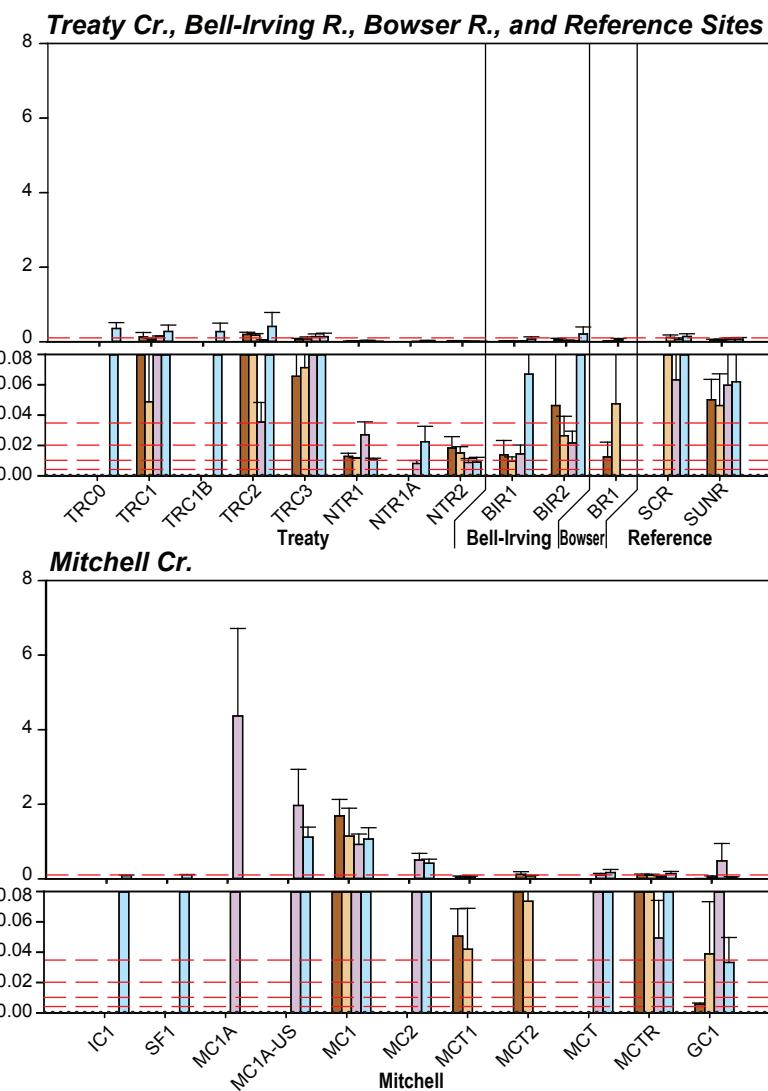
Notes: Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

No BC MOE guideline for total phosphorus in streams exists.

Red dashed lines indicate CCME trigger ranges for total phosphorus in Canadian lakes and rivers.



Hyper-eutrophic >0.1 mg/L

Eutrophic 0.035 to 0.1 mg/L

Meso-eutrophic 0.02 to 0.035 mg/L

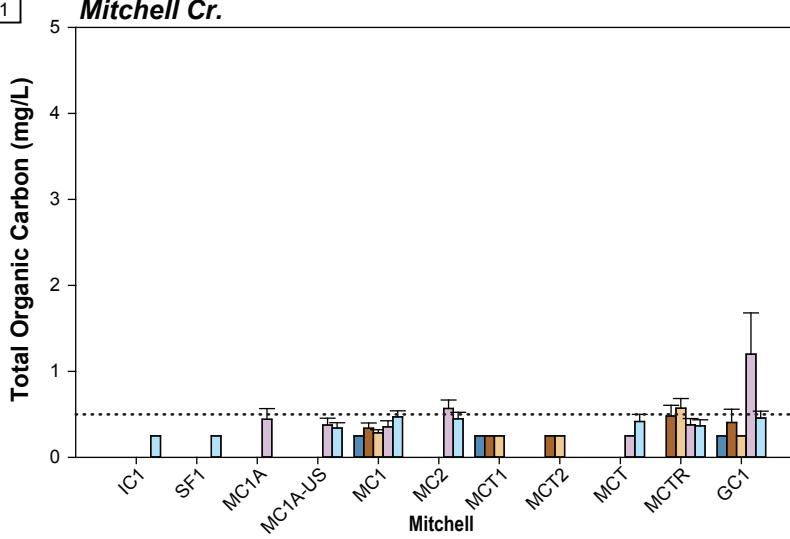
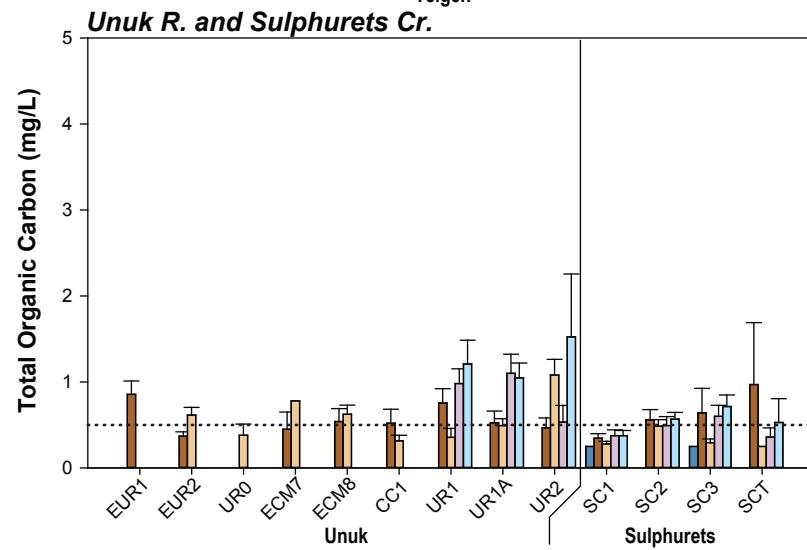
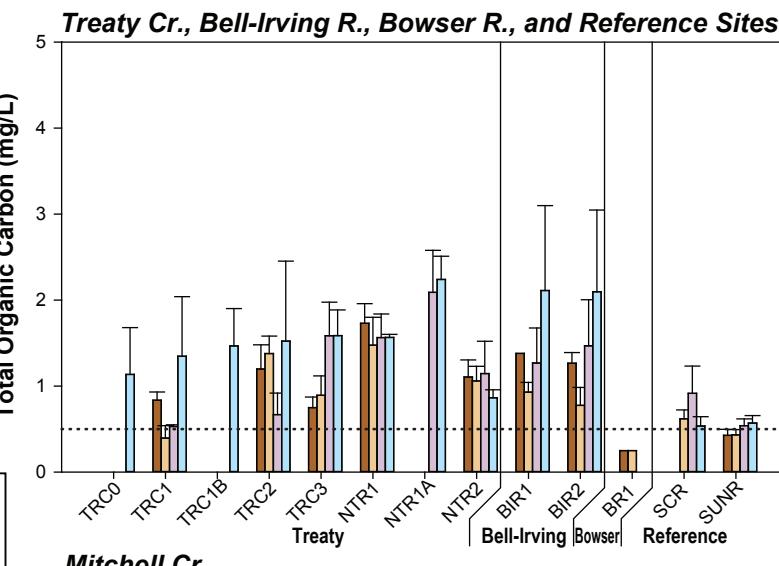
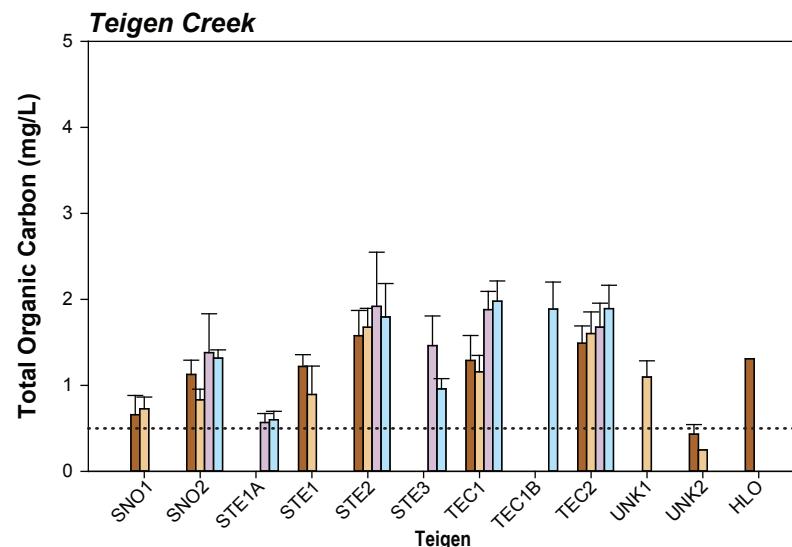
Mesotrophic 0.01 to 0.02 mg/L

Oligotrophic 0.004 to 0.01 mg/L

Ultra-oligotrophic <0.004 mg/L

Mean Annual Total Phosphorus Concentrations in KSM Project Streams, 2007 to 2011

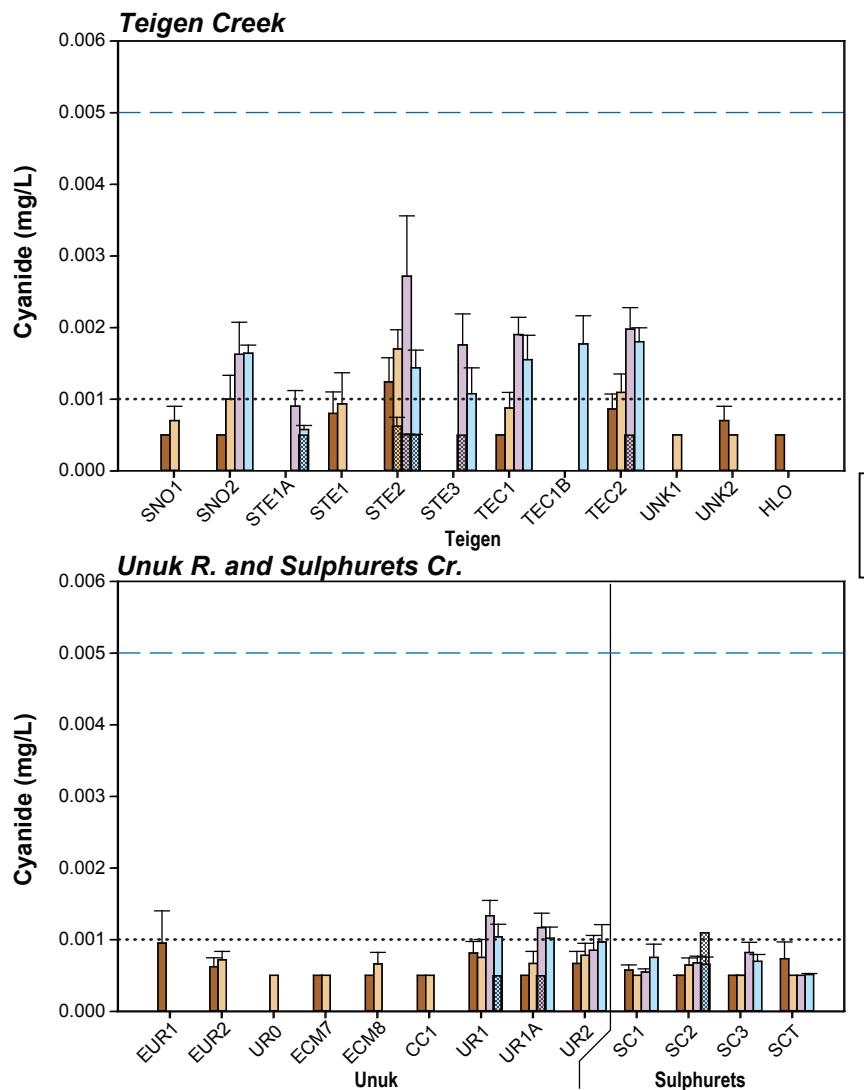
Figure 4.1-9



Notes: Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.



Notes: Error bars represent standard error of the mean.

Solid bars indicate total cyanide concentrations.

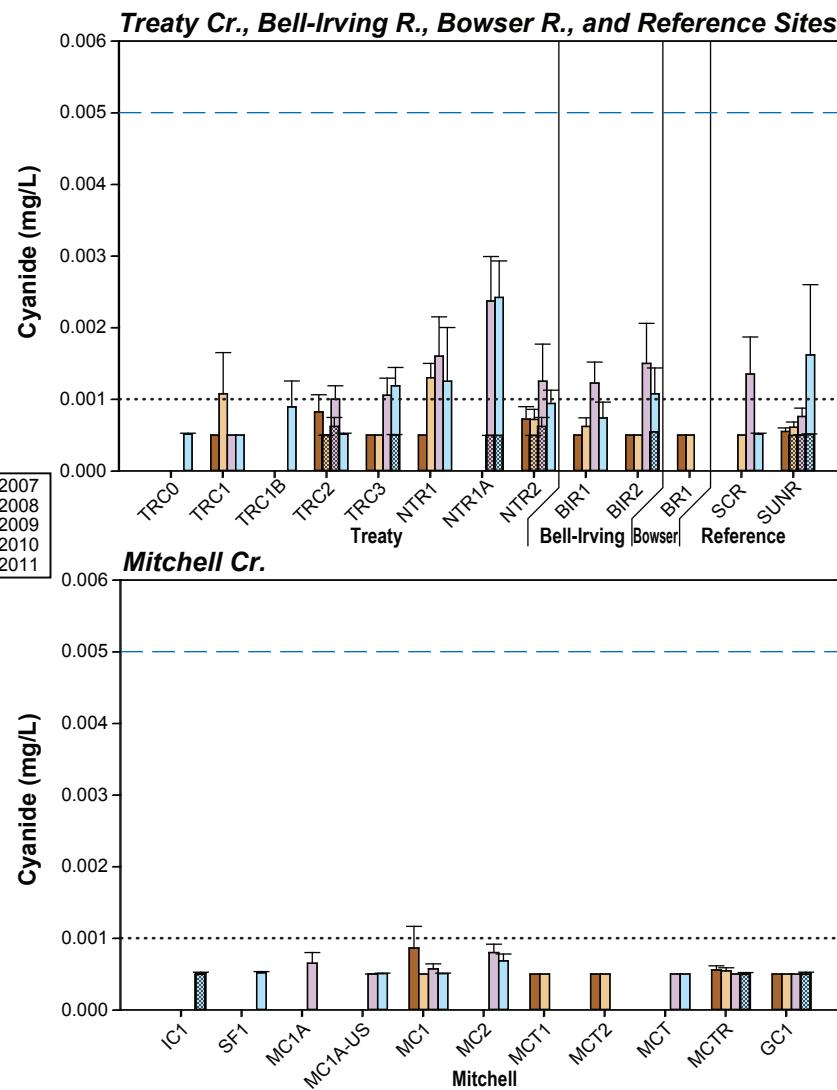
Patterned bars indicate weak-acid dissociable cyanide concentrations.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

No CCME or BC MOE guidelines for total cyanide exist.

Blue dashed lines indicate the BC MOE 30-day mean water quality guideline for weak-acid dissociable cyanide (0.005 mg/L).



Notes: Error bars represent standard error of the mean.

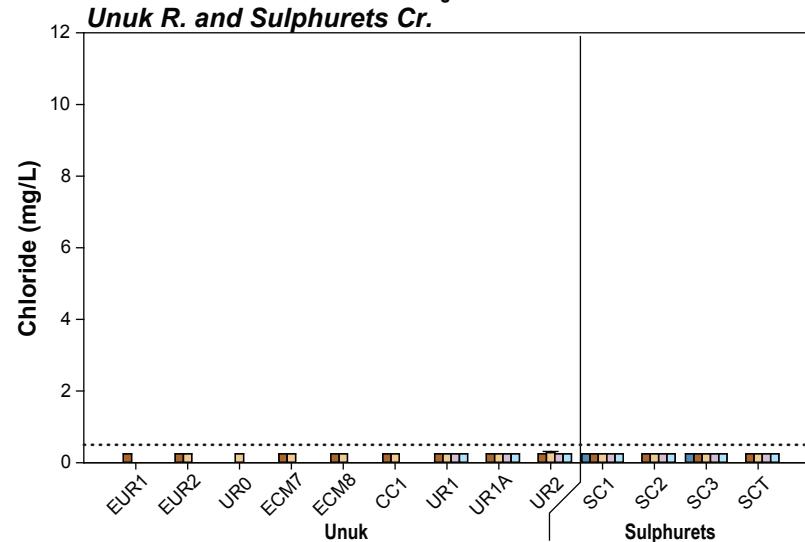
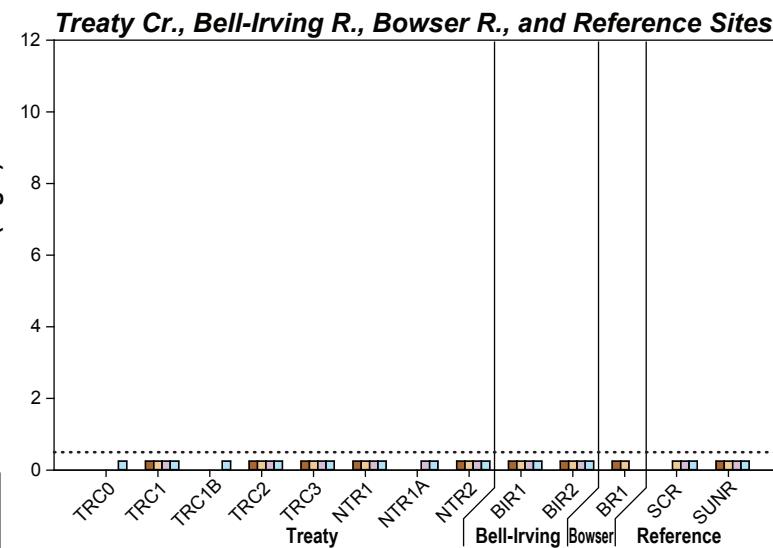
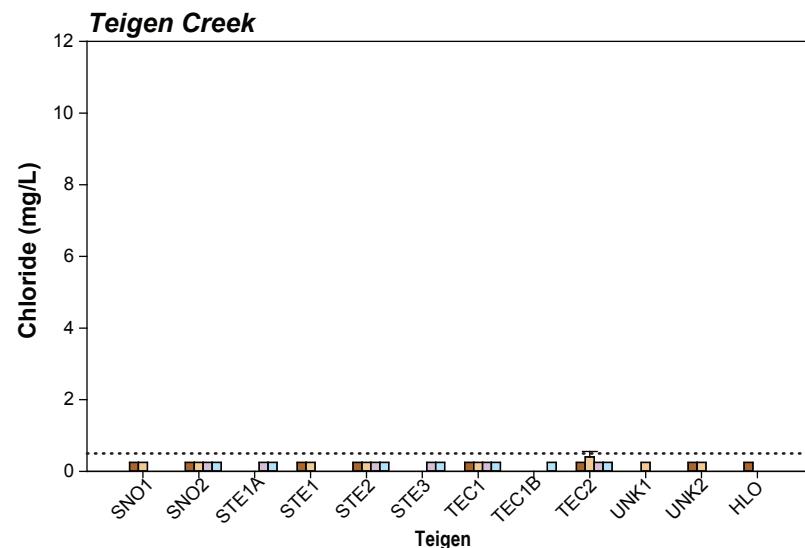
Solid bars indicate total cyanide concentrations.

Patterned bars indicate weak-acid dissociable cyanide concentrations.

Dotted line represents the analytical detection limit.

Figure 4.1-11

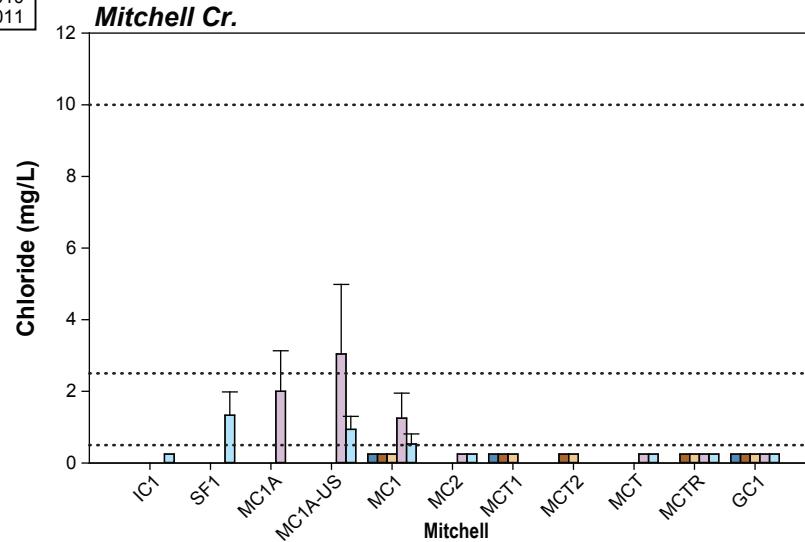
## Mean Annual Cyanide Concentrations in KSM Project Streams, 2007 to 2011



Notes: Error bars represent standard error of the mean.

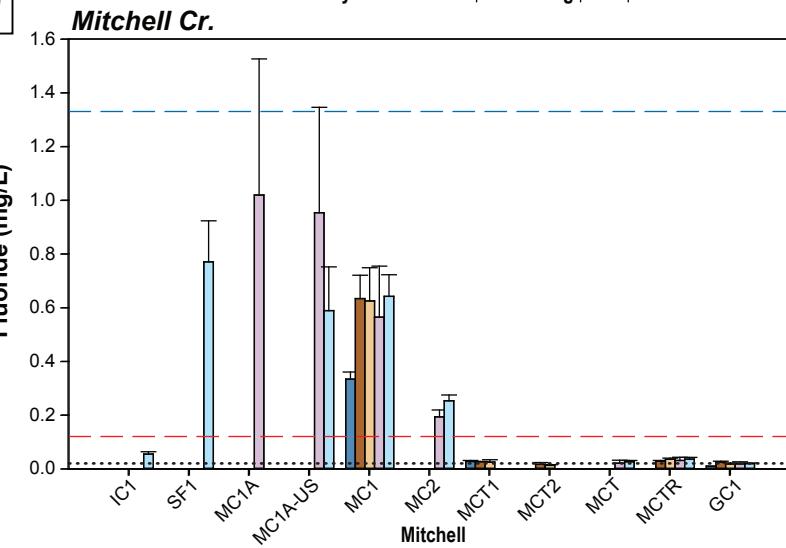
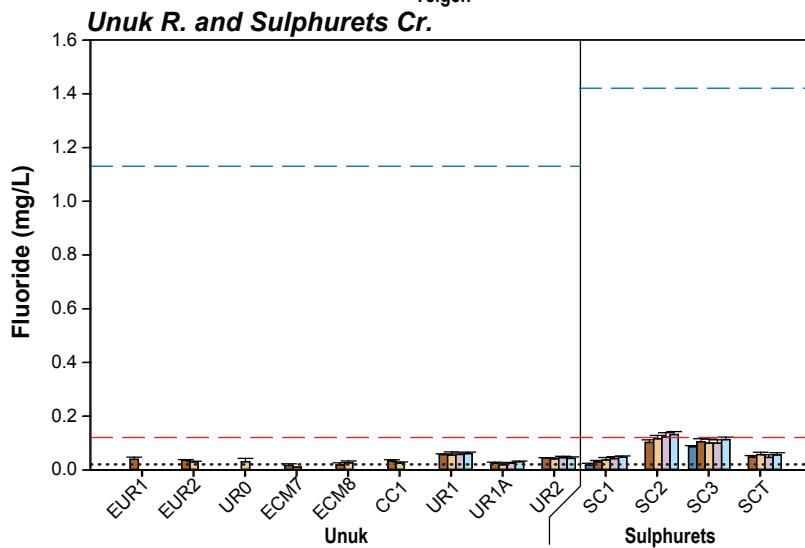
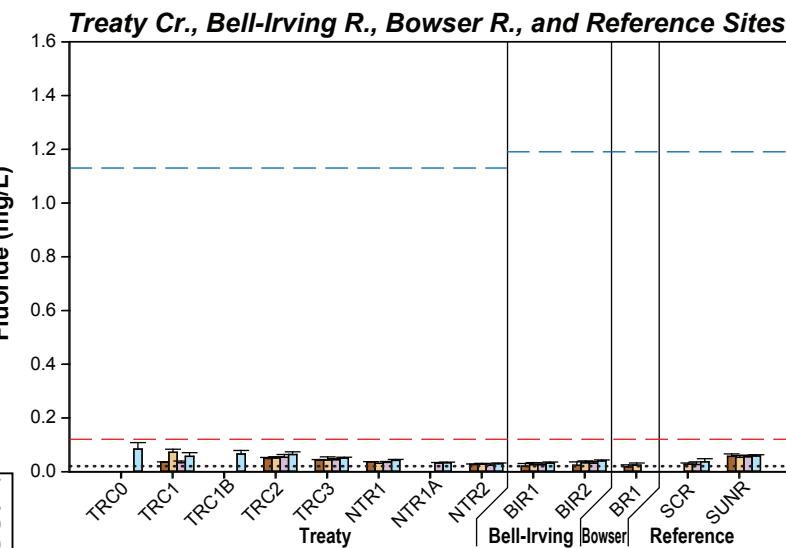
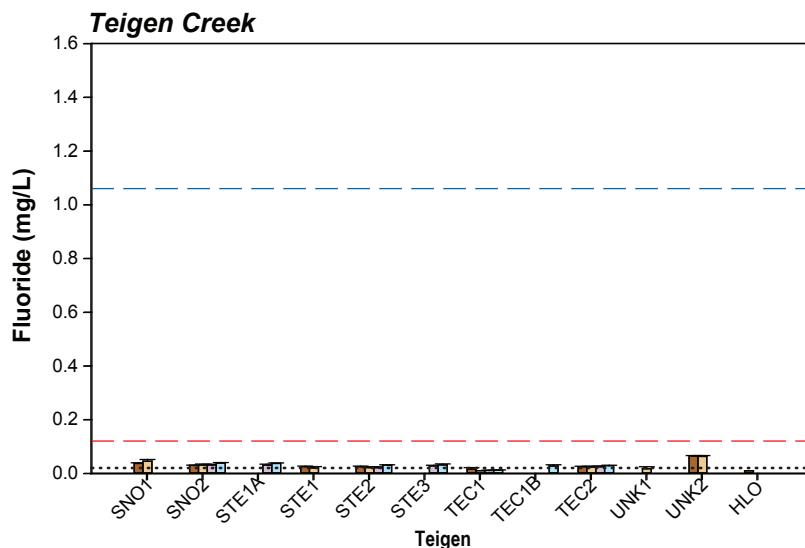
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.



CCME long term guideline: 120 mg/L  
BC 30-day mean guideline: 150 mg/L

Figure 4.1-12



Notes: Error bars represent the standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

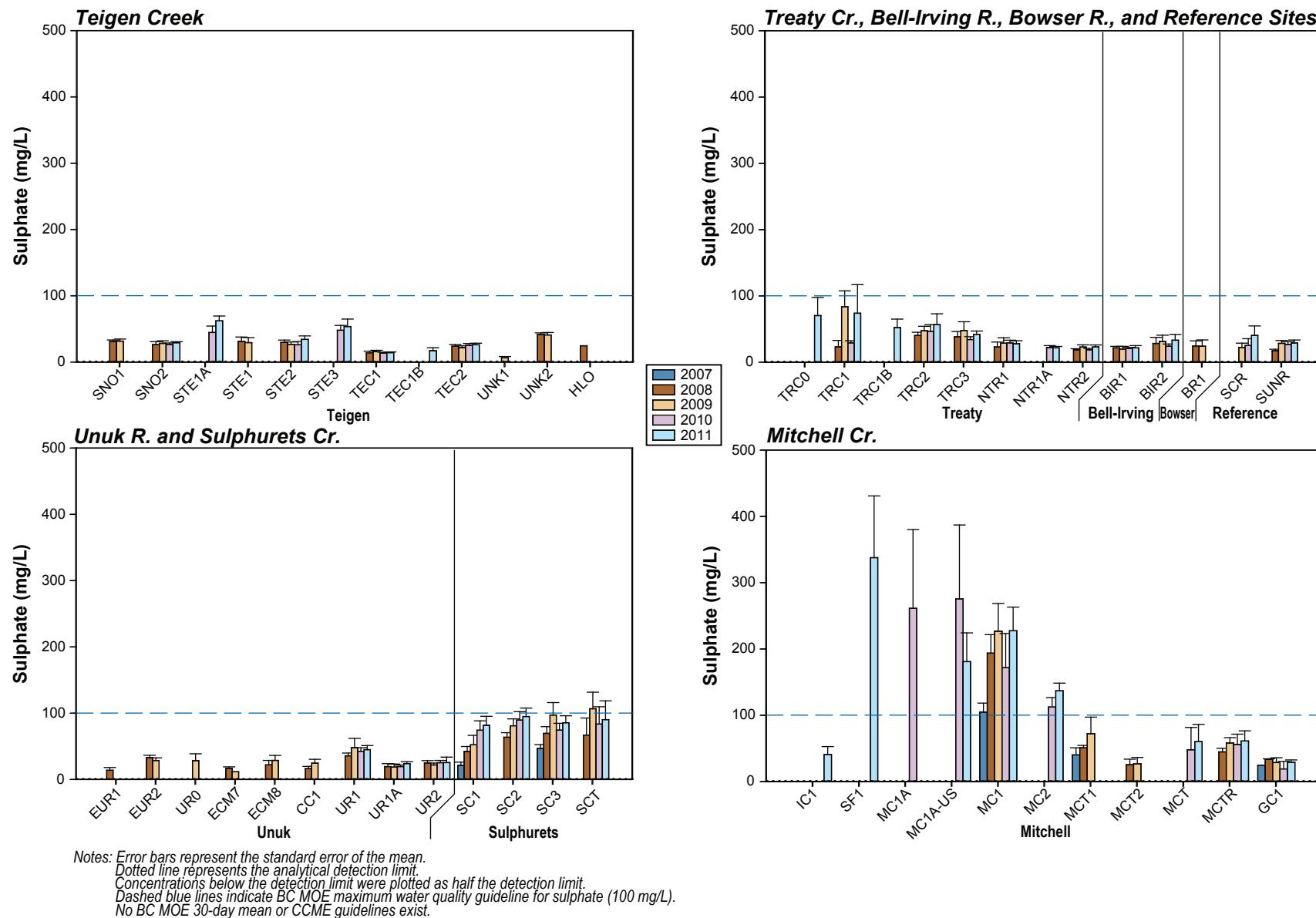
Dashed red lines indicate interim CCME water quality guideline for fluoride (0.12 mg/L).

Dashed blue lines indicate interim BC MOE maximum hardness-dependent water quality criterion for total fluoride (see Appendix 3.2-1).

Median hardness values for each watershed were used to set guideline limit.

Figure 4.1-13

## Mean Annual Fluoride Concentrations in KSM Project Streams, 2007 to 2011



Mean Annual Sulphate Concentrations in  
KSM Project Streams, 2007 to 2011

Figure 4.1-14

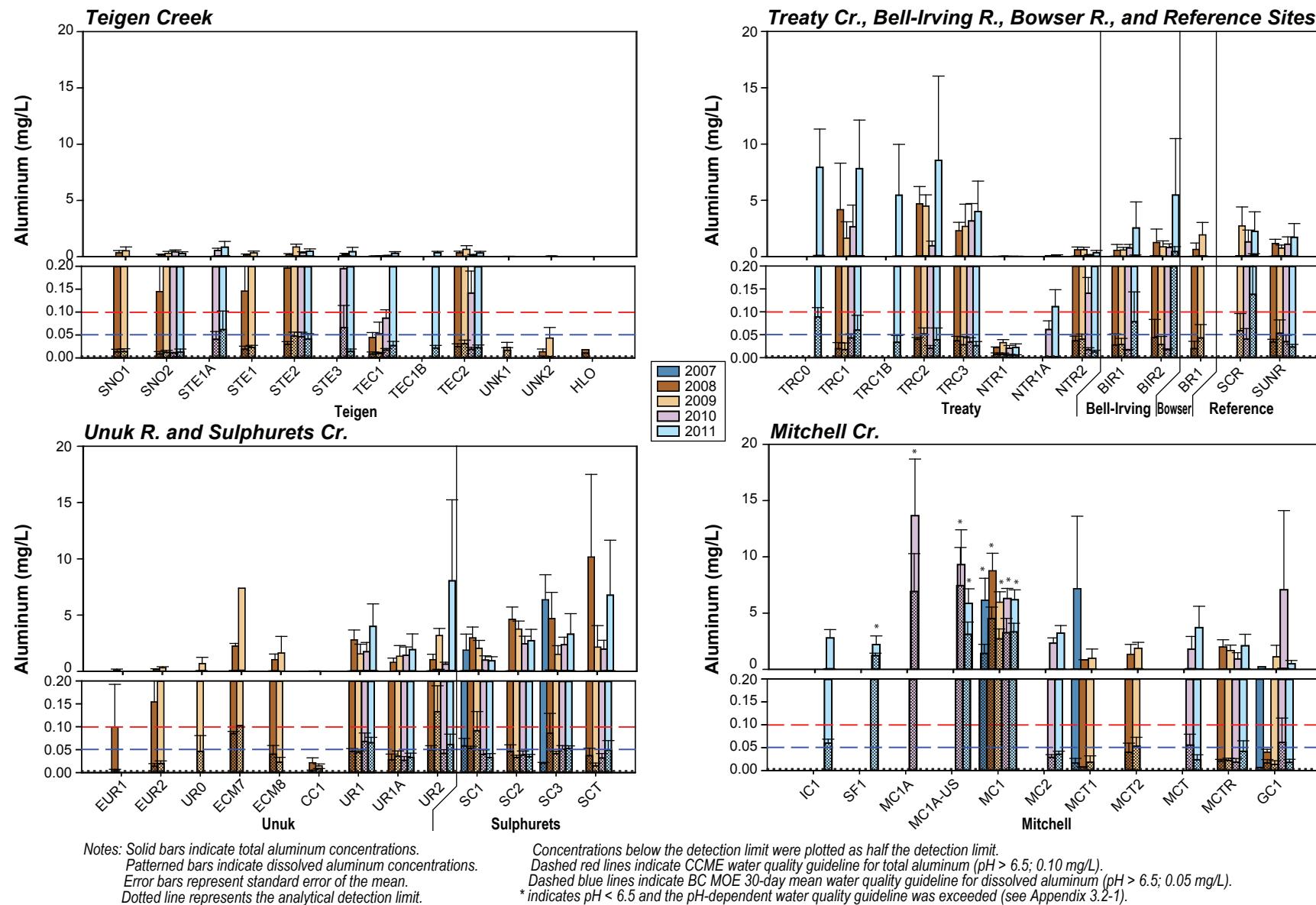
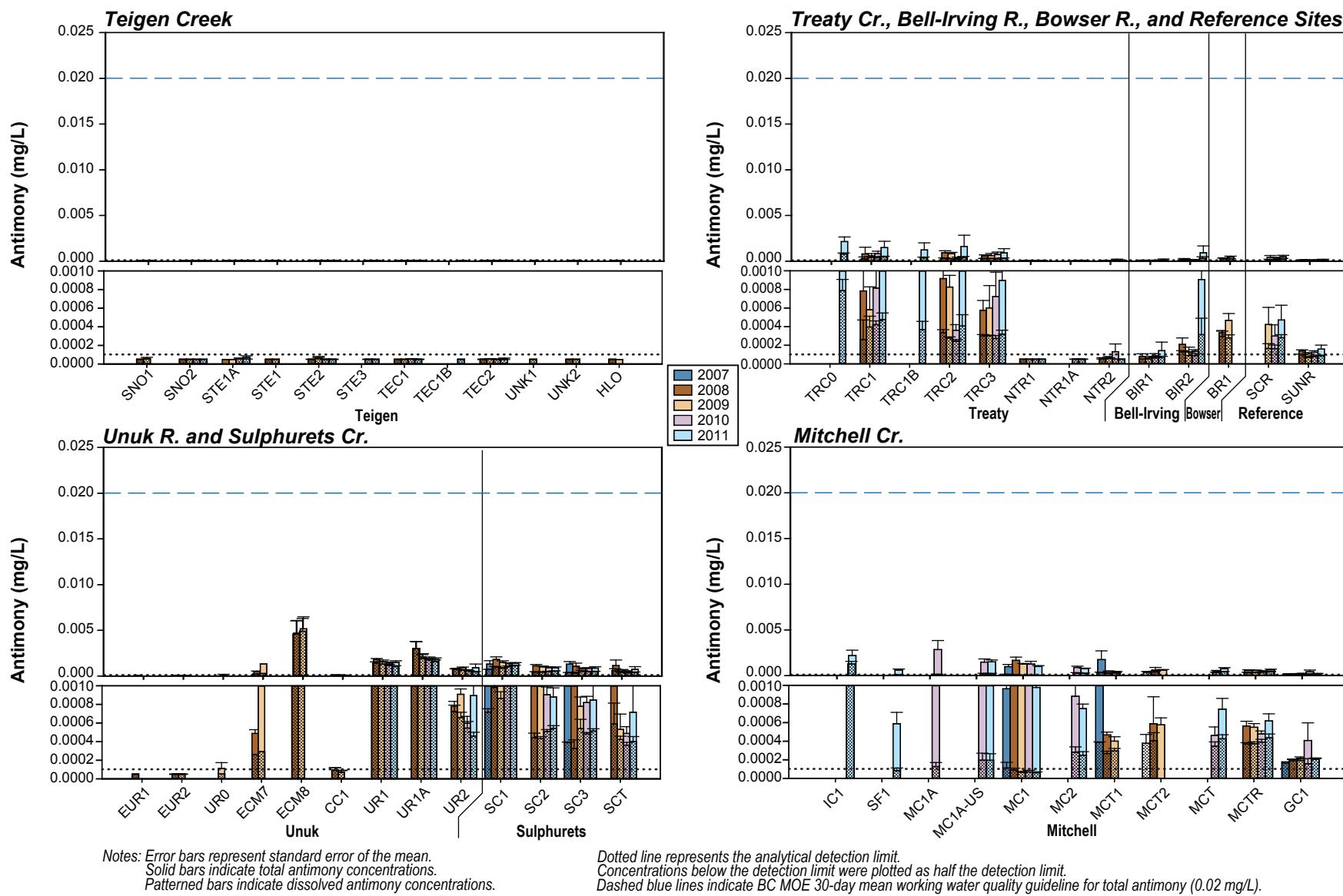
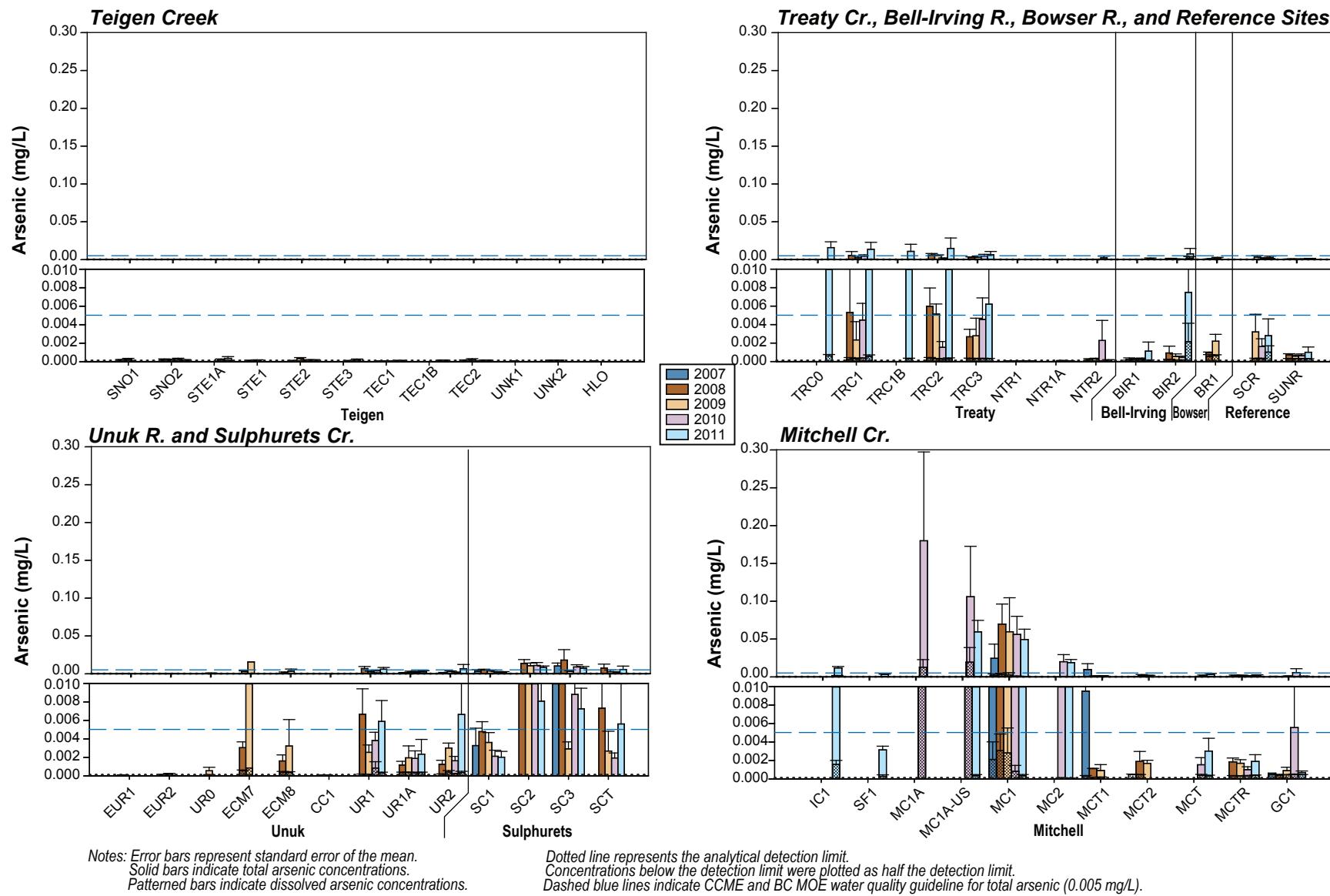


Figure 4.1-15





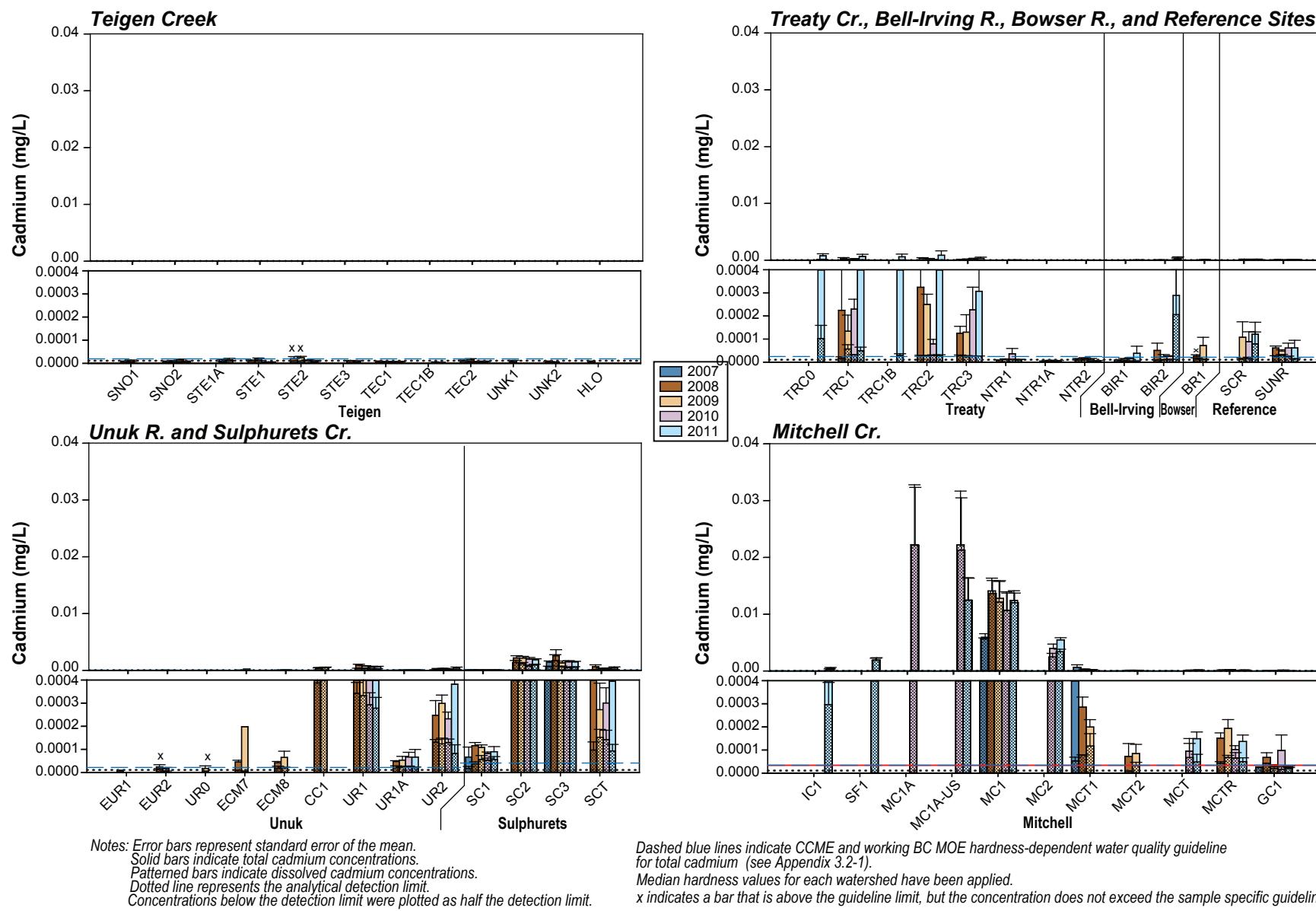


Figure 4.1-18

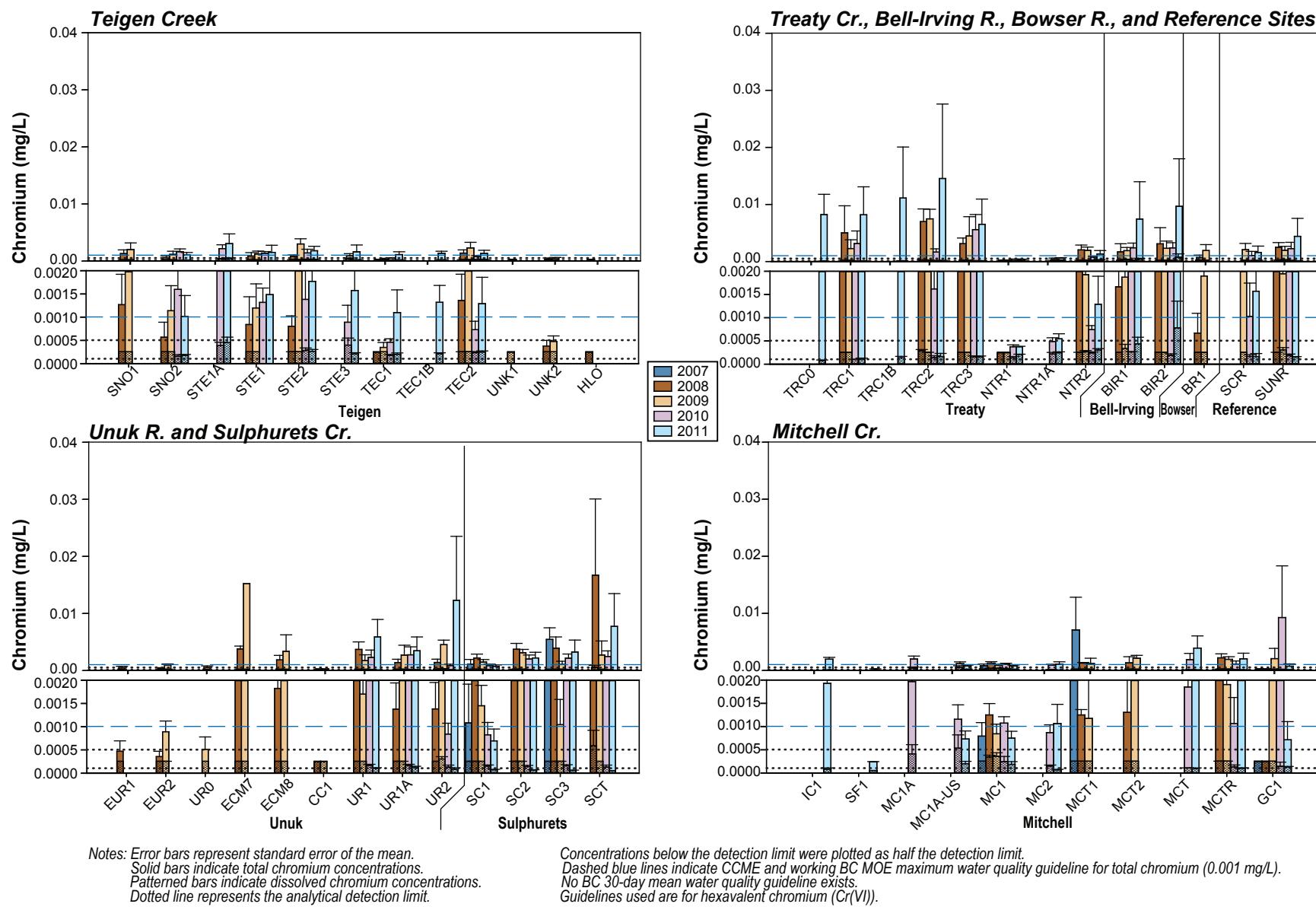


Figure 4.1-19

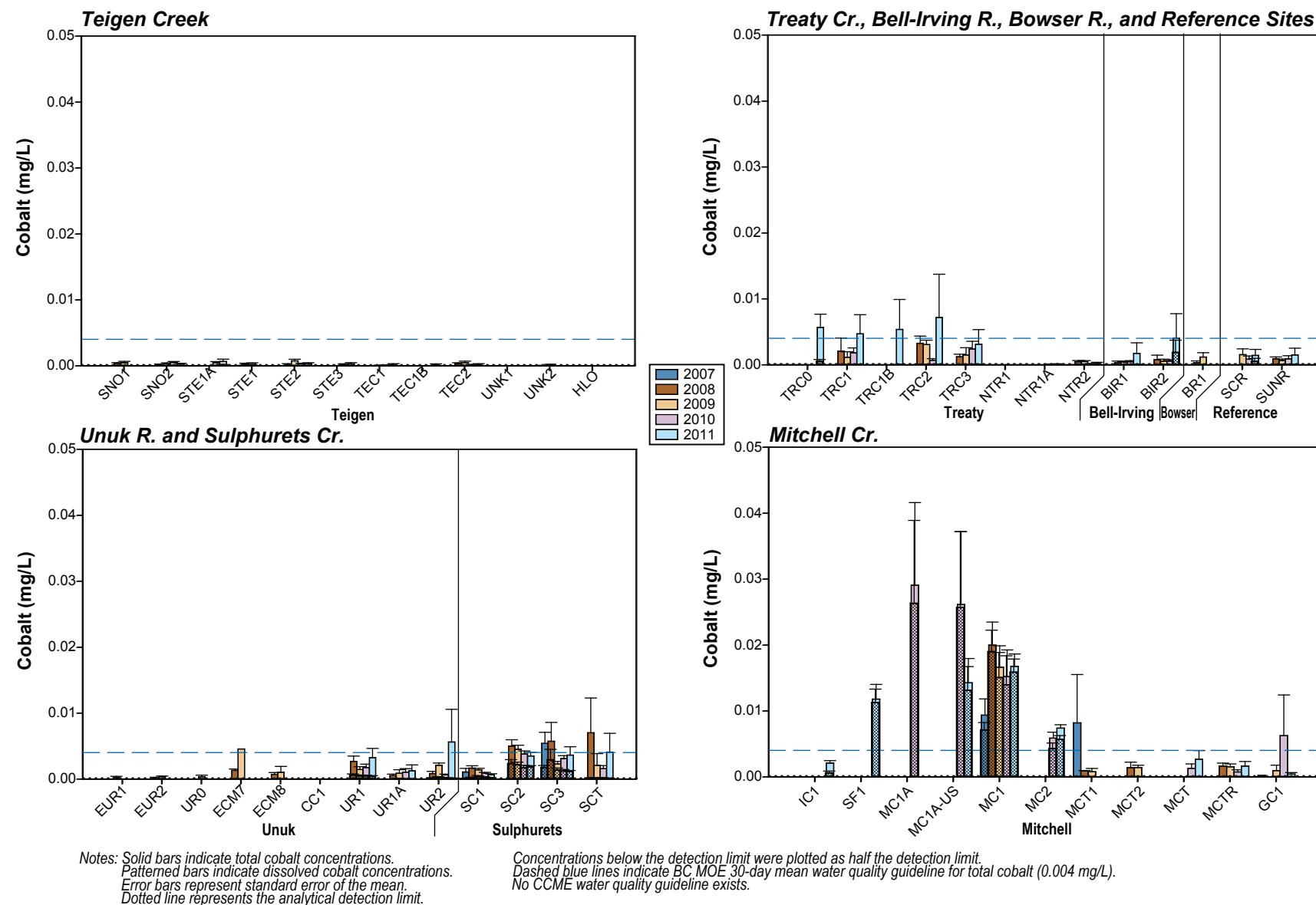
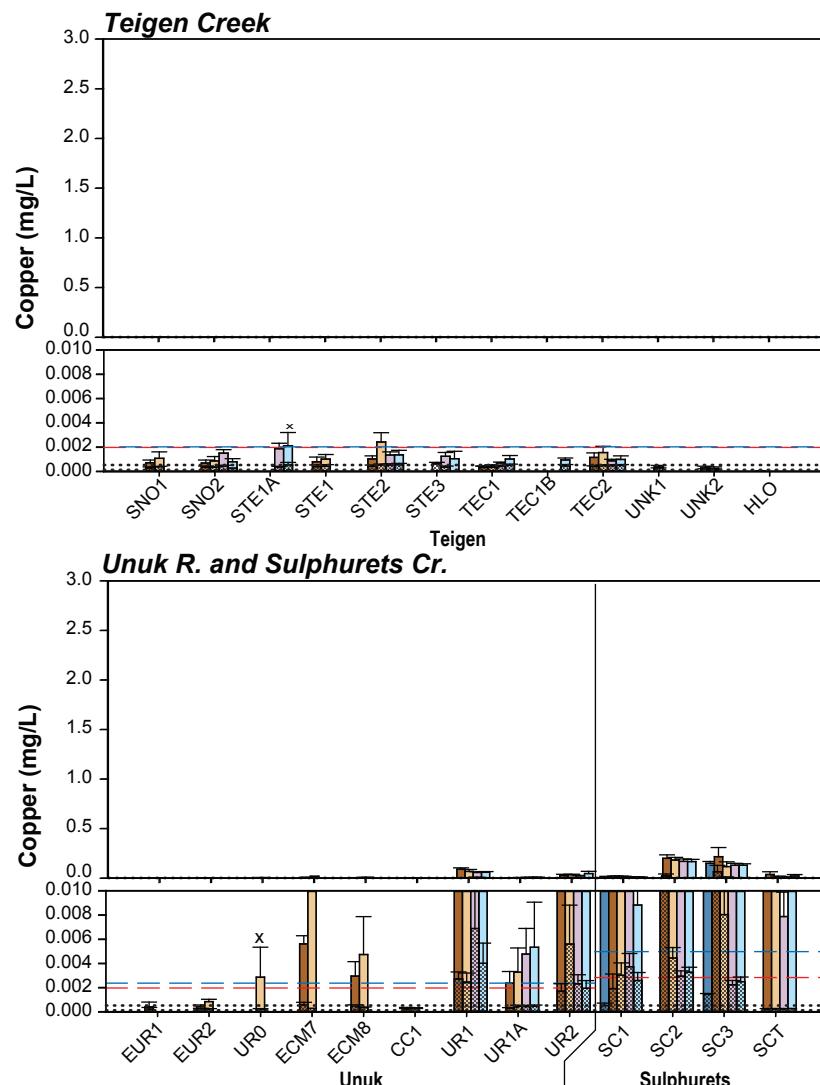
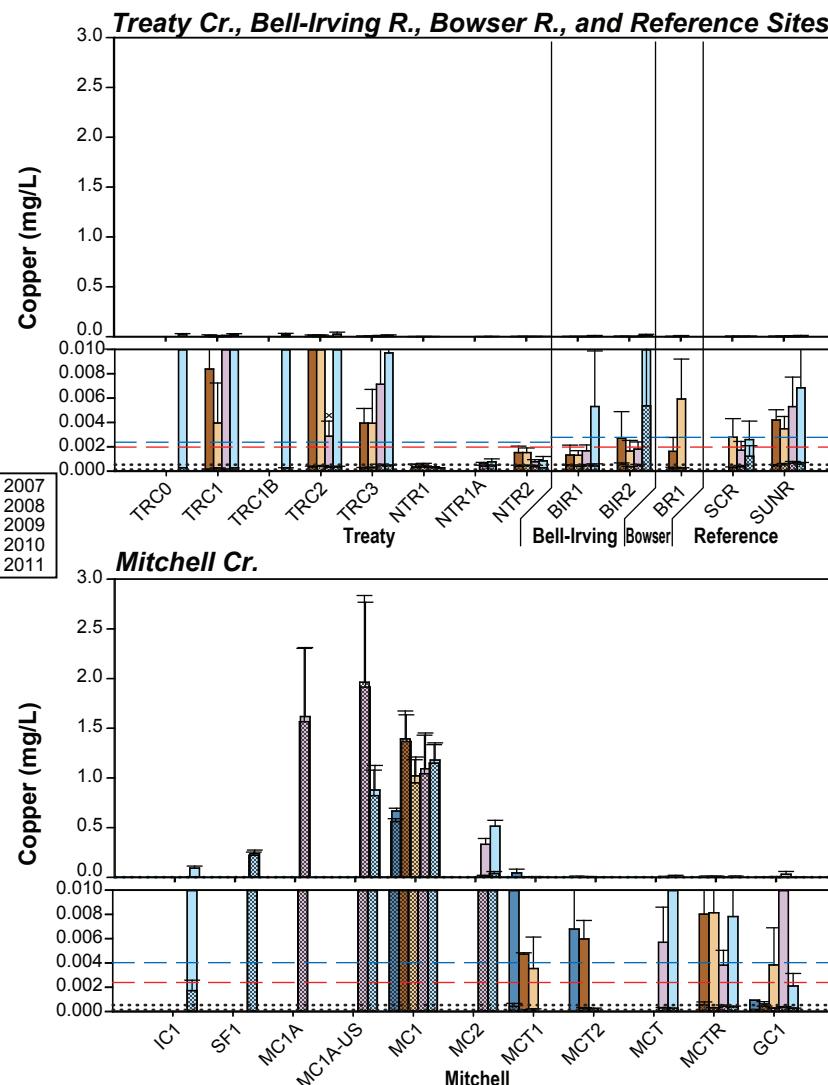


Figure 4.1-20



Notes: Solid bars indicate total copper concentrations.  
Patterned bars indicate dissolved copper concentrations.  
Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.  
Concentrations below the detection limit were plotted as half the detection limit.



Dashed red lines indicate CCME hardness-dependent water quality guideline for total copper (see Appendix 3.2-1).  
Dashed blue lines indicate BC MOE hardness-dependent 30-day mean water quality guideline for total copper (see Appendix 3.2-1).  
Median hardness values for each watershed were used to set guideline limit.  
x indicates a bar that is above the guideline limit, but the concentration does not exceed the sample specific guideline.

Figure 4.1-21

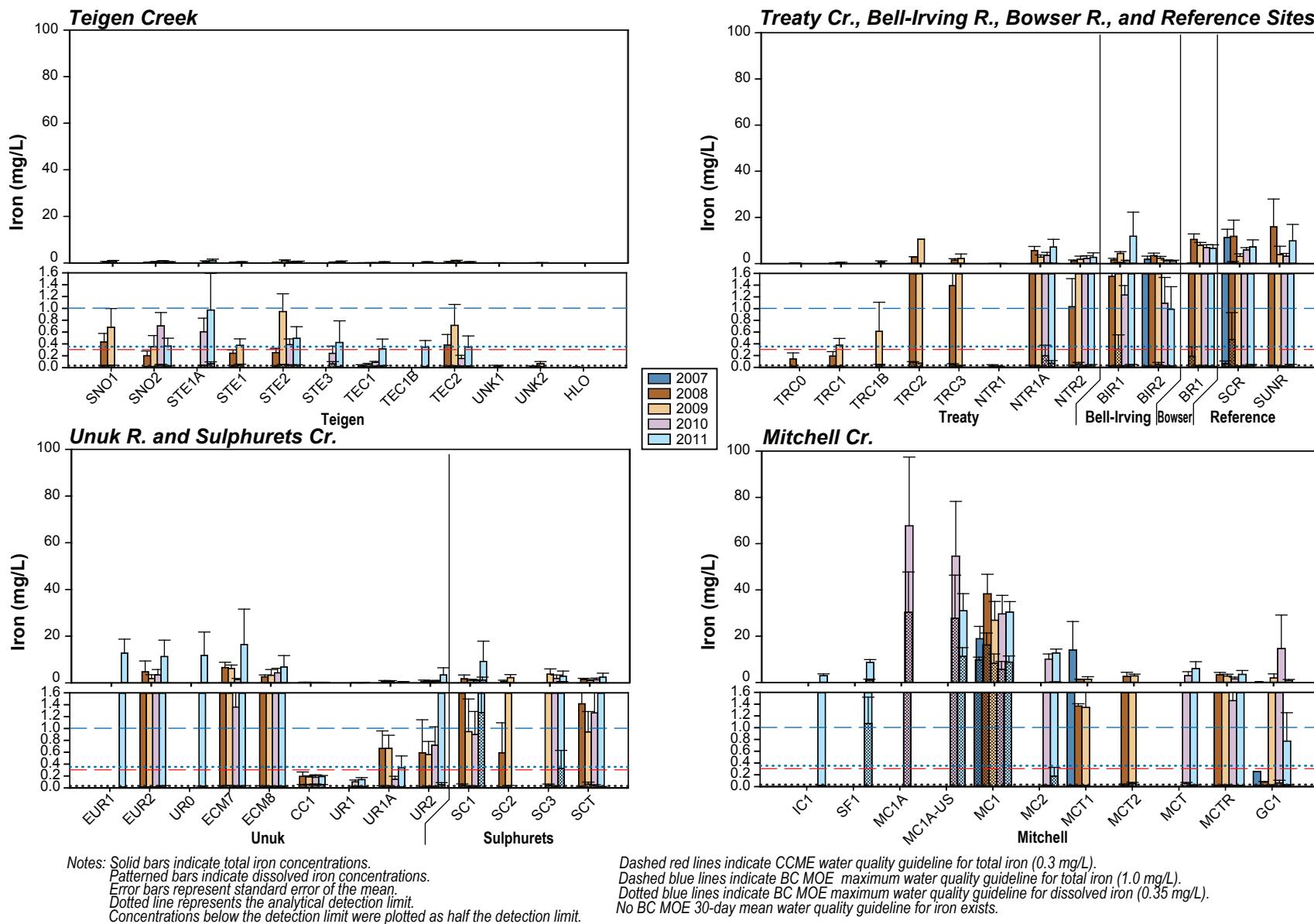
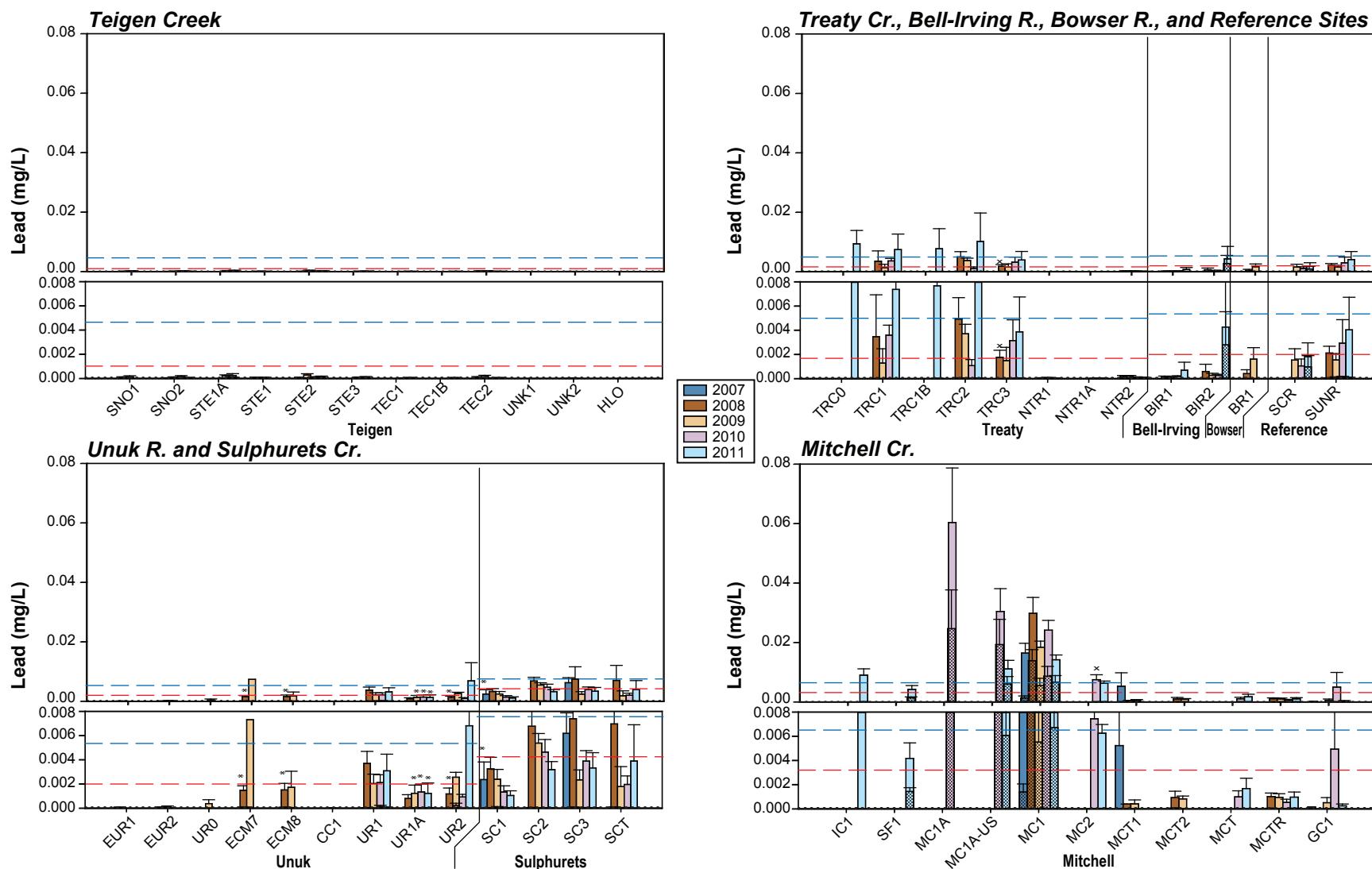


Figure 4.1-22



Notes: Error bars represent standard error of the mean.

Solid bars indicate total lead concentrations.

Patterned bars indicate dissolved lead concentrations.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Dashed red lines indicate CCME hardness-dependent water quality guideline for total lead (see Appendix 3.2-1).

Dashed blue lines indicate BC MOE hardness-dependent 30-day mean water quality guideline for total lead (see Appendix 3.2-1).

Median hardness values for each watershed were used to set guideline limit.

\* indicates a bar is below the CCME guideline limit, but the concentration exceeds the sample specific guideline.

x indicates a bar is above the BC guideline limit, but the concentration does not exceed the sample specific guideline.

Figure 4.1-23

## Mean Annual Total and Dissolved Lead Concentrations in KSM Project Streams, 2007 to 2011

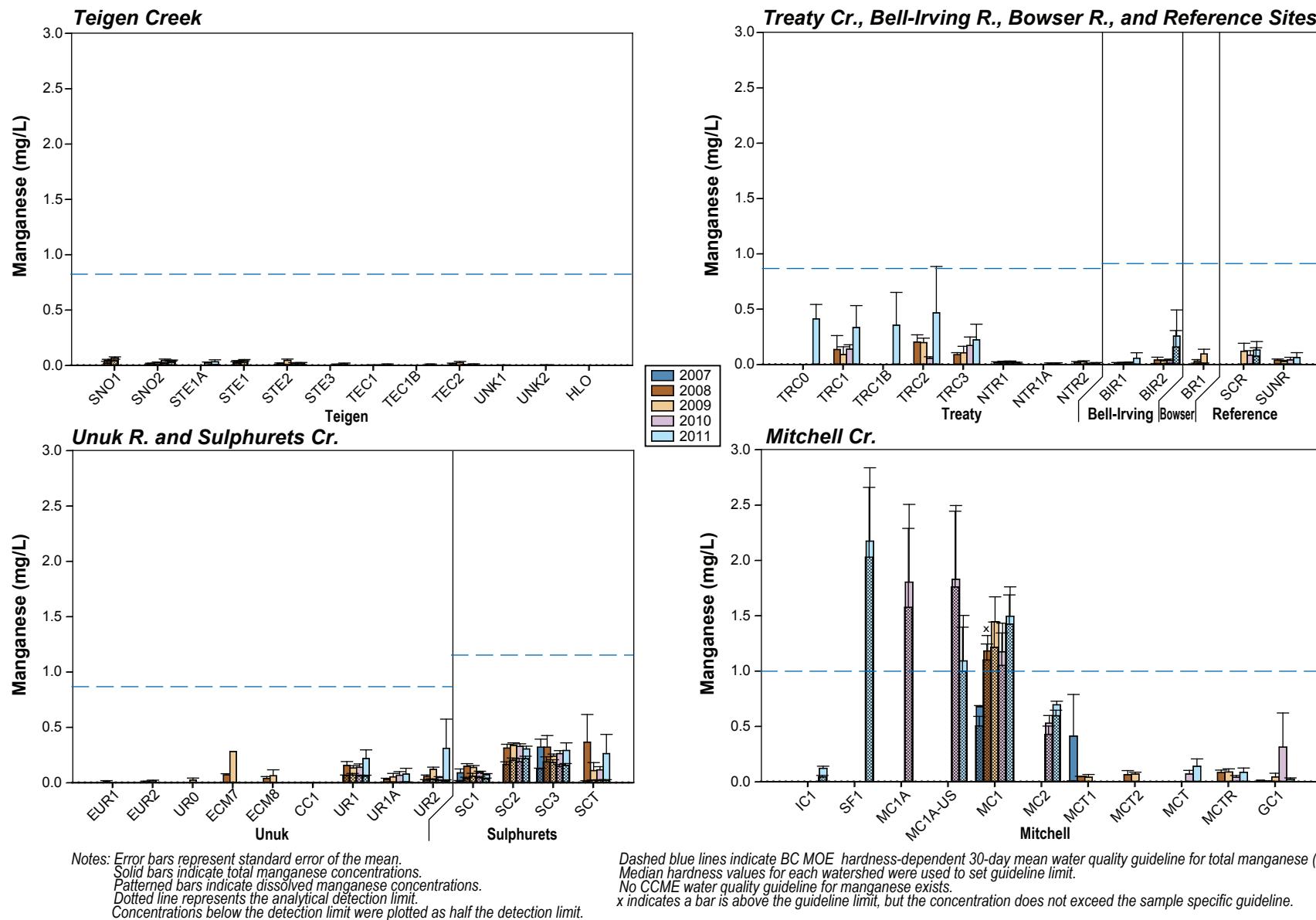


Figure 4.1-24

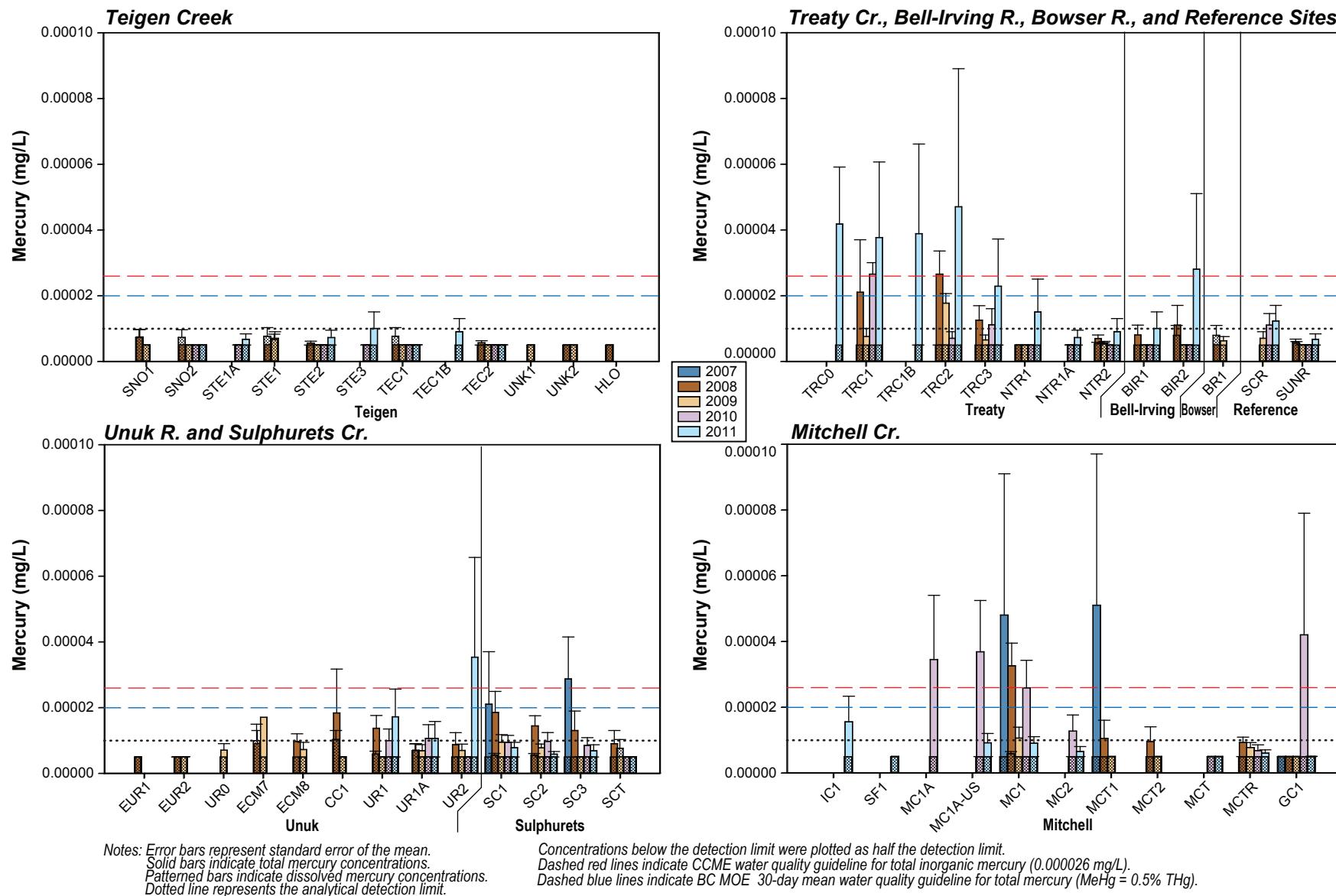
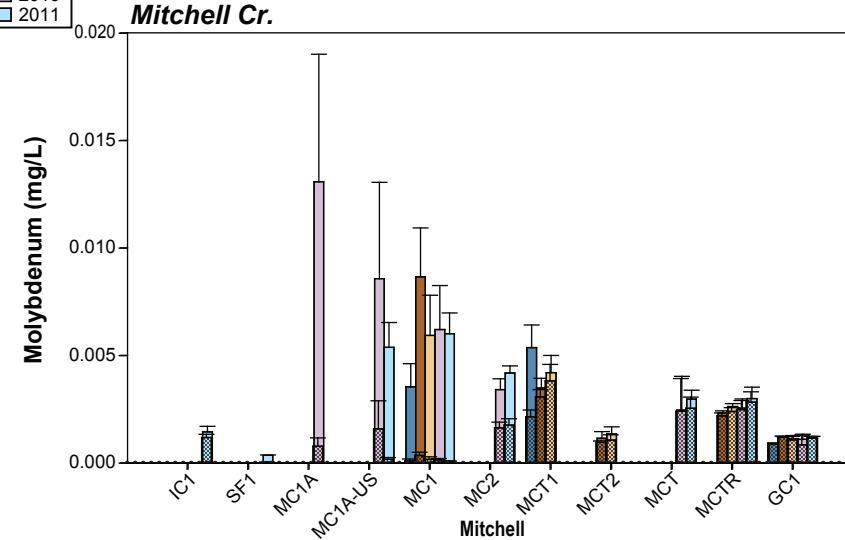
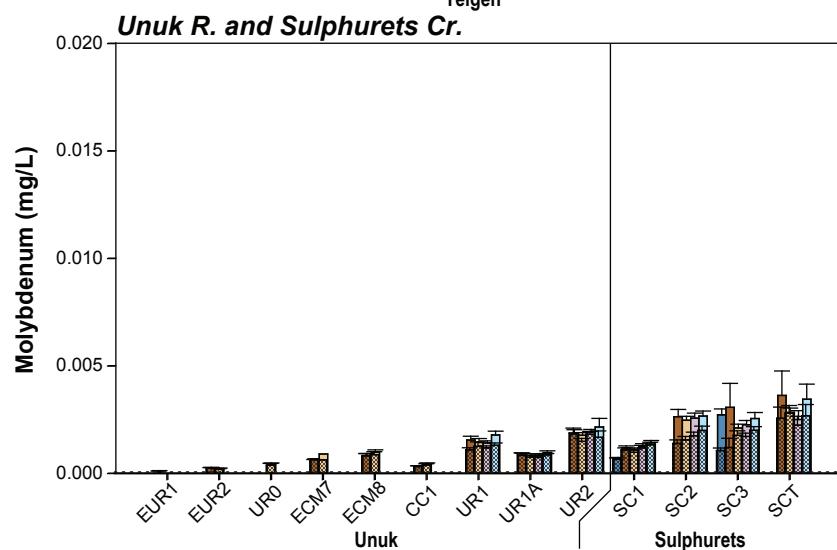
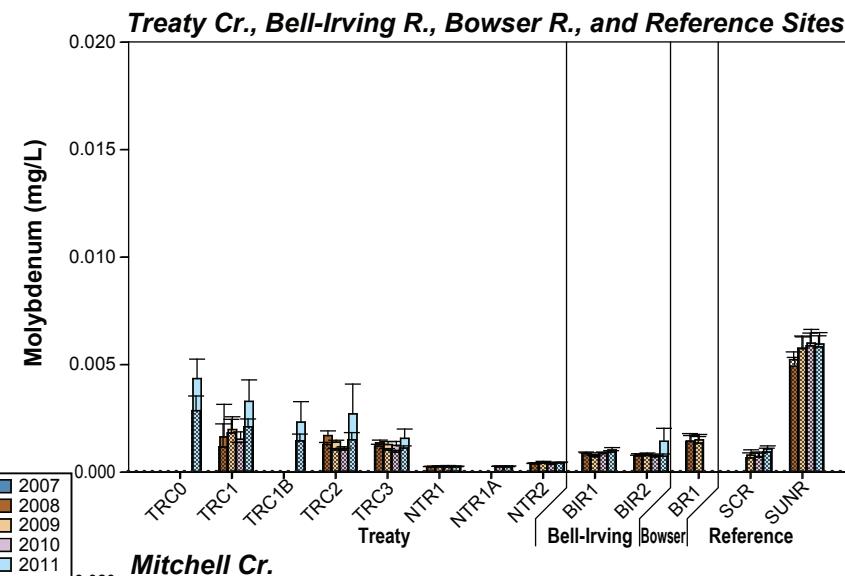
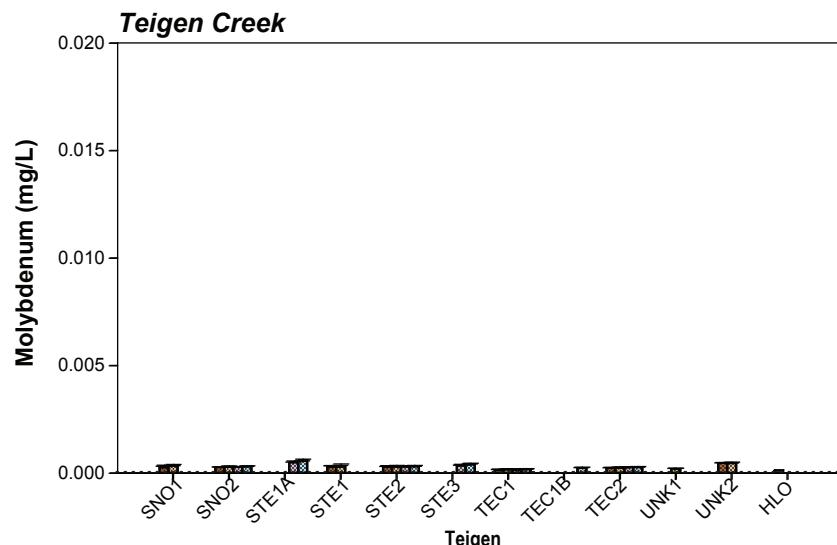


Figure 4.1-25



Notes: Error bars represent standard error of the mean.

Solid bars indicate total molybdenum concentrations.

Patterned bars indicate dissolved molybdenum concentrations.

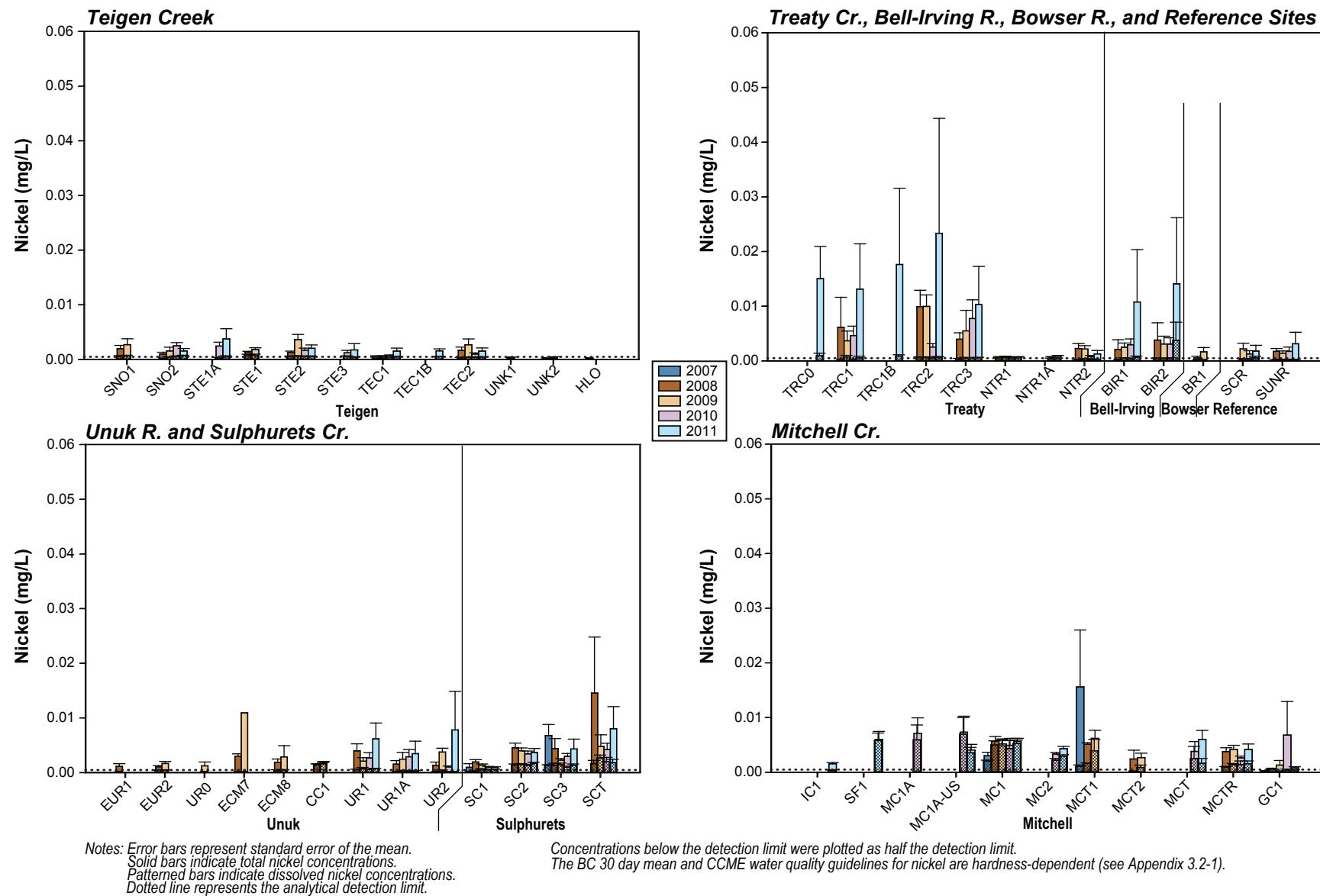
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

CCME guideline: 0.073 mg/L  
BC MOE 30-day mean guideline: 1 mg/L

### Mean Annual Total and Dissolved Molybdenum Concentrations in KSM Project Streams, 2007 to 2011

Figure 4.1-26



Mean Annual Total and Dissolved Nickel Concentrations  
in KSM Project Streams, 2007 to 2011

Figure 4.1-27

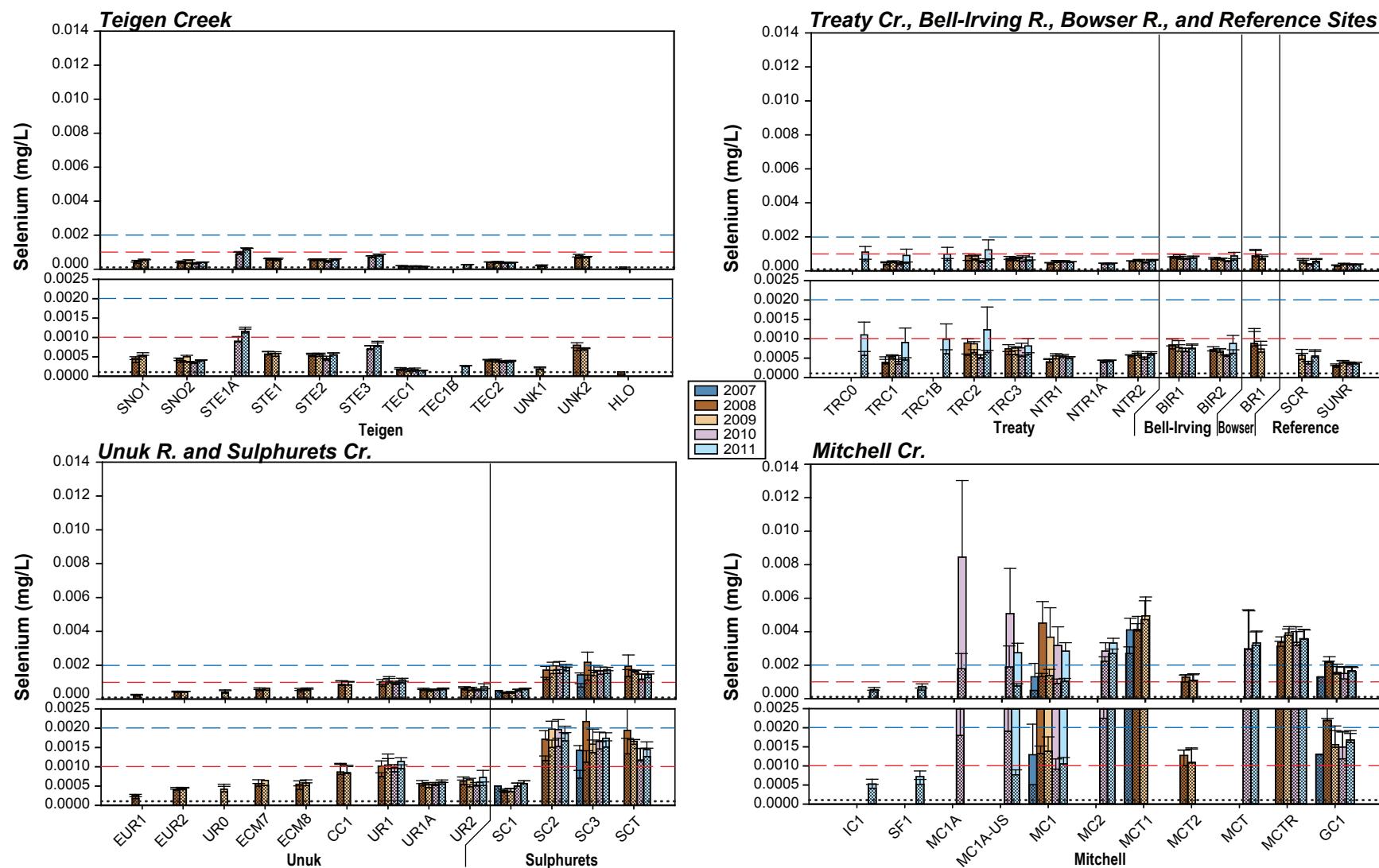
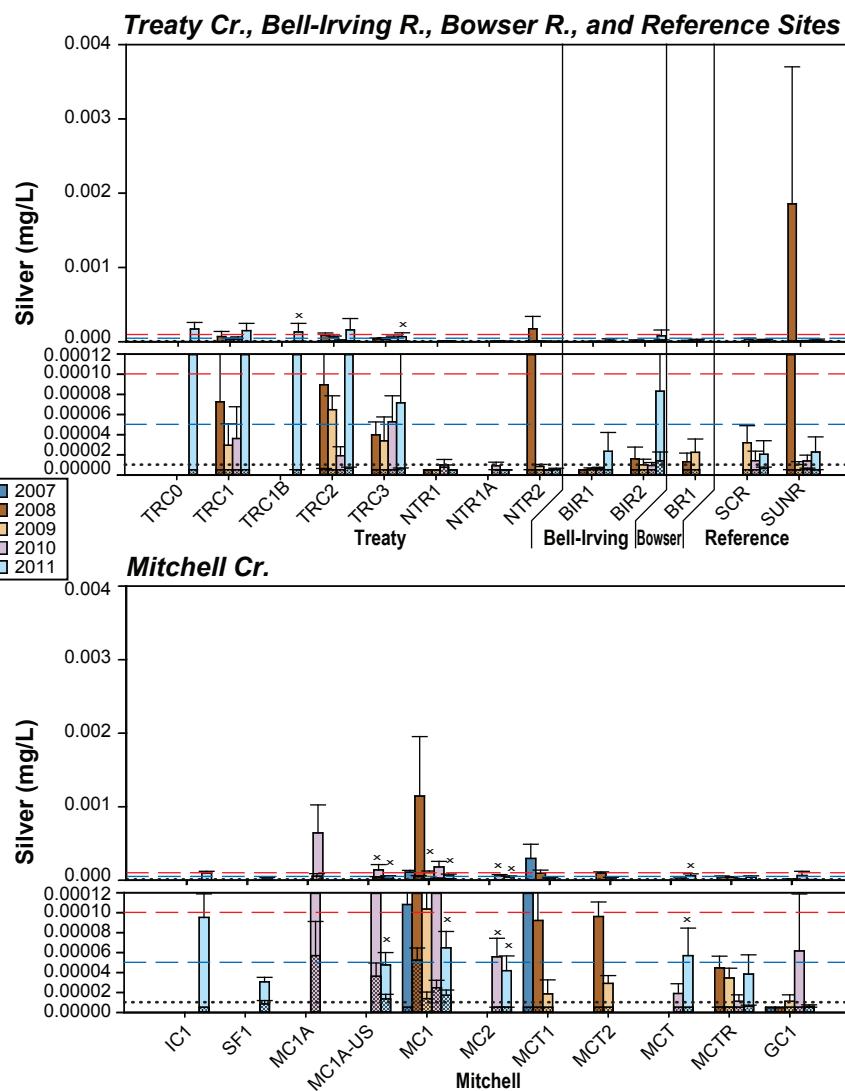
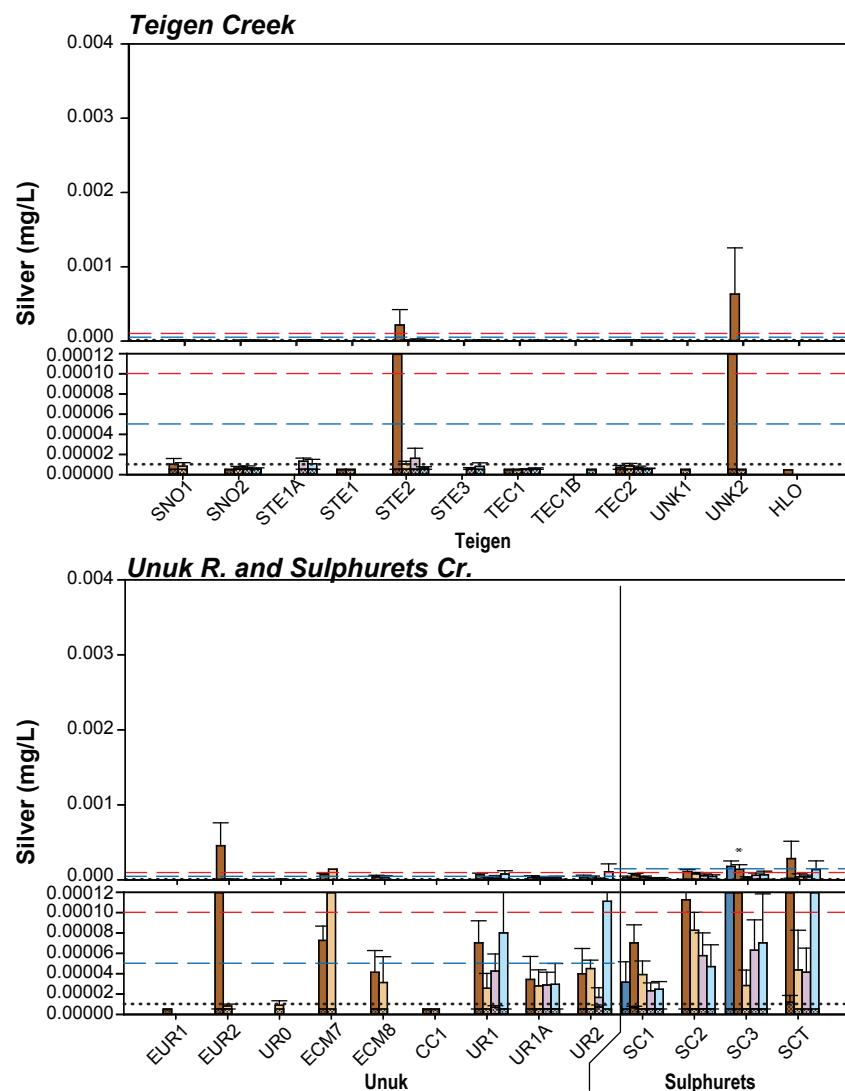


Figure 4.1-28



Notes: Error bars represent standard error of the mean.

Solid bars indicate total silver concentrations.

Patterned bars indicate dissolved silver concentrations.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Dashed red lines indicate CCME water quality guideline for total silver (0.0001 mg/L).

Dashed blue lines indicate BC MOE hardness-dependent 30-day mean water quality guideline for total silver (see Appendix 3.2-1).

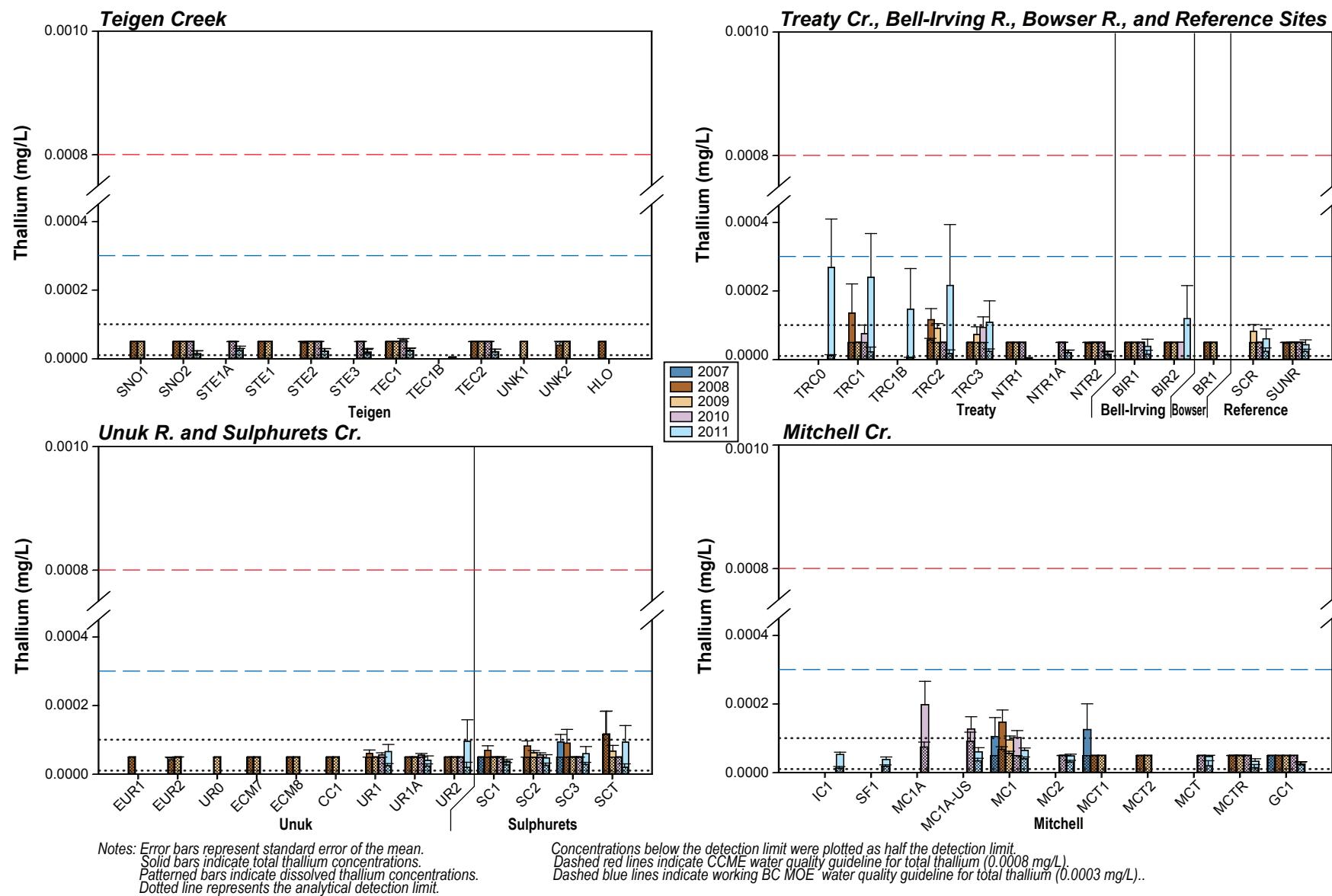
Median hardness values for each watershed were used to set guideline limit.

\* indicates a bar is below the BC guideline limit, but the concentration exceeds the sample specific guideline.

x indicates a bar that is above the BC guideline limit, but the concentration does not exceed the sample specific guideline.

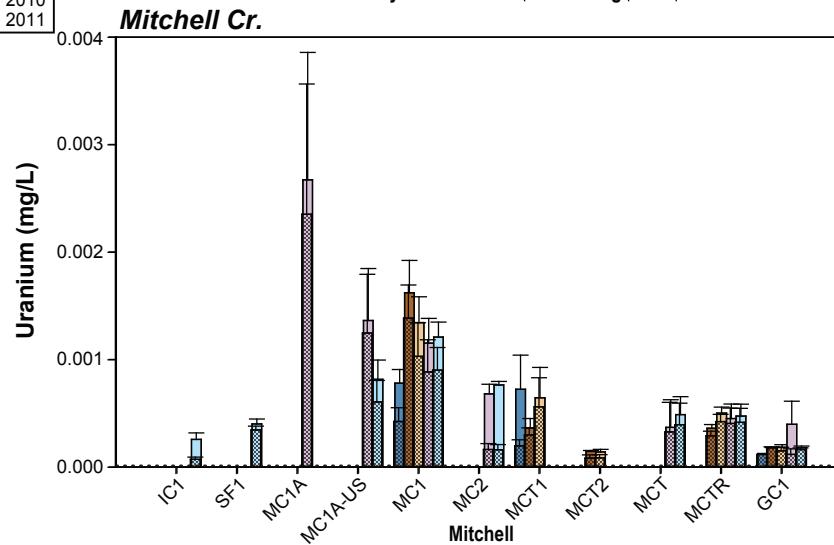
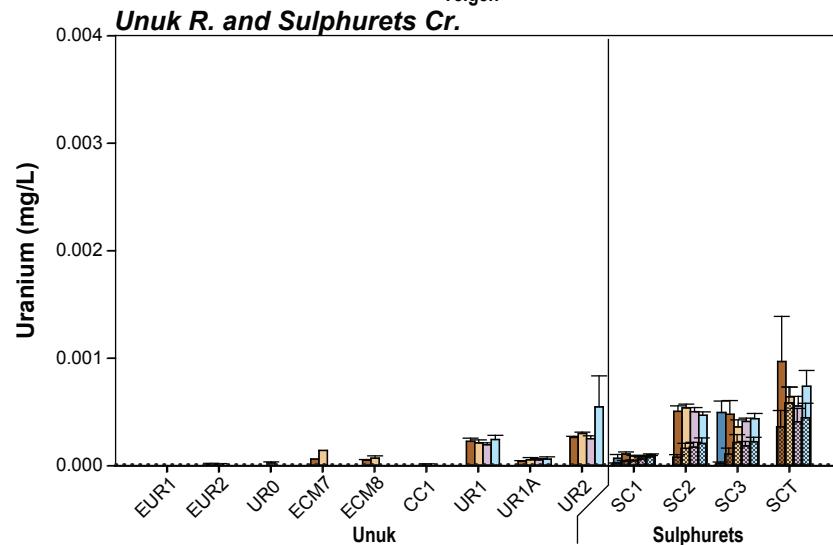
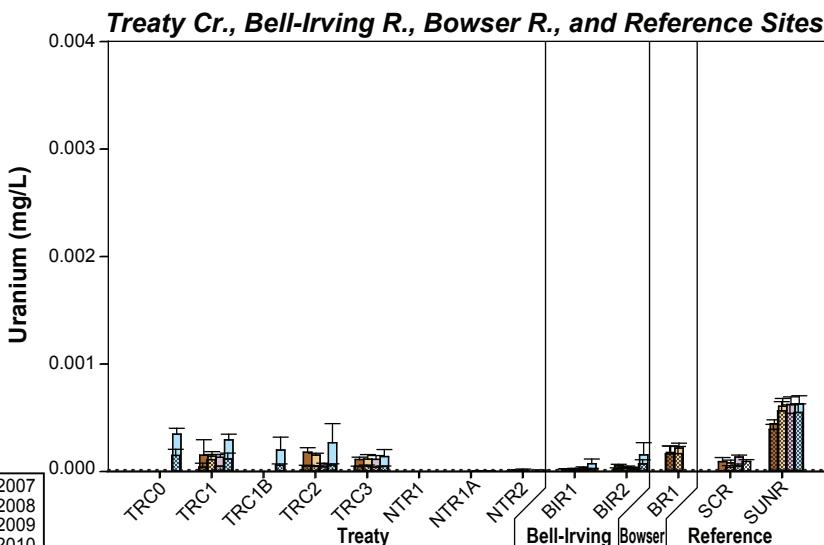
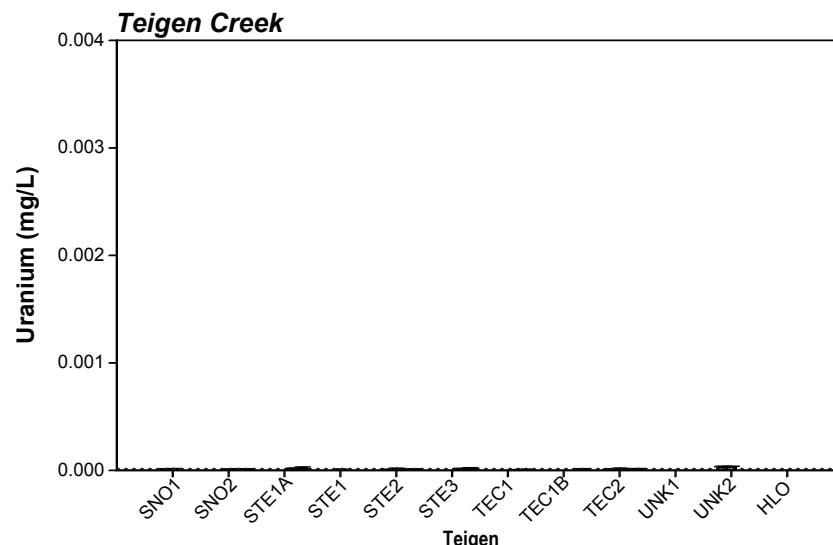
Figure 4.1-29

## Mean Annual Total and Dissolved Silver Concentrations in KSM Project Streams, 2007 to 2011



Mean Annual Total and Dissolved Thallium Concentrations  
in KSM Project Streams, 2007 to 2011

Figure 4.1-30



Notes: Error bars represent standard error of the mean.

Solid bars indicate total uranium concentrations.

Patterned bars indicate dissolved uranium concentrations.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

CCME long term guideline: 0.015 mg/L

Working BC MOE maximum guideline: 0.3 mg/L

### Mean Annual Total and Dissolved Uranium Concentrations in KSM Project Streams, 2007 to 2011

Figure 4.1-31

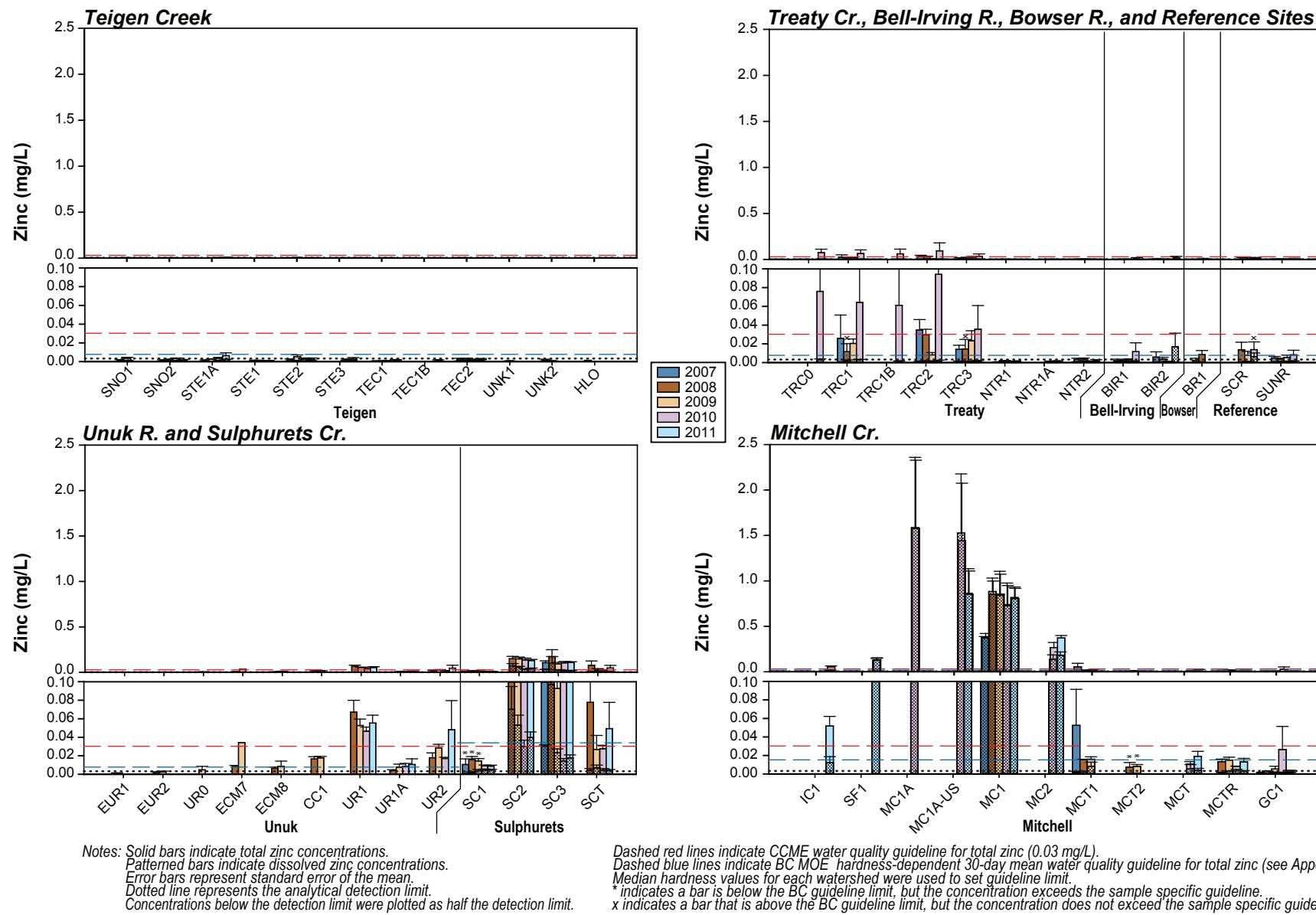


Figure 4.1-32

#### 4.1.2 Suspended Material

Turbidity and total suspended solids (TSS) concentrations were primarily associated with the hydrological regime (Figures 4.1-5 to 4.1-6) with increased sediment loads during freshet and the fall period of high rainfall. Due to the high mineralization of the KSM Project area, peaks in TSS often resulted in elevated metal concentrations (see Section 4.1.6). Turbidity in the Project area streams was most likely controlled by the sediment load and followed largely similar spatial and temporal patterns as TSS.

The lowest turbidity and TSS concentrations were observed in the Teigen Creek watershed, North Treaty Creek (NTR1, NTR1A, and NTR2), Coulter Creek (CC1), and the upper East Unuk River (EUR2). TSS was frequently below the analytical detection limit at sites in those streams. The highest turbidity and TSS concentrations were observed in the Mitchell Creek watershed, but elevated concentrations were observed in Treaty and Sulphurets creeks. Overall, TSS ranged from below detection (many sites) to 995 mg/L (MC1A, May 2010); turbidity ranged from 0.11 NTU (SCR, March 2009; UNK2, November 2009; MCTR, June 2008) to 1,010 NTU (MC1A, May 2010). The Bell-Irving, Bowser, and Unuk rivers typically had lower TSS and turbidity compared to the Sulphurets, Treaty, and Mitchell watersheds (TSS: 32.0 to 205 mg/L; turbidity: 0.14 to 757 NTU).

Some inter-annual variability was observed, especially in the lower Unuk River (UR2), Ted Morris Creek (SCT), Gingras Creek (GC1), and Treaty Creek (TRC1B and TRC2), which may reflect true variability related to timing of sampling and rainfall events. Specifically, TSS concentrations and turbidity on September 4, 2011 were elevated relative to the previous baseline data.

#### 4.1.3 Nutrients and Total Organic Carbon

Total nitrogen concentrations were low in the KSM Project streams (Appendix 4-1). Total nitrogen was primarily in the form of nitrate, although organic nitrogen as indicated by total Kjeldahl nitrogen was occasionally the dominant form of nitrogen (Appendix 4-1). Nitrate concentrations were frequently below the analytical detection limit (0.005 mg/L) in most samples from most sites. The highest mean annual nitrate concentrations were measured in North Treaty Creek, lower Treaty Creek, Snowbank Creek, and at UNK2 in the Teigen watershed (Figure 4.1-7). The maximum measured nitrate concentration was 1.39 mg/L in North Treaty Creek at NTR2 in April 2009. Mean annual nitrite concentrations were always below the analytical detection limit (0.001 mg/L) at all sites and were therefore not graphed (Appendix 4-1). Ammonia concentrations were frequently below the analytical detection limit (0.005 mg/L) in most samples from most sites (Figure 4.1-8). Detectable ammonia was most frequently measured in Treaty Creek and at the north and south sides and toe of the Mitchell glacier. The maximum ammonia concentration was 0.027 mg/L in Mitchell Creek at MC1 in July 2009.

Total phosphorus concentrations were high and annual means were frequently above the CCME total phosphorus trigger range for eutrophic lakes and rivers (0.035 to 0.1 mg/L; Figure 4.1-9). Sites in Treaty Creek, Mitchell Creek, Sulphurets Creek, and the Unuk River frequently had total phosphorus concentrations above the trigger range for hyper-eutrophic systems ( $> 0.1 \text{ mg/L}$ ). Ortho-phosphate was frequently below the analytical detection limit (0.001 mg/L) and, when detected, was a relatively minor proportion of the total phosphorus concentration for most sites at most times (Appendix 4-1). These data indicate that there was little bioavailable phosphorus and that phosphorus was largely bound to suspended mineral and/or organic substrates. The watercourses with the highest total phosphorus concentrations also had the highest TSS concentrations and sediment loads (Figure 4.1-5). The nitrogen to phosphorus ratios, low nutrient concentrations, and the mineral-bound nature of the phosphorus in KSM Project streams indicate that primary production in the Project area is likely nutrient-limited.

Total organic carbon (TOC) concentrations were below or near the detection limit of 0.5 mg/L at most sites in the upper East Unuk River, Sulphurets Creek, Mitchell Creek watershed, Bowser River, and reference sites (Scott Creek and South Unuk River; Fig 4.1-10). The highest TOC concentrations were observed in Snowbank/Teigen creeks (0.51 to 4.2 mg/L), Treaty Creek (0.51 to 4.6 mg/L), and Bell-Irving River (0.54 to 5.1 mg/L). Intra-annual variability is the result of increased TOC concentrations in the spring and fall due to organic components in run-off during freshet and heavy rainfall events (i.e. allochthonous material).

#### **4.1.4 Cyanide**

Cyanide (total and weak acid dissociable (WAD) cyanide and thiocyanate) concentrations were frequently below the analytical detection limit in the KSM Project streams (Figure 4.1-11). Naturally detectable total cyanide was most frequently observed in the Teigen Creek watershed (maximum concentration 0.006 mg/L, STE2, September 2010). Mean annual total cyanide concentrations were frequently below the analytical detection limit in upper Treaty Creek, Bowser River, Unuk River, and the Mitchell Creek watershed. The highest concentration of WAD cyanide observed was 0.0011 mg/L in Sulphurets Creek (SC2) in September 2011. The highest concentration of thiocyanate observed was 5.0 mg/L at TRC2 in June 2009 during freshet (Appendix 4-1).

#### **4.1.5 Major Anions**

Chloride concentrations were below detection at stream sites in the KSM Project area (Figure 4.1-12). Variability in the chloride concentrations in the Mitchell Creek watershed reflects variable analytical detection limits due to elevated TDS levels, rather than measurable chloride.

Low mean annual fluoride concentrations were observed at streams in the Snowbank/Teigen, Treaty, Bell-Irving, Bowser, Unuk, and reference watersheds (Figure 4.1-13). Naturally elevated concentrations of fluoride were frequently observed in the acidic stream sites of the Mitchell Creek watershed (SF1, MC1A, MC1A-US, and MC1; range of annual means: 0.33 to 1.0 mg/L). These elevated concentrations were diluted by the natural catchment at downstream sites, where lower but still elevated fluoride concentrations were observed at MC2 (range of annual means: 0.19 to 0.25 mg/L) and in Sulphurets Creek downstream of the confluence with Mitchell Creek at SC2 and SC3 (range of annual means: 0.086 to 0.13 mg/L).

Sulphate concentrations followed a similar pattern to fluoride, with the lowest concentrations observed in the Snowbank/Teigen, Treaty, Bell-Irving, Bowser, and Unuk watersheds, and the highest concentrations observed in the Mitchell Creek watershed (Figure 4.1-14). Annual mean sulphate concentrations in Mitchell Creek ranged from 104 mg/L (MC1, 2007) to 338 mg/L (SF1, 2011). Sulphate concentrations decreased downstream with annual mean concentrations in Sulphurets Creek ranging from 16.3 mg/L (SC1, 2007) to 98.0 mg/L (SC3, 2009).

Fluoride and sulphate concentrations followed a similar pattern to hardness and TDS in Sulphurets Creek with concentrations increasing from 2007 to 2011.

#### **4.1.6 Metals**

Metals BC provincial or federal water quality guidelines are graphed and presented in Figures 4.1-15 to 4.1-32. On each graph, dissolved concentrations are superimposed on total concentrations, and existing provincial and federal guidelines for the protection of freshwater aquatic life are presented. Dissolved metal concentrations are useful for QA/QC purposes and are useful in determining what fraction of a specific metal is present in the dissolved phase. Metals dissolved in the water column are more biologically available than metals bound to particulates in the water column.

The total concentrations of most metals of interest at most stream sites followed the seasonal trends observed in TSS concentrations (Figure 4.1-5), indicating that total metal concentrations are associated with increased sediment loading from terrestrial run-off and increased suspension of stream bed sediments during spring freshet and fall heavy rainfall events. Metals present as oxyanions at the near-neutral pH of KSM Project streams (i.e., antimony, molybdenum, selenium, and uranium) had a higher proportion of the total concentration in the dissolved fraction. Cadmium was also largely present in the dissolved fraction.

The intra-annual variability is graphically represented as error bars of the standard error of the mean. Either increasing or decreasing trends in concentrations outside of this natural variability were not typically observed. Increasing concentrations of many metals between 2007 and 2011 were observed in the Unuk River at UR1A and in Treaty Creek at TRC3.

The sites that deviated from the overall TSS-influenced pattern included the acidic sites in the upper Mitchell watershed: SF1, MC1A, MC1A-US, and MC1. At these stations, metal concentrations followed temporal patterns of total dissolved solids. For some metals, higher proportions of dissolved metals were carried through to the downstream MC2 site and to Sulphurets Creek (SC2 and SC3).

The lowest concentrations of all metals were observed in the Teigen Creek watershed and highest in the Mitchell Creek watershed. The exception was chromium concentrations that were relatively low in the Mitchell and Teigen watersheds and higher in the Treaty, Bell-Irving, Sulphurets, and Unuk watersheds.

#### **4.1.7 Hydrocarbons**

Water samples were collected in September 2008 in Teigen Creek (TEC2) and Sulphurets Creek (SC2) for polycyclic aromatic hydrocarbons (PAHs) and total extractable hydrocarbons (TEHs) at the request of US regulators. Variables were below analytical detection limits at both sites. The results are presented in Appendix 4.1-1.

#### **4.1.8 Comparison to Water Quality Guidelines**

Water quality parameters were compared to CCME and approved or working BC MOE 30-day mean water quality guidelines for the protection of freshwater aquatic life (BC MOE 2006b, 2006a; CCME 2011) to identify naturally occurring guideline exceedances. BC acute (maximum) water quality guidelines were used for parameters where a chronic (30-day mean) guideline did not exist. The mean magnitudes by which parameter concentrations naturally exceeded guidelines and the frequency (percentage) of collected samples that exceeded guidelines are presented in Table 4.1-1. Fifteen CCME guidelines, six BC chronic guidelines, and 12 BC acute guidelines are presented in Table 4.1-1. Guidelines defined for ammonia, nitrate, nitrite, phosphorus, chloride, free and WAD cyanide, total antimony, total beryllium, total boron, and total molybdenum were not included in the table as exceedances were not observed. The mean magnitude of exceedance was not calculated for parameters where the overall mean concentration did not exceed a given guideline. For those parameters only the frequency of exceedances at sites within a watershed is presented. Similar tables for individual baseline years (2007 to 2011) can be found in Appendix 4.1-2.

CCME and/or BC MOE guidelines for pH, fluoride, sulphate, total and dissolved aluminum, total arsenic, total cadmium, total chromium, total cobalt, total copper, total and dissolved iron, total lead, total manganese, total mercury, total nickel, total selenium, total silver, total thallium, and total zinc were exceeded at a minimum of one time at one site. The magnitude and frequency of naturally occurring exceedances was typically highest in the Mitchell Creek watershed, which was often a result of the acidic conditions frequently observed at the four upstream sites (SF1, MC1A, MC1A-US, and MC1) and highly mineralized nature of the Project area. The magnitude and frequency of exceedances was typically lowest in the Teigen Creek watershed.

**Table 4.1-1. Summary of Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2007 to 2011**

Parameter Guideline Jurisdiction	pH 6.5 - 9 CCME = BC Maximum		Fluoride (F) Hardness-dependent BC Maximum		Fluoride (F) 0.12 mg/L CCME		Sulphate (SO <sub>4</sub> ) 100 mg/L BC Maximum		Aluminum (Al) pH-dependent CCME		Dissolved Aluminum (Al) pH-dependent BC Maximum		Arsenic (As) 0.005 mg/L CCME = BC Maximum		Cadmium (Cd) Hardness-dependent CCME = BC Maximum		
Watershed	N	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor
Teigen Creek	197	0.5	-	0	-	0	-	0	-	53	3.5	13	-	0	-	18	-
Bell-Irving River	29	0	-	0	-	0	-	0	-	62	16.6	21	1.8	3	-	38	2.4
Treaty Creek	157	0	-	0.6	-	0.6	-	0	-	63	26.4	23	-	18	-	52	7.3
SCR - Reference Site	13	0	-	0	-	0	-	0	-	54	21.3	38	1.5	23	-	54	4.0
SUNR - Reference Site	53	0	-	0	-	2	-	0	-	64	11.5	21	-	2	-	72	2.2
Unuk River	147	0	-	0	-	0	-	0	-	71	17.9	32	-	13	-	77	11.2
Mitchell Creek	170	30	-	2	-	43	2.4	40	1.2	85	53.1	39	38.2	48	5.6	92	126.5
Sulphurets Creek	152	0	-	0	-	28	-	37	-	88	28.9	32	-	39	1.4	97	30.0
Bowser	6	0	-	0	-	0	-	0	-	67	14.9	17	-	0	-	67	2.3

Parameter Guideline Jurisdiction	Chromium (Cr) 0.001 mg/L CCME = BC Maximum		Cobalt (Cu) 0.004 mg/L BC 30-d Average		Copper (Cu) Hardness-dependent BC 30-d Average		Copper (Cu) Hardness-dependent CCME		Iron (Fe) 1 mg/L BC Maximum		Iron (Fe) 0.3 mg/L CCME		Dissolved Iron (Fe) 0.35 mg/L BC Maximum		Lead (Pb) Hardness-dependent BC 30-d Average		
Watershed	N	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor
Teigen Creek	197	33	1.4	0.5	-	13	-	15	-	10	0.4	31	1.4	0	-	0	-
Bell-Irving River	29	59	4.0	7	-	31	1.2	38	1.6	31	2.3	59	7.8	3	-	0	-
Treaty Creek	157	48	4.3	14	-	36	2.0	40	2.8	41	3.9	53	12.9	0	-	0	-
SCR - Reference Site	13	38	1.6	0	-	38	-	38	1.0	38	2.9	54	9.5	8	-	0	-
SUNR - Reference Site	53	49	2.6	4	-	49	1.5	55	2.1	32	1.4	55	4.7	2	-	0	-
Unuk River	147	43	2.7	7	-	59	7.9	60	10.9	48	2.8	66	9.3	2	-	0	-
Mitchell Creek	170	43	1.5	51	2.0	74	85.1	78	148.7	76	15.4	84	51.2	27	13.0	0	-
Sulphurets Creek	152	52	2.6	23	-	90	20.2	95	33.7	81	5.7	85	18.9	1	-	0	-
Bowser	6	50	1.5	0	-	50	1.5	50	2.0	50	1.7	67	5.6	0	-	0	-

Parameter Guideline Jurisdiction	Lead (Pb) Hardness-dependent CCME		Manganese (Mn) Hardness-dependent BC Maximum		Mercury (Hg) 0.00002 mg/L BC 30-d Average		Mercury (Hg) 0.000026 mg/L CCME		Nickel (Ni) Hardness-dependent BC Maximum		Nickel (Ni) Hardness-dependent CCME		Selenium (Se) 0.001 mg/L CCME		Selenium (Se) 0.002 mg/L BC 30-d Average		
Watershed	N	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor
Teigen Creek	197	1	-	0	-	0	-	0	-	0	-	0	-	5	-	0	-
Bell-Irving River	29	7	-	0	-	3	-	3	-	3	-	0	-	7	-	0	-
Treaty Creek	157	24	1.0	2	-	10	-	10	-	4	-	1	-	9	-	3	-
SCR - Reference Site	13	46	-	0	-	0	-	0	-	0	-	0	-	8	-	0	-
SUNR - Reference Site	53	42	1.1	0	-	0	-	0	-	2	-	0	-	0	-	0	-
Unuk River	147	30	-	1	-	6	-	6	-	3	-	0	-	18	-	0	-
Mitchell Creek	170	47	1.8	15	-	11	-	11	-	0	-	0	-	83	3.2	64	1.6
Sulphurets Creek	152	46	-	1	-	7	-	7	-	0	-	0	-	57	1.4	26	-
Bowser	6	33	-	0	-	0	-	0	-	0	-	0	-	33	-	0	-

Parameter Guideline Jurisdiction	Silver (Ag) Hardness-dependent BC 30-d Average		Silver (Ag) 0.00001 mg/L CCME		Thallium (Tl) 0.00003 mg/L BC Maximum		Thallium (Tl) 0.00008 mg/L CCME		Zinc (Zn) Hardness-dependent BC 30-d Average		Zinc (Zn) 0.03 mg/L CCME		
Watershed	N	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor
Teigen Creek	197	2	-	1	-	0	-	0	-	5	-	0	-
Bell-Irving River	29	7	-	3	-	3	-	0	-	17	-	7	-
Treaty Creek	157	20	-	14	-	5	-	0	-	32	1.1	16	-
SCR - Reference Site	13	23	-	0	-	0	-	0	-	38	-	15	-
SUNR - Reference Site	53	8	-	4									

#### 4.1.9 Hydrological Influences on Stream Water Quality

The influence of the hydrological regime on stream water quality was examined at the request of regulators and the working group. Stream water quality parameters at low flow, spring peak flow (freshet), and fall peak flow (heavy rainfall) were graphed and presented in Figures 4.1-33 to 4.1-47. Typical KSM Project streams experience a low flow period between late October and early May, spring peak flow between late May and mid-July, and fall peak flow between August and early October. In North Treaty (NTR2), South Teigen (STE2, STE3), Teigen (TEC2), and Scott (SCR) creeks higher discharges were typically observed during freshet than in the fall. The timing of peak discharge varied between spring and fall in McTagg (MCTR), Mitchell (MC1), Ted Morris (SCT), Sulphurets (SC3), and Treaty (TRC3) creeks as well as the Unuk River (UR1A). Greater detail on the hydrology of the KSM Project streams is reported separately (Rescan 2012).

The hydrological regime affected water quality in two ways: 1) it increased discharge during freshet and heavy rainfall events and diluted concentrations of major ions and TDS; and 2) it increased the sediment load and transport during freshet and heavy rainfall events leading to increased concentrations of TSS and associated metals. Water quality at the minimum flow during the low flow period and the maximum flow during the two peak flow periods were selected for comparison. Measured or estimated daily discharge values for selected water quality samples are presented in Table 4.1-2.

##### 4.1.9.1 Physical Parameters

The pH of most KSM Project streams was near-neutral and varied little with the hydrological regime (Figure 4.1-33). The exception was upper Mitchell Creek (MC1) where acidic conditions occurred during most of the year, except during the fall peak flow when near-neutral conditions occurred in 2008 to 2010. Alkalinity also increased during the fall peak flow (Appendix 4-1), which indicates that surface run-off during heavy rainfall contained sufficient acid neutralizing capacity to raise the pH in the stream. Hardness was highest during the low flow period and was reduced during peak flow periods (Appendix 4-1), which reflects the dilution of calcium and magnesium concentrations.

TDS followed a similar pattern to hardness and decreased concentrations were observed during high flow periods (Figure 4.1-34). TDS concentrations in upper Mitchell Creek (MC1) were lower during the fall peak flow than in the spring peak flow for all years despite comparable discharge values for most years.

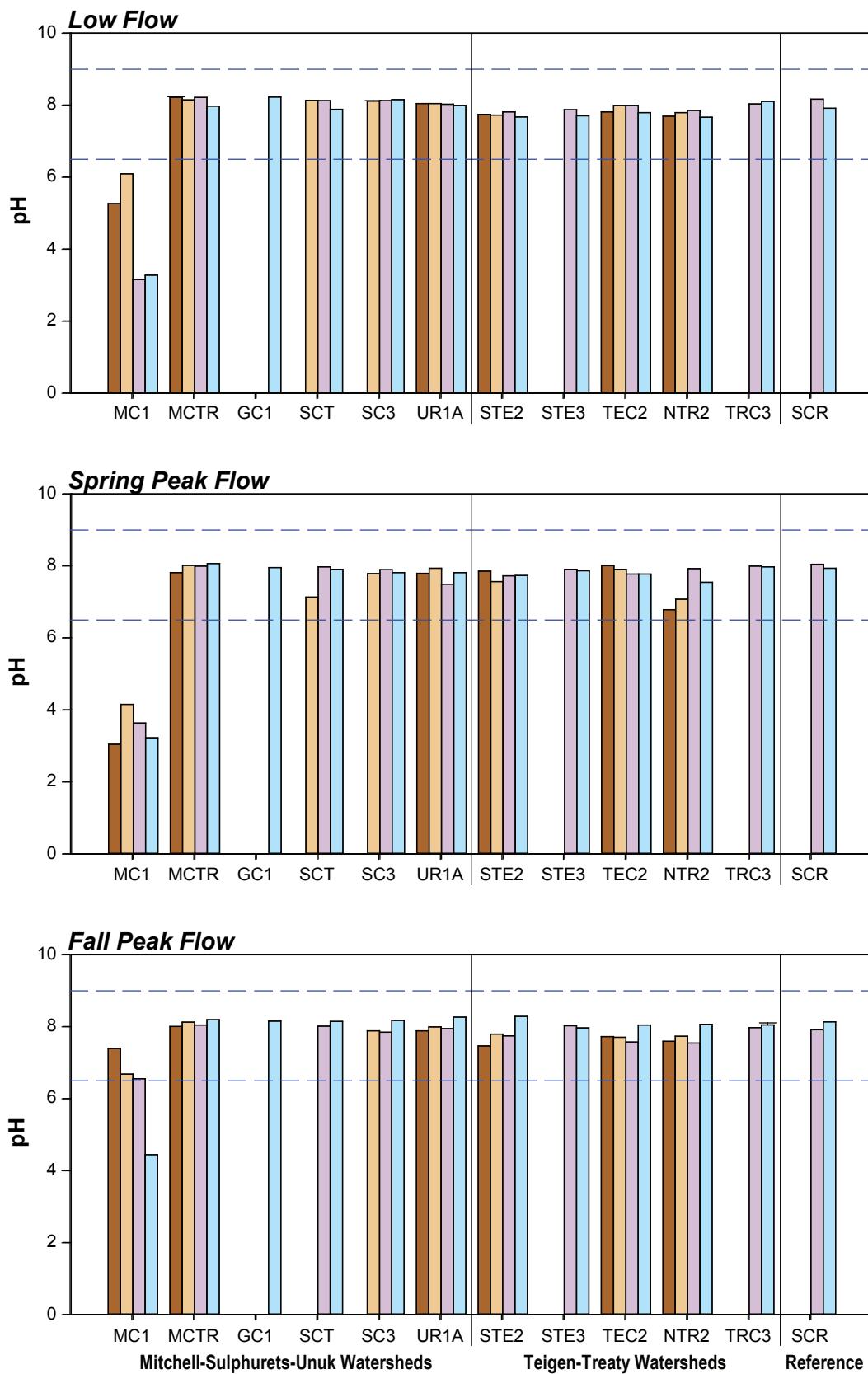
##### 4.1.9.2 Suspended Material

Increased TSS concentrations were observed due to the increased sediment load during freshet and heavy rainfall in the fall (Figure 4.1-35). During low flow, TSS concentrations were frequently below the analytical detection limit (3.0 mg/L). The exception was Mitchell Creek (MC1) with low flow TSS ranging from 38.0 to 81.5 mg/L.

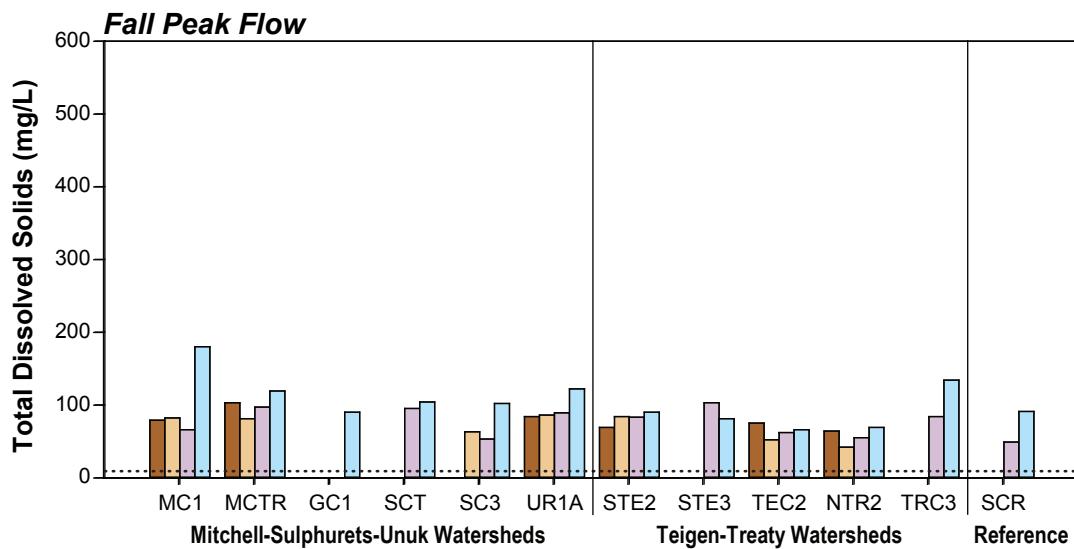
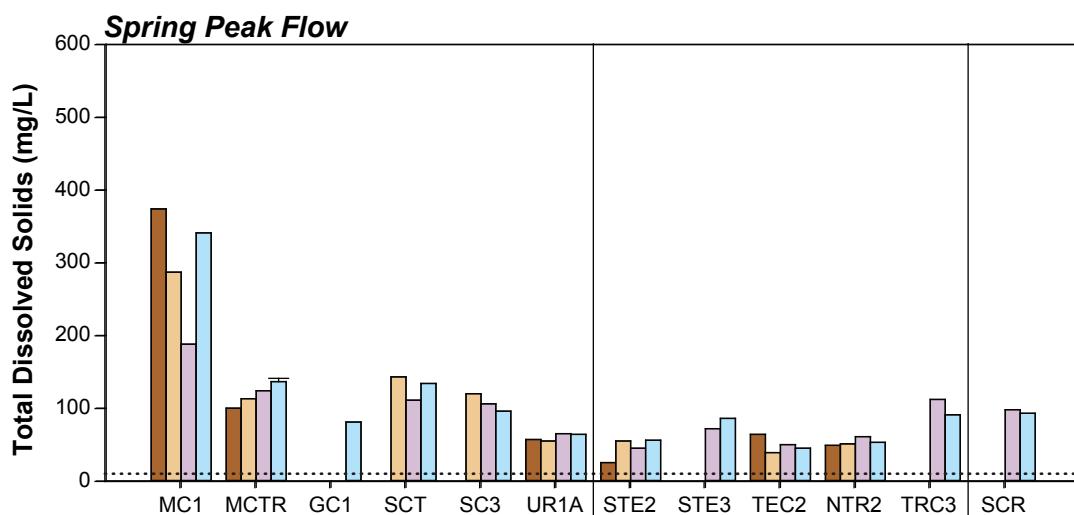
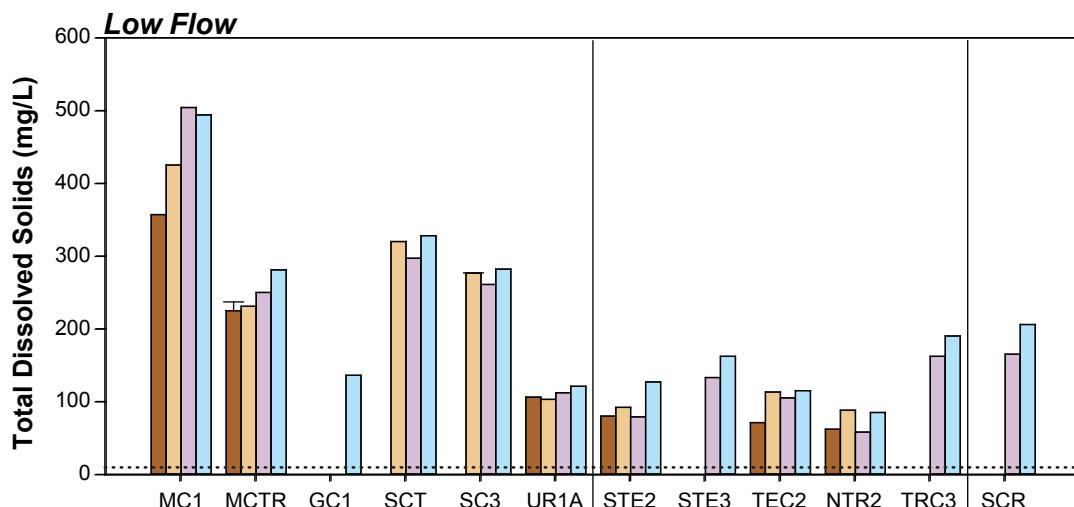
TSS concentrations during the peak flows were highly variable across years. TSS was typically greatest during the spring peak flow for the Teigen-Treaty watersheds (exception: 2010 TRC3) and greatest during the fall peak flow for the Mitchell-Sulphurets-Unuk watersheds.

##### 4.1.9.3 Metals

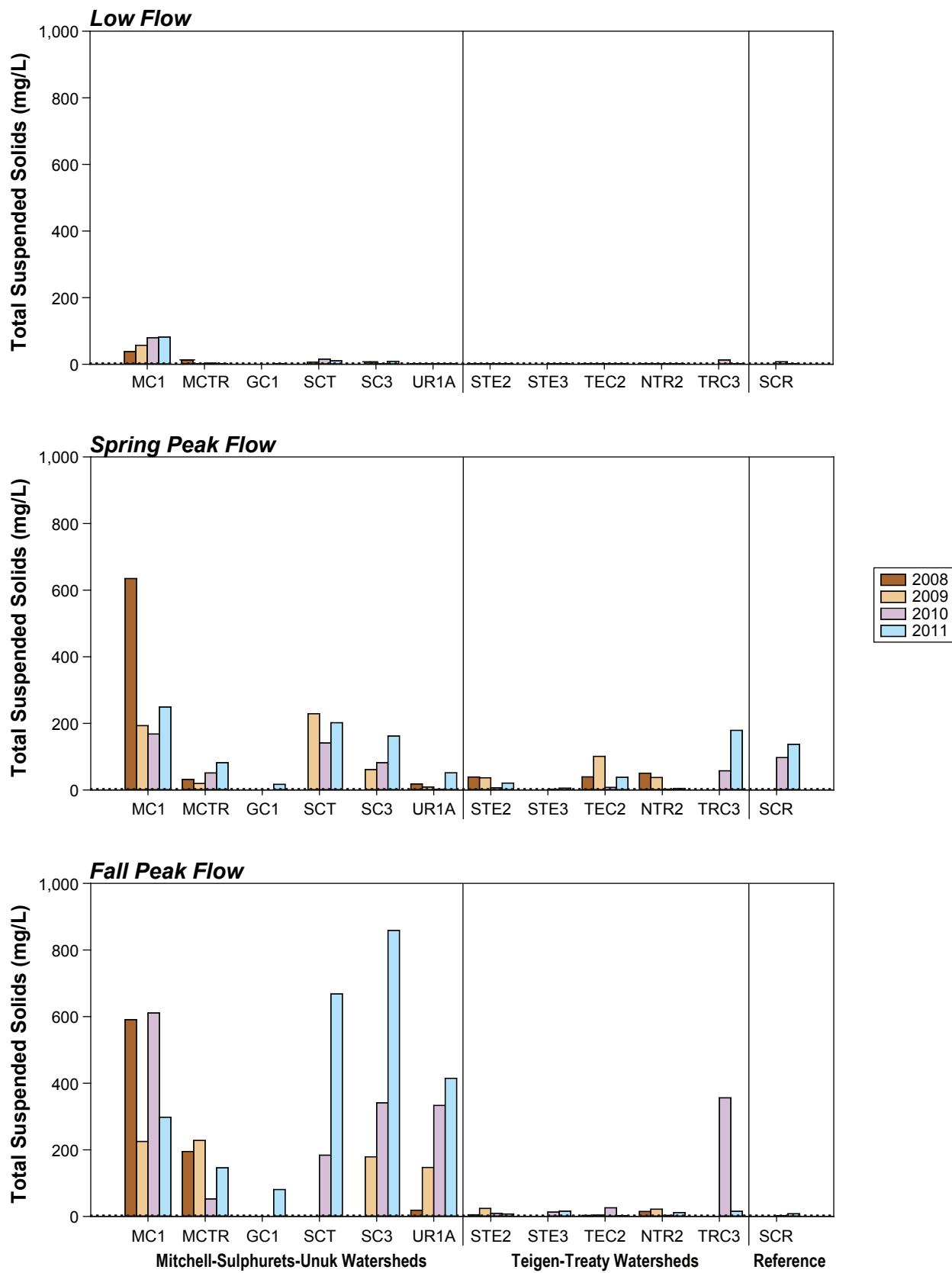
Metals of interest are graphed and presented in Figures 4.1-36 to 4.1-47. On each graph, dissolved concentrations are superimposed on total concentrations, and existing guidelines for the protection of freshwater aquatic life are presented. Metals dissolved in the water column are more biologically available than metals bound to particulates in the water column.



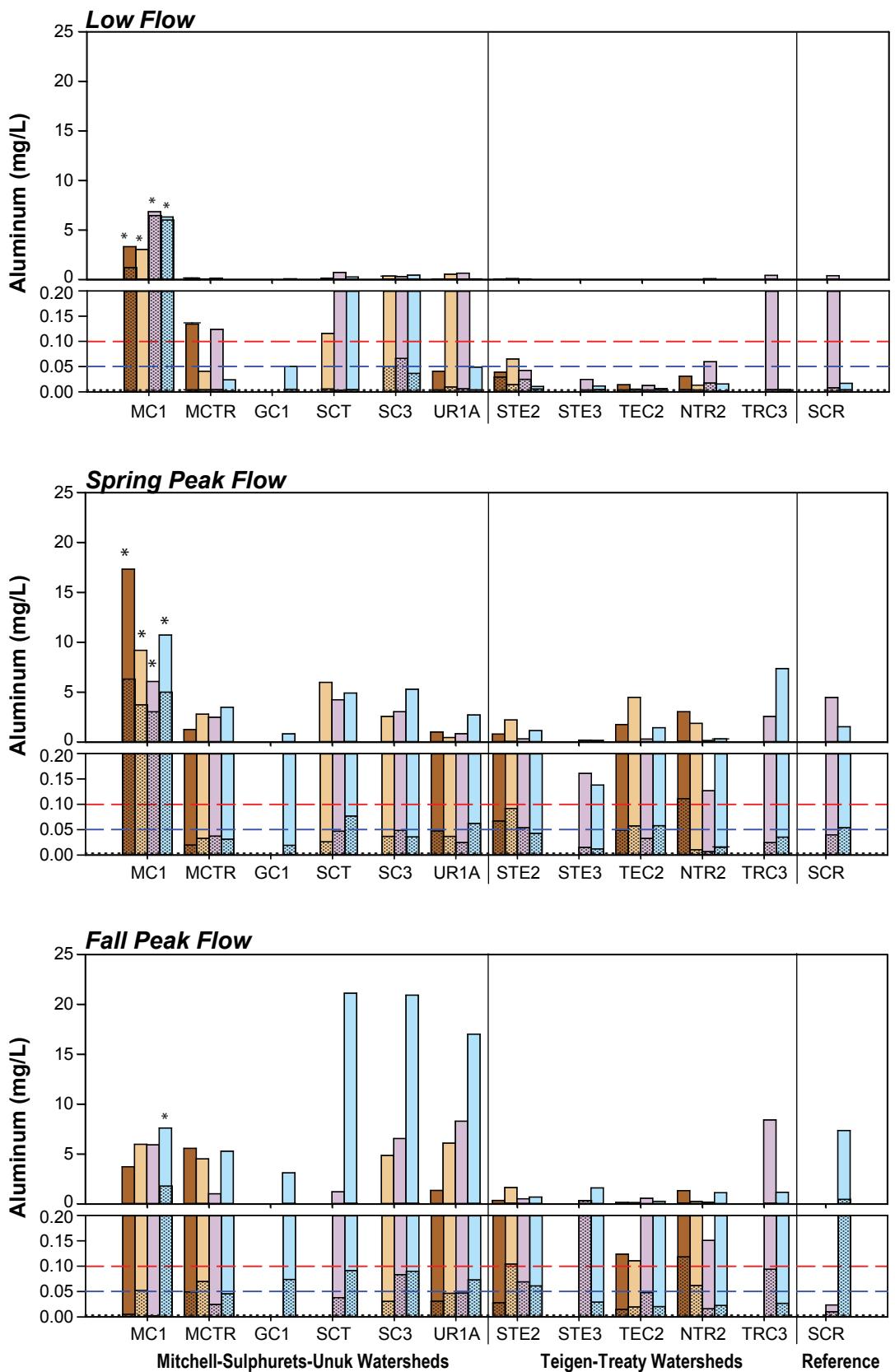
Notes: Error bars represent standard error of the mean.  
 Blue dashed lines indicate the upper ( $\text{pH}=9$ ) and lower ( $\text{pH}=6.5$ ) limits of the CCME and BC MOE water quality guideline for pH.



Notes: Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.  
Concentrations below the detection limit were plotted as half the detection limit.  
Water quality guidelines for dissolved solids are dependent on background levels.

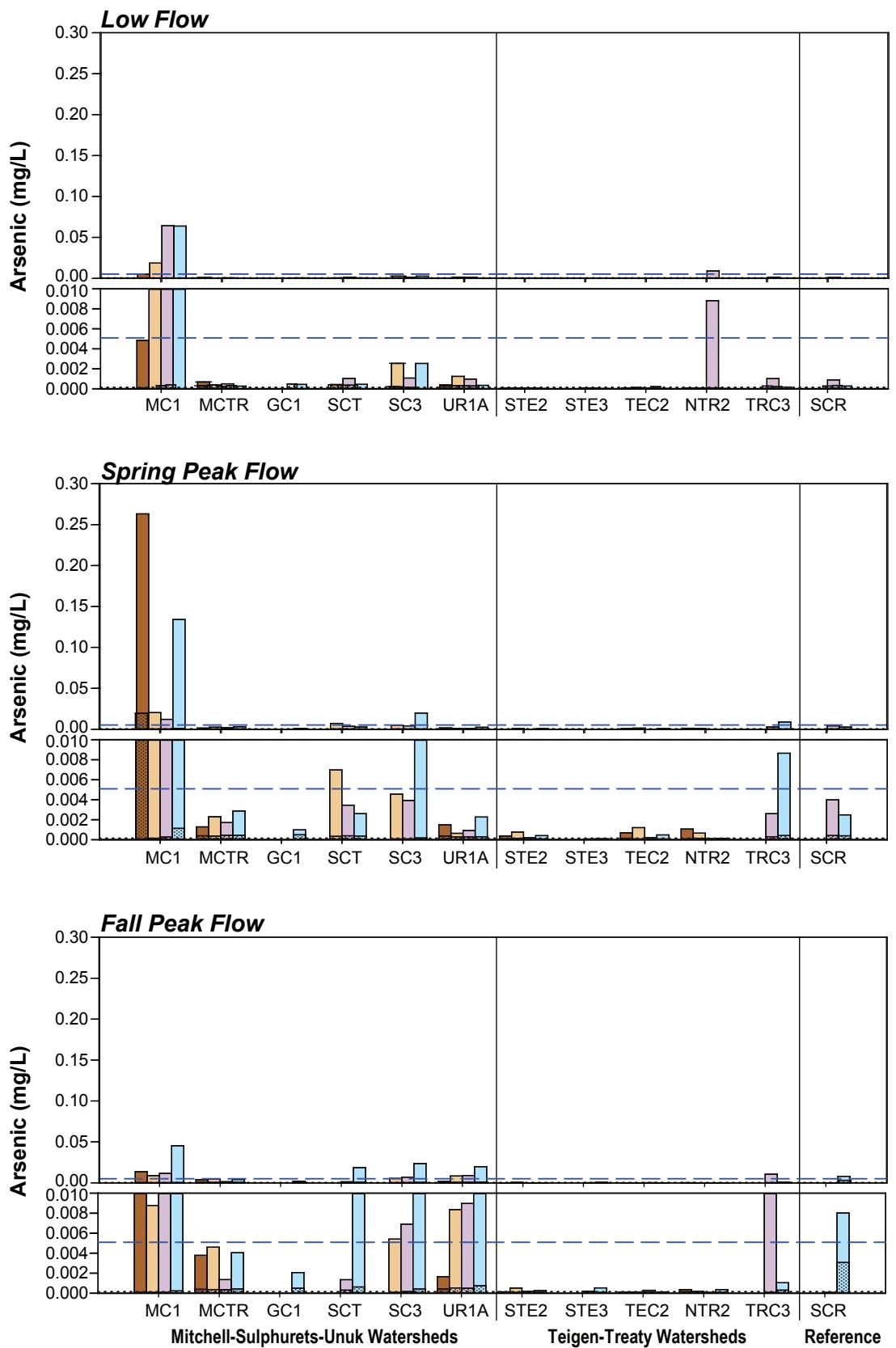


Notes: Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.  
Concentrations below the detection limit were plotted as half the detection limit.  
Water quality guidelines for suspended solids are dependent on background levels.



Notes: Solid bars indicate total aluminum concentrations.  
Patterned bars indicate dissolved aluminum concentrations.  
Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.  
Dashed red lines indicate CCME water quality guideline for total aluminum ( $pH > 6.5$ ;  $0.10 \text{ mg/L}$ ).  
Dashed blue lines indicate BC MOE 30-day mean water quality guideline for dissolved aluminum ( $pH > 6.5$ ;  $0.05 \text{ mg/L}$ ).  
\* indicates  $pH < 6.5$  and the pH-dependent water quality guideline was exceeded (see Appendix 3.2-1).  
Dissolved metals were not measured for the March 4, 2009 sample at MC1.



Notes: Solid bars indicate total arsenic concentrations.

Patterned bars indicate dissolved arsenic concentrations.

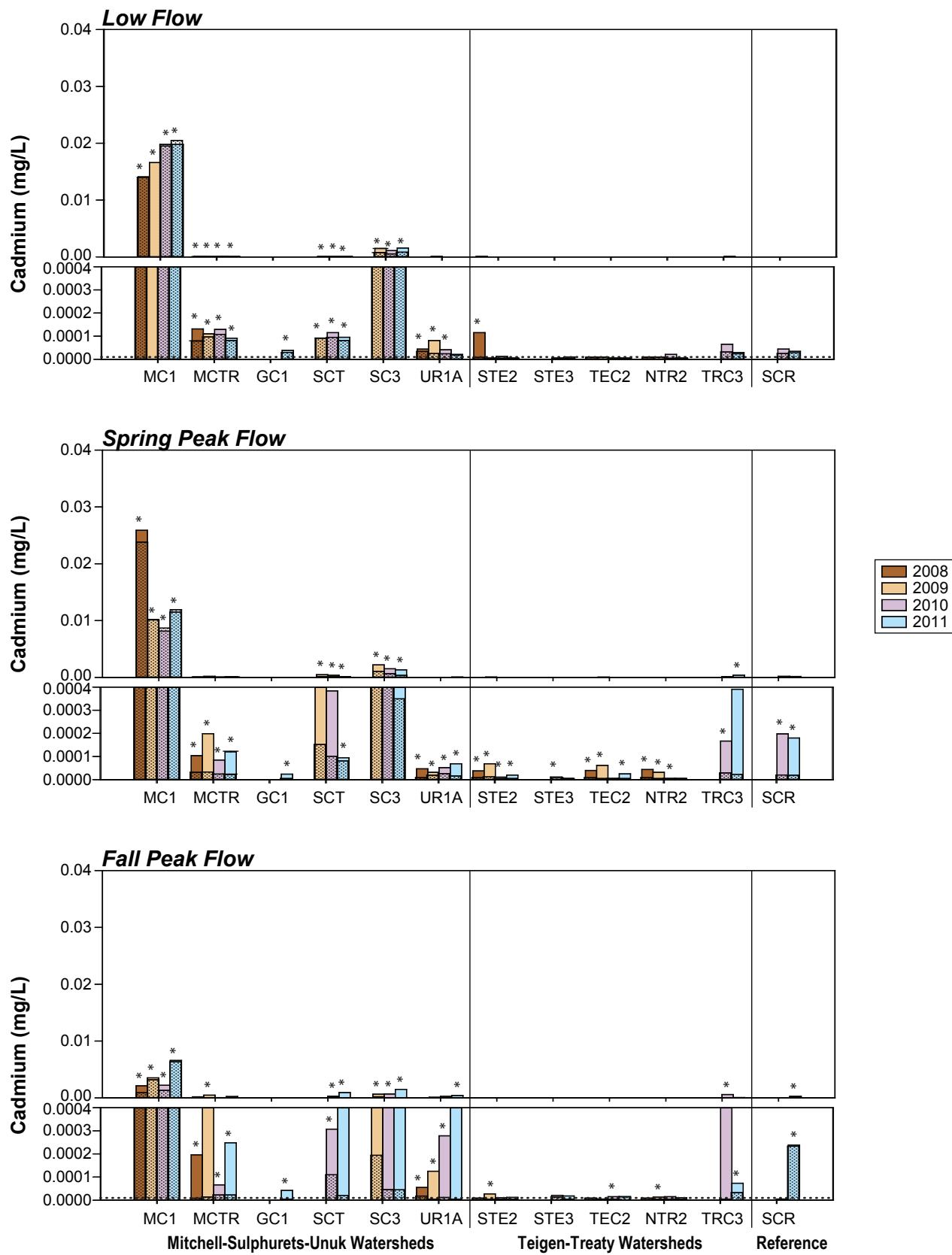
Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Dashed blue lines indicate CCME and BC MOE water quality guideline for total arsenic (0.005 mg/L).

Dissolved metals were not measured for the March 4, 2009 sample at MC1.



Notes: Solid bars indicate total cadmium concentrations.

Patterned bars indicate dissolved cadmium concentrations

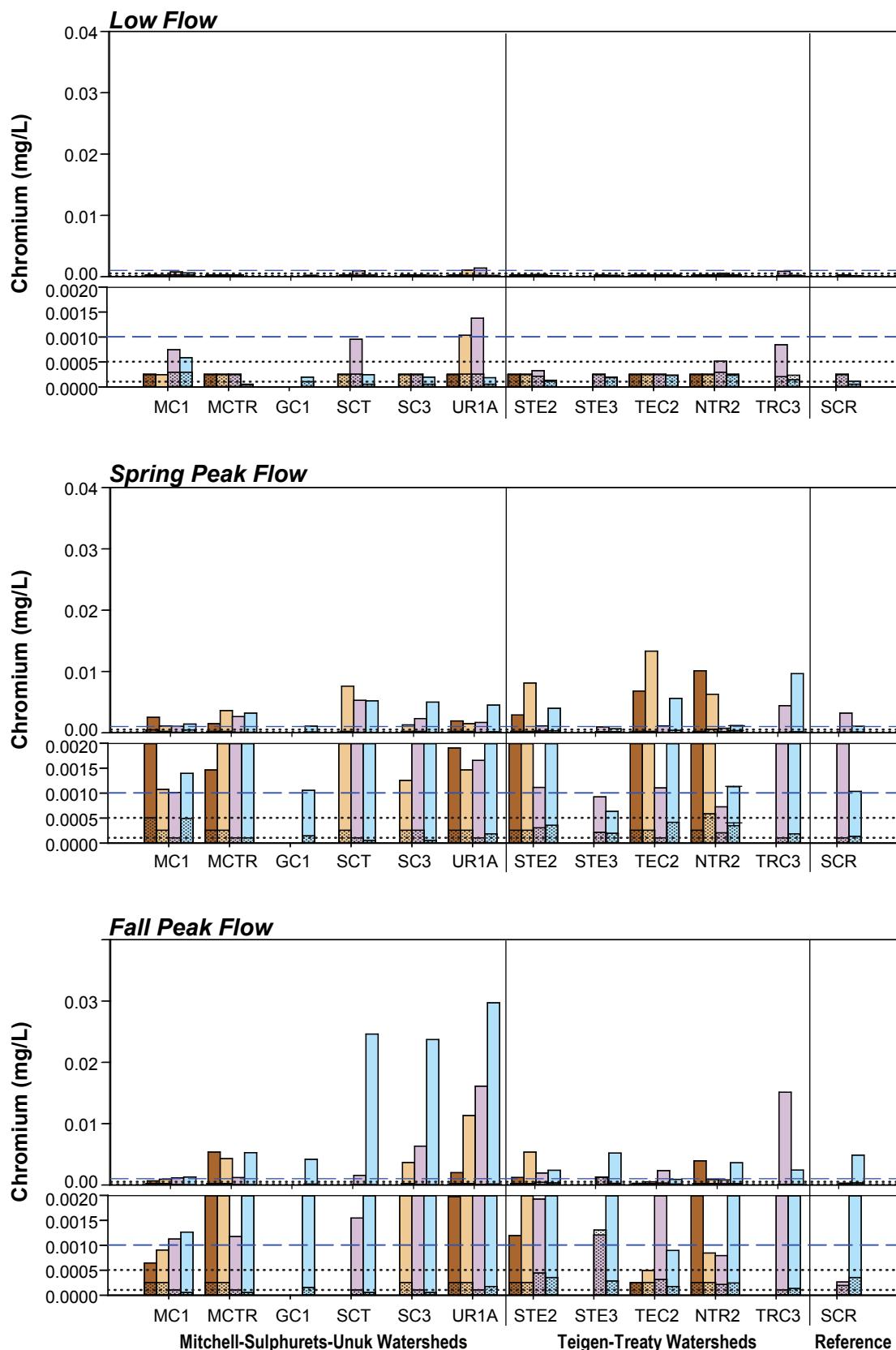
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

CCME and BC MOE 30-day mean guidelines are hardness-dependent (see Appendix 3.2-1).

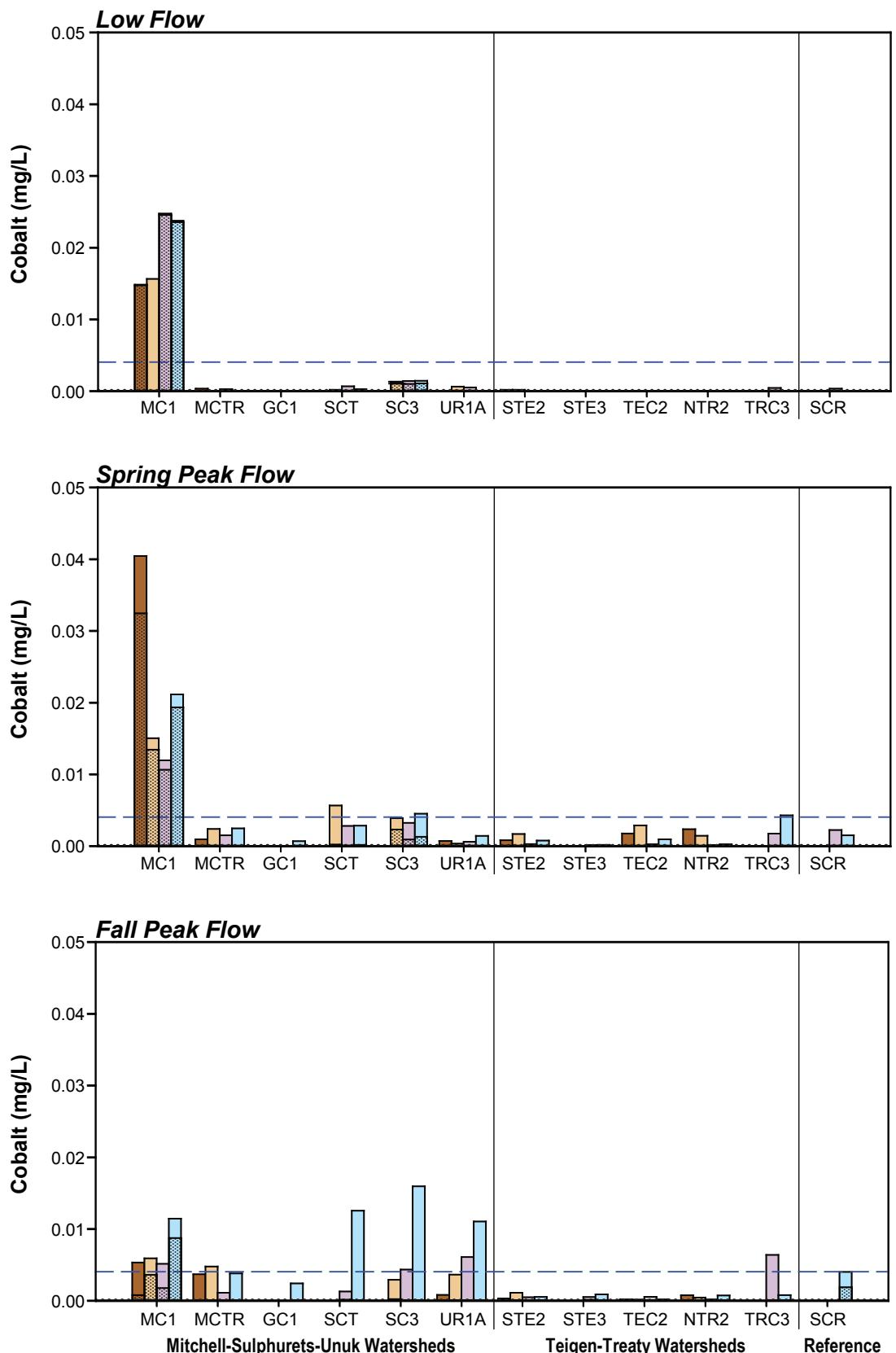
\* indicates the concentration exceeds the sample specific guideline.

Dissolved metals were not measured for the March 4, 2009 sample at MC1.



Notes: Solid bars indicate total chromium concentrations.  
 Patterned bars indicate dissolved chromium concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.

Dashed blue lines indicate CCME and working BC MOE maximum water quality guideline for total chromium (0.001 mg/L).  
 No BC 30-day mean water quality guideline exists.  
 Guidelines used are for hexavalent chromium (Cr(VI)).  
 Dissolved metals were not measured for the March 4, 2009 sample at MC1.



Notes: Solid bars indicate total cobalt concentrations.

Patterned bars indicate dissolved cobalt concentrations.

Error bars represent standard error of the mean.

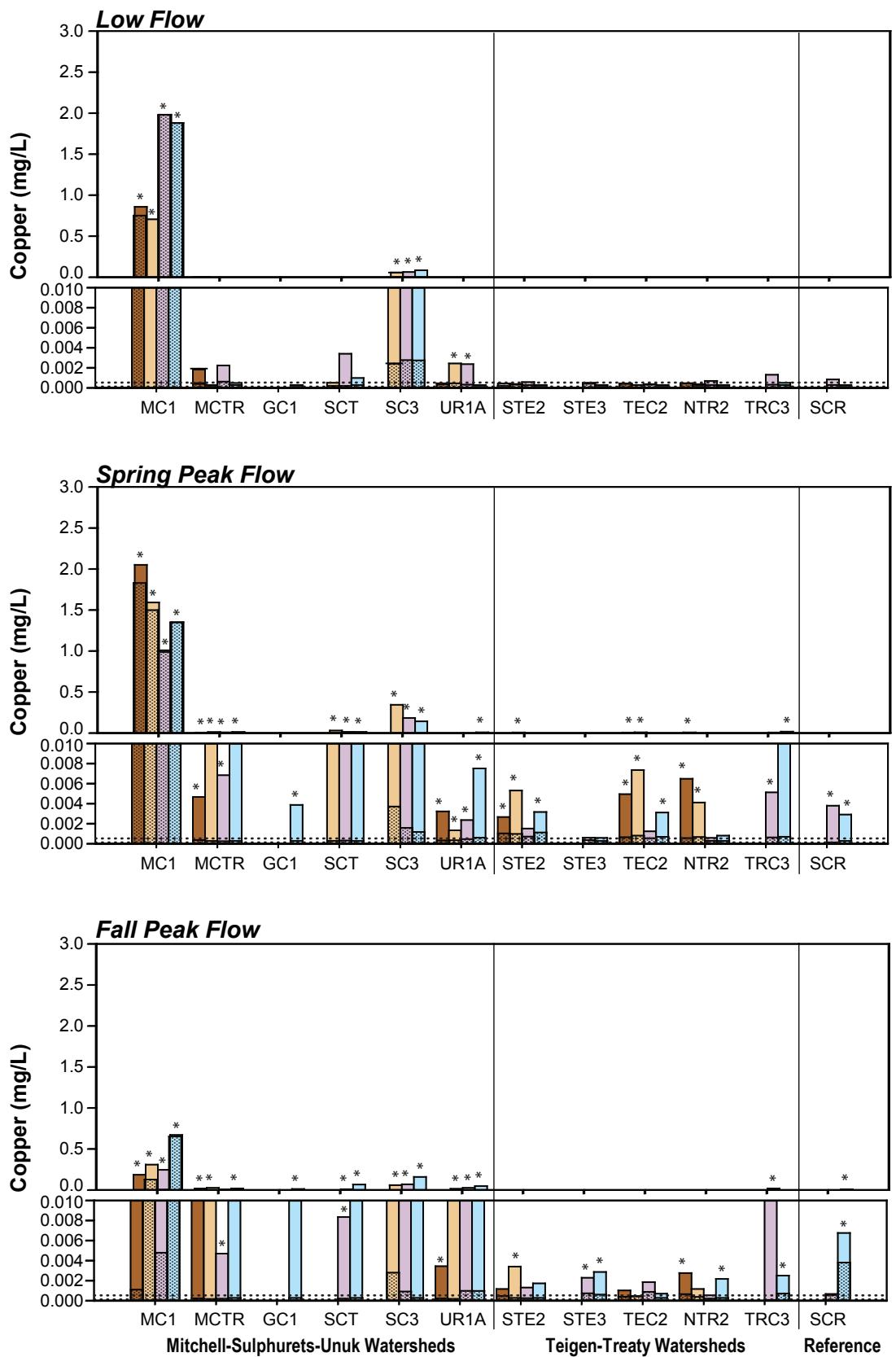
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Dashed blue lines indicate BC MOE 30-day mean water quality guideline for total cobalt (0.004 mg/L).

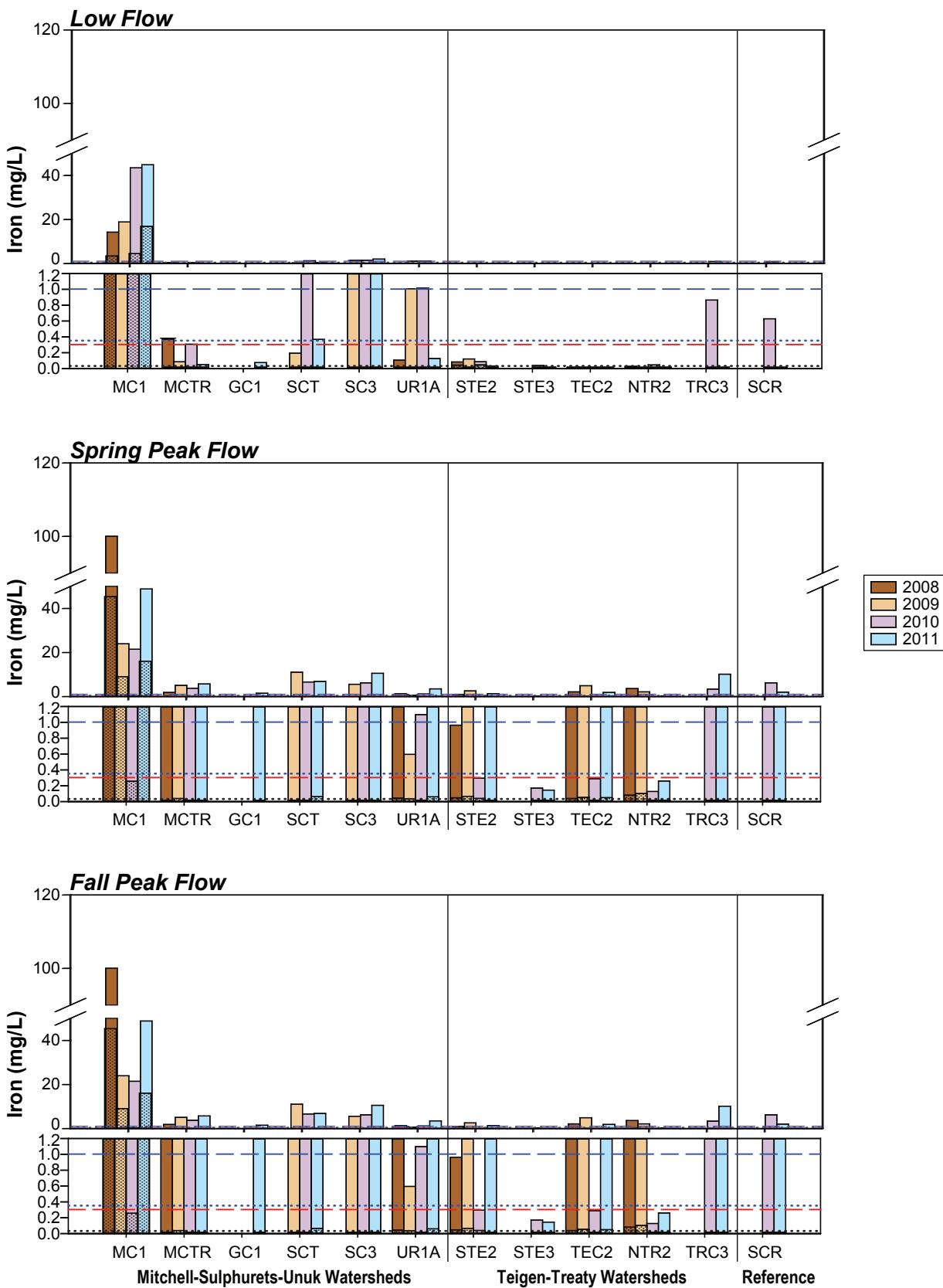
No CCME water quality guideline exists.

Dissolved metals were not measured for the March 4, 2009 sample at MC1.



Notes: Solid bars indicate total copper concentrations.  
Patterned bars indicate dissolved copper concentrations.  
Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.  
CCME and BC MOE 30-day mean guidelines are hardness-dependent (see Appendix 3.2-1).  
\* indicates the concentration exceeds the sample specific guideline.  
Dissolved metals were not measured for the March 4, 2009 sample at MC1.



Notes: Solid bars indicate total iron concentrations.

Patterned bars indicate dissolved iron concentrations.

Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Dashed red lines indicate CCME water quality guideline for total iron (0.3 mg/L).

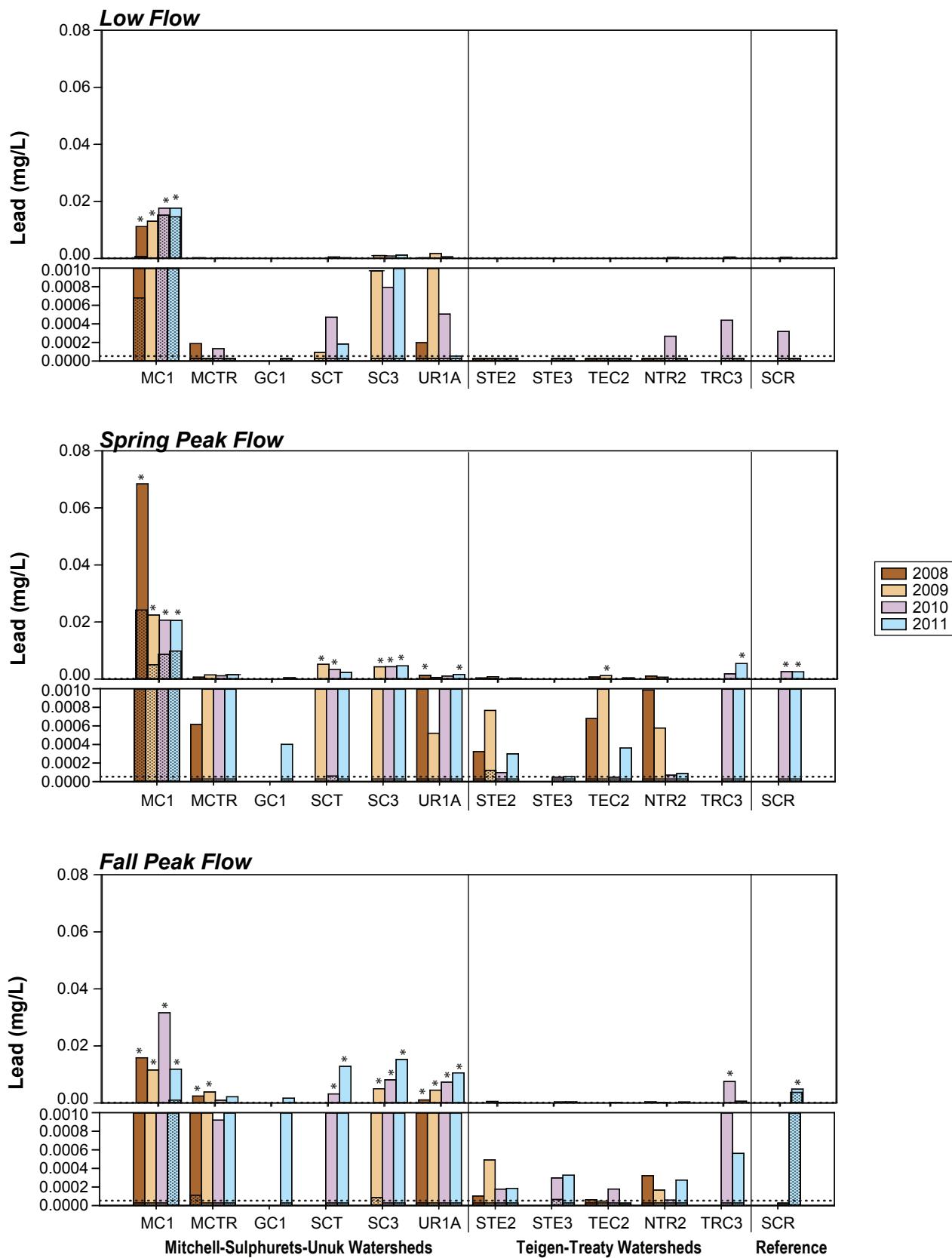
Dashed blue lines indicate BC MOE maximum water quality guideline for total iron (1.0 mg/L).

Dotted blue lines indicate BC MOE maximum water quality guideline for dissolved iron (0.35 mg/L).

No BC MOE 30-day mean water quality guideline for iron exists.

Dissolved metals were not measured for the March 4, 2009 sample at MC1.

Figure 4.1-42



Notes: Solid bars indicate total lead concentrations. Patterned bars indicate dissolved lead concentrations.

Error bars represent standard error of the mean.

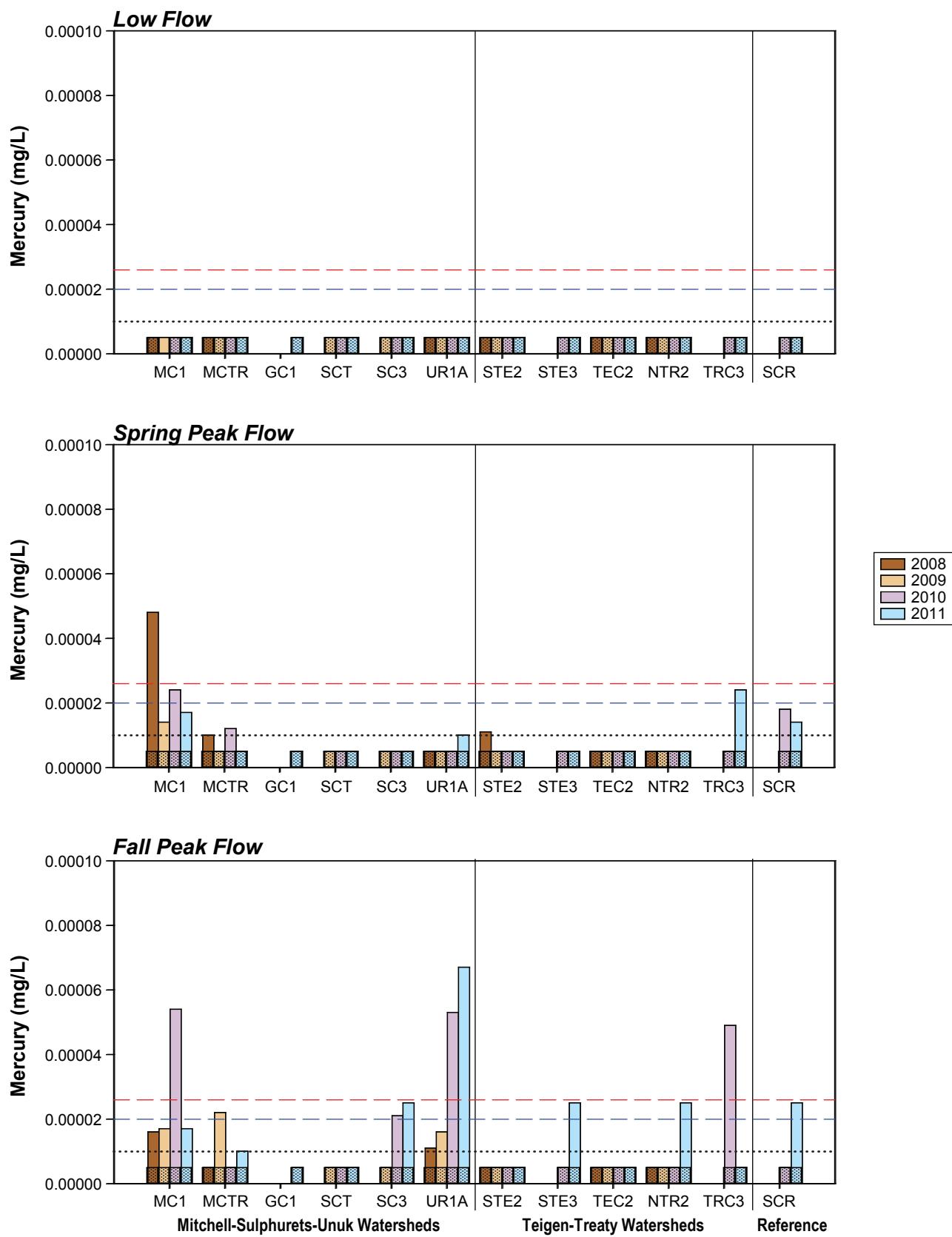
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

CCME and BC MOE water quality guidelines are hardness-dependent (see Appendix 3.2-1).

\* indicates the concentration exceeds the sample specific guideline.

Dissolved metals were not measured for the March 4, 2009 sample at MC1.



Notes: Solid bars indicate total mercury concentrations. Patterned bars indicate dissolved mercury concentrations.

Error bars represent standard error of the mean.

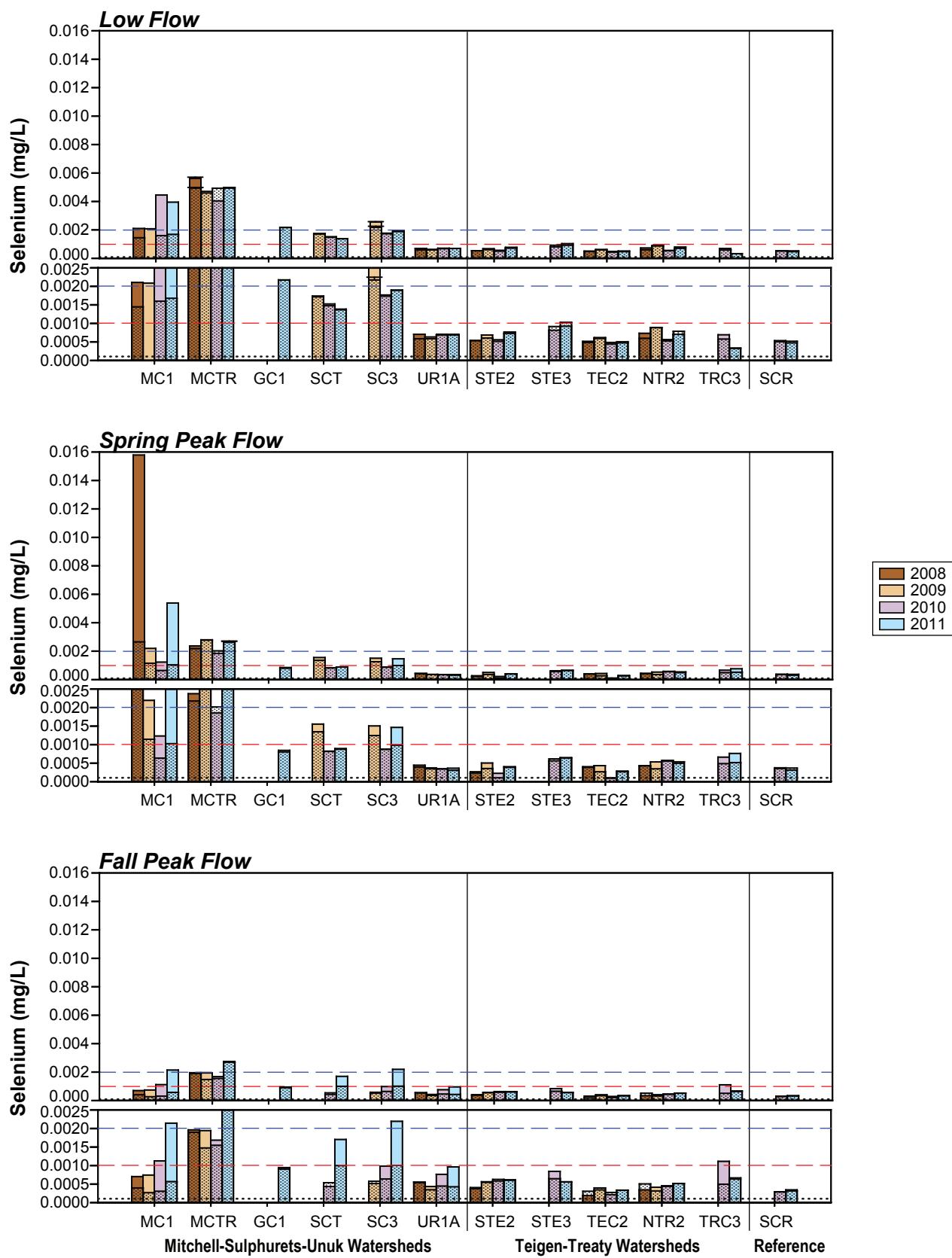
Dashed red lines indicate CCME water quality guideline for total inorganic mercury (0.000026 mg/L).

Dotted line represents the analytical detection limit.

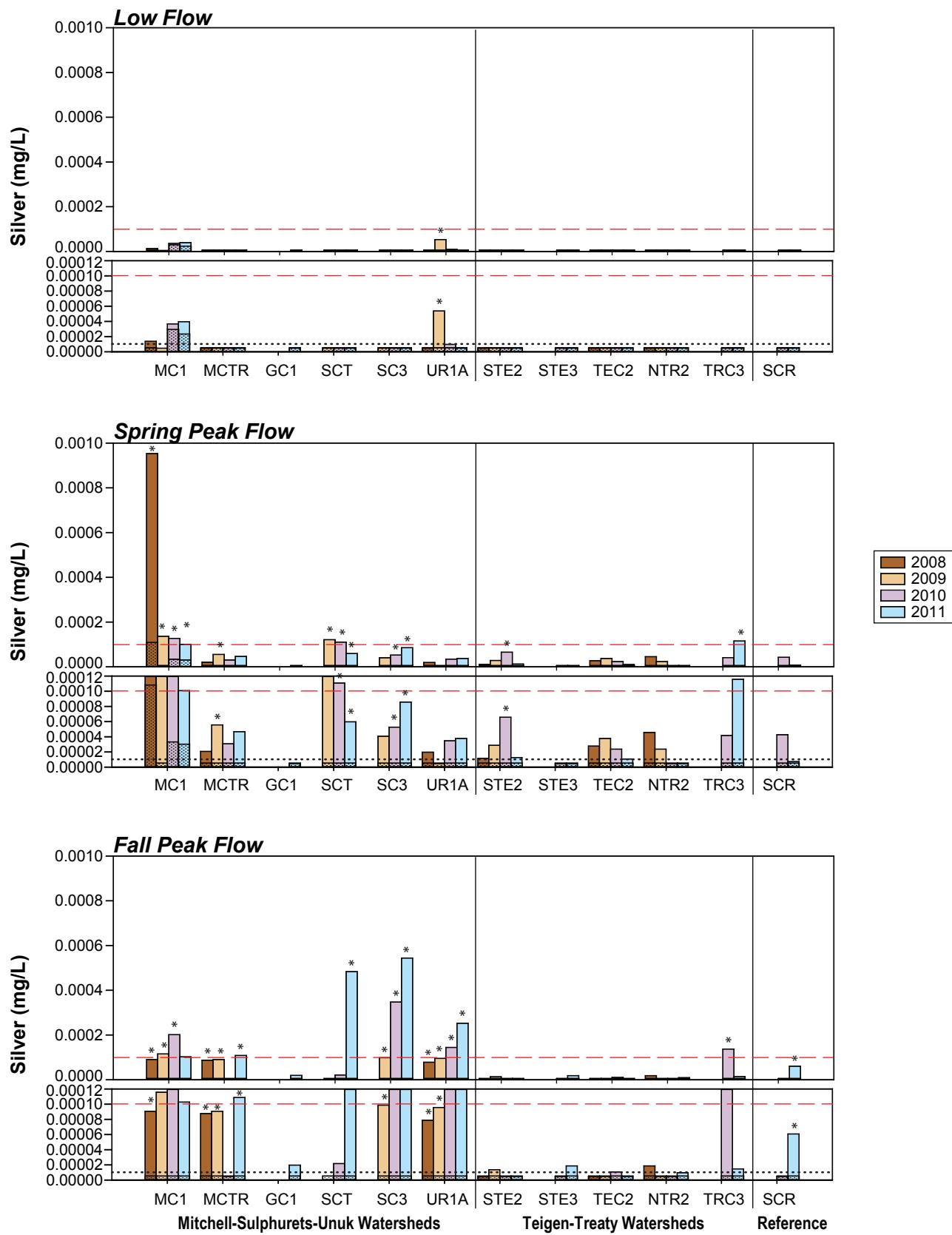
Concentrations below the detection limit were plotted as half the detection limit.

Dissolved metals were not measured for the March 4, 2009 sample at MC1.

Figure 4.1-44



Notes: Solid bars indicate total selenium concentrations. Patterned bars indicate dissolved selenium concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 Dashed red lines indicate CCME water quality guideline for total selenium (0.001 mg/L).  
 Dashed blue lines indicate BC MOE 30-day mean water quality guideline for total selenium (0.002 mg/L).  
 Dissolved metals were not measured for the March 4, 2009 sample at MC1.



Notes: Solid bars indicate total silver concentrations. Patterned bars indicate dissolved silver concentrations.

Error bars represent standard error of the mean.

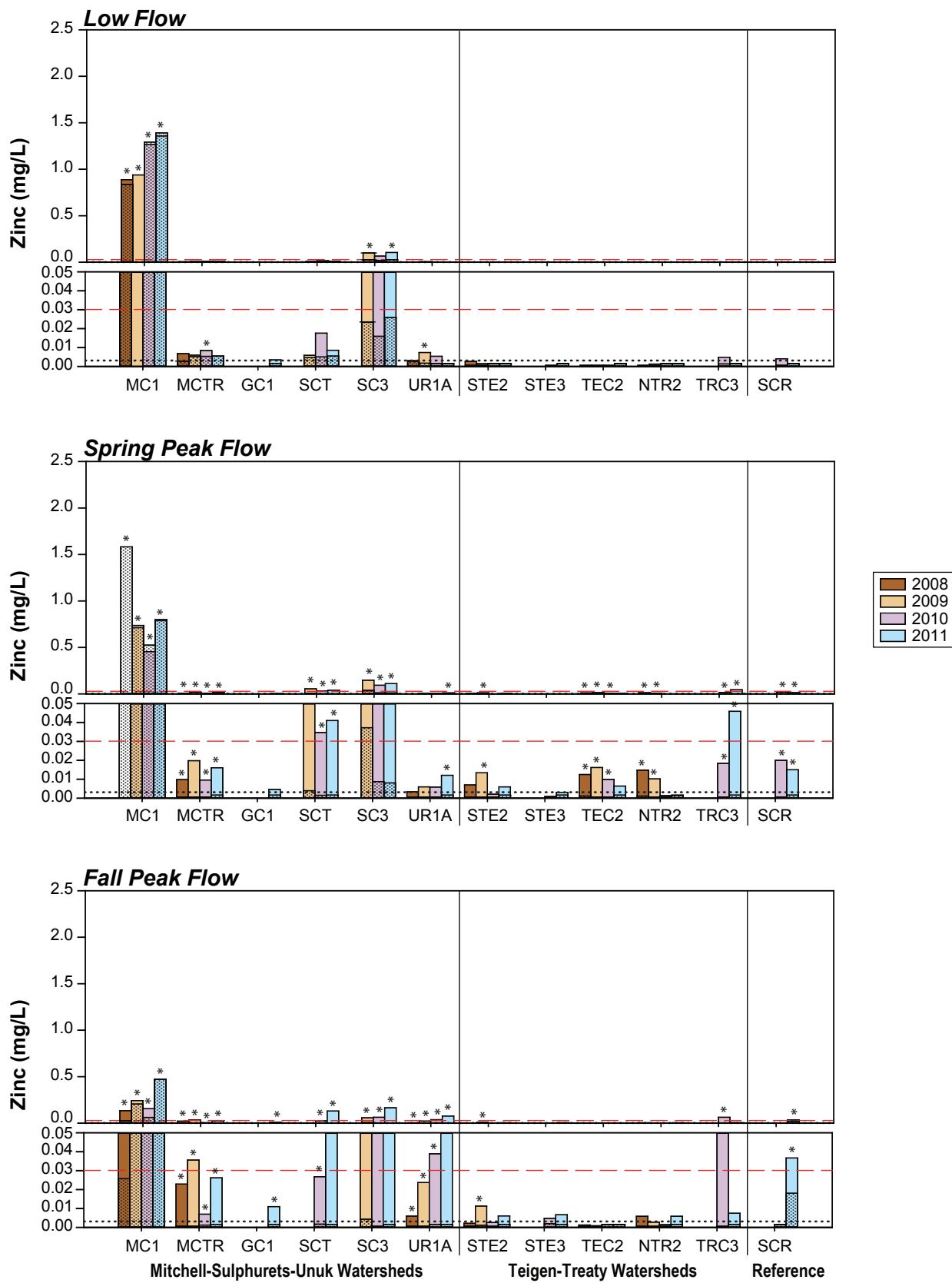
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Dashed red lines indicate CCME water quality guideline for total silver (0.0001 mg/L).

BC MOE 30-day mean water quality guideline for total silver is hardness-dependent (see Appendix 3.2-1).

\* indicates the concentration exceeds the sample specific guideline.



Notes: Solid bars indicate total zinc concentrations. Patterned bars indicate dissolved zinc concentrations.

Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Dashed red lines indicate CCME water quality guideline for total zinc (0.03 mg/L).

BC MOE 30-day mean water quality guideline for total zinc is hardness-dependent (see Appendix 3.2-1).

\* indicates the concentration exceeds the sample specific guideline.

**Table 4.1-2. Stream Flows at Water Quality Sites, KSM Project, 2008 to 2011**

Hydrological Regime	Winter Low Flow		Spring Peak Flow		Fall Peak Flow	
Site Name	Date	Discharge (m³/s)	Date	Discharge (m³/s)	Date	Discharge (m³/s)
<b>Mitchell Creek</b>						
GC1	27-Nov-11	0.004	5-Jun-11	1.266	5-Sep-11	1.277
MCTR	5-Dec-08	0.734	25-Jul-08	4.520	2-Oct-08	4.862
	26-Nov-09	0.527	13-Jun-09	7.018	4-Aug-09	5.029
	28-Mar-10	0.428	5-Jul-10	3.260	27-Aug-10	3.428
	31-Mar-11	0.512	4-Jul-11	4.545	5-Sep-11	4.781
MC1	5-Dec-08	0.734	3-Jul-08	5.854	2-Oct-08	4.862
	4-Mar-09	0.343	2-Jul-09	4.620	22-Aug-09	4.011
	15-Nov-10	2.117	5-Jul-10	3.260	3-Aug-10	9.383
	26-Oct-11	0.177	5-Jun-11	4.545	5-Sep-11	5.195
<b>Sulphurets Creek</b>						
SCT	28-Mar-09	0.386	2-Jul-09	5.302	-	-
	28-Mar-10	0.354	5-Jul-10	6.299	27-Aug-10	6.089
	31-Mar-11	0.080	4-Jul-11	7.897	5-Sep-11	21.520
SC3	29-Mar-09	2.024	2-Jul-09	28.003	22-Aug-09	54.750
	3-Mar-10	3.078	5-Jul-10	30.848	3-Aug-10	79.088
	5-Mar-11	2.787	4-Jun-11	49.607	4-Sep-11	45.658
<b>Unuk River</b>						
UR1A	6-Dec-08	7.583	26-Jun-08	46.886	10-Sep-08	20.316
	26-Nov-09	17.506	5-Jul-09	74.979	22-Aug-09	34.024
	17-Jan-10	5.205	26-May-10	53.407	28-Sep-10	102.712
	1-Feb-11	3.671	4-Jun-11	80.580	4-Sep-11	150.742
<b>Treaty Creek</b>						
NTR2	5-Dec-08	0.407	3-Jul-08	9.230	2-Oct-08	1.675
	28-Mar-09	0.102	13-Jun-09	6.144	4-Aug-09	1.717
	15-Nov-10	0.276	5-Jul-10	1.943	27-Aug-10	0.952
	1-Apr-11	0.151	3-Jul-11	3.058	4-Sep-11	1.235
TRC3	28-Mar-10	3.614	26-May-10	55.519	3-Aug-10	87.565
	5-Mar-11	11.029	4-Jun-11	92.442	30-Sep-11	49.870
<b>Teigen Creek</b>						
STE2	29-Oct-08	0.284	28-May-08	7.719	2-Oct-08	1.838
	25-Nov-09	0.306	13-Jun-09	8.195	4-Aug-09	1.859
	15-Nov-10	0.470	26-May-10	6.486	3-Aug-10	1.705
	31-Mar-11	0.062	4-Jun-11	6.911	1-Aug-11	1.733
STE3	3-Mar-10	0.246	5-Jul-10	4.562	27-Aug-10	1.325
	1-Apr-11	0.479	4-Jul-11	2.972	4-Sep-11	2.573

(continued)

**Table 4.1-2. Stream Flows at Water Quality Sites, KSM Project, 2008 to 2011 (completed)**

Hydrological Regime	Winter Low Flow		Spring Peak Flow		Fall Peak Flow	
Site Name	Date	Discharge (m <sup>3</sup> /s)	Date	Discharge (m <sup>3</sup> /s)	Date	Discharge (m <sup>3</sup> /s)
<b>Teigen Creek (cont'd)</b>						
TEC2	5-Dec-08	1.531	3-Jul-08	25.542	2-Oct-08	6.585
	29-Mar-09	0.644	8-Jun-09	70.821	27-Sep-09	10.935
	3-Mar-10	0.385	26-May-10	25.480	28-Sep-10	22.582
	1-Apr-11	0.645	4-Jun-11	41.815	5-Sep-11	16.374
<b>Reference</b>						
SCR	28-Mar-10	0.717	5-Jul-10	5.558	15-Nov-10	5.255
	1-Apr-11	0.112	3-Jul-11	5.725	4-Sep-11	3.458

Notes: “-” indicates water sample was not collected. Discharge is measured or estimated.

The total concentrations of most metals of interest at most stream sites followed the trend observed in TSS concentrations (Figure 4.1-35) and metal concentrations were substantially higher during peak flows. The exception was selenium, which is predominantly in the dissolved phase, and dissolved iron which had higher concentrations at low flow. Total metal concentrations in Mitchell Creek (MC1) were typically lower during fall peak flow than during spring peak flow, which is a result of higher pH values in the fall. Lower metal concentrations were not observed in the fall in Sulphurets Creek downstream of Mitchell Creek indicating that multiple sources, including surface run-off, contribute to metal loading in Sulphurets Creek.

Fewer guideline exceedances were observed at low flow than at peak flows (exception: selenium), especially in the Teigen-Treaty watersheds where few exceedances were observed at low flow. In the Sulphurets-Unuk watershed, more exceedances were generally observed at fall peak flow, while in the Teigen-Treaty watersheds more exceedances were generally observed at spring peak flow.

#### 4.1.10 Quality Assurance and Quality Control (QA/QC)

Field and travel blank data for stream sampling from 2007 to 2011 are presented in Appendix 4.1-3. Measured parameters in field and travel blanks were usually below the analytical detection (exception: pH, acidity, and ammonia). Ammonia was detected (> 0.005 mg/L) in 32% of field and travel blanks and was the most commonly detected parameter after pH and acidity. Total organic carbon was detected (> 0.5 mg/L) in 7.2% of field and travel blanks. Total metals, including aluminum, barium, cadmium, calcium, chromium, copper, lead, magnesium, manganese, mercury, molybdenum, potassium, selenium, silver, strontium, tin, uranium, and zinc were detected in less than 4.5% of field and travel blanks.

The relative percent difference (RPD) analysis of QA/QC field duplicate data for the Project streams was calculated for duplicates collected from 2008 to 2011 and is presented in Appendix 4.1-4. The RPD between field replicates is a measure of the variability inherent in field samples (environmental heterogeneity), but can also indicate sample contamination or analytical errors. Duplicate samples with several water quality parameters with RPDs greater than 20% may indicate that one sample had increased concentrations of TSS. British Columbia provincial guidance indicates that RPD values greater than 20% should be noted and the data interpreted accordingly, and that RPD values greater than 50% indicate a problem, likely either contamination or a lack of sample representativeness (BC MOE 2003).

In 2007 and 2008, 16 duplicate stream samples were compared for each parameter. Ten percent (n=61) of the 598 RPD calculations were greater than 20%. Twenty-two percent (n=14) of the RPD calculations

greater than 20% occurred for the October duplicates collected in Treaty Creek at TRC2. Total phosphorus, total aluminum, and total iron represented greater than 25% of the RPD calculations greater than 20%.

In 2009, 23 duplicate stream samples were compared for each parameter. Thirteen percent (n=106) of the 847 RPD calculations were greater than 20%. Nineteen percent (n=20) of the RPD calculations greater than 20% occurred for the September duplicates collected in Treaty Creek at TRC2. Total and dissolved aluminum, total copper, and total iron were among those parameters that frequently had RPD calculations greater than 20%.

In 2010, 16 duplicate stream samples were compared for each parameter. Fourteen percent (n=75) of the 523 RPD calculations were greater than 20%. Twenty-four percent (n=18) of the RPD calculations greater than 20% occurred for the November duplicates collected in Bell-Irving River at BIR2. Total aluminum, total and dissolved calcium, total and dissolved manganese were among those parameters that frequently had RPD calculations greater than 20%.

In 2011, 15 duplicate stream samples were compared for each parameter. Eleven percent (n=65) of the 588 RPD calculations were greater than 20%. Twenty-nine percent (n=19) of the RPD calculations greater than 20% occurred for the July duplicates collected in McTagg Creek at MCTR and 35% (n=23) of the RPD calculations greater than 20% occurred for the September duplicates in Treaty Creek at TRC1B.

For all years, total metal RPDs greater than 20% typically reflected high natural variability (environmental heterogeneity) in TSS concentrations and turbidity rather than analytical or sampling errors.

## 4.2 LAKE WATER QUALITY

Knipple Glacier (KGL) and Sulphurets (SUL) lakes are high altitude, glacier-fed lakes with sparse riparian vegetation and organic inputs. West Teigen (LAL) and Todedada (TDL) lakes are lower altitude lakes surrounded by a thick vegetated riparian boundary. Lake water quality parameters were graphed and presented in Figures 4.2-1 to 4.2-32. The annual mean of all data collected for a lake is presented graphically, with ranges indicated as standard error.

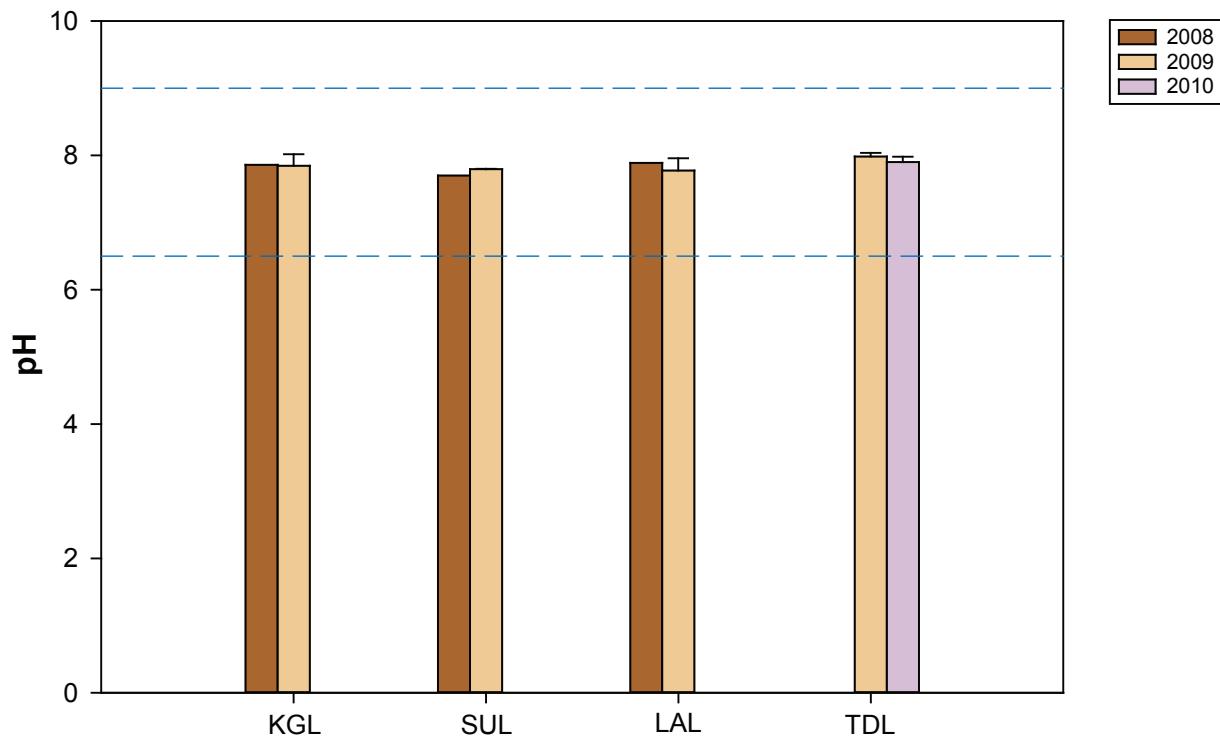
### 4.2.1 Physical Parameters

In general, lakes in the study area were near-neutral, with soft waters (< 60 mg /L CaCO<sub>3</sub>), and with low to moderate sensitivity to acid inputs (Figures 4.2-1 to 4.2-3). The pH of the lakes ranged from 7.70 to 7.98 (Figure 4.2-1). Total alkalinity was present predominantly as bicarbonate and results indicated that most lakes were moderately-buffered with alkalinity ranging from 38.4 mg/L CaCO<sub>3</sub> at Knipple Glacier Lake (2008; KGL) to 58.7 mg/L CaCO<sub>3</sub> at Todedada Lake (2010; TDL; Figure 4.2-2). Lower alkalinity (< 20 mg/L CaCO<sub>3</sub>) was observed at Sulphurets Lake. All lakes were classified as soft with lower hardness values observed at Knipple Glacier and Sulphurets lakes than West Teigen and Todedada lakes (Figure 4.2-3).

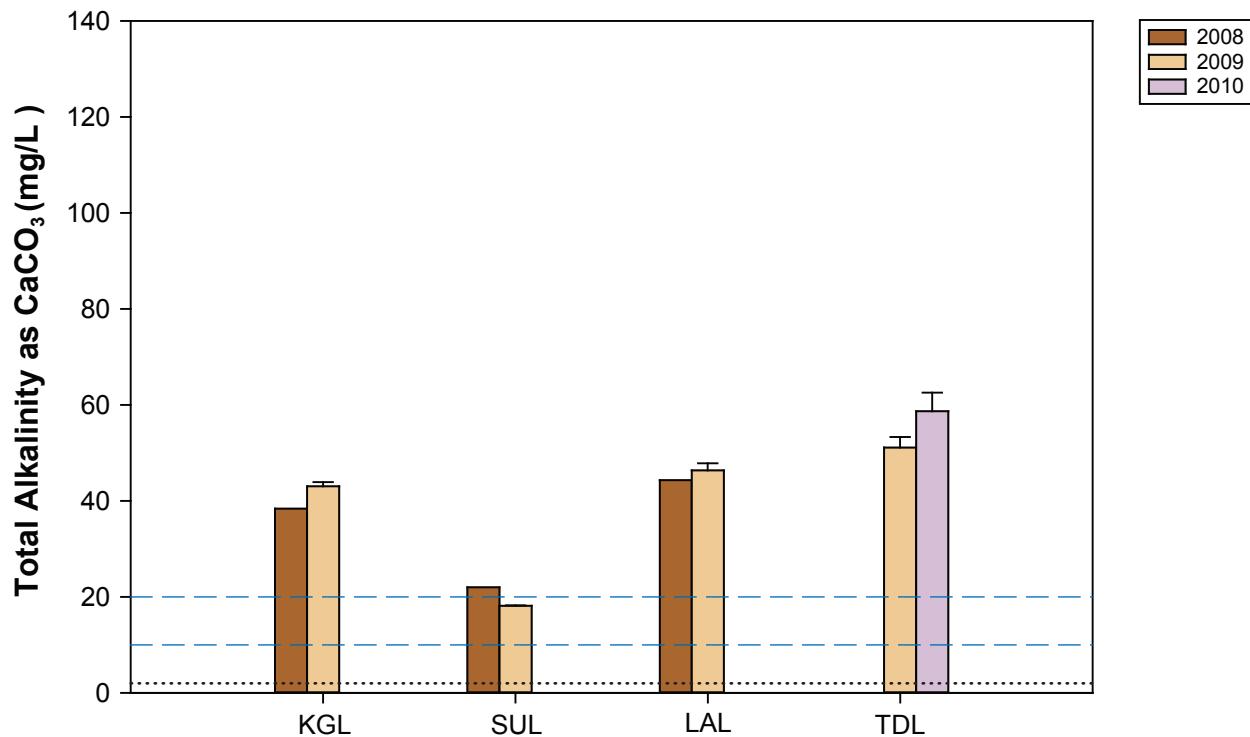
Alkalinity, hardness and TDS had similar spatial patterns in the KSM Project lakes. TDS at Knipple Glacier and Sulphurets lakes ranged from 43 mg/L (2009; SUL) to 85 mg/L (2009; KGL; Figure 4.2-4). TDS at West Teigen and Todedada lakes ranged from 78 mg/L (2009; TDL) to 107 mg/L (2008; LAL).

### 4.2.2 Suspended Material

The highest TSS concentrations were in the glacier-fed Knipple Glacier and Sulphurets lakes (range: 11.3 mg/L to 38.0 mg/L). TSS concentrations at West Teigen Lake were highly variable between years (14.7 mg/L in 2008 and below the analytical detection limit of 3 mg/L in 2009). TSS concentrations in Todedada Lake were consistently near or below the analytical detection limit (Figure 4.2-5).



Notes: Error bars represent standard error of the mean.  
Blue dashed lines indicate the upper ( $\text{pH}=9$ ) and lower ( $\text{pH}=6.5$ ) limits of the CCME and BC MOE water quality guideline for pH.



Notes: Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

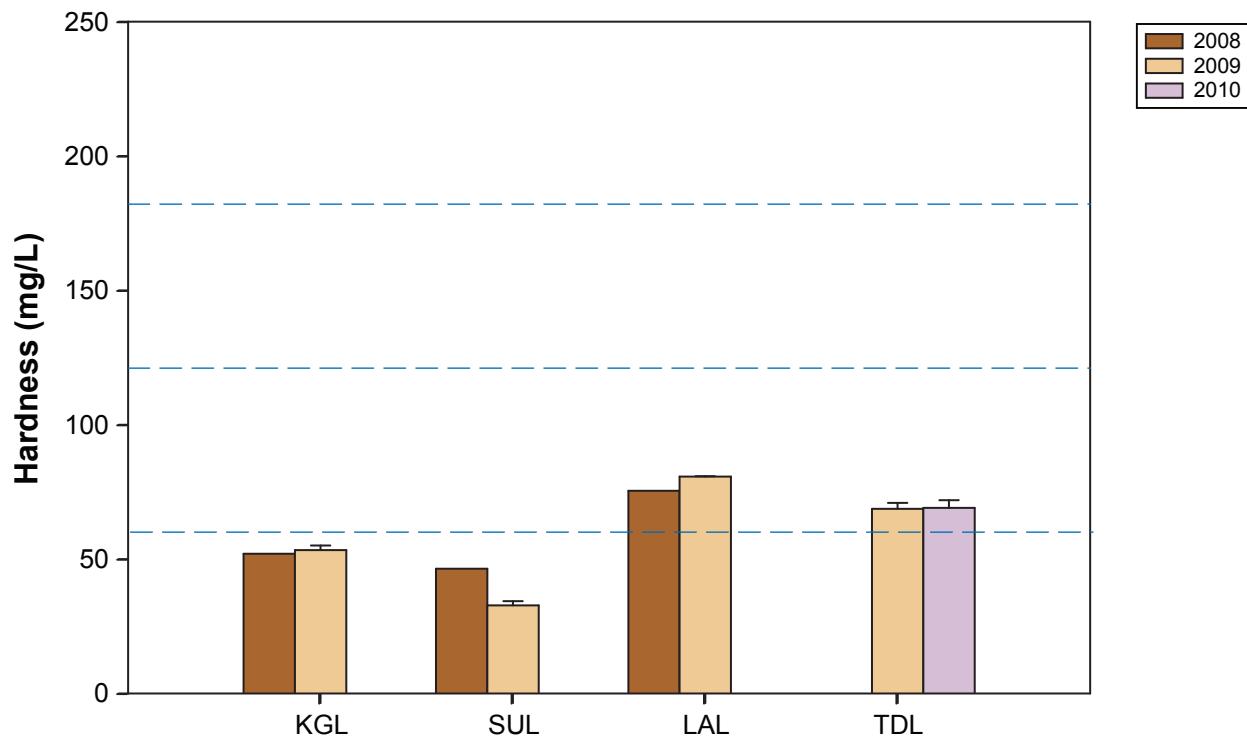
No CCME guideline exists.

Blue dashed lines indicate BC MOE working water quality guideline ranges for sensitivity to acid inputs.

< 10 mg/L as CaCO<sub>3</sub>, highly sensitive to acid inputs

10-20 mg/L as CaCO<sub>3</sub>, moderately sensitive to acid inputs

>20 mg/L as CaCO<sub>3</sub>, low sensitivity to acid inputs



Notes: Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

No CCME or BC MOE guidelines exist.

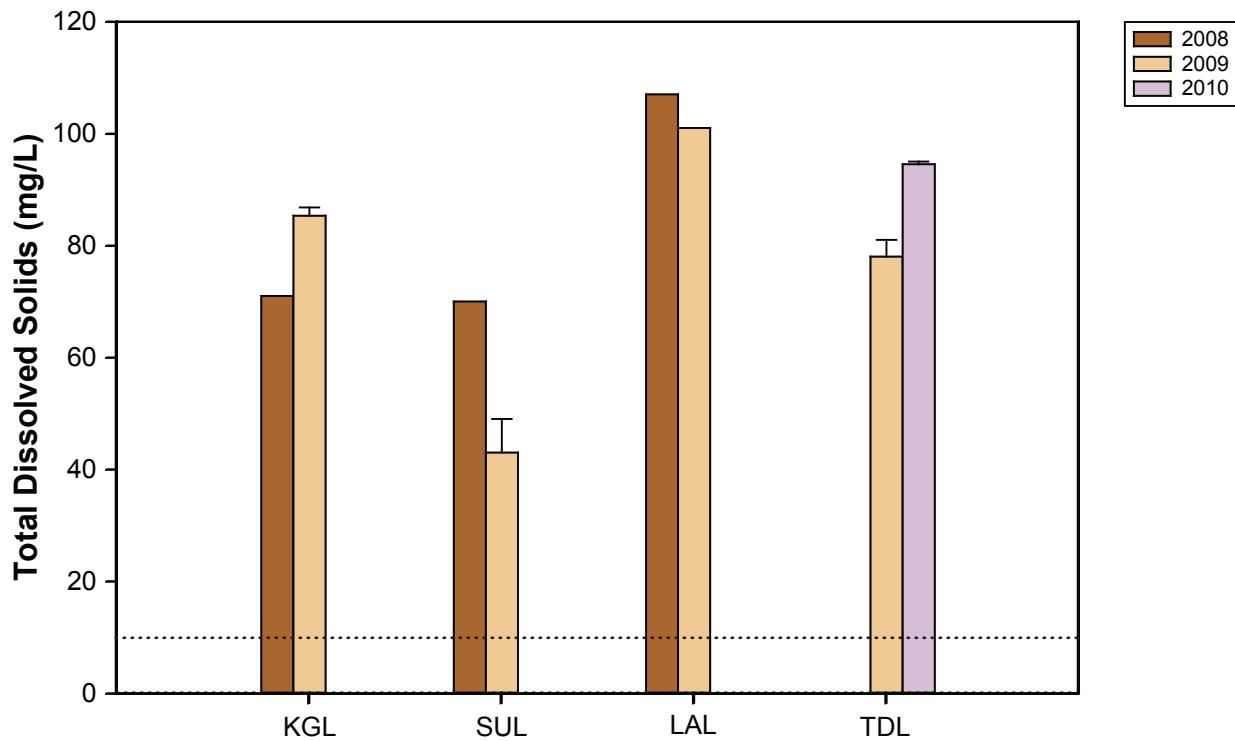
Blue dashed lines indicate classification ranges for hardness concentrations (Briggs et al. 1977).

< 60 mg/L, soft;

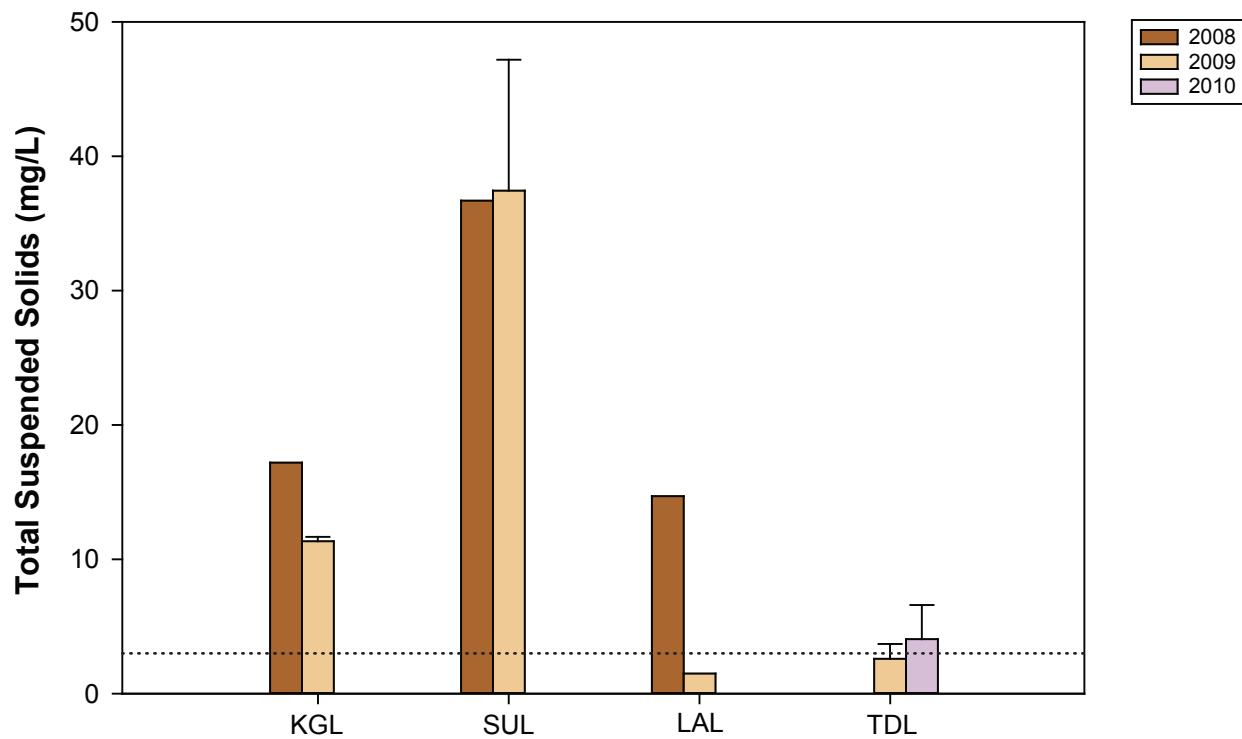
61-120 mg/L,

moderately hard;

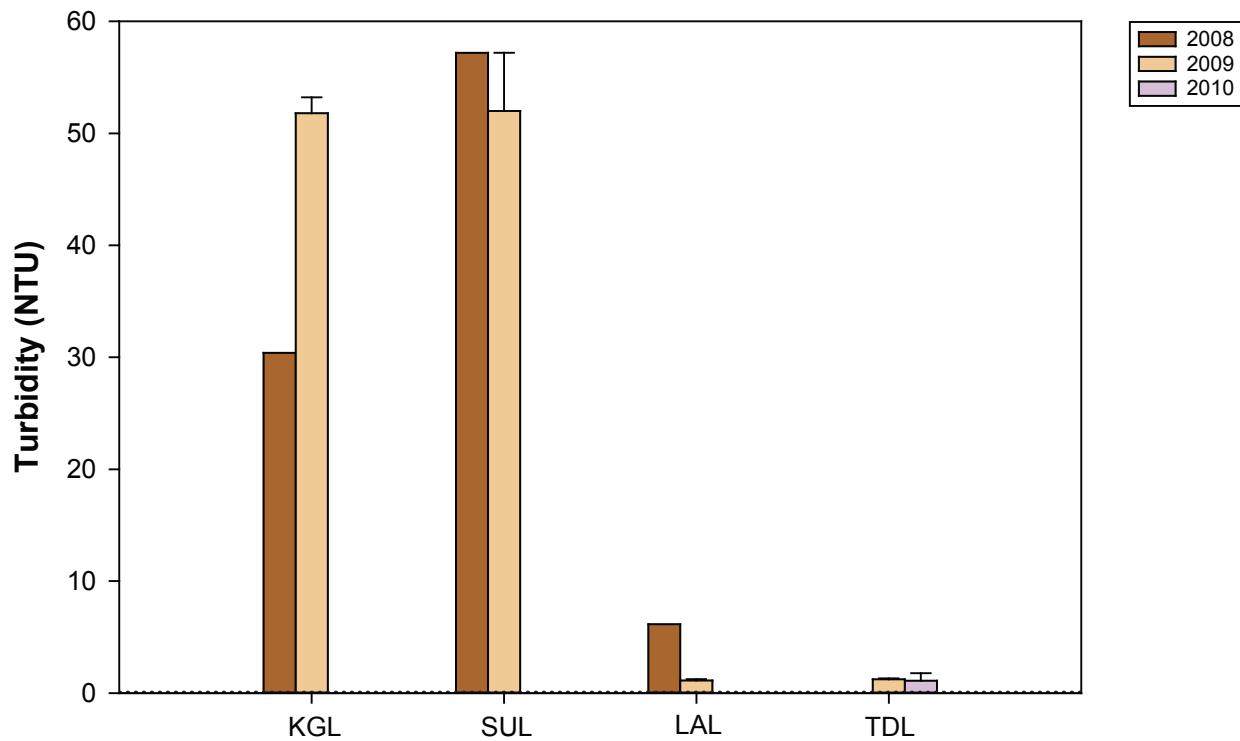
> 180 mg/L, very hard



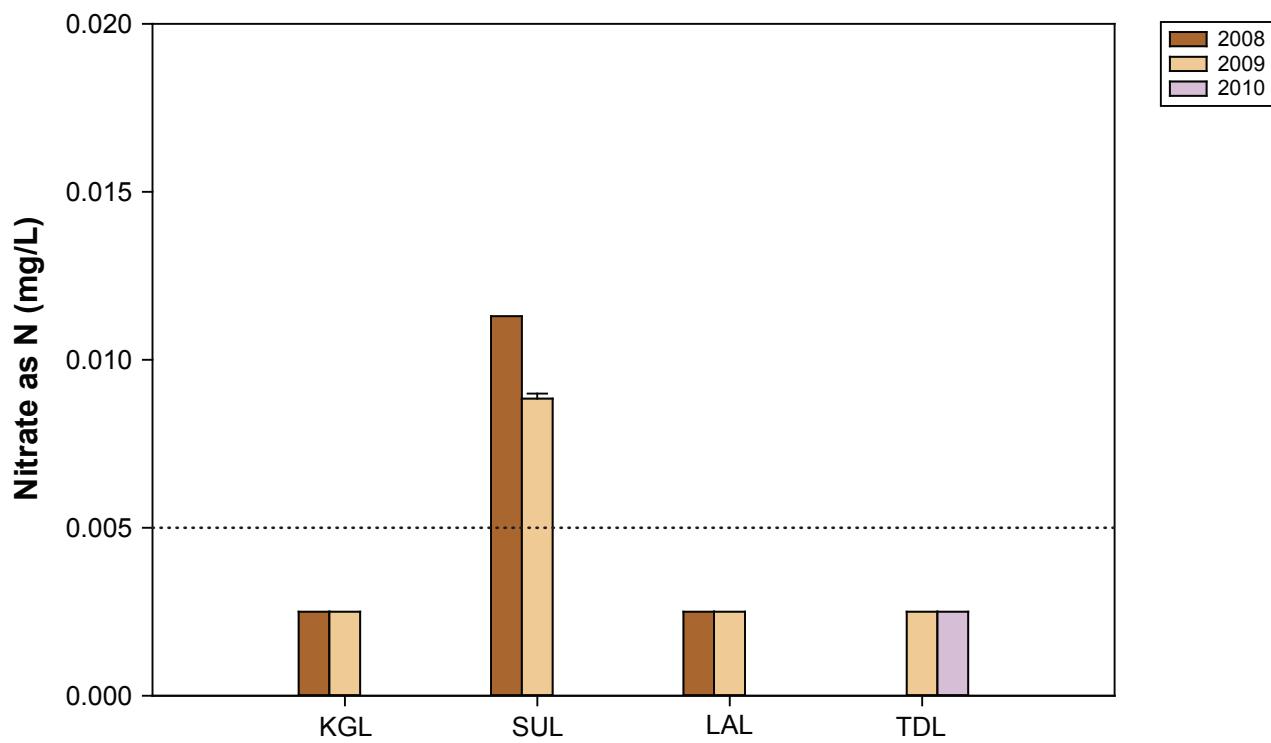
Notes: Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.  
Concentrations below the detection limit were plotted as half the detection limit.  
Water quality guidelines for dissolved solids are dependent on background levels.



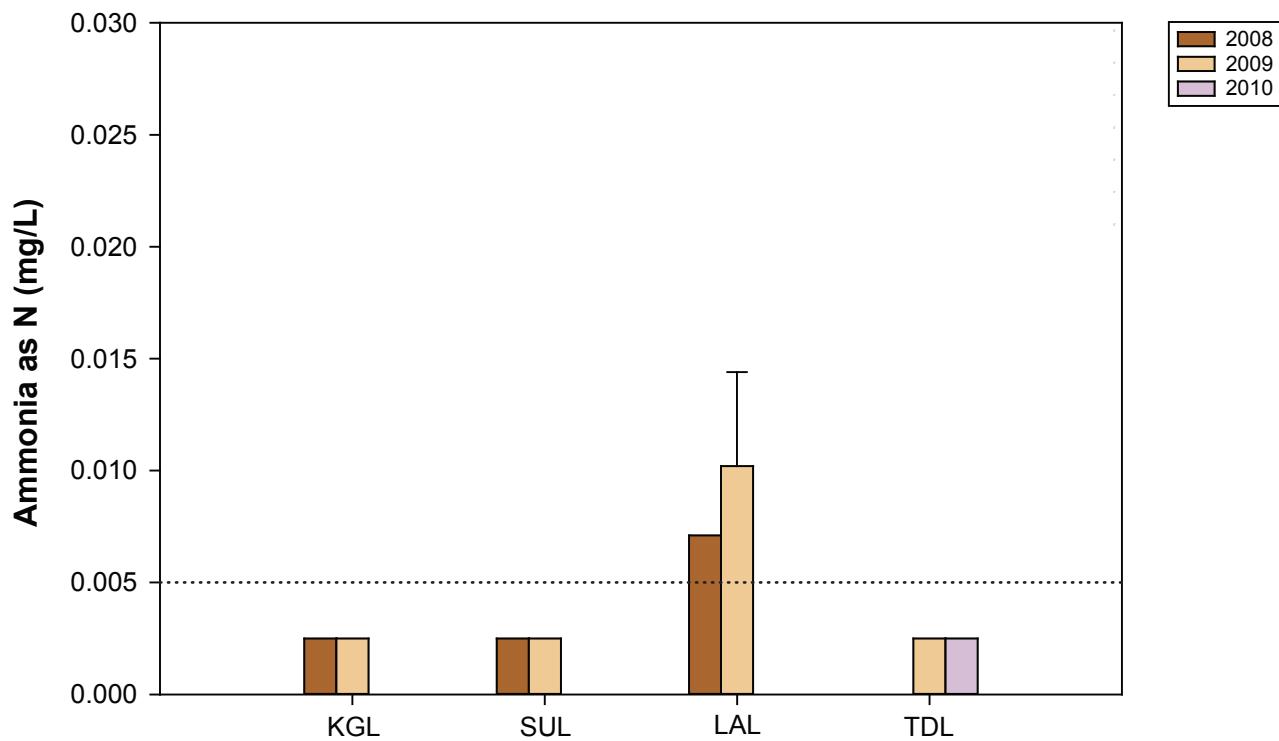
Notes: Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.  
Concentrations below the detection limit were plotted as half the detection limit.  
Water quality guidelines for suspended solids are dependent on background levels.



Notes: Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.  
Concentrations below the detection limit were plotted as half the detection limit.  
Water quality guidelines are dependent on background concentrations.



Notes: Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.  
Concentrations below the detection limit were plotted as half the detection limit.  
CCME guideline for nitrate-nitrogen = 2.935 mg/L  
BC MOE 30-day mean guideline for nitrate-nitrogen = 3.0 mg/L

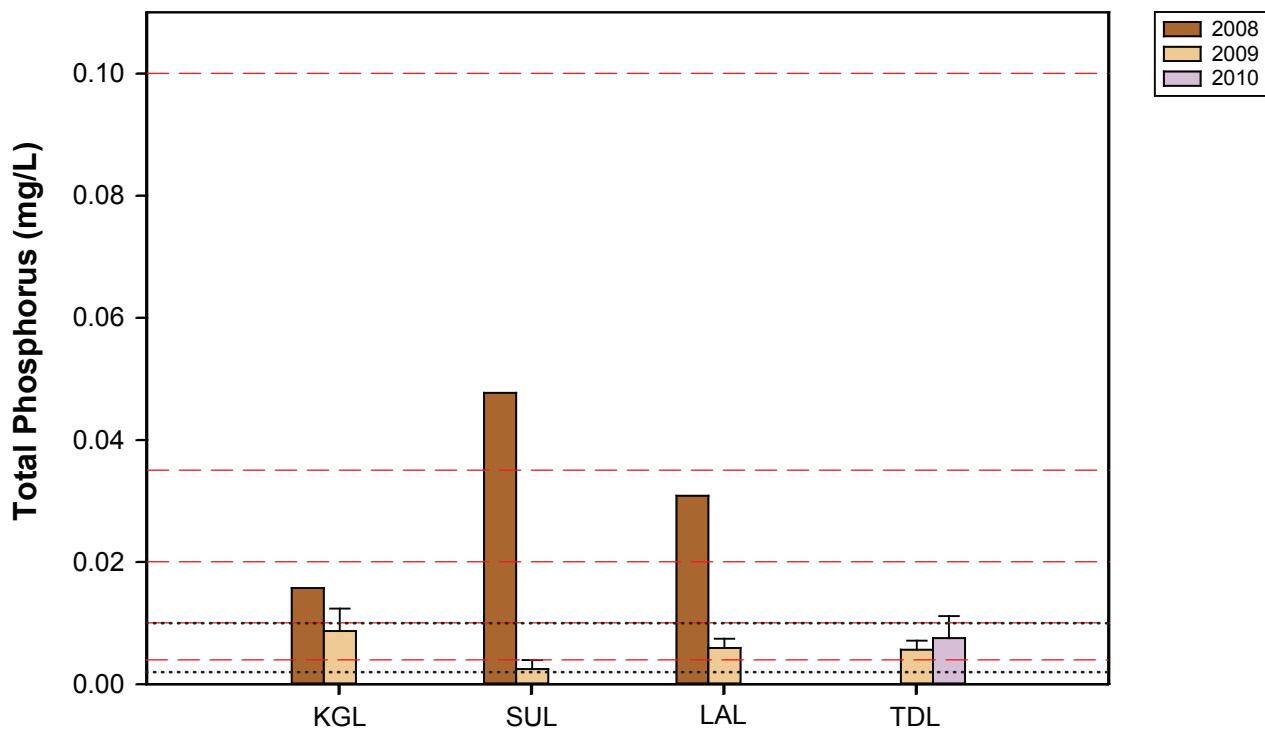


Notes: Error bars represent standard error of the mean.

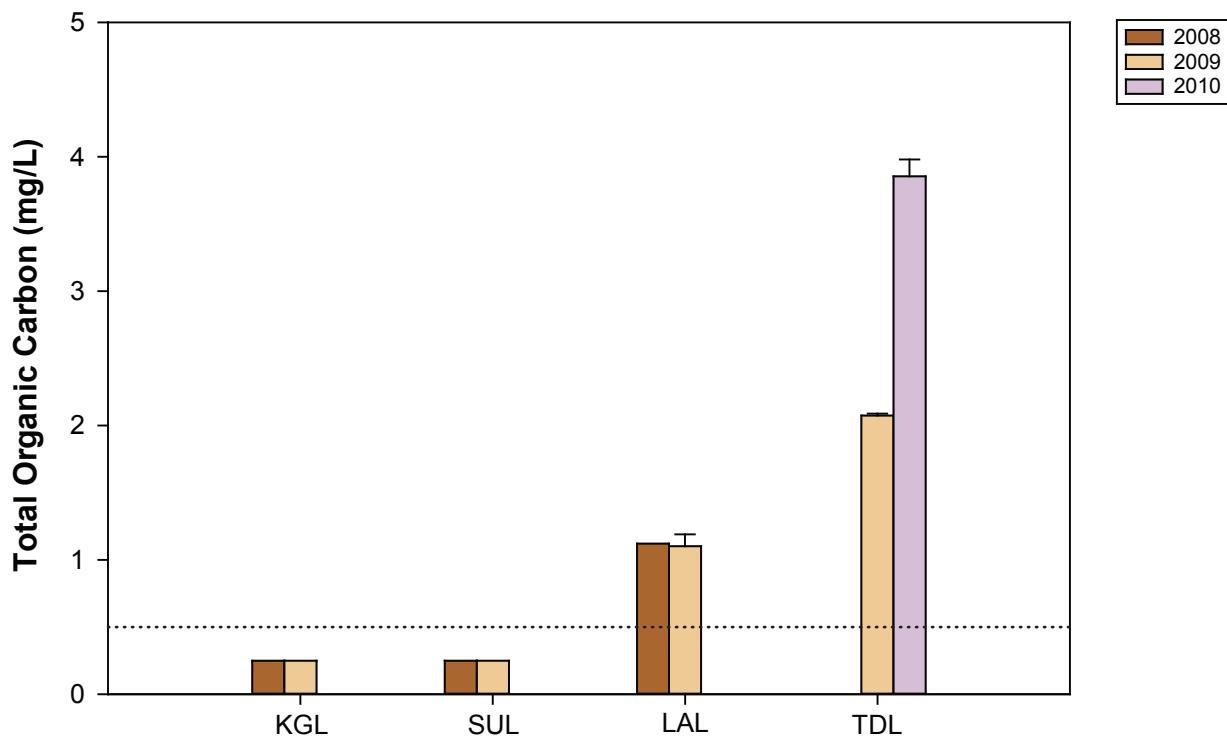
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

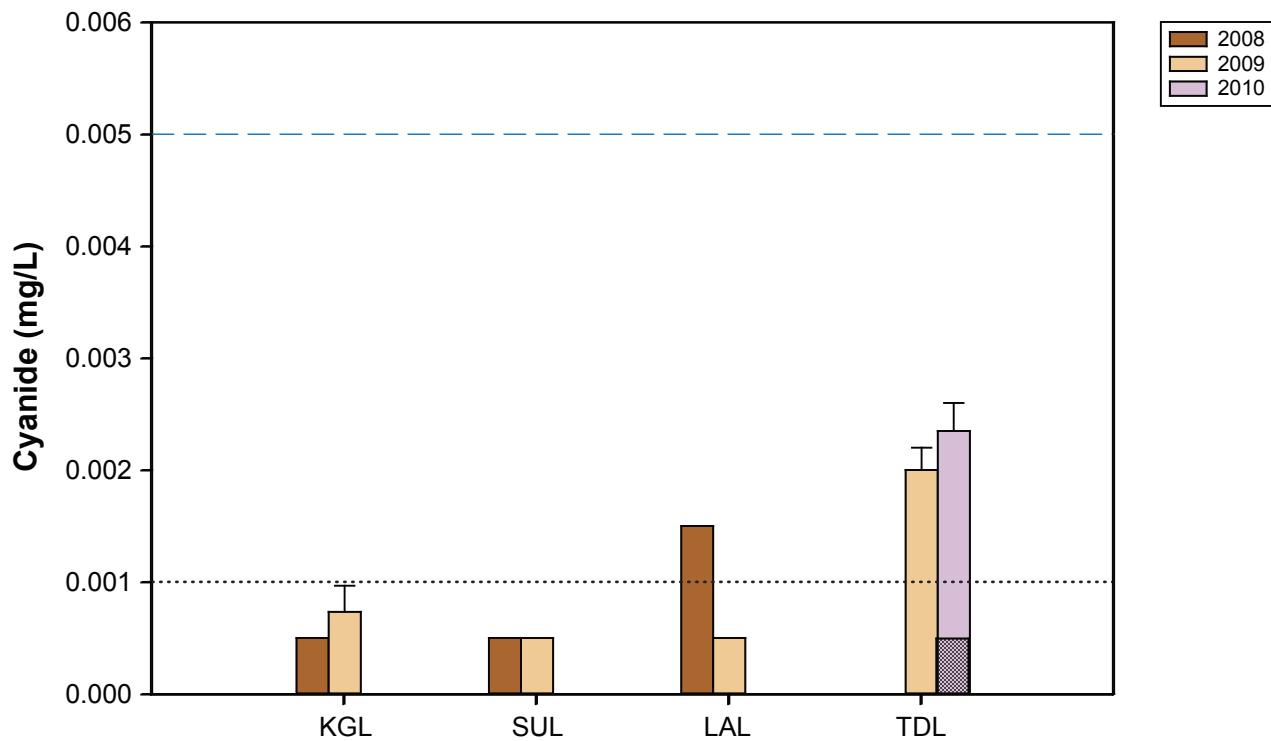
The BC 30 day mean and CCME water quality guideline for ammonia is pH- and temperature-dependent (see Appendix 3.2-1).



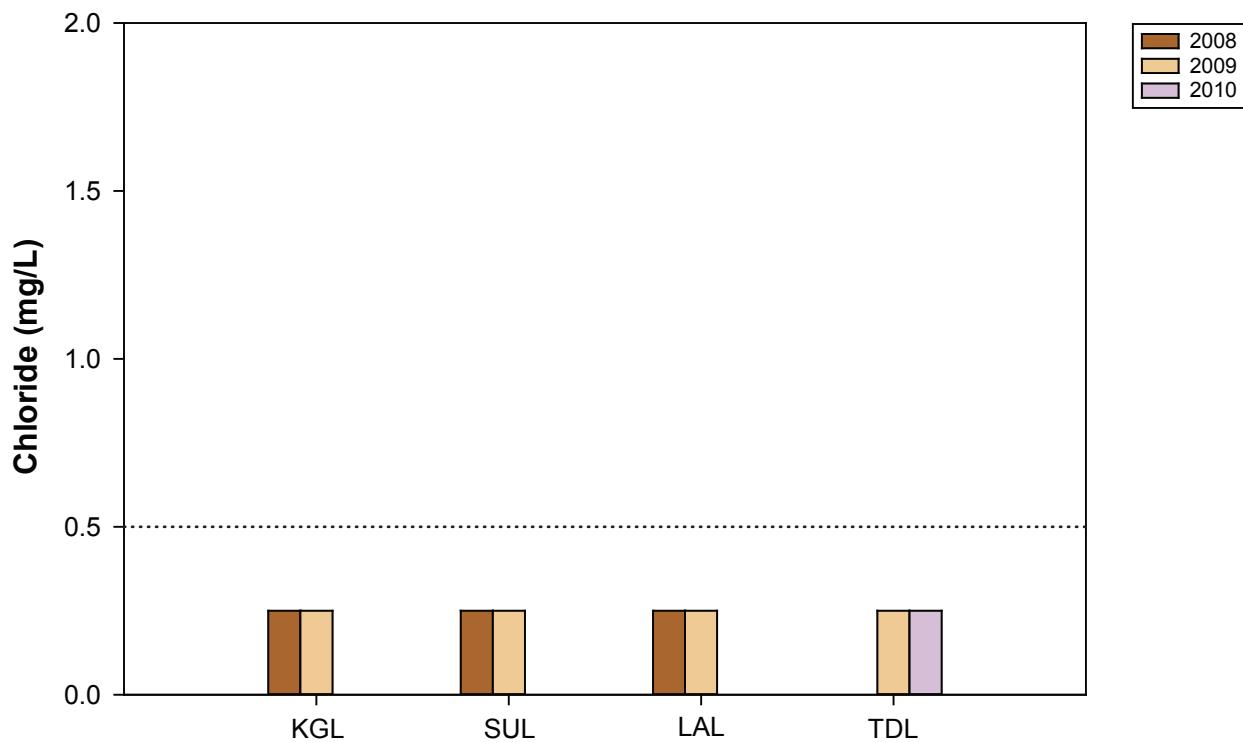
Notes: Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 BC MOE guideline for total phosphorus in lakes applies to lakes with salmonid fish species only. See Appendix 3.2-1.  
 Red dashed lines indicate CCME trigger ranges for total phosphorus in Canadian lakes and rivers.  
 Hyper-eutrophic >0.1 mg/L  
 Eutrophic 0.035 to 0.1 mg/L  
 Meso-eutrophic 0.02 to 0.035 mg/L  
 Mesotrophic 0.01 to 0.02 mg/L  
 Oligotrophic 0.004 to 0.01 mg/L  
 Ultra-oligotrophic <0.004 mg/L



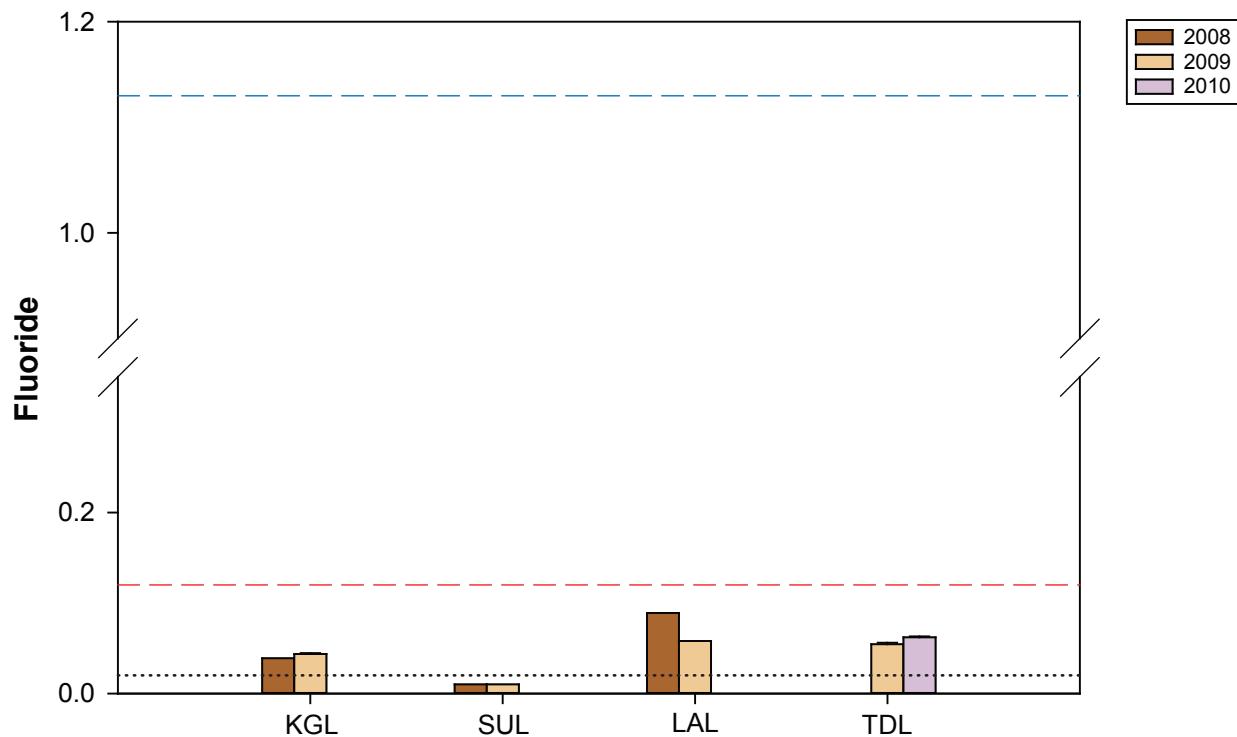
Notes: Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.  
Concentrations below the detection limit were plotted as half the detection limit.



Notes: Solid bars indicate total cyanide concentrations.  
 Patterned bars indicate weak-acid dissociable cyanide concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 No CCME or BC MOE guidelines for total cyanide exist.  
 Blue dashed lines indicate the BC MOE 30-day mean water quality guideline for weak-acid dissociable cyanide (0.005 mg/L).



Notes: Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.  
Concentrations below the detection limit were plotted as half the detection limit.  
CCME long term guideline: 120 mg/L  
BC 30-day mean guideline: 150 mg/L



Notes: Error bars represent the standard error of the mean.

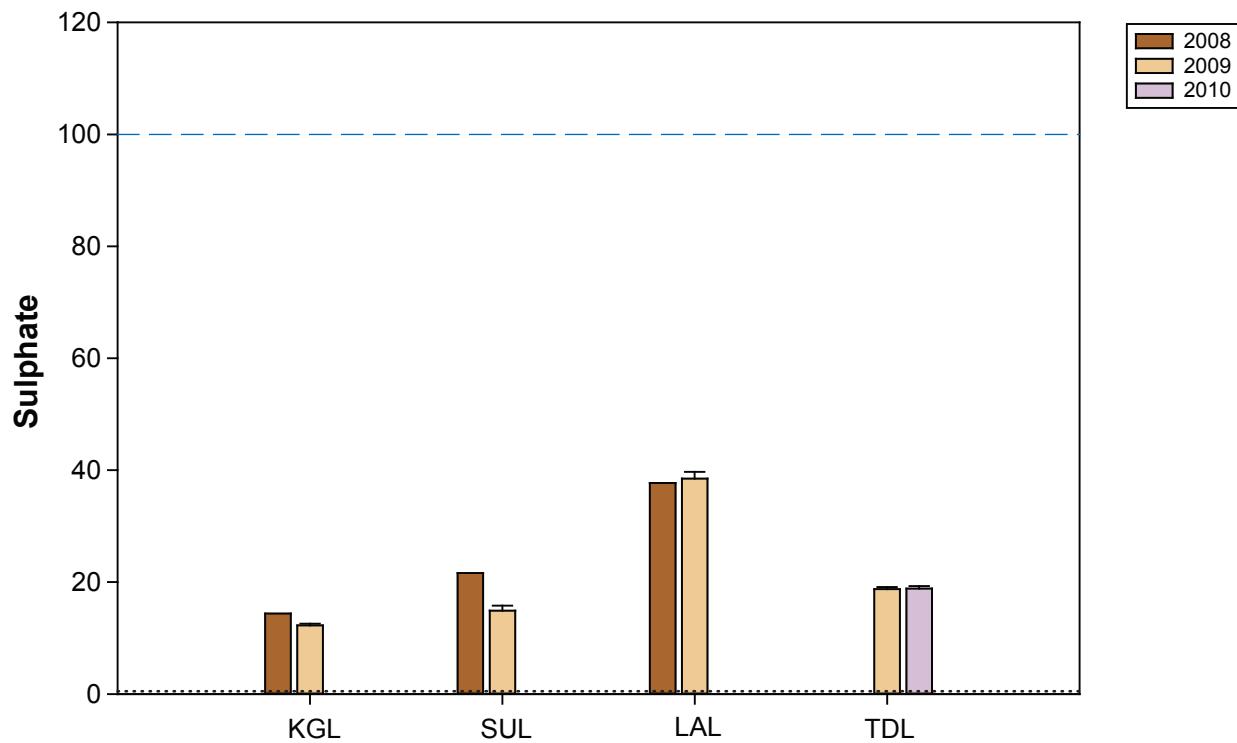
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

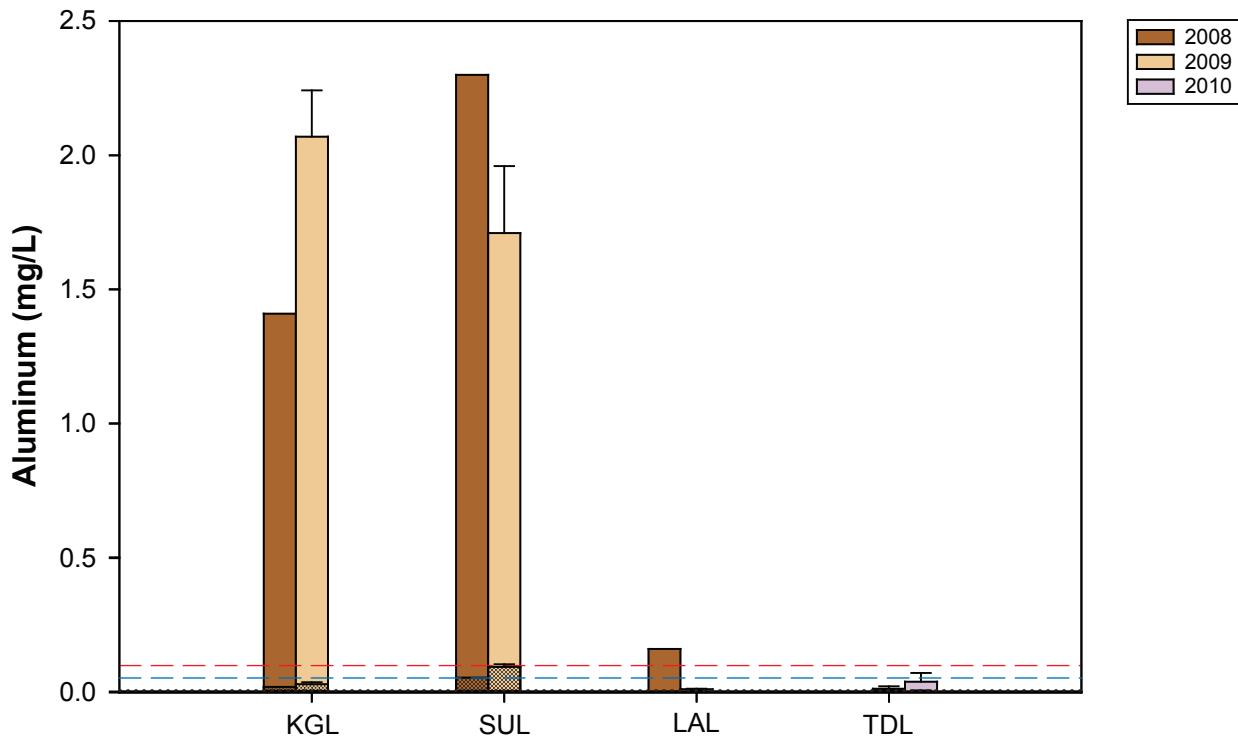
Dashed red lines indicate interim CCME water quality guideline for fluoride (0.12 mg/L).

Dashed blue lines indicate interim BC MOE maximum hardness-dependent water quality criterion for total fluoride (see Appendix 3.2-1).

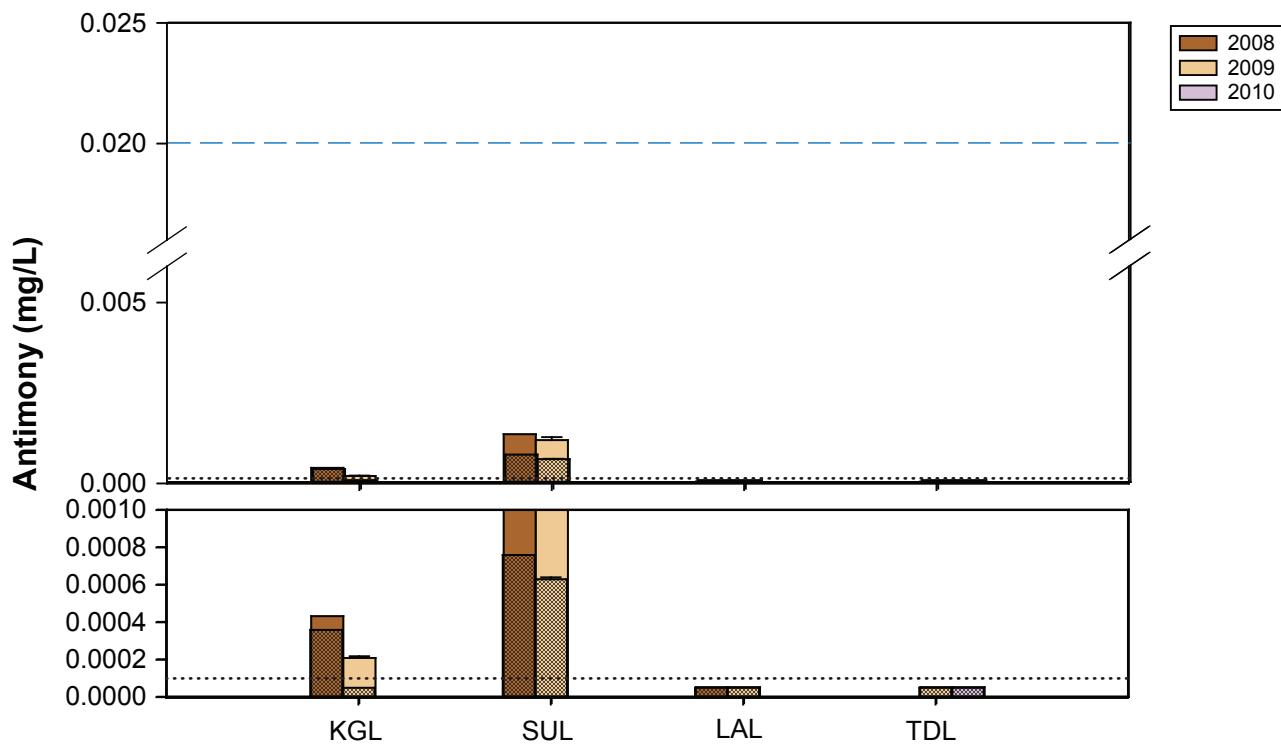
The median hardness for the lakes was used to set the guideline limit.

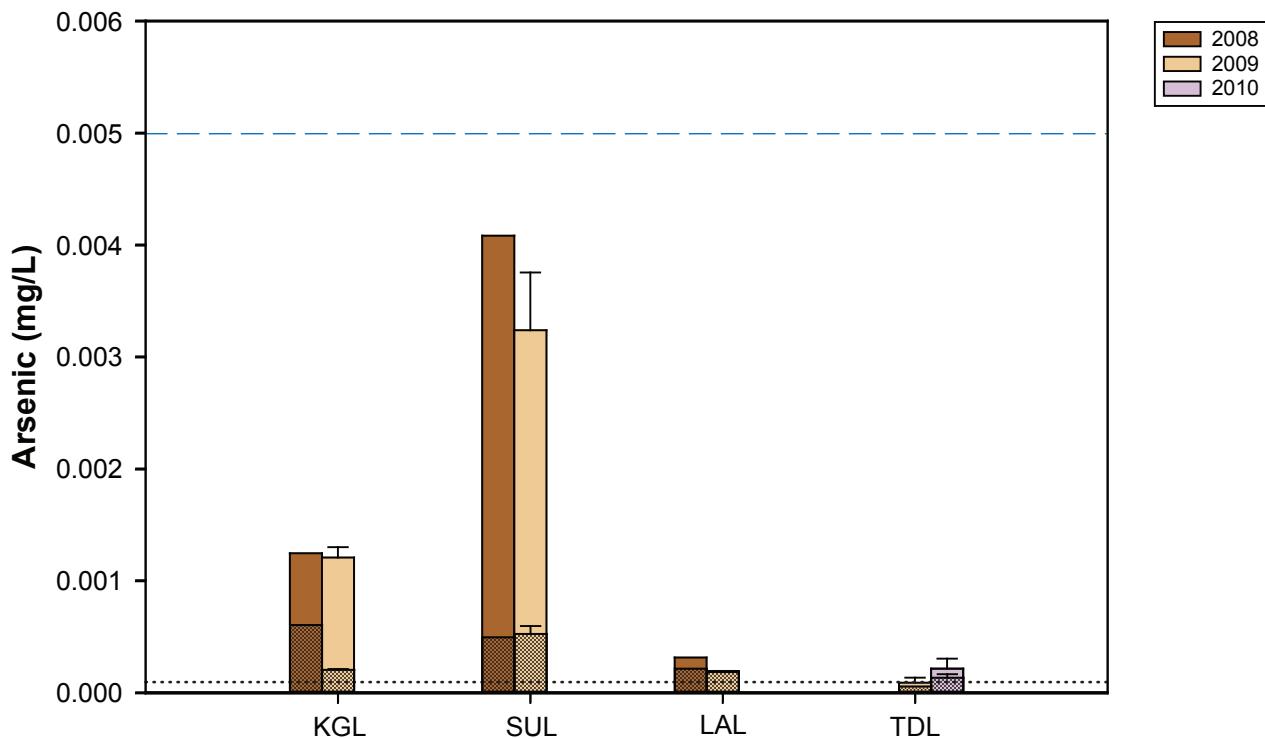


Notes: Error bars represent standard error of the mean.  
Blue dashed lines indicate the BC MOE maximum water quality guideline for sulphate (100 mg/L).  
No CCME or BC MOE 30-day mean guidelines exist.



Notes: Solid bars indicate total aluminum concentrations.  
 Patterned bars indicate dissolved aluminum concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 Dashed red lines indicate CCME water quality guideline for total aluminum ( $pH > 6.5$ ;  $0.10 \text{ mg/L}$ ).  
 Dashed blue lines indicate BC MOE 30-day mean water quality guideline for dissolved aluminum ( $pH > 6.5$ ;  $0.05 \text{ mg/L}$ ).





Notes: Solid bars indicate total arsenic concentrations.

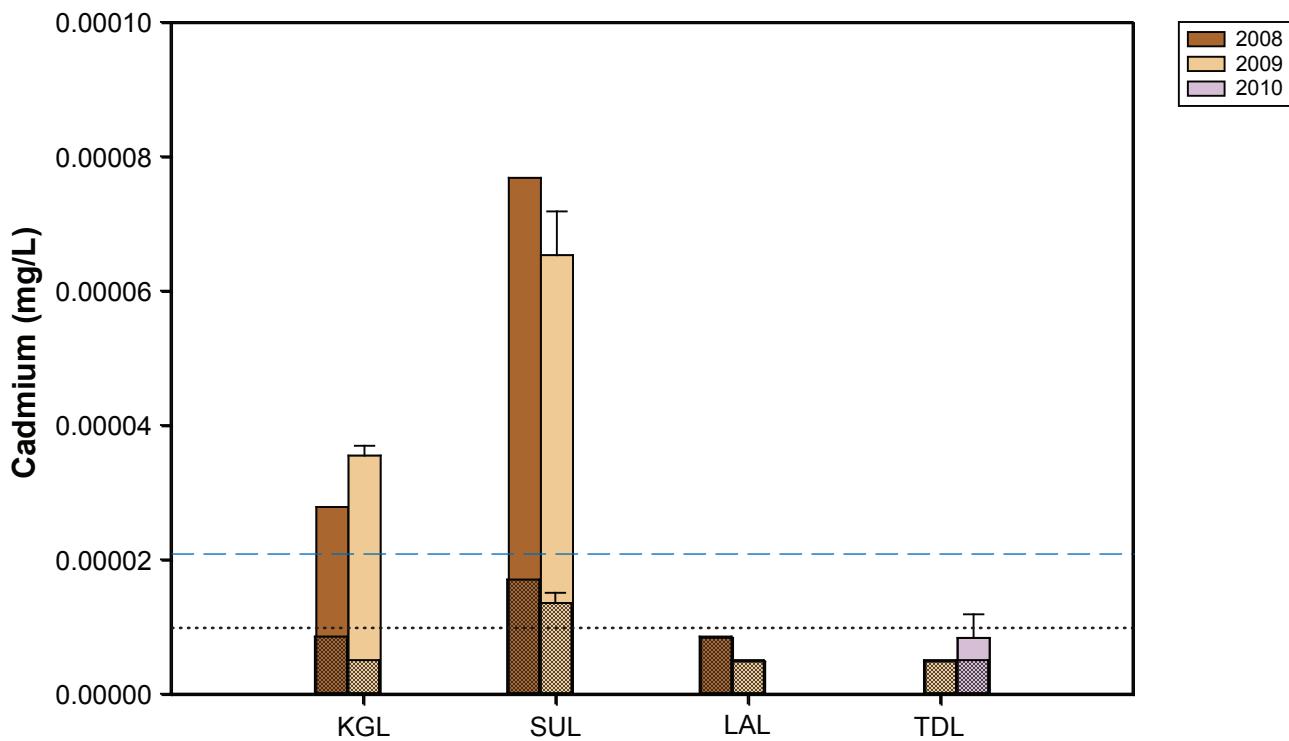
Patterned bars indicate dissolved arsenic concentrations.

Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Dashed blue lines indicate CCME and BC MOE water quality guideline for total arsenic (0.005 mg/L).



Notes: Solid bars indicate total cadmium concentrations.

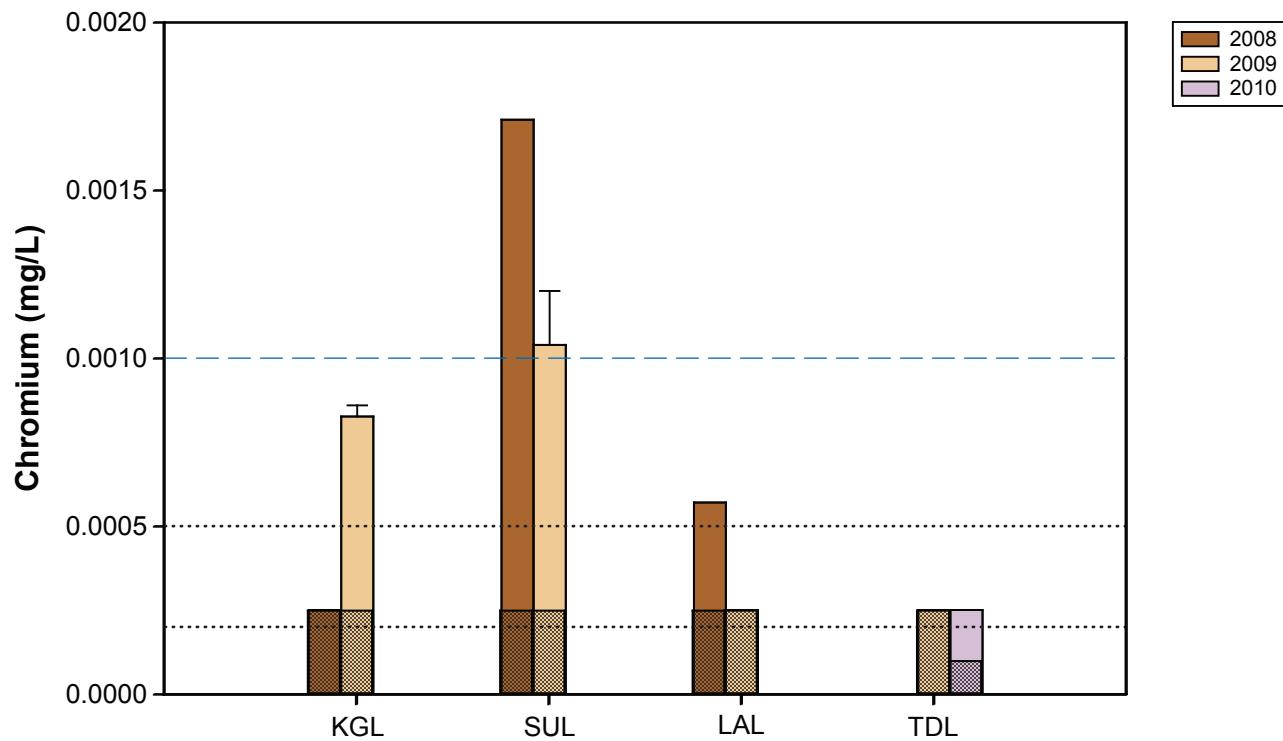
Patterned bars indicate dissolved cadmium concentrations.

Error bars represent standard error of the mean.

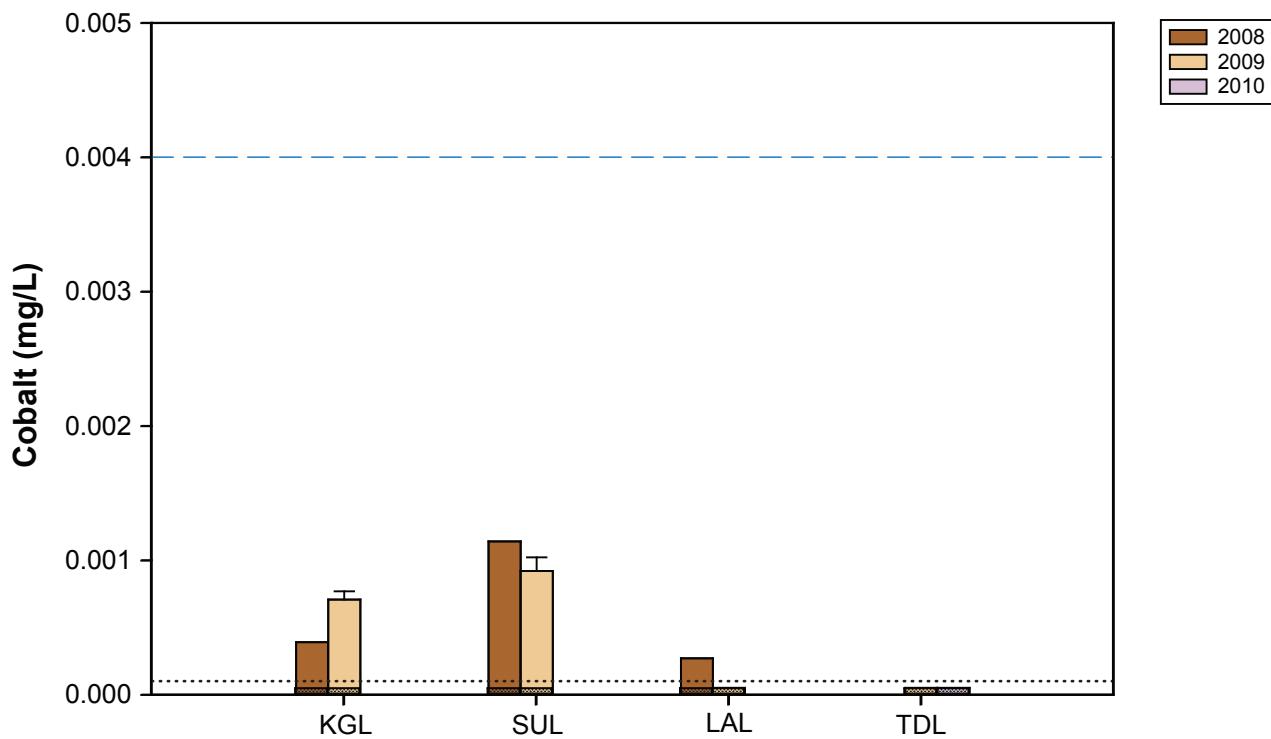
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

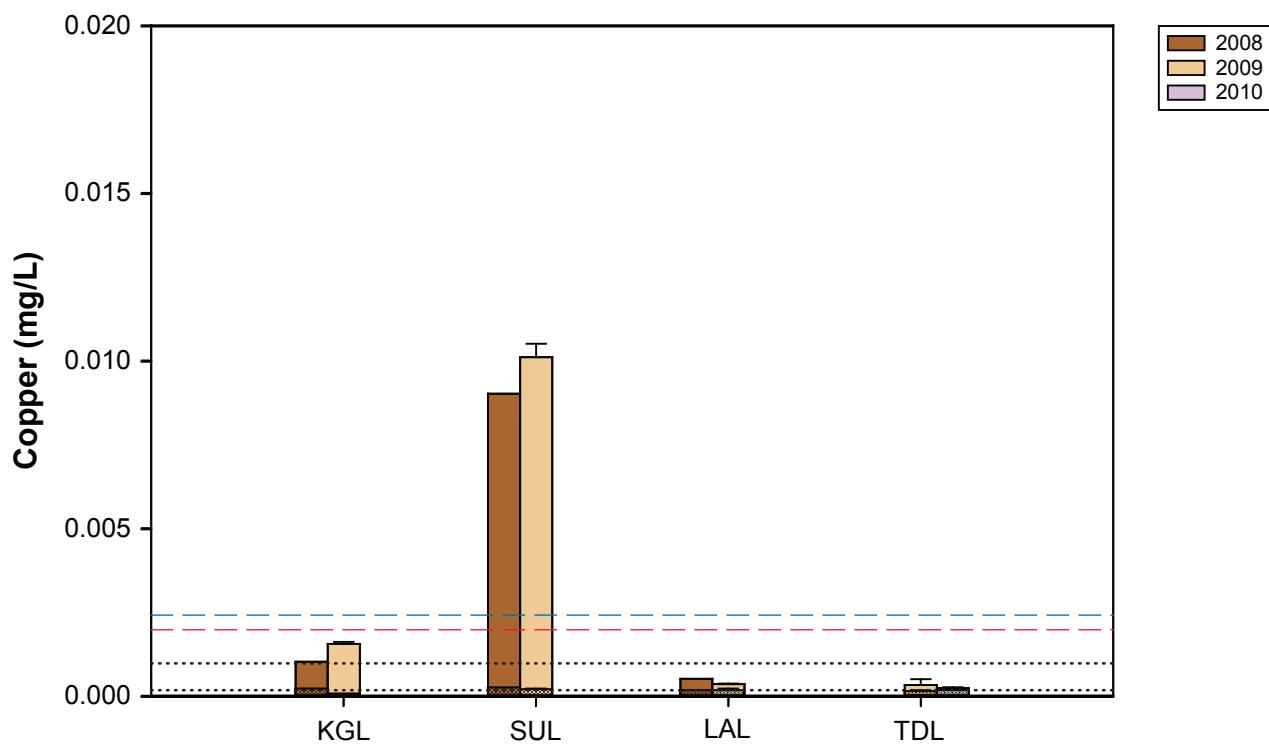
Dashed blue lines indicate CCME and working BC MOE hardness-dependent water quality guideline for total cadmium (see Appendix 3.2-1)  
Median hardness value for lakes was used to set the guideline limit.



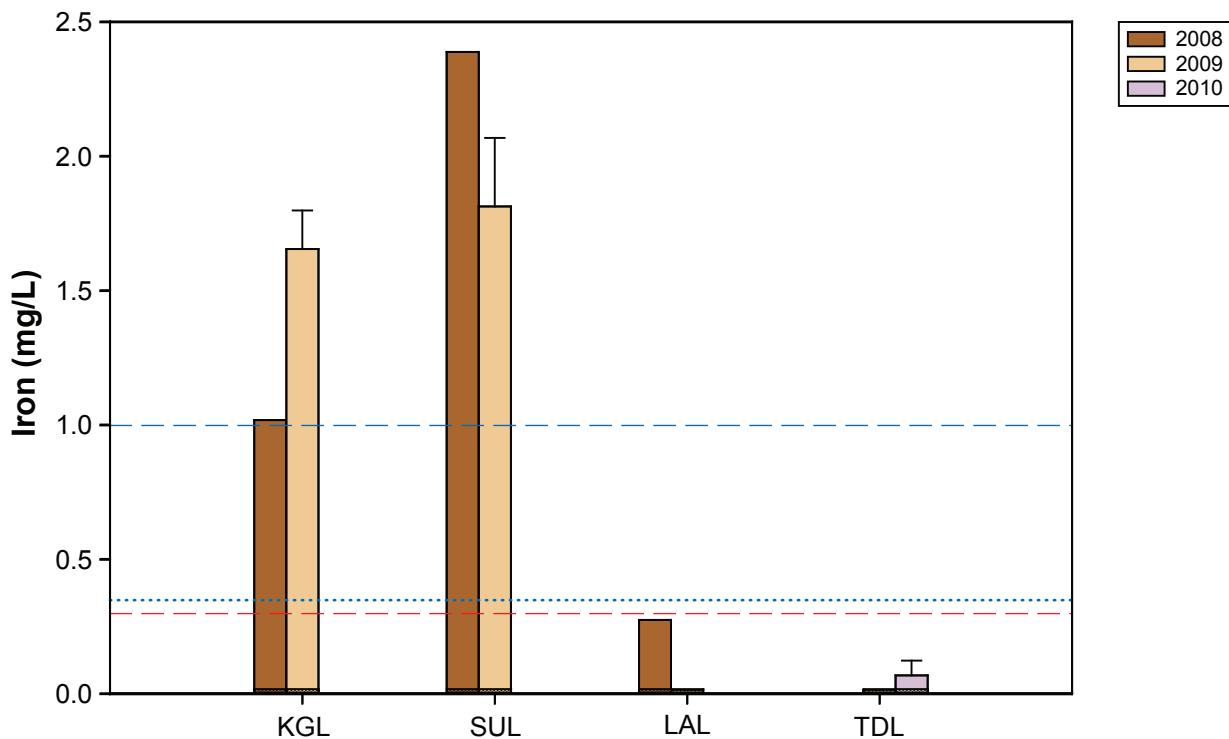
Notes: Solid bars indicate total chromium concentrations.  
 Patterned bars indicate dissolved chromium concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 Dashed blue lines indicate CCME and working BC MOE maximum water quality guideline for total chromium (0.001 mg/L).  
 No BC 30-day mean water quality guideline exists.  
 Guidelines used are for hexavalent chromium (Cr(VI)).



Notes: Solid bars indicate total cobalt concentrations.  
 Patterned bars indicate dissolved cobalt concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 Dashed blue lines indicate BC MOE 30-day mean water quality guideline for total cobalt (0.004 mg/L).  
 No CCME water quality guideline exists.



Notes: Solid bars indicate total copper concentrations.  
 Patterned bars indicate dissolved copper concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 Dashed red lines indicate CCME hardness-dependent water quality guideline for total copper (see Appendix 3.2-1).  
 Dashed blue lines indicate BC MOE hardness-dependent 30-day mean water quality guideline for total copper (see Appendix 3.2-1).  
 Median hardness value for lakes was used to set the guideline limit.



Notes: Solid bars indicate total iron concentrations.

Patterned bars indicate dissolved iron concentrations.

Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Dashed red lines indicate CCME water quality guideline for total iron (0.3 mg/L).

Dashed blue lines indicate BC MOE maximum water quality guideline for total iron (1.0 mg/L).

Dotted blue lines indicate BC MOE maximum water quality guideline for dissolved iron (0.35 mg/L).

No BC MOE 30-day mean water quality guideline for iron exists.

Figure 4.2-22

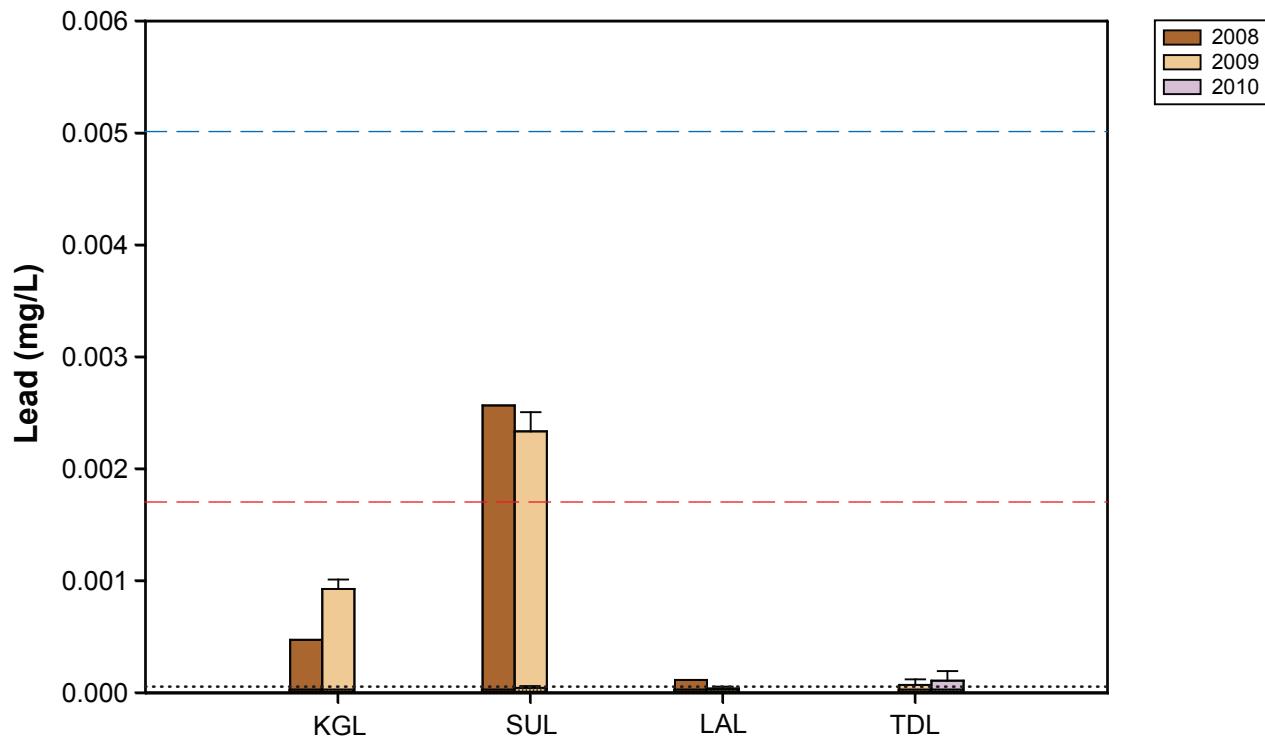
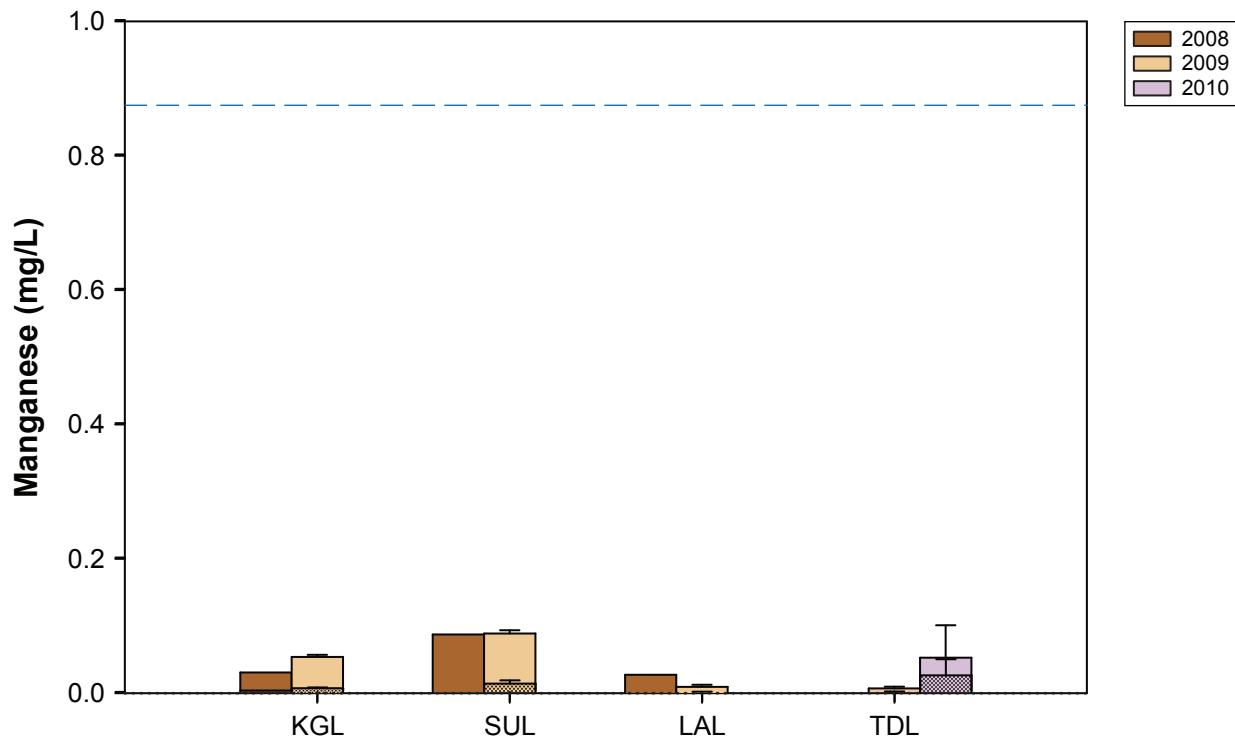
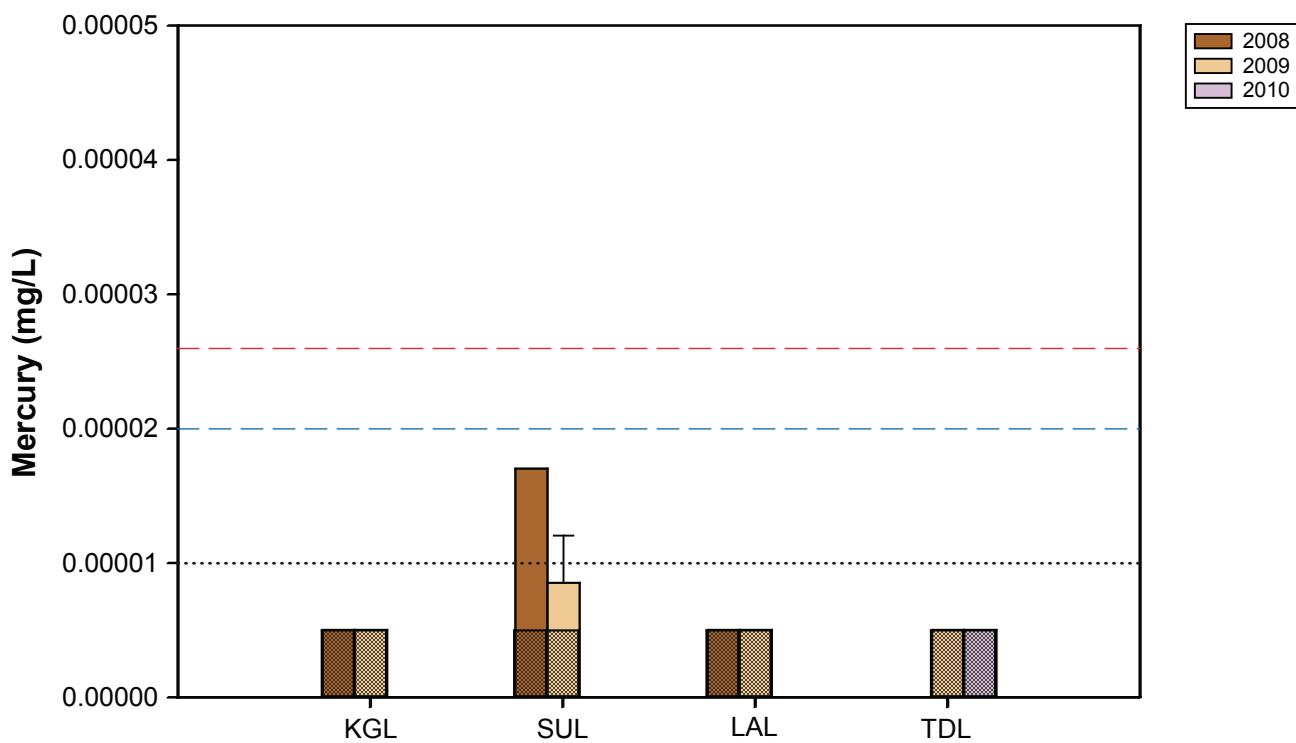
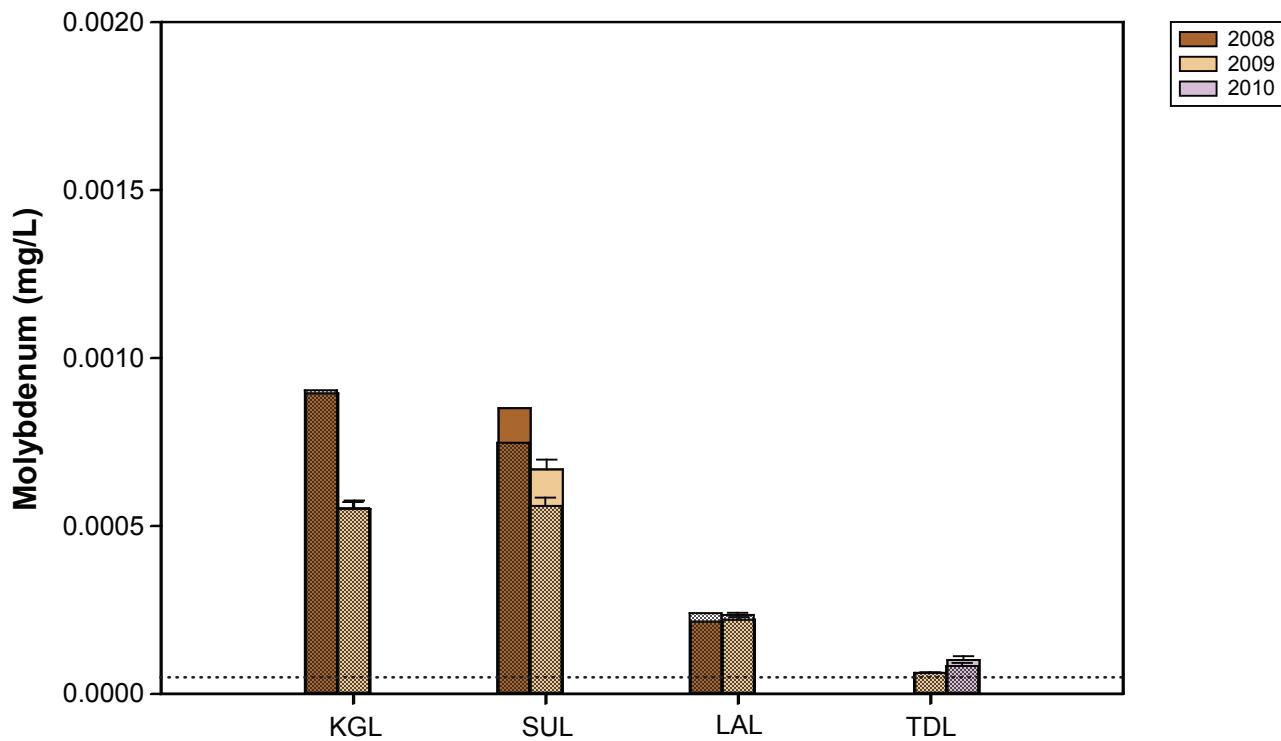


Figure 4.2-23

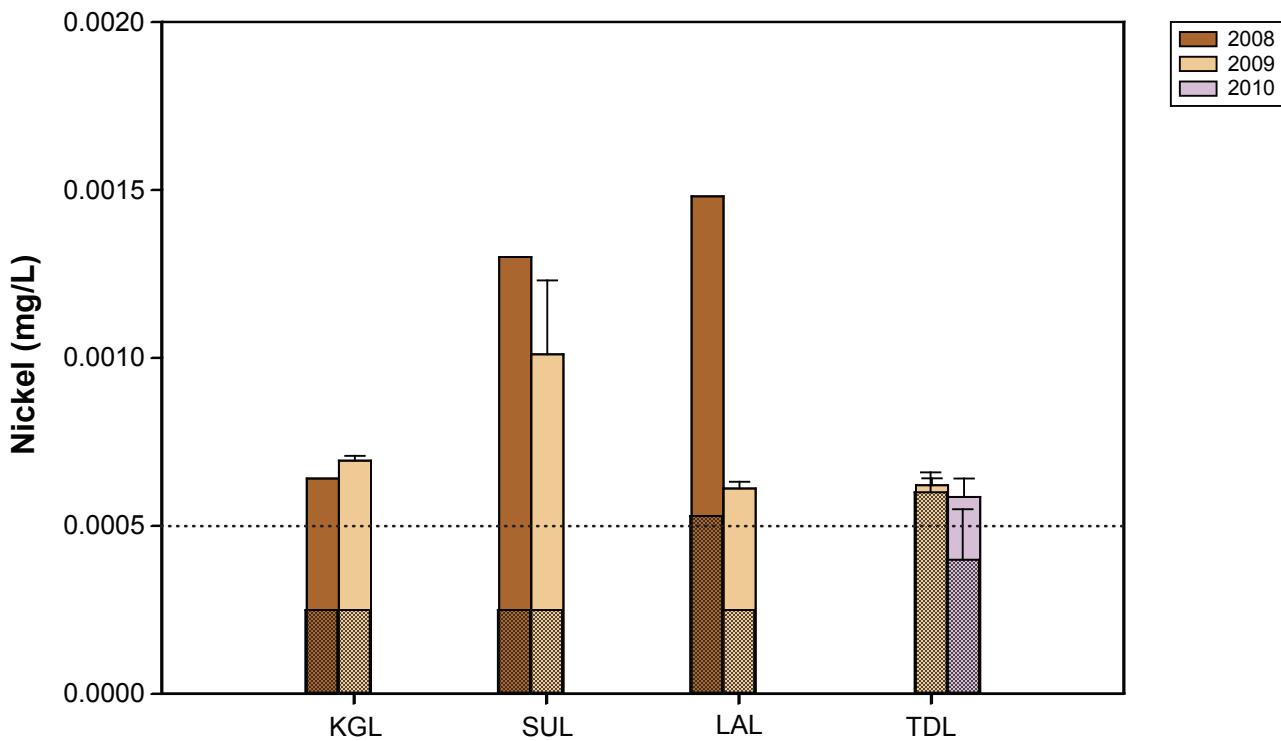


Notes: Solid bars indicate total manganese concentrations.  
 Patterned bars indicate dissolved manganese concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 Dashed blue lines indicate BC MOE hardness-dependent 30-day mean water quality guideline for total manganese (see Appendix 3.2-1).  
 Median hardness values for each watershed were used to set guideline limit.  
 No CCME water quality guideline for manganese exists.

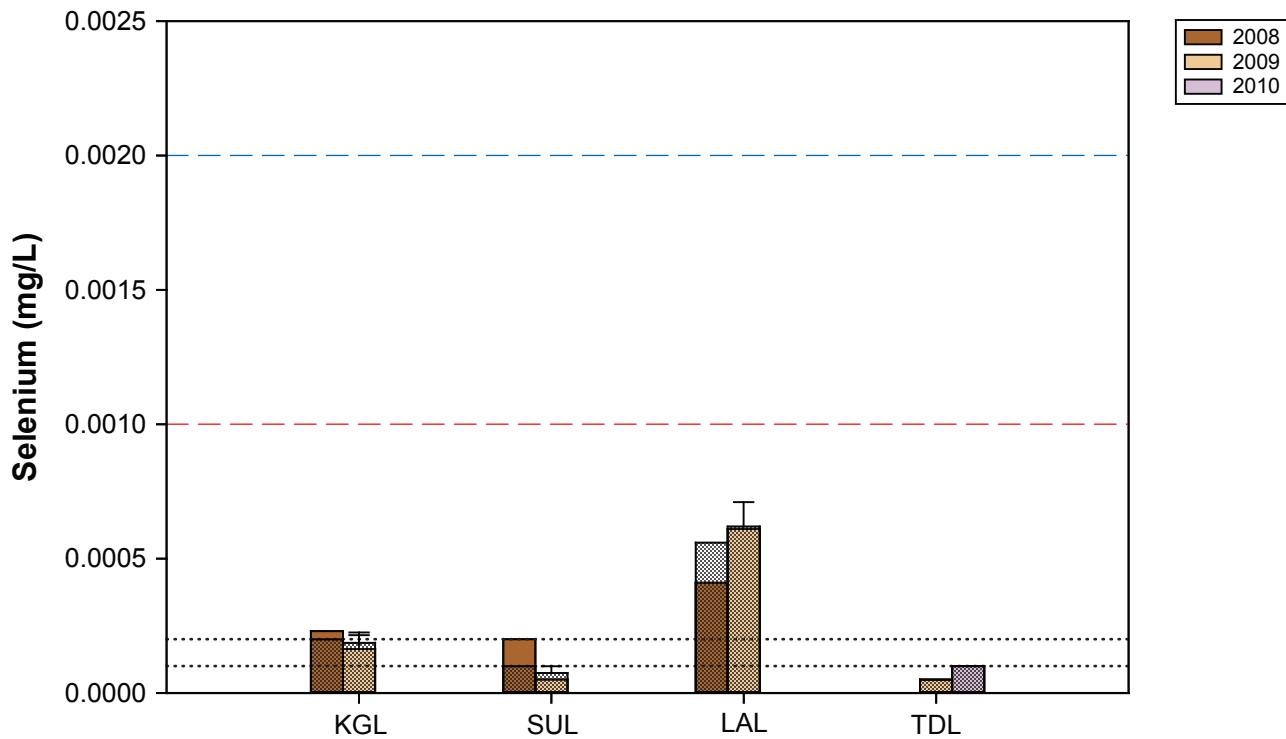




Notes: Solid bars indicate total molybdenum concentrations.  
 Patterned bars indicate dissolved molybdenum concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 CCME guideline: 0.073 mg/L  
 BC MOE 30-day mean guideline: 1 mg/L



Notes: Solid bars indicate total nickel concentrations.  
 Patterned bars indicate dissolved nickel concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 Median hardness values for each watershed were used to set guideline limit.  
 No BC MOE 30-day mean guideline exists.  
 CCME hardness-dependent guideline: 0.065 mg/L  
 Working BC MOE maximum hardness-dependent guideline: 0.065 mg/L



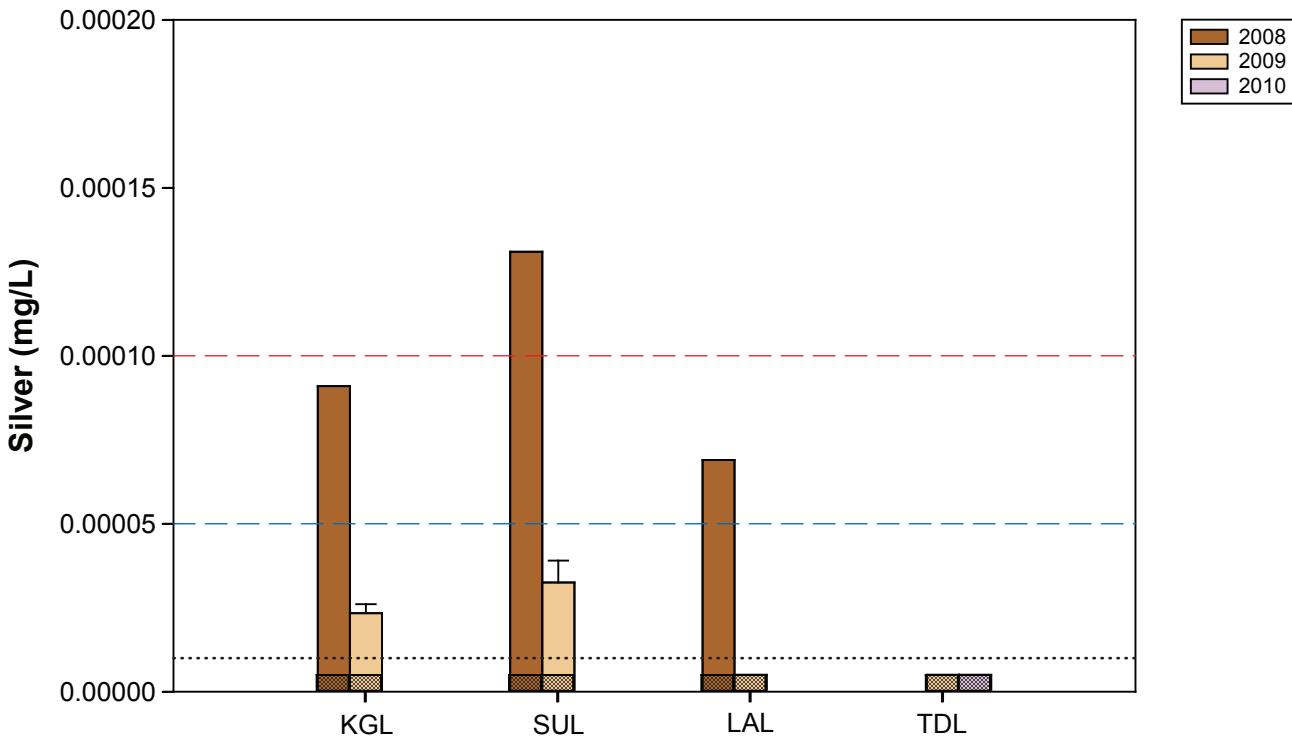
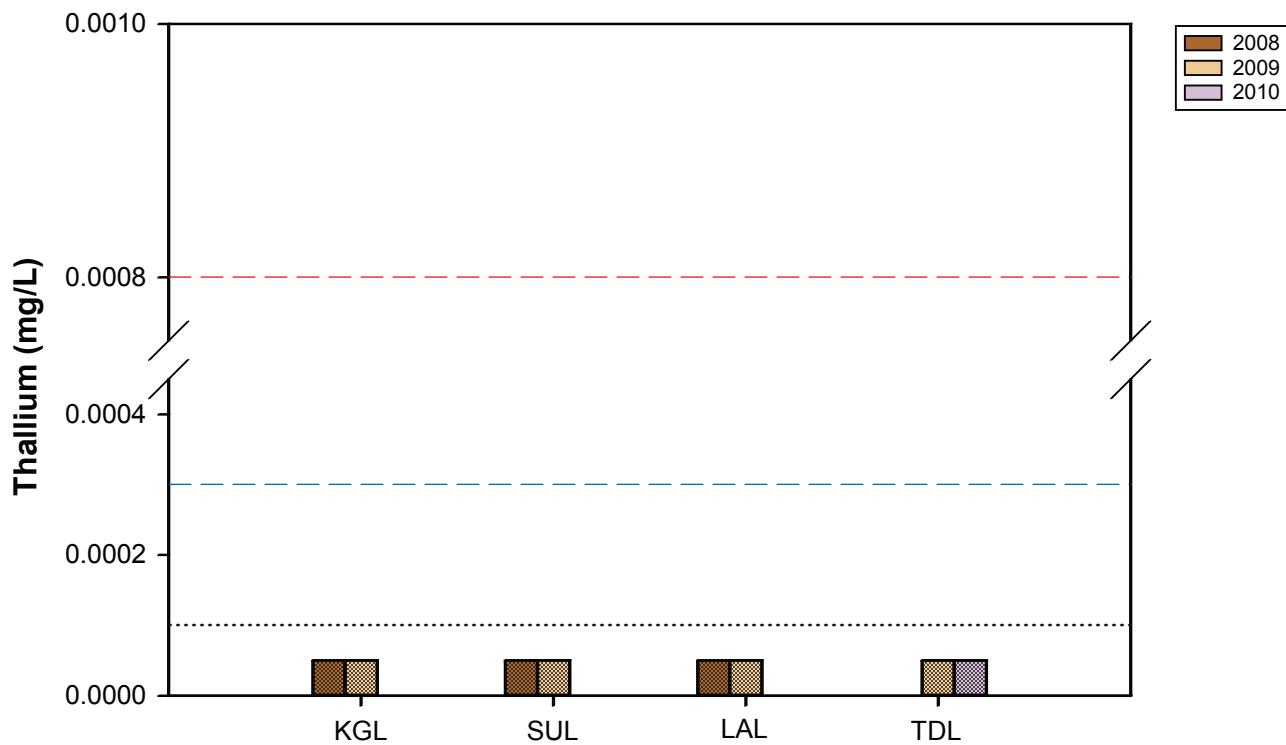
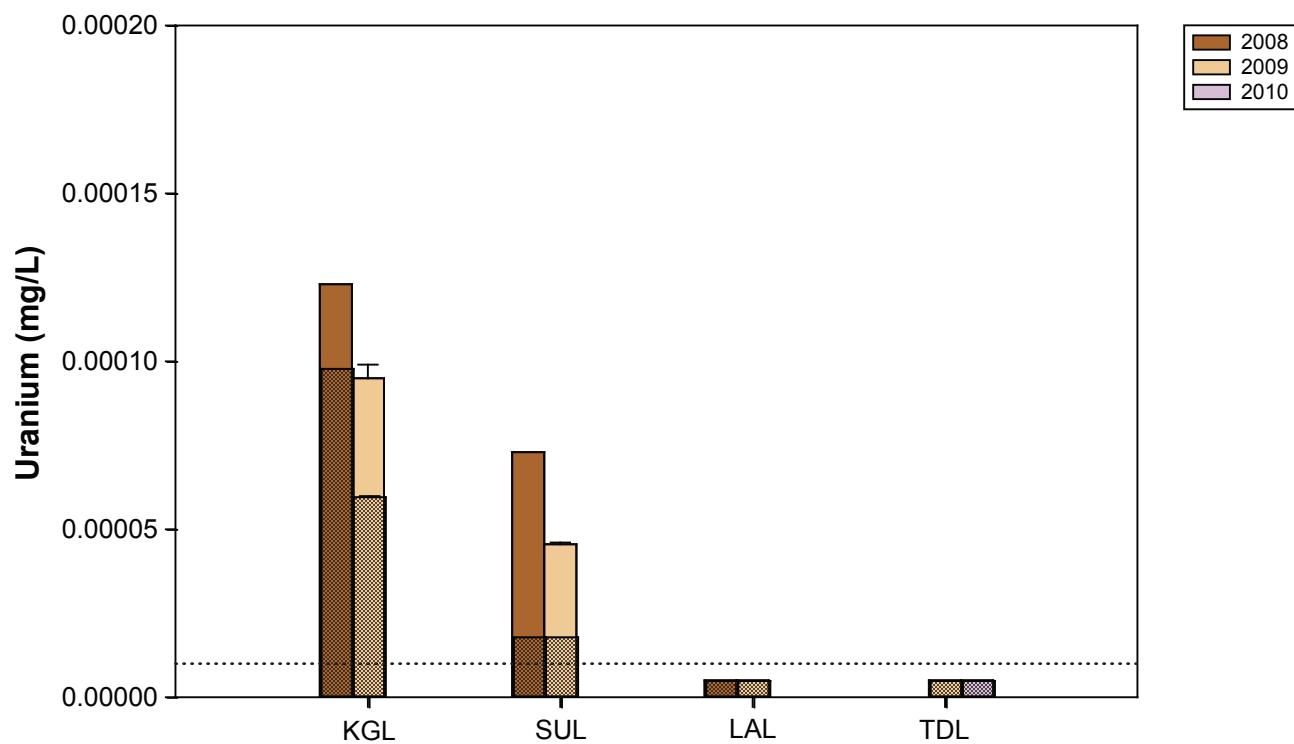


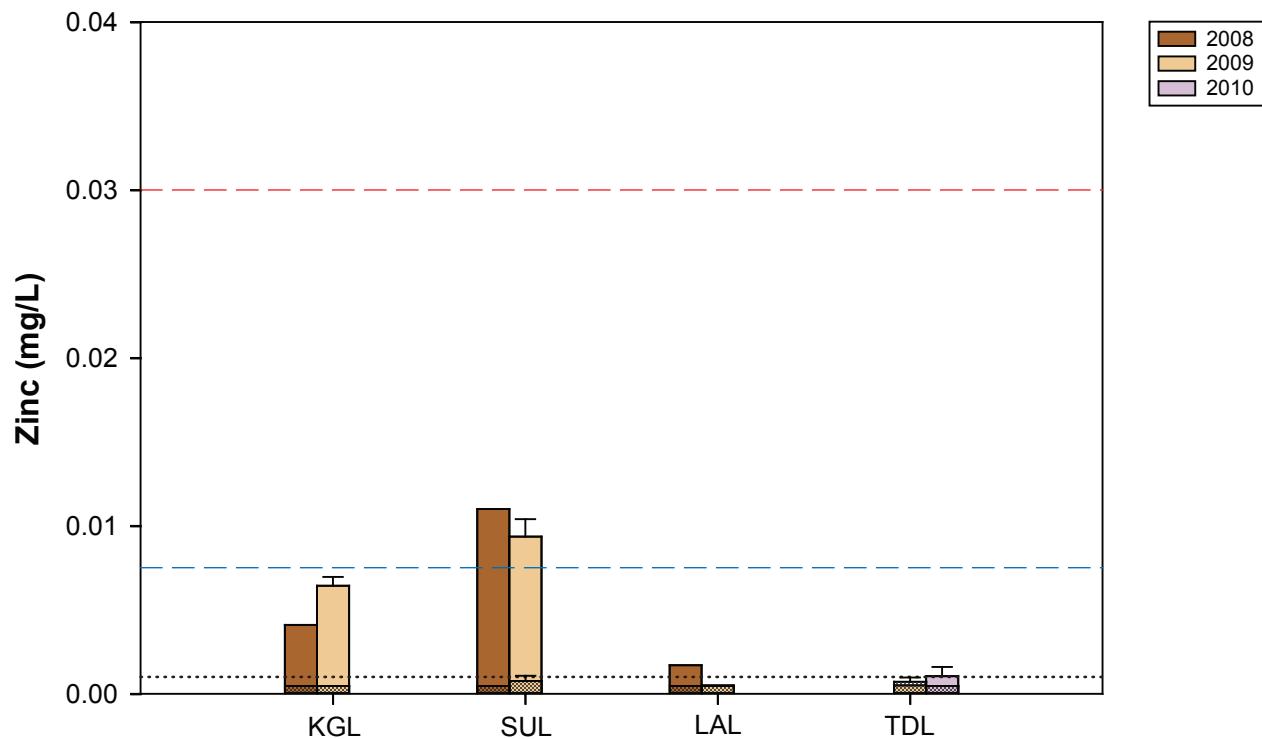
Figure 4.2-29



Notes: Solid bars indicate total thallium concentrations.  
 Patterned bars indicate dissolved thallium concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 Dashed red lines indicate CCME water quality guideline for total thallium (0.0008 mg/L).  
 Dashed blue lines indicate working BC MOE water quality guideline for total thallium (0.0003 mg/L).



Notes: Solid bars indicate total uranium concentrations.  
 Patterned bars indicate dissolved uranium concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 No BC 30-day mean guideline for uranium exists.  
 CCME long term guideline: 0.015 mg/L  
 Working BC MOE maximum guideline: 0.3 mg/L



Notes: Solid bars indicate total zinc concentrations.  
 Patterned bars indicate dissolved zinc concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.  
 Concentrations below the detection limit were plotted as half the detection limit.  
 Dashed red lines indicate CCME water quality guideline for total zinc (0.3 mg/L).  
 Dashed blue lines indicate BC MOE hardness-dependent 30-day mean water quality guideline for total zinc (see Appendix 3.2-1).  
 Median hardness values for lakes were used to set guideline limit.

Turbidity reflected TSS concentrations with high turbidity measured in Knipple Glacier and Sulphurets lakes (range: 30.4 NTU to 57.2 NTU), and lower turbidity measured in West Teigen and Todedada lakes (1.11 NTU to 6.15 NTU; Figure 4.2-6).

#### **4.2.3 Nutrients and Total Organic Carbon**

Nutrient concentrations were generally low in the KSM Project lakes. Nitrate was below the analytical detection limit (0.005 mg/L) in Knipple Glacier, West Teigen, and Todedada lakes. Nitrate in Sulphurets Lake ranged from 0.011 mg/L in 2008 to 0.0089 mg/L in 2009 (Figure 4.2-7).

Ammonia was below the analytical detection limit (0.005 mg/L) in Knipple Glacier, Sulphurets, and Todedada lakes. Ammonia in West Teigen Lake ranged from 0.0071 mg/L in 2008 to 0.010 mg/L in 2009 (Figure 4.2-8).

Total phosphorus concentrations were highly variable between years (Figure 4.2-9). Phosphorus concentrations were higher in 2008 and lakes were classified as mesotrophic (Knipple Glacier), meso-eutrophic (West Teigen), and eutrophic (Sulphurets). In 2009, lakes were classified as oligotrophic (Knipple Glacier, West Teigen, and Todedada) and ultra-oligotrophic (Sulphurets).

Total organic carbon concentrations were below detection in the glacier-fed Knipple Glacier and Sulphurets lakes. TOC concentrations were highest in Todedada Lake (range: 2.08 mg/L to 3.86 mg/L). The TOC concentration in West Teigen Lake was 1.1 mg/L in both 2008 and 2009 (Figure 4.2-10).

#### **4.2.4 Cyanides**

Cyanide concentrations were frequently below the detection limit (0.001 mg/L) in KSM Project lakes (Figure 4.2-11). Detectable cyanide ranged from 0.0015 mg/L in West Teigen Lake (2008) to 0.0024 mg/L in Todedada Lake (2010).

#### **4.2.5 Major Anions**

Major anion concentrations were generally low in lakes in the Project area and followed similar spatial trends to TDS concentrations. Chloride concentrations were below the detection limit (0.5 mg/L) at all lakes in all years (Figure 4.2-12). Fluoride concentrations were typically low, ranging from below detection (Sulphurets Lake) to 0.089 mg/L (West Teigen Lake; 2008; Figure 4.2-13). Sulphate concentrations ranged from 12.3 mg/L (Knipple Glacier; 2009) to 38.5 mg/L (West Teigen Lake; 2009; Figure 4.2-14).

#### **4.2.6 Metals**

Metals with BC provincial or federal guidelines are graphed and presented in Figures 4.2-15 to 4.2-32. On each graph, dissolved concentrations are superimposed on total concentrations, and existing guidelines for the protection of freshwater aquatic life are presented. Dissolved metal concentrations are useful for QA/QC purposes and are useful in determining what fraction of a specific metal is in the dissolved form. Metals dissolved in the water column are more biologically available than metals bound to particulates in the water column.

The lowest concentrations of metals were observed in West Teigen and Todedada lakes and highest concentrations of all metals were observed in Knipple Glacier and Sulphurets lakes. Total concentrations of antimony, cadmium, chromium, cobalt, copper, iron, mercury, thallium, uranium, and zinc were frequently below their analytical detection limits in West Teigen and Todedada lakes. The total concentrations of most metals of interest at most lake sites followed the spatial trend observed in TSS concentrations (Figure 4.2-5), indicating that total metal concentrations were associated with sediment loads. Metals present as oxyanions at the near-neutral pH of KSM Project

lakes (i.e., antimony, molybdenum, selenium, and uranium) had a higher proportion of the total concentration in the dissolved fraction. Comparison to Water Quality Guidelines

Water quality parameters were compared to CCME and approved or working BC MOE 30-day mean water quality guidelines for the protection of freshwater aquatic life (BC MOE 2006b, 2006a; CCME 2011). BC acute (maximum) water quality guidelines were used for parameters where a chronic (30-day mean) guideline did not exist.

The mean magnitudes by which parameter concentrations naturally exceeded guidelines and the frequency (percentage) of collected samples that exceeded guidelines are presented in Table 4.2-1. Fifteen CCME guidelines, six BC chronic guidelines, and 12 BC acute guidelines are presented in Table 4.1-1. Guidelines defined for ammonia, nitrate, nitrite, phosphorus, chloride, free and WAD cyanide, total beryllium, total boron, and total molybdenum were not included in the table as exceedances were not observed. The mean magnitude of exceedance was not calculated for parameters where the overall mean concentration did not exceed a given guideline. For those parameters, only the frequency of exceedances at sites within a watershed is presented. CCME and/or BC MOE guidelines for total and dissolved aluminum, total cadmium, total chromium, total copper, total iron, total lead, total silver, and total zinc were exceeded at a minimum of one time at one site. The magnitude and frequency of naturally occurring exceedances was highest in Sulphurets Lake, which reflects the location within a highly mineralized area. The magnitude and frequency of exceedances was lowest in West Teigen and Todedada lakes.

#### **4.2.7 Quality Assurance and Quality Control (QA/QC)**

An equipment blank of the 5 L acid-washed GO-FLO sampler was collected in 2009 at KSM Camp using distilled water supplied by ALS Environmental Laboratories and the data are presented in Appendix 4.2-1.

Several parameters for the equipment blank were above the analytical detection limit and total aluminum and total lead concentrations exceeded water quality guidelines. To determine if the GO-FLO transferred contamination to the water samples, the lake data collected immediately after the equipment blank were examined. The first sample was collected 1 m below the surface at West Teigen Lake and none of the exceedances evident in the equipment blank were present. This result indicates that the contamination occurred while collecting the blank at camp, potentially from dust particles in the air, during the shipping process, or as the sample was handled at the laboratory.

One set of field duplicates was collected in 2009 for the KSM Project lakes and the data are presented in Appendix 4.2-2. Twenty-eight percent ( $n=13$ ) of the 47 RPD calculations were greater than 20%. RPD calculations greater than 20% were primarily for concentrations of total metals.

Total metal RPDs greater than 20% reflected high natural variability (environmental heterogeneity) in TSS concentrations and turbidity rather than analytical or sampling errors.

**Table 4.2-1. Summary of Lake Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2008 to 2010**

Parameter Guideline Jurisdiction	pH 6.5 - 9 CCME = BC Maximum	Fluoride (F) Hardness-dependent BC Maximum	Fluoride (F) 0.12 mg/L CCME	Sulphate (SO <sub>4</sub> ) 100 mg/L BC Maximum	Aluminum (Al) pH-dependent CCME	Dissolved Aluminum (Al) pH-dependent BC Maximum	Arsenic (As) 0.005 mg/L CCME = BC Maximum	Cadmium (Cd) Hardness-dependent CCME = BC Maximum
Watershed N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
KGL 4	0 -	0 -	0 -	0 -	100 19.1	0 -	0 -	100 1.8
LAL 3	0 -	0 -	0 -	0 -	33 -	0 -	0 -	0 -
SUL 3	0 -	0 -	0 -	0 -	100 19.1	100 1.6	0 -	100 4.9
TDL 4	0 -	0 -	0 -	0 -	0 -	0 -	0 -	0 -

Parameter Guideline Jurisdiction	Chromium (Cr) 0.001 mg/L CCME = BC Maximum	Cobalt (Cu) 0.004 mg/L BC 30-d Average	Copper (Cu) Hardness-dependent BC 30-d Average	Copper (Cu) Hardness-dependent CCME	Iron (Fe) 1 mg/L BC Maximum	Iron (Fe) 0.3 mg/L CCME	Dissolved Iron (Fe) 0.35 mg/L BC Maximum	Lead (Pb) Hardness-dependent BC 30-d Average
Watershed N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
KGL 4	0 -	0 -	0 -	0 -	100 1.5	100 5.0	0 -	0 -
LAL 3	0 -	0 -	0 -	0 -	0 -	0 -	0 -	0 -
SUL 3	67 1.3	0 -	100 4.9	100 4.9	100 2.0	100 6.7	0 -	0 -
TDL 4	0 -	0 -	0 -	0 -	0 -	0 -	0 -	0 -

Parameter Guideline Jurisdiction	Lead (Pb) Hardness-dependent CCME	Manganese (Mn) Hardness-dependent BC Maximum	Mercury (Hg) 0.00002 mg/L BC 30-d Average	Mercury (Hg) 0.000026 mg/L CCME	Nickle (Ni) Hardness-dependent BC Maximum	Nickle (Ni) Hardness-dependent CCME	Selenium (Se) 0.001 mg/L CCME	Selenium (Se) 0.002 mg/L BC 30-d Average
Watershed N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
KGL 4	0 -	0 -	0 -	0 -	0 -	0 -	0 -	0 -
LAL 3	0 -	0 -	0 -	0 -	0 -	0 -	0 -	0 -
SUL 3	100 2.3	0 -	0 -	0 -	0 -	0 -	0 -	0 -
TDL 4	0 -	0 -	0 -	0 -	0 -	0 -	0 -	0 -

Parameter Guideline Jurisdiction	Silver (Ag) Hardness-dependent BC 30-d Average	Silver (Ag) 0.0001 mg/L CCME	Thallium (Tl) 0.0003 mg/L BC Maximum	Thallium (Tl) 0.0008 mg/L CCME	Zinc (Zn) Hardness-dependent BC 30-d Average	Zinc (Zn) 0.03 mg/L CCME
Watershed N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
KGL 4	25 -	0 -	0 -	0 -	0 -	0 -
LAL 3	33 -	0 -	0 -	0 -	0 -	0 -
SUL 3	33 1.3	33 -	0 -	0 -	100 1.3	0 -
TDL 4	0 -	0 -	0 -	0 -	0 -	0 -

## 5. Summary

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### 5.1 STREAMS

The hydrological regime was a major factor in the water quality of streams in the KSM Project area. Increased discharge during freshet, glacial melt and increased rainfall events diluted concentrations of major ions resulting in the low levels of total dissolved solids, hardness, conductivity and alkalinity during the summer months. Freshet, glacial melt, and heavy fall rains resulted in increased sediment load and transport, which was reflected in an increase in concentrations of total suspended solids and turbidity in July and September. Due to the mineralization of the Project area, increased sediment loading often resulted in elevated metal concentrations.

Particulate and particle-bound metals were transported with suspended sediments resulting in several total metal concentrations naturally exceeding federal or provincial water quality guidelines. These metals largely followed similar spatial and temporal patterns as total suspended solids, with higher concentrations occurring during the summer and early fall. The exceptions were the most upstream sites in Mitchell Creek (MC1), just below the toe of the Mitchell Glacier (MC1A and MC1A-US), and the north and south slopes of the Mitchell Glacier (IC1 and SF1) where natural ARD was occurring. Metal concentrations at these sites were highest during the low flow periods of winter, early spring and late fall. With the exception of the acidic upper Mitchell sites, the majority of streams in the Project area were slightly basic, with low to moderate buffering capacity and primarily soft to moderately hard water.

Sites within the Mitchell and Sulphurets watersheds typically had higher concentrations of various parameters, particularly metals, and greater temporal and spatial variation in water chemistry was observed near the deposits of the Project than sites within the Teigen, Bell-Irving, Treaty, and Scott (reference) creeks, and Unuk River watersheds. Sites in the Mitchell and Sulphurets watersheds had greater frequencies of exceedances of the provincial and federal water quality guidelines and greater magnitudes of exceedances than sites in the other watersheds. The fewest parameters exceeding water quality guidelines and lowest frequencies and magnitudes of exceedances were observed in the Teigen Creek watershed.

Within the Mitchell Creek watershed, the highest concentrations of various parameters were observed at the upstream Mitchell Creek sites and the lowest concentrations at the McTagg Creek sites. Concentrations of metals in Mitchell Creek decreased with the distance downstream due to dilution from the catchment. Water quality in Unuk River was likely affected by the inflow from Mitchell and Sulphurets creeks, since concentrations of TSS and metals at UR1, the site located downstream from the Sulphurets Creek confluence, were higher than those at UR1A, located upstream.

### 5.2 LAKES

The four lakes in the KSM Project study area were characterized by moderate hardness levels and slightly alkaline water. Knipple Glacier and Sulphurets lakes are glacier-fed lakes, located at higher altitudes with sparse riparian vegetation and organic inputs. In contrast, West Teigen and Todedada lakes are located at lower altitudes surrounded by a thick vegetated riparian boundary. Turbidity and TSS concentrations were much higher at Sulphurets Lake (SUL), and to a lesser degree at Knipple Glacier Lake (KGL), than at West Teigen Lake (LAL) and Todedada Lake (TDL). Todedada and West Teigen lakes had higher concentrations of TOC. Naturally elevated concentrations of particulate-associated metals were observed at Sulphurets and Knipple Glacier lakes, which also had high concentrations of TSS. The highest concentrations were observed at Sulphurets Lake which is proximal to the deposit area. Total and dissolved aluminum, and total copper, cadmium, chromium, and iron exceeded the BC and/or CCME guidelines at Sulphurets and/or Knipple Glacier lakes.

## References

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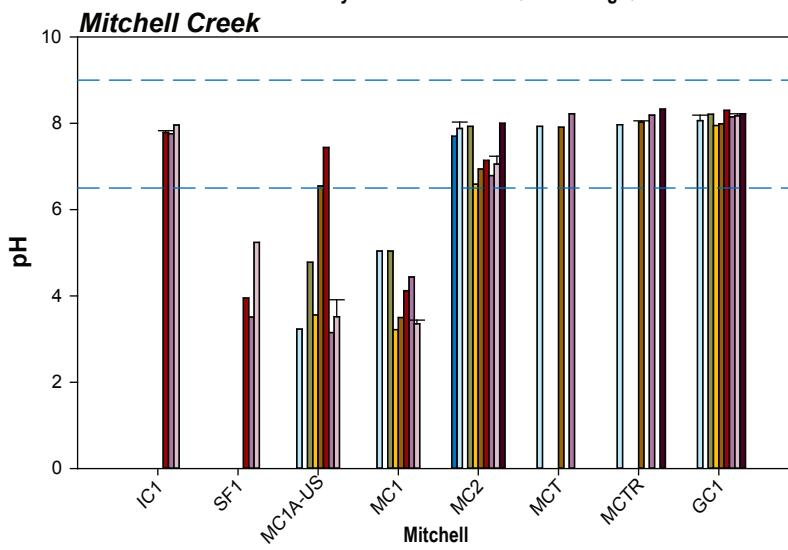
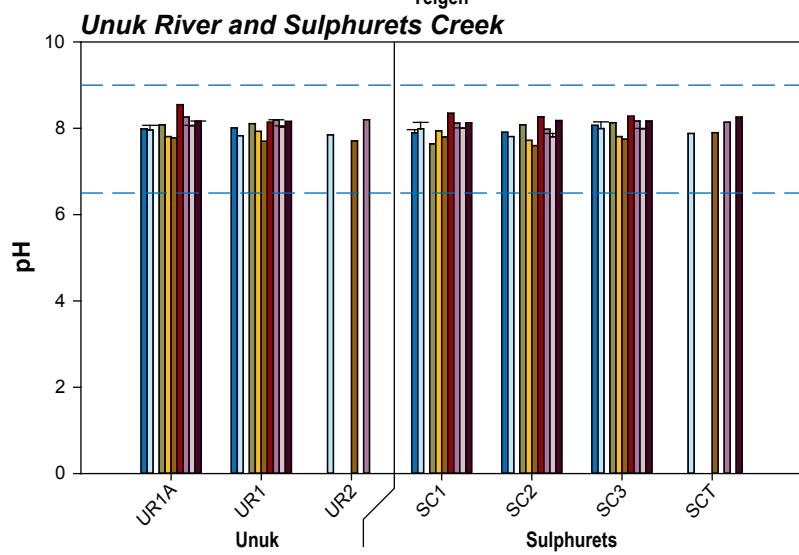
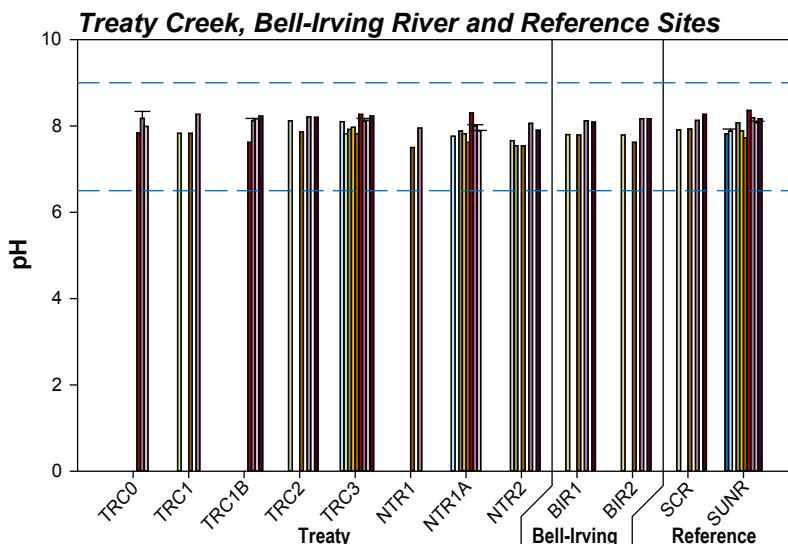
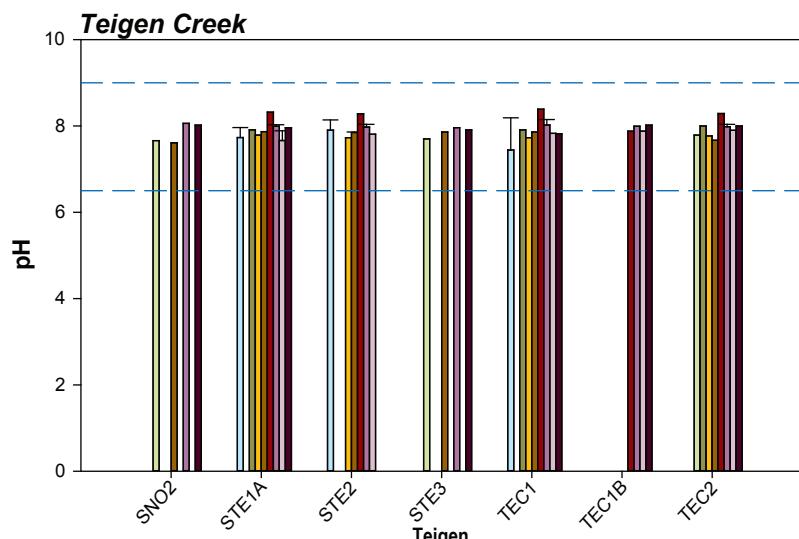
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- Rescan. 2010. *KSM Project: 2009 Water Quality Baseline Report*. Vancouver, British Columbia: Seabridge Gold Inc.
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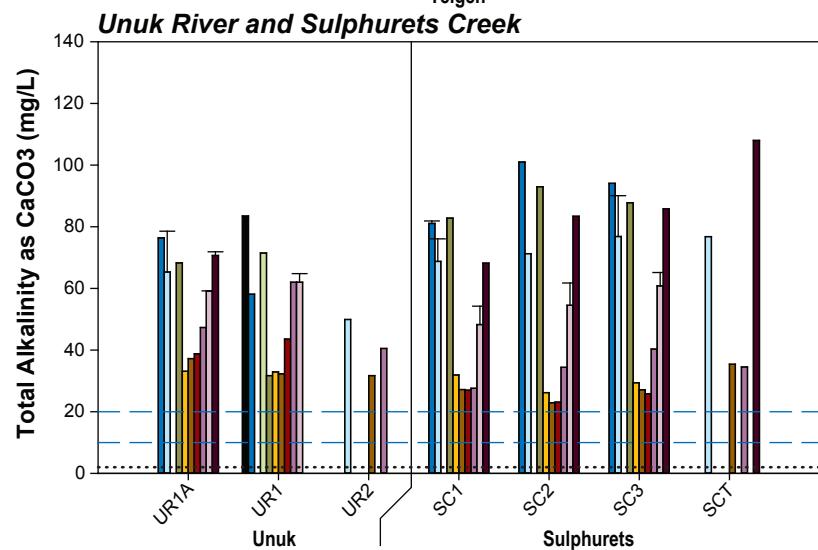
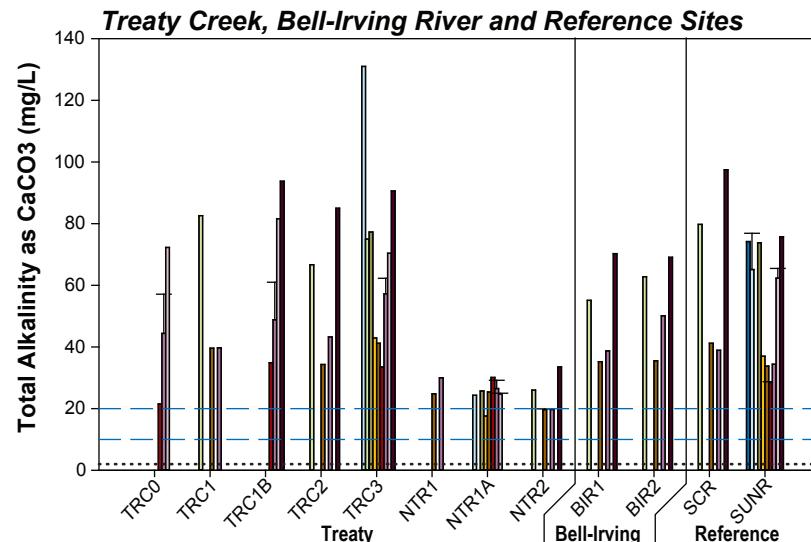
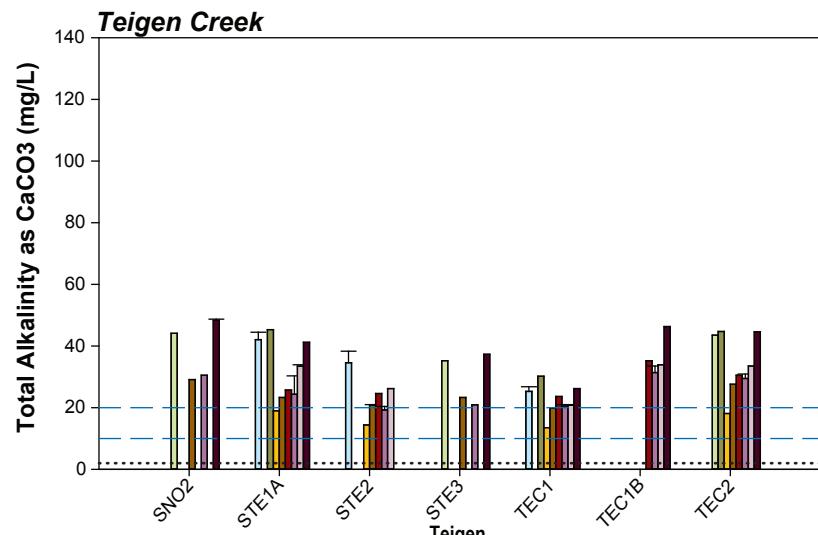
## Appendix 1-1

### Stream Water Quality Results, KSM Project, 2011



Notes: Error bars represent standard error of the mean.

Blue dashed lines indicate the upper (pH=9) and lower (pH=6.5) limits of the CCME and BC MOE water quality guideline for pH.

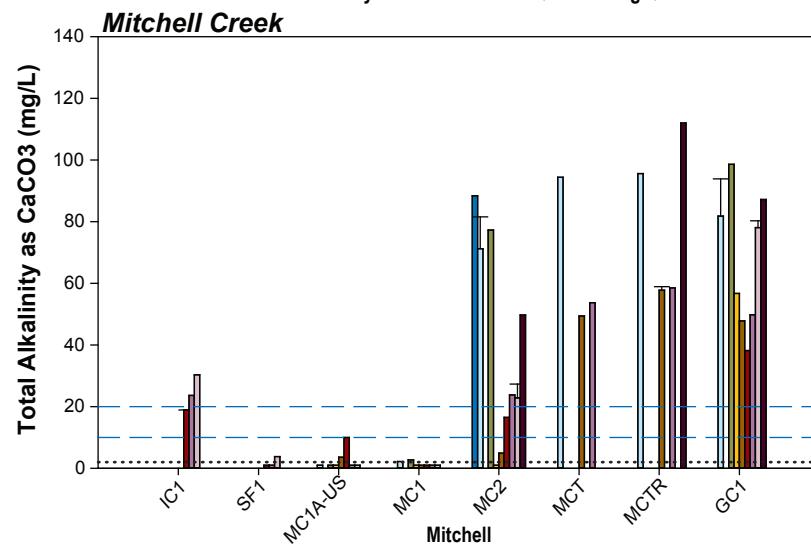


Notes: Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

No CCME guideline exists.



Blue dashed lines indicate BC MOE working water quality guideline ranges for sensitivity to acid inputs.

< 10 mg/L as  $\text{CaCO}_3$ , highly sensitive to acid inputs

10-20 mg/L as  $\text{CaCO}_3$ , moderately sensitive to acid inputs

> 20 mg/L as  $\text{CaCO}_3$ , low sensitivity to acid inputs

Figure 1-2

## Total Alkalinity in KSM Project Streams, 2011

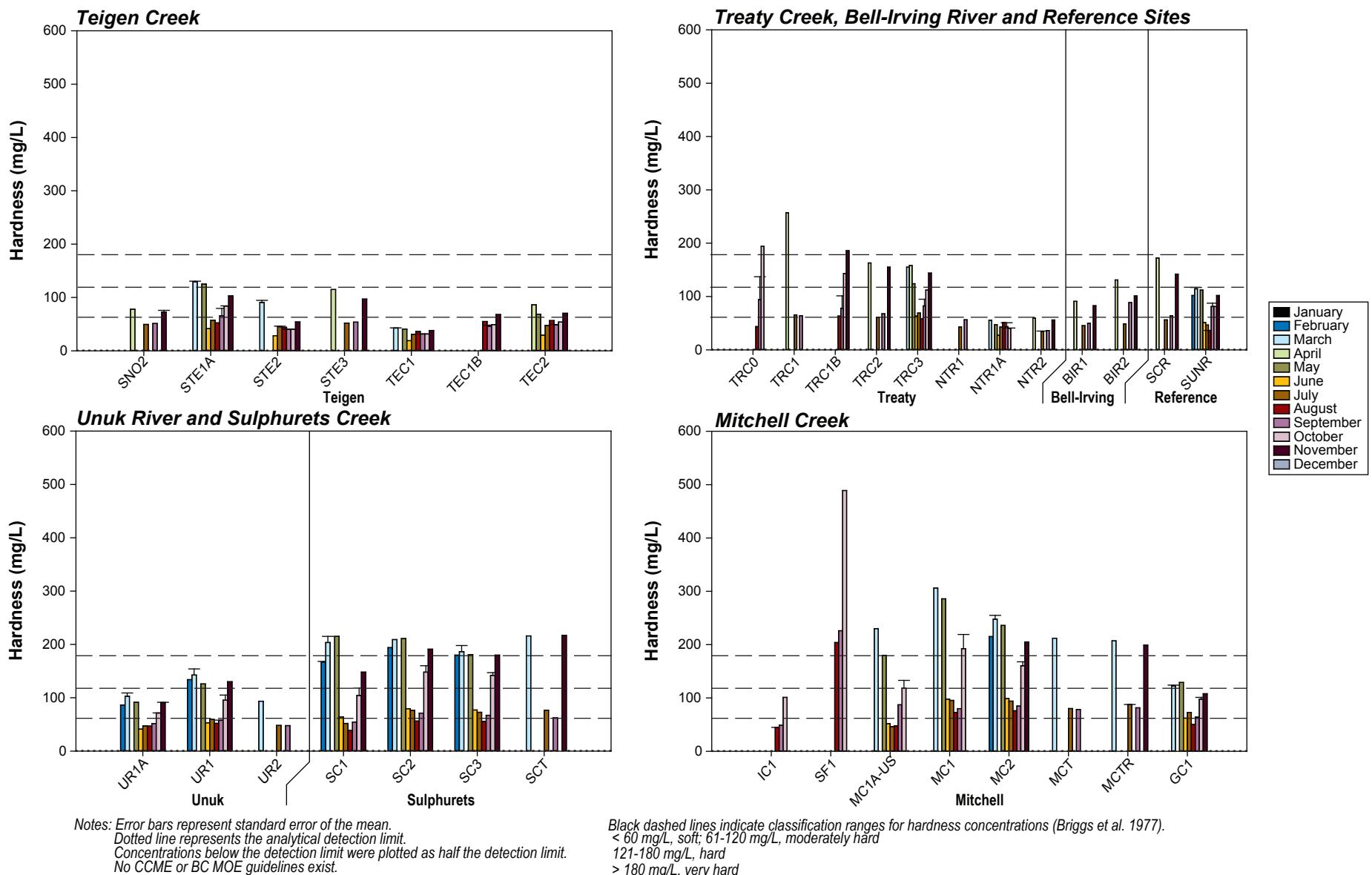
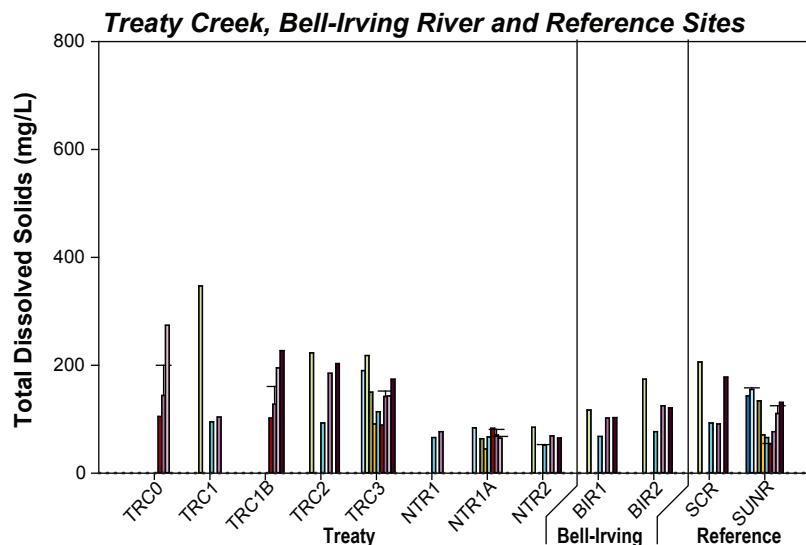
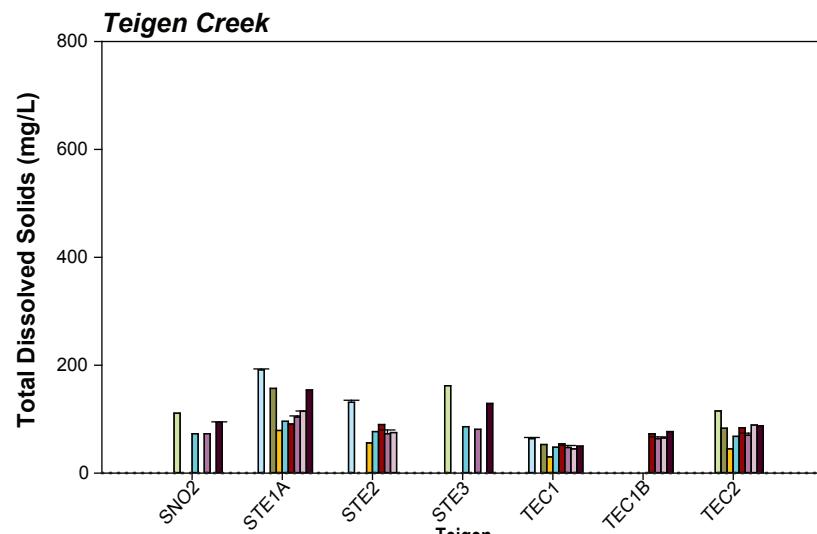
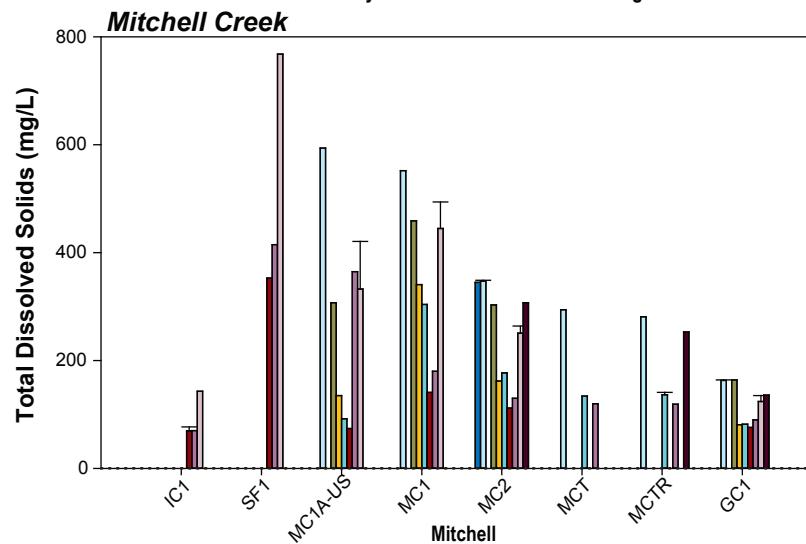
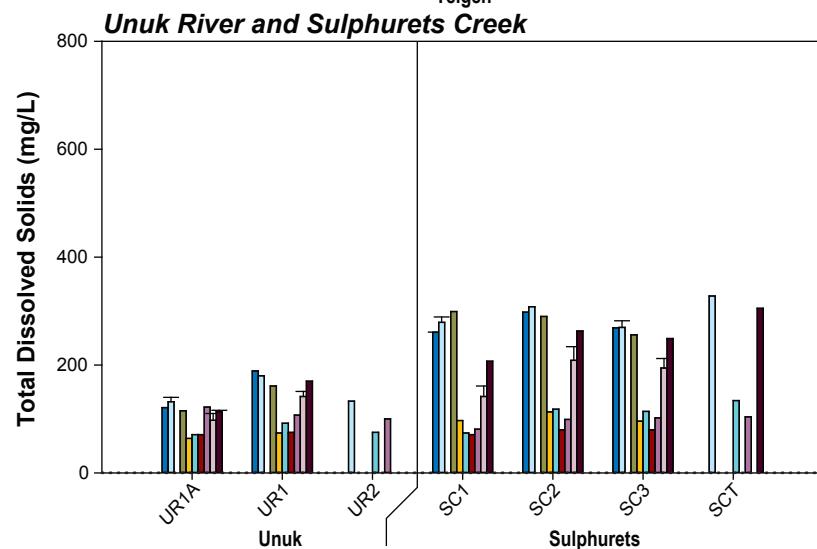


Figure 1-3



- January
- February
- March
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- July
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- October
- November
- December



Notes: Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.  
Concentrations below the detection limit were plotted as half the detection limit.  
Water quality guidelines for dissolved solids are dependent on background levels.

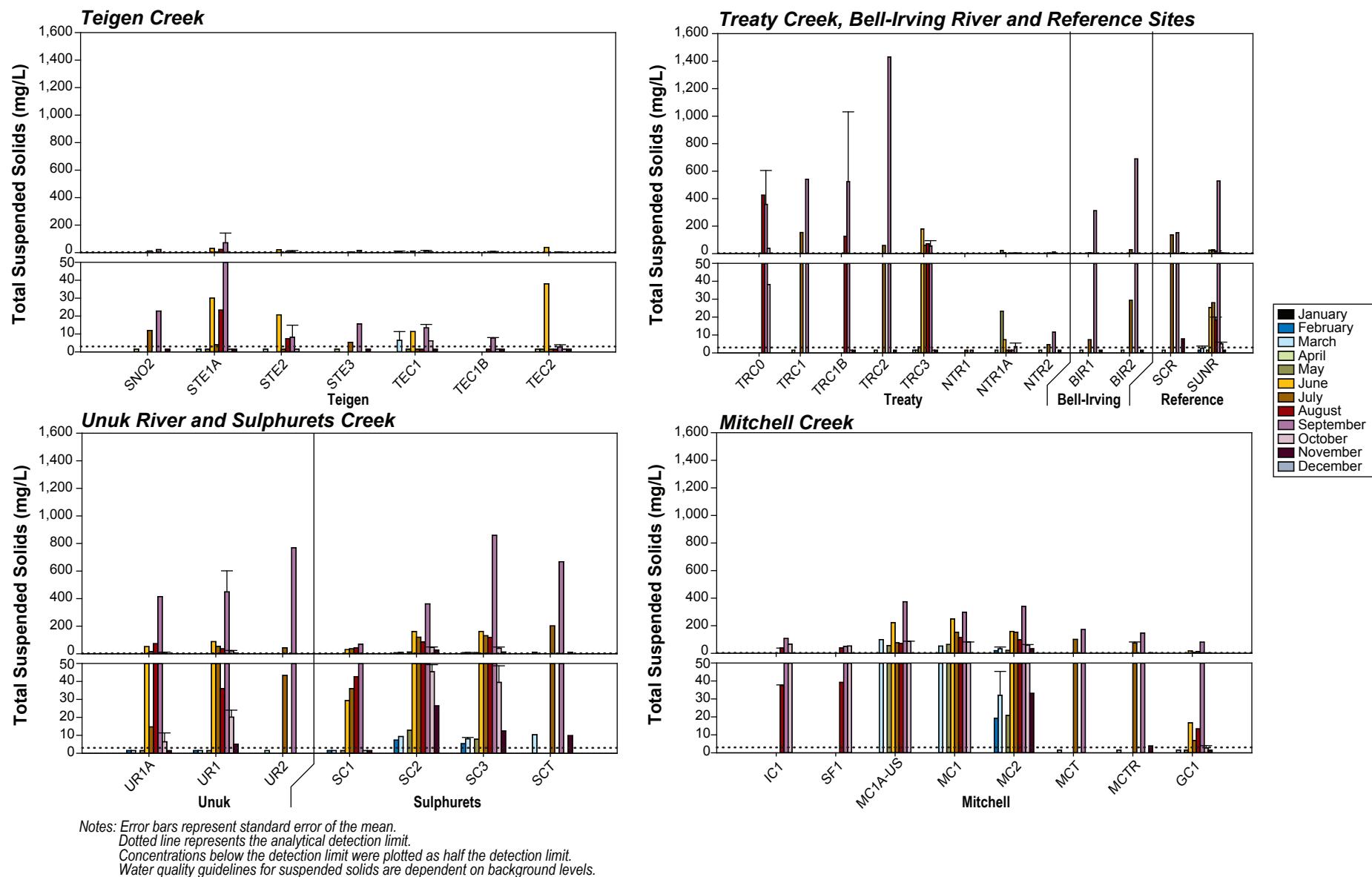
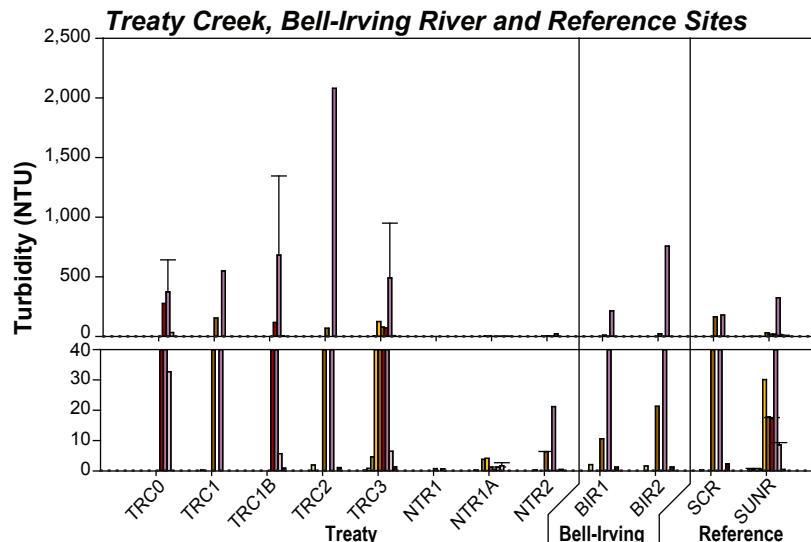
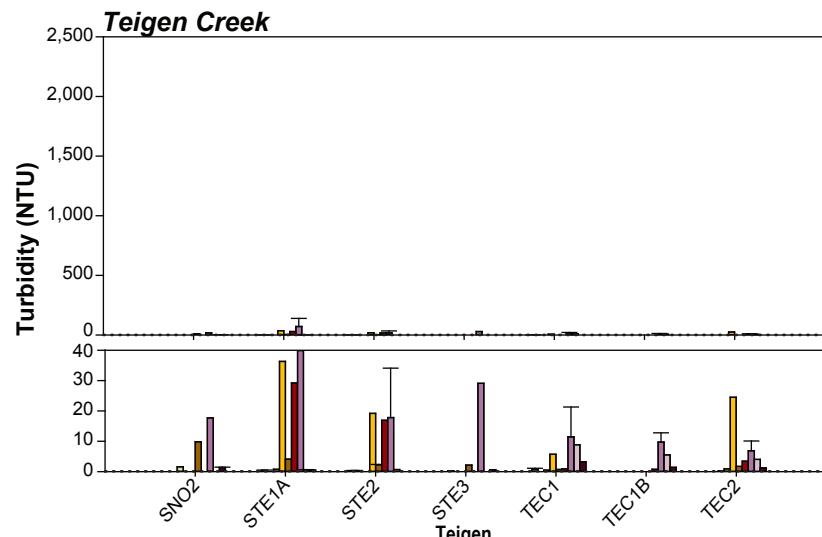
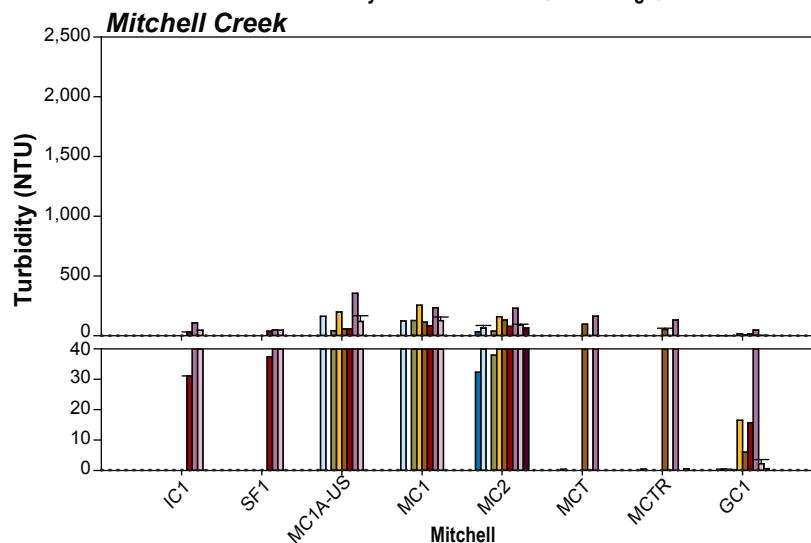
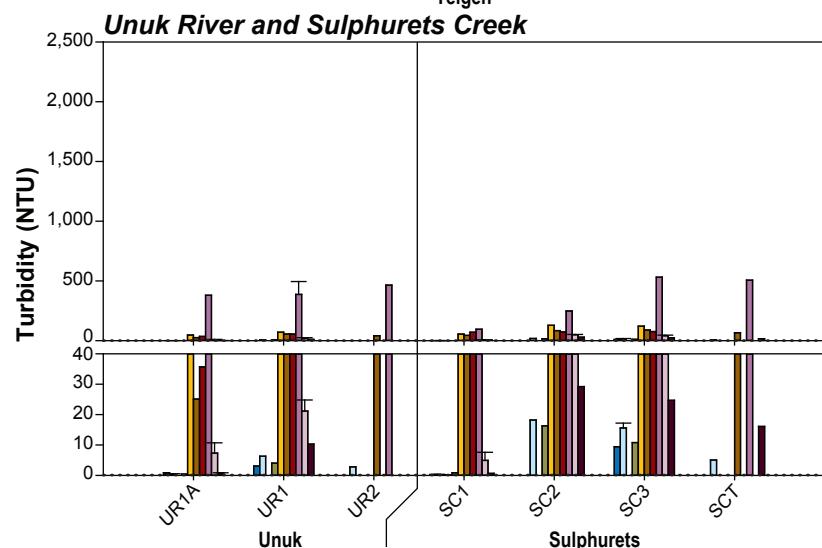


Figure 1-5



- January
- February
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- May
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- October
- November
- December



Notes: Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Water quality guidelines for turbidity are dependent on background levels.

## Turbidity in KSM Project Streams, 2011

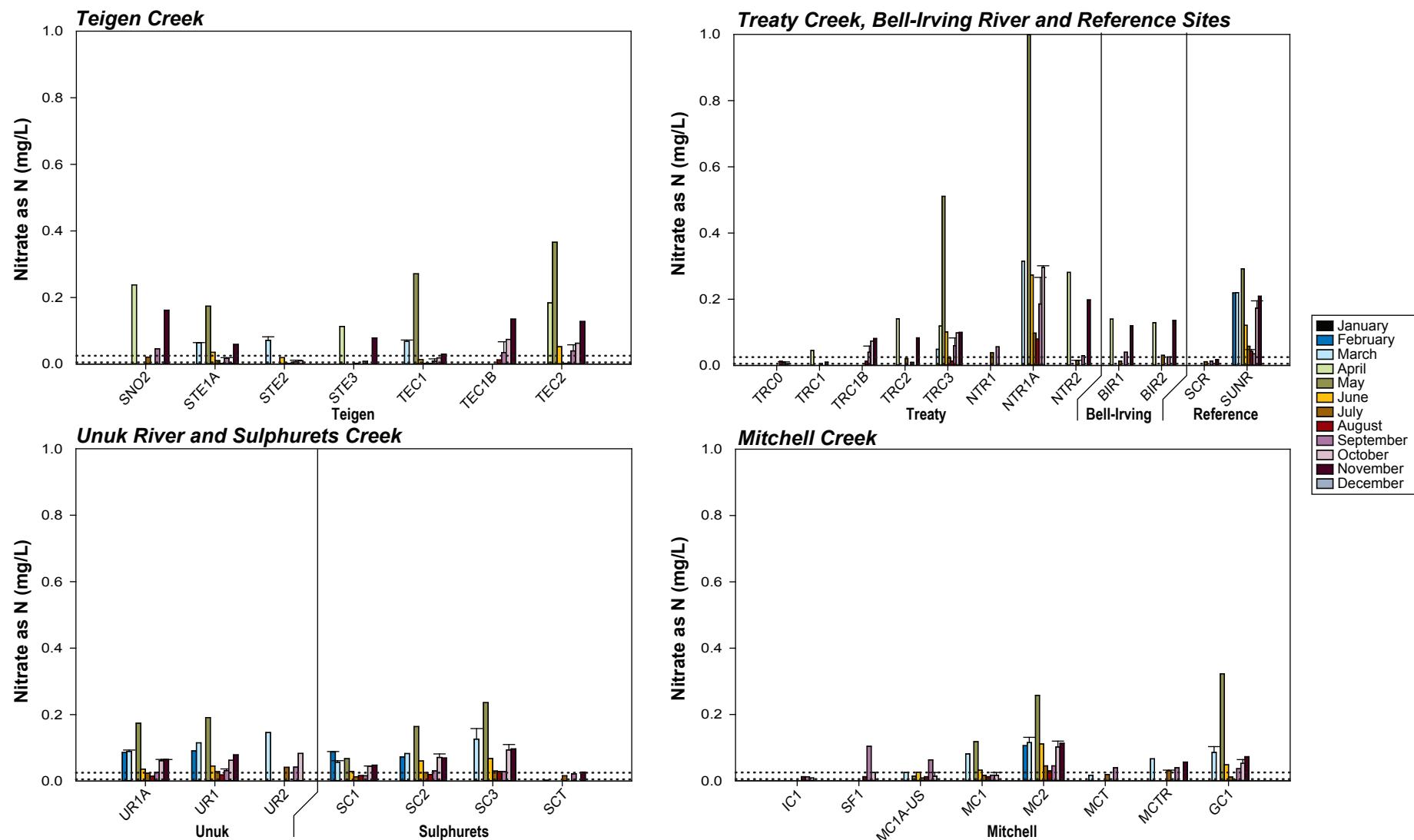
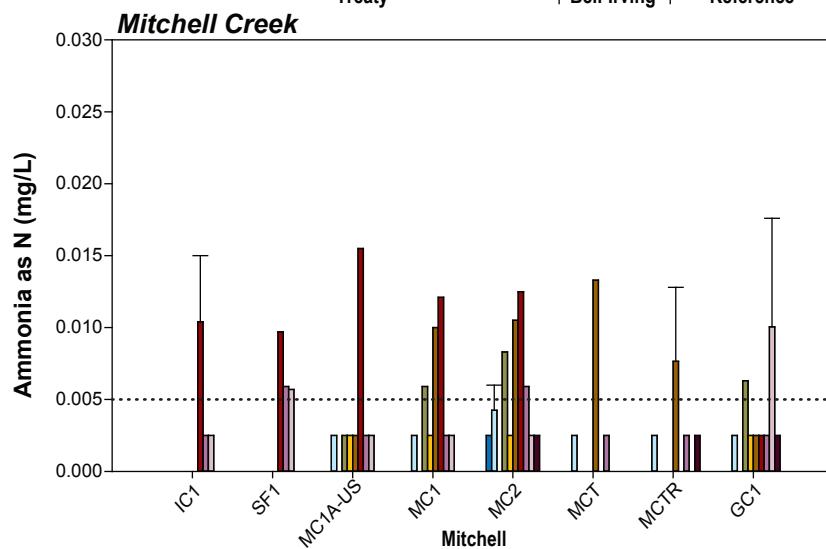
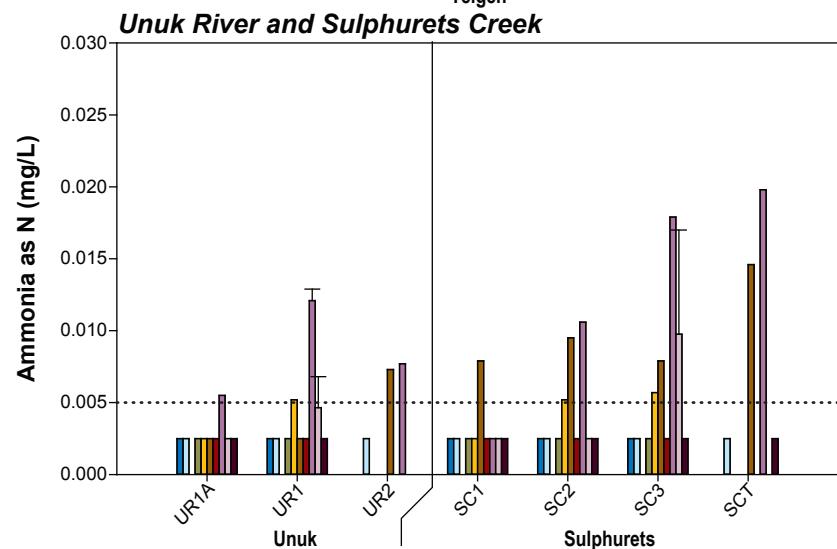
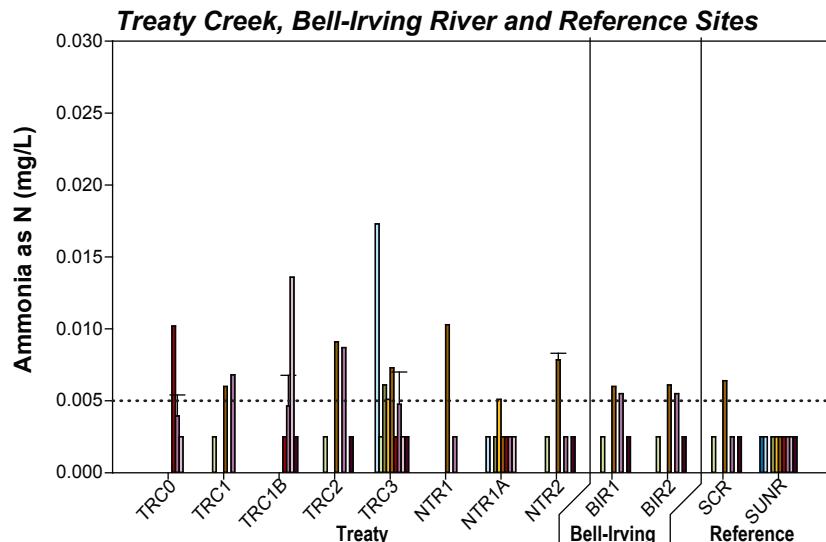
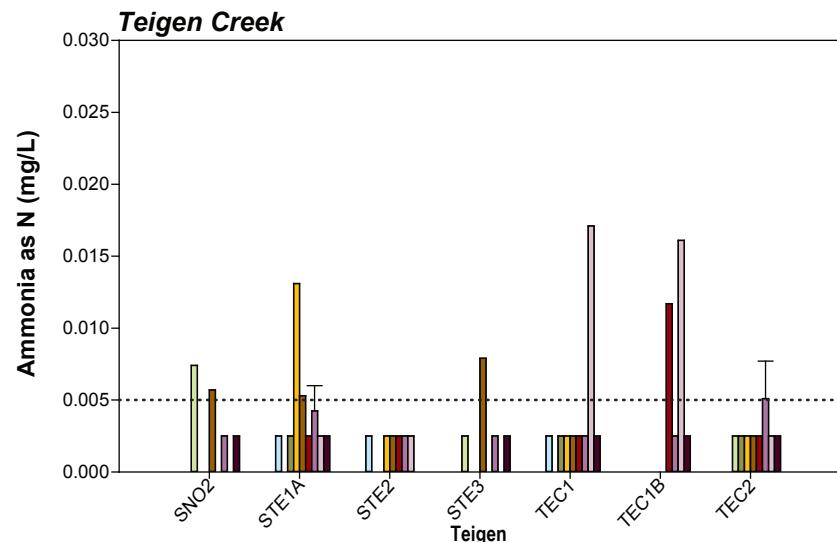


Figure 1-7

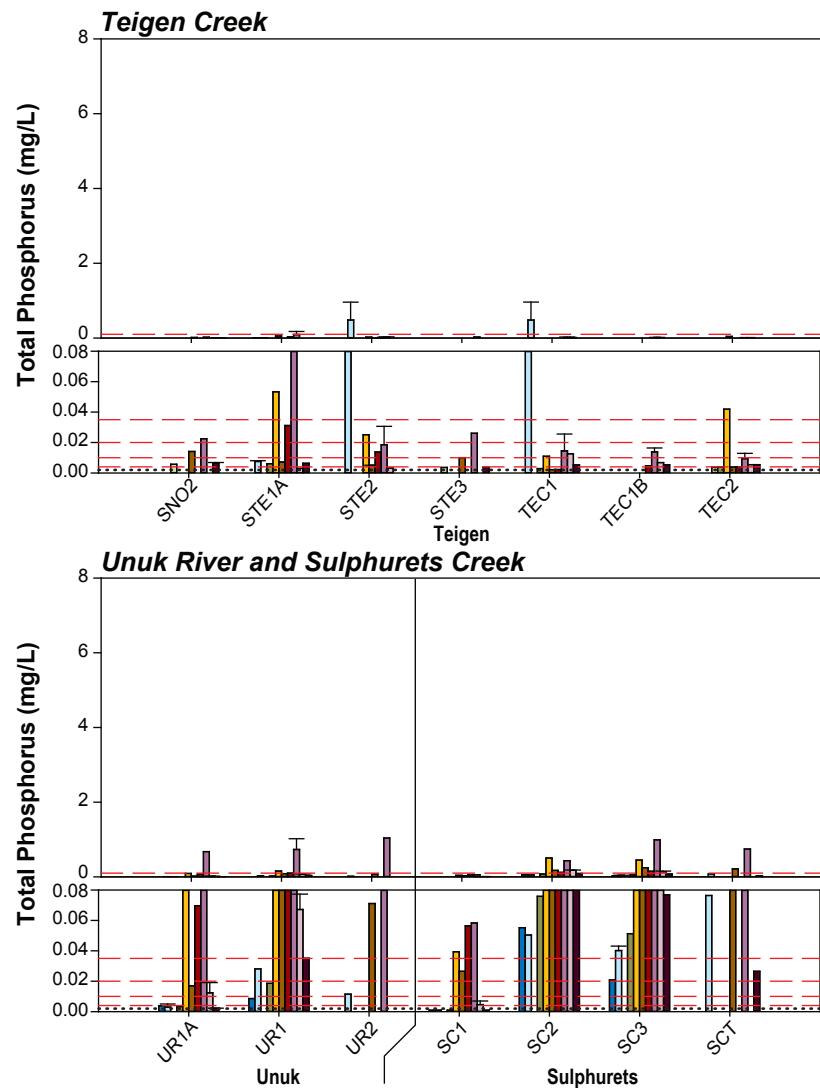


Notes: Error bars represent the standard error of the mean.

Dotted line indicates the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

The BC 30 day mean and CCME water quality guidelines for ammonia are pH- and temperature-dependent (see Appendix 3.2-1).



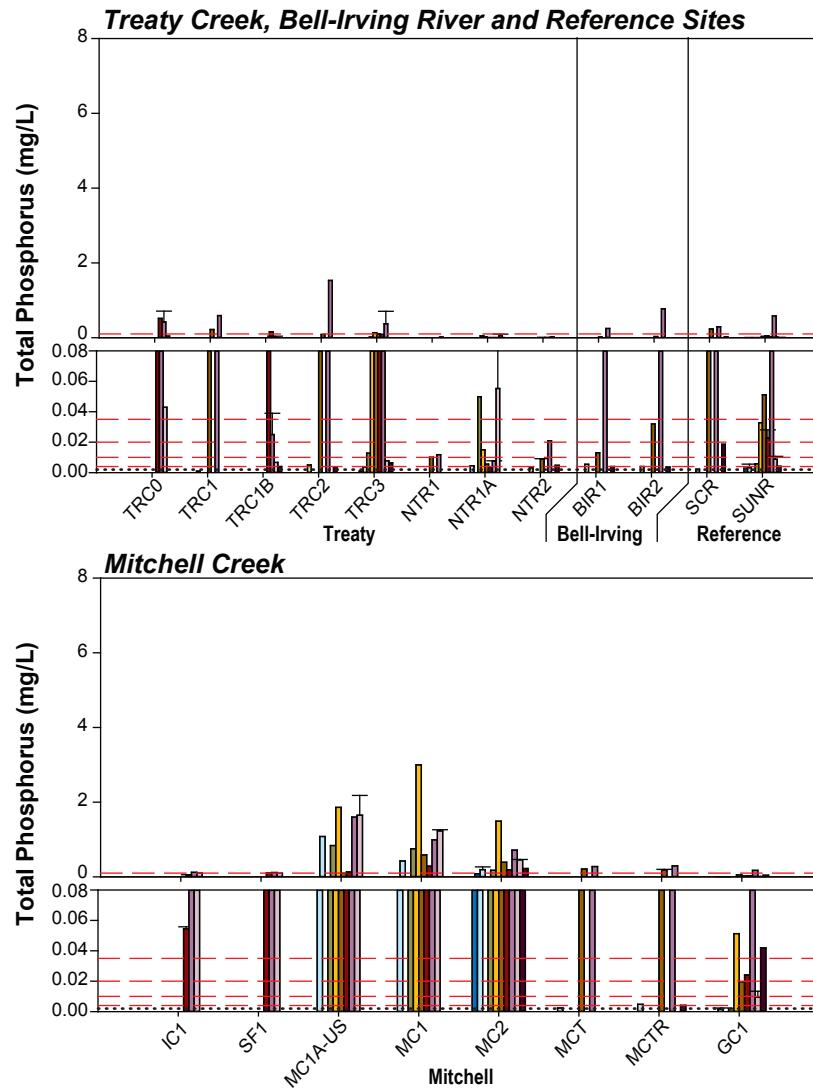
Notes: Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

No BC MOE guideline for total phosphorus in streams exists.

Red dashed lines indicate CCME trigger ranges for total phosphorus in Canadian lakes and rivers.



Hyper-eutrophic >0.1 mg/L

Eutrophic 0.035 to 0.1 mg/L

Meso-eutrophic 0.02 to 0.035 mg/L

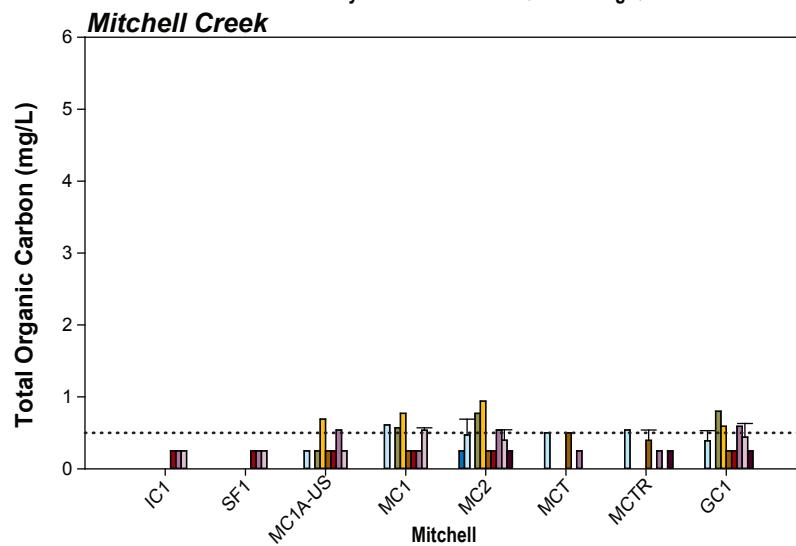
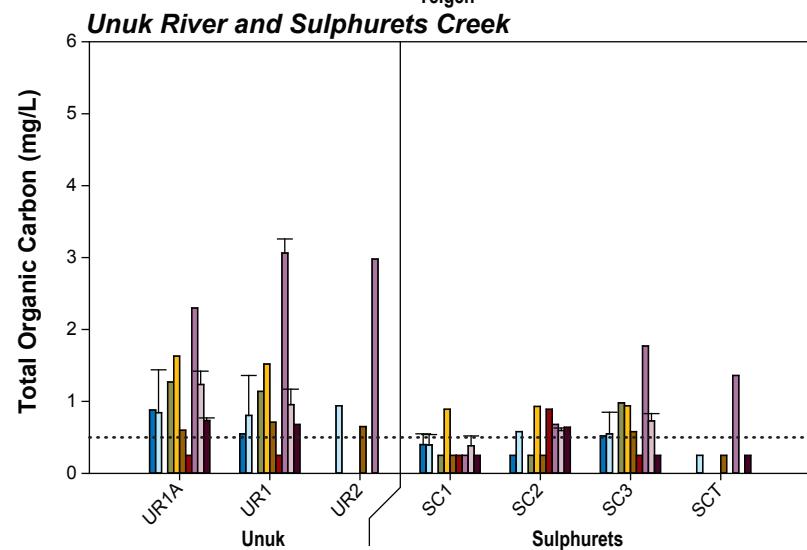
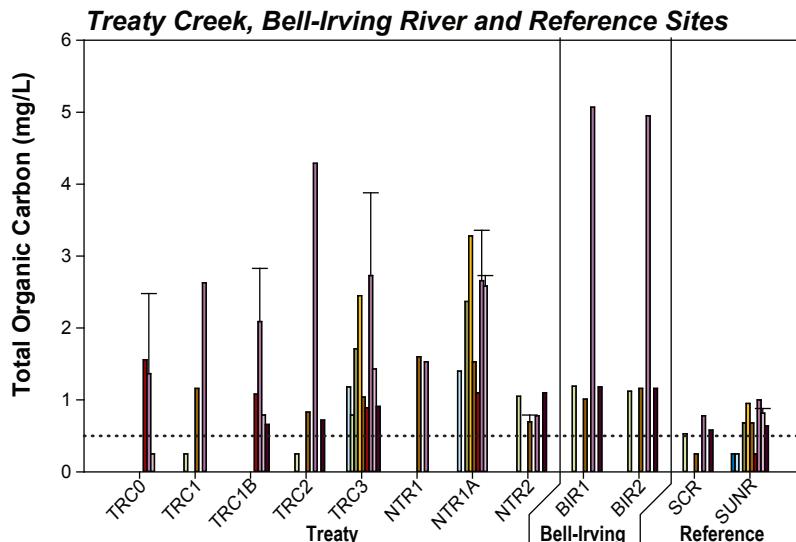
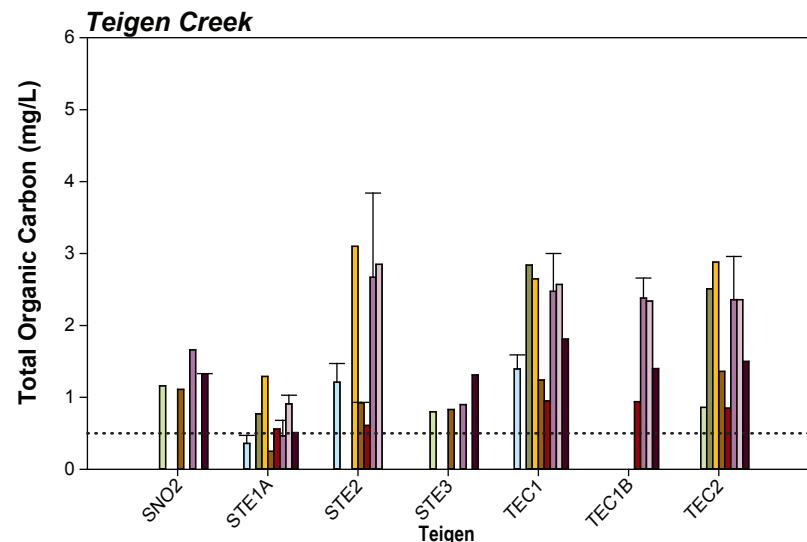
Mesotrophic 0.01 to 0.02 mg/L

Oligotrophic 0.004 to 0.01 mg/L

Ultra-oligotrophic <0.004 mg/L

January  
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November  
December

Figure 1-9



Notes: Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.  
Concentrations below the detection limit were plotted as half the detection limit.

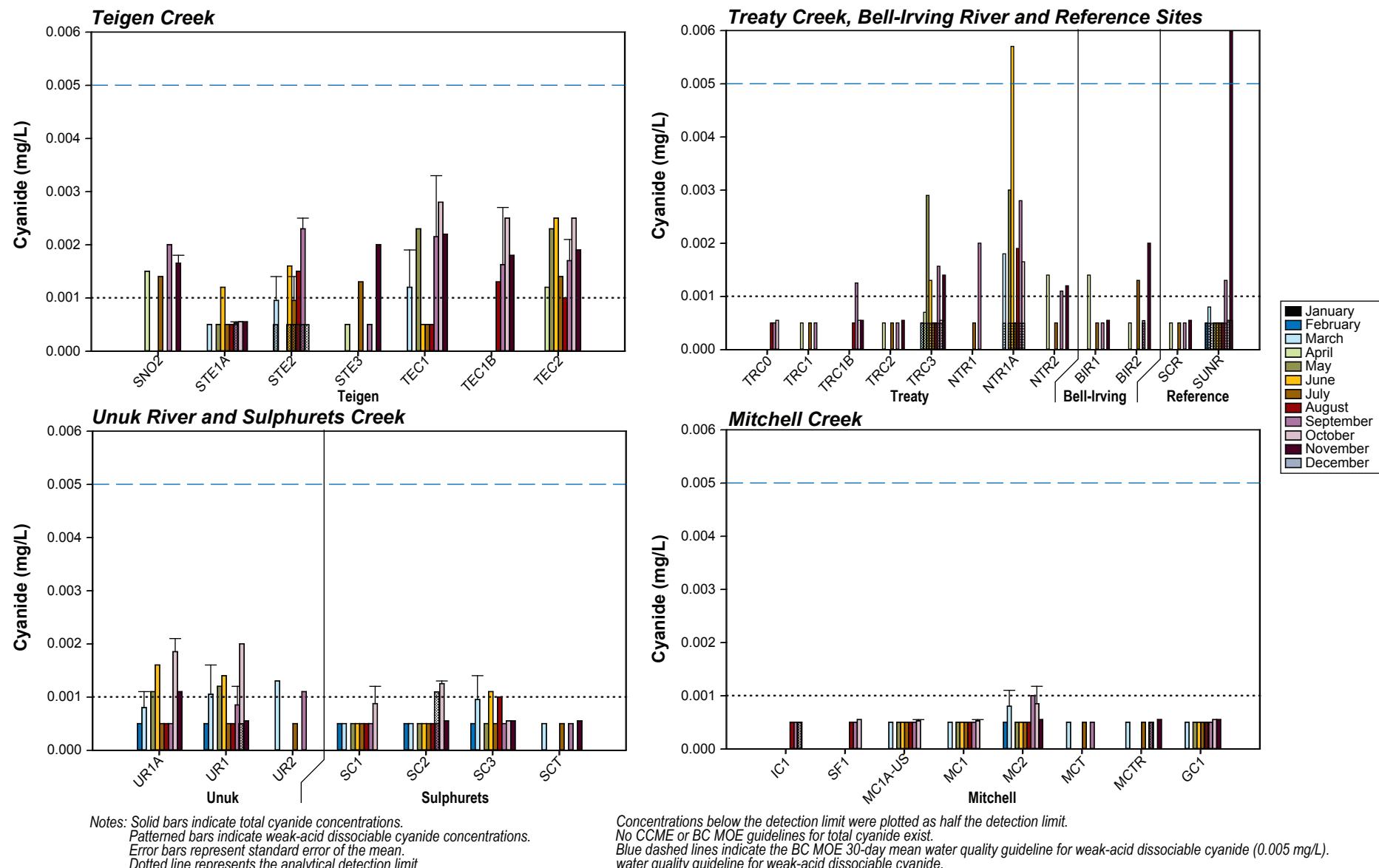
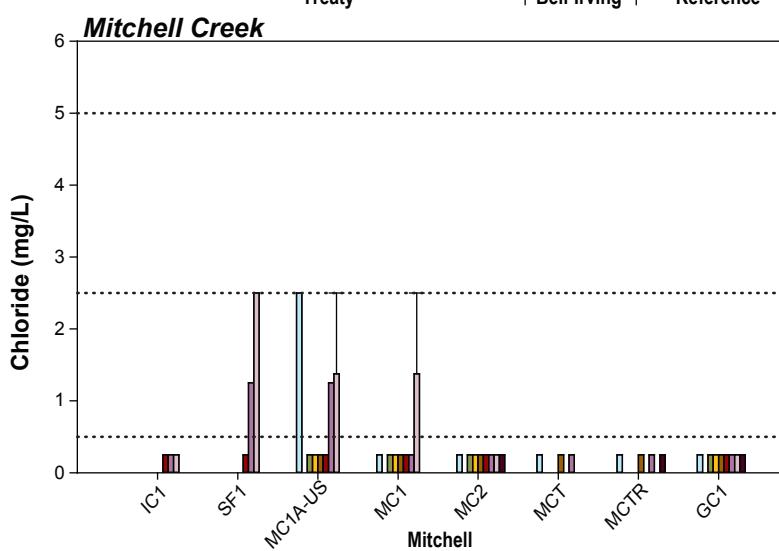
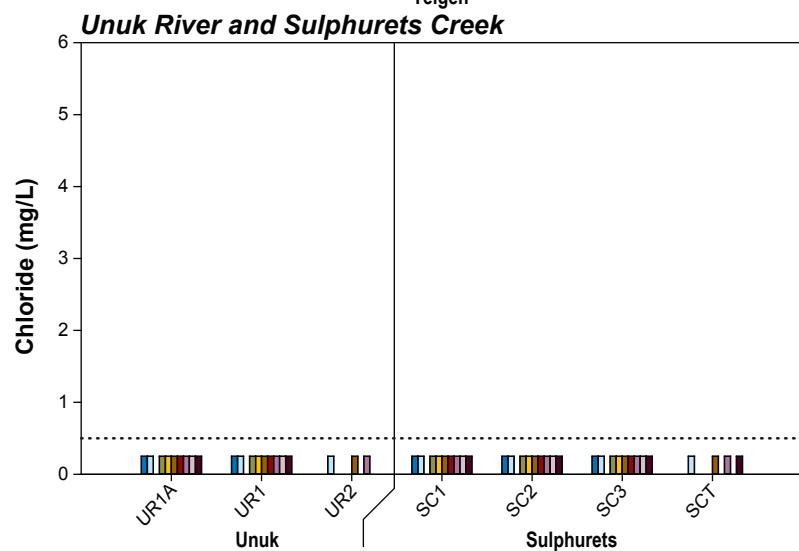
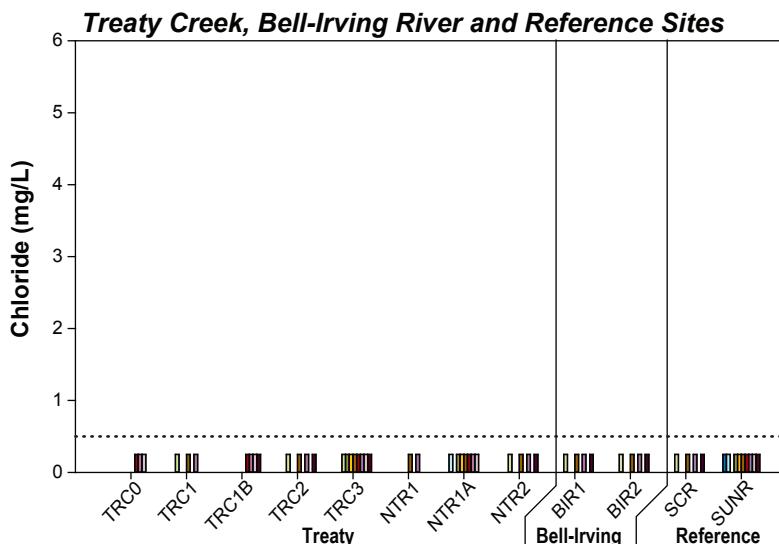
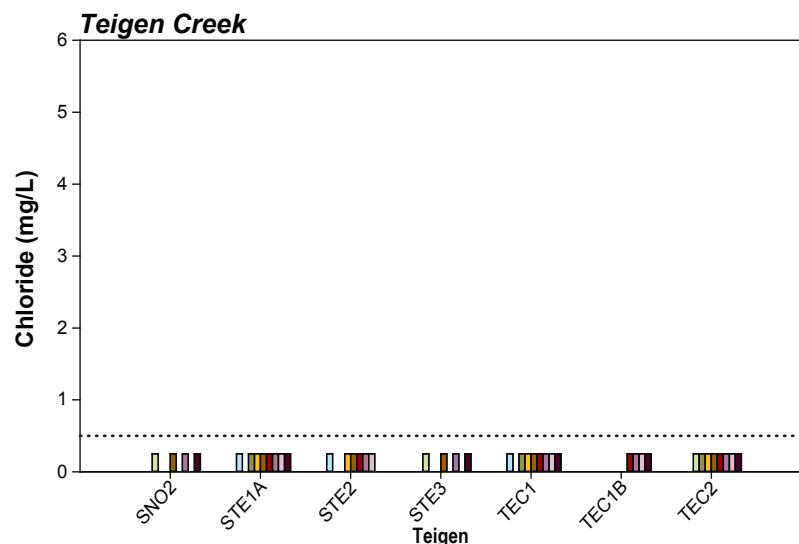


Figure 1-11



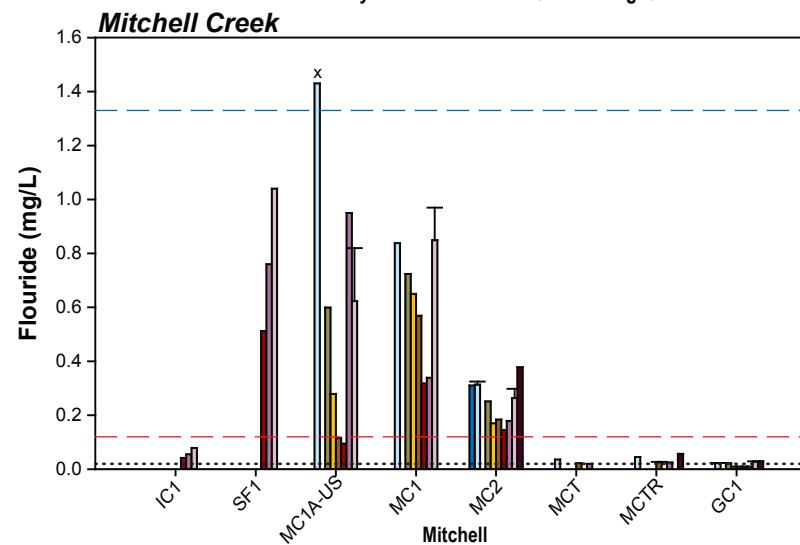
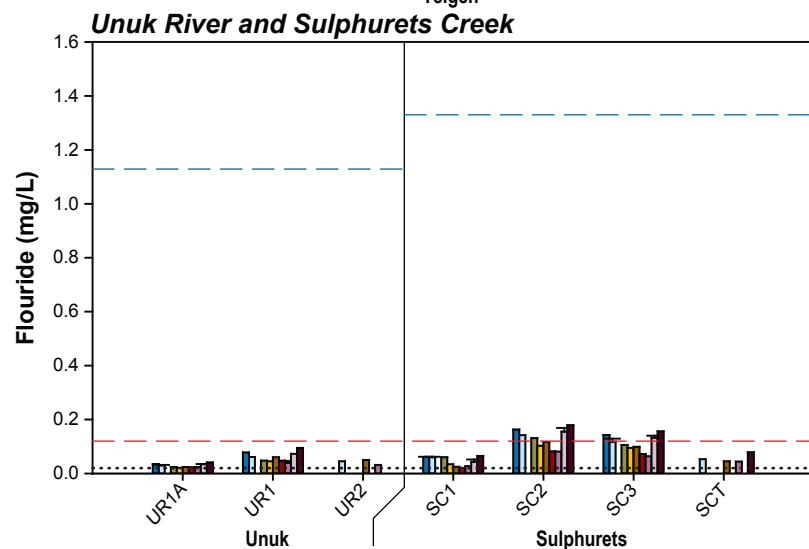
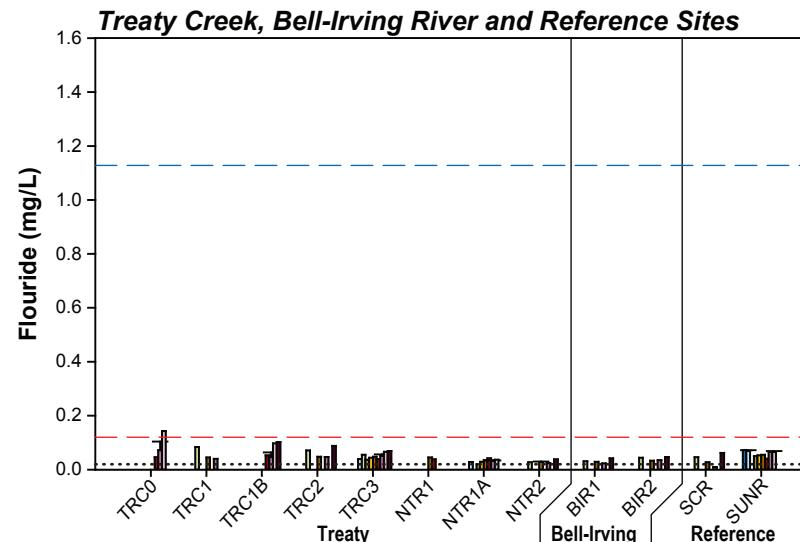
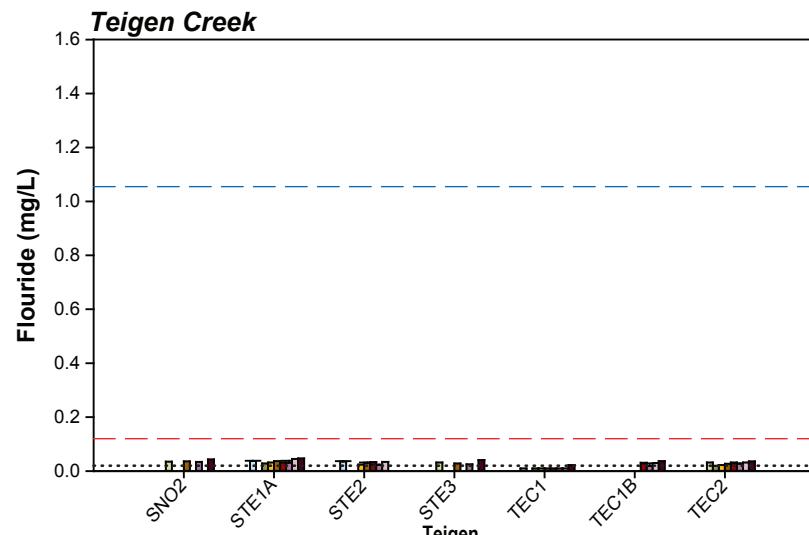
Notes: Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

CCME long term guideline: 120 mg/L  
BC 30-day mean guideline: 150 mg/L

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█ August  
█ September  
█ October  
█ November  
█ December



Notes: Error bars represent the standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Dashed red lines indicate interim CCME water quality guideline for fluoride (0.12 mg/L).

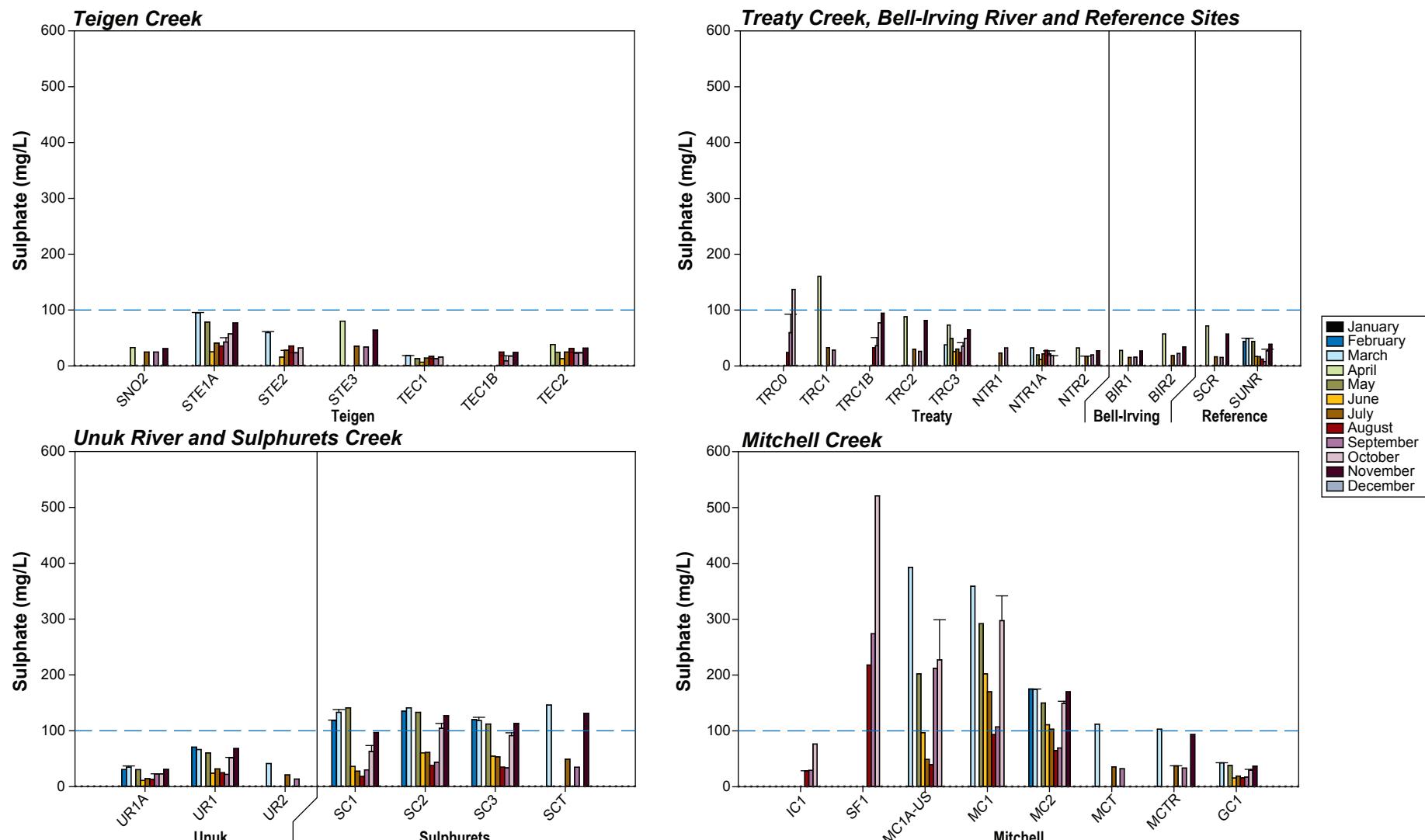
Dashed blue lines indicate interim BC MOE maximum hardness-dependent water quality criterion for total fluoride (see Appendix 3.2-1).

Median hardness values were used to set the guideline limit.

\* indicates a bar is below the criterion limit, but the concentration exceeds the sample specific criterion.

x indicates a bar is above the criterion limit, but the concentration does not exceed the sample specific criterion.

Figure 1-13



Notes: Error bars represent the standard error of the mean.

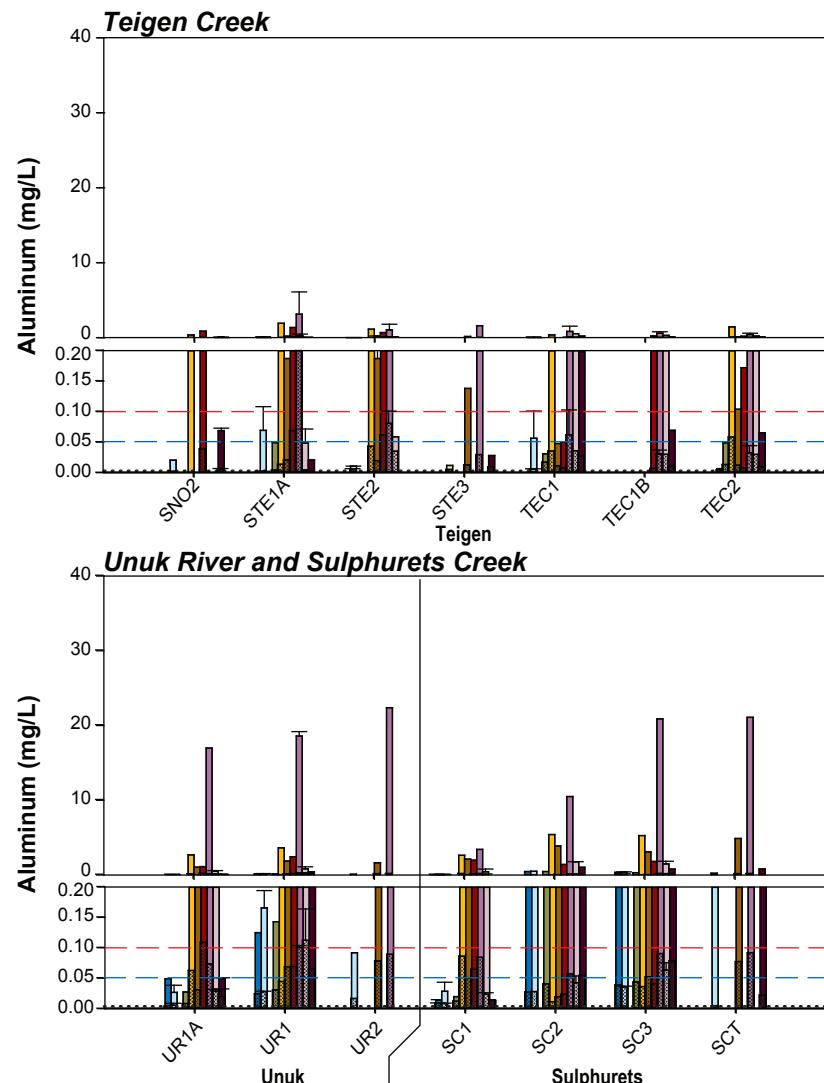
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

Dashed blue lines indicate BC MOE maximum water quality guideline for sulphate (100 mg/L).

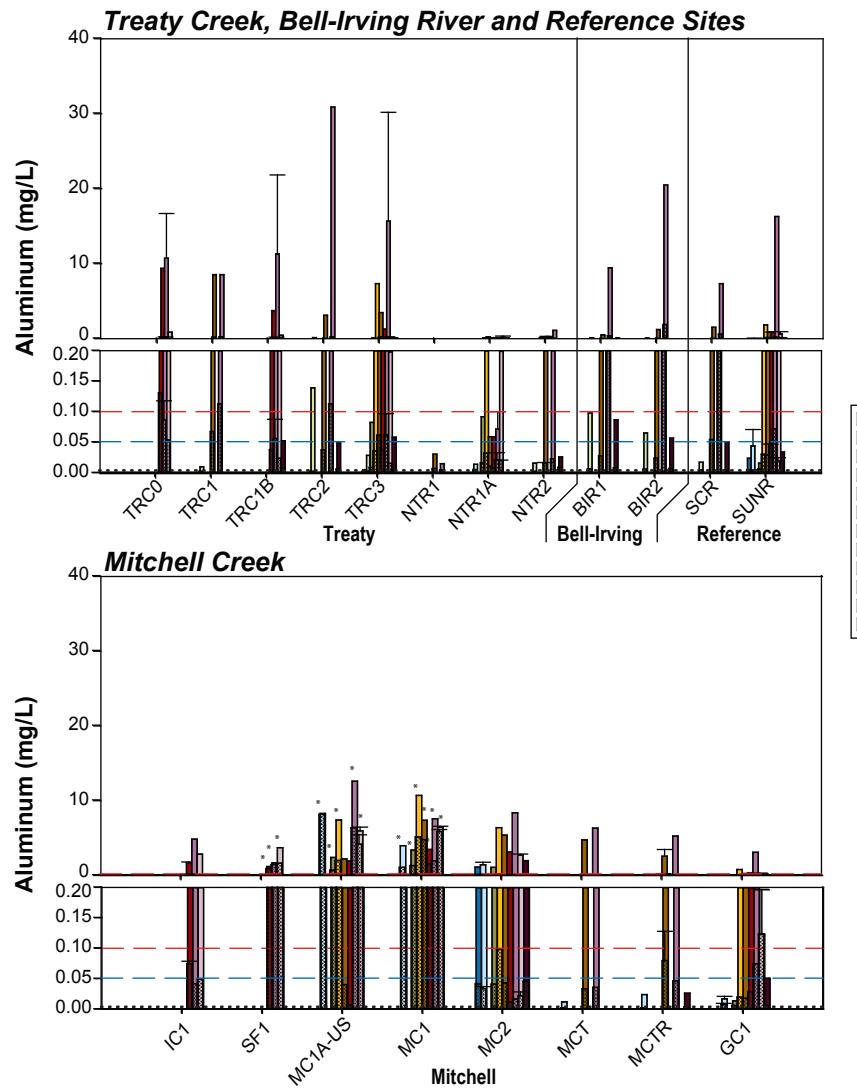
No BC MOE 30-day mean or CCME guidelines exist.

Figure 1-14



Notes: Solid bars indicate total aluminum concentrations.  
Patterned bars indicate dissolved aluminum concentrations.  
Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.  
Dashed red lines indicate CCME water quality guideline for total aluminum ( $pH > 6.5$ ; 0.10 mg/L).  
Dashed blue lines indicate BC MOE 30-day mean water quality guideline for dissolved aluminum ( $pH > 6.5$ ; 0.05 mg/L).  
\* Indicates  $pH < 6.5$  and the pH-dependent water quality guideline was exceeded (see Appendix 3.2-1).

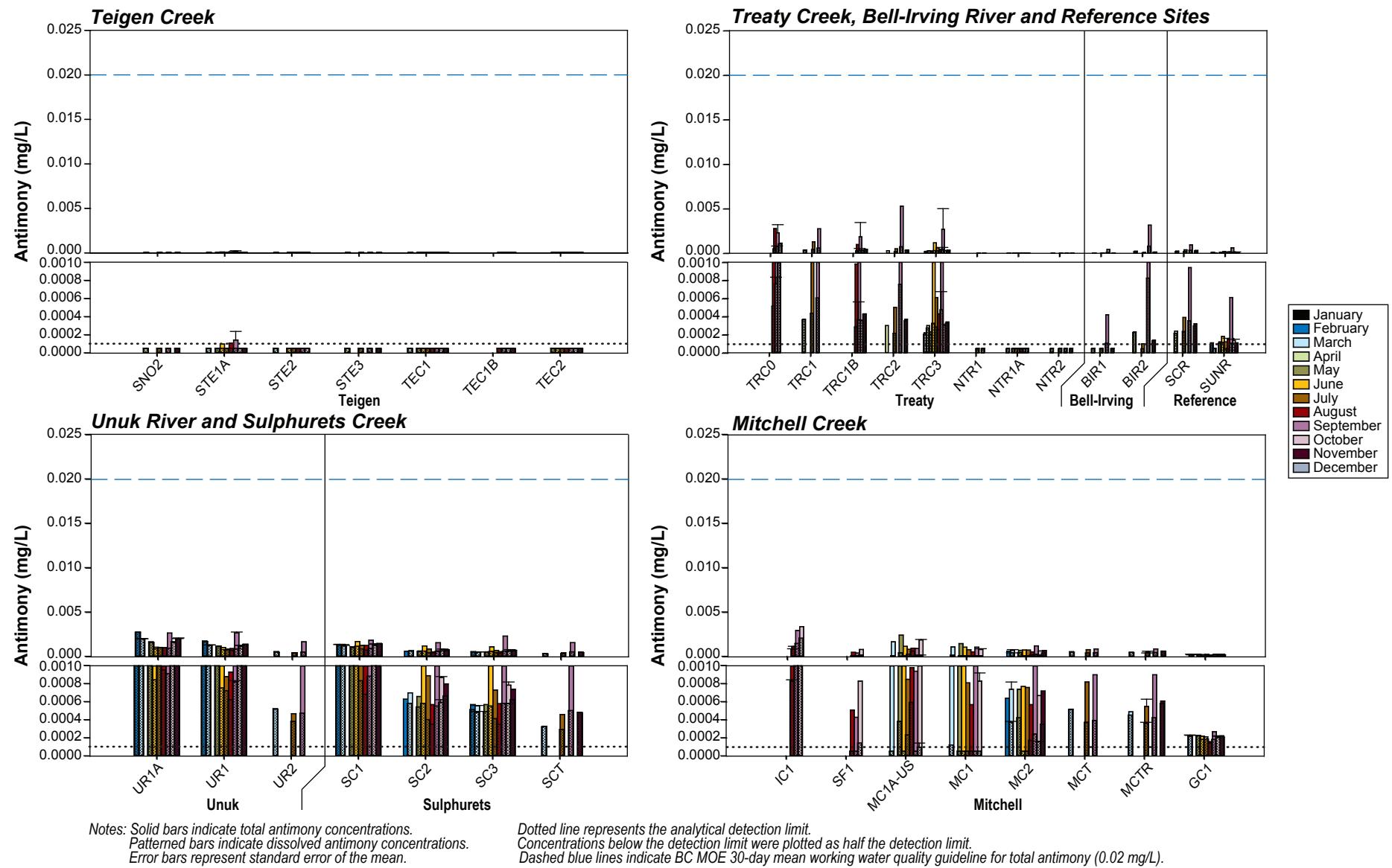


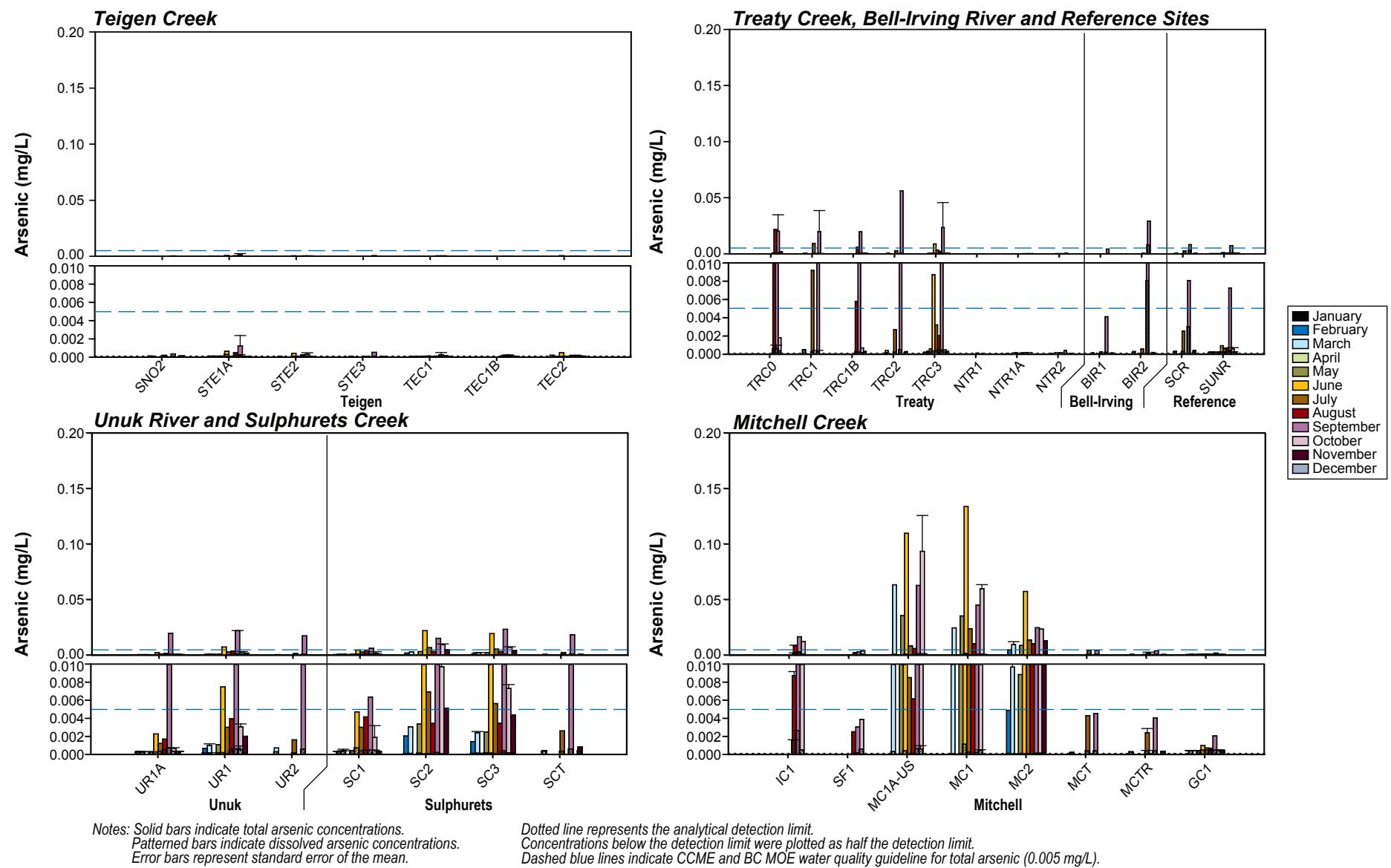
Legend:

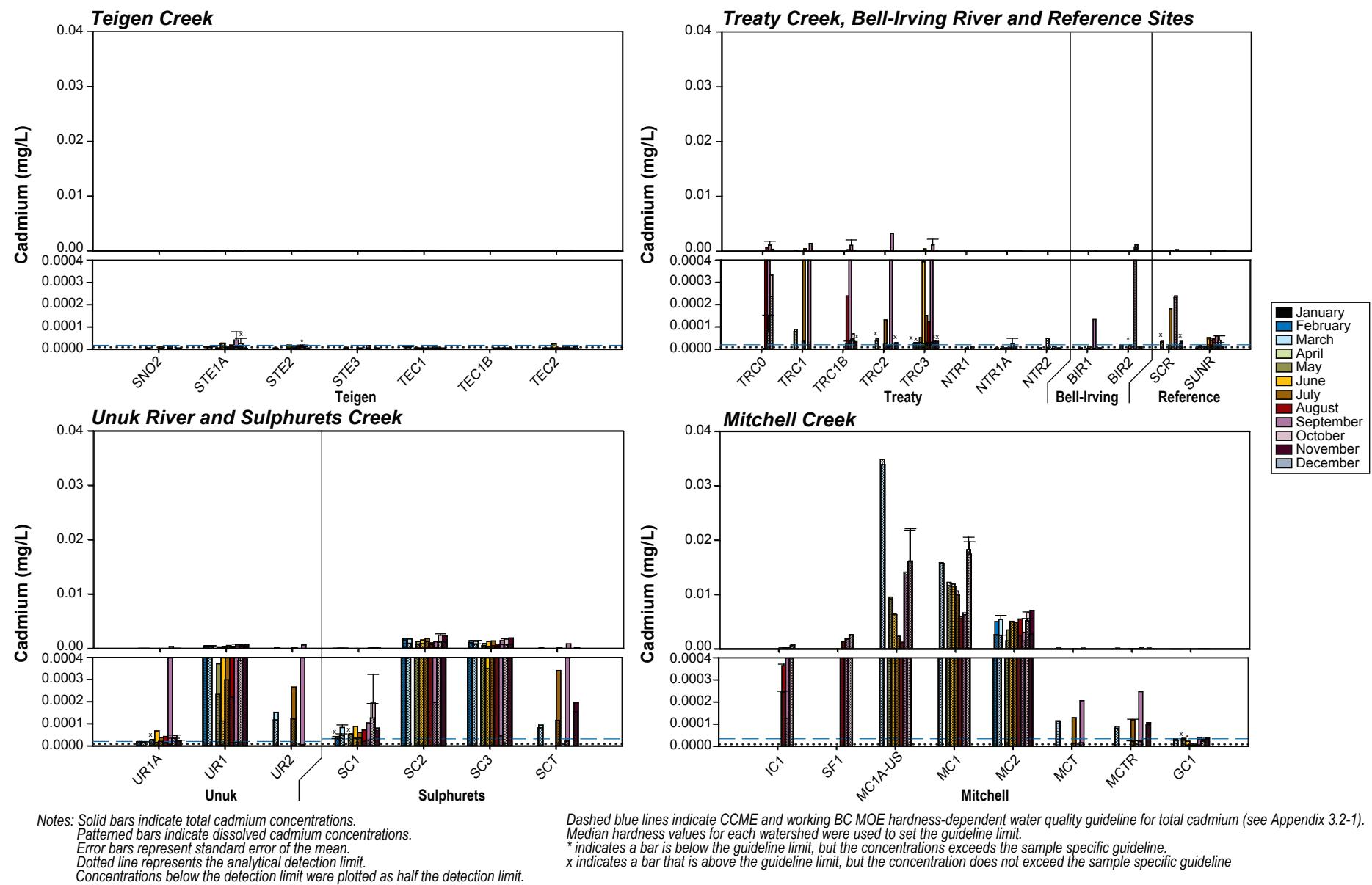
- January
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Total and Dissolved Aluminum Concentrations in KSM Project Streams, 2011

Figure 1-15







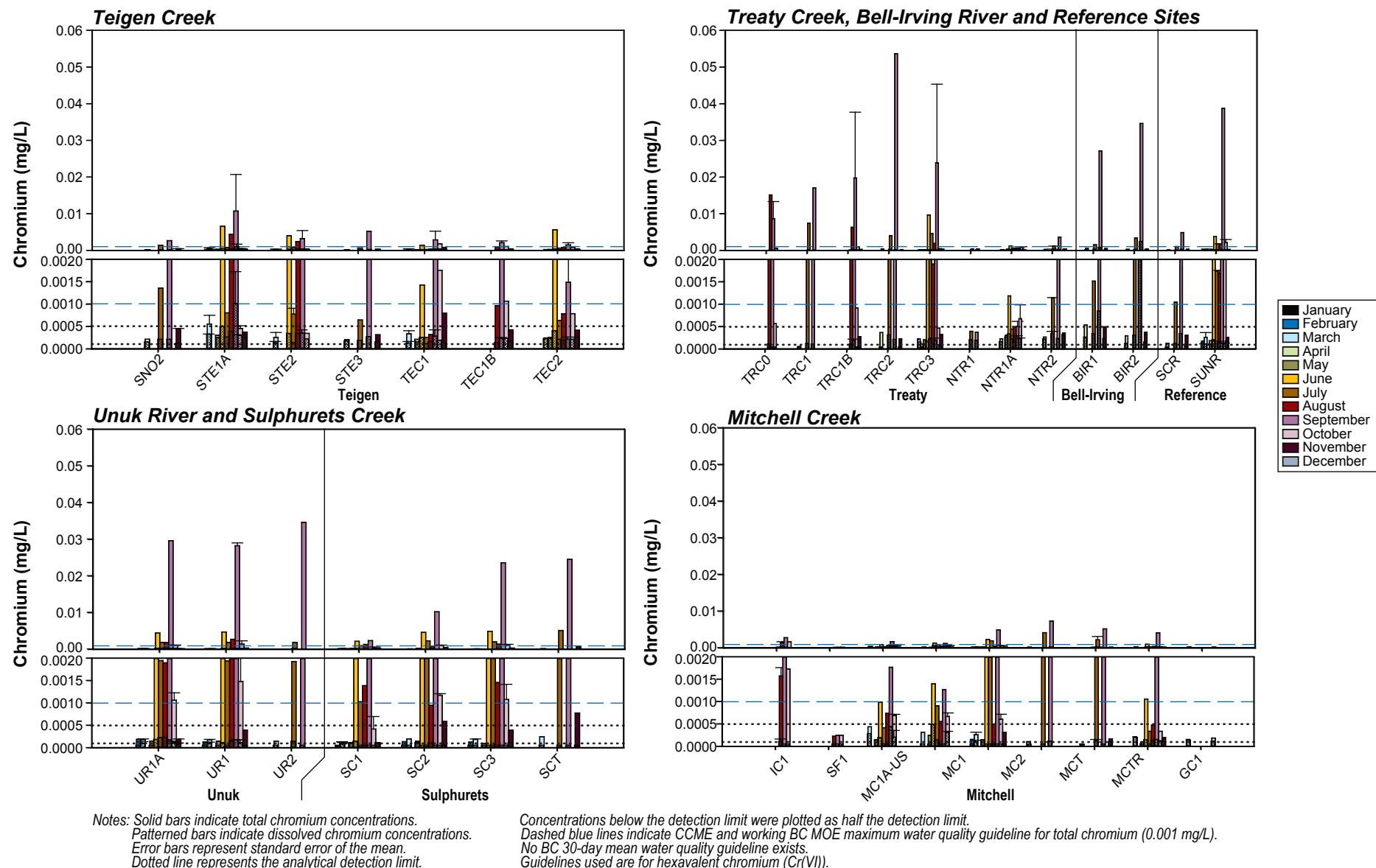
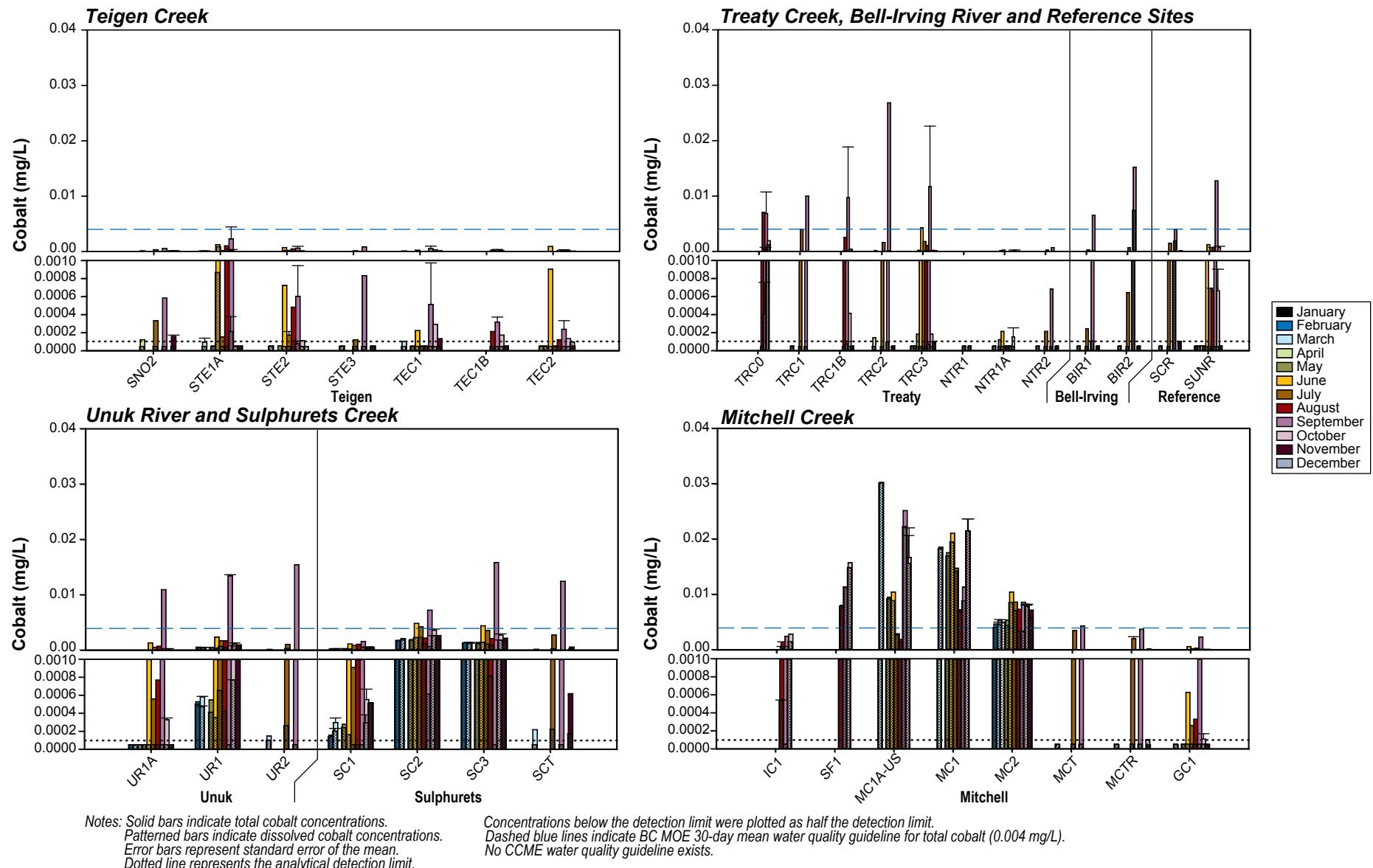


Figure 1-19

## Total and Dissolved Chromium Concentrations in KSM Project Streams, 2011



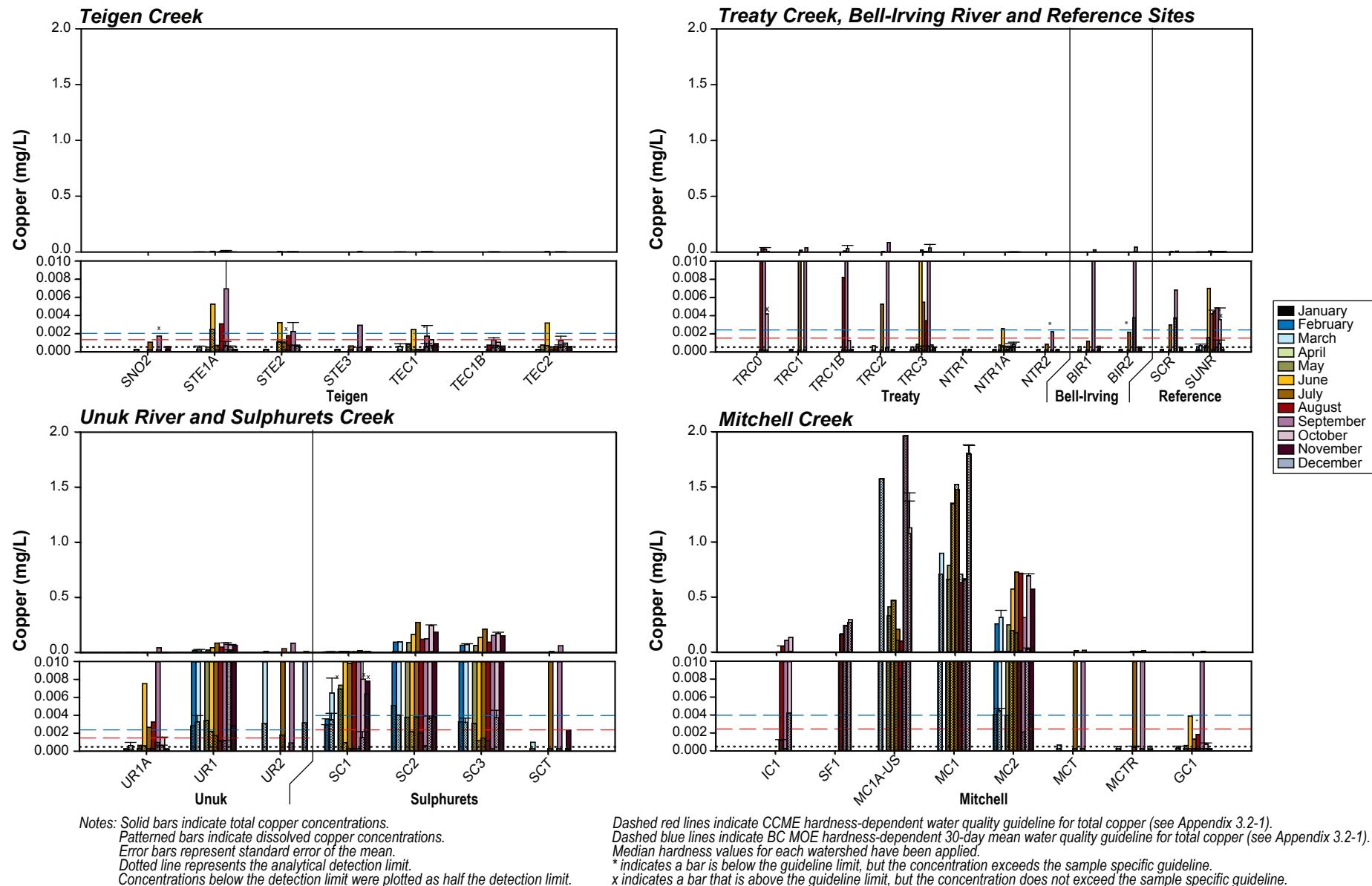


Figure 1-21

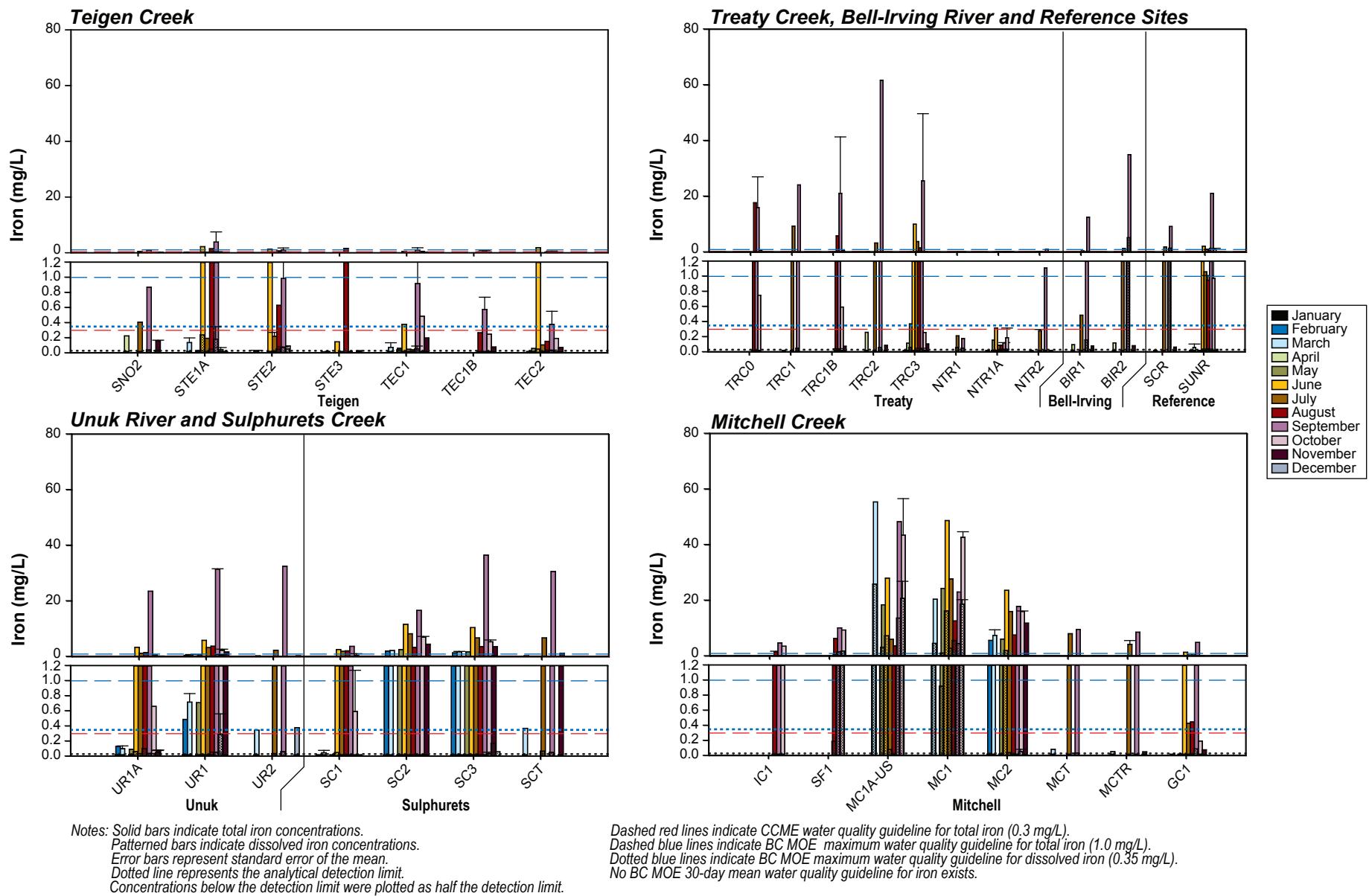


Figure 1-22

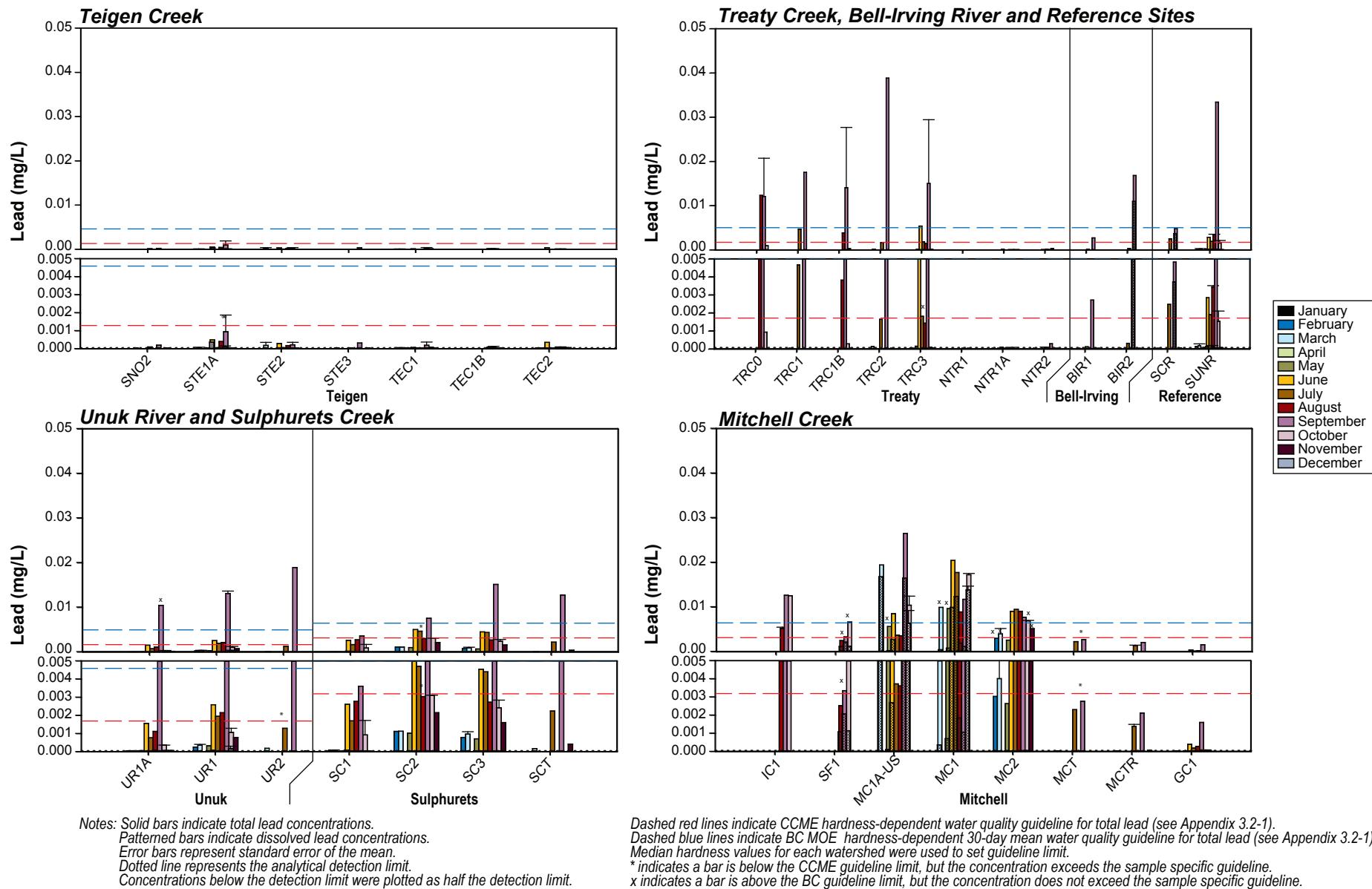
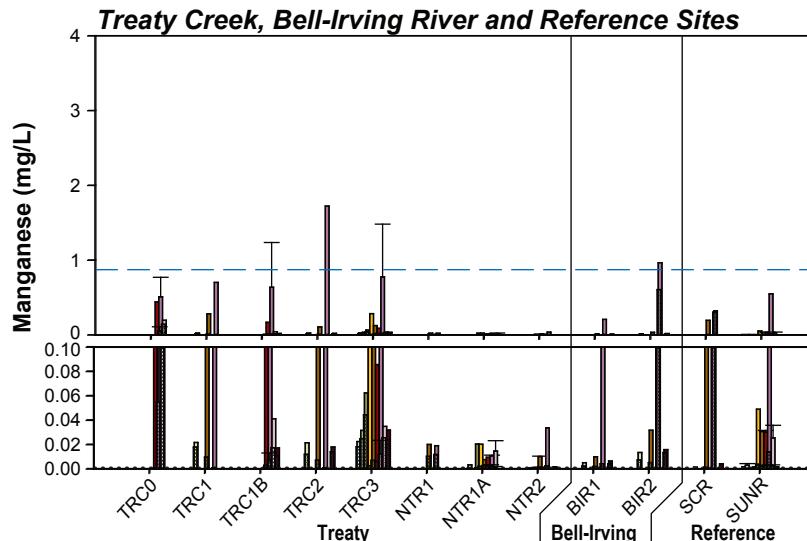
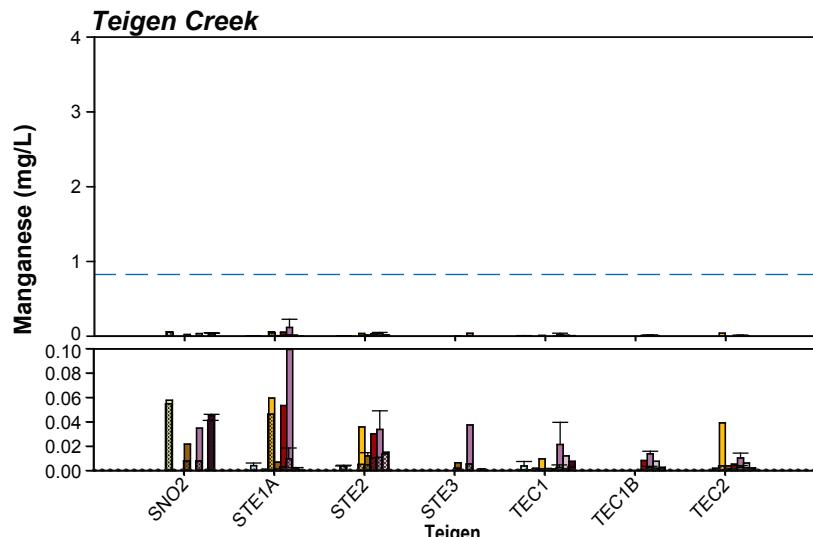
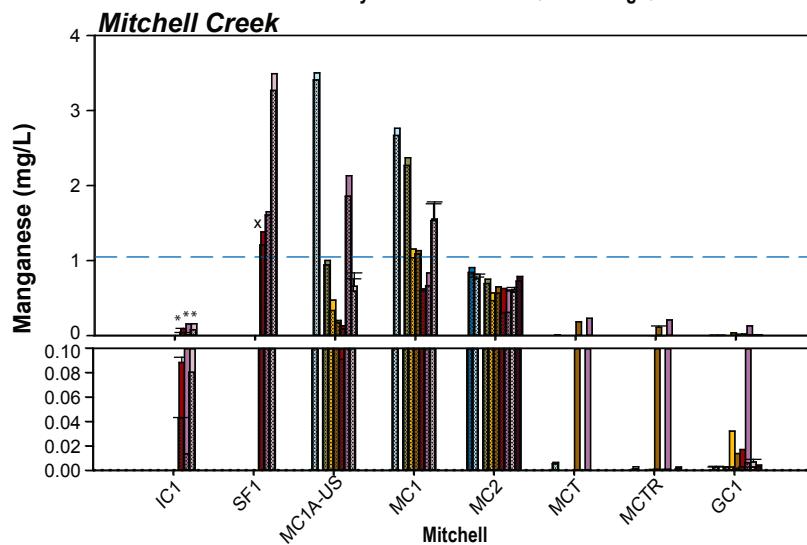
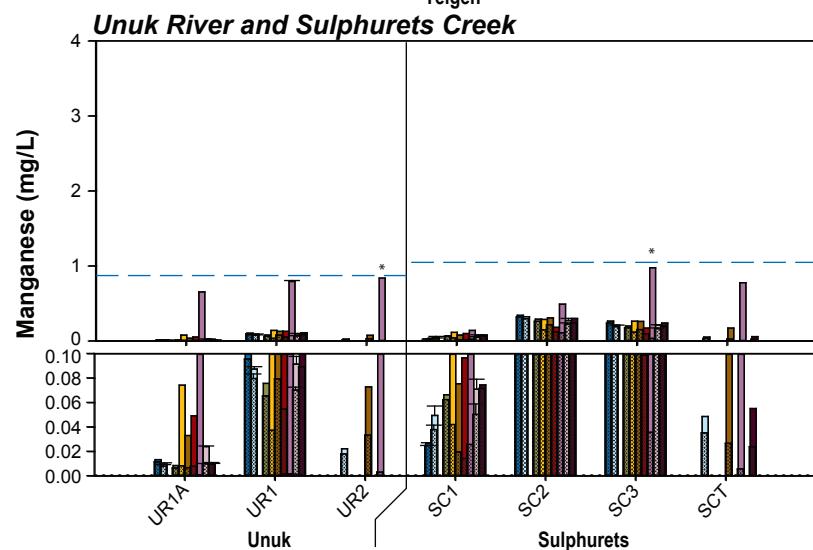


Figure 1-23



Legend:

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December



Notes: Solid bars indicate total manganese concentrations.

Patterned bars indicate dissolved manganese concentrations.

Error bars represent standard error of the mean.

Dotted line represents the analytical detection limit.

Concentrations below the detection limit were plotted as half the detection limit.

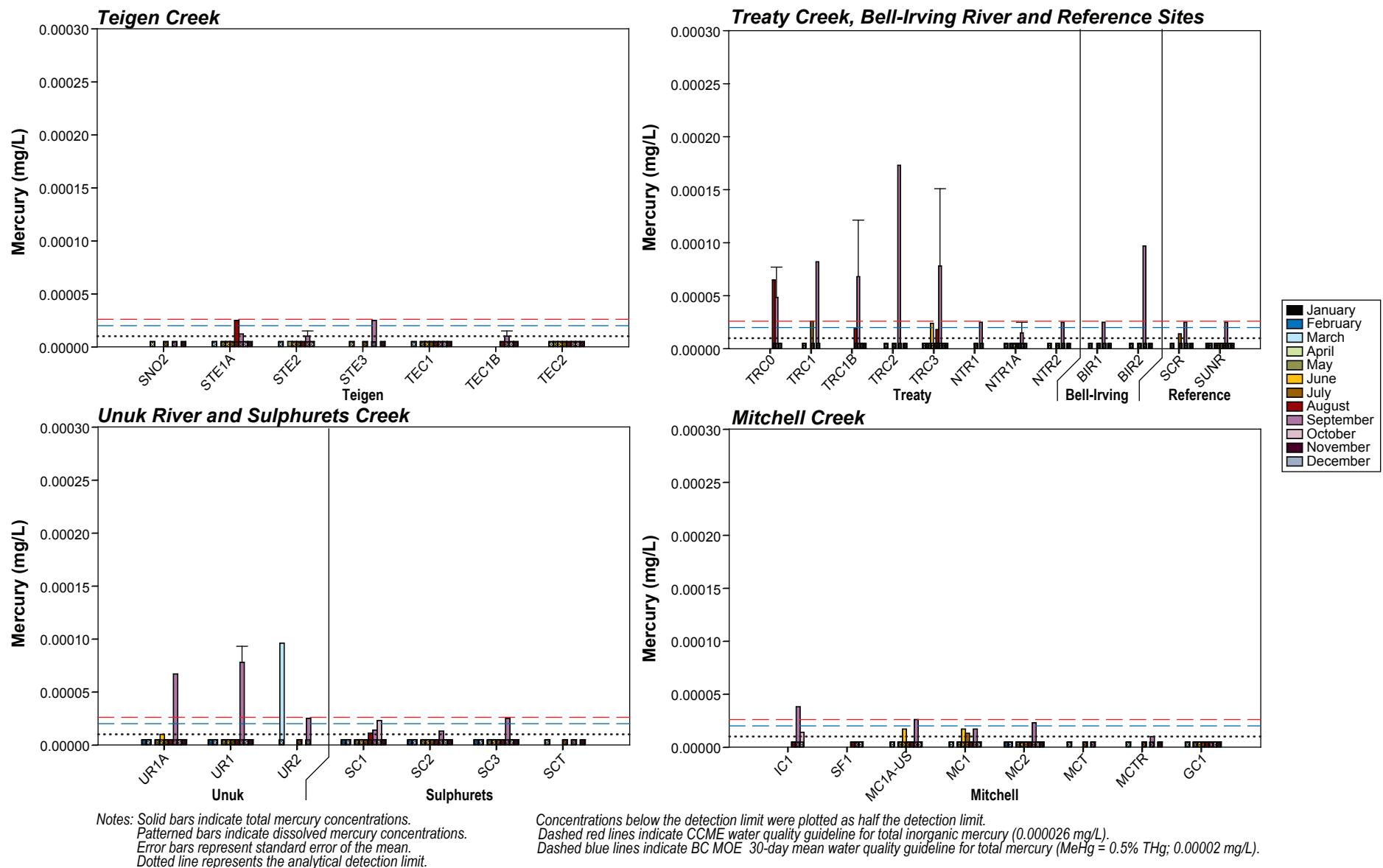
Dashed blue lines indicate BC MOE hardness-dependent 30-day mean water quality guideline for total manganese (see Appendix 3.2-1). Median hardness values for each watershed were used to set guideline limit.

\* Indicates a bar is below the guideline limit, but the concentration exceeds the sample specific guideline.

x Indicates a bar is above the guideline limit, but the concentration does not exceed the sample specific guideline.

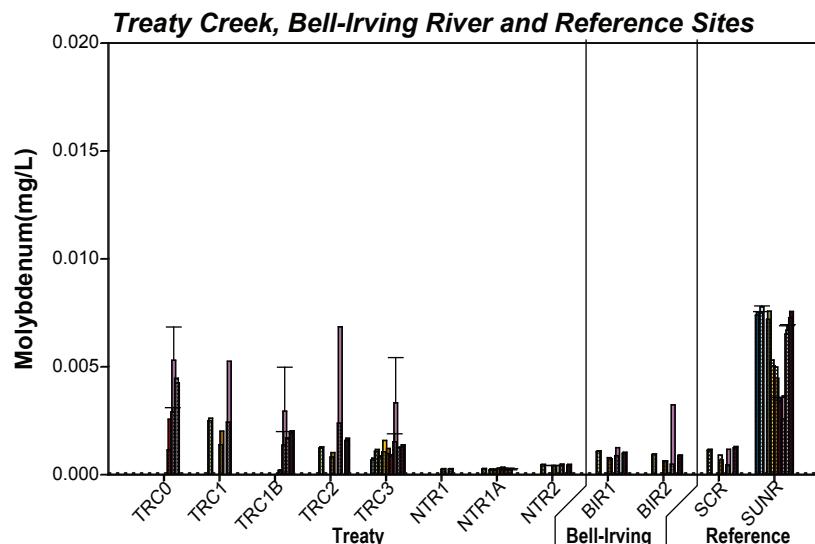
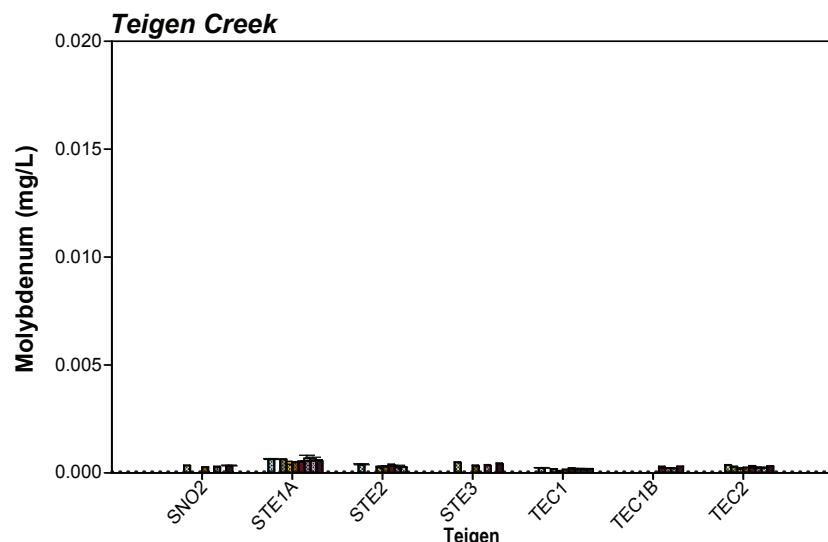
Figure 1-24

## Total and Dissolved Manganese Concentrations in KSM Project Streams, 2011



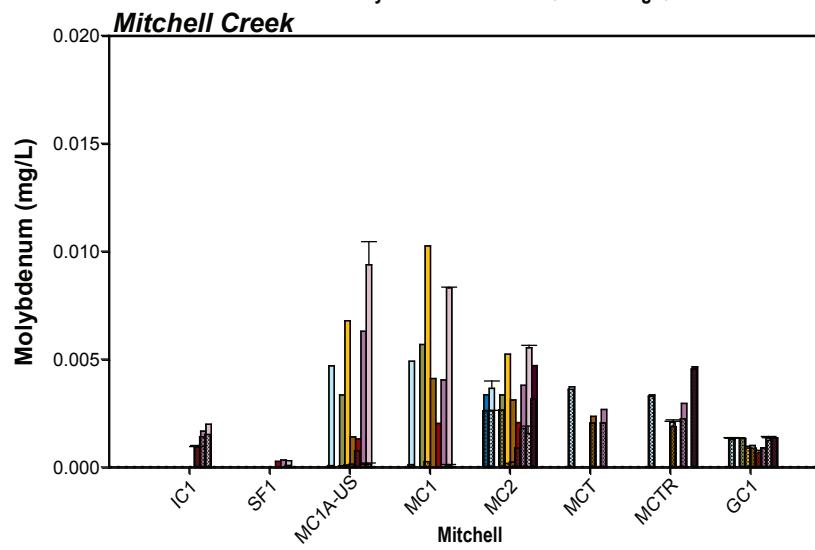
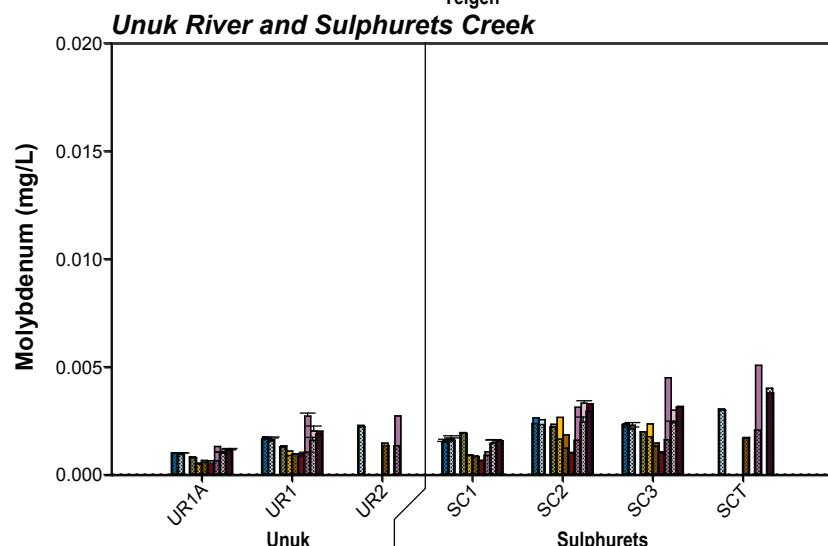
Total and Dissolved Mercury  
Concentrations in KSM Project Streams, 2011

Figure 1-25



Legend:

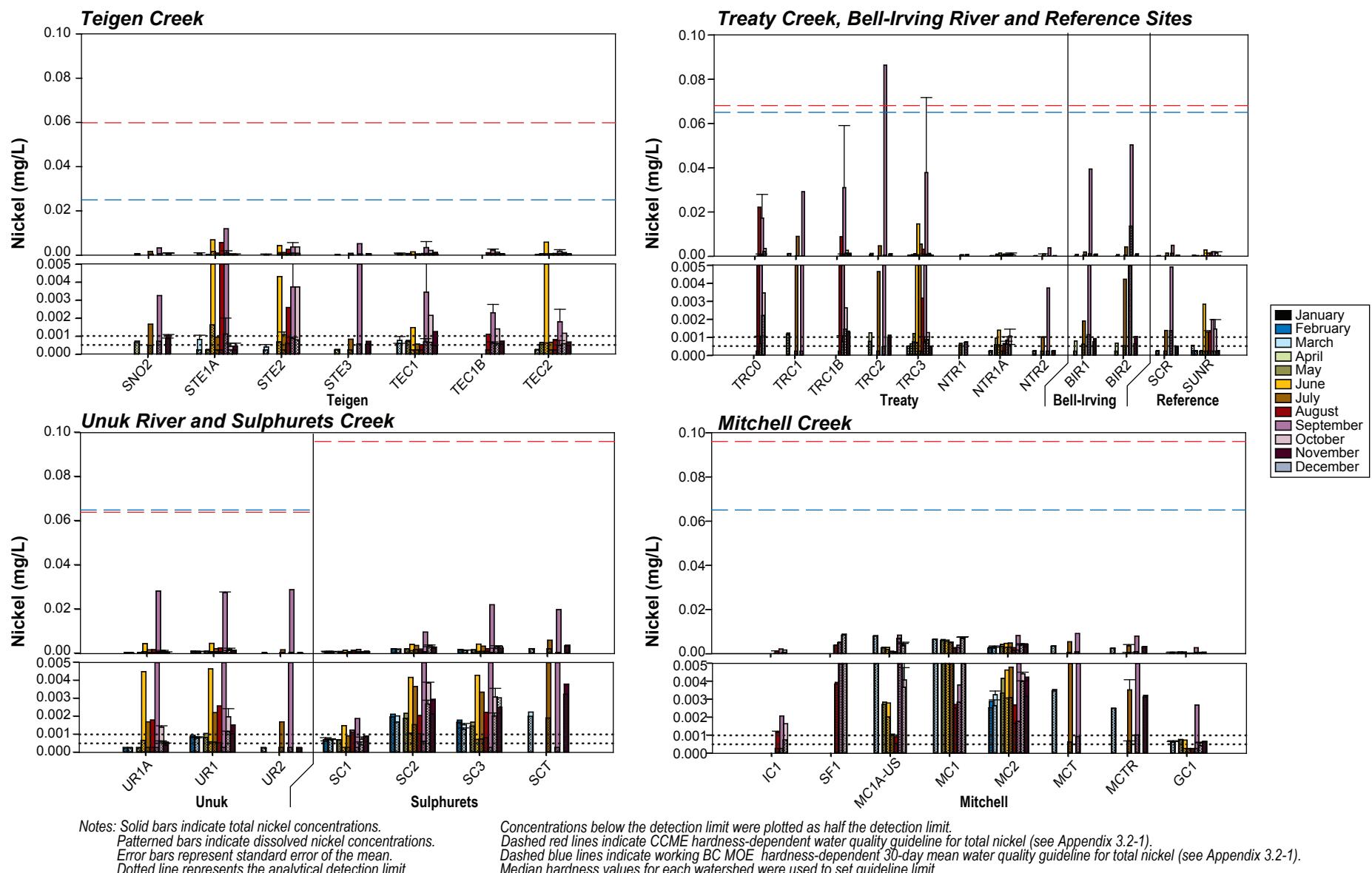
- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December



Notes:  
 Solid bars indicate total molybdenum concentrations.  
 Patterned bars indicate dissolved molybdenum concentrations.  
 Error bars represent standard error of the mean.  
 Dotted line represents the analytical detection limit.

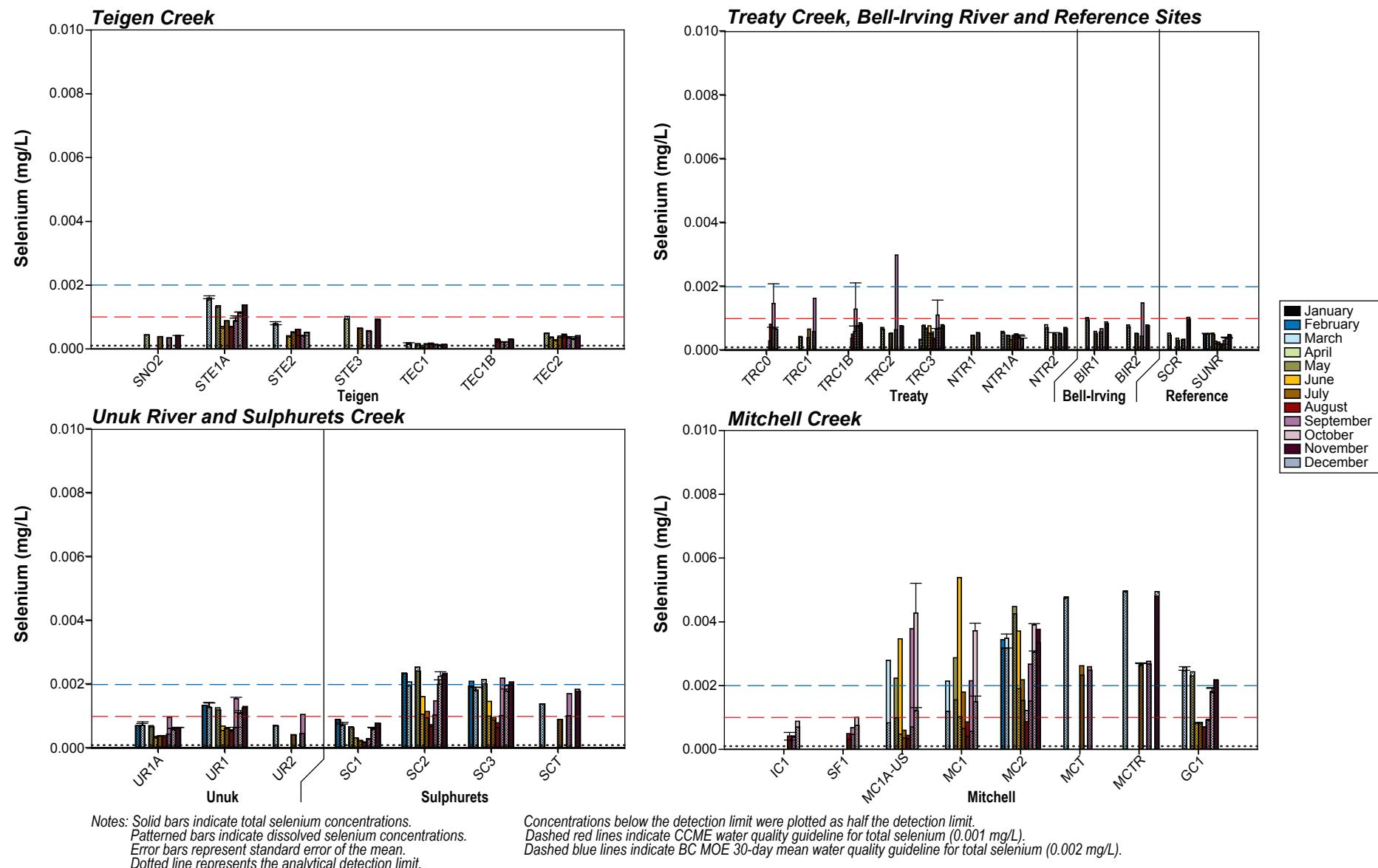
Concentrations below the detection limit were plotted as half the detection limit.  
 CCME guideline: 0.073 mg/L  
 BC MOE 30-day mean guideline: 1 mg/L

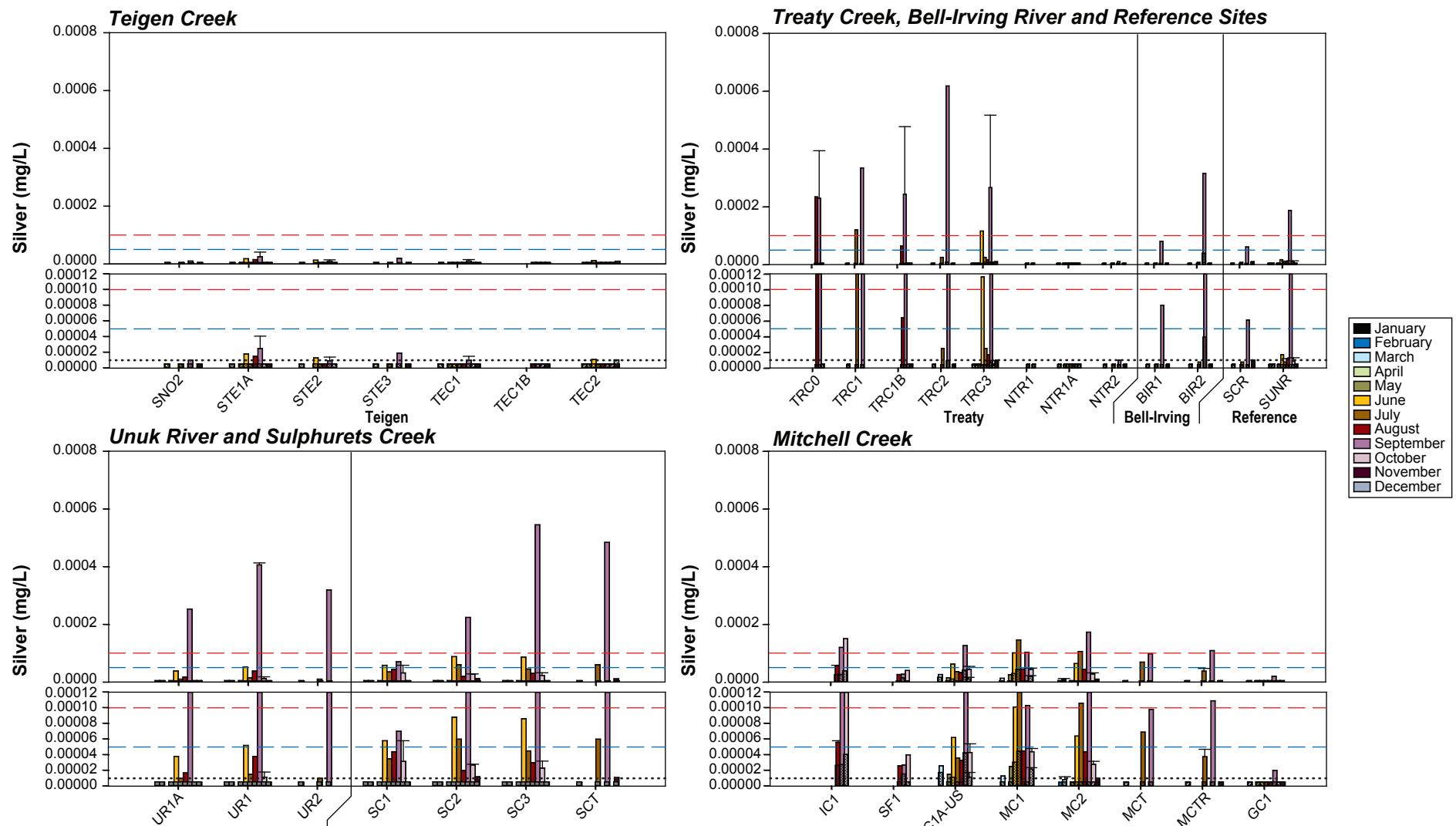
## Total and Dissolved Molybdenum Concentrations in KSM Project Streams, 2011



**Total and Dissolved Nickel  
Concentrations in KSM Project Streams, 2011**

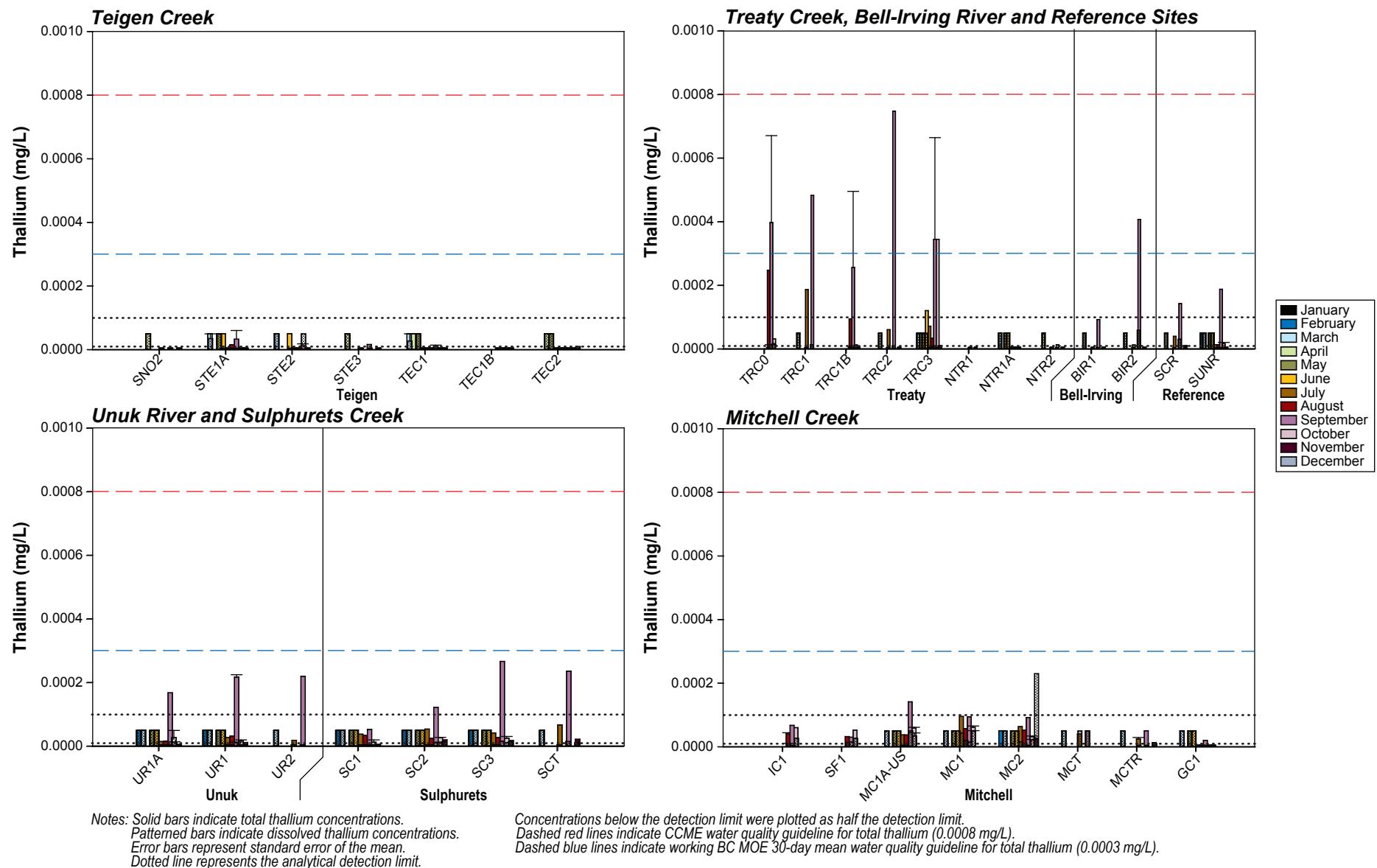
Figure 1-27





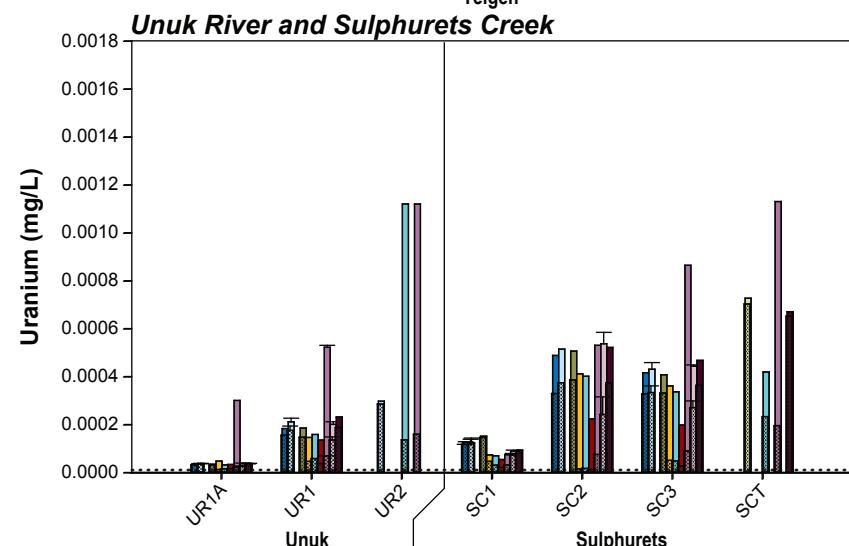
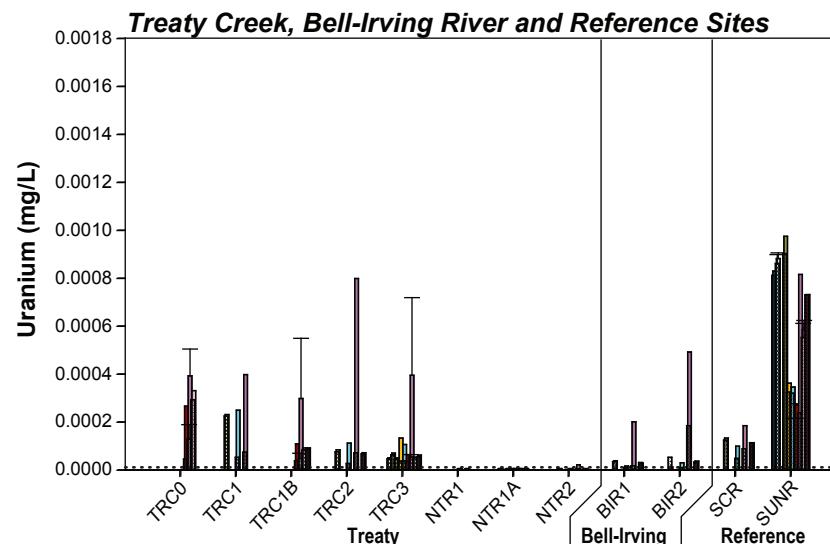
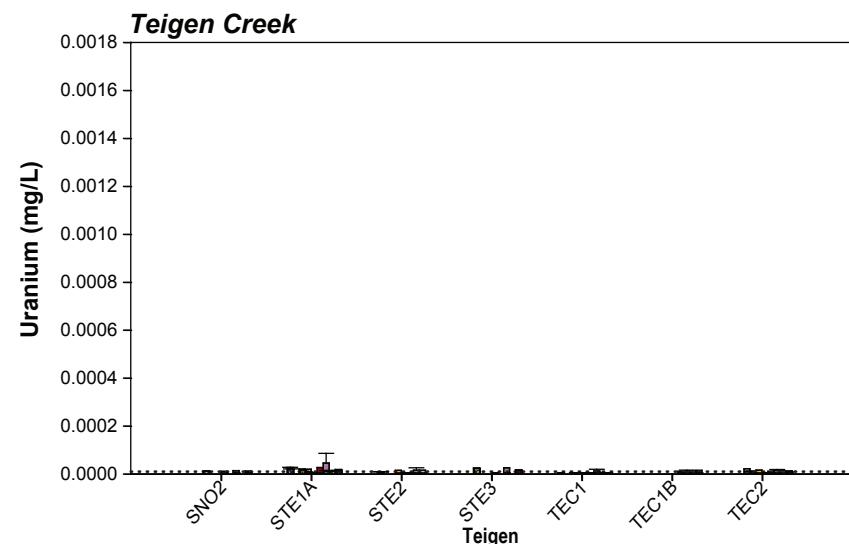
**Total and Dissolved Silver  
Concentrations in KSM Project Streams, 2011**

Figure 1-29

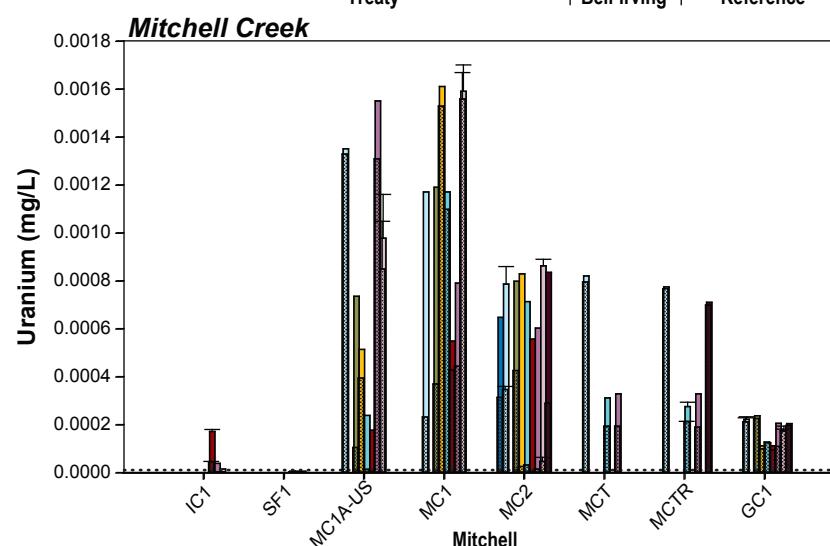


**Total and Dissolved Thallium  
Concentrations in KSM Project Streams, 2011**

Figure 1-30



Notes: Solid bars indicate total uranium concentrations.  
Patterned bars indicate dissolved uranium concentrations.  
Error bars represent standard error of the mean.  
Dotted line represents the analytical detection limit.



Concentrations below the detection limit were plotted as half the detection limit.  
CCME long-term guideline: 0.015 mg/L  
Working BC MOE maximum guideline: 0.3 mg/L

## Total and Dissolved Uranium Concentrations in KSM Project Streams, 2011

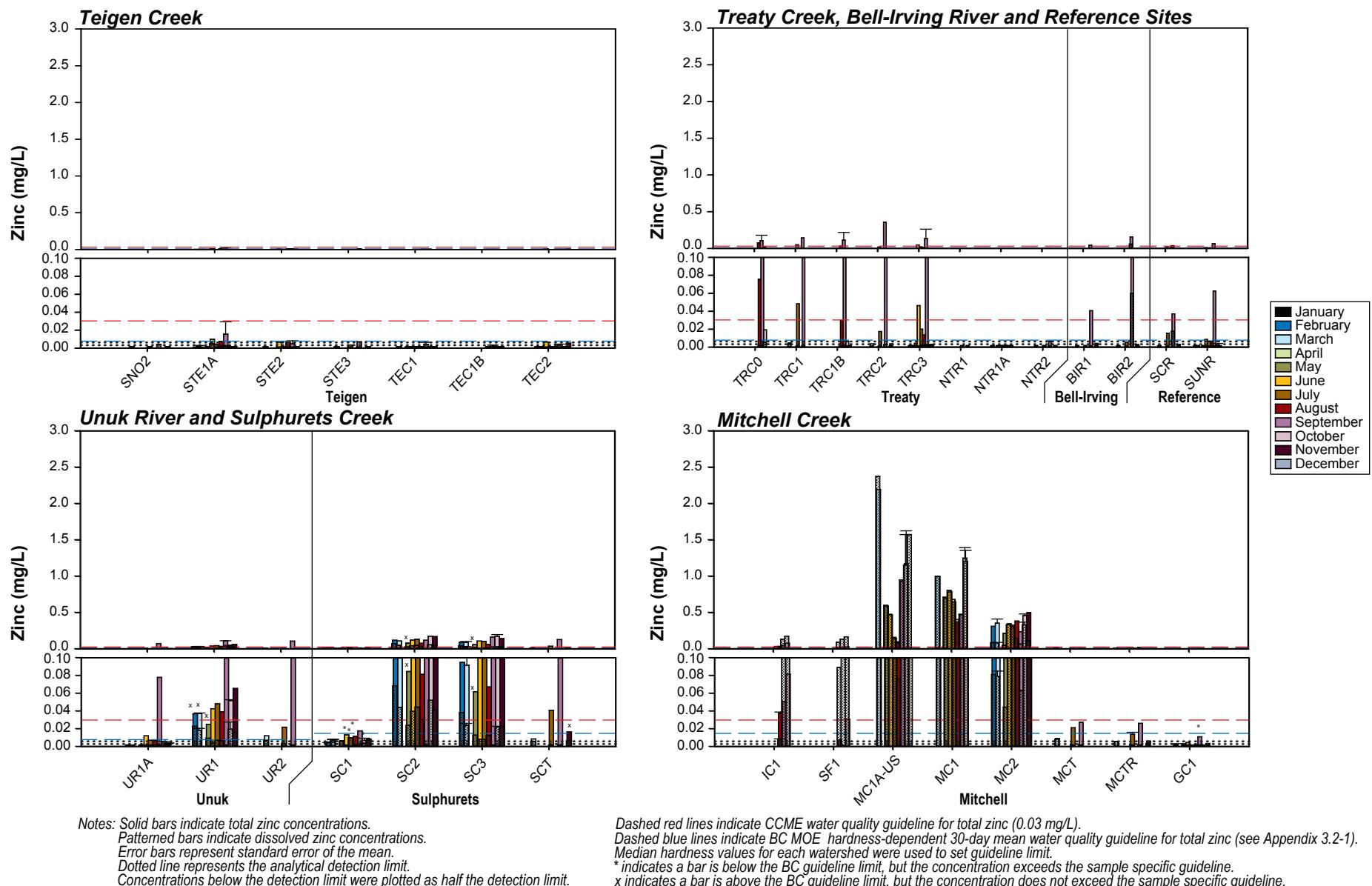


Figure 1-32

KSM PROJECT  
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## Appendix 3.2-1

### Water Quality Guidelines

### Appendix 3.2-1. Water Quality Guidelines

Jurisdiction	Guideline		
	CCME	BC Chronic (30-day average)	BC Acute (maximum) <sup>1</sup>
<b>Physical Parameters</b>			
pH (pH units)	6.5 to 9.0	-	6.5 to 9.0
Alkalinity (mg CaCO <sub>3</sub> /L)	-	-	<10: Highly sensitive to acid inputs 10-20: Moderately sensitive to acid inputs >20: Low sensitivity to acid inputs <sup>5</sup>
<b>Nutrients</b>			
Nitrate (as N)	2.935	3.0	-
Nitrite (as N)	0.06	chloride-dependent <sup>2</sup>	-
Ammonia	temperature- and pH-dependent <sup>2</sup>	temperature- and pH-dependent <sup>2</sup>	-
Total Phosphorus	trigger ranges	-	0.005 to 0.015 <sup>3</sup>
<b>Cyanide</b>			
Weak-acid dissociable (WAD) cyanide	-	0.005	-
<b>Major Anions</b>			
Chloride	120 <sup>4</sup>	150	-
Fluoride	0.12	-	LC <sub>50</sub> = -51.73 + 92.57*log(hardness)*0.01
Sulphate	-	-	100
<b>Total Metals</b>			
Aluminum	pH>6.5: 0.1 pH<6.5: 0.005	-	-
Antimony	-	-	0.02 <sup>5</sup>
Arsenic	0.005	-	0.005
Cadmium	10 <sup>(0.86[\log[\text{hardness}]]-3.2)*0.001</sup>	-	10 <sup>(0.86[\log[\text{hardness}]]-3.2)*0.001</sup> <sup>5</sup>
Chromium <sup>6</sup>	0.001	-	0.001
Cobalt	-	0.004	-
Copper	e <sup>(0.8545[\ln[\text{hardness}]]-1.465)*0.2*0.001</sup>	0.04(hardness)*0.001	-
Iron	0.3	-	1
Lead	e <sup>(1.273[\ln[\text{hardness}]]-4.705)*0.001</sup>	3.31 + e <sup>(1.273[\ln[\text{hardness}]]-4.704)*0.001</sup> 0.044(hardness) + 0.605	-
Manganese	-	-	-
Mercury	0.000026 <sup>8</sup>	0.00002 <sup>7</sup>	-
Molybdenum	0.073	1	-
Nickel	e <sup>(0.76[\ln[\text{hardness}]]+1.06)*0.001</sup>	-	hardness-dependent <sup>2</sup>
Selenium	0.001	0.002	-
Silver	0.0001	hardness < 100 mg/L: 0.00005 hardness > 100 mg/L: 0.0015	-
Thallium	0.0008	-	0.0003 <sup>5</sup>
Uranium	0.015 <sup>4</sup>	-	0.3 <sup>5</sup>
Zinc	0.03	7.5 + 0.75*(hardness-90)	-
<b>Dissolved Metals</b>			
Aluminum	-	pH > 6.5: 0.05 pH < 6.5: e <sup>(1.6-3.327(\text{median pH})+0.402(\text{median pH}))2</sup>	-
Iron	-	-	0.35

Notes:

Units are mg/L unless otherwise indicated.

- indicates no guideline or guideline not applied

1. Includes undefined BC Guidelines

2. See guideline summary reports for table.

3. Guideline only applies to lakes where salmonids are the predominant fish species.

4. Long term guideline

5. Working guideline

6. Guidelines presented are for Cr(VI)

7. when MeHg = 0.5% THg

8. Guideline is for inorganic mercury

**KSM PROJECT**  
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## **Appendix 4-1**

### **Stream Water Quality Data, KSM Project, 2007 to 2011**

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Bell-Irving River Watershed**

Site Name	Date	ALS Sample No.	Physical Parameter						Anions and Nutrients											
			Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Total (as $\text{CaCO}_3$ ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)
BIR1	2-Oct-08	L691752-14	7.0	119	54.0	7.82	15.6	80	24.1	1.1	38.2	<2.0	<2.0	38.2	<0.0050	<0.050	<0.50	<0.020	0.0604	<0.0010
	6-Dec-08	L717413-25	<5.0	164	74.4	8.04	<3.0	91	1.08	<1.0	62.2	<2.0	<2.0	62.2	<0.0050	<0.050	<0.50	0.030	0.174	<0.0010
	29-Mar-09	L749298-4	<5.0	237	117	7.94	<3.0	134	0.24	4.1	102	<2.0	<2.0	102	<0.0050	<0.050	<0.50	0.042	0.131	<0.0010
	3-Jul-09	L787346-32	<5.0	85.9	43.6	7.90	21	53	15.8	2.3	32.3	<2.0	<2.0	32.3	<0.0050	<0.050	<0.50	0.020	0.0318	<0.0010
	3-Jul-09	L787346-28	<5.0	86.1	42.9	7.88	21	50	15.4	2.7	34.8	<2.0	<2.0	34.8	<0.0050	<0.050	<0.50	<0.020	0.0338	<0.0010
	23-Aug-09	L809851-5	<5.0	114	55.1	8.07	9.3	71	17.5	1.1	37.8	<2.0	<2.0	37.8	<0.0050	<0.050	<0.50	<0.020	0.0148	<0.0010
	1-Dec-09	L845898-7	<5.0	196	91.2	8.09	17.3	117	1.82	1.6	62.8	<2.0	<2.0	62.8	<0.0050	<0.050	<0.50	0.046	0.144	<0.0010
	28-Mar-10	L873293-13	5.3	167	77.5	8.03	23.7	99	31.2	1.9	64.1	<2.0	<2.0	64.1	<0.0050	<0.050	<0.50	0.034	0.272	<0.0010
	5-Jul-10	L905787-27	<5.0	103	47.9	7.99	5.5	60	6.52	2.8	35.4	<2.0	<2.0	35.4	<0.0050	<0.050	<0.50	<0.020	0.0162	<0.0010
	27-Aug-10	L926457-27	<5.0	136	60.8	8.08	8.0	104	18.3	3.9	43.3	<1.0	<1.0	43.3	<0.0050	<0.050	<0.50	0.022	0.0176	<0.0010
	15-Nov-10	L955725-26	6.9	155	75.9	8.06	3.1	78	2.92	1.8	59.9	<2.0	<2.0	59.9	<0.0050	<0.050	<0.50	0.035	0.139	<0.0010
	1-Apr-11	L991777-20	<5.0	202	91.0	7.80	<3.0	117	2.09	4.9	55.1	<2.0	<2.0	55.1	<0.0050	<0.050	<0.50	0.031	0.140	<0.0010
	3-Jul-11	L1026874-8	<5.0	101	45.3	7.79	7.3	68	10.6	<1.0	35.2	<2.0	<2.0	35.2	0.0060	<0.050	<0.50	0.029	0.0131	<0.0010
	4-Sep-11	L1054465-8	<5.0	109	49.7	8.12	312	102	215	3.7	38.7	<1.0	<1.0	38.7	0.0055	<0.050	<0.50	0.023	0.0399	<0.0010
	28-Nov-11	L1091310-21	<5.0	184	82.8	8.09	<3.0	103	1.28	2.0	70.3	<2.0	<2.0	70.3	<0.0050	<0.050	<0.50	0.042	0.120	<0.0010
BIR2	2-Oct-08	L691752-15	7.2	122	55.5	7.54	83.6	88	47.1	2.2	39.2	<2.0	<2.0	39.2	<0.0050	<0.050	<0.50	<0.020	0.0698	<0.0010
	6-Dec-08	L717413-27	<5.0	200	92.6	8.02	<3.0	119	2.42	<1.0	65.8	<2.0	<2.0	65.8	<0.0050	<0.050	<0.50	0.036	0.178	<0.0010
	28-Mar-09	L748538-13	<5.0	286	136	8.01	6.3	178	2.07	2.2	95.4	<2.0	<2.0	95.4	<0.0050	<0.050	<0.50	0.050	0.137	<0.0010
	2-Jul-09	L787346-29	<5.0	101	50.5	7.89	25.5	58	18.7	2.9	35.4	<2.0	<2.0	35.4	<0.0050	<0.050	<0.50	0.024	0.0416	<0.0010
	23-Aug-09	L809851-10	<5.0	117	53.6	7.96	58.8	78	44.0	1.5	38.6	<2.0	<2.0	38.6	<0.0050	<0.050	<0.50	0.021	0.0279	<0.0010
	25-Nov-09	L844495-25	<5.0	186	93.1	8.03	<3.0	114	1.02	1.2	60.2	<2.0	<2.0	60.2	<0.0050	<0.050	<0.50	0.036	0.150	<0.0010
	28-Mar-10	L873293-14	9.5	150	69.2	7.96	32.7	98	27.8	2.0	58.1	<2.0	<2.0	58.1	<0.0050	<0.050	<0.50	0.034	0.295	<0.0010
	5-Jul-10	L905787-28	<5.0	123	57.1	8.00	11.5	73	12.3	2.7	40.0	<2.0	<2.0	40.0	<0.0050	<0.050	<0.50	0.022	0.0367	<0.0010
	27-Aug-10	L926457-28	<5.0	137	60.9	7.05	13.5	95	20.3	8.0	42.1	<1.0	<1.0	42.1	<0.0050	<0.050	<0.50	0.022	0.0230	<0.0010
	15-Nov-10	L955725-27	6.0	192	95.1	8.11	<3.0	103	1.98	1.8	65.3	<2.0	<2.0	65.3	<0.0050	<0.050	<0.50	0.047	0.168	<0.0010
	1-Apr-11	L991777-22	<5.0	282	131	7.79	<3.0	174	1.62	5.9	62.8	<2.0	<2.0	62.8	<0.0050	<0.050	<0.50	0.044	0.129	<0.0010
	3-Jul-11	L1026874-9	<5.0	107	48.8	7.62	29.3	77	21.3	2.7	35.5	<2.0	<2.0	35.5	0.0061	<0.050	<0.50	0.033	0.0304	<0.0010
	4-Sep-11	L1054465-7	<5.0	145	88.5	8.17	689	125	757	3.5	50.1	<1.0	<1.0	50.1	0.0055	<0.050	<0.50	0.035	0.0256	<0.0010
	28-Nov-11	L1091310-15	<5.0	210	101	8.17	<3.0	121	1.31	1.8	69.1	<2.0	<2.0	69.1	<0.0050	<0.050	<0.50	0.047	0.136	<0.0010

Notes:

< indicates that the value is below the analytical detection limit

- indicates parameter was not analyzed

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Bell-Irving River Watershed**

Site Name	Date	ALS Sample No.	Anions and Nutrients					Cyanides			Carbon	Total Metals										
			Total Kjeldahl Nitrogen	Total Nitrogen	Ortho Phosphate (as P)	Total Phosphate (as P)	Sulphate (SO <sub>4</sub> )	Cyanide, Weak Acid Dissociable	Cyanide, Total	Thiocyanate	Total Organic Carbon	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BIR1	2-Oct-08	L691752-14	<0.050	0.070	0.0021	0.0235	19.1	-	<0.0010	-	1.38	1.07	0.00011	0.00041	0.0459	<0.00050	<0.00050	<0.010	<0.00017	11.8	0.00309	0.00054
	6-Dec-08	L717413-25	0.056	0.230	0.0022	0.0046	23.6	-	<0.0010	-	-	0.0433	<0.00010	0.00011	0.0477	<0.00050	<0.00050	<0.010	<0.00017	17.4	<0.00050	<0.00010
	29-Mar-09	L749298-4	<0.050	0.140	<0.0010	<0.0020	26.2	-	<0.0010	-	1.19	0.0042	<0.00010	<0.00010	0.0650	<0.00050	<0.00050	<0.010	<0.00017	30.3	0.00081	<0.00010
	3-Jul-09	L787346-32	<0.050	<0.050	0.0012	0.0147	11.0	-	<0.0010	-	0.98	0.991	<0.00010	0.00036	0.0429	<0.00050	<0.00050	<0.010	0.000018	10.1	0.00298	0.00057
	3-Jul-09	L787346-28	<0.050	<0.050	<0.0010	0.0151	11.0	-	<0.0010	-	0.85	1.00	<0.00010	0.00039	0.0480	<0.00050	<0.00050	<0.010	0.000021	10.7	0.00291	0.00066
	23-Aug-09	L809851-5	<0.050	<0.050	0.0017	0.0079	17.0	-	<0.0010	-	0.54	0.864	0.00013	0.00041	0.0473	<0.00050	<0.00050	<0.010	0.000012	12.8	0.00243	0.00047
	1-Dec-09	L845898-7	0.086	0.230	<0.0010	0.0115	32.1	-	0.0011	-	1.09	0.0235	<0.00010	0.00013	0.0385	<0.00050	<0.00050	<0.010	0.000013	24.6	<0.00050	<0.00010
	28-Mar-10	L873293-13	<0.050	0.320	<0.0010	0.0314	23.5	-	0.0019	-	1.97	1.55	0.00010	0.00051	0.0676	<0.00050	<0.00050	0.014	0.000025	20.0	0.00454	0.00091
	5-Jul-10	L905787-27	<0.050	<0.050	<0.0010	0.0085	14.9	-	0.0014	-	0.97	0.350	<0.00010	<0.00030	0.0353	<0.00050	<0.00050	0.012	<0.000010	11.6	0.00136	0.00021
	27-Aug-10	L926457-27	<0.050	<0.050	<0.0010	0.0135	22.0	-	<0.0010	-	<0.50	0.962	0.00015	0.00040	0.0550	<0.00050	<0.00050	0.011	0.000016	15.3	0.00275	0.00049
	15-Nov-10	L955725-26	0.071	0.210	<0.0010	0.0050	20.2	-	0.0011	-	1.88	0.188	<0.00010	0.00017	0.0460	<0.00050	<0.00050	<0.010	0.000019	18.1	0.00090	0.00012
	1-Apr-11	L991777-20	0.090	0.230	0.0015	0.0055	27.7	-	0.0014	-	1.19	0.0977	<0.00010	0.00012	0.0589	<0.00050	<0.00050	<0.010	<0.000010	20.5	0.00053	<0.00010
	3-Jul-11	L1026874-8	0.090	0.090	<0.0010	0.0131	15.2	-	<0.0010	-	1.01	0.501	<0.00010	0.00024	0.0361	<0.00050	<0.00050	<0.010	0.000013	9.7	0.00151	0.00024
	4-Sep-11	L1054465-8	0.230	0.270	0.0019	0.246	15.7	-	<0.0010	-	5.07	9.46	0.00042	0.00408	0.170	0.00028	<0.00050	0.016	0.000132	11.8	0.0271	0.00649
	28-Nov-11	L1091310-21	<0.050	0.090	0.0012	0.0040	26.7	-	<0.0011	-	1.18	0.0870	<0.00010	0.00012	0.0531	<0.00050	<0.00050	<0.010	<0.000010	20.6	0.00049	<0.00010
BIR2	2-Oct-08	L691752-15	<0.050	0.090	0.0018	0.0880	18.9	-	<0.0010	-	1.39	2.44	0.00028	0.00168	0.0633	<0.00050	<0.00050	<0.010	0.000083	14.0	0.00590	0.00143
	6-Dec-08	L717413-27	0.052	0.230	0.0019	0.0050	37.2	-	<0.0010	-	1.14	0.0510	0.00014	0.00021	0.0390	<0.00050	<0.00050	<0.010	0.000020	27.3	<0.00050	<0.00010
	28-Mar-09	L748538-13	0.053	0.190	0.0012	0.0119	57.2	-	<0.0010	-	0.70	0.0361	0.00020	0.00027	0.0417	<0.00050	<0.00050	<0.010	0.000020	41.8	<0.00050	<0.00010
	2-Jul-09	L787346-29	<0.050	0.055	0.0015	0.0255	14.6	-	<0.0010	-	1.25	1.06	<0.00010	0.00046	0.0448	<0.00050	<0.00050	<0.010	0.000021	14.0	0.00314	0.00071
	23-Aug-09	L809851-10	<0.050	<0.050	0.0011	0.0630	20.1	-	<0.0010	-	<0.50	2.27	0.00023	0.00136	0.0635	<0.00050	<0.00050	<0.010	0.000050	14.9	0.00552	0.00129
	25-Nov-09	L844495-25	0.080	0.230	<0.0010	0.0062	32.4	-	<0.0010	-	0.90	0.0479	<0.00010	0.00017	0.0437	<0.00050	<0.00050	<0.010	<0.000010	27.6	<0.00050	<0.00010
	28-Mar-10	L873293-14	<0.050	0.330	0.0013	0.0425	21.2	-	0.0031	-	2.72	1.61	0.00012	0.00080	0.0541	<0.00050	<0.00050	0.013	0.000033	20.6	0.00471	0.00110
	5-Jul-10	L905787-28	<0.050	0.050	<0.0010	0.0215	19.5	-	0.0011	-	0.99	0.542	0.00010	<0.00050	0.0377	<0.00050	<0.00050	0.012	0.000023	15.4	0.00172	0.00042
	27-Aug-10	L926457-28	<0.050	<0.050	<0.0010	0.0185	21.5	-	<0.0010	-	<0.50	0.935	0.00017	0.00058	0.0482	<0.00050	<0.00050	0.011	0.000024	18.6	0.00262	0.00051
	15-Nov-10	L955725-27	0.062	0.230	0.0016	0.0049	33.5	-	0.0013	-	1.91	0.0949	0.00016	0.00026	0.0337	<0.00050	<0.00050	<0.010	0.000025	29.3	0.00044	0.00011
	1-Apr-11	L991777-22	0.091	0.220	<0.0010	0.0040	57.1	-	<0.0													

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Bell-Irving River Watershed**

Site Name	Date	ALS Sample No.	Total Metals																			
			Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
BIR1	2-Oct-08	L691752-14	0.00216	1.15	0.000232	<0.0050	5.80	0.0166	0.000011	0.000803	0.00384	<0.30	0.586	0.00069	4.13	<0.000010	<2.0	0.113	<0.00010	<0.00010	0.033	0.000022
	6-Dec-08	L717413-25	0.00053	0.040	<0.000050	<0.0050	7.73	0.00201	<0.000010	0.000882	<0.00050	<0.30	0.362	0.00100	2.29	<0.000010	2.7	0.158	<0.00010	<0.00010	<0.010	0.000023
	29-Mar-09	L749298-4	0.00045	<0.030	<0.000050	<0.0050	11.30	0.00281	<0.000010	0.000576	0.00069	<0.30	0.411	0.00149	2.22	<0.000010	2.6	0.193	<0.00010	<0.00010	<0.010	0.000028
	3-Jul-09	L787346-32	0.00203	1.000	0.000220	<0.0050	5.82	0.0207	<0.000010	0.000743	0.00385	<0.30	0.486	0.00057	2.95	<0.000010	<2.0	0.118	<0.00010	<0.00010	0.016	0.000018
	3-Jul-09	L787346-28	0.00216	1.000	0.000242	<0.0050	6.14	0.0240	<0.000010	0.000774	0.00401	<0.30	0.507	0.00061	2.89	<0.000010	<2.0	0.131	<0.00010	<0.00010	0.014	0.000022
	23-Aug-09	L809851-5	0.00156	0.747	0.000180	<0.0050	6.84	0.0131	<0.000010	0.000920	0.00318	<0.30	0.532	0.00059	2.82	0.000011	<2.0	0.137	<0.00010	<0.00010	0.019	0.000027
	1-Dec-09	L845898-7	0.00040	0.065	<0.000050	<0.0050	7.23	0.0141	<0.000010	0.000745	0.00061	<0.30	0.330	0.00063	2.36	<0.000010	2.4	0.202	<0.00010	<0.00010	<0.010	0.000027
	28-Mar-10	L873293-13	0.00303	1.60	0.000352	<0.0050	8.67	0.0337	<0.000010	0.000912	0.00590	<0.30	0.756	0.00090	5.23	<0.000010	3.6	0.182	<0.00010	0.00017	0.049	0.000048
	5-Jul-10	L905787-27	0.00095	0.392	0.000098	<0.0050	5.38	0.00882	<0.000010	0.000776	0.00168	<0.30	0.353	0.00055	2.05	0.000011	<2.0	0.114	<0.00010	<0.00010	<0.010	0.000016
	27-Aug-10	L926457-27	0.00171	0.691	0.000190	<0.0050	6.93	0.0126	<0.000010	0.000976	0.00295	<0.30	0.607	0.00057	2.95	<0.000010	<2.0	0.147	<0.00010	<0.00010	0.022	0.000043
	15-Nov-10	L955725-26	0.00109	0.205	0.000181	<0.0050	7.38	0.00575	<0.000010	0.000860	0.00115	<0.30	0.369	0.00071	2.51	<0.000010	2.5	0.161	<0.00010	<0.00010	<0.010	0.000025
	1-Apr-11	L991777-20	0.00055	0.096	<0.000050	<0.0050	9.62	0.00473	<0.000010	0.00109	0.00078	<0.30	0.420	0.00095	2.31	<0.000010	3.6	0.213	<0.00010	<0.00010	<0.010	0.000038
	3-Jul-11	L1026874-8	0.00116	0.486	0.000107	0.00138	4.91	0.00955	<0.000010	0.000715	0.00189	<0.30	0.372	0.00053	2.44	<0.000010	<2.0	0.113	<0.00010	<0.00010	0.014	0.000015
	4-Sep-11	L1054465-8	0.0190	12.6	0.00270	0.0104	9.20	0.204	<0.000050	0.00124	0.0394	0.31	2.29	0.00068	14.90	0.000080	<2.0	0.135	0.00009	<0.00010	0.093	0.00200
	28-Nov-11	L1091310-21	0.00061	0.081	<0.000050	0.00135	8.34	0.00605	<0.000010	0.00102	0.00092	<0.30	0.424	0.00084	2.49	<0.000010	2.8	0.197	<0.00010	<0.00010	<0.010	0.000028
BIR2	2-Oct-08	L691752-15	0.00491	3.32	0.00121	<0.0050	5.61	0.0647	0.000017	0.000843	0.00694	<0.30	0.886	0.00064	6.88	0.000028	<2.0	0.118	<0.00010	<0.00010	0.098	0.000065
	6-Dec-08	L717413-27	0.00054	0.094	<0.000050	<0.0050	6.36	0.0139	<0.000010	0.000794	0.00063	<0.30	0.334	0.00080	2.50	<0.000010	2.3	0.194	<0.00010	<0.00010	<0.010	0.000036
	28-Mar-09	L748538-13	<0.00050	0.187	0.000112	<0.0050	7.58	0.0230	<0.000010	0.000946	0.00072	<0.30	0.362	0.00075	2.43	<0.000010	2.9	0.277	<0.00010	<0.00010	<0.010	0.000058
	2-Jul-09	L787346-29	0.00236	1.07	0.000279	<0.0050	5.98	0.0332	<0.000010	0.000716	0.00406	<0.30	0.514	0.00062	3.23	<0.000010	<2.0	0.140	<0.00010	<0.00010	0.022	0.000026
	23-Aug-09	L809851-10	0.00383	2.46	0.000769	<0.0050	6.01	0.0574	<0.000010	0.000841	0.00665	<0.30	0.818	0.00056	5.49	0.000027	<2.0	0.136	<0.00010	<0.00010	0.071	0.000047
	25-Nov-09	L844495-25	<0.00050	0.083	<0.000050	<0.0050	8.02	0.0145	<0.000010	0.000809	0.00080	<0.30	0.384	0.00083	2.18	<0.000010	2.5	0.222	<0.00010	<0.00010	<0.010	0.000034
	28-Mar-10	L873293-14	0.00350	1.98	0.000488	<0.0050	6.23	0.0723	<0.000010	0.000570	0.00632	<0.30	0.702	0.00058	5.11	0.000017	2.5	0.150	<0.00010	<0.00010	0.044	0.000040
	5-Jul-10	L905787-28	0.00149	0.695	0.000250	<0.0050	5.26	0.0254	<0.000010	0.000708	0.00233	<0.30	0.401	0.00051	2.54	<0.000010	<2.0	0.130	<0.00010	<0.00010	0.011	0.000022
	27-Aug-10	L926457-28	0.00160	0.795	0.000349	<0.0050	5.35	0.0254	<0.000010	0.000816	0.00257	<0.30	0.572	0.00049	2.97	0.000012	<2.0	0.148	<0.00010	<0.00010	0.023	0.000038
	15-Nov-10	L95																				

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Bell-Irving River Watershed**

Site Name	Date	ALS Sample No.	Total Metals		Dissolved Metals																	
			Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)
BIR1																						
	2-Oct-08	L691752-14	0.0033	0.0038	0.0514	<0.00010	0.00014	0.0341	<0.00050	<0.010	<0.000017	12.4	<0.00050	<0.00010	0.00049	<0.030	<0.000050	<0.0050	5.61	0.00086	<0.000010	
	6-Dec-08	L717413-25	<0.0010	<0.0010	<0.0070	<0.00010	<0.00010	0.0474	<0.00050	<0.010	<0.000017	17.3	<0.00050	<0.00010	0.00048	<0.030	<0.000050	<0.0050	7.60	0.00099	<0.000010	
	29-Mar-09	L749298-4	<0.0010	<0.0010	0.0022	<0.00010	<0.00010	0.0644	<0.00050	<0.00050	<0.010	<0.000017	29.4	0.00068	<0.00010	0.00041	<0.030	<0.000050	<0.0050	10.6	0.00221	<0.000010
	3-Jul-09	L787346-32	0.0026	0.0040	0.0296	<0.00010	<0.00010	0.0278	<0.00050	<0.00050	<0.010	<0.000010	9.06	<0.00050	<0.00010	0.00035	<0.030	<0.000050	<0.0050	5.11	0.00201	<0.000010
	3-Jul-09	L787346-28	0.0027	0.0042	0.0295	<0.00010	<0.00010	0.0279	<0.00050	<0.00050	<0.010	<0.000010	8.76	<0.00050	<0.00010	0.00032	<0.030	<0.000050	<0.0050	5.10	0.00210	<0.000010
	23-Aug-09	L809851-5	0.0024	0.0031	0.0764	<0.00010	0.00016	0.0350	<0.00050	<0.00050	<0.010	<0.000010	11.9	<0.00050	<0.00010	0.00029	0.042	<0.000050	<0.0050	6.18	0.00206	<0.000010
	1-Dec-09	L845898-7	<0.0010	<0.0010	0.0047	<0.00010	0.00011	0.0384	<0.00050	<0.00050	<0.010	<0.000010	24.6	<0.00050	<0.00010	0.00042	<0.030	<0.000050	<0.0050	7.19	0.0125	<0.000010
	28-Mar-10	L873293-13	0.0043	0.0062	0.0165	<0.00010	0.00011	0.0461	<0.00050	<0.00050	<0.010	<0.000010	18.5	<0.00050	<0.00010	0.00062	<0.030	<0.000050	<0.0050	7.61	0.00894	<0.000010
	5-Jul-10	L905787-27	0.0011	0.0015	0.0142	<0.00010	<0.00010	0.0304	<0.00050	<0.00050	<0.010	<0.000010	10.9	0.00024	<0.00010	0.00032	<0.030	<0.000050	<0.0050	5.02	0.00035	<0.000010
	27-Aug-10	L926457-27	0.0028	0.0032	0.0202	0.00010	0.00013	0.0404	<0.00050	<0.00050	<0.010	<0.000010	13.8	0.00028	<0.00010	0.00026	<0.030	<0.000050	<0.0050	6.42	0.00175	<0.000010
	15-Nov-10	L955725-26	<0.0010	<0.0030	0.0144	<0.00010	0.00012	0.0443	<0.00050	<0.00050	<0.010	<0.000010	18.0	0.00026	<0.00010	0.00054	<0.030	<0.000050	<0.0050	7.50	0.00148	<0.000010
	1-Apr-11	L991777-20	<0.0010	<0.0030	0.0057	<0.00010	<0.00010	0.0561	<0.00050	<0.00050	<0.010	<0.000010	20.7	0.00027	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	9.56	0.00239	<0.000010
	3-Jul-11	L1026874-8	0.0014	<0.0030	0.0267	<0.00010	0.00010	0.0300	<0.00050	<0.00050	<0.010	<0.000010	10.3	0.00035	<0.00010	<0.00050	<0.030	<0.000050	0.00105	4.78	0.00217	<0.000010
	4-Sep-11	L1054465-8	0.0276	0.0403	0.273	0.00011	0.00024	0.0395	<0.00010	<0.00050	<0.010	<0.000010	11.3	0.00086	0.00011	0.00089	0.155	<0.000050	0.00152	5.23	0.00437	<0.000010
	28-Nov-11	L1091310-21	<0.0010	0.0039	0.0072	<0.00010	0.00012	0.0515	<0.00010	<0.00050	<0.010	<0.000010	19.6	0.00024	<0.00010	<0.00050	<0.030	<0.000050	0.00124	8.24	0.00425	<0.000010
BIR2																						
	2-Oct-08	L691752-15	0.0074	0.0117	0.0831	0.00011	0.00024	0.0321	<0.00050	<0.010	<0.000017	14.5	<0.00050	<0.00010	0.00065	0.064	<0.000050	<0.0050	4.71	0.00094	<0.000010	
	6-Dec-08	L717413-27	<0.0010	<0.0010	<0.0080	0.00014	0.00015	0.0381	<0.00050	<0.010	<0.000017	27.1	<0.00050	<0.00010	0.00043	<0.030	<0.000050	<0.0050	6.09	0.0107	0.00011	
	28-Mar-09	L748538-13	<0.0010	0.0020	0.0026	0.00020	0.00018	0.0415	<0.00050	<0.00050	<0.010	0.000017	42.0	<0.00050	<0.00010	0.00024	<0.030	<0.000050	<0.0050	7.68	0.0110	<0.000010
	2-Jul-09	L787346-29	0.0029	0.0045	0.0258	<0.00010	0.00011	0.0271	<0.00050	<0.00050	<0.010	<0.000010	12.1	<0.00050	<0.00010	0.00044	<0.030	<0.000050	<0.0050	4.93	0.00567	<0.000010
	23-Aug-09	L809851-10	0.0063	0.0090	0.0792	<0.00010	0.00017	0.0293	<0.00050	<0.00050	<0.010	<0.000010	13.7	<0.00050	<0.00010	0.00033	0.050	<0.000050	<0.0050	4.71	0.00112	<0.000010
	25-Nov-09	L844495-25	<0.0010	<0.0010	0.0057	<0.00010	0.00012	0.0395	<0.00050	<0.00050	<0.010	<0.000010	25.1	<0.00050	<0.00010	0.00031	<0.030	<0.000050	<0.0050	7.42	0.0109	<0.000010
	28-Mar-10	L873293-14	0.0045	0.0076	0.0204	<0.00010	0.00014	0.0337	<0.00050	<0.00050	0.010	<0.000010	19.0	<0.00050	<0.00010	0.00061	0.041	<0.000050	<0.0050	5.28	0.0192	<0.000010
	5-Jul-10	L905787-28	0.0016	0.0034	0.0149	<0.00010	0.00016	0.0301	<0.00050	<0.00050	<0.010	0.000010	14.9	<0.00020	<0.00010	0.00035	<0.030	<0.000050	<0.0050	4.84		

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Bell-Irving River Watershed**

Site Name	Date	ALS Sample No.	Dissolved Metals														
			Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	
BIR1	2-Oct-08	L691752-14	0.000818	<0.00050	<0.30	0.342	0.00066	1.65	<0.000010	<2.0	0.114	<0.00010	<0.00010	<0.010	0.000012	<0.0010	<0.0010
	6-Dec-08	L717413-25	0.000941	<0.00050	<0.30	0.358	0.00081	2.13	<0.000010	2.7	0.158	<0.00010	<0.00010	<0.010	0.000025	<0.0010	<0.0010
	29-Mar-09	L749298-4	0.000581	0.00082	<0.30	0.395	0.00131	2.16	<0.000010	2.7	0.190	<0.00010	<0.00010	<0.010	0.000029	<0.0010	0.0013
	3-Jul-09	L787346-32	0.000631	<0.00050	<0.30	0.252	0.00036	1.48	<0.000010	<2.0	0.101	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	3-Jul-09	L787346-28	0.000685	<0.00050	<0.30	0.253	0.00054	1.47	<0.000010	<2.0	0.107	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	23-Aug-09	L809851-5	0.000950	0.00056	<0.30	0.308	0.00056	1.41	<0.000010	<2.0	0.131	<0.00010	<0.00010	<0.010	0.000014	<0.0010	<0.0010
	1-Dec-09	L845898-7	0.000744	0.00055	<0.30	0.324	0.00061	2.26	<0.000010	2.4	0.201	<0.00010	<0.00010	<0.010	0.000029	<0.0010	<0.0010
	28-Mar-10	L873293-13	0.000836	0.00065	<0.30	0.386	0.00085	2.13	<0.000010	3.4	0.173	<0.00010	<0.00010	<0.010	0.000026	<0.0010	<0.0010
	5-Jul-10	L905787-27	0.000794	<0.00050	<0.30	0.268	0.00050	1.50	<0.000010	<2.0	0.111	<0.00010	<0.00010	<0.010	0.000010	<0.0010	<0.0010
	27-Aug-10	L926457-27	0.000972	<0.00050	<0.30	0.308	0.00056	1.32	<0.000010	<2.0	0.140	<0.00010	<0.00010	<0.010	0.000018	<0.0010	<0.0010
	15-Nov-10	L955725-26	0.000865	0.00057	<0.30	0.330	0.00073	2.25	<0.000010	2.6	0.164	<0.00010	<0.00010	<0.010	0.000021	<0.0010	<0.0030
	1-Apr-11	L991777-20	0.00108	<0.00050	<0.30	0.397	0.00100	2.12	<0.000010	3.6	0.209	<0.00010	<0.00010	<0.010	0.000036	<0.0010	<0.0030
	3-Jul-11	L1026874-8	0.000797	0.00063	<0.30	0.264	0.00057	1.54	<0.000010	<2.0	0.119	<0.000010	<0.00010	<0.010	0.000011	<0.0010	<0.0030
	4-Sep-11	L1054465-8	0.000889	0.00116	<0.30	0.396	0.00055	1.81	<0.000010	<2.0	0.113	<0.000010	<0.00010	<0.010	0.000019	<0.0010	<0.0030
	28-Nov-11	L1091310-21	0.000989	0.00078	<0.30	0.411	0.00087	2.32	<0.000010	2.8	0.188	<0.000010	<0.00010	<0.010	0.000032	<0.0010	<0.0030
BIR2	2-Oct-08	L691752-15	0.000719	0.00053	<0.30	0.338	0.00068	1.76	<0.000010	<2.0	0.115	<0.00010	<0.00010	<0.010	0.000015	<0.0010	<0.0010
	6-Dec-08	L717413-27	0.000791	0.00052	<0.30	0.320	0.00065	2.32	<0.000010	2.2	0.191	<0.00010	<0.00010	<0.010	0.000035	<0.0010	<0.0010
	28-Mar-09	L748538-13	0.000957	<0.00050	<0.30	0.356	0.00079	2.45	<0.000010	2.9	0.280	<0.00010	<0.00010	<0.010	0.000055	<0.0010	<0.0010
	2-Jul-09	L787346-29	0.000617	0.00056	<0.30	0.267	0.00046	1.72	<0.000010	<2.0	0.118	<0.00010	<0.00010	<0.010	0.000013	<0.0010	<0.0010
	23-Aug-09	L809851-10	0.000742	0.00050	<0.30	0.282	0.00051	1.51	<0.000010	<2.0	0.127	<0.00010	<0.00010	<0.010	0.000017	<0.0010	<0.0010
	25-Nov-09	L844495-25	0.000774	0.00056	<0.30	0.340	0.00080	2.10	<0.000010	2.5	0.204	<0.00010	<0.00010	<0.010	0.000029	<0.0010	<0.0010
	28-Mar-10	L873293-14	0.000519	0.00074	<0.30	0.334	0.00059	2.19	<0.000010	2.3	0.147	<0.00010	<0.00010	<0.010	0.000021	<0.0010	<0.0010
	5-Jul-10	L905787-28	0.000711	<0.00050	<0.30	0.275	0.00058	1.70	<0.000010	<2.0	0.126	<0.00010	<0.00010	<0.010	0.000014	<0.0010	<0.0010
	27-Aug-10	L926457-28	0.000845	<0.00050	<0.30	0.274	0.00042	1.40	<0.000010	<2.0	0.137	<0.00010	<0.00010	<0.010	0.000019	<0.0010	<0.0010
	15-Nov-10	L955725-27	0.000777	0.00063	<0.30	0.275	0.00058	2.45	<0.000010	2.0	0.206	<0.00010	<0.00010	<0.010	0.000032	<0.0010	<0.0030
	1-Apr-11	L991777-22	0.000938	<0.00050	<0.30	0.320	0.00077	2.39	<0.000010	2.6	0.310	<0.00010	<0.00010	<0.010	0.000054	<0.0010	<0.0030
	3-Jul-11	L1026874-9	0.000649	0.00055	<0.30	0.247	0.00051	1.62	<0.000010	<2.0	0.123	<0.000010	<0.00010	<0.010	0.000011	<0.0010	<0.0030
	4-Sep-11	L1054465-7	0.000488	0.0137	0.68	0.514	0.00042	2.73	0.000040	<2.0	0.179	0.00006	<0.00010	<0.010	0.000186	0.0052	0.0601
	28-Nov-11	L1091310-15	0.000897	0.00066	<0.30	0.375	0.00077	2.49	<0.000010	2.4	0.214	<0.000010	<0.00010	<0.010	0.000034	<0.0010	0.0032

**Notes:**

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**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Bowser River Watershed**

Site Name	Date	ALS Sample No.	Physical Parameter						Anions and Nutrients											
			Colour, True (colour unit)	Conductivity (µS/cm)	Hardness (as CaCO <sub>3</sub> ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Bicarbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Carbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Hydroxide (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Total (as CaCO <sub>3</sub> ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)
BR1	9-Sep-08	L682706-2	<5.0	118	54.7	7.61	16.9	72	32.2	2.8	39.9	<2.0	<2.0	39.9	<0.0050	<0.050	<0.50	<0.020	0.0076	<0.0010
	6-Dec-08	L717413-6	<5.0	187	88.9	8.10	<3.0	105	2.00	<1.0	64.5	<2.0	<2.0	64.5	<0.0050	<0.050	<0.50	0.025	0.0270	<0.0010
	28-Mar-09	L748538-12	<5.0	258	122	8.09	<3.0	151	1.11	1.9	94.8	<2.0	<2.0	94.8	<0.0050	<0.050	<0.50	0.033	0.0364	<0.0010
	2-Jul-09	L787346-27	<5.0	89.8	43.9	7.93	23.0	69	53.3	2.6	33.7	<2.0	<2.0	33.7	<0.0050	<0.050	<0.50	<0.020	0.0217	<0.0010
	22-Aug-09	L809879-19	<5.0	59.7	27.4	8.01	143	56	122	<1.0	26.1	<1.0	<1.0	26.1	<0.0050	<0.050	<0.50	<0.020	0.0078	<0.0010
	1-Dec-09	L845898-6	<5.0	209	100	8.09	<3.0	126	2.32	1.6	72.6	<2.0	<2.0	72.6	0.0067	<0.050	<0.50	0.042	0.0240	<0.0010

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**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Bowser River Watershed**

Site Name	Date	ALS Sample No.	Anions and Nutrients					Cyanides			Carbon	Total Metals											
			Total Kjeldahl Nitrogen	Total Nitrogen	Ortho Phosphate (as P)	Total Phosphate (as P)	Sulphate (SO <sub>4</sub> )	Cyanide, Weak Acid Dissociable	Cyanide, Total	Thiocyanate		Total Organic Carbon	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	
BR1	9-Sep-08	L682706-2	<0.050	<0.05	<0.0010	0.0224	16.5	-	<0.0010	-	<0.50	1.20	0.00031	0.00104	0.0551	<0.00050	<0.00050	<0.010	0.000033	21.0	0.00110	0.00056	
	6-Dec-08	L717413-6	<0.050	0.070	<0.0010	0.0029	32.0	-	<0.0010	-	<0.50	0.0663	0.00036	0.00093	0.0516	<0.00050	<0.00050	<0.010	0.000021	31.3	<0.00050	<0.00010	
	28-Mar-09	L748538-12	<0.050	<0.050	<0.0010	<0.0020	45.8	-	<0.0010	-	<0.50	0.0307	0.00036	0.00096	0.0652	<0.00050	<0.00050	<0.010	0.000018	43.6	<0.00050	<0.00010	
	2-Jul-09	L787346-27	<0.050	<0.050	<0.0010	0.0378	11.3	-	<0.0010	-	<0.50	2.56	0.00051	0.00207	0.0742	<0.00050	<0.00050	<0.010	0.000059	18.4	0.00256	0.00118	
	22-Aug-09	L809879-19	<0.050	<0.050	0.0013	0.151	5.47	-	<0.0010	-	<0.50	4.76	0.00066	0.00434	0.119	<0.00050	<0.00050	<0.010	0.000176	14.1	0.00455	0.00297	
	1-Dec-09	L845898-6	<0.050	<0.050	<0.0010	<0.0020	33.0	-	<0.0010	-	<0.50	0.345	0.00034	0.00148	0.0724	<0.00050	<0.00050	<0.010	0.000038	38.8	<0.00050	0.00041	

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**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Bowser River Watershed**

Site Name	Date	ALS Sample No.	Total Metals																																					
			Copper (Cu)		Iron (Fe)		Lead (Pb)		Lithium (Li)		Magnesium (Mg)		Mercury (Hg)		Molybdenum (Mo)		Nickel (Ni)		Phosphorus (P)		Potassium (K)		Selenium (Se)		Silicon (Si)		Silver (Ag)		Sodium (Na)		Strontium (Sr)		Thallium (Tl)		Tin (Sn)		Titanium (Ti)		Uranium (U)	
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)									
BR1	9-Sep-08	L682706-2	0.00279	1.10	0.000756	<0.0050	1.82	0.0437	<0.000010	0.00116	0.00082	<0.30	0.602	0.00050	2.73	0.000022	<2.0	0.106	<0.00010	0.00010	0.034	0.000115																		
	6-Dec-08	L717413-6	0.00050	0.086	0.000115	<0.0050	2.52	0.0163	<0.000010	0.00169	<0.00050	<0.30	0.517	0.00127	1.56	<0.000010	<2.0	0.150	<0.00010	<0.00010	<0.010	0.000234																		
	28-Mar-09	L748538-12	0.00045	0.077	0.000065	<0.0050	3.41	0.0225	<0.000010	0.00198	<0.00050	<0.30	0.583	0.00116	1.82	<0.000010	<2.0	0.196	<0.00010	<0.00010	<0.010	0.000329																		
	2-Jul-09	L787346-27	0.00618	2.27	0.00121	<0.0050	2.64	0.0905	<0.000010	0.00141	0.00174	<0.30	0.962	0.00071	4.72	0.000020	<2.0	0.124	<0.00010	<0.00010	0.073	0.000116																		
	22-Aug-09	L809879-19	0.0151	5.85	0.00439	<0.0050	2.51	0.216	0.000010	0.000817	0.00383	0.38	1.47	0.00019	8.88	0.000061	<2.0	0.076	<0.00010	<0.00010	0.197	0.000175																		
	1-Dec-09	L845898-6	0.00205	0.675	0.000863	<0.0050	3.25	0.0472	<0.000010	0.00174	0.00063	<0.30	0.560	0.00089	2.10	<0.000010	<2.0	0.203	<0.00010	<0.00010	0.028	0.000243																		

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**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Bowser River Watershed**

Site Name	Date	ALS Sample No.	Total Metals		Dissolved Metals																	
			Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)
BR1	9-Sep-08	L682706-2	0.0038	0.0048	0.0355	0.00023	0.00037	0.0357	<0.00050	<0.00050	<0.010	<0.000017	19.7	<0.00050	<0.00010	<0.00010	<0.030	<0.000050	<0.0050	1.35	0.00967	<0.000010
	6-Dec-08	L717413-6	<0.0010	<0.0010	<0.0070	0.00035	0.00074	0.0511	<0.00050	<0.00050	<0.010	0.000018	31.5	<0.00050	<0.00010	0.00029	<0.030	<0.000050	<0.0050	2.48	0.0131	0.000011
	28-Mar-09	L748538-12	<0.0010	<0.0010	0.0028	0.00036	0.00074	0.0636	<0.00050	<0.00050	<0.010	<0.000017	43.2	<0.00050	<0.00010	0.00019	<0.030	<0.000050	<0.0050	3.38	0.0182	<0.000010
	2-Jul-09	L787346-27	0.0079	0.0092	0.0372	0.00027	0.00059	0.0263	<0.00050	<0.00050	<0.010	0.000013	15.2	<0.00050	<0.00010	0.00030	<0.030	<0.000050	<0.0050	1.42	0.00668	<0.000010
	22-Aug-09	L809879-19	0.0158	0.0208	0.127	0.00020	0.00038	0.0201	<0.00050	<0.00050	<0.010	<0.000010	9.97	<0.00050	<0.00010	0.00021	0.061	<0.000050	<0.0050	0.604	0.00144	<0.000010
	1-Dec-09	L845898-6	0.0013	0.0042	0.0040	0.00028	0.00080	0.0607	<0.00050	<0.00050	<0.010	0.000016	35.3	<0.00050	<0.00010	0.00019	<0.030	<0.000050	<0.0050	2.88	0.0179	<0.000010

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**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Bowser River Watershed**

Site Name	Date	ALS Sample No.	Dissolved Metals														
			Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
BR1	9-Sep-08	L682706-2	0.00106	<0.00050	<0.30	0.230	0.00043	0.857	<0.000010	<2.0	0.102	<0.00010	<0.00010	<0.010	0.000093	<0.0010	<0.0010
	6-Dec-08	L717413-6	0.00180	<0.00050	<0.30	0.505	0.00118	1.42	<0.000010	<2.0	0.150	<0.00010	<0.00010	<0.010	0.000238	<0.0010	<0.0010
	28-Mar-09	L748538-12	0.00200	<0.00050	<0.30	0.568	0.00103	1.74	<0.000010	<2.0	0.193	<0.00010	<0.00010	<0.010	0.000329	<0.0010	<0.0010
	2-Jul-09	L787346-27	0.00109	<0.00050	<0.30	0.241	0.00049	0.786	<0.000010	<2.0	0.095	<0.00010	<0.00010	<0.010	0.000078	<0.0010	<0.0010
	22-Aug-09	L809879-19	0.00064	<0.00050	<0.30	0.193	0.00023	0.613	<0.000010	<2.0	0.052	<0.00010	<0.00010	<0.010	0.000037	<0.0010	<0.0010
	1-Dec-09	L845898-6	0.00170	<0.00050	<0.30	0.456	0.00085	1.57	<0.000010	<2.0	0.188	<0.00010	<0.00010	<0.010	0.000224	<0.0010	<0.0010

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**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Physical Parameter							Anions and Nutrients											
			Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Total (as $\text{CaCO}_3$ ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)	
GC-1																					
	23-Sep-07	L559547-13	-	158	79.3	7.98	16.5	89	-	4.4	-	-	-	52.6	<0.0050	<0.050	<0.50	<0.020	0.0129	<0.0010	
	29-Oct-08	L703445-14	<5.0	209	94.5	8.12	<3.0	122	1.13	<1.0	76.8	<2.0	<2.0	76.8	<0.0050	<0.050	<0.50	0.028	0.143	<0.0010	
	6-Dec-08	L717413-17	<5.0	211	98.0	8.11	<3.0	123	1.01	<1.0	82.0	<2.0	<2.0	82.0	<0.0050	<0.050	<0.50	0.023	0.124	<0.0010	
	28-Mar-09	L748538-7	<5.0	262	117	8.06	6.3	160	0.85	1.8	88.2	<2.0	<2.0	88.2	<0.0050	<0.050	<0.50	0.025	0.0966	<0.0010	
	2-Jul-09	L787346-22	<5.0	143	68.4	7.96	3.0	82	2.44	2.7	60.5	<2.0	<2.0	60.5	<0.0050	<0.050	<0.50	<0.020	0.0189	<0.0010	
	22-Aug-09	L809879-15	<5.0	101	46.7	7.94	73.8	92	103	1.5	37.6	<1.0	<1.0	37.6	<0.0050	<0.050	<0.50	<0.020	0.0065	<0.0010	
	1-Dec-09	L845898-3	<5.0	225	109	7.73	<3.0	141	0.61	3.6	76.6	<2.0	<2.0	76.6	<0.0050	<0.050	<0.50	0.025	0.0722	<0.0010	
	3-Aug-10	L916942-19	<5.0	82.2	39.7	8.07	715	66	453	1.7	35.1	<1.0	<1.0	35.1	<0.0050	<0.050	<0.50	<0.020	0.0076	<0.0010	
	15-Nov-10	L955725-32	<5.0	226	107	8.21	<3.0	123	0.83	1.4	89.0	<2.0	<2.0	89.0	<0.0050	<0.050	<0.50	0.026	0.125	<0.0010	
	5-Mar-11	L985810-5	<5.0	260	121	8.19	<3.0	162	0.43	3.4	93.9	<2.0	<2.0	93.9	<0.0050	<0.050	<0.50	0.022	0.0676	<0.0010	
	31-Mar-11	L991777-7	<5.0	270	124	7.94	<3.0	164	0.34	4.6	69.7	<2.0	<2.0	69.7	<0.0050	<0.050	<0.50	0.023	0.103	<0.0010	
	2-May-11	L1002688-12	<5.0	271	129	8.21	<3.0	164	0.26	2.0	98.6	<2.0	<2.0	98.6	0.0063	<0.050	<0.50	0.022	0.323	<0.0010	
	5-Jun-11	L1014013-14	<5.0	134	62.2	7.95	16.7	81	16.5	3.1	56.7	<2.0	<2.0	56.7	<0.0050	<0.050	<0.50	<0.020	0.0482	<0.0010	
	4-Jul-11	L1028827-2	<5.0	140	72.9	7.99	6.9	82	6.01	1.3	47.8	<2.0	<2.0	47.8	<0.0050	<0.050	<0.50	<0.020	0.0112	<0.0010	
	1-Aug-11	L1039955-11	<5.0	114	50.6	8.30	13.3	76	15.7	<1.0	38.2	<2.0	<2.0	38.2	<0.0050	<0.050	<0.50	<0.020	<0.0050	<0.0010	
	5-Sep-11	L1054953-12	<5.0	139	64.1	8.15	80.8	90	46.7	4.0	49.8	<2.0	<2.0	49.8	<0.0050	<0.050	<0.50	<0.020	0.0364	<0.0010	
	1-Oct-11	L1067383-7	<5.0	201	94.4	8.22	4.0	113	3.58	2.7	75.9	<2.0	<2.0	75.9	<0.0050	<0.050	<0.50	0.029	0.0407	<0.0010	
	26-Oct-11	L1079029-18	<5.0	218	101	8.13	<3.0	135	0.89	2.4	80.3	<2.0	<2.0	80.3	0.0176	<0.050	<0.50	0.027	0.0640	<0.0010	
	27-Nov-11	L1091310-4	<5.0	238	108	8.22	<3.0	136	0.61	1.6	87.2	<2.0	<2.0	87.2	<0.0050	<0.050	<0.50	0.029	0.0726	<0.0010	
MC1																					
	24-Jul-07	L535508-8	-	-	61.0	3.72	-	127	-	31.8	-	-	-	<2.0	<0.0050	<0.050	<0.50	0.307	<0.0050	<0.0010	
	23-Sep-07	L559547-9	-	269	102	5.53	231	158	-	23.1	-	-	-	<2.0	<0.0050	<0.050	<0.50	0.360	0.0084	<0.0010	
	28-May-08	L635965-2	118	5.2	614	3.31	321	535	480	113	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.050	<0.50	0.667	0.0426	<0.0010	
	5-Jun-08	L639617-8	98.9	17.4	742	3.16	358	313	335	177	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.050	<0.50	0.870	0.0201	<0.0010	
	5-Jun-08	L639617-7	99.8	17.4	702	3.18	359	298	280	170	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.050	<0.50	0.880	0.0192	<0.0010	
	11-Jun-08	L642688-9	122	<5.0	670	3.28	404	328	318	148	<1.0	<1.0	<1.0	<1.0	<0.0050	<0.050	<0.50	0.949	0.0180	<0.0010	
	26-Jun-08	L650936-29	6.9	593	108	3.15	381	327	338	107	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.050	<0.50	0.734	<0.0050	<0.0010	
	3-Jul-08	L652071-6	28.5	780	90.6	3.04	635	374	714	226	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.050	<0.50	0.693	<0.0050	<0.0010	
	25-Jul-08	L662220-8	<5.0	257	66.1	4.46	272	149	203	32.8	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.050	<0.50	0.302	0.0131	<0.0010	
	21-Aug-08	50155639	5.0	-	44.0	-	220	68	153	<0.5	<0.5	<0.5	<0.5	<0.05	<0.05	<0.5	<0.090	0.0040			
	10-Sep-08	L683687-4	<5.0	198	72.2	4.88	285	134	276	7.5	<2.0	<2.0	<2.0								

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Physical Parameter						Anions and Nutrients											
			Colour, True (colour unit)	Conductivity (µS/cm)	Hardness (as CaCO <sub>3</sub> ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Bicarbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Carbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Hydroxide (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Total (as CaCO <sub>3</sub> ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)
MC1A	15-Nov-10	L955725-17	6.6	867	230	3.15	79.6	504	140	106	<1.0	<1.0	<1.0	<1.0	<0.020	<0.50	<5.0	0.910	0.0850	<0.010
	31-Mar-11	L991777-11	<5.0	705	306	5.04	52.3	552	123	24.2	2.2	<2.0	<2.0	2.2	<0.0050	<1.8	<0.50	0.838	0.0811	<0.0010
	2-May-11	L1002688-15	<5.0	607	286	5.04	63.8	459	127	22.3	2.7	<2.0	<2.0	2.7	0.0059	<0.050	<0.50	0.724	0.118	<0.0010
	5-Jun-11	L1014013-12	<5.0	593	97.6	3.22	249	341	255	103	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.050	<0.50	0.650	0.0319	<0.0010
	4-Jul-11	L1028827-8	<5.0	448	95.4	3.50	152	304	113	70.6	<2.0	<2.0	<2.0	<2.0	0.0100	<0.050	<0.50	0.569	0.0163	<0.0010
	1-Aug-11	L1041095-6	<5.0	243	72.7	4.12	114	141	83.1	26.0	<2.0	<2.0	<2.0	<2.0	0.0121	<0.050	<0.50	0.318	<0.025	<0.0010
	5-Sep-11	L1054953-4	<5.0	258	80	4.44	298	180	234	33.4	<2.0	<2.0	<2.0	<2.0	<0.0050	0.066	<0.50	0.339	0.0169	<0.0010
	1-Oct-11	L1067383-13	<5.0	655	166	3.44	82.0	396	96.7	108	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.050	<0.50	0.728	0.0078	0.0012
	26-Oct-11	L1079029-16	<5.0	801	219	3.27	81.5	494	156	97.2	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.50	<5.0	0.970	<0.050	<0.010
	2-May-10	L884476-6	63.2	998	165	3.02	373	669	368	287	<1.0	<1.0	<1.0	<1.0	0.0058	<1.0	<10	1.50	<0.10	<0.020
	26-May-10	L891484-8	34.3	1130	156	2.97	995	712	1010	309	<2.0	<2.0	<2.0	<2.0	0.0177	<0.50	<5.0	2.21	<0.050	<0.010
	5-Jul-10	L905787-17	<5.0	300	60.1	3.57	161	146	172	42.3	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.050	<0.50	0.312	0.0157	<0.0010
	3-Aug-10	L916942-8	<5.0	65.1	28.1	7.33	743	31	150	2.6	9.9	<1.0	<1.0	9.9	<0.0050	<0.050	<0.50	0.055	0.0060	<0.0010
MC1A-US	3-Aug-10	L916942-20	<5.0	62.6	28.9	7.30	519	42	235	2.6	7.5	<1.0	<1.0	7.5	<0.0050	<0.050	<0.50	0.055	0.0056	<0.0010
	27-Aug-10	L926457-17	<5.0	288	63.6	3.96	413	171	198	47.2	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.050	<0.50	0.407	0.0067	<0.0010
	28-Sep-10	L938295-8	<5.0	96.8	38.5	7.23	299	60	214	5.5	11.4	<1.0	<1.0	11.4	<0.0050	<0.050	<0.50	0.088	0.0059	<0.0010
	21-Oct-10	L946802-5	139	1270	209	2.92	101	1130	186	519	<1.0	<1.0	<1.0	<1.0	<0.0050	<2.5	<25	1.90	<0.25	<0.050
	15-Nov-10	L955725-16	9.6	824	146	3.03	75.1	428	142	152	<1.0	<1.0	<1.0	<1.0	<0.020	<0.50	<5.0	0.950	<0.050	<0.010
	15-Dec-10	L963832-7	16.3	1160	239	3.10	119	751	131	320	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.50	<5.0	2.32	<0.050	<0.010
	31-Mar-11	L991777-12	<5.0	897	230	3.23	99.3	594	162	162	<2.0	<2.0	<2.0	<2.0	<0.0050	<2.0	<5.0	1.43	<0.050	<0.010
	2-May-11	L1002688-16	<5.0	444	180	4.78	56.3	307	41.1	26.7	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.50	<5.0	0.599	0.0142	<0.0010
	5-Jun-11	L1014013-11	<5.0	303	51.7	3.56	222	135	198	46.2	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.050	<0.50	0.279	0.0258	<0.0010
	4-Jul-11	L1028827-7	<5.0	123	46.2	6.55	76.0	92	56.4	3.7	3.6	<2.0	<2.0	3.6	<0.0050	<0.050	<0.50	0.115	0.0084	<0.0010
	1-Aug-11	L1041095-8	<5.0	117	47.8	7.44	71.2	74	57.1	2.3	10.0	<2.0	<2.0	10.0	0.0155	<0.050	<0.50	0.095	<0.025	<0.0010
	5-Sep-11	L1054953-5	<5.0	653	87.1	3.15	374	365	355	127	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.25	<2.5	0.950	0.0630	0.0242
	1-Oct-11	L1067383-12	<5.0	398	103	3.91	84.0	244	71.1	68.6	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.050	<0.50	0.426	<0.0050	<0.0010
	26-Oct-11	L1079029-15	6.5	789	133	3.13	87.5	421	167	140	<2.0	<2.0	<2.0	<2.0	<0.0050	<0.50	<5.0	0.820	<0.050	<0.010
MC2	17-Jan-10	L855505-6	<5.0	450	212	7.92	17.8	318	38.4	3.9	76.9	<2.0	<2.0	76.9	<0.0050	<0.050	<0.50	0.250	0.142	<0.0010
	3-Mar-10	L866873-6	<5.0	477	209	8.00	16.8	338	37.0	3.8	78.8	<2.0	<2.0	78.8	0.0078	<0.050	<0.50	0.276	0.160	<0.0010
	28-Mar-10	L873292-1	<5.0	434	201	7.76	38.7	300	76.0	3.8	76.5	<2.0	<2.0	76.5	<0.0050	<0.050	<0.50	0.277	0	

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Physical Parameter							Anions and Nutrients										
			Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Total (as $\text{CaCO}_3$ ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)
MCT	1-Oct-11	L1067383-14	<5.0	352	154	6.80	64.0	241	97.6	7.8	18.4	<2.0	<2.0	18.4	<0.0050	<0.050	<0.50	0.233	0.0845	0.0020
	26-Oct-11	L1079029-17	<5.0	397	175	6.96	47.5	277	78.5	6.2	31.8	<2.0	<2.0	31.8	<0.0050	<0.050	<0.50	0.332	0.137	<0.0010
	27-Nov-11	L1091310-8	<5.0	468	205	8.00	33.1	307	64.4	2.4	49.7	<2.0	<2.0	49.7	<0.0050	<0.050	<0.50	0.378	0.113	<0.0010
	5-Jul-10	L905787-20	<5.0	115	53.4	7.88	92.5	86	94.0	3.7	46.1	<1.0	<1.0	46.1	0.0052	<0.050	<0.50	<0.020	0.0206	<0.0010
	27-Aug-10	L926457-20	<5.0	82.0	34.3	8.01	95.0	64	44.9	4.2	29.4	<1.0	<1.0	29.4	<0.0050	<0.050	<0.50	<0.020	0.0105	<0.0010
	15-Nov-10	L955725-19	<5.0	420	203	8.22	<3.0	267	0.58	1.5	104.0	<2.0	<2.0	104.0	<0.0050	<0.050	<0.50	0.043	0.0090	<0.0010
	31-Mar-11	L991777-10	<5.0	451	212	7.93	<3.0	294	0.39	6.3	94.4	<2.0	<2.0	94.4	<0.0050	<0.050	<0.50	0.036	0.0167	<0.0010
MCT1	4-Jul-11	L1028827-17	<5.0	179	80.2	7.91	101	134	95.9	2.5	49.4	<2.0	<2.0	49.4	0.0133	<0.050	<0.50	0.022	0.0188	<0.0010
	5-Sep-11	L1054953-2	<5.0	173	78.4	8.22	172	120	163	3.3	53.7	<2.0	<2.0	53.7	<0.0050	<0.050	<0.50	0.020	0.0393	<0.0010
	24-Jul-07	L535508-9	-	-	75.7	7.94	-	98	-	<1.0				47.5	<0.0050	<0.050	<0.50	0.023	0.0190	<0.0010
	23-Sep-07	L559547-10	-	233	119	7.97	47.5	148	-	2.8				65.1	<0.0050	<0.050	<0.50	0.031	0.0214	<0.0010
	26-Jun-08	L650936-28	<5.0	237	98.8	7.91	30.4	141	25.1	2.0	59.5	<2.0	<2.0	59.5	<0.0050	<0.050	<0.50	0.027	0.0113	<0.0010
	10-Sep-08	L683687-5	<5.0	193	91.9	7.91	19.7	123	15.4	1.6	49.5	<2.0	<2.0	49.5	<0.0050	<0.050	<0.50	0.026	0.0082	<0.0010
	2-Jul-09	L787346-20	<5.0	253	125	7.91	9.5	163	10.7	3.7	71.0	<2.0	<2.0	71.0	<0.0050	<0.050	<0.50	0.025	0.0127	<0.0010
MCT2	22-Aug-09	L809879-13	<5.0	154	72.6	8.00	57.8	116	55.1	1.5	41.7	<2.0	<2.0	41.7	<0.0050	<0.050	<0.50	<0.020	0.0073	<0.0010
	26-Nov-09	L844495-20	<5.0	415	235	8.14	7.4	284	1.54	1.4	103.0	<2.0	<2.0	103.0	<0.0050	<0.050	<0.50	0.040	0.0097	<0.0010
	26-Jun-08	L650936-27	<5.0	113	47.7	7.61	47.4	72	39.7	2.0	37.3	<2.0	<2.0	37.3	<0.0050	<0.050	<0.50	<0.020	0.0292	<0.0010
	10-Sep-08	L683687-6	<5.0	171	80.4	7.99	21.2	106	15.3	1.5	49.8	<2.0	<2.0	49.8	<0.0050	<0.050	<0.50	0.023	0.0094	<0.0010
	2-Jul-09	L787346-31	<5.0	145	70.8	8.00	41.0	93	37.7	2.6	44.9	<2.0	<2.0	44.9	<0.0050	<0.050	<0.50	<0.020	0.0217	<0.0010
	2-Jul-09	L787346-21	<5.0	160	72.9	8.00	51.0	96	45.4	2.7	48.1	<2.0	<2.0	48.1	<0.0050	<0.050	<0.50	<0.020	0.0222	<0.0010
	22-Aug-09	L809879-21	<5.0	58.2	27.5	7.75	75.3	47	65.8	1.8	19.4	<2.0	<2.0	19.4	<0.0050	<0.050	<0.50	<0.020	0.0117	<0.0010
MCTR	22-Aug-09	L809879-14	<5.0	58.7	25.7	8.00	69.8	57	65.3	<1.0	19.4	<2.0	<2.0	19.4	<0.0050	<0.050	<0.50	<0.020	0.0102	<0.0010
	26-Nov-09	L844495-21	<5.0	263	130	8.17	7.9	164	0.87	<1.0	78.9	<2.0	<2.0	78.9	<0.0050	<0.050	<0.50	0.023	0.0259	<0.0010
	28-May-08	L635965-10	92.3	<5.0	197	8.02	123	135	90.1	3.6	64.3	<1.0	<1.0	64.3	<0.0050	<0.050	<0.50	0.037	0.128	<0.0010
	5-Jun-08	L639617-9	95.3	<5.0	224	7.72	140	25	23.5	2.8	60.6	<2.0	<2.0	60.6	<0.0050	<0.050	<0.50	0.033	0.0782	<0.0010
	11-Jun-08	L642688-1	97.0	<5.0	218	8.12	139	29	38.2	<1.0	65.1	<2.0	<2.0	65.1	<0.0050	<0.050	<0.50	0.032	0.0632	<0.0010
	26-Jun-08	L650936-26	<5.0	210	93.6	7.97	14.4	127	0.11	1.7	61.3	<2.0	<2.0	61.3	<0.0050	<0.050	<0.50	0.028	0.0234	<0.0010
	3-Jul-08	L652071-7	<5.0	144	61.8	6.59	405	93	156	14.1	43.7	<2.0	<2.0	43.7	<0.0050	<0.050	<0.50	<0.020	0.0253	<0.0010
MCTR	25-Jul-08	L662220-9	<5.0	158	70.2	7.81	31.7	100	31.7	1.8	47.6	<2.0	<2.0	47.6	<0.0050	<0.050	<0.50	0.022	0.0185	<0.0010
	10-Sep-08	L683687-7	<5.0	178	80.9	7.96	18.7	111												

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Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Physical Parameter						Anions and Nutrients											
			Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Total (as $\text{CaCO}_3$ ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)
	8-Jun-09	L776835-9	6.3	173	84.7	8.04	267	106	150	1.5	57.6	<1.0	<1.0	57.6	<0.0050	<0.050	<0.50	0.030	0.0891	<0.0010
	13-Jun-09	L778602-9	<5.0	184	75.0	8.01	19.2	113	73.4	1.4	57.7	<2.0	<2.0	57.7	<0.0050	<0.050	<0.50	0.034	0.0723	<0.0010
	19-Jun-09	L781603-2	<5.0	179	81.5	8.01	131	120	108	1.7	55.1	<2.0	<2.0	55.1	<0.0050	<0.050	<0.50	0.024	0.0551	<0.0010
	2-Jul-09	L787346-19	<5.0	216	111	7.73	17.0	137	14.3	3.9	74.3	<2.0	<2.0	74.3	<0.0050	<0.050	<0.50	0.030	0.0462	<0.0010
	4-Aug-09	L801967-4	<5.0	119	55.2	8.12	228	81	160	<1.0	45.2	<1.0	<1.0	45.2	<0.0050	<0.050	<0.50	<0.020	0.0644	<0.0010
	22-Aug-09	L809879-12	<5.0	125	58.8	7.87	57.3	93	51.6	1.9	38.7	<2.0	<2.0	38.7	<0.0050	<0.050	<0.50	<0.020	0.0117	<0.0010
	13-Sep-09	L817873-7	<5.0	122	56.7	8.06	108	67	75.9	1.7	47.1	<1.0	<1.0	47.1	<0.0050	<0.050	<0.50	<0.020	0.0137	<0.0010
	27-Sep-09	L824535-9	<5.0	217	101	7.74	16.5	124	15.4	3.1	63.9	<2.0	<2.0	63.9	<0.0050	<0.050	<0.50	0.029	0.0571	<0.0010
	31-Oct-09	L837185-9	<5.0	321	147	8.12	<3.0	205	3.40	1.3	94.6	<2.0	<2.0	94.6	<0.0050	<0.050	<0.50	0.035	0.156	<0.0010
	26-Nov-09	L844495-19	<5.0	349	180	8.14	<3.0	231	0.60	1.3	101.0	<2.0	<2.0	101.0	<0.0050	<0.050	<0.50	0.045	0.0611	<0.0010
	28-Mar-10	L873292-2	<5.0	384	187	8.21	3.2	250	2.76	1.8	122.0	<2.0	<2.0	122.0	<0.0050	<0.050	<0.50	0.051	0.466	<0.0010
	5-Jul-10	L905787-21	<5.0	177	86.0	7.99	51.0	124	60.0	3.4	55.7	<2.0	<2.0	55.7	<0.0050	<0.050	<0.50	<0.020	0.0256	<0.0010
	27-Aug-10	L926457-21	<5.0	146	64.0	8.04	52.5	97	34.7	4.4	42.7	<1.0	<1.0	42.7	<0.0050	<0.050	<0.50	<0.020	0.0147	<0.0010
	15-Nov-10	L955725-20	<5.0	339	167	8.25	<3.0	199	2.21	<1.0	104.0	<2.0	<2.0	104.0	<0.0050	<0.050	<0.50	0.052	0.156	<0.0010
	31-Mar-11	L991777-9	<5.0	436	207	7.97	<3.0	281	0.44	5.9	95.6	<2.0	<2.0	95.6	<0.0050	<0.52	<0.50	0.045	0.0662	<0.0010
	4-Jul-11	L1028827-15	<5.0	192	87.6	8.06	82.0	141	62.3	1.4	58.9	<2.0	<2.0	58.9	<0.0050	<0.50	<0.50	0.027	0.0321	<0.0010
	4-Jul-11	L1028827-1	<5.0	195	87.4	8.00	66.9	132	41.7	1.6	56.6	<2.0	<2.0	56.6	0.0128	<0.50	<0.50	0.025	0.0295	<0.0010
	5-Sep-11	L1054953-1	<5.0	179	81.6	8.19	146	119	131	3.5	58.5	<2.0	<2.0	58.5	<0.0050	<0.50	<0.50	0.025	0.0394	0.0015
	27-Nov-11	L1091310-10	<5.0	409	199	8.33	3.8	253	0.53	<1.0	112.0	<1.0	<1.0	112.0	<0.0050	<0.50	<0.50	0.057	0.0564	<0.0010
IC1	1-Aug-11	L1041095-9	<5.0	106	44.8	7.75	37.2	62	31.0	1.9	18.9	<2.0	<2.0	18.9	0.0150	<0.050	<0.50	0.042	<0.025	<0.0010
	1-Aug-11	L1041095-2	<5.0	106	44.0	7.83	37.8	77	31.1	1.6	18.8	<2.0	<2.0	18.8	0.0058	<0.050	<0.50	0.042	<0.025	<0.0010
	5-Sep-11	L1054953-7	<5.0	115	48.7	7.76	107	70	107	6.2	23.6	<2.0	<2.0	23.6	<0.0050	<0.050	<0.50	0.055	0.0121	<0.0010
SF1	1-Oct-11	L1067383-10	<5.0	231	101	7.96	66.0	143	45.6	4.3	30.3	<2.0	<2.0	30.3	<0.0050	<0.050	<0.50	0.079	0.0085	0.0014
	1-Aug-11	L1041095-3	<5.0	507	204	3.95	39.2	353	37.4	17.0	<2.0	<2.0	<2.0	0.0097	<0.050	<0.50	0.512	<0.025	<0.0010	
	5-Sep-11	L1054953-6	<5.0	658	226	3.51	50.2	415	48.1	44.9	<2.0	<2.0	<2.0	0.0059	<0.25	<2.5	0.760	0.104	<0.0050	
	1-Oct-11	L1067383-11	<5.0	958	489	5.24	52.7	768	45.9	19.6	3.8	<2.0	<2.0	3.8	0.0057	<0.50	<5.0	1.04	<0.050	0.0140

Notes:

< indicates that the value is below the analytical detection limit

- indicates parameter was not analyzed

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Anions and Nutrients					Cyanides			Carbon	Total Metals											
			Total Kjeldahl Nitrogen	Total Nitrogen	Ortho Phosphate (as P)	Total Phosphate (as P)	Sulphate (SO <sub>4</sub> )	Cyanide, Weak Acid Dissociable	Cyanide, Total	Thiocyanate	Total Organic Carbon	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	
GC-1			-	-	0.0015	-	24.5	-	-	-	<0.50	0.223	0.00018	0.00065	0.0095	<0.00050	<0.00050	<0.010	<0.000050	29.8	<0.00050	0.00019	
	23-Sep-07	L559547-13	<0.050	0.14	<0.0010	0.0067	32.1	-	<0.0010	-	0.56	0.0468	0.00017	0.00043	0.0115	<0.00050	<0.00050	<0.010	0.000089	35.9	<0.00050	<0.00010	
	29-Oct-08	L703445-14	0.096	0.22	0.0015	0.0052	34.0	-	<0.0010	-	<0.50	0.0348	0.00021	0.00052	0.0117	<0.00050	<0.00050	<0.010	0.000049	36.4	<0.00050	<0.00010	
	6-Dec-08	L717413-17	<0.050	0.13	0.0015	0.0083	43.4	-	<0.0010	-	<0.50	0.129	0.00023	0.00065	0.0144	<0.00050	<0.00050	<0.010	0.000046	45.1	<0.00050	0.00021	
	28-Mar-09	L748538-7	<0.050	0.13	0.0015	0.0034	18.3	-	<0.0010	-	<0.50	0.0858	0.00023	0.00055	0.0084	<0.00050	<0.00050	<0.010	0.000017	27.1	<0.00050	<0.00010	
	2-Jul-09	L787346-22	<0.050	<0.050	<0.0010	0.0034	13.6	-	<0.0010	-	<0.50	4.170	0.00024	0.00200	0.0464	<0.00050	<0.00050	<0.010	0.000038	18.4	0.00743	0.00339	
	22-Aug-09	L809879-15	<0.050	<0.050	0.0021	0.142	38.0	-	<0.0010	-	<0.50	0.0318	0.00018	0.00050	0.0103	<0.00050	<0.00050	<0.010	0.000021	40.7	<0.00050	<0.00010	
	1-Dec-09	L845898-3	<0.050	0.090	0.0017	0.0028	1.68	-	<0.0010	-	<0.50	14.1	0.00060	0.0107	0.181	<0.00050	<0.00050	<0.010	0.000166	25.1	0.0183	0.0124	
	3-Aug-10	L916942-19	<0.050	<0.050	0.0020	0.943	7.53	-	<0.0010	-	0.72	0.0360	0.00022	0.00047	0.0119	<0.00050	<0.00050	<0.010	0.000032	42.2	0.00019	<0.00010	
	15-Nov-10	L955725-32	<0.050	0.17	0.0015	0.0082	30.1	-	<0.0010	-	0.53	0.0210	0.00023	0.00039	0.0137	<0.00050	<0.00050	<0.010	0.000025	45.9	0.00014	<0.00010	
	5-Mar-11	L985810-5	<0.050	0.072	<0.0010	<0.0020	42.6	-	<0.0010	-	0.59	0.0127	0.00021	0.00042	0.0125	<0.00050	<0.00050	<0.010	0.000029	46.0	0.00020	<0.00010	
	31-Mar-11	L991777-7	<0.050	0.15	<0.0010	0.0024	43.0	-	<0.0010	-	0.59	0.0252	0.00019	0.00074	0.0098	<0.00010	<0.00010	<0.010	0.000013	23.0	0.00034	0.00026	
	2-May-11	L1002688-12	0.137	0.46	<0.0010	0.0021	38.0	-	<0.0010	-	0.98	0.0136	0.00023	0.00040	0.0152	<0.00050	<0.00050	<0.010	0.000037	47.4	<0.00020	<0.00010	
	5-Jun-11	L1014013-14	0.082	0.13	0.0016	0.0513	15.5	-	<0.0010	-	0.59	0.793	0.00022	0.00101	0.0188	<0.00050	<0.00050	<0.010	0.000024	22.6	0.00106	0.00063	
	4-Jul-11	L1028827-2	0.079	0.09	<0.0010	0.0197	19.1	-	<0.0010	-	0.59	0.329	0.00016	0.00070	0.0114	<0.00010	<0.00010	<0.010	0.000010	19.9	0.00048	0.00033	
	1-Aug-11	L1039955-11	<0.050	<0.050	<0.0010	0.0241	16.1	<0.0010	<0.0010	-	<0.50	3.090	0.00027	0.00208	0.0407	<0.00010	<0.00010	<0.010	0.000042	27.6	0.00415	0.00236	
	5-Sep-11	L1054953-12	0.074	0.11	0.0013	0.173	17.3	-	<0.0010	-	0.59	0.196	0.00019	0.00053	0.0120	<0.00010	<0.00010	<0.010	0.000021	30.7	0.00034	0.00017	
	1-Oct-11	L1067383-7	<0.050	0.06	0.0014	0.0134	28.5	-	<0.0011	-	0.63	0.0496	0.00022	0.00049	0.0115	<0.00010	<0.00010	<0.010	0.000037	39.3	0.00019	<0.00010	
	26-Oct-11	L1079029-18	<0.050	0.11	<0.0010	0.0054	31.1	-	<0.0011	-	0.50	0.0508	0.00021	0.00046	0.0122	<0.00010	<0.00010	<0.010	0.000038	40.7	0.00020	<0.00010	
	27-Nov-11	L1091310-4	<0.050	0.05	<0.0010	0.0419	36.8	-	<0.0011	-	<0.50	8.090	0.00121	0.0432	0.213	0.00120	<0.00050	<0.00050	<0.010	0.000654	23.7	0.00109	0.0118
MC1			-	-	<0.0010	-	90.9	-	-	-	4.180	0.00072	0.00549	0.126	0.00081	<0.00050	<0.00050	<0.010	0.000528	36.1	0.00051	0.00686	
	24-Jul-07	L535508-8	<0.050	<0.05	-	-	118	-	<0.0010	-	0.67	12.8	0.00230	0.247	0.391	0.00250	<0.0010	<0.020	0.0204	43.3	0.00170	0.0273	
	23-Sep-07	L559547-9	<0.050	<0.05	-	-	4.32	224	-	<0.0010	-	0.50	13.9	0.00171	0.0922	0.287	0.00280	<0.0010	<0.020	0.0202	35.0	0.00160	0.0307
	28-May-08	L635965-2	<0.050	<0.05	-	-	2.67	267	-	<0.0010	-	0.50	13.1	0.00169	0.0893	0.286	0.00260	<0.0010	<0.020	0.0197	34.3	0.00160	0.0306
	5-Jun-08	L639617-8	<0.050	<0.05	-	-	2.55	268	-	<0.0010	-	0.50	12.5	0.00174	0.0389	0.331	0.00272	<0.00050	<0.010	0.0195	44.5	0.00174	0.0312
	5-Jun-08	L639617-7	<0.050	<0.05	-	-	1.88	256	-	<0.0010	-	0.50	10.9	0.00218	0.0401	0.381	0.00177	<0.00050	<0.010	0.0150	37.0		

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Anions and Nutrients					Cyanides			Carbon	Total Metals										
			Total Kjeldahl Nitrogen	Total Nitrogen	Ortho Phosphate (as P)	Total Phosphate (as P)	Sulphate (SO <sub>4</sub> )	Cyanide, Weak Acid Dissociable	Cyanide, Total	Thiocyanate	Total Organic Carbon	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MC1A	15-Nov-10	L955725-17	<0.050	0.06	0.0066	1.40	318	-	<0.0010	-	<0.50	6.820	0.00088	0.0641	0.0358	0.00165	<0.00050	<0.010	0.0195	80.8	0.00075	0.0247
	31-Mar-11	L991777-11	0.099	0.18	<0.0010	0.423	359	-	<0.0010	-	0.61	3.980	0.00112	0.0248	0.0272	0.00142	<0.00050	<0.010	0.0158	108	0.00032	0.0186
	2-May-11	L1002688-15	0.142	0.26	<0.0010	0.752	292	-	<0.0010	-	0.57	3.390	0.00150	0.0355	0.0261	0.00101	<0.00050	<0.010	0.0117	108	<0.00050	0.0176
	5-Jun-11	L1014013-12	0.098	0.13	0.0624	3.00	202	-	<0.0010	-	0.77	10.7	0.00109	0.134	0.179	0.00121	<0.00050	<0.010	0.0115	33.4	0.00140	0.0211
	4-Jul-11	L1028827-8	0.114	0.13	0.0013	0.587	170	-	<0.0010	-	<0.50	7.380	0.00081	0.0240	0.165	0.00099	<0.00050	<0.010	0.0100	32.8	0.00091	0.0148
	1-Aug-11	L1041095-6	0.110	0.11	<0.0010	0.288	93.3	-	<0.0010	-	<0.50	3.480	0.00057	0.0106	0.0911	0.00054	<0.00050	<0.010	0.00568	25.3	0.00056	0.00729
	5-Sep-11	L1054953-4	<0.050	0.06	<0.0010	0.992	107	-	<0.0010	-	<0.50	7.590	0.00109	0.0453	0.226	0.00065	<0.00050	<0.010	0.00636	30.0	0.00127	0.0114
	1-Oct-11	L1067383-13	<0.050	<0.050	0.0021	1.20	253	-	<0.0010	-	0.57	6.580	0.00074	0.0564	0.0643	0.00119	<0.00050	<0.010	0.0152	56.9	0.00075	0.0194
	26-Oct-11	L1079029-16	0.080	0.08	0.0019	1.26	342	-	<0.0011	-	0.50	6.290	0.00092	0.0637	0.0381	0.00155	<0.00050	<0.010	0.0198	78.4	0.00059	0.0237
	2-May-10	L884476-6	2.070	2.07	0.607	10.1	431	-	<0.0010	-	0.23	17.0	0.00339	0.514	0.350	0.00500	<0.0010	<0.020	0.0403	60.0	0.00240	0.0484
	26-May-10	L891484-8	0.102	0.102	0.306	6.30	497	-	0.0011	-	0.74	26.4	0.00538	0.173	1.360	0.00500	<0.0010	<0.020	0.0390	51.3	0.00322	0.0528
	5-Jul-10	L905787-17	<0.050	<0.050	<0.0010	0.342	96.9	-	<0.0010	-	<0.50	6.240	0.00095	0.0133	0.188	0.00078	<0.00050	<0.010	0.00749	21.9	0.00108	0.0104
	3-Aug-10	L916942-8	<0.050	<0.050	<0.0010	0.716	20.0	-	<0.0010	-	0.55	4.960	0.00161	0.0191	0.463	<0.00050	<0.00050	<0.010	0.00170	16.9	0.00119	0.00459
MC1A-US	3-Aug-10	L916942-20	<0.050	<0.050	<0.0010	0.832	19.6	-	<0.0010	-	0.65	7.780	0.00297	0.0245	0.620	<0.00050	<0.00050	<0.010	0.00195	15.6	0.00177	0.00642
	27-Aug-10	L926457-17	<0.050	<0.050	<0.0010	0.243	106	-	<0.0010	-	<0.50	4.110	0.00060	0.00855	0.120	0.00073	<0.00050	<0.010	0.00822	25.6	0.00063	0.0104
	28-Sep-10	L938295-8	<0.050	<0.050	<0.0010	0.510	30.5	-	<0.0010	-	<0.50	1.560	0.00079	0.00673	0.113	<0.00050	<0.00050	<0.010	0.000981	16.7	0.00043	0.00225
	21-Oct-10	L946802-5	<0.050	<0.050	2.34	6.64	648	-	<0.0010	-	0.60	21.5	0.00118	0.4310	0.0975	0.00482	<0.00050	<0.010	0.0484	66.9	0.00235	0.0699
	15-Nov-10	L955725-16	<0.050	<0.050	0.0278	1.90	289	-	<0.0010	-	<0.50	5.560	0.00177	0.0679	0.0500	0.00153	<0.00050	<0.010	0.0175	47.9	0.00064	0.0194
	15-Dec-10	L963832-7	<0.050	<0.050	0.0876	1.65	559	-	<0.0010	-	<0.50	15.3	0.00148	0.0968	0.0459	0.00498	<0.00050	<0.010	0.0504	81.2	0.00115	0.0484
	31-Mar-11	L991777-12	0.060	0.06	0.0071	1.08	393	-	<0.0010	-	<0.50	8.290	0.00170	0.0636	0.0462	0.00325	<0.00050	<0.010	0.0340	78.0	0.00044	0.0303
	2-May-11	L1002688-16	<0.050	0.06	0.0023	0.838	202	-	<0.0010	-	<0.50	2.410	0.00245	0.0358	0.0357	0.00084	<0.00050	<0.010	0.00961	66.2	<0.00030	0.00955
	5-Jun-11	L1014013-11	0.094	0.12	0.0046	1.86	96.7	-	<0.0010	-	0.69	7.410	0.00118	0.1100	0.180	0.00061	<0.00050	<0.010	0.00636	19.1	0.00099	0.0105
	4-Jul-11	L1028827-7	0.092	0.1	<0.0010	0.0950	48.8	-	<0.0010	-	<0.50	2.210	0.00085	0.00853	0.0876	0.00019	<0.00050	<0.010	0.00208	17.6	0.00042	0.00294
	1-Aug-11	L1041095-8	0.070	0.07	<0.0010	0.132	39.5	-	<0.0010	-	<0.50	1.930	0.00098	0.00617	0.0852	0.00012	<0.00050	<0.010	0.00129	17.9	0.00074	0.00192
	5-Sep-11	L1054953-5	<0.050	0.08	0.0161	1.60	212	-	<0.0010	-	0.54	12.6	0.00094	0.0630	0.238	0.00142	<0.00050	<0.010	0.0137	30.8	0.00177	0.0252
	1-Oct-11	L1067383-12	<0.050	<0.050	0.0014	1.12	155	-	<0.0010	-	<0.50	5.480	0.00186	0.0615	0.116	0.00063	<0.00050	<0.010	0.0103			

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Mitchell Creek Watershed**

Site Name	Date	ALS Sample No.	Anions and Nutrients					Cyanides			Carbon	Total Metals										
			Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Ortho Phosphate (as P) (mg/L)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)	Total Organic Carbon (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)
MCT	1-Oct-11	L1067383-14	<0.050	0.13	<0.0010	0.466	145	-	<0.0011	-	<0.50	2.690	0.00067	0.0237	0.0469	0.00046	<0.00050	<0.010	0.00658	54.0	0.00063	0.00825
	26-Oct-11	L1079029-17	<0.050	0.15	<0.0010	0.378	157	-	0.0015	-	0.69	2.510	0.00077	0.0241	0.0408	0.00058	<0.00050	<0.010	0.00703	64.1	0.00041	0.00853
	27-Nov-11	L1091310-8	<0.050	0.09	<0.0010	0.223	170	-	<0.0011	-	<0.50	1.980	0.00072	0.0132	0.0344	0.00058	<0.00050	0.012	0.00716	74.2	0.00032	0.00722
	5-Jul-10	L905787-20	<0.050	<0.050	0.0010	0.164	16.1	-	<0.0010	-	<0.50	3.890	0.00064	0.00278	0.0712	<0.00050	<0.00050	<0.010	0.000050	19.5	0.00392	0.00236
	27-Aug-10	L926457-20	<0.050	<0.050	0.0013	0.113	11.7	-	<0.0010	-	<0.50	1.430	0.00042	0.00175	0.0302	<0.00050	<0.00050	<0.010	0.000033	16.3	0.00149	0.00140
	15-Nov-10	L955725-19	<0.050	<0.050	0.0014	0.0029	115	-	<0.0010	-	<0.50	0.0167	0.00033	0.00015	0.0189	<0.00050	<0.00050	<0.010	0.000205	72.3	0.00016	<0.00010
	31-Mar-11	L991777-10	0.083	0.1	<0.0010	0.0024	112	-	<0.0010	-	0.50	0.0118	0.00052	0.00027	0.0258	<0.00050	<0.00050	<0.010	0.000113	70.7	<0.00010	<0.00010
MCT1	4-Jul-11	L1028827-17	0.101	0.12	0.0015	0.209	35.5	-	<0.0010	-	0.50	4.750	0.00082	0.00431	0.0755	0.00014	<0.00050	<0.010	0.000130	32.3	0.00422	0.00352
	5-Sep-11	L1054953-2	<0.050	0.07	0.0014	0.276	32.1	-	<0.0010	-	<0.50	6.330	0.00090	0.00454	0.0975	0.00017	<0.00050	<0.010	0.000207	33.2	0.00739	0.00437
	24-Jul-07	L535508-9	-	-	0.0041	-	29.2	-	-	-	13.6	0.00270	0.0173	0.194	0.00052	<0.00050	<0.010	0.00107	59.1	0.0128	0.0155	
	23-Sep-07	L559547-10	-	-	0.0028	-	50.7	-	-	-	<0.50	0.738	0.00078	0.00175	0.0274	<0.00050	<0.00050	<0.010	0.000187	42.5	0.00132	0.00083
	26-Jun-08	L650936-28	<0.050	<0.05	-	0.0688	54.2	-	<0.0010	-	<0.50	0.850	0.00050	0.00112	0.0286	<0.00050	<0.00050	<0.010	0.000243	41.0	0.00137	0.00094
	10-Sep-08	L683687-5	<0.050	<0.05	0.0013	0.0328	47.2	-	<0.0010	-	<0.50	0.806	0.00044	0.00117	0.0233	<0.00050	<0.00050	<0.010	0.000330	32.9	0.00114	0.00082
	2-Jul-09	L787346-20	<0.050	<0.050	0.0014	0.0148	62.9	-	<0.0010	-	<0.50	0.259	0.00033	0.00040	0.0163	<0.00050	<0.00050	<0.010	0.000158	49.3	<0.00050	0.00030
MCT2	22-Aug-09	L809879-13	<0.050	<0.050	0.0017	0.0960	33.8	-	<0.0010	-	<0.50	2.610	0.00049	0.00220	0.0479	<0.00050	<0.00050	<0.010	0.000180	28.5	0.00304	0.00175
	26-Nov-09	L844495-20	<0.050	<0.050	0.0012	0.0156	119	-	<0.0010	-	<0.50	0.0620	0.00039	0.00022	0.0218	<0.00050	<0.00050	<0.010	0.000263	92.2	<0.00050	0.00019
	26-Jun-08	L650936-27	<0.050	<0.05	-	0.187	17.0	-	<0.0010	-	<0.50	2.210	0.00088	0.00300	0.0452	<0.00050	<0.00050	<0.010	0.000129	20.1	0.00237	0.00221
	10-Sep-08	L683687-6	<0.050	<0.05	0.0026	0.0452	33.5	-	<0.0010	-	<0.50	0.458	0.00030	0.00082	0.0176	<0.00050	<0.00050	<0.010	0.000018	28.5	<0.00050	0.00052
	2-Jul-09	L787346-31	<0.050	<0.050	0.0023	0.0729	27.2	-	<0.0010	-	<0.50	1.730	0.00069	0.00176	0.0362	<0.00050	<0.00050	<0.010	0.000143	25.7	0.00203	0.00138
	2-Jul-09	L787346-21	<0.050	<0.050	0.0021	0.0841	32.8	-	<0.0010	-	<0.50	1.730	0.00073	0.00207	0.0385	<0.00050	<0.00050	<0.010	0.000214	28.4	0.00216	0.00158
	22-Aug-09	L809879-21	<0.050	<0.050	0.0019	0.108	7.08	-	<0.0010	-	<0.50	2.890	0.00039	0.00027	0.0477	<0.00050	<0.00050	<0.010	0.000030	11.3	0.00303	0.00196
MCTR	22-Aug-09	L809879-14	<0.050	<0.050	0.0020	0.0950	7.11	-	<0.0010	-	<0.50	2.940	0.00040	0.00203	0.0473	<0.00050	<0.00050	<0.010	0.000030	11.2	0.00304	0.00197
	26-Nov-09	L844495-21	<0.050	0.050	0.0014	0.0086	58.5	-	<0.0010	-	<0.50	0.0514	0.00068	0.00046	0.0223	<0.00050	<0.00050	<0.010	0.000011	46.6	<0.00050	<0.00010
	28-May-08	L635965-10	<0.050	0.16	-	0.313	36.6	-	<0.0010	-	1.89	3.620	0.00090	0.00392	0.0581	<0.00050	<0.00050	<0.010	0.000345	35.3	0.00422	0.00327
	5-Jun-08	L639617-9	<0.050	0.07	-	0.0591	41.7	-	<0.0010	-	<0.50	0.956	0.00046	0.00123	0.0270	<0.00050	<0.00050	<0.010	0.000114	34.4	0.00097	0.00087
	11-Jun-08	L642688-1	<0.050	<0.05	-	0.0586	41.4	-	<0.0010	-	<0.50	1.270	0.00052	0.00122	0.0360	<0.00050	<0.00050	<0.010	0.000115	36.0	0.0	

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Anions and Nutrients					Cyanides			Carbon	Total Metals										
			Total Kjeldahl Nitrogen	Total Nitrogen	Ortho Phosphate (as P)	Total Phosphate (as P)	Sulphate (SO <sub>4</sub> )	Cyanide, Weak Acid Dissociable	Cyanide, Total	Thiocyanate	Total Organic Carbon	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
IC1	8-Jun-09	L776835-9	0.093	0.182	0.0027	0.335	30.3	-	<0.0010	-	1.57	5.860	0.00099	0.00476	0.0991	<0.00050	<0.00050	<0.010	0.000592	36.8	0.00501	0.00493
	13-Jun-09	L778602-9	<0.050	0.079	0.0025	0.0900	32.7	-	<0.0010	-	0.57	2.770	0.00063	0.00232	0.0489	<0.00050	<0.00050	<0.010	0.000199	30.4	0.00361	0.00233
	19-Jun-09	L781603-2	<0.050	0.086	0.0021	0.183	31.3	-	<0.0010	-	0.56	4.010	0.00064	0.00282	0.0648	<0.00050	<0.00050	<0.010	0.000168	34.2	0.00464	0.00304
	2-Jul-09	L787346-19	<0.050	<0.050	0.0019	0.0270	44.5	-	<0.0010	-	0.85	0.452	0.00047	0.00091	0.0216	<0.00050	<0.00050	<0.010	0.000107	37.9	0.00080	0.00046
	4-Aug-09	L801967-4	<0.050	0.095	0.0071	0.379	17.8	-	<0.0010	-	0.76	4.490	0.00076	0.00462	0.0778	<0.00050	<0.00050	<0.010	0.000482	45.0	0.00427	0.00472
	22-Aug-09	L809879-12	<0.050	<0.050	0.0018	0.105	22.2	-	<0.0010	-	<0.50	2.530	0.00044	0.00191	0.0462	<0.00050	<0.00050	<0.010	0.000084	22.3	0.00268	0.00171
	13-Sep-09	L817873-7	<0.050	<0.050	0.0018	0.0408	19.7	-	<0.0010	-	<0.50	3.310	0.00052	0.00287	0.0611	<0.00050	<0.00050	<0.010	0.000144	24.5	0.00408	0.00276
	27-Sep-09	L824535-9	<0.050	<0.050	0.0018	0.0303	44.2	-	<0.0010	-	<0.50	0.581	0.00048	0.00094	0.0243	<0.00050	<0.00050	<0.010	0.000108	37.2	<0.0010	0.00059
	31-Oct-09	L837185-9	<0.050	0.120	0.0012	0.0059	69.6	-	0.0012	-	0.53	0.0557	0.00045	0.00049	0.0202	<0.00050	<0.00050	<0.010	0.000130	50.3	<0.00050	0.00013
	26-Nov-09	L844495-19	<0.050	0.080	0.0014	0.0033	82.8	-	<0.0010	-	<0.50	0.0411	0.00047	0.00041	0.0237	<0.00050	<0.00050	<0.010	0.000110	65.6	<0.00050	<0.00010
	28-Mar-10	L873292-2	<0.050	0.466	0.0012	0.0075	90.7	-	<0.0010	-	<0.50	0.124	0.00043	0.00052	0.0263	<0.00050	<0.00050	<0.010	0.000129	63.3	<0.00050	0.00022
	5-Jul-10	L905787-21	<0.050	<0.050	0.0010	0.0910	33.1	-	<0.0010	-	0.50	2.460	0.00053	0.00174	0.0520	<0.00050	<0.00050	<0.010	0.000085	30.5	0.00261	0.00145
	27-Aug-10	L926457-21	<0.050	<0.050	0.0010	0.0938	26.5	-	<0.0010	-	<0.50	1.000	0.00042	0.00138	0.0270	<0.00050	<0.00050	<0.010	0.000066	26.9	0.00118	0.00107
	15-Nov-10	L955725-20	0.055	0.21	0.0011	0.0059	72.8	-	<0.0010	-	0.51	0.0878	0.00054	0.00048	0.0232	<0.00050	<0.00050	<0.010	0.000133	58.2	0.00025	0.00017
	31-Mar-11	L991777-9	0.094	0.16	0.0012	0.0048	103	-	<0.0010	-	0.54	0.0240	0.00049	0.00029	0.0276	<0.00050	<0.00050	<0.010	0.000091	68.8	<0.00010	<0.00010
	4-Jul-11	L1028827-15	0.098	0.13	0.0017	0.201	37.3	-	<0.0010	-	0.54	3.470	0.00063	0.00289	0.0622	0.00010	<0.00050	<0.010	0.000123	32.7	0.00318	0.00242
	4-Jul-11	L1028827-1	0.101	0.13	0.0014	0.172	37.4	-	<0.0010	-	<0.50	1.670	0.00047	0.00196	0.0378	<0.00010	<0.00050	<0.010	0.000118	32.2	0.00138	0.00174
	5-Sep-11	L1054953-1	0.079	0.12	0.0019	0.294	33.3	<0.0010	<0.0010	-	<0.50	5.260	0.00090	0.00407	0.0796	0.00015	<0.00050	<0.010	0.000248	31.9	0.00525	0.00375
	27-Nov-11	L1091310-10	<0.050	<0.050	0.0020	0.0041	93.6	-	<0.0011	-	<0.50	0.0262	0.00061	0.00039	0.0263	<0.00010	<0.00050	<0.010	0.000108	68.7	0.00017	<0.00010
SF1	1-Aug-11	L1041095-9	<0.050	<0.050	<0.0010	0.0532	28.3	-	<0.0010	-	<0.50	1.630	0.00113	0.00827	0.0516	<0.00010	<0.00050	<0.010	0.000358	17.1	0.00139	0.00137
	1-Aug-11	L1041095-2	0.130	0.13	<0.0010	0.0558	28.5	-	<0.0010	-	<0.50	1.800	0.00119	0.00919	0.0560	<0.00010	<0.00050	<0.010	0.000372	17.2	0.00176	0.00149
	5-Sep-11	L1054953-7	0.068	0.08	0.0014	0.121	29.2	-	<0.0010	-	<0.50	4.850	0.00297	0.0168	0.115	0.00011	<0.00050	<0.010	0.000404	18.2	0.00286	0.00250
	1-Oct-11	L1067383-10	<0.050	<0.050	<0.0010	0.0990	76.4	<0.0010	<0.0011	-	<0.50	2.850	0.00341	0.0124	0.0863	<0.00010	<0.00050	<0.010	0.000829	36.4	0.00173	0.00289
SF1	1-Aug-11	L1041095-3	0.120	0.12	<0.0010	0.106	218	-	<0.0010	-	<0.50	1.190	0.00051	0.00254	0.0483	0.00026	<0.00050	<0.010	0.00125	82.7	0.00023	0.00808
	5-Sep-11	L1054953-6	0.056	0.16	<0.0010	0.115	274	-	<0.0010	-	<0.50	1.670	0.00043	0.00306	0.0345	0.00035	<0.00050	<0.010	0.00182	87.1	0.00025	0.0114

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals																	
			Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Titanium (Ti) (mg/L)
GC-1	23-Sep-07	L559547-13	0.00096	0.259	0.00018	<0.0050	1.41	0.0122	<0.000010	0.00085	<0.00050	<0.30	<2.0	0.00130	1.67	<0.000010	<2.0	0.199	<0.00010	<0.00010
	29-Oct-08	L703445-14	<0.00090	0.090	<0.000050	<0.0050	1.63	0.0046	<0.000010	0.00122	0.00072	<0.30	0.534	0.00190	2.24	<0.000010	<2.0	0.190	<0.00010	<0.010
	6-Dec-08	L717413-17	0.00083	0.072	<0.000050	<0.0050	1.80	0.0058	<0.000010	0.00118	0.00054	<0.30	0.577	0.00250	2.31	<0.000010	<2.0	0.212	<0.00010	<0.010
	28-Mar-09	L748538-7	0.00141	0.311	0.00025	<0.0050	2.30	0.0150	<0.000010	0.00130	0.00080	<0.30	0.713	0.00243	2.49	<0.000010	2.5	0.243	<0.00010	<0.00010
	2-Jul-09	L787346-22	0.00060	0.120	0.00007	<0.0050	1.52	0.0050	<0.000010	0.00123	<0.00050	<0.30	0.531	0.00096	1.49	<0.000010	<2.0	0.243	<0.00010	<0.010
	22-Aug-09	L809879-15	0.0130	7.16	0.00178	<0.0050	3.22	0.144	<0.000010	0.00070	0.00379	<0.30	1.23	0.00050	8.79	0.00031	<2.0	0.155	<0.00010	<0.243
	1-Dec-09	L845898-3	0.00042	0.059	<0.000050	<0.0050	2.09	0.0044	<0.000010	0.00127	<0.00050	<0.30	0.586	0.00236	2.38	<0.000010	<2.0	0.272	<0.00010	<0.010
	3-Aug-10	L916942-19	0.0578	29.1	0.00988	0.0127	7.63	0.620	0.00079	0.00085	0.0129	1.61	3.40	0.00109	24.3	0.00019	<2.0	0.233	<0.00010	0.00014
	15-Nov-10	L955725-32	0.00073	0.057	<0.000050	<0.0050	1.99	0.0036	<0.000010	0.00133	0.00061	<0.30	0.731	0.00191	2.31	<0.000010	<2.0	0.263	<0.00010	<0.010
	5-Mar-11	L985810-5	<0.00050	<0.030	<0.000050	<0.0050	2.25	0.0027	<0.000010	0.00127	0.00057	<0.30	0.783	0.00245	2.24	<0.000010	2.3	0.269	<0.00010	0.00022
	31-Mar-11	L991777-7	0.00055	<0.030	<0.000050	<0.0050	2.59	0.0036	<0.000010	0.00138	0.00070	<0.30	0.791	0.00248	2.37	<0.000010	2.7	0.302	<0.00010	<0.010
	2-May-11	L1002688-12	0.00063	<0.030	<0.000050	<0.0050	2.85	0.0030	<0.000010	0.00137	0.00075	<0.30	0.868	0.00230	2.47	<0.000010	2.7	0.325	<0.00010	<0.010
	5-Jun-11	L1014013-14	0.00390	1.43	0.00040	<0.0050	1.46	0.0324	<0.000010	0.00093	0.00073	<0.30	0.627	0.00081	2.93	<0.000010	<2.0	0.174	<0.00010	0.045
	4-Jul-11	L1028827-2	0.00134	0.431	0.00020	0.00065	1.21	0.0141	<0.000010	0.00092	<0.00050	<0.30	0.507	0.00081	1.64	<0.000010	<2.0	0.195	<0.00010	0.014
	1-Aug-11	L1039955-11	0.00186	0.448	0.00029	<0.00050	1.04	0.0174	<0.000010	0.00072	<0.00050	<0.30	0.43	0.00071	1.64	<0.000010	<2.0	0.172	<0.00010	0.014
	5-Sep-11	L1054953-12	0.0109	4.94	0.00161	0.00261	2.65	0.126	<0.000010	0.00094	0.00268	0.44	1.170	0.00091	6.39	0.00020	<2.0	0.226	0.0002	<0.00010
	1-Oct-11	L1067383-7	0.00091	0.306	0.00010	0.00089	1.64	0.0093	<0.000010	0.00116	0.00052	<0.30	0.819	0.00165	2.46	<0.000010	<2.0	0.205	<0.00010	0.016
	26-Oct-11	L1079029-18	0.00062	0.083	<0.000050	0.00122	1.86	0.0052	<0.000010	0.00141	0.00062	<0.30	0.786	0.00191	2.36	<0.000010	<2.0	0.247	<0.00010	<0.010
	27-Nov-11	L1091310-4	<0.00050	0.078	<0.000050	0.00082	1.97	0.0046	<0.000010	0.00139	0.00066	<0.30	0.774	0.00218	2.41	<0.000010	<2.0	0.264	<0.00010	<0.010
MC1	24-Jul-07	L535508-8	0.694	24.2	0.0197	0.00640	3.26	0.666	0.000091	0.00461	0.00363	1.10	2.10	0.00210	10.6	0.000132	<2.0	0.130	0.00016	<0.00020
	23-Sep-07	L559547-9	0.638	13.5	0.0131	<0.0050	3.47	0.687	<0.000010	0.00246	0.00235	0.31	<2.0	<0.0010	4.29	0.00085	<2.0	0.197	<0.00010	0.055
	28-May-08	L635965-2	1.31	59.0	0.0314	0.0110	5.32	0.940	0.000078	0.0162	0.00660	3.62	2.57	0.00949	17.5	0.000356	<2.0	0.240	0.00020	0.414
	5-Jun-08	L639617-8	2.51	63.1	0.0384	<0.010	4.93	1.40	0.000025	0.0133	0.00810	2.44	2.27	0.00651	13.3	0.000257	<2.0	0.235	0.00021	<0.00020
	5-Jun-08	L639617-7	2.47	64.1	0.0375	<0.010	4.90	1.37	0.000036	0.0129	0.00830	2.44	1.96	0.00602	13	0.000276	<2.0	0.223	<0.00020	<0.272
	11-Jun-08	L642688-9	2.69	46.5	0.0466	0.0105	5.80	1.71	0.000019	0.00841	0.00875	1.19	2.00	0.00389	9.56	0.000531	<2.0	0.278	0.00021	<0.00010
	26-Jun-08	L650936-29	1.91	42.2	0.0443	0.00980	5.52	1.49	0.000060	0.00803	0.00805	1.30	1.85	0.00379	12.7	0.000380	<2.0	0.258	0.00019	0.00015
	3-Jul-08	L652071-6	2.05	100	0.0684	0.0170	6.37	1.47	0.000048	0.0277	0.00930	4.97	3.57	0.0158	16.7	0.000954	<2.0	0.205	0.00045	0.00037
	25-Jul-08	L662220-8	0.811	17.2	0.0201	<0.0050	2.97	0.788	0.000024	0.00284	0.00281	0.55	0.929	0.00143	9.00	0.000124	<2.0</td			

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Mitchell Creek Watershed**

Site Name	Date	ALS Sample No.	Total Metals																		
			Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)
MC1A	15-Nov-10	L955725-17	1.98	43.4	0.0176	0.00650	7.95	2.12	<0.000010	0.00843	0.00825	1.28	0.757	0.00446	5.71	0.000037	2.7	0.523	<0.00010	<0.00010	0.012
	31-Mar-11	L991777-11	0.902	20.5	0.00998	0.00770	10.10	2.76	<0.000010	0.00495	0.00661	0.46	0.906	0.00214	5.07	0.000013	4.7	0.849	<0.00010	<0.00010	<0.010
	2-May-11	L1002688-15	0.792	24.4	0.00969	<0.0050	8.40	2.37	<0.000010	0.00573	0.00636	0.77	0.831	0.00287	4.71	0.000025	3.6	0.696	<0.00010	<0.00010	<0.010
	5-Jun-11	L1014013-12	1.35	48.8	0.0205	0.00710	4.52	1.15	0.000017	0.0103	0.00607	2.79	1.19	0.00539	15.2	0.000101	<2.0	0.220	<0.00010	<0.00010	0.322
	4-Jul-11	L1028827-8	1.48	27.8	0.0178	0.00693	3.96	1.13	0.000013	0.00415	0.00525	0.61	1.11	0.00180	9.62	0.000146	<2.0	0.219	0.00010	<0.00010	0.167
	1-Aug-11	L1041095-6	0.638	12.7	0.00896	0.00369	2.50	0.619	<0.000010	0.00207	0.00271	<0.30	0.669	0.00086	3.81	0.000045	<2.0	0.164	0.00006	<0.00010	0.066
	5-Sep-11	L1054953-4	0.669	23.1	0.0118	0.00773	4.05	0.832	0.000017	0.00409	0.00380	0.97	1.42	0.00215	11.3	0.000103	<2.0	0.191	0.00009	<0.00010	0.415
	1-Oct-11	L1067383-13	1.72	40.8	0.0170	0.00615	5.84	1.32	<0.000010	0.00833	0.00643	1.12	0.763	0.00348	6.35	0.000048	<2.0	0.363	0.00007	<0.00010	0.045
	26-Oct-11	L1079029-16	1.88	44.8	0.0176	0.00732	7.41	1.78	<0.000010	0.00839	0.00764	1.22	0.748	0.00396	5.59	0.000040	2.5	0.500	0.00006	<0.00010	<0.010
	2-May-10	L884476-6	2.420	116	0.0640	0.01000	8.03	2.60	<0.000010	0.0232	0.0112	9.49	2.24	0.0202	9.11	0.000347	2.9	0.390	0.00025	0.00037	0.216
MC1A-US	26-May-10	L891484-8	3.120	122	0.1060	0.0200	11.10	3.37	0.000020	0.0235	0.0126	5.87	2.78	0.0112	21.4	0.00177	2.9	0.398	0.00036	<0.00020	0.579
	5-Jul-10	L905787-17	0.784	20.8	0.0167	0.00570	2.84	0.753	0.000021	0.00256	0.00322	0.41	1.15	0.00103	8.66	0.000118	<2.0	0.140	<0.00010	<0.00010	0.194
	3-Aug-10	L916942-8	0.143	11.9	0.0547	0.00570	1.94	0.488	0.000092	0.00304	0.00141	1.45	1.26	0.00137	9.3	0.000334	<2.0	0.090	0.00013	<0.00010	0.373
	3-Aug-10	L916942-20	0.157	17.6	0.0368	0.00790	2.89	0.507	0.000058	0.00288	0.00213	1.23	1.89	0.00152	9.45	0.000488	<2.0	0.094	0.00023	0.00016	0.609
MC2	27-Aug-10	L926457-17	0.872	17.5	0.0277	<0.0050	2.67	1.14	0.000051	0.00145	0.00326	0.90	0.714	0.00104	3.85	0.000102	<2.0	0.142	<0.00010	<0.00010	0.041
	28-Sep-10	L938295-8	0.0689	3.08	0.00525	<0.0050	0.93	0.280	0.000097	0.00087	0.00086	0.37	0.624	0.00040	2.89	0.000028	<2.0	0.099	<0.00010	<0.00010	0.043
	21-Oct-10	L946802-5	5.20	152	0.0581	0.0165	10.60	3.89	<0.000010	0.0300	0.0189	7.24	1.21	0.0180	8.77	0.000132	2.9	0.453	0.00022	0.00020	0.050
	15-Nov-10	L955725-16	1.46	41.8	0.0153	0.00540	4.44	1.28	<0.000010	0.00743	0.00561	1.35	0.715	0.00410	4.44	0.000030	<2.0	0.343	<0.00010	<0.00010	0.014
	15-Dec-10	L963832-7	3.72	95.6	0.0395	0.0159	10.80	3.87	<0.000010	0.00878	0.0130	1.68	1.17	0.00537	8.45	0.000054	4.3	0.616	0.00016	<0.00010	0.013
	31-Mar-11	L991777-12	1.58	55.5	0.0195	0.0113	9.91	3.50	<0.000010	0.00474	0.00811	1.16	1.07	0.00279	6.32	0.000026	5.1	0.696	<0.00010	<0.00010	0.012
	2-May-11	L1002688-16	0.416	18.5	0.00568	<0.0050	4.40	0.998	<0.000010	0.00339	0.00284	0.72	0.788	0.00223	3.67	0.000015	2.4	0.465	<0.00010	<0.00010	<0.010
	5-Jun-11	L1014013-11	0.473	28.1	0.00857	<0.0050	2.26	0.469	0.000017	0.00683	0.00279	1.56	1.14	0.00347	13.6	0.000062	<2.0	0.122	<0.00010	<0.00010	0.318
	4-Jul-11	L1028827-7	0.210	6.06	0.00373	0.00188	1.27	0.198	<0.000010	0.00145	0.00106	<0.30	0.681	0.00060	4.14	0.000036	<2.0	0.112	0.00004	<0.00010	0.073
	1-Aug-11	L1041095-8	0.104	3.72	0.00362	0.00154	1.24	0.127	<0.000010	0.00135	0.00091	<0.30	0.759	0.00044	3.35	0.000033	<2.0	0.118	0.00004	<0.00010	0.057
	5-Sep-11	L1054953-5	1.97	48.4	0.0266	0.0123	6.19	2.13	0.000026	0.00634	0.00837	1.78	1.55	0.00378	16.1	0.000126	<2.0	0.215	0.00014	<0.00010	0.520
	1-Oct-11	L1067383-12	0.815	30.4	0.00844	0.00340	2.85	0.476	<0.000010	0.00836	0.00299	1.12	0.913	0.00334	6.98	0.000054	<2.0	0.273	0.00006	<0.00010	0.090
	26-Oct-11	L1079029-15	1.45	56.7	0.0125	0.00544	3.93	0.832	<0.000010	0.0105	0.00516	2.02	0.882	0.00521	5.74	0.000032</td					

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals																		
			Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)
MCT	1-Oct-11	L1067383-14	0.710	16.4	0.00706	0.00283	5.24	0.581	<0.000010	0.00574	0.00430	0.48	0.822	0.00391	4.26	0.000027	2.1	0.290	0.00003	<0.00010	0.032
	26-Oct-11	L1079029-17	0.661	16.0	0.00680	0.00370	6.16	0.665	<0.000010	0.00538	0.00458	0.47	0.847	0.00397	3.95	0.000021	2.6	0.331	0.00003	<0.00010	0.013
	27-Nov-11	L1091310-8	0.575	11.9	0.00521	0.00367	7.13	0.785	<0.000010	0.00475	0.00423	<0.30	0.922	0.00376	3.83	<0.000020	3.7	0.414	0.00003	<0.00010	<0.010
	5-Jul-10	L905787-20	0.0101	6.01	0.00167	<0.0050	3.24	0.115	<0.000010	0.00115	0.00265	<0.30	1.91	0.00082	9.57	0.000038	<2.0	0.130	<0.00010	<0.00010	0.215
	27-Aug-10	L926457-20	0.00680	2.57	0.00134	<0.0050	1.63	0.0864	<0.000010	0.00061	0.00139	<0.30	0.930	0.00042	3.19	0.000015	<2.0	0.093	<0.00010	<0.00010	0.087
	15-Nov-10	L955725-19	<0.00050	<0.030	<0.000050	<0.0050	6.34	0.0050	<0.000010	0.00558	0.00731	<0.30	0.231	0.00755	1.78	<0.000010	<2.0	0.281	<0.00010	<0.00010	<0.010
MCT1	31-Mar-11	L919777-10	0.00067	0.085	<0.000050	<0.0050	8.94	0.0067	<0.000010	0.00377	0.00354	<0.30	1.33	0.00474	2.1	<0.000010	<2.0	0.340	<0.00010	<0.00010	<0.010
	4-Jul-11	L1028827-17	0.0180	8.10	0.00231	0.00257	4.94	0.181	<0.000010	0.00240	0.00535	0.36	1.75	0.00262	10.9	0.000069	<2.0	0.170	0.00004	<0.00010	0.352
	5-Sep-11	L1054953-2	0.0202	9.66	0.00277	0.00359	5.74	0.227	<0.000010	0.00272	0.00907	0.33	2.03	0.00259	13.6	0.000098	<2.0	0.179	0.00005	<0.00010	0.356
	24-Jul-07	L535508-9	0.0809	26.3	0.00978	0.00740	11.40	0.787	0.000097	0.00641	0.0260	2.07	4.00	0.00480	26.3	0.000488	<2.0	0.214	0.00020	<0.00030	1.030
	23-Sep-07	L559547-10	0.00528	1.62	0.00073	<0.0050	4.32	0.0348	<0.000010	0.00431	0.00516	<0.30	<2.0	0.00340	2.63	0.000101	<2.0	0.171	<0.00010	<0.00010	0.047
	26-Jun-08	L650936-28	0.00486	1.41	0.00042	<0.0050	3.57	0.0486	<0.000010	0.00393	0.00538	<0.30	0.385	0.00491	3.09	0.000050	<2.0	0.172	<0.00010	<0.00010	0.048
MCT2	10-Sep-08	L683687-5	0.00464	1.33	0.00040	<0.0050	2.62	0.0421	0.000016	0.00303	0.00479	<0.30	0.329	0.00335	2.25	0.000135	<2.0	0.131	<0.00010	<0.00010	0.035
	2-Jul-09	L787346-20	0.00166	0.39	0.00017	<0.0050	3.88	0.0163	<0.000010	0.00392	0.00422	<0.30	0.291	0.00522	1.57	<0.000010	<2.0	0.206	<0.00010	<0.00010	0.015
	22-Aug-09	L809879-13	0.00868	3.51	0.00109	<0.0050	2.96	0.0891	<0.000010	0.00297	0.00523	<0.30	0.744	0.00287	5.52	0.000047	<2.0	0.130	<0.00010	<0.00010	0.106
	26-Nov-09	L844495-20	<0.00070	0.140	<0.000050	<0.0050	6.93	0.0140	<0.000010	0.00569	0.00905	<0.30	0.278	0.00674	1.97	<0.000010	<2.0	0.339	<0.00010	<0.00010	<0.010
	26-Jun-08	L650936-27	0.0111	4.35	0.00148	<0.0050	2.92	0.1000	0.000014	0.00145	0.00400	<0.30	1.58	0.00114	5.73	0.000082	<2.0	0.132	<0.00010	<0.00010	0.186
	10-Sep-08	L683687-6	0.00252	0.823	0.00042	<0.0050	4.03	0.0257	<0.000010	0.00083	0.00077	<0.30	0.593	0.00142	2.01	0.000111	<2.0	0.137	<0.00010	<0.00010	0.032
MCTR	2-Jul-09	L787346-31	0.00598	2.54	0.00076	<0.0050	3.71	0.0672	<0.000010	0.00173	0.00346	<0.30	1.41	0.00096	4.07	0.000048	<2.0	0.172	<0.00010	<0.00010	0.109
	2-Jul-09	L787346-21	0.00692	2.56	0.00084	<0.0050	4.08	0.0801	<0.000010	0.00215	0.00515	<0.30	1.50	0.00158	4.19	0.000045	<2.0	0.189	<0.00010	<0.00010	0.107
	22-Aug-09	L809879-21	0.00844	4.27	0.00130	<0.0050	1.99	0.0959	<0.000010	0.00055	0.00226	<0.30	1.18	0.00030	6.15	0.000025	<2.0	0.079	<0.00010	<0.00010	0.158
	22-Aug-09	L809879-14	0.00845	4.41	0.00130	<0.0050	2.01	0.0946	<0.000010	0.00055	0.00212	<0.30	1.16	0.00035	6.13	0.000024	<2.0	0.079	<0.00010	<0.00010	0.150
	26-Nov-09	L844495-21	<0.00040	0.084	<0.000050	<0.0050	5.87	0.0028	<0.000010	0.00171	<0.00050	<0.30	1.52	0.00230	1.92	<0.000010	<2.0	0.273	<0.00010	<0.00010	<0.010
	28-May-08	L635965-10	0.0166	6.58	0.00203	<0.0050	4.98	0.169	0.000025	0.00274	0.00719	<0.30	1.39	0.00370	8.07	0.000100	<2.0	0.144	<0.00010	<0.00010	0.227
MCTR	5-Jun-08	L639617-9	0.00555	1.67	0.00058	<0.0050	3.79	0.0442	0.000011	0.00222	0.00244	<0.30	0.915	0.00345	3.46	0.000019	<2.0	0.156	<0.00010	<0.00010	0.077
	11-Jun-08	L642688-1	0.00516	2.30	0.00069	<0.0050	4.02	0.0519	0.000012	0.00244	0.00253	<0.30	1.08	0.00315	4.41	0.000063	<2.0	0.148	<0.00010	<0.00010	0.075
	26-Jun-08</																				

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals																		
			Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)
	8-Jun-09	L776835-9	0.0256	8.72	0.00304	<0.0050	5.32	0.347	0.000022	0.00275	0.0117	0.59	1.51	0.00341	10	0.000135	<2.0	0.188	<0.00010	<0.00010	0.285
	13-Jun-09	L778602-9	0.0105	5.02	0.00138	<0.0050	4.24	0.112	<0.000010	0.00226	0.00492	<0.30	1.29	0.00281	7.12	0.000056	<2.0	0.137	<0.00010	<0.00010	0.184
	19-Jun-09	L781603-2	0.0127	6.06	0.00187	<0.0050	4.86	0.147	<0.000010	0.00225	0.00551	<0.30	1.68	0.00286	9.21	0.000054	<2.0	0.161	<0.00010	<0.00010	0.196
	2-Jul-09	L787346-19	0.00243	0.805	0.00030	<0.0050	3.75	0.0240	<0.000010	0.00255	0.00222	<0.30	0.838	0.00326	2.45	0.000011	<2.0	0.147	<0.00010	<0.00010	0.035
	4-Aug-09	L801967-4	0.0247	7.53	0.00381	<0.0050	3.99	0.336	0.000022	0.00183	0.00856	0.89	1.35	0.00195	8.06	0.000091	<2.0	0.172	<0.00010	<0.00010	0.262
	22-Aug-09	L809879-12	0.00750	3.77	0.00105	<0.0050	2.89	0.0854	<0.000010	0.00181	0.00296	<0.30	1.03	0.00148	5.87	0.000027	<2.0	0.114	<0.00010	<0.00010	0.140
	13-Sep-09	L817873-7	0.0213	5.48	0.00190	<0.0050	3.28	0.150	<0.000010	0.00181	0.00504	0.33	1.15	0.00188	7.49	0.000056	<2.0	0.123	<0.00010	<0.00010	0.203
	27-Sep-09	L824535-9	0.00426	1.07	<0.00040	<0.0050	3.65	0.0330	<0.000010	0.00248	<0.0030	<0.30	0.829	0.00368	2.38	<0.000020	<2.0	0.172	<0.00010	<0.00010	0.036
	31-Oct-09	L837185-9	0.00135	0.198	0.00006	<0.0050	4.98	0.0086	<0.000010	0.00280	0.00236	<0.30	0.806	0.00503	2.20	<0.000010	<2.0	0.222	<0.00010	<0.00010	0.011
	26-Nov-09	L844495-19	<0.00060	0.088	<0.000050	<0.0050	7.10	0.0064	<0.000010	0.00358	0.00295	<0.30	1.06	0.00460	2.32	<0.000010	<2.0	0.296	<0.00010	<0.00010	<0.010
	28-Mar-10	L873292-2	0.00226	0.310	0.00014	<0.0050	7.66	0.0122	<0.000010	0.00314	0.00310	<0.30	1.000	0.00405	2.32	<0.000010	<2.0	0.266	<0.00010	<0.00010	0.010
	5-Jul-10	L905787-21	0.00686	3.72	0.00108	<0.0050	3.75	0.0736	0.000012	0.00207	0.00285	<0.30	1.38	0.00186	6.41	0.000031	<2.0	0.158	<0.00010	0.00011	0.127
	27-Aug-10	L926457-21	0.00472	1.61	0.00092	<0.0050	2.37	0.0599	<0.000010	0.00156	0.00169	<0.30	0.792	0.00169	2.66	<0.000010	<2.0	0.122	<0.00010	<0.00010	0.052
	15-Nov-10	L955725-20	0.00150	0.208	0.00008	<0.0050	6.53	0.0087	<0.000010	0.00338	0.00278	<0.30	0.915	0.00506	2.39	<0.000010	<2.0	0.259	<0.00010	<0.00010	<0.010
	31-Mar-11	L991777-9	0.00051	0.055	<0.000050	<0.0050	8.77	0.0034	<0.000010	0.00339	0.00250	<0.30	1.16	0.00494	2.51	<0.000010	<2.0	0.329	<0.00010	<0.00010	<0.010
	4-Jul-11	L1028827-15	0.0120	5.64	0.00150	0.00207	4.46	0.125	<0.000010	0.00224	0.00409	<0.30	1.49	0.00271	8.19	0.000047	<2.0	0.166	0.00003	<0.00010	0.238
	4-Jul-11	L1028827-1	0.00855	2.88	0.00129	0.00145	3.61	0.0878	<0.000010	0.00161	0.00296	<0.30	1.06	0.00254	4.32	0.000028	<2.0	0.160	0.00002	<0.00010	0.081
	5-Sep-11	L1054953-1	0.0179	8.65	0.00212	0.00306	5.26	0.205	0.000010	0.00300	0.00795	0.31	1.75	0.00276	10.9	0.000109	<2.0	0.166	0.00005	<0.00010	0.323
	27-Nov-11	L1091310-10	<0.00050	0.051	<0.000050	0.00067	7.53	0.0030	<0.000010	0.00470	0.00322	<0.30	1.14	0.00481	2.51	<0.000010	<2.0	0.302	0.00001	<0.00010	<0.010
IC1	1-Aug-11	L1041095-9	0.0573	1.35	0.00502	0.00094	1.39	0.0843	<0.000010	0.00097	0.00110	<0.30	0.739	0.00053	3.37	0.000054	<2.0	0.106	0.00004	<0.00010	0.031
	1-Aug-11	L1041095-2	0.0605	1.79	0.00553	0.00107	1.54	0.0929	<0.000010	0.00105	0.00123	<0.30	0.817	0.00030	4.09	0.000058	<2.0	0.110	0.00004	<0.00010	0.043
	5-Sep-11	L1054953-7	0.111	4.76	0.0127	0.00235	2.40	0.151	0.000038	0.00171	0.00208	<0.30	1.15	0.00042	8.52	0.000120	<2.0	0.132	0.00007	<0.00010	0.114
	1-Oct-11	L1067383-10	0.138	3.60	0.0126	0.00185	3.14	0.155	0.000014	0.00203	0.00164	<0.30	1.11	0.00088	6.26	0.000150	<2.0	0.257	0.00006	<0.00010	0.064
SF1	1-Aug-11	L1041095-3	0.170	6.40	0.00253	0.00402	3.38	1.38	<0.000010	0.00031	0.00394	<0.30	0.512	0.00049	2.58	0.000026	<2.0	0.532	0.00003	<0.00010	<0.010
	5-Sep-11	L1054953-6	0.241	10.2	0.00336	0.00471	4.00	1.65	<0.000010	0.00038	0.00518	<0.30	0.482	0.00068	3.59	0.000027	<2.0	0.601	0.00003	<0.00010	<0.010
	1-Oct-11	L1067383-11	0.298	9.42	0.00670	0.0106	9.46	3.49	<0.000010	0.00035	0.00879	<0.30	1.03	0.00100	7.22	0.000040	4.8	1.26	0.00005	<0.00010	0.039

Note:

< indicates that the value is below the analytical detection limit

- indicates parameter was not analyzed

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals			Dissolved Metals																
			Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)
GC-1	23-Sep-07	L559547-13	0.000124	0.0012	0.0021	0.0063	0.00016	0.00046	0.0063	<0.00050	<0.00050	<0.010	<0.000050	29.5	<0.00050	<0.00010	0.00014	<0.030	<0.000050	<0.0050	1.34	0.00145
	29-Oct-08	L703445-14	0.000175	<0.0010	0.0034	0.0087	0.00017	0.00039	0.0109	<0.00050	<0.00050	<0.010	0.000042	35.2	<0.00050	<0.00010	0.00039	<0.030	<0.000050	<0.0050	1.59	0.00241
	6-Dec-08	L717413-17	0.000180	<0.0010	0.0032	0.0235	0.00020	0.00039	0.0113	<0.00050	<0.00050	<0.010	0.000042	36.4	<0.00050	<0.00010	0.00042	<0.030	<0.000050	<0.0050	1.74	0.00267
	28-Mar-09	L748538-7	0.000240	<0.0010	0.0047	0.0041	0.00021	0.00041	0.0122	<0.00050	<0.00050	<0.010	0.000035	43.1	<0.00050	<0.00010	0.00022	<0.030	<0.000050	<0.0050	2.17	0.00250
	2-Jul-09	L787346-22	0.000120	<0.0010	0.0016	0.0076	0.00021	0.00048	0.0068	<0.00050	<0.00050	<0.010	0.000013	25.1	<0.00050	<0.00010	0.00018	<0.030	<0.000050	<0.0050	1.42	0.00084
	22-Aug-09	L809879-15	0.000172	0.0219	0.0143	0.0363	0.00014	0.00039	0.0042	<0.00050	<0.00050	<0.010	<0.000010	17.5	<0.00050	<0.00010	0.00021	0.038	<0.000050	<0.0050	0.70	0.00644
	1-Dec-09	L845898-3	0.000194	<0.0010	0.0018	0.0040	0.00020	0.00043	0.0099	<0.00050	<0.00050	<0.010	0.000023	40.2	<0.00050	<0.00010	0.00033	<0.030	<0.000050	<0.0050	2.04	0.00208
	3-Aug-10	L916942-19	0.000611	0.0658	0.0516	0.114	0.00010	0.00051	0.0039	<0.00050	<0.00050	<0.010	<0.000010	15.0	0.00023	<0.00010	0.00038	0.103	<0.000050	<0.0050	0.55	0.00351
	15-Nov-10	L955725-32	0.000180	<0.0010	<0.0030	0.0076	0.00021	0.00039	0.0111	<0.00050	<0.00050	<0.010	0.000027	39.9	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	1.87	0.00165
	5-Mar-11	L985810-5	0.000211	<0.0010	0.0033	0.0043	0.00021	0.00039	0.0121	<0.00050	<0.00050	<0.010	0.000031	44.8	0.00021	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.19	0.00196
	31-Mar-11	L991777-7	0.000232	<0.0010	<0.0030	0.0087	0.00023	0.00043	0.0137	<0.00050	<0.00050	<0.010	0.000031	45.6	0.00015	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.57	0.00262
	2-May-11	L1002688-12	0.000237	<0.0010	0.0032	0.0053	0.00022	0.00041	0.0148	<0.00050	<0.00050	<0.010	0.000032	47.2	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.78	0.00247
	5-Jun-11	L1014013-14	0.000111	0.0037	0.0047	0.0189	0.00018	0.00047	0.0071	<0.00050	<0.00050	<0.010	<0.000010	23.1	0.00014	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	1.09	0.00261
	4-Jul-11	L1028827-2	0.000124	0.0013	<0.0030	0.0171	0.00021	0.00049	0.0064	<0.00010	<0.00050	<0.010	<0.000010	27.3	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	0.00058	1.13	0.00149
	1-Aug-11	L1039955-11	0.000112	0.0015	<0.0030	0.0270	0.00014	0.00045	0.0053	<0.00010	<0.00050	<0.010	<0.000010	18.8	0.00013	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	0.88	0.00286
	5-Sep-11	L1054953-12	0.000205	0.0150	0.0111	0.0736	0.00018	0.00047	0.0071	<0.00010	<0.00050	<0.010	<0.000010	23.9	0.00015	<0.00010	<0.00050	0.085	<0.000050	0.00075	1.05	0.00604
	1-Oct-11	L1067383-7	0.000155	0.0013	<0.0030	0.0084	0.00020	0.00042	0.0090	<0.00010	<0.00050	<0.010	0.000017	35.3	0.00012	<0.00010	<0.00050	<0.030	<0.000050	0.00075	1.49	0.00228
	26-Oct-11	L1079029-18	0.000193	<0.0010	<0.0030	0.0056	0.00022	0.00042	0.0104	<0.00010	<0.00050	<0.010	0.000029	37.5	0.00011	<0.00010	<0.00050	<0.030	<0.000050	0.00094	1.76	0.00256
	27-Nov-11	L1091310-4	0.000204	<0.0010	0.0036	0.0048	0.00022	0.00045	0.0114	<0.00010	<0.00050	<0.010	0.000030	40.1	0.00010	<0.00010	<0.00050	<0.030	<0.000050	0.00076	1.94	0.00272
MC1	24-Jul-07	L535508-8	0.000906	0.0197	0.420	2.23	<0.00010	0.00399	0.0502	0.00088	<0.00050	<0.010	0.00584	21.3	<0.00050	0.00825	0.591	11.0	0.00204	<0.0050	1.93	0.421
	23-Sep-07	L559547-9	0.000652	0.0080	0.337	0.612	0.00017	0.00018	0.0379	0.00053	<0.00050	<0.010	0.00546	36.0	<0.00050	0.00600	0.535	8.60	0.000708	<0.0050	3.01	0.592
	28-May-08	L635965-2	0.00204	0.0305	1.33	5.28	<0.00020	0.00113	0.0960	0.00220	<0.0010	<0.020	0.0203	42.0	<0.0010	0.0250	1.31	8.35	0.0145	<0.010	3.15	0.776
	5-Jun-08	L639617-8	0.00298	0.0318	1.24	8.52	<0.00020	0.00566	0.0591	0.00280	<0.0010	<0.020	0.0200	33.5	<0.0010	0.0293	2.54	38.1	0.0242	<0.010	3.69	1.30
	5-Jun-08	L639617-7	0.00282	0.0289	1.22	8.32	<0.00020	0.00570	0.0593	0.00250	<0.0010	<0.020	0.0197	33.9	<0.0010	0						

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals			Dissolved Metals																
			Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)
MC1A	15-Nov-10	L955725-17	0.00157	0.0091	1.27	6.49	<0.00010	0.00029	0.0281	0.00167	<0.00050	<0.010	0.0198	79.2	0.00029	0.0246	1.98	4.53	0.0152	0.00640	7.92	2.09
	31-Mar-11	L991777-11	0.00117	0.0028	1.00	0.971	0.00012	<0.00010	0.0247	0.00076	<0.00050	<0.010	0.0158	106	<0.00010	0.0182	0.707	4.41	0.000352	0.00750	9.88	2.67
	2-May-11	L1002688-15	0.00119	0.0030	0.706	1.21	<0.00010	<0.00010	0.0234	0.00074	<0.00050	<0.010	0.0122	101	<0.00010	0.0169	0.660	0.916	0.000694	0.00560	8.17	2.27
	5-Jun-11	L1014013-12	0.00161	0.0171	0.789	5.03	<0.00010	0.00111	0.0766	0.00121	<0.00050	<0.010	0.0119	33.8	0.00049	0.0194	1.35	16.1	0.00983	<0.0050	3.18	1.04
	4-Jul-11	L1028827-8	0.00117	0.0115	0.652	4.68	<0.00010	0.00025	0.0532	0.00098	<0.00050	<0.010	0.0106	32.7	0.00014	0.0141	1.52	2.60	0.0123	0.00473	3.32	1.09
	1-Aug-11	L1041095-6	0.000548	0.0057	0.377	1.46	<0.00010	<0.00010	0.0447	0.00046	<0.00050	<0.010	0.00585	25.5	<0.00010	0.00681	0.707	5.44	0.00183	0.00274	2.21	0.601
	5-Sep-11	L1054953-4	0.000790	0.0154	0.474	1.82	<0.00010	0.00020	0.0809	0.00051	<0.00050	<0.010	0.00657	28.2	<0.00010	0.00879	0.653	4.28	0.00105	0.00228	2.31	0.666
	1-Oct-11	L1067383-13	0.00148	0.0109	1.06	5.49	<0.00010	0.00050	0.0372	0.00118	<0.00050	<0.010	0.0159	56.8	0.00033	0.0193	1.73	20.1	0.0129	0.00541	5.72	1.310
	26-Oct-11	L1079029-16	0.00170	0.0101	1.36	6.03	<0.00010	0.00038	0.0327	0.00148	<0.00050	<0.010	0.0205	75.7	0.00029	0.0236	1.88	16.9	0.0146	0.00660	7.38	1.760
	2-May-10	L884476-6	0.00438	0.0298	2.94	10.80	<0.00020	0.0424	0.0667	0.00420	<0.0010	<0.020	0.0387	55.7	<0.0010	0.0450	2.21	59.5	0.0368	<0.010	6.38	2.320
MC1A-US	26-May-10	L891484-8	0.00504	0.0452	2.80	14.30	<0.00020	0.00878	0.0808	0.00550	<0.0010	<0.020	0.0419	50.2	0.00093	0.0507	3.30	61.7	0.0556	0.0100	7.49	3.200
	5-Jul-10	L905787-17	0.000738	0.0125	0.441	2.61	<0.00010	0.00028	0.0691	0.00081	<0.00050	<0.010	0.00782	21.2	<0.00020	0.00891	0.760	0.250	0.00624	<0.0050	1.75	0.639
	3-Aug-10	L916942-8	0.000529	0.0132	0.127	0.0034	0.00025	<0.00010	0.0816	<0.00050	<0.010	0.000658	10.7	<0.00020	0.00078	0.00092	<0.030	<0.00050	<0.0050	0.35	0.153	
	3-Aug-10	L916942-20	0.000696	0.0220	0.138	0.0158	0.00024	<0.00010	0.0824	<0.00050	<0.010	0.000635	10.9	<0.00020	0.00080	0.00077	<0.030	<0.00050	<0.0050	0.38	0.170	
MC1A-US	27-Aug-10	L926457-17	0.000691	0.0068	0.524	2.68	<0.00010	0.00017	0.0558	0.00085	<0.00050	<0.010	0.00842	21.5	<0.00020	0.00954	0.882	5.77	0.00990	<0.0050	2.39	1.05
	28-Sep-10	L938295-8	0.000194	0.0029	0.0657	0.0030	0.00051	<0.00010	0.0478	<0.00050	<0.010	0.000681	14.4	<0.00020	0.00109	0.00141	<0.030	<0.00050	<0.0050	0.60	0.131	
	21-Oct-10	L946802-5	0.00336	0.0356	3.28	20.2	0.00026	0.116	0.0463	0.00454	<0.00050	<0.010	0.0492	66.6	0.00188	0.0704	5.28	118	0.0507	0.01430	10.40	3.86
	15-Nov-10	L955725-16	0.00104	0.0097	1.17	7.42	<0.00010	0.00036	0.0419	0.00178	<0.00050	<0.010	0.0231	49.8	0.00035	0.0246	1.93	12.2	0.0171	0.00540	5.17	1.62
	15-Dec-10	L963832-7	0.00219	0.0212	3.47	14.4	<0.00010	0.00083	0.0391	0.00500	<0.00050	<0.010	0.0513	78.5	0.00066	0.0478	3.69	30.9	0.0382	0.01510	10.30	3.74
	31-Mar-11	L991777-12	0.00135	0.0072	2.20	8.05	<0.00010	0.00030	0.0402	0.00334	<0.00050	<0.010	0.0348	76.1	0.00028	0.0301	1.57	25.7	0.0167	0.01130	9.80	3.41
	2-May-11	L1002688-16	0.000735	0.0023	0.595	0.587	0.00038	<0.00010	0.0321	<0.00050	<0.010	0.00914	65.2	0.00014	0.00911	0.327	3.02	0.000094	<0.0050	4.24	0.944	
	5-Jun-11	L1014013-11	0.000513	0.0125	0.472	1.89	<0.00010	0.00039	0.0771	0.00054	<0.00050	<0.010	0.0065	18.9	0.00019	0.00881	0.468	7.11	0.0267	<0.0050	1.10	0.336
	4-Jul-11	L1028827-7	0.000238	0.0042	0.151	0.0395	0.00023	<0.00010	0.0447	<0.00010	<0.00050	<0.010	0.0023	16.8	<0.00010	0.00263	0.107	0.076	<0.000050	0.00078	1.04	0.175
	1-Aug-11	L1041095-8	0.000176	0.0046	0.102	0.0059	0.00059	<0.00010	0.0386	<0.00010	<0.00050	<0.010	0.00113	17.7	<0.00010	0.00125	0.00799	<0.030	<0.000050	0.00054	0.88	0.091
	5-Sep-11	L1054953-5	0.00155	0.0205	0.935	6.26	<0.00010	0.00062	0.0936	0.00141	<0.00050	<0.010	0.0141	28.1	0.00044	0.0222	1.96	13.5	0.0164	0.00576	4.11	1.86
	1-Oct-11	L1067383-12	0.000795	0.0110	0.722	2.81	0.00014															

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals			Dissolved Metals																
			Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)
MCT	1-Oct-11	L1067383-14	0.000842	0.0055	0.435	0.0129	0.00015	<0.00010	0.0294	<0.00010	<0.00050	<0.010	0.00567	53.2	<0.00010	0.00801	0.0358	<0.030	<0.000050	0.00251	5.16	0.569
	26-Oct-11	L1079029-17	0.000916	0.0044	0.508	0.0177	0.00024	<0.00010	0.0277	<0.00010	<0.00050	<0.010	0.00439	60.7	<0.00010	0.00759	0.00831	<0.030	<0.000050	0.00317	5.79	0.609
	27-Nov-11	L1091310-8	0.000835	0.0027	0.504	0.0448	0.00035	<0.00010	0.0275	<0.00010	<0.00050	0.010	0.00271	70.9	<0.00010	0.00575	0.00403	<0.030	<0.000050	0.00322	6.88	0.728
	5-Jul-10	L905787-20	0.000139	0.0177	0.0103	0.0786	0.00043	0.00053	0.0122	<0.00050	<0.00050	<0.010	<0.000010	18.9	<0.00020	<0.00010	0.00033	0.064	<0.000050	<0.0050	1.49	0.00099
	27-Aug-10	L926457-20	0.000084	0.0083	0.0070	0.0789	0.00027	0.00041	0.0072	<0.00050	<0.00050	<0.010	<0.000010	12.4	<0.00020	<0.00010	0.00026	0.070	<0.000050	<0.0050	0.82	0.00281
	15-Nov-10	L955725-19	0.000880	<0.0010	0.0158	0.0076	0.00033	0.00014	0.0187	<0.00050	<0.00050	<0.010	0.000189	71.1	0.00011	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	6.21	0.00207
	31-Mar-11	L991777-10	0.000820	<0.0010	0.0094	<0.0030	0.00051	0.00015	0.0253	<0.00050	<0.00050	<0.010	0.000114	70.5	0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	8.78	0.00528
MCT1	4-Jul-11	L1028827-17	0.000311	0.0242	0.0213	0.0328	0.00037	0.00038	0.0119	<0.00010	<0.00050	<0.010	0.000012	28.1	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.45	0.00042
	5-Sep-11	L1054953-2	0.000328	0.0291	0.0274	0.0349	0.00039	0.00039	0.0126	<0.00010	<0.00050	<0.010	0.000015	27.4	0.00011	<0.00010	<0.00050	0.031	<0.000050	<0.0050	2.38	0.00040
	24-Jul-07	L535508-9	0.00104	0.0810	0.0917	0.0260	0.00039	0.00035	0.0072	<0.00050	<0.00050	<0.010	0.000036	26.6	<0.00050	<0.00010	0.00064	<0.030	<0.000050	<0.0050	2.25	0.0101
	23-Sep-07	L559547-10	0.000403	0.0060	0.0138	0.0056	0.00038	0.00028	0.0124	<0.00050	<0.00050	<0.010	0.000068	41.2	<0.00050	<0.00010	0.00014	<0.030	<0.000050	<0.0050	3.82	0.00395
	26-Jun-08	L650936-28	0.000450	0.0054	0.0161	0.0062	0.00029	<0.00010	0.0116	<0.00050	<0.00050	<0.010	0.000076	35.0	<0.00050	<0.00010	<0.00020	<0.030	<0.000050	<0.0050	2.75	0.00011
	10-Sep-08	L683687-5	0.000273	0.0043	0.0154	0.0078	0.00024	0.00014	0.0097	<0.00050	<0.00050	<0.010	0.000078	33.0	<0.00050	<0.00010	<0.00020	<0.030	<0.000050	<0.0050	2.32	0.00011
	2-Jul-09	L787346-20	0.000493	0.0013	0.0113	0.0049	0.00029	0.00011	0.0122	<0.00050	<0.00050	<0.010	0.000105	43.8	<0.00050	<0.00010	0.00017	<0.030	<0.000050	<0.0050	3.10	0.00016
MCT2	22-Aug-09	L809879-13	0.000244	0.0125	0.0171	0.0456	0.00025	0.00024	0.0090	<0.00050	<0.00050	<0.010	0.000029	26.3	<0.00050	<0.00010	0.00014	<0.030	<0.000050	<0.0050	1.70	0.00047
	26-Nov-09	L844495-20	0.00119	<0.0010	0.0201	0.0023	0.00034	0.00010	0.0198	<0.00050	<0.00050	<0.010	0.000214	83.7	<0.00050	<0.00010	0.00020	<0.030	<0.000050	<0.0050	6.28	0.00249
	26-Jun-08	L650936-27	0.000153	0.0140	0.0126	0.0593	0.00047	0.00050	0.0121	<0.00050	<0.00050	<0.010	<0.000017	16.9	<0.00050	<0.00010	<0.00060	0.040	0.000057	<0.0050	1.36	0.00068
	10-Sep-08	L683687-6	0.000133	0.0030	0.0027	0.0193	0.00028	0.00040	0.0109	<0.00050	<0.00050	<0.010	<0.000017	26.5	<0.00050	<0.00010	<0.00030	<0.030	<0.000050	<0.0050	3.48	0.00055
	2-Jul-09	L787346-31	0.000146	0.0095	0.0090	0.0273	0.00049	0.00049	0.0112	<0.00050	<0.00050	<0.010	0.000054	23.9	<0.00050	<0.00010	0.00020	<0.030	<0.000050	<0.0050	2.72	0.00097
	2-Jul-09	L787346-21	0.000190	0.0098	0.0120	0.0356	0.00046	0.00042	0.0116	<0.00050	<0.00050	<0.010	0.000076	24.5	<0.00050	<0.00010	0.00023	0.036	<0.000050	<0.0050	2.85	0.00155
	22-Aug-09	L809879-21	0.000099	0.0143	0.0097	0.0974	0.00021	0.00045	0.0064	<0.00050	<0.00050	<0.010	0.000013	10.1	<0.00050	<0.00010	0.00029	0.091	<0.000050	<0.0050	0.52	0.00154
MCTR	22-Aug-09	L809879-14	0.000070	0.0146	0.0108	0.0994	0.00020	0.00042	0.0064	<0.00050	<0.00050	<0.010	<0.000010	9.5	<0.00050	<0.00010	0.00028	0.094	<0.000050	<0.0050	0.50	0.00153
	26-Nov-09	L844495-21	0.000191	<0.0010	<0.0010	0.0039	0.00065	0.00040	0.0211	<0.00050	<0.00050	<0.010	0.000011	42.8	<0.00050	<0.00010	<0.030	<0.000050	<0.0050	5.54	0.00020	
	28-May-08	L635965-10	0.000397	0.0193	0.0290	0.0390	0.00038	0.00039	0.0123	<0.00050	&lt											

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals			Dissolved Metals																
			Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)
IC1	8-Jun-09	L776835-9	0.000444	0.0246	0.0458	0.0279	0.00032	0.00031	0.0129	<0.00050	<0.00050	<0.010	0.000029	28.2	<0.00050	<0.00010	0.00032	0.032	<0.000050	<0.0050	3.44	0.00063
	13-Jun-09	L778602-9	0.000338	0.0167	0.0199	0.0326	0.00030	0.00033	0.0122	<0.00050	<0.00050	<0.010	0.000033	26.2	<0.00050	<0.00010	0.00025	0.036	<0.000050	<0.0050	2.35	0.00114
	19-Jun-09	L781603-2	0.000359	0.0202	0.0200	0.0348	0.00033	0.00037	0.0133	<0.00050	<0.00050	<0.010	0.000025	28.4	<0.00050	<0.00010	0.00027	<0.030	<0.000050	<0.0050	2.55	0.00065
	2-Jul-09	L787346-19	0.000333	0.0028	0.0069	0.0155	0.00037	0.00038	0.0142	<0.00050	<0.00050	<0.010	0.000068	37.2	<0.00050	<0.00010	0.00032	<0.030	<0.000050	<0.0050	4.40	0.00218
	4-Aug-09	L801967-4	0.000407	0.0261	0.0357	0.0696	0.00028	0.00034	0.0081	<0.00050	<0.00050	<0.010	0.000014	19.8	<0.00050	<0.00010	<0.00030	0.060	<0.000050	<0.0050	1.36	0.00126
	22-Aug-09	L809879-12	0.000175	0.0128	0.0118	0.0471	0.00024	0.00032	0.0090	<0.00050	<0.00050	<0.010	0.000017	21.0	<0.00050	<0.00010	0.00017	0.036	<0.000050	<0.0050	1.55	0.00072
	13-Sep-09	L817873-7	0.000216	0.0182	0.0191	0.0474	0.00022	0.00033	0.0088	<0.00050	<0.00050	<0.010	0.000013	20.3	<0.00050	<0.00010	0.00017	<0.030	<0.000050	<0.0050	1.45	0.00042
	27-Sep-09	L824535-9	0.000300	0.0033	<0.010	0.0222	0.00035	0.00026	0.0146	<0.00050	<0.00050	<0.010	0.000060	35.3	<0.00050	<0.00010	0.00035	<0.030	<0.000050	<0.0050	3.17	0.00270
	31-Oct-09	L837185-9	0.000507	<0.0010	0.0076	0.0047	0.00043	0.00028	0.0194	<0.00050	<0.00050	<0.010	0.000107	50.5	<0.00050	<0.00010	<0.00060	<0.030	<0.000050	<0.0050	5.17	0.00448
	26-Nov-09	L844495-19	0.000665	<0.0010	0.0061	0.0039	0.00047	0.00033	0.0224	<0.00050	<0.00050	<0.010	0.000097	61.2	<0.00050	<0.00010	0.00019	<0.030	<0.000050	<0.0050	6.68	0.00288
	28-Mar-10	L873292-2	0.000789	<0.0010	0.0085	0.0041	0.00042	0.00023	0.0241	<0.00050	<0.00050	<0.010	0.000108	62.8	<0.00050	<0.00010	0.00060	<0.030	<0.000050	<0.0050	7.40	0.00372
	5-Jul-10	L905787-21	0.000275	0.0115	0.0097	0.0370	0.00037	0.00041	0.0136	<0.00050	<0.00050	<0.010	0.000024	30.1	<0.00020	<0.00010	0.00022	<0.030	<0.000050	<0.0050	2.64	0.00050
	27-Aug-10	L926457-21	0.000199	0.0057	0.0071	0.0243	0.00031	0.00032	0.0093	<0.00050	<0.00050	<0.010	0.000023	22.7	<0.00020	<0.00010	0.00017	<0.030	<0.000050	<0.0050	1.76	0.00262
	15-Nov-10	L955725-20	0.000538	<0.0010	0.0072	0.0062	0.00045	0.00031	0.0213	<0.00050	<0.00050	<0.010	0.000102	56.4	<0.00010	<0.00010	0.00059	<0.030	<0.000050	<0.0050	6.42	0.00333
	31-Mar-11	L991777-9	0.000774	<0.0010	0.0056	<0.0030	0.00045	0.00029	0.0267	<0.00050	<0.00050	<0.010	0.000081	68.5	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	8.71	0.00123
	4-Jul-11	L1028827-15	0.000293	0.0172	0.0162	0.0310	0.00035	0.00041	0.0132	<0.00010	<0.00050	<0.010	0.000024	30.6	0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.74	0.00053
	4-Jul-11	L1028827-1	0.000257	0.0083	0.0120	0.127	0.00037	0.00043	0.0135	<0.00010	<0.00050	<0.010	0.000020	30.4	0.00015	<0.00010	0.00051	<0.030	<0.000050	<0.0050	2.80	0.00071
	5-Sep-11	L1054953-1	0.000328	0.0252	0.0263	0.0452	0.00042	0.00039	0.0129	<0.00010	<0.00050	<0.010	0.000023	28.6	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	0.00058	2.47	0.00070
	27-Nov-11	L1091310-10	0.000710	<0.0010	0.0063	<0.0060	0.00058	0.00034	0.0255	<0.00020	<0.0010	<0.020	0.000096	67.6	<0.00020	<0.00020	<0.0010	<0.030	<0.00010	<0.0010	7.23	0.00093
SF1	1-Aug-11	L1041095-9	0.000163	0.0049	0.0366	0.0778	0.00084	0.00161	0.0261	<0.00010	<0.00050	<0.010	0.000239	16.3	0.00016	0.00052	0.00110	<0.030	<0.000050	<0.0050	0.97	0.0419
	1-Aug-11	L1041095-2	0.000179	0.0058	0.0390	0.0701	0.00081	0.00143	0.0258	<0.00010	<0.00050	<0.010	0.000248	16.0	<0.00010	0.00054	0.00123	<0.030	<0.000050	0.00050	0.96	0.0431
	5-Sep-11	L1054953-7	0.000256	0.0098	0.0507	0.0410	0.00144	0.00264	0.0463	<0.00010	<0.00050	<0.010	0.000126	17.8	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	1.03	0.0134
	1-Oct-11	L1067383-10	0.000426	0.0054	0.0818	0.0484	0.00203	0.00050	0.0470	<0.00010	<0.00050	<0.010	0.000570	36.2	<0.00010	0.00138	0.00419	<0.030	<0.000050	0.00081	2.60	0.0802

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals															
			Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	
GC-1																		
	23-Sep-07	L559547-13	<0.000010	0.000934	<0.00050	<0.30	<2.0	0.00130	1.49	<0.000010	<2.0	0.196	<0.00010	<0.00010	<0.010	0.000118	<0.0010	<0.0010
	29-Oct-08	L703445-14	<0.000010	0.00117	0.00057	<0.30	0.524	0.00224	2.19	<0.000010	<2.0	0.189	<0.00010	<0.00010	<0.010	0.000178	<0.0010	0.0026
	6-Dec-08	L717413-17	<0.000010	0.00126	0.00056	<0.30	0.572	0.00212	2.20	<0.000010	<2.0	0.210	<0.00010	<0.00010	<0.010	0.000190	<0.0010	0.0028
	28-Mar-09	L748538-7	<0.000010	0.00124	<0.00050	<0.30	0.656	0.00245	2.34	<0.000010	2.5	0.232	<0.00010	<0.00010	<0.010	0.000217	<0.0010	0.0024
	2-Jul-09	L787346-22	<0.000010	0.00109	<0.00050	<0.30	0.492	0.00087	1.39	<0.000010	<2.0	0.216	<0.00010	<0.00010	<0.010	0.000113	<0.0010	<0.0010
	22-Aug-09	L809879-15	<0.000010	0.000647	<0.00050	<0.30	0.357	0.00063	0.94	<0.000010	<2.0	0.137	<0.00010	<0.00010	<0.010	0.000080	<0.0010	<0.0010
	1-Dec-09	L845898-3	<0.000010	0.00136	<0.00050	<0.30	0.583	0.00198	2.23	<0.000010	<2.0	0.272	<0.00010	<0.00010	<0.010	0.000199	<0.0010	0.0016
	3-Aug-10	L916942-19	<0.000010	0.000400	<0.00050	<0.30	0.445	0.00048	0.77	<0.000010	<2.0	0.117	<0.00010	<0.00010	<0.010	0.000067	<0.0010	<0.0010
	15-Nov-10	L955725-32	<0.000010	0.00130	0.00059	<0.30	0.705	0.00188	2.17	<0.000010	<2.0	0.256	<0.00010	<0.00010	<0.010	0.000171	<0.0010	<0.0030
	5-Mar-11	L985810-5	<0.000010	0.00129	0.00056	<0.30	0.742	0.00258	2.23	<0.000010	2.3	0.271	<0.00010	<0.00010	<0.010	0.000197	<0.0010	<0.0030
	31-Mar-11	L991777-7	<0.000010	0.00136	0.00063	<0.30	0.786	0.00259	2.33	<0.000010	2.7	0.295	<0.00010	<0.00010	<0.010	0.000230	<0.0010	<0.0030
	2-May-11	L1002688-12	<0.000010	0.00135	0.00075	<0.30	0.869	0.00243	2.37	<0.000010	2.6	0.317	<0.00010	<0.00010	<0.010	0.000227	<0.0010	<0.0030
	5-Jun-11	L1014013-14	<0.000010	0.000950	<0.00050	<0.30	0.495	0.00084	1.32	<0.000010	<2.0	0.177	<0.00010	<0.00010	<0.010	0.000100	<0.0010	<0.0030
	4-Jul-11	L1028827-2	<0.000010	0.000994	<0.00050	<0.30	0.462	0.00085	1.29	<0.000010	<2.0	0.231	<0.00010	<0.00010	<0.010	0.000129	<0.0010	<0.0030
	1-Aug-11	L1039955-11	<0.000010	0.000761	<0.00050	<0.30	0.348	0.00071	1.05	<0.000010	<2.0	0.164	<0.00010	<0.00010	<0.010	0.000095	<0.0010	<0.0030
	5-Sep-11	L1054953-12	<0.000010	0.000882	<0.00050	<0.30	0.576	0.00094	1.35	<0.000010	<2.0	0.191	<0.00010	<0.00010	<0.010	0.000111	<0.0010	<0.0030
	1-Oct-11	L1067383-7	<0.000010	0.00131	<0.00050	<0.30	0.743	0.00169	1.93	<0.000010	<2.0	0.233	<0.00010	<0.00010	<0.010	0.000168	<0.0010	<0.0030
	26-Oct-11	L1079029-18	<0.000010	0.00141	0.00056	<0.30	0.749	0.00194	2.23	<0.000010	<2.0	0.237	<0.00010	<0.00010	<0.010	0.000183	<0.0010	<0.0030
	27-Nov-11	L1091310-4	<0.000010	0.00135	0.00063	<0.30	0.771	0.00216	2.27	<0.000010	<2.0	0.258	<0.00010	<0.00010	<0.010	0.000198	<0.0010	<0.0030
MC1																		
	24-Jul-07	L535508-8	<0.000010	<0.000050	0.00224	<0.30	<2.0	<0.0010	1.60	<0.000010	<2.0	0.104	<0.00010	<0.00010	<0.010	0.000554	<0.0010	0.388
	23-Sep-07	L559547-9	<0.000010	0.000191	0.00192	<0.30	<2.0	<0.0010	2.27	<0.000010	<2.0	0.190	<0.00010	<0.00010	<0.010	0.000297	<0.0010	0.359
	28-May-08	L635965-2	<0.000010	<0.00010	0.00510	<0.30	0.540	0.00128	2.45	0.000095	<2.0	0.220	<0.00020	<0.00020	<0.010	0.00172	<0.0020	1.35
	5-Jun-08	L639617-8	<0.000010	0.000570	0.00760	<0.30	0.610	0.00176	3.18	0.000065	<2.0	0.208	<0.00020	<0.00020	<0.010	0.00273	<0.0020	1.25
	5-Jun-08	L639617-7	<0.000010	0.000770	0.00760	<0.30	0.610	0.00184	3.16	0.000061	<2.0	0.212	<0.00020	<0.00020	<0.010	0.00265	<0.0020	1.22
	11-Jun-08	L642688-9	0.000010	0.000058	0.00787	<0.30	0.630	0.00152	3.80	0.000091	<2.0	0.248	<0.00010	<0.00010	<0.010	0.00266	<0.0010	1.15
	26-Jun-08	L650936-29	<0.000010	<0.000050	0.00609	<0.30	0.561	0.00105	3.53	0.000075	<2.0	0.233	<0.00010	<0.00010	<0.010	0.00164	<0.0010	0.904
	3-Jul-08	L652071-6	<0.000010	0.00152	0.00690	0.32	0.470	0.00264	2.34	0.000108	<2.0	0.145	<0.00020	<0.00020	<0.010	0.00170	<0.0020	1.58
	25-Jul-08	L662220-8	<0.000010	<0.000050	0.00228	<0.30	0.305	0.00070	1.99	<0.000010	<2.0	0.155	<0.00010	<0.00010	<0.010	0.000578	<0.0010	0.416
	21-Aug-08	50155639																
	10-Sep-08	L683687-4	<0.000010	<0.000050	0.00206	<0.30	0.289	0.00057	1.63	0.000059	<2.0	0.154	<0.00010	<0.0				

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals															
			Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	
MC1A	15-Nov-10	L955725-17	<0.000010	0.000117	0.00842	<0.30	0.697	0.00159	5.47	0.000029	2.7	0.539	<0.00010	<0.00010	<0.010	0.00158	<0.0010	1.29
	31-Mar-11	L991777-11	<0.000010	0.000108	0.00649	<0.30	0.875	0.00119	4.61	<0.000010	4.6	0.825	<0.00010	<0.00010	<0.010	0.000233	<0.0010	0.994
	2-May-11	L1002688-15	<0.000010	<0.000050	0.00609	<0.30	0.802	0.00155	4.36	<0.000010	3.5	0.711	<0.00010	<0.00010	<0.010	0.000371	<0.0010	0.707
	5-Jun-11	L1014013-12	<0.000010	0.000244	0.00553	<0.30	0.376	0.00102	2.48	0.000030	<2.0	0.216	<0.00010	<0.00010	<0.010	0.00153	<0.0010	0.800
	4-Jul-11	L1028827-8	<0.000010	<0.000050	0.00508	<0.30	0.405	0.00065	3.00	0.000044	<2.0	0.212	0.00004	<0.00010	<0.010	0.00110	<0.0010	0.676
	1-Aug-11	L1041095-6	<0.000010	<0.000050	0.00249	<0.30	0.257	0.00040	1.83	<0.000010	<2.0	0.165	0.00002	<0.00010	<0.010	0.000428	<0.0010	0.399
	5-Sep-11	L1054953-4	<0.000010	<0.000050	0.00282	<0.30	0.295	0.00056	1.93	<0.000010	<2.0	0.176	0.00002	<0.00010	<0.010	0.000445	<0.0010	0.472
	1-Oct-11	L1067383-13	<0.000010	0.000114	0.00635	<0.30	0.552	0.00133	4.25	0.000019	<2.0	0.363	0.00005	<0.00010	<0.010	0.00145	<0.0010	1.10
	26-Oct-11	L1079029-16	<0.000010	0.000085	0.00754	<0.30	0.698	0.00167	5.19	0.000023	2.5	0.485	0.00005	<0.00010	<0.010	0.00167	<0.0010	1.39
	2-May-10	L884476-6	<0.000010	0.00930	0.90	0.600	0.00425	3.45	0.000051	2.6	0.350	<0.00020	<0.00020	<0.010	0.00393	<0.0020	2.84	
MC1A-US	26-May-10	L891484-8	<0.000010	0.000660	0.0117	<0.30	0.720	0.00207	4.20	0.000155	2.2	0.350	<0.00020	<0.00020	<0.010	0.00490	<0.0020	2.99
	5-Jul-10	L905787-17	<0.000010	<0.000050	0.00251	<0.30	0.309	0.00049	1.84	0.000016	<2.0	0.131	<0.00010	<0.00010	<0.010	0.000585	<0.0010	0.494
	3-Aug-10	L916942-8	<0.000010	0.000605	<0.00050	<0.30	0.121	0.00035	0.42	<0.000010	<2.0	0.058	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0237
	3-Aug-10	L916942-20	<0.000010	0.000560	<0.00050	<0.30	0.128	0.00034	0.39	<0.000010	<2.0	0.056	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0198
MC2	27-Aug-10	L926457-17	<0.000010	<0.000050	0.00313	<0.30	0.307	0.00020	2.18	0.000049	<2.0	0.131	<0.00010	<0.00010	<0.010	0.000551	<0.0010	0.559
	28-Sep-10	L938295-8	<0.000010	0.000653	<0.00050	<0.30	0.224	0.00029	1.05	<0.000010	<2.0	0.090	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0360
	21-Oct-10	L946802-5	<0.000010	0.00808	0.0185	1.87	0.902	0.00809	7.03	0.000091	2.7	0.457	0.00019	<0.00010	<0.010	0.00336	0.0068	3.37
	15-Nov-10	L955725-16	<0.000010	0.000141	0.00675	<0.30	0.671	0.00126	4.42	0.000023	2.1	0.368	<0.00010	<0.00010	<0.010	0.00136	<0.0010	1.69
	15-Dec-10	L963832-7	<0.000010	0.000141	0.0130	<0.30	1.10	0.00122	8.02	0.000043	4.3	0.618	0.00016	<0.00010	<0.010	0.00221	<0.0010	3.49
	31-Mar-11	L991777-12	<0.000010	0.000059	0.00809	<0.30	1.02	0.00083	5.93	0.000017	5.1	0.694	<0.00010	<0.00010	<0.010	0.00133	<0.0010	2.37
	2-May-11	L1002688-16	<0.000010	0.000054	0.00269	<0.30	0.781	0.00099	3.33	<0.000010	2.4	0.450	<0.00010	<0.00010	<0.010	0.000106	<0.0010	0.595
	5-Jun-11	L1014013-11	<0.000010	0.000083	0.00200	<0.30	0.294	0.00048	1.41	0.000011	<2.0	0.117	<0.00010	<0.00010	<0.010	0.000396	<0.0010	0.471
	4-Jul-11	L1028827-7	<0.000010	0.000122	0.00098	<0.30	0.344	0.00035	1.42	<0.000010	<2.0	0.107	<0.00010	<0.00010	<0.010	0.000015	<0.0010	0.154
	1-Aug-11	L1041095-8	<0.000010	0.000744	0.00051	<0.30	0.251	0.00033	1.25	<0.000010	<2.0	0.116	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0758
	5-Sep-11	L1054953-5	<0.000010	0.000126	0.00708	<0.30	0.411	0.00070	3.36	0.000042	<2.0	0.193	0.00005	<0.00010	<0.010	0.00131	<0.0010	0.946
	1-Oct-11	L1067383-12	<0.000010	0.000066	0.00257	<0.30	0.510	0.00111	2.28	<0.000010	<2.0	0.250	0.00003	<0.00010	<0.010	0.000652	<0.0010	0.723
	26-Oct-11	L1079029-15	<0.000010	0.000181	0.00474	<0.30	0.607	0.00131	3.29	0.000017	<2.0	0.302	0.00004	<0.00010	<0.010	0.00105	<0.0010	1.57
MC2	17-Jan-10	L855505-6	<0.000010	0.00271	0.00251	<0.30	0.802	0.00303	2.67	<0.000010	4.6	0.420	<0.00010	<0.00010	<0.010	0.000401	<0.0010	0.0752
	3-Mar-10	L866873-6	<0.000010	0.00287	0.00221	<0.30	0.810	0.00315	2.53	<0.000010	4.9	0.425	<0.00010	<0.00010	<0.010	0.000499	<0.0010	0.0497
	28-Mar-10	L873292-1	<0.000010	0.00252	0.00295	<0.30	0.761	0.00282	2.53	<0.000010	3.9	0.371	<0.0001					

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals															
			Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	
MCT	1-Oct-11	L1067383-14	<0.000010	0.00118	0.00404	<0.30	0.733	0.00297	2.40	<0.000010	2	0.277	0.00002	<0.00010	<0.010	0.000029	<0.0010	0.367
	26-Oct-11	L1079029-17	<0.000010	0.00223	0.00395	<0.30	0.767	0.00313	2.52	<0.000010	2.5	0.316	0.00002	<0.00010	<0.010	0.000082	<0.0010	0.253
	27-Nov-11	L1091310-8	<0.000010	0.00315	0.00314	<0.30	0.872	0.00334	2.41	<0.000010	3.6	0.387	0.00002	<0.00010	<0.010	0.000291	<0.0010	0.106
	5-Jul-10	L905787-20	<0.000010	0.00112	<0.00050	<0.30	0.903	0.00083	0.94	<0.000010	<2.0	0.120	<0.00010	<0.00010	<0.010	0.000068	<0.0010	<0.0010
	27-Aug-10	L926457-20	<0.000010	0.000655	<0.00050	<0.30	0.536	0.00046	0.62	<0.000010	<2.0	0.076	<0.00010	<0.00010	<0.010	0.000039	<0.0010	<0.0010
	15-Nov-10	L955725-19	<0.000010	0.00545	0.00699	<0.30	0.225	0.00765	1.72	<0.000010	<2.0	0.275	<0.00010	<0.00010	<0.010	0.000879	<0.0010	0.0145
	31-Mar-11	L991777-10	<0.000010	0.00359	0.00344	<0.30	1.28	0.00478	2.06	<0.000010	<2.0	0.332	<0.00010	<0.00010	<0.010	0.000797	<0.0010	0.0079
MCT1	4-Jul-11	L1028827-17	<0.000010	0.00203	0.00061	<0.30	0.695	0.00233	1.02	<0.000010	<2.0	0.144	<0.000010	<0.00010	<0.010	0.000195	<0.0010	<0.0030
	5-Sep-11	L1054953-2	<0.000010	0.00204	0.00091	<0.30	0.770	0.00248	1.02	<0.000010	<2.0	0.141	<0.000010	<0.00010	<0.010	0.000195	<0.0010	<0.0030
	24-Jul-07	L535508-9	<0.000010	0.00184	0.00079	<0.30	<2.0	0.00230	0.95	<0.000010	<2.0	0.100	<0.00010	<0.00010	<0.010	0.000143	<0.0010	<0.0010
	23-Sep-07	L559547-10	<0.000010	0.00247	0.00134	<0.30	<2.0	0.00310	1.42	<0.000010	<2.0	0.163	<0.00010	<0.00010	<0.010	0.000256	<0.0010	0.0025
	26-Jun-08	L650936-28	<0.000010	0.00342	0.00154	<0.30	0.167	0.00448	1.01	<0.000010	<2.0	0.155	<0.00010	<0.00010	<0.010	0.000366	<0.0010	0.0022
	10-Sep-08	L683687-5	<0.000010	0.00273	0.00173	<0.30	0.153	0.00363	0.90	<0.000010	<2.0	0.129	<0.00010	<0.00010	<0.010	0.000235	<0.0010	0.0026
	2-Jul-09	L787346-20	<0.000010	0.00372	0.00303	<0.30	0.216	0.00508	1.10	<0.000010	<2.0	0.149	<0.00010	<0.00010	<0.010	0.000441	<0.0010	0.0067
MCT2	22-Aug-09	L809879-13	<0.000010	0.00255	0.00085	<0.30	0.184	0.00262	0.77	<0.000010	<2.0	0.114	<0.00010	<0.00010	<0.010	0.000163	<0.0010	0.0011
	26-Nov-09	L844495-20	<0.000010	0.00520	0.00796	<0.30	0.248	0.00648	1.87	<0.000010	<2.0	0.312	<0.00010	<0.00010	<0.010	0.00108	<0.0010	0.0163
	26-Jun-08	L650936-27	<0.000010	0.00103	<0.00050	<0.30	0.935	0.00059	0.95	<0.000010	<2.0	0.114	<0.00010	<0.00010	<0.010	0.000055	<0.0010	<0.0010
	10-Sep-08	L683687-6	<0.000010	0.000902	<0.00050	<0.30	0.519	0.00141	1.28	<0.000010	<2.0	0.129	<0.00010	<0.00010	<0.010	0.000115	<0.0010	<0.0010
	2-Jul-09	L787346-31	<0.000010	0.00133	0.00151	<0.30	1.03	0.00112	1.04	<0.000010	<2.0	0.151	<0.00010	<0.00010	<0.010	0.000095	<0.0010	<0.0010
	2-Jul-09	L787346-21	<0.000010	0.00147	0.00227	<0.30	1.00	0.00130	1.10	<0.000010	<2.0	0.151	<0.00010	<0.00010	<0.010	0.000106	<0.0010	<0.0010
	22-Aug-09	L809879-21	<0.000010	0.000477	<0.00050	<0.30	0.487	0.00025	0.54	<0.000010	<2.0	0.067	<0.00010	<0.00010	<0.010	0.000026	<0.0010	<0.0010
MCTR	22-Aug-09	L809879-14	<0.000010	0.000487	<0.00050	<0.30	0.458	0.00041	0.55	<0.000010	<2.0	0.063	<0.00010	<0.00010	<0.010	0.000024	<0.0010	<0.0010
	26-Nov-09	L844495-21	<0.000010	0.00160	<0.00050	<0.30	1.43	0.00228	1.79	<0.000010	<2.0	0.258	<0.00010	<0.00010	<0.010	0.000187	<0.0010	<0.0010
	28-May-08	L635965-10	<0.000010	0.00240	<0.00050	<0.30	0.683	0.00361	1.39	<0.000010	<2.0	0.123	<0.00010	<0.00010	<0.010	0.000252	<0.0010	<0.0010
	5-Jun-08	L639617-9	<0.000010	0.00214	0.00107	<0.30	0.698	0.00337	1.44	<0.000010	<2.0	0.148	<0.00010	<0.00010	<0.010	0.000283	<0.0010	0.0015
	11-Jun-08	L642688-1	<0.000010	0.00215	0.00087	<0.30	0.696	0.00324	1.44	<0.000010	<2.0	0.138	<0.00010	<0.00010	<0.010	0.000285	<0.0010	0.0013
	26-Jun-08	L650936-26	<0.000010	0.00224	0.00082	<0.30	0.699	0.00277	1.40	<0.000010	<2.0	0.157	<0.00010	<0.00010	<0.010	0.000274	<0.0010	<0.0010
	3-Jul-08	L652071-7	<0.000010	0.00173	<0.00050	<0.30	0.565	0.00196	0.92	<0.000010	<2.0	0.093	<0.00010	<0.00010	<0.010	0.000137	<0.0010	<0.0010
MCTR	25-Jul-08	L662220-9	<0.000010	0.00166	0.00103	<0.30	0.516	0.00217	1.00	<0.000010	<2.0	0.129	<0.00010	<0.00013	<0.010	0.000171	<0.0010	<0.0010
	10-Sep-08</td																	

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Mitchell Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals															
			Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	
	8-Jun-09	L776835-9	<0.000010	0.00188	0.00078	<0.30	0.651	0.00310	1.23	<0.000010	<2.0	0.147	<0.000010	<0.000010	<0.010	0.000201	<0.0010	<0.0010
	13-Jun-09	L778602-9	<0.000010	0.00181	0.00074	<0.30	0.602	0.00276	1.29	<0.000010	<2.0	0.112	<0.000010	<0.000010	<0.010	0.000205	<0.0010	<0.0010
	19-Jun-09	L781603-2	<0.000010	0.00197	0.00067	<0.30	0.688	0.00272	1.23	<0.000010	<2.0	0.129	<0.000010	<0.000010	<0.010	0.000220	<0.0010	<0.0010
	2-Jul-09	L787346-19	<0.000010	0.00231	0.00146	<0.30	0.696	0.00338	1.51	<0.000010	<2.0	0.136	<0.000010	<0.000010	<0.010	0.000296	<0.0010	0.0024
	4-Aug-09	L801967-4	<0.000010	0.00139	<0.00050	<0.30	0.487	0.00147	0.78	<0.000010	<2.0	0.085	<0.000010	<0.000010	<0.010	0.000097	<0.0010	<0.0010
	22-Aug-09	L809879-12	<0.000010	0.00163	<0.00050	<0.30	0.449	0.00135	0.83	<0.000010	<2.0	0.100	<0.000010	<0.000010	<0.010	0.000115	<0.0010	<0.0010
	13-Sep-09	L817873-7	<0.000010	0.00137	<0.00050	<0.30	0.463	0.00161	0.76	<0.000010	<2.0	0.097	<0.000010	<0.000010	<0.010	0.000113	<0.0010	<0.0010
	27-Sep-09	L824535-9	<0.000010	0.00230	0.00131	<0.30	0.680	0.00360	1.39	<0.000010	<2.0	0.157	<0.000010	<0.000010	<0.010	0.000271	<0.0010	0.0014
	31-Oct-09	L837185-9	<0.000010	0.00295	0.00235	<0.30	0.817	0.00500	2.01	<0.000010	<2.0	0.227	<0.000010	<0.000010	<0.010	0.000500	<0.0010	0.0049
	26-Nov-09	L844495-19	<0.000010	0.00350	0.00257	<0.30	0.985	0.00469	2.21	<0.000010	<2.0	0.278	<0.000010	<0.000010	<0.010	0.000625	<0.0010	0.0050
	28-Mar-10	L873292-2	<0.000010	0.00321	0.00274	<0.30	0.981	0.00491	2.25	<0.000010	<2.0	0.260	<0.000010	<0.000010	<0.010	0.000759	<0.0010	0.0052
	5-Jul-10	L905787-21	<0.000010	0.00196	<0.00050	<0.30	0.686	0.00201	1.16	<0.000010	<2.0	0.152	<0.000010	<0.000010	<0.010	0.000218	<0.0010	<0.0010
	27-Aug-10	L926457-21	<0.000010	0.00158	<0.00050	<0.30	0.493	0.00154	0.89	<0.000010	<2.0	0.107	<0.000010	<0.000010	<0.010	0.000137	<0.0010	0.0011
	15-Nov-10	L955725-20	<0.000010	0.00320	0.00242	<0.30	0.892	0.00502	2.14	<0.000010	<2.0	0.250	<0.000010	<0.000010	<0.010	0.000518	<0.0010	0.0062
	31-Mar-11	L991777-9	<0.000010	0.00327	0.00248	<0.30	1.16	0.00497	2.46	<0.000010	<2.0	0.321	<0.000010	<0.000010	<0.010	0.000769	<0.0010	0.0053
	4-Jul-11	L1028827-15	<0.000010	0.00205	0.00067	<0.30	0.704	0.00264	1.21	<0.000010	<2.0	0.149	<0.000010	<0.000010	<0.010	0.000215	<0.0010	<0.0030
	4-Jul-11	L1028827-1	<0.000010	0.00211	0.00066	<0.30	0.718	0.00269	1.24	<0.000010	<2.0	0.150	<0.000010	<0.000010	<0.010	0.000213	<0.0010	<0.0030
	5-Sep-11	L1054953-1	<0.000010	0.00223	0.00100	<0.30	0.752	0.00268	1.14	<0.000010	<2.0	0.142	<0.000010	<0.000010	<0.010	0.000191	<0.0010	<0.0030
	27-Nov-11	L1091310-10	<0.000010	0.00453	0.00310	<0.30	1.12	0.00495	2.42	<0.000020	<2.0	0.310	<0.000020	<0.000020	<0.010	0.000700	<0.0020	<0.0060
IC1	1-Aug-11	L1041095-9	<0.000010	0.000941	<0.00050	<0.30	0.319	0.00027	1.37	<0.000010	<2.0	0.103	0.00001	<0.000010	<0.010	0.000048	<0.0010	0.0070
	1-Aug-11	L1041095-2	<0.000010	0.000930	<0.00050	<0.30	0.324	0.00029	1.42	<0.000010	<2.0	0.100	0.00001	<0.000010	<0.010	0.000046	<0.0010	0.0084
	5-Sep-11	L1054953-7	<0.000010	0.00140	<0.00050	<0.30	0.295	0.00038	1.15	<0.000010	<2.0	0.125	<0.000010	<0.000010	<0.010	0.000065	<0.0010	<0.0030
	1-Oct-11	L1067383-10	<0.000010	0.00150	0.00072	<0.30	0.696	0.00070	2.73	<0.000010	<2.0	0.253	0.00003	<0.000010	<0.010	0.000134	<0.0010	0.0309
SF1	1-Aug-11	L1041095-3	<0.000010	<0.000050	0.00383	<0.30	0.327	0.00032	1.93	<0.000010	<2.0	0.503	0.00001	<0.000010	<0.010	0.000293	<0.0010	0.0888
	5-Sep-11	L1054953-6	<0.000010	<0.000050	0.00511	<0.30	0.361	0.00047	2.95	0.000015	<2.0	0.582	0.00002	<0.000010	<0.010	0.000413	<0.0010	0.130
	1-Oct-11	L1067383-11	<0.000010	0.000066	0.00847	<0.30	0.762	0.00075	4.43	<0.000010	4.4	1.200	0.00003	<0.000010	<0.010	0.000336	<0.0010	0.162

Note:

< indicates that the value is below the analytical detection limit

- indicates parameter was not analyzed

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Sulphurets Creek Watershed**

Site Name	Date	ALS Sample No.	Physical Parameter							Anions and Nutrients											
			Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	pH (pH unit)	Total Suspended Solids ( $\text{mg/L}$ )	Total Dissolved Solids ( $\text{mg/L}$ )	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Total (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Ammonia (as N) ( $\text{mg/L}$ )	Bromide ( $\text{Br}$ ) ( $\text{mg/L}$ )	Chloride ( $\text{Cl}$ ) ( $\text{mg/L}$ )	Fluoride ( $\text{F}$ ) ( $\text{mg/L}$ )	Nitrate (as N) ( $\text{mg/L}$ )		
SC1	25-Jul-07	L535508-3	-	-	37.5	7.77	-	61	-	<1.0	-	-	-	19.8	<0.0050	<0.050	<0.50	<0.20	0.0110		
	23-Sep-07	L559547-3	-	104	47.0	7.77	16.0	80	-	2.4	-	-	-	23.4	<0.0050	<0.050	<0.50	0.024	0.0067		
	28-May-08	L635965-9	94.2	<5.0	211	7.91	140	30	46.1	3.9	38.6	<2.0	<2.0	38.6	<0.0050	<0.050	<0.50	0.052	0.0335		
	28-May-08	L635965-8	93.9	<5.0	211	7.76	141	21	45.1	5.6	39.1	<2.0	<2.0	39.1	<0.0050	<0.050	<0.50	0.052	0.034		
	5-Jun-08	L639617-10	64.1	<5.0	154	7.86	96	40	53.6	1.9	31.0	<2.0	<2.0	31.0	<0.0050	<0.050	<0.50	0.039	0.0218		
	11-Jun-08	L642688-2	66.5	<5.0	155	7.89	101	26	37.2	1.1	34.9	<2.0	<2.0	34.9	<0.0050	<0.050	<0.50	0.031	0.0237		
	26-Jun-08	L650936-30	<5.0	122	60.0	7.32	61.4	75	57.1	2.5	28.1	<2.0	<2.0	28.1	<0.0050	<0.050	<0.50	0.030	0.0159		
	3-Jul-08	L652071-8	<5.0	101	44.4	7.90	153	71	78.1	5.9	23.2	<2.0	<2.0	23.2	<0.0050	<0.050	<0.50	0.023	0.0123		
	25-Jul-08	L662220-10	<5.0	89.6	36.0	7.77	61.7	53	74.8	1.4	21.7	<2.0	<2.0	21.7	<0.0050	<0.050	<0.50	<0.20	0.0143		
	10-Sep-08	L683687-1	<5.0	97.5	43.4	7.73	37.2	57	42.9	1.5	23.0	<2.0	<2.0	23.0	<0.0050	<0.050	<0.50	<0.20	0.0114		
	2-Oct-08	L691752-10	6.6	114	50.3	7.74	291	75	350	1.2	34.1	<1.0	<1.0	34.1	<0.0050	<0.050	<0.50	<0.20	0.0157		
	2-Oct-08	L691752-9	<5.0	114	50.6	7.87	293	94	352	<1.0	34.2	<1.0	<1.0	34.2	<0.0050	<0.050	<0.50	<0.20	0.0137		
	29-Oct-08	L703445-12	<5.0	237	104	7.83	<3.0	150	1.48	1.4	45.3	<2.0	<2.0	45.3	<0.0050	<0.050	<0.50	0.039	0.0701		
	6-Dec-08	L717413-30	<5.0	307	138	7.82	<3.0	198	0.57	1.3	49.7	<2.0	<2.0	49.7	<0.0050	<0.050	<0.50	0.050	0.0253		
	27-May-09	L771080-2	<5.0	331	166	7.86	8.5	225	10.0	3.5	73.8	<2.0	<2.0	73.8	<0.0050	<0.050	<0.50	0.077	0.0473		
	27-May-09	L771080-1	<5.0	330	170	7.76	11	227	10.5	3.8	63.2	<2.0	<2.0	63.2	<0.0050	<0.050	<0.50	0.077	0.0574		
	2-Jul-09	L787346-23	<5.0	141	65.5	7.89	12	88	26.7	2.8	36.2	<2.0	<2.0	36.2	<0.0050	<0.050	<0.50	0.027	0.0116		
	4-Aug-09	L801967-9	<5.0	66.5	29.8	7.93	115	40	132	1.1	25.3	<1.0	<1.0	25.3	<0.0050	<0.050	<0.50	<0.20	0.012		
	4-Aug-09	L801967-8	<5.0	68.3	31.0	8.08	110	42	137	<1.0	26.0	<1.0	<1.0	26.0	<0.0050	<0.050	<0.50	<0.20	0.011		
	22-Aug-09	L809879-16	<5.0	63.2	27.8	7.99	88.3	47	113	<1.0	21.6	<1.0	<1.0	21.6	<0.0050	<0.050	<0.50	<0.20	0.0089		
	27-Sep-09	L824535-10	<5.0	108	46.0	7.80	20.5	85	97.6	2.0	24.8	<1.0	<1.0	24.8	<0.0050	<0.050	<0.50	0.023	0.0136		
	31-Oct-09	L837185-10	<5.0	229	93.4	<3.0	147	3.62	1.2	44.1	<2.0	<2.0	44.1	<0.0050	<0.050	<0.50	0.032	0.0449			
	1-Dec-09	L845898-4	<5.0	303	142	7.93	<3.0	196	0.85	2.4	59.0	<2.0	<2.0	59.0	<0.0050	<0.050	<0.50	0.061	0.0628		
	17-Jan-10	L855505-7	<5.0	338	154	8.00	<3.0	231	0.52	3.2	60.2	<2.0	<2.0	60.2	<0.0050	<0.050	<0.50	0.049	0.0706		
	3-Mar-10	L866873-7	<5.0	382	172	8.00	<3.0	261	0.48	3.2	64.5	<2.0	<2.0	64.5	<0.0050	<0.050	<0.50	0.075	0.0654		
	28-Mar-10	L873293-9	<5.0	401	196	8.03	<3.0	269	0.75	2.3	83.1	<2.0	<2.0	83.1	<0.0050	<0.050	<0.50	0.068	0.120		
	1-May-10	L884476-5	<5.0	348	179	8.02	<3.0	232	1.25	4.0	65.5	<2.0	<2.0	65.5	0.0080	<0.050	<0.50	0.059	0.0626		
	26-May-10	L891484-16	<5.0	191	88.3	8.04	26.0	125	30.0	3.7	39.5	<2.0	<2.0	39.5	<0.0050	<0.050	<0.50	0.039	0.0226		
	5-Jul-10	L905787-23	<5.0	114	52.3	7.94	25.0	103	75.4	3.0	28.3	<2.0	<2.0	28.3	<0.0050	<0.050	<0.50	<0.20	0.0167		
	3-Aug-10	L916942-16	<5.0	63.0	28.4	7.93	123	47	126	2.1	21.3	<1.0	<1.0	21.3	<0.0050	<0.050	<0.50	<0.20	0.0073		
	27-Aug-10	L926457-23	<5.0	85.5	38.2																

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Sulphurets Creek Watershed**

Site Name	Date	ALS Sample No.	Physical Parameter							Anions and Nutrients									
			Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	pH (pH unit)	Total Suspended Solids ( $\text{mg/L}$ )	Total Dissolved Solids ( $\text{mg/L}$ )	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Total (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Ammonia (as N) ( $\text{mg/L}$ )	Bromide ( $\text{Br}$ ) ( $\text{mg/L}$ )	Chloride ( $\text{Cl}$ ) ( $\text{mg/L}$ )	Fluoride ( $\text{F}$ ) ( $\text{mg/L}$ )	Nitrate (as N) ( $\text{mg/L}$ )
SC3	17-Sep-08	L686098-8	<5.0	124	52.7	7.98	261	71	213	3.7	26.2	<2.0	<2.0	26.2	<0.0050	<0.050	<0.50	0.047	0.0122
	25-Sep-08	L688714-8	<5.0	193	79.6	7.74	52.4	119	40.9	1.4	33.9	<2.0	<2.0	33.9	<0.0050	<0.050	<0.50	0.094	0.0222
	25-Sep-08	L688714-7	<5.0	193	79.1	7.71	51.4	123	38.5	1.5	33.8	<2.0	<2.0	33.8	<0.0050	<0.050	<0.50	0.093	0.0218
	2-Oct-08	L691752-11	<5.0	129	60.2	7.84	561	85	369	1.0	35.8	<1.0	<1.0	35.8	<0.0050	<0.050	<0.50	0.042	0.0216
	9-Oct-08	L694973-7	<5.0	209	88.6	7.88	51.2	127	52.3	2.4	36.9	<2.0	<2.0	36.9	<0.0050	<0.050	<0.50	0.098	0.0391
	29-Oct-08	L703445-7	<5.0	304	133	7.97	15.3	200	28.9	1.3	59.4	<2.0	<2.0	59.4	<0.0050	<0.050	<0.50	0.129	0.113
	6-Dec-08	L717413-15	<5.0	357	160	8.00	37	231	43	1.2	82.2	<2.0	<2.0	82.2	<0.0050	<0.050	<0.50	0.140	0.0972
	4-Mar-09	L740333-6	<5.0	418	197	7.97	6.0	291	11.7	3.6	94.4	<2.0	<2.0	94.4	<0.0050	<0.050	<0.50	0.162	0.0836
	4-Mar-09	L740333-5	<5.0	419	193	7.98	5.5	293	12.6	3.9	95.0	<2.0	<2.0	95.0	<0.0050	<0.050	<0.50	0.164	0.0857
	28-Mar-09	L748538-9	<5.0	442	202	7.98	9.3	225	13	2.9	99.0	<2.0	<2.0	99.0	<0.0050	<0.050	<0.50	0.142	0.0756
	28-Apr-09	L759011-2	<5.0	437	224	7.80	28.3	298	27.8	5.7	89.2	<2.0	<2.0	89.2	<0.0050	<0.050	<0.50	0.146	0.253
	27-May-09	L771080-7	<5.0	299	135	7.46	153	181	129	4.8	35.9	<2.0	<2.0	35.9	<0.0050	<0.050	<0.50	0.202	0.192
	8-Jun-09	L776835-8	<5.0	195	85.7	7.34	323	122	223	3.2	22.4	<2.0	<2.0	22.4	<0.0050	<0.050	<0.50	0.105	0.0812
	13-Jun-09	L778602-7	<5.0	197	81.7	7.24	235	125	165	2.8	18.0	<1.0	<1.0	18.0	<0.0050	<0.050	<0.50	0.141	0.0664
	19-Jun-09	L781603-3	<5.0	184	76.3	7.01	173	116	138	3.2	21.8	<2.0	<2.0	21.8	<0.0050	<0.050	<0.50	0.116	0.0509
	19-Jun-09	L781603-4	<5.0	187	79.2	7.32	172	113	132	2.8	21.8	<2.0	<2.0	21.8	<0.0050	<0.050	<0.50	0.103	0.0507
	5-Jul-09	L788462-4	<5.0	159	65.8	7.73	230	98	167	3.8	23.5	<2.0	<2.0	23.5	<0.0050	<0.050	<0.50	0.085	0.0248
	4-Aug-09	L801967-3	<5.0	98.5	43.6	7.83	280	53	207	1.4	19.9	<2.0	<2.0	19.9	0.0073	<0.050	<0.50	0.032	0.0111
	22-Aug-09	L809879-17	<5.0	107	44.4	7.81	203	63	131	1.5	21.4	<2.0	<2.0	21.4	<0.0050	<0.050	<0.50	0.037	0.0132
	13-Sep-09	L817873-8	<5.0	105	43.6	7.96	282	63	215	1.8	31.3	<1.0	<1.0	31.3	<0.0050	<0.050	<0.50	0.046	0.0125
	27-Sep-09	L824535-11	<5.0	200	83.2	7.98	86.5	121	92.1	2.3	34.3	<2.0	<2.0	34.3	<0.0050	<0.050	<0.50	0.097	0.0401
	31-Oct-09	L837185-11	<5.0	313	135	7.97	24.5	207	39.1	1.5	60.8	<1.0	<1.0	60.8	<0.0050	<0.050	<0.50	0.112	0.0960
	26-Nov-09	L844495-22	<5.0	354	176	7.97	13.9	235	20.5	1.6	69.5	<2.0	<2.0	69.5	<0.0050	<0.050	<0.50	0.158	0.0712
	17-Jan-10	L855505-8	<5.0	398	188	8.02	8.3	273	16.1	3.4	82.2	<2.0	<2.0	82.2	<0.0050	<0.050	<0.50	0.123	0.0901
	3-Mar-10	L866873-8	<5.0	426	193	8.08	5.3	292	13.3	3.0	83.6	<2.0	<2.0	83.6	<0.0050	<0.050	<0.50	0.141	0.0963
	28-Mar-10	L873293-10	<5.0	402	192	8.04	23.2	274	35.3	2.4	89.6	<2.0	<2.0	89.6	<0.0050	<0.050	<0.50	0.142	0.195
	1-May-10	L884476-14	<5.0	359	179	7.07	64.5	240	81.0	6.3	49.7	<2.0	<2.0	49.7	<0.0050	<0.050	<0.50	0.189	0.236
	26-May-10	L891484-11	<5.0	219	95.2	7.80	111	143	86.9	4.6	31.9	<2.0	<2.0	31.9	<0.0050	<0.050	<0.50	0.112	0.0554
	5-Jul-10	L905787-24	<5.0	171	75.5	7.81	97.5	108	87.9	3.3	27.2	<1.0	<1.0	27.2	<0.0050	<0.050	<0.50	0.090	0.0258
	3-Aug-10	L916942-11	<5.0	87.1	38.6	7.82	500	54	218	2.4	24	<1.0	<1.0	24.0	<0.0050	<0.050	<0.50	0.022	0.0064
	27-Aug-10	L926457-24	<5.0	138	58.1	7.95	102	86	61.3	4.5	25.2	<2.0	<2.0	25.2	<0.0050	<0.050	<0.50	0.048	0.0152
	28-Sep-10	L938295-11	<5.0	158															

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Sulphurets Creek Watershed

Site Name	Date	ALS Sample No.	Physical Parameter							Anions and Nutrients											
			Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	pH (pH unit)	Total Suspended Solids ( $\text{mg/L}$ )	Total Dissolved Solids ( $\text{mg/L}$ )	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Total (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Ammonia (as N) ( $\text{mg/L}$ )	Bromide ( $\text{Br}$ ) ( $\text{mg/L}$ )	Chloride ( $\text{Cl}$ ) ( $\text{mg/L}$ )	Fluoride ( $\text{F}$ ) ( $\text{mg/L}$ )	Nitrate (as N) ( $\text{mg/L}$ )		
SCT	29-Mar-09	L749298-6	<5.0	417	194	8.10	7.5	276	7.58	3.0	97.4	<2.0	<2.0	97.4	<0.0050	<0.050	<0.50	0.123	0.0988		
	28-Apr-09	L759011-3	<5.0	446	221	7.85	<3.0	306	0.43	5.1	70.4	<2.0	<2.0	70.4	<0.0050	<0.050	<0.50	0.081	0.0133		
	2-Jul-09	L787346-24	<5.0	199	92.2	7.78	61	120	60.2	3.2	33.2	<2.0	<2.0	33.2	<0.0050	<0.050	<0.50	0.107	0.0556		
	22-Aug-09	L809879-18	<5.0	106	45.8	7.88	179	63	126	1.3	23.7	<2.0	<2.0	23.7	<0.0050	<0.050	<0.50	0.036	0.0159		
	26-Nov-09	L844495-23	<5.0	322	160	8.03	42.4	218	23.4	1.4	66.7	<2.0	<2.0	66.7	<0.0050	<0.050	<0.50	0.129	0.100		
	17-Jan-10	L855505-9	<5.0	362	165	8.11	5.3	241	11.4	2.8	78.4	<2.0	<2.0	78.4	<0.0050	<0.050	<0.50	0.102	0.120		
	3-Mar-10	L866873-9	<5.0	384	174	8.12	<3.0	261	11.2	2.8	79.5	<2.0	<2.0	79.5	<0.0050	<0.050	<0.50	0.119	0.139		
	28-Mar-10	L873293-11	<5.0	335	159	8.06	22.2	220	31.4	2.2	82.2	<2.0	<2.0	82.2	<0.0050	<0.050	<0.50	0.108	0.258		
	1-May-10	L884476-15	<5.0	338	173	7.94	37.0	220	47.2	4.5	56.0	<2.0	<2.0	56.0	<0.0050	<0.050	<0.50	0.155	0.286		
	26-May-10	L891484-12	<5.0	210	94.1	7.96	89.5	143	80.6	4.1	34.6	<2.0	<2.0	34.6	<0.0050	<0.050	<0.50	0.100	0.0697		
	5-Jul-10	L905787-25	<5.0	171	78.6	7.89	82.0	106	79.4	3.2	27.4	<2.0	<2.0	27.4	<0.0050	<0.050	<0.50	0.087	0.0310		
	3-Aug-10	L916942-12	<5.0	92.1	41.4	7.84	341	53	174	2.5	25.1	<1.0	<1.0	25.1	<0.0050	<0.050	<0.50	0.036	0.0107		
	27-Aug-10	L926457-25	<5.0	136	58.4	8.00	104	98	47.6	4.2	29.2	<1.0	<1.0	29.2	<0.0050	<0.050	<0.50	0.042	0.0173		
	28-Sep-10	L938295-12	<5.0	161	72.1	7.89	558	108	431	5.9	40.6	<1.0	<1.0	40.6	<0.0050	<0.050	<0.50	0.056	0.0465		
	21-Oct-10	L946803-2	<5.0	291	133	7.83	57.8	194	47.3	5.9	45.5	<2.0	<2.0	45.5	<0.0050	<0.050	<0.50	0.145	0.129		
	15-Nov-10	L955725-24	<5.0	321	161	8.08	30.6	194	30.8	2.1	64.7	<2.0	<2.0	64.7	<0.0050	<0.050	<0.50	0.139	0.149		
	1-Feb-11	L975149-4	<5.0	409	180	8.07	5.3	269	9.43	2.5	94.1	<2.0	<2.0	94.1	<0.0050	<0.050	<0.50	0.143	0.108		
	5-Mar-11	L985810-4	<5.0	423	198	8.15	8.8	282	17.2	4.1	90.1	<2.0	<2.0	90.1	<0.0050	<0.050	<0.50	0.129	0.0945		
	31-Mar-11	L991777-5	<5.0	390	175	7.84	7.3	257	14	5.5	63.6	<2.0	<2.0	63.6	<0.0050	<0.050	<0.50	0.106	0.158		
	2-May-11	L1002688-10	<5.0	396	181	8.13	7.8	256	10.8	3.0	87.8	<2.0	<2.0	87.8	<0.0050	<0.050	<0.50	0.106	0.236		
	4-Jun-11	L1014013-10	<5.0	181	77.0	7.81	162	96	121	1.6	29.4	<2.0	<2.0	29.4	0.0057	<0.050	<0.50	0.095	0.0676		
	4-Jul-11	L1028827-6	<5.0	176	72.8	7.75	131	114	89.1	2.7	27.1	<2.0	<2.0	27.1	0.0079	<0.050	<0.50	0.099	0.0302		
	1-Aug-11	L1039955-14	<5.0	135	55.6	8.28	119	80	76.4	2.3	25.8	<2.0	<2.0	25.8	<0.0050	<0.050	<0.50	0.072	0.0291		
	4-Sep-11	L1054465-5	<5.0	154	67.1	8.17	859	102	531	3.5	40.3	<1.0	<1.0	40.3	0.0179	<0.050	<0.50	0.064	0.0285		
	1-Oct-11	L1067383-6	<5.0	285	137	8.00	48.7	177	46.3	3.4	56.5	<2.0	<2.0	56.5	<0.0050	<0.050	<0.50	0.126	0.077		
	26-Oct-11	L1079029-21	<5.0	360	147	7.98	30.2	212	36.5	3.4	65.2	<2.0	<2.0	65.2	0.0170	<0.050	<0.50	0.140	0.11		
	27-Nov-11	L1091310-6	<5.0	394	180	8.17	12.4	249	24.7	1.9	85.8	<2.0	<2.0	85.8	<0.0050	<0.050	<0.50	0.156	0.0966		
SCT	26-Jun-08	L650936-31	<5.0	185	76.6	7.85	1470	120	904	1.8	43.1	<1.0	<1.0	43.1	<0.0050	<0.050	<0.50	0.045	0.0307		
	9-Sep-08	L682706-5	<5.0	157	62.3	7.81	231	99	121	2.5	34.9	<1.0	<1.0	34.9	<0.0050	<0.050	<0.50	0.039	0.0126		
	6-Dec-08	L717413-12	<5.0	396	186	8.18	14.5	272	8.95	<1.0	94.5	<2.0	<2.0	94.5	<0.0050	<0.050	<0.50	0.058	0.0553		
	28-Mar-09	L748538-10	<5.0	473	232	8.13	6.3														

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Sulphurets Creek Watershed**

Site Name	Date	ALS Sample No.	Anions and Nutrients						Cyanides			Carbon	Total Metals								
			Nitrite (as N)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Ortho Phosphate (as P)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)	Total Organic Carbon (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
SC1	25-Jul-07	L535508-3	<0.0010	-	-	0.0014	-	15.9	-	-	-	-	3.30	0.00166	0.00518	0.0986	<0.00050	<0.00050	<0.010	0.000111	13.8
	23-Sep-07	L559547-3	<0.0010	-	-	0.0091	-	25.9	-	-	-	<0.50	0.447	0.00092	0.00142	0.0340	<0.00050	<0.00050	<0.010	<0.000050	16.9
	28-May-08	L635965-9	<0.0010	<0.050	<0.05	-	0.0364	58.6	-	<0.0010	-	<0.50	1.97	0.00145	0.00436	0.0643	<0.00050	<0.00050	<0.010	0.000135	35.3
	28-May-08	L635965-8	<0.0010	<0.050	<0.05	-	0.0253	58.4	-	0.0013	-	<0.50	1.87	0.00145	0.00416	0.0612	<0.00050	<0.00050	<0.010	0.000116	34.8
	5-Jun-08	L639617-10	<0.0010	<0.050	<0.060	-	0.0387	38.0	-	<0.0010	-	<0.50	2.38	0.00143	0.00418	0.0767	<0.00050	<0.00050	<0.010	0.000104	23.7
	11-Jun-08	L642688-2	<0.0010	<0.050	<0.05	-	0.0271	36.0	-	<0.0010	-	<0.50	1.43	0.00135	0.00328	0.0573	<0.00050	<0.00050	<0.010	0.000080	24.9
	26-Jun-08	L650936-30	<0.0010	<0.050	<0.05	-	0.0587	30.9	-	-	-	<0.50	1.67	0.00131	0.00328	0.0741	<0.00050	<0.00050	<0.010	0.000104	20.6
	3-Jul-08	L652071-8	<0.0010	<0.050	<0.05	-	0.0346	22.3	-	<0.0010	-	0.51	3.43	0.00192	0.00711	0.101	<0.00050	<0.00050	<0.010	0.000148	17.5
	25-Jul-08	L662220-10	<0.0010	<0.050	<0.05	-	0.0788	18.2	-	<0.0010	-	<0.50	1.88	0.00133	0.00418	0.0699	<0.00050	<0.00050	<0.010	0.000082	14.1
	10-Sep-08	L683687-1	<0.0010	<0.050	<0.05	<0.0010	0.0342	23.1	-	<0.0010	-	<0.50	1.20	0.00110	0.00303	0.0538	<0.00050	<0.00050	<0.010	0.000067	16.2
	2-Oct-08	L691752-10	<0.0010	<0.050	<0.05	0.0011	0.163	22.4	-	<0.0010	-	0.59	9.02	0.00364	0.0111	0.223	<0.00050	<0.00050	<0.010	0.000195	17.5
	2-Oct-08	L691752-9	<0.0010	<0.050	<0.05	<0.0010	0.163	22.4	-	<0.0010	-	0.79	10.6	0.00405	0.0124	0.251	<0.00050	<0.00050	<0.010	0.000205	18.6
	29-Oct-08	L703445-12	<0.0010	<0.050	0.060	<0.0010	0.0028	71.4	-	<0.0010	-	<0.50	0.046	0.00109	0.00043	0.0298	<0.00050	<0.00050	<0.010	0.000059	36.7
	6-Dec-08	L717413-30	<0.0010	0.085	0.110	<0.0010	0.0027	103	-	<0.0010	-	<0.50	0.055	0.00142	0.00023	0.0413	<0.00050	<0.00050	<0.010	0.000111	49.2
	27-May-09	L771080-2	<0.0010	<0.050	0.070	<0.0010	0.0136	110	-	<0.0010	-	<0.50	0.130	0.00105	0.00078	0.0347	<0.00050	<0.00050	<0.010	0.000136	55.9
	27-May-09	L771080-1	0.0014	<0.050	0.050	<0.0010	0.0148	110	-	<0.0010	-	<0.50	0.139	0.00112	0.00100	0.0356	<0.00050	<0.00050	<0.010	0.000143	54.5
	2-Jul-09	L787346-23	<0.0010	<0.050	<0.050	<0.0010	0.0112	33.3	-	<0.0010	-	<0.50	1.33	0.00127	0.00235	0.0625	<0.00050	<0.00050	<0.010	0.000065	26.0
	4-Aug-09	L801967-9	<0.0010	0.056	0.068	0.0011	0.112	10.1	-	<0.0010	-	<0.50	4.83	0.00204	0.00778	0.132	<0.00050	<0.00050	<0.010	0.000133	11.9
	4-Aug-09	L801967-8	<0.0010	0.075	0.086	<0.0010	0.105	10.1	-	<0.0010	-	<0.50	4.78	0.00200	0.00773	0.128	<0.00050	<0.00050	<0.010	0.000138	11.6
	22-Aug-09	L809879-16	<0.0010	<0.050	<0.050	0.0012	0.0780	11.5	-	<0.0010	-	<0.50	4.11	0.00199	0.00599	0.120	<0.00050	<0.00050	<0.010	0.000122	10.8
	27-Sep-09	L824535-10	<0.0010	<0.050	<0.050	<0.0010	0.0360	25.5	-	<0.0010	-	<0.50	2.85	0.00184	0.00615	0.0904	<0.00050	<0.00050	<0.010	0.000104	18.3
	31-Oct-09	L837185-10	<0.0010	<0.050	<0.050	<0.0010	0.0025	64.3	-	<0.0010	-	<0.50	0.106	0.00107	0.00061	0.0349	<0.00050	<0.00050	<0.010	0.000065	37.0
	1-Dec-09	L845898-4	<0.0010	<0.050	0.110	<0.0010	<0.0020	93.7	-	<0.0010	-	0.52	0.043	0.00112	0.00034	0.0382	<0.00050	<0.00050	<0.010	0.000079	49.6
	17-Jan-10	L855505-7	<0.0010	<0.050	0.080	0.0039	<0.0020	104	-	<0.0010	-	<0.50	0.019	0.00113	0.00031	0.0413	<0.00050	<0.00050	<0.010	0.000075	53.8
	3-Mar-10	L866873-7	<0.0010	<0.050	0.080	<0.0010	<0.0020	127	-	<0.0010	-	<0.50	0.019	0.00109	0.00027	0.0412	<0.00050	<0.00050	<0.010	0.000078	62.6
	28-Mar-10	L873293-9	<0.0010	<0.050	0.120	<0.0010	0.0150	135	-	<0.0010	-	<0.50	0.048	0.00108	0.00051	0.0419	<0.00050	<0.00050	<0.010	0.000071	75.8
	1-May-10	L884476-5	<0.0010	<0.050	0.060	<0.0010	0.0031	112	-	<0.0010	-	0.26	0.091	0.00128	0.00085						

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Sulphurets Creek Watershed

Site Name	Date	ALS Sample No.	Anions and Nutrients						Cyanides			Carbon	Total Metals								
			Nitrite (as N)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Ortho Phosphate (as P)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)	Total Organic Carbon (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)
SC3	17-Sep-08	L686098-8	<0.0010	<0.050	<0.05	<0.0010	0.284	30.6	-	<0.0010	-	<0.50	9.54	0.00135	0.00845	0.218	<0.00050	<0.00050	<0.010	0.00109	24.6
	25-Sep-08	L688714-8	<0.0010	<0.050	<0.05	<0.0010	0.0609	54.2	-	<0.0010	-	<0.50	1.90	0.00078	0.00231	0.0516	<0.00050	<0.00050	<0.010	0.00120	29.7
	25-Sep-08	L688714-7	<0.0010	<0.050	<0.05	<0.0010	0.0456	54.4	-	<0.0010	-	<0.50	1.74	0.00076	0.00225	0.0506	<0.00050	<0.00050	<0.010	0.00120	29.7
	2-Oct-08	L691752-11	<0.0010	<0.050	0.050	0.0016	0.531	27.5	-	<0.0010	-	0.97	12.6	0.00231	0.0140	0.307	<0.00050	<0.00050	<0.010	0.000921	26.6
	9-Oct-08	L694973-7	<0.0010	0.061	0.100	<0.0010	0.0040	61.6	-	<0.0010	-	<0.50	2.12	0.00094	0.00254	0.0676	<0.00050	<0.00050	<0.010	0.00141	33.4
	29-Oct-08	L703445-7	<0.0010	<0.050	0.100	0.0014	0.0741	93.2	-	<0.0010	-	0.64	0.805	0.00068	0.00269	0.0421	<0.00050	<0.00050	<0.010	0.00171	49.2
	6-Dec-08	L717413-15	<0.0010	<0.050	0.130	<0.0010	0.0271	113	-	<0.0010	-	0.970	0.00079	0.00398	0.0426	<0.00050	<0.00050	<0.010	0.00235	55.7	
	4-Mar-09	L740333-6	<0.0010	<0.050	0.090	<0.0010	0.0350	134	-	<0.0010	-	<0.50	0.371	0.00063	0.00246	0.0382	<0.00050	<0.00050	<0.010	0.00195	67.2
	4-Mar-09	L740333-5	<0.0010	<0.050	0.070	0.0013	0.0341	134	-	<0.0010	-	<0.50	0.365	0.00062	0.00243	0.0377	<0.00050	<0.00050	<0.010	0.00190	68.6
	28-Mar-09	L748538-9	<0.0010	<0.050	0.090	0.0085	0.0413	132	-	<0.0010	-	<0.50	0.432	0.00060	0.00292	0.0397	<0.00050	<0.00050	<0.010	0.00172	72.9
	28-Apr-09	L759011-2	<0.0010	<0.050	0.300	<0.0010	0.0803	136	-	<0.0010	-	0.56	0.876	0.00073	0.00359	0.0418	<0.00050	<0.00050	<0.010	0.00147	92.5
	27-May-09	L771080-7	<0.0010	<0.050	0.237	0.0106	0.838	111	-	<0.0010	-	0.97	4.56	0.00122	0.0576	0.112	0.00064	<0.00050	<0.010	0.00576	58.4
	8-Jun-09	L776835-8	<0.0010	0.069	0.150	<0.0010	0.399	64.7	-	0.0018	-	1.27	9.02	0.00136	0.0272	0.197	<0.00050	<0.00050	<0.010	0.00304	34.3
	13-Jun-09	L778602-7	<0.0010	<0.050	0.094	<0.0010	0.404	68.8	-	<0.0010	-	0.62	6.04	0.00121	0.0128	0.139	<0.00050	<0.00050	<0.010	0.00307	31.6
	19-Jun-09	L781603-3	<0.0010	<0.050	0.073	<0.0010	0.273	61.6	-	<0.0010	-	<0.50	4.10	0.00086	0.00736	0.0941	<0.00050	<0.00050	<0.010	0.00242	30.1
	19-Jun-09	L781603-4	<0.0010	<0.050	0.072	<0.0010	0.269	61.3	-	<0.0010	-	<0.50	5.00	0.00096	0.00801	0.111	<0.00050	<0.00050	<0.010	0.00250	30.7
	5-Jul-09	L788462-4	<0.0010	0.088	0.113	<0.0010	0.286	48.7	-	<0.0010	-	0.65	4.82	0.00108	0.0103	0.109	<0.00050	<0.00050	<0.010	0.00248	26.6
	4-Aug-09	L801967-3	<0.0010	0.090	0.101	<0.0010	0.306	22.0	-	<0.0010	-	0.53	7.40	0.00141	0.00912	0.243	<0.00050	<0.00050	<0.010	0.000946	18.9
	22-Aug-09	L809879-17	<0.0010	<0.050	<0.050	<0.0010	0.161	26.9	-	<0.0010	-	<0.50	5.21	0.00116	0.00570	0.140	<0.00050	<0.00050	<0.010	0.000810	18.3
	13-Sep-09	L817873-8	<0.0010	<0.050	<0.050	<0.0010	0.273	23.5	-	<0.0010	-	0.54	7.03	0.00153	0.00900	0.247	<0.00050	<0.00050	<0.010	0.000867	19.1
	27-Sep-09	L824535-11	<0.0010	<0.050	<0.050	<0.0010	0.103	58.1	-	<0.0010	-	<0.50	2.83	0.00111	0.00483	0.0921	<0.00050	<0.00050	<0.010	0.00131	31.9
	31-Oct-09	L837185-11	<0.0010	<0.050	0.060	<0.0010	0.0470	96.0	-	0.0015	-	0.62	0.920	0.00068	0.00192	0.0466	<0.00050	<0.00050	<0.010	0.00157	51.0
	26-Nov-09	L844495-22	<0.0010	<0.050	0.090	<0.0010	0.0390	114	-	<0.0010	-	<0.50	1.07	0.00078	0.00266	0.0493	<0.00050	<0.00050	<0.010	0.00245	65.2
	17-Jan-10	L855505-8	<0.0010	<0.050	0.110	<0.0010	0.0244	117	-	<0.0010	-	<0.50	0.374	0.00066	0.00135	0.0383	<0.00050	<0.00050	<0.010	0.00166	65.5
	3-Mar-10	L866873-8	<0.0010	<0.050	0.120	<0.0010	0.0283	132	-	<0.0010	-	<0.50	0.320	0.00068	0.00120	0.0384	<0.00050	<0.00050	<0.010	0.00138	70.1
	28-Mar-10	L873293-10	<0.0010	<0.050	0.190	<0.0010	0.0634	128	-	<0.0010	-	<0.50	0.991	0.00079	0.00251	0.0486	<0.00050	<0.00050	0.012	0.00162	74.0
	1-May-10	L884476-14	<0.0010	0.064	0.300	0.0015	0.850	130	-	<0.0010	-	0.39	2.54	0.0011							

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Sulphurets Creek Watershed

Site Name	Date	ALS Sample No.	Anions and Nutrients						Cyanides			Carbon	Total Metals									
			Nitrite (as N)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Ortho Phosphate (as P) (mg/L)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)		Total Organic Carbon (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)		0.00055	0.00017	0.00050	<0.00050	<0.00050	<0.00050	0.00147	68.6		
	29-Mar-09	L749298-6	<0.0010	<0.050	0.100	<0.0010	0.0171	122	-	<0.0010	-	<0.50	0.322	0.00055	0.00254	0.0386	<0.00050	<0.00050	<0.010	0.00147	68.6	
	28-Apr-09	L759011-3	<0.0010	<0.050	<0.050	<0.0010	<0.0020	153	-	<0.0010	-	<0.50	0.039	0.00105	0.00017	0.0392	<0.00050	<0.00050	<0.010	0.000168	80.0	
	2-Jul-09	L787346-24	<0.0010	<0.050	0.073	<0.0010	0.0890	62.8	-	<0.0010	-	<0.50	2.55	0.00074	0.00458	0.0751	<0.00050	<0.00050	<0.010	0.00221	36.0	
	22-Aug-09	L809879-18	<0.0010	<0.050	<0.050	<0.0010	0.149	25.3	-	<0.0010	-	<0.50	4.83	0.00111	0.00543	0.144	<0.00050	<0.00050	<0.010	0.000659	17.5	
	26-Nov-09	L844495-23	<0.0010	<0.050	0.150	<0.0010	0.0810	97.6	-	<0.0010	-	0.51	1.000	0.00069	0.00238	0.0537	<0.00050	<0.00050	<0.010	0.00183	60.8	
	17-Jan-10	L855505-9	<0.0010	<0.050	0.140	<0.0010	0.0174	103	-	<0.0010	-	<0.50	0.309	0.00057	0.00100	0.0363	<0.00050	<0.00050	<0.010	0.00118	58.5	
	3-Mar-10	L866873-9	<0.0010	<0.050	0.170	<0.0010	0.0210	113	-	<0.0010	-	0.52	0.273	0.00065	0.00110	0.0370	<0.00050	<0.00050	<0.010	0.00110	65.6	
	28-Mar-10	L873293-11	<0.0010	<0.050	0.290	<0.0010	0.0606	96.1	-	0.0018	-	1.04	1.09	0.00071	0.00280	0.0439	<0.00050	<0.00050	0.011	0.00139	59.6	
	1-May-10	L884476-15	<0.0010	0.074	0.360	0.0023	0.605	112	-	<0.0010	-	0.34	1.40	0.00083	0.0337	0.0515	<0.00050	<0.00050	<0.010	0.00286	65.7	
	26-May-10	L891484-12	<0.0010	<0.050	0.050	0.0017	0.303	65.2	-	<0.0010	-	<0.50	2.57	0.00101	0.0164	0.0974	<0.00050	<0.00050	<0.010	0.00219	34.4	
	5-Jul-10	L905787-25	<0.0010	<0.050	<0.050	<0.0010	0.115	50.7	-	<0.0010	-	<0.50	3.01	0.00095	0.00395	0.0920	<0.00050	<0.00050	0.012	0.00153	27.6	
	3-Aug-10	L916942-12	<0.0010	<0.050	<0.050	<0.0010	0.404	19.1	-	<0.0010	-	0.58	6.53	0.00132	0.00692	0.190	<0.00050	<0.00050	<0.010	0.000691	17.1	
	27-Aug-10	L926457-25	<0.0010	<0.050	<0.050	<0.0010	0.0910	31.9	-	<0.0010	-	<0.50	1.76	0.00069	0.00243	0.0690	<0.00050	<0.00050	<0.010	0.000759	23.1	
	28-Sep-10	L938295-12	<0.0010	0.068	0.114	0.0014	0.973	38	-	0.0014	-	1.58	6.49	0.00097	0.00695	0.170	<0.00050	<0.00050	<0.010	0.000812	36.3	
	21-Oct-10	L946803-2	<0.0010	<0.050	0.130	0.0012	0.324	92.4	-	0.0012	-	0.70	1.63	0.00071	0.0155	0.0528	<0.00050	<0.00050	<0.010	0.00201	47.0	
	15-Nov-10	L955725-24	<0.0010	0.061	0.210	<0.0010	0.161	94.9	-	0.0011	-	0.84	0.877	0.00063	0.00637	0.0411	<0.00050	<0.00050	<0.010	0.00178	57.2	
	1-Feb-11	L975149-4	<0.0010	<0.050	0.090	<0.0010	0.0208	120	-	<0.0010	-	0.52	0.344	0.00057	0.00144	0.0400	<0.00050	<0.00050	<0.010	0.00151	65.6	
	5-Mar-11	L985810-4	<0.0010	<0.050	0.105	<0.0010	0.0431	124	-	<0.0010	-	<0.50	0.419	0.00055	0.00256	0.0380	<0.00050	<0.00050	0.014	0.00156	70.8	
	31-Mar-11	L991777-5	<0.0010	<0.050	0.200	<0.0010	0.0372	112	-	0.0014	-	0.85	0.376	0.00056	0.00229	0.0370	<0.00050	<0.00050	<0.010	0.00126	63.0	
	2-May-11	L1002688-10	<0.0010	0.095	0.330	<0.0010	0.0513	112	-	<0.0010	-	0.98	0.309	0.00057	0.00251	0.0367	<0.00050	<0.00050	<0.010	0.001000	63.3	
	4-Jun-11	L1014013-10	<0.0010	0.102	0.170	0.0015	0.449	54.4	-	0.0011	-	0.94	5.27	0.00113	0.0196	0.116	<0.00050	<0.00050	<0.010	0.00134	27.6	
	4-Jul-11	L1028827-6	<0.0010	0.120	0.150	<0.0010	0.246	53.3	-	<0.0010	-	0.58	3.10	0.00073	0.00565	0.0820	0.00020	<0.00050	<0.010	0.00147	27.2	
	1-Aug-11	L1039955-14	<0.0010	0.061	0.090	<0.0010	0.149	34.8	-	0.0010	-	<0.50	1.81	0.00058	0.00348	0.0622	<0.00010	<0.00050	<0.010	0.000881	21.0	
	4-Sep-11	L1054465-5	<0.0010	0.102	0.130	0.0021	0.990	33.5	-	<0.0010	-	1.77	20.9	0.00234	0.0235	0.410	0.00053	0.00073	<0.010	0.00152	42.1	
	1-Oct-11	L1067383-6	<0.0010	0.073	0.150	<0.0010	0.154	86.2	-	<0.0011	-	0.63	1.83	0.00082	0.00775	0.0621	0.00015	<0.00050	<0.010	0.00179	47.4	
	26-Oct-11	L1079029-21	<0.0010	<0.050	0.140	<0.0010	0.121	96.3	-	<0.0011	-	0.83	1.12	0.00075	0.00689	0.0470	0.00015	<0.00050	<0.010	0.00186	53.1	
	27-Nov-11	L10913																				

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Sulphurets Creek Watershed**

Site Name	Date	ALS Sample No.	Total Metals																
			Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)
SC1	25-Jul-07	L535508-3	0.00192	0.00159	0.0170	3.15	0.00384	<0.0050	2.04	0.123	0.000037	0.000726	0.00161	<0.30	<2.0	<0.0010	6.67	0.000052	<2.0
	23-Sep-07	L559547-3	<0.00050	0.00050	0.00776	0.558	0.00092	<0.0050	1.60	0.054	<0.000010	0.000605	<0.00050	<0.30	<2.0	<0.0010	1.15	0.000012	<2.0
	28-May-08	L635965-9	0.00145	0.00139	0.0167	2.11	0.00212	<0.0050	3.02	0.158	0.000010	0.00140	0.00145	<0.30	1.16	0.00039	4.55	0.000045	<2.0
	28-May-08	L635965-8	0.00134	0.00138	0.0160	2.02	0.00199	<0.0050	3.03	0.154	<0.000010	0.00137	0.00133	<0.30	1.11	0.00041	4.50	0.000043	<2.0
	5-Jun-08	L639617-10	0.00149	0.00124	0.0144	2.27	0.00209	<0.0050	2.42	0.116	0.000015	0.00115	0.00125	<0.30	1.20	0.00044	6.09	0.000047	<2.0
	11-Jun-08	L642688-2	0.00098	0.00088	0.0103	1.64	0.00167	<0.0050	2.24	0.079	0.000017	0.00102	0.00090	<0.30	0.86	0.00038	3.90	0.000036	<2.0
	26-Jun-08	L650936-30	0.00110	0.00120	0.0135	1.64	0.00214	<0.0050	2.08	0.116	<0.000010	0.000893	0.00111	<0.30	0.88	0.00031	4.35	0.000039	<2.0
	3-Jul-08	L652071-8	0.00253	0.00225	0.0257	3.86	0.00450	<0.0050	2.32	0.205	<0.000010	0.000913	0.00208	<0.30	1.67	0.00024	7.02	0.000092	<2.0
	25-Jul-08	L662220-10	0.00170	0.00112	0.0108	2.32	0.00265	<0.0050	1.81	0.103	0.000015	0.000769	0.00356	<0.30	0.78	0.00032	4.96	0.000046	<2.0
	10-Sep-08	L683687-1	0.00096	0.00091	0.00779	1.35	0.00206	<0.0050	1.61	0.074	0.000013	0.000698	0.00096	<0.30	0.59	0.00021	2.49	0.000132	<2.0
	2-Oct-08	L691752-10	0.00648	0.00375	0.0327	11.0	0.00979	0.0066	4.70	0.287	0.000075	0.00148	0.00427	<0.30	3.71	0.00038	19.50	0.000162	<2.0
	2-Oct-08	L691752-9	0.00755	0.00428	0.0360	11.9	0.0101	0.0076	5.39	0.322	0.000052	0.00163	0.00485	<0.30	4.22	0.00042	22.00	0.000195	<2.0
	29-Oct-08	L703445-12	<0.00050	0.00034	0.00690	0.068	0.00007	<0.0050	2.55	0.046	<0.000010	0.00128	<0.00050	<0.30	0.34	0.00055	1.24	<0.000010	<2.0
	6-Dec-08	L717413-30	<0.00050	0.00096	0.0214	0.059	<0.000050	<0.0050	3.97	0.100	<0.000010	0.00151	0.00087	<0.30	0.46	0.00067	1.62	<0.000010	<2.0
	27-May-09	L771080-2	<0.00050	0.00118	0.0180	0.189	0.00029	<0.0050	4.15	0.176	<0.000010	0.00134	0.00131	<0.30	0.54	0.00057	1.81	<0.000010	<2.0
	27-May-09	L771080-1	<0.00050	0.00125	0.0196	0.248	0.00039	<0.0050	4.34	0.188	<0.000010	0.00139	0.00127	<0.30	0.57	0.00055	1.91	<0.000010	<2.0
	2-Jul-09	L787346-23	0.00089	0.00075	0.00776	1.08	0.00110	<0.0050	2.80	0.083	<0.000010	0.00118	0.00076	<0.30	0.74	<0.00010	2.95	0.000026	<2.0
	4-Aug-09	L801967-9	0.00317	0.00229	0.0201	5.12	0.00558	<0.0050	2.46	0.186	0.000016	0.000698	0.00233	<0.30	1.89	0.00022	7.35	0.000089	<2.0
	4-Aug-09	L801967-8	0.00315	0.00227	0.0196	5.20	0.00554	<0.0050	2.49	0.183	0.000017	0.000703	0.00222	<0.30	1.84	0.00013	7.31	0.000103	<2.0
	22-Aug-09	L809879-16	0.00247	0.00185	0.0158	4.75	0.00461	<0.0050	2.17	0.151	0.000022	0.000767	0.00182	<0.30	1.59	0.00010	8.07	0.000077	<2.0
	27-Sep-09	L824535-10	0.00241	0.00171	0.0220	3.59	0.00397	<0.0050	2.35	0.125	<0.000010	0.001000	<0.0020	<0.30	1.27	0.00035	6.01	<0.000080	<2.0
	31-Oct-09	L837185-10	<0.00050	0.00049	0.00683	0.147	0.00019	<0.0050	2.66	0.062	<0.000010	0.00132	0.00068	<0.30	0.34	0.00054	1.32	<0.000010	<2.0
	1-Dec-09	L845898-4	<0.00050	0.00061	0.0130	0.061	<0.000050	<0.0050	3.96	0.079	<0.000010	0.00125	0.00071	<0.30	0.37	0.00070	1.68	<0.000010	<2.0
	17-Jan-10	L855505-7	<0.00050	0.00044	0.0103	<0.030	<0.000050	<0.0050	4.24	0.060	<0.000010	0.00132	0.00069	<0.30	0.40	0.00077	1.81	<0.000010	<2.0
	3-Mar-10	L866873-7	<0.00050	0.00057	0.0122	<0.030	<0.000050	<0.0050	4.85	0.083	<0.000010	0.00142	0.00091	<0.30	0.46	0.00052	1.82	<0.000010	<2.0
	28-Mar-10	L873293-9	<0.00050	0.00054	0.0138	0.067	0.00008	<0.0050	5.32	0.086	<0.000010	0.00160	0.00082	<0.30	0.54	0.00083	1.86	<0.000010	<2.0
	1-May-10	L884476-5	<0.00050	0.00074	0.00922	0.125	0.00019	<0.0050	4.87	0.113	<0.000010	0.00167	0.00096	<0.30	0.54	0.00059	1.67	<0.000010	<2.0
	26-May-10	L891484-16	0.00100	0.00117	0.0150	1.55	0.00181	<0.0050	2.85	0.131	<0.000010	0.00119	0.00103	<0.30	0.82	0.00033	3.57	0.000037	<2.0
	5-Jul-10	L905787-23	0.00185	0.00107	0.0102	2.75	0.00245	<0.0050	2.42	0.087	0.000018	0.00119	0.00106	<0.30	1.39	0.00021	6.75	0.000047	<2.0
	3-Aug-10	L916942-16	0.00248	0.00187	0.0150	4.19	0.00495	<0.0050	1.91	0.158	0.000026	0.000555	0.00182	<0.30</					

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Sulphurets Creek Watershed**

Site Name	Date	ALS Sample No.	Total Metals															
			Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)
17-Sep-08	L686098-8	0.00903	0.00530	0.0794	12.6	0.00966	0.0054	6.24	0.370	0.000027	0.00225	0.00708	0.49	3.45	0.00107	16.90	0.000236	<2.0
25-Sep-08	L688714-8	0.00146	0.00226	0.107	3.84	0.00305	<0.0050	3.09	0.182	<0.000010	0.00176	0.00229	<0.30	1.48	0.00108	4.39	0.000038	<2.0
25-Sep-08	L688714-7	0.00133	0.00225	0.107	3.53	0.00299	<0.0050	3.05	0.183	0.000013	0.00173	0.00234	<0.30	1.46	0.00118	4.29	0.000035	<2.0
2-Oct-08	L691752-11	0.01120	0.00794	0.0852	20.0	0.0117	0.0080	6.93	0.565	0.000044	0.00249	0.00856	0.78	4.69	0.00124	24.70	0.000243	<2.0
9-Oct-08	L694973-7	0.00113	0.00256	0.138	4.25	0.00338	<0.0050	3.25	0.232	<0.000010	0.00207	0.00253	<0.30	1.64	0.00124	5.20	0.000050	<2.0
29-Oct-08	L703445-7	<0.00050	0.00246	0.153	3.31	0.00239	<0.0050	4.09	0.239	<0.000010	0.00230	0.00228	<0.30	1.45	0.00188	2.86	0.000013	<2.0
6-Dec-08	L717413-15	0.00058	0.00238	0.190	4.68	0.00365	<0.0050	4.83	0.264	<0.000010	0.00274	0.00210	<0.30	1.55	0.00269	3.12	0.000011	2.3
4-Mar-09	L740333-6	<0.00050	0.00186	0.0864	2.00	0.00145	<0.0050	5.71	0.281	<0.000010	0.00260	0.00159	<0.30	1.78	0.00258	2.89	<0.000010	3.5
4-Mar-09	L740333-5	<0.00050	0.00184	0.0849	1.97	0.00144	<0.0050	5.55	0.272	<0.000010	0.00247	0.00147	<0.30	1.78	0.00269	2.88	<0.000010	3.5
28-Mar-09	L748538-9	<0.00050	0.00165	0.0803	1.85	0.00139	<0.0050	6.29	0.250	<0.000010	0.00259	0.00151	<0.30	1.84	0.00236	2.91	<0.000010	4.0
28-Apr-09	L759011-2	0.00082	0.00328	0.127	3.75	0.00233	<0.0050	6.55	0.280	<0.000010	0.00266	0.00292	<0.30	1.93	0.00305	3.31	0.000022	2.8
27-May-09	L771080-7	0.00654	0.00948	0.315	15.6	0.00708	<0.0050	6.41	0.425	<0.000010	0.00416	0.00729	0.94	2.08	0.00385	7.59	0.000105	<2.0
8-Jun-09	L776835-8	0.00669	0.00818	0.293	17.8	0.0118	<0.0050	5.23	0.571	0.000010	0.00369	0.00753	0.79	2.78	0.00221	14.10	0.000187	<2.0
13-Jun-09	L778602-7	0.00497	0.00772	0.345	13.6	0.00797	<0.0050	4.50	0.434	<0.000010	0.00291	0.00583	0.49	2.54	0.00201	10.60	0.000116	<2.0
19-Jun-09	L781603-3	0.00333	0.00571	0.328	8.39	0.00656	<0.0050	3.53	0.353	<0.000010	0.00202	0.00446	<0.30	1.84	0.00146	7.21	0.000077	<2.0
19-Jun-09	L781603-4	0.00391	0.00602	0.329	9.64	0.00682	<0.0050	3.90	0.378	<0.000010	0.00220	0.00509	<0.30	2.03	0.00157	8.80	0.000101	<2.0
5-Jul-09	L788462-4	0.00488	0.00568	0.167	10.3	0.00654	<0.0050	3.88	0.286	0.000014	0.00208	0.00622	0.41	2.13	0.00144	8.98	0.000119	<2.0
4-Aug-09	L801967-3	0.00515	0.00472	0.109	10.7	0.00892	<0.0050	4.06	0.354	0.000021	0.00172	0.00491	0.41	2.40	0.00096	11.60	0.000180	<2.0
22-Aug-09	L809879-17	0.00371	0.00305	0.0705	6.83	0.00520	<0.0050	3.36	0.253	0.000011	0.00133	0.00328	<0.30	2.08	0.00071	9.44	0.000121	<2.0
13-Sep-09	L817873-8	0.00550	0.00409	0.0728	9.91	0.00873	<0.0050	3.89	0.338	0.000012	0.00183	0.00441	0.34	2.76	0.00106	16.60	0.000214	<2.0
27-Sep-09	L824535-11	0.00201	0.00336	0.133	5.63	0.00454	<0.0050	3.38	0.235	<0.000010	0.00187	<0.0035	<0.30	1.69	0.00149	6.72	<0.000080	<2.0
31-Oct-09	L837185-11	0.00070	0.00262	0.149	3.63	0.00249	<0.0050	4.11	0.263	<0.000010	0.00233	0.00251	<0.30	1.44	0.00186	3.39	0.000019	<2.0
26-Nov-09	L844495-22	<0.00050	0.00270	0.213	4.24	0.00313	<0.0050	5.83	0.344	<0.000010	0.00294	0.00286	<0.30	1.65	0.00237	2.99	0.000010	2.6
17-Jan-10	L855505-8	<0.00050	0.00179	0.0872	2.05	0.00123	<0.0050	5.42	0.260	<0.000010	0.00251	0.00175	<0.30	1.50	0.00235	2.66	<0.000010	3.0
3-Mar-10	L866873-8	<0.00050	0.00176	0.0734	1.72	0.00093	<0.0050	5.89	0.284	<0.000010	0.00251	0.00183	<0.30	1.50	0.00185	2.50	<0.000010	3.2
28-Mar-10	L873293-10	0.00073	0.00286	0.143	4.00	0.00219	<0.0050	6.18	0.376	<0.000010	0.00273	0.00254	<0.30	1.65	0.00231	3.49	0.000016	3.1
1-May-10	L884476-14	0.00147	0.00593	0.268	11.8	0.00686	<0.0050	5.85	0.395	<0.000010	0.00415	0.00342	0.84	1.70	0.00390	4.69	0.000055	2.3
26-May-10	L891484-11	0.00186	0.00441	0.178	9.66	0.00673	<0.0050	3.65	0.278	<0.000010	0.00277	0.00269	0.43	1.60	0.00210	6.70	0.000166	<2.0
5-Jul-10	L905787-24	0.00259	0.00357	0.204	7.03	0.00497	<0.0050	3.33	0.280	0.000013	0.00207	0.00315	<0.30	1.75	0.00092	7.67	0.000068	<2.0
3-Aug-10	L916942-11	0.00717	0.00607	0.0915	14.7	0.0133	0.0061	4.59	0.454	0.000031	0.00206	0.00704	0.95	2.63	0.00127	13.80	0.000254	<2.0
27-Aug-10	L926457-24	0.00093	0.00199	0.0863	2.50	0.00387	<0.0050	1.97	0.191	<0.000010	0.00101	0.00174	<0.30	0.99	0.00057	1.90</td		

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Sulphurets Creek Watershed**

Site Name	Date	ALS Sample No.	Total Metals																
			Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)
	29-Mar-09	L749298-6	<0.00050	0.00125	0.0554	1.34	0.00097	<0.0050	6.18	0.205	<0.000010	0.00228	0.00177	<0.30	1.68	0.00259	2.67	<0.000010	3.5
	28-Apr-09	L759011-3	<0.00050	0.00199	0.0404	0.064	<0.000050	<0.0050	5.76	0.215	<0.000010	0.00173	0.00146	<0.30	0.64	0.00041	1.98	<0.000010	<2.0
	2-Jul-09	L787346-24	0.00126	0.00384	0.343	5.52	0.00425	<0.0050	4.04	0.314	<0.000010	0.00230	0.00309	<0.30	1.28	0.00151	4.28	0.000041	<2.0
	22-Aug-09	L809879-18	0.00364	0.00287	0.0575	6.97	0.00496	<0.0050	3.06	0.225	<0.000010	0.00140	0.00303	<0.30	1.89	0.00052	9.61	0.000099	<2.0
	26-Nov-09	L844495-23	0.00064	0.00225	0.139	3.11	0.00300	<0.0050	5.33	0.274	<0.000010	0.00259	0.00249	<0.30	1.57	0.00196	3.14	0.000017	2.3
	17-Jan-10	L855505-9	<0.00050	0.00133	0.0666	1.41	0.00096	<0.0050	4.96	0.192	<0.000010	0.00231	0.00163	<0.30	1.40	0.00185	2.50	<0.000010	3.0
	3-Mar-10	L866873-9	<0.00050	0.00137	0.0610	1.43	0.00080	<0.0050	5.36	0.216	<0.000010	0.00240	0.00147	<0.30	1.42	0.00174	2.54	<0.000010	2.9
	28-Mar-10	L873293-11	0.00089	0.00194	0.120	3.77	0.00218	<0.0050	5.04	0.256	<0.000010	0.00231	0.00195	<0.30	1.40	0.00180	3.71	0.000015	2.6
	1-May-10	L884476-15	0.00078	0.00407	0.205	7.59	0.00415	<0.0050	5.34	0.280	<0.000010	0.00358	0.00227	0.54	1.47	0.00338	3.22	0.000024	2.2
	26-May-10	L891484-12	0.00167	0.00340	0.128	7.09	0.00425	<0.0050	3.29	0.219	<0.000010	0.00233	0.00217	0.30	1.46	0.00170	6.05	0.000081	<2.0
	5-Jul-10	L905787-25	0.00230	0.00320	0.182	6.17	0.00427	<0.0050	3.11	0.254	<0.000010	0.00185	0.00286	<0.30	1.54	0.00088	6.37	0.000053	<2.0
	3-Aug-10	L916942-12	0.00631	0.00430	0.0681	11.0	0.00805	<0.0050	3.80	0.322	0.000021	0.00162	0.00492	0.41	2.39	0.00099	11.80	0.000348	<2.0
	27-Aug-10	L926457-25	0.00157	0.00186	0.0707	3.09	0.00329	<0.0050	2.14	0.175	<0.000010	0.00117	0.00170	<0.30	1.27	0.00066	3.47	0.000040	<2.0
	28-Sep-10	L938295-12	0.00730	0.00615	0.0817	11.1	0.0101	<0.0050	4.73	0.504	0.000027	0.00171	0.00717	0.81	3.13	0.00119	11.50	0.000089	<2.0
	21-Oct-10	L946803-2	0.00146	0.00373	0.252	7.18	0.00294	<0.0050	4.53	0.248	<0.000010	0.00296	0.00365	0.32	1.55	0.00227	3.96	0.000027	<2.0
	15-Nov-10	L955725-24	0.00069	0.00253	0.172	4.29	0.00202	<0.0050	4.37	0.211	<0.000010	0.00247	0.00266	<0.30	1.36	0.00195	3.11	0.000010	<2.0
	1-Feb-11	L975149-4	0.00013	0.00141	0.0686	1.43	0.00080	<0.0050	5.85	0.261	<0.000010	0.00241	0.00179	<0.30	1.70	0.00210	2.86	<0.000010	3.4
	5-Mar-11	L985810-4	0.00020	0.00139	0.0826	1.95	0.00111	<0.0050	5.78	0.208	<0.000010	0.00246	0.00161	<0.30	1.75	0.00190	2.67	<0.000010	3.2
	31-Mar-11	L991777-5	0.00018	0.00148	0.0694	1.65	0.00085	<0.0050	5.63	0.206	<0.000010	0.00221	0.00147	<0.30	1.43	0.00175	2.73	<0.000010	3.0
	2-May-11	L1002688-10	<0.00020	0.00145	0.0670	1.77	0.00072	<0.0050	6.18	0.196	<0.000010	0.00204	0.00168	<0.30	1.48	0.00202	2.67	<0.000010	2.6
	4-Jun-11	L1014013-10	0.00498	0.00447	0.141	10.5	0.00455	<0.0050	4.04	0.260	<0.000010	0.00240	0.00429	0.45	1.99	0.00147	12.10	0.000086	<2.0
	4-Jul-11	L1028827-6	0.00209	0.00364	0.215	6.79	0.00441	0.0024	3.08	0.258	<0.000010	0.00151	0.00335	<0.30	1.45	0.00096	6.53	0.000045	<2.0
	1-Aug-11	L1039955-14	0.00146	0.00219	0.0968	3.67	0.00274	0.0013	2.24	0.169	<0.000010	0.00111	0.00223	<0.30	1.07	0.00080	3.80	0.000030	<2.0
	4-Sep-11	L1054465-5	0.0237	0.0159	0.158	36.6	0.0152	0.0130	13.20	0.973	<0.000050	0.00454	0.0221	1.37	6.17	0.00220	35.70	0.000545	2.3
	1-Oct-11	L1067383-6	0.00142	0.00300	0.187	6.07	0.00285	0.0019	4.41	0.213	<0.000010	0.00303	0.00356	<0.30	1.68	0.00193	5.66	0.000032	<2.0
	26-Oct-11	L1079029-21	0.00074	0.00254	0.166	4.75	0.00201	0.0019	4.66	0.211	<0.000010	0.00303	0.00260	<0.30	1.71	0.00199	3.75	0.000014	<2.0
	27-Nov-11	L1091310-6	0.00040	0.00222	0.155	3.66	0.00162	0.0018	5.45	0.236	<0.000010	0.00321	0.00251	<0.30	1.94	0.00208	3.36	<0.000010	2.5
SCT	26-Jun-08	L650936-31	0.0432	0.0174	0.0894	39.6	0.0169	<0.025	15.50	0.856	0.000017	0.00583	0.0350	1.51	9.24	0.00287	47.30	0.000744	3.3
	9-Sep-08	L682706-5	0.00615	0.00325	0.0159	7.49	0.00375	<0.0050	4.64	0.200	<0.000010	0.00205	0.00558	<0.30	3.61	0.00066	10.40	0.000109	<2.0
	6-Dec-08	L717413-12	0.00070	0.00035	0.00122	0.473	0.00030	<0.0050	5.40	0.040	<0.000010	0.00296	0.00297	<0.30	3.83	0.00232	2.74	<0.000010	<2.0
	28-Mar-09	L7																	

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Sulphurets Creek Watershed**

Site Name	Date	ALS Sample No.	Total Metals							Dissolved Metals											
			Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)
SC1	25-Jul-07	L535508-3	0.073	<0.00010	<0.00020	0.086	0.000102	0.0098	0.0169	0.0740	0.00068	0.00074	0.0219	<0.00050	<0.00050	<0.010	<0.000017	13.5	<0.00050	<0.00010	0.00070
	23-Sep-07	L559547-3	0.088	<0.00010	<0.00010	<0.010	0.000032	0.0012	0.0046	0.0415	0.00075	0.00033	0.0225	<0.00050	<0.00050	<0.010	<0.000050	16.6	<0.00050	0.00013	0.00030
	28-May-08	L635965-9	0.170	<0.00010	<0.00010	0.053	0.000089	0.0065	0.0149	0.0389	0.00093	0.00043	0.0276	<0.00050	<0.00050	<0.010	<0.000070	33.9	<0.00050	0.00029	0.00094
	28-May-08	L635965-8	0.167	<0.00010	<0.00010	0.053	0.000083	0.0061	0.0128	0.0493	0.00094	0.00047	0.0276	<0.00050	<0.00050	<0.010	<0.000080	33.8	<0.00050	0.00030	0.00100
	5-Jun-08	L639617-10	0.130	<0.00010	<0.00010	0.071	0.000091	0.0074	0.0129	0.0630	0.00086	0.00052	0.0271	<0.00050	<0.00050	<0.010	0.000049	23.0	<0.00050	0.00020	0.00060
	11-Jun-08	L642688-2	0.123	<0.00010	<0.00010	0.044	0.000092	0.0048	<0.010	0.0474	0.00084	0.00056	0.0264	<0.00050	<0.00050	<0.010	0.000039	23.9	<0.00050	0.00013	0.00040
	26-Jun-08	L650936-30	0.118	<0.00010	<0.00010	0.053	0.000067	0.0047	0.0100	-	-	-	-	-	-	-	-	-	-	-	-
	3-Jul-08	L652071-8	0.087	<0.00010	<0.00010	0.101	0.000113	0.0117	0.0206	0.0571	0.00070	0.00037	0.0241	<0.00050	<0.00050	<0.010	0.000019	16.1	<0.00050	<0.00010	0.00037
	25-Jul-08	L662220-10	0.085	<0.00010	0.00012	0.063	0.000060	0.0058	0.0120	0.0489	0.00066	0.00045	0.0212	<0.00050	<0.00050	<0.010	0.000019	12.8	<0.00050	<0.00010	0.00026
	10-Sep-08	L683687-1	0.083	<0.00010	<0.00010	0.029	0.000056	0.0038	0.0077	0.0599	0.00069	0.00051	0.0251	<0.00050	<0.00050	<0.010	0.000024	15.4	<0.00050	<0.00010	<0.00030
	2-Oct-08	L691752-10	0.099	0.00016	0.00015	0.229	0.000263	0.0282	0.0374	0.0749	0.00138	0.00086	0.0302	<0.00050	<0.00050	<0.010	<0.000017	18.1	<0.00050	<0.00010	0.00018
	2-Oct-08	L691752-9	0.106	0.00017	0.00018	0.261	0.000227	0.0330	0.0423	0.0762	0.00137	0.00080	0.0304	<0.00050	<0.00050	<0.010	<0.000017	18.2	<0.00050	<0.00010	0.00022
	29-Oct-08	L703445-12	0.170	<0.00010	<0.00010	<0.010	0.000062	<0.0010	0.0045	0.0267	0.00107	0.00027	0.0300	<0.00050	<0.00050	<0.010	0.000056	37.3	<0.00050	0.00033	0.00319
	6-Dec-08	L717413-30	0.252	<0.00010	<0.00010	<0.010	0.000077	<0.0010	0.0108	0.0321	0.00133	0.00014	0.0407	<0.00050	<0.00050	<0.010	0.000105	49.0	<0.00050	0.00093	0.0136
	27-May-09	L771080-2	0.254	<0.00010	<0.00010	<0.010	0.000085	<0.0010	0.0124	0.0297	0.00105	0.00025	0.0345	<0.00050	<0.00050	<0.010	0.000143	58.4	<0.00050	0.00114	0.00682
	27-May-09	L771080-1	0.265	<0.00010	<0.00010	<0.010	0.000084	<0.0010	0.0130	0.0270	0.00106	0.00021	0.0336	<0.00050	<0.00050	<0.010	0.000133	60.3	<0.00050	0.00109	0.00649
	2-Jul-09	L787346-23	0.167	<0.00010	<0.00010	0.029	0.000071	0.0032	0.0071	0.0545	0.00090	0.00060	0.0304	<0.00050	<0.00050	<0.010	0.000033	22.8	<0.00050	0.00013	0.00036
	4-Aug-09	L801967-9	0.063	<0.00010	<0.00010	0.111	0.000099	0.0147	0.0250	0.0724	0.00058	0.00058	0.0237	<0.00050	<0.00050	<0.010	0.000010	10.8	<0.00050	<0.00010	0.00108
	4-Aug-09	L801967-8	0.061	<0.00010	<0.00010	0.114	0.000122	0.0149	0.0242	0.417	0.00066	0.00096	0.0329	<0.00050	<0.00050	<0.010	0.000016	11.2	<0.00050	0.00014	0.00159
	22-Aug-09	L809879-16	0.060	<0.00010	<0.00010	0.111	0.000110	0.0124	0.0204	0.110	0.00063	0.00063	0.0232	<0.00050	<0.00050	<0.010	<0.000010	10.1	<0.00050	<0.00010	0.00032
	27-Sep-09	L824535-10	0.097	<0.00010	<0.00010	0.080	0.000087	0.0096	0.0179	0.0617	0.00074	0.00047	0.0256	<0.00050	<0.00050	<0.010	0.000020	16.5	<0.00050	<0.00010	0.00050
	31-Oct-09	L837185-10	0.195	<0.00010	<0.00010	<0.010	0.000056	<0.0010	0.0044	0.0191	0.00102	0.00029	0.0321	<0.00050	<0.00050	<0.010	0.000057	33.5	<0.00050	0.00035	0.00213
	1-Dec-09	L845898-4	0.284	<0.00010	<0.00010	<0.010	0.000069	<0.0010	0.0074	0.0260	0.00112	0.00021	0.0383	<0.00050	<0.00050	<0.010	0.000078	50.0	<0.00050	0.00060	0.00767
	17-Jan-10	L855505-7	0.323	<0.00010	<0.00010	<0.010	0.000074	<0.0010	0.0080	0.0133	0.00111	0.00023	0.0411	<0.00050	<0.00050	<0.010	0.000067	54.5	<0.00050	0.00046	0.00830
	3-Mar-10	L866873-7	0.360	<0.00010	<0.00010	<0.010	0.000085	<0.0010	0.0091	0.0117	0.00111	0.00025	0.0412	<0.00050	<0.00050	<0.010	0.000079	61.2	<0.00050	0.00051	0.00962
	28-Mar-10	L873293-9	0.376	<0.00010	<0.00010	<0.010	0.000113	<													

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Sulphurets Creek Watershed**

Site Name	Date	ALS Sample No.	Total Metals							Dissolved Metals										Chromium		
			Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	(Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	
SC3	17-Sep-08	L686098-8	0.134	0.00012	0.00019	0.545	0.000614	0.0309	0.0930	0.0282	0.00044	<0.00010	0.0323	<0.00050	<0.00050	<0.010	0.000208	18.8	<0.00050	0.00032	0.00041	
	25-Sep-08	L688714-8	0.148	<0.00010	0.00020	0.068	0.000294	0.0054	0.0817	0.0390	0.00047	<0.00010	0.0297	<0.00050	<0.00050	<0.010	0.000707	28.1	<0.00050	0.00116	0.00197	
	25-Sep-08	L688714-7	0.149	<0.00010	<0.00010	0.064	0.000300	0.0051	0.0810	0.0398	0.00047	<0.00010	0.0298	<0.00050	<0.00050	<0.010	0.000698	27.9	<0.00050	0.00120	0.00201	
	2-Oct-08	L691752-11	0.144	0.00018	0.00018	0.695	0.000634	0.0440	0.0924	0.0815	0.00078	0.00033	0.0463	<0.00050	<0.00050	<0.010	0.000028	22.0	<0.00050	<0.00010	0.00030	
	9-Oct-08	L694973-7	0.176	<0.00010	<0.00010	0.070	0.000374	0.0055	0.0881	0.0332	0.00055	<0.00010	0.0347	<0.00050	<0.00050	<0.010	0.000750	31.3	<0.00050	0.00135	0.00204	
	29-Oct-08	L703445-7	0.233	<0.00010	<0.00010	0.020	0.000426	0.0020	0.112	0.0608	0.00055	0.00014	0.0334	<0.00050	<0.00050	<0.010	0.000950	47.0	<0.00050	0.00200	0.00830	
	6-Dec-08	L717413-15	0.300	<0.00010	<0.00010	0.016	0.000596	0.0018	0.167	0.0318	0.00061	<0.00010	0.0349	<0.00050	<0.00050	<0.010	0.00108	56.2	<0.00050	0.00183	0.00422	
	4-Mar-09	L740333-6	0.385	<0.00010	<0.00010	<0.010	0.000528	<0.0010	0.126	0.0384	0.00055	<0.00010	0.0374	<0.00050	<0.00050	<0.010	0.00129	69.7	<0.00050	0.00174	0.00397	
	4-Mar-09	L740333-5	0.368	<0.00010	<0.00010	<0.010	0.000531	<0.0010	0.124	0.0389	0.00054	<0.00010	0.0362	<0.00050	<0.00050	<0.010	0.00122	68.1	<0.00050	0.00171	0.00385	
	28-Mar-09	L748538-9	0.369	<0.00010	<0.00010	<0.010	0.000570	<0.0010	0.117	0.0358	0.00048	0.00012	0.0352	<0.00050	<0.00050	<0.010	0.00104	70.8	<0.00050	0.00147	0.00371	
	28-Apr-09	L759011-2	0.332	<0.00010	<0.00010	0.031	0.000631	0.0030	0.104	0.0503	0.00054	<0.00010	0.0336	<0.00050	<0.00050	<0.010	0.000673	80.5	<0.00050	0.00170	0.00440	
	27-May-09	L771080-7	0.262	<0.00010	<0.00010	0.200	0.000675	0.0155	0.383	0.0110	0.00040	0.00018	0.0350	<0.00050	<0.00050	<0.010	0.00296	47.6	<0.00050	0.00551	0.00439	
	8-Jun-09	L776835-8	0.206	0.00010	<0.00010	0.401	0.000647	0.0309	0.230	0.0050	0.00034	<0.00010	0.0420	<0.00050	<0.00050	<0.010	0.00170	29.8	<0.00050	0.00357	0.00293	
	13-Jun-09	L778602-7	0.169	<0.00010	0.00011	0.290	0.000764	0.0204	0.204	0.0072	0.00032	<0.00010	0.0349	<0.00050	<0.00050	<0.010	0.00233	29.1	<0.00050	0.00451	0.0131	
	19-Jun-09	L781603-3	0.162	<0.00010	<0.00010	0.144	0.000570	0.0129	0.159	0.0168	0.00035	<0.00010	0.0316	<0.00050	<0.00050	<0.010	0.00172	27.1	<0.00050	0.00323	0.00803	
	19-Jun-09	L781603-4	0.168	<0.00010	<0.00010	0.211	0.000698	0.0157	0.165	0.0177	0.00036	<0.00010	0.0312	<0.00050	<0.00050	<0.010	0.00185	28.2	<0.00050	0.00348	0.0102	
	5-Jul-09	L788462-4	0.128	<0.00010	0.00012	0.277	0.000453	0.0192	0.184	0.0153	0.00039	<0.00010	0.0321	<0.00050	<0.00050	<0.010	0.00139	23.4	<0.00050	0.00216	0.00258	
	4-Aug-09	L801967-3	0.107	0.00011	0.00045	0.396	0.000358	0.0249	0.0854	0.0553	0.00033	<0.00010	0.0367	<0.00050	<0.00050	<0.010	0.000173	15.9	<0.00050	0.00029	<0.00080	
	22-Aug-09	L809879-17	0.104	<0.00010	0.00011	0.237	0.000265	0.0149	0.0701	0.0238	0.00036	<0.00010	0.0331	<0.00050	<0.00050	<0.010	0.000226	15.9	<0.00050	0.00033	0.00050	
	13-Sep-09	L817873-8	0.111	0.00013	0.00017	0.391	0.000504	0.0215	0.0864	0.0727	0.00037	0.00015	0.0423	<0.00050	<0.00050	<0.010	0.000167	15.8	<0.00050	0.00023	0.00074	
	27-Sep-09	L824535-11	0.169	<0.00010	<0.00010	0.132	0.000343	0.0089	0.0919	0.0374	0.00045	<0.00010	0.0312	<0.00050	<0.00050	<0.010	0.000715	29.6	<0.00050	0.00162	0.00250	
	31-Oct-09	L837185-11	0.265	<0.00010	<0.00010	0.040	0.000429	0.0024	0.104	0.0323	0.00051	<0.00010	0.0320	<0.00050	<0.00050	<0.010	0.000854	48.0	<0.00050	0.00188	0.00518	
	26-Nov-09	L844495-22	0.384	<0.00010	<0.00010	0.016	0.000616	0.0018	0.166	0.0594	0.00057	<0.00010	0.0372	<0.00050	<0.00050	<0.010	0.00104	61.6	<0.00050	0.00192	0.00431	
	17-Jan-10	L855505-8	0.382	<0.00010	<0.00010	<0.010	0.000480	<0.0010	0.112	0.0427	0.00055	<0.00010	0.0370	<0.00050	<0.00050	<0.010	0.00106	66.4	<0.00050	0.00166	0.00443	
	3-Mar-10	L866873-8	0.417	<0.00010	<0.00010	<0.010	0.000496	<0.0010	0.0829													

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Sulphurets Creek Watershed**

Site Name	Date	ALS Sample No.	Total Metals							Dissolved Metals											
			Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)
	29-Mar-09	L749298-6	0.366	<0.00010	<0.00010	<0.010	0.000480	<0.0010	0.101	0.0505	0.00047	0.00019	0.0354	<0.00050	<0.00050	<0.010	0.000739	67.9	<0.00050	0.00109	0.00242
	28-Apr-09	L759011-3	0.326	<0.00010	<0.00010	<0.010	0.00093	<0.0010	0.0250	0.0231	0.00103	<0.00010	0.0395	<0.00050	<0.00050	<0.010	0.000169	78.9	<0.00050	0.00203	0.0335
	2-Jul-09	L787346-24	0.235	<0.00010	<0.00010	0.077	0.000405	0.0059	0.149	0.0366	0.00041	<0.00010	0.0306	<0.00050	<0.00050	<0.010	0.00105	31.8	<0.00050	0.00237	0.00369
	22-Aug-09	L809879-18	0.101	<0.00010	0.00012	0.266	0.000243	0.0154	0.0590	0.0304	0.00036	<0.00010	0.0364	<0.00050	<0.00050	<0.010	0.000194	16.5	<0.00050	0.00028	0.00277
	26-Nov-09	L844495-23	0.349	<0.00010	<0.00010	0.029	0.000464	0.0024	0.124	0.0553	0.00049	0.00012	0.0341	<0.00050	<0.00050	<0.010	0.000771	56.3	<0.00050	0.00144	0.00333
	17-Jan-10	L855505-9	0.343	<0.00010	<0.00010	<0.010	0.000420	<0.0010	0.0774	0.0392	0.00052	0.00011	0.0346	<0.00050	<0.00050	<0.010	0.000720	58.0	<0.00050	0.00119	0.00300
	3-Mar-10	L866873-9	0.381	<0.00010	<0.00010	<0.010	0.000414	<0.0010	0.0675	0.0658	0.00052	0.00014	0.0340	<0.00050	<0.00050	<0.010	0.000533	61.3	<0.00050	0.00105	0.00274
	28-Mar-10	L873293-11	0.317	<0.00010	0.00013	0.042	0.000484	0.0031	0.102	0.0366	0.00045	0.00013	0.0306	<0.00050	<0.00050	0.011	0.000500	56.2	<0.00050	0.00100	0.00430
	1-May-10	L884476-15	0.339	<0.00010	<0.00010	0.035	0.000623	0.0033	0.211	0.0238	0.00050	0.00028	0.0241	<0.00050	<0.00050	<0.010	0.000592	61.2	<0.00050	0.00238	0.00209
	26-May-10	L891484-12	0.186	<0.00010	<0.00010	0.115	0.000357	0.0075	0.170	0.0155	0.00047	0.00012	0.0277	<0.00050	<0.00050	<0.010	0.000682	33.6	<0.00020	0.00164	0.00123
	5-Jul-10	L905787-25	0.156	<0.00010	0.00010	0.123	0.000368	0.0087	0.0946	0.0482	0.00051	<0.00010	0.0376	<0.00050	<0.00050	<0.010	0.000629	27.8	<0.00020	0.00096	0.00156
	3-Aug-10	L916942-12	0.099	<0.00010	0.00015	0.397	0.000330	0.0233	0.0645	0.0830	0.00037	0.00013	0.0413	<0.00050	<0.00050	<0.010	0.000046	15.1	<0.00020	<0.00010	0.00089
	27-Aug-10	L926457-25	0.118	<0.00010	<0.00010	0.073	0.000228	0.0055	0.0559	0.0256	0.00040	<0.00010	0.0294	<0.00050	<0.00050	<0.010	0.000402	20.9	<0.00020	0.00070	0.00114
	28-Sep-10	L938295-12	0.176	<0.00010	<0.00010	0.346	0.000501	0.0272	0.0656	0.0862	0.00056	0.00018	0.0297	<0.00050	<0.00050	<0.010	0.000079	26.2	<0.00020	0.00026	0.00094
	21-Oct-10	L946803-2	0.263	<0.00010	<0.00010	0.059	0.000407	0.0044	0.134	0.0427	0.00046	<0.00010	0.0282	<0.00050	<0.00050	<0.010	0.000623	46.4	0.00013	0.00249	0.00262
	15-Nov-10	L955725-24	0.281	<0.00010	<0.00010	0.028	0.000381	0.0021	0.123	0.0878	0.00050	0.00011	0.0303	<0.00050	<0.00050	<0.010	0.000598	57.6	<0.00010	0.00177	0.00381
	1-Feb-11	L975149-4	0.396	<0.00010	<0.00010	0.012	0.000416	<0.0010	0.0949	0.0381	0.00051	<0.00010	0.0371	<0.00050	<0.00050	<0.010	0.00103	62.8	<0.00010	0.00120	0.00325
	5-Mar-11	L985810-4	0.391	<0.00010	<0.00010	0.011	0.000458	<0.0010	0.106	0.0362	0.00047	0.00010	0.0364	<0.00050	<0.00050	0.013	0.000834	69.7	<0.00010	0.00112	0.00272
	31-Mar-11	L991777-5	0.372	<0.00010	<0.00010	<0.010	0.000402	<0.0010	0.0777	0.0334	0.00049	0.00013	0.0346	<0.00050	<0.00050	<0.010	0.000687	61.1	<0.00010	0.00119	0.00366
	2-May-11	L1002688-10	0.383	<0.00010	<0.00010	<0.010	0.000407	<0.0010	0.0619	0.0430	0.00049	0.00015	0.0335	<0.00050	<0.00050	<0.010	0.000477	62.6	<0.00010	0.00113	0.00308
	4-Jun-11	L1014013-10	0.154	<0.00010	<0.00010	0.335	0.000361	0.0172	0.112	0.0354	0.00055	0.00015	0.0294	<0.00050	<0.00050	<0.010	0.000349	27.5	<0.00010	0.00135	0.00115
	4-Jul-11	L1028827-6	0.153	0.00004	<0.00010	0.154	0.000336	0.0100	0.107	0.0513	0.00041	<0.00010	0.0323	<0.00010	<0.00050	<0.010	0.000492	25.8	<0.00010	0.00105	0.00144
	1-Aug-11	L1039955-14	0.118	0.00003	<0.00010	0.089	0.000198	0.0059	0.0673	0.0404	0.00035	<0.00010	0.0287	<0.00010	<0.00050	<0.010	0.000427	19.8	<0.00010	0.00081	0.00113
	4-Sep-11	L1054465-5	0.214	0.00027	0.00020	1.460	0.000864	0.0928	0.167	0.0898	0.00058	0.00039	0.0366	<0.00010	<0.00050	<0.010	0.000045	24.4	<0.00010	<0.00010	<0.00050
	1-Oct-11	L1067383-6	0.252	0.00003	<0.00010	0.091	0.000448	0.0057	0.123	0.0505	0.00057	<0.00010	0.0290	<0.00010	<0.00050	<0.010	0.000664	48.9	<0.00010	0.00180	0.00286
	26-Oct-11	L1079029-21	0.276	0.00																	

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Sulphurets Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals																				
			Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	
SC1	25-Jul-07	L535508-3	<0.030	<0.000050	<0.0050	0.95	0.0126	<0.000010	0.000607	<0.00050	<0.30	<2.0	<0.0010	0.53	<0.000010	<2.0	0.062	<0.00010	<0.00010	<0.010	0.000027	<0.0010	<0.0010
	23-Sep-07	L559547-3	<0.030	<0.000050	<0.0050	1.38	0.0214	<0.000010	0.000725	<0.00050	<0.30	<2.0	<0.0010	0.58	<0.000010	<2.0	0.087	<0.00010	<0.00010	<0.010	0.000024	<0.0010	<0.0010
	28-May-08	L635965-9	<0.030	<0.000050	<0.0050	2.35	0.0878	<0.000010	0.00130	<0.00050	<0.30	0.394	0.00038	1.24	<0.000010	<2.0	0.162	<0.00010	<0.00010	<0.010	0.000054	<0.0010	0.0015
	28-May-08	L635965-8	<0.030	<0.000050	<0.0050	2.34	0.0899	<0.000010	0.00126	<0.00050	<0.30	0.390	0.00036	1.29	<0.000010	<2.0	0.162	<0.00010	<0.00010	<0.010	0.000052	<0.0010	<0.0010
	5-Jun-08	L639617-10	<0.030	<0.000050	<0.0050	1.65	0.0511	<0.000010	0.000995	<0.00050	<0.30	0.322	0.00027	1.08	<0.000010	<2.0	0.124	<0.00010	<0.00010	<0.010	0.000050	<0.0010	<0.0010
	11-Jun-08	L642688-2	<0.030	<0.000050	<0.0050	1.67	0.0352	<0.000010	0.000940	<0.00050	<0.30	0.265	0.00028	1.01	<0.000010	<2.0	0.118	<0.00010	<0.00010	<0.010	0.000048	<0.0010	<0.0010
	26-Jun-08	L650936-30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3-Jul-08	L652071-8	<0.030	<0.000050	<0.0050	1.05	0.0094	<0.000010	0.000696	<0.00050	<0.30	0.212	0.00019	0.66	<0.000010	<2.0	0.078	<0.00010	<0.00010	<0.010	0.000026	<0.0010	<0.0010
	25-Jul-08	L662220-10	<0.030	<0.000050	<0.0050	0.98	0.0107	<0.000010	0.000626	<0.00050	<0.30	0.157	0.00012	0.55	<0.000010	<2.0	0.075	<0.00010	0.00018	<0.010	0.000026	<0.0010	<0.0010
	10-Sep-08	L683687-1	<0.030	<0.000050	<0.0050	1.18	0.0156	<0.000010	0.000734	<0.00050	<0.30	0.175	0.00020	0.58	0.000020	<2.0	0.081	<0.00010	<0.00010	<0.010	0.000025	<0.0010	<0.0010
	2-Oct-08	L691752-10	<0.030	<0.000050	<0.0050	1.24	0.0004	<0.000010	0.00134	<0.00050	<0.30	0.399	0.00036	0.65	<0.000010	<2.0	0.093	<0.00010	<0.00010	<0.010	0.000036	<0.0010	<0.0010
	2-Oct-08	L691752-9	<0.030	<0.000050	<0.0050	1.24	0.0003	<0.000010	0.00130	<0.00050	<0.30	0.404	0.00040	0.65	<0.000010	<2.0	0.092	<0.00010	<0.00010	<0.010	0.000039	<0.0010	<0.0010
	29-Oct-08	L703445-12	<0.030	<0.000050	<0.0050	2.59	0.0442	<0.000010	0.00131	<0.00050	<0.30	0.345	0.00055	1.20	<0.000010	<2.0	0.171	<0.00010	<0.00010	<0.010	0.000065	<0.0010	0.0034
	6-Dec-08	L717413-30	<0.030	<0.000050	<0.0050	3.87	0.0966	0.000011	0.00156	0.00104	<0.30	0.454	0.00046	1.55	<0.000010	<2.0	0.249	<0.00010	<0.00010	<0.010	0.000074	<0.0010	0.0093
	27-May-09	L771080-2	<0.030	<0.000050	<0.0050	4.93	0.187	<0.000010	0.00152	0.00153	<0.30	0.625	0.00057	1.65	<0.000010	<2.0	0.278	<0.00010	<0.00010	<0.010	0.000084	<0.0010	0.0097
	27-May-09	L771080-1	<0.030	<0.000050	<0.0050	4.63	0.182	<0.000010	0.00149	0.00129	<0.30	0.590	0.00061	1.68	<0.000010	<2.0	0.271	<0.00010	<0.00010	<0.010	0.000084	<0.0010	0.0095
	2-Jul-09	L787346-23	<0.030	<0.000050	<0.0050	2.11	0.0336	<0.000010	0.001000	<0.00050	<0.30	0.273	0.00028	0.94	<0.000010	<2.0	0.148	<0.00010	<0.00010	<0.010	0.000045	<0.0010	<0.0010
	4-Aug-09	L801967-9	<0.030	0.000079	<0.0050	0.66	0.0014	<0.000010	0.000483	<0.00050	<0.30	0.160	<0.00010	0.38	<0.000010	<2.0	0.056	<0.00010	<0.00010	<0.010	0.000016	<0.0010	<0.0020
	4-Aug-09	L801967-8	0.291	0.000379	<0.0050	0.77	0.0110	<0.000010	0.000492	<0.00050	<0.30	0.286	<0.00010	1.00	<0.000010	<2.0	0.057	<0.00010	<0.00010	<0.010	0.000022	0.0012	<0.0030
	22-Aug-09	L809879-16	0.035	0.000056	<0.0050	0.67	0.0009	<0.000010	0.000554	<0.00050	<0.30	0.143	0.00013	0.44	<0.000010	<2.0	0.053	<0.00010	<0.00010	<0.010	0.000018	<0.0010	<0.0010
	27-Sep-09	L824535-10	0.031	<0.000050	<0.0050	1.13	0.0115	<0.000010	0.000761	<0.00050	<0.30	0.202	0.00028	0.67	<0.000010	<2.0	0.084	<0.00010	<0.00010	<0.010	0.000030	<0.0010	<0.0010
	31-Oct-09	L837185-10	<0.030	<0.000050	<0.0050	2.38	0.0482	<0.000010	0.00120	<0.00050	<0.30	0.270	0.00054	1.22	<0.000010	<2.0	0.180	<0.00010	<0.00010	<0.010	0.000050	<0.0010	0.0028
	1-Dec-09	L845898-4	<0.030	<0.000050	<0.0050	4.03	0.0779	<0.000010	0.00136	0.00086	<0.30	0.377	0.00066	1.59	<0.000010	<2.0	0.284</td						

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Sulphurets Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals																																									
			Iron (Fe) (mg/L)		Lead (Pb) (mg/L)		Lithium (Li) (mg/L)		Magnesium (Mg) (mg/L)		Manganese (Mn) (mg/L)		Mercury (Hg) (mg/L)		Molybdenum (Mo) (mg/L)		Nickel (Ni) (mg/L)		Phosphorus (P) (mg/L)		Potassium (K) (mg/L)		Selenium (Se) (mg/L)		Silicon (Si) (mg/L)		Silver (Ag) (mg/L)		Sodium (Na) (mg/L)		Strontium (Sr) (mg/L)		Thallium (Tl) (mg/L)		Tin (Sn) (mg/L)		Titanium (Ti) (mg/L)		Uranium (U) (mg/L)		Vanadium (V) (mg/L)		Zinc (Zn) (mg/L)	
			Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)																					
SC3	17-Sep-08	L686098-8	<0.030	<0.000050	<0.0050	1.41	0.0395	<0.000010	0.00114	<0.00050	<0.30	0.950	0.00056	0.75	<0.000010	<2.0	0.100	<0.00010	<0.00010	<0.010	0.000022	<0.0010	0.0036																					
	25-Sep-08	L688714-8	<0.030	<0.000050	<0.0050	2.31	0.126	<0.000010	0.00147	0.00109	<0.30	0.863	0.00094	1.15	<0.000010	<2.0	0.140	<0.00010	<0.00010	<0.010	0.000084	<0.0010	0.0241																					
	25-Sep-08	L688714-7	<0.030	<0.000050	<0.0050	2.28	0.129	<0.000010	0.00147	0.00113	<0.30	0.888	0.00095	1.14	<0.000010	<2.0	0.141	<0.00010	<0.00010	<0.010	0.000080	<0.0010	0.0242																					
	2-Oct-08	L691752-11	<0.030	<0.000050	<0.0050	1.30	0.0017	<0.000010	0.00155	<0.00050	<0.30	1.320	0.00076	0.77	<0.000010	<2.0	0.104	<0.00010	<0.00010	<0.010	0.000060	<0.0010	<0.0020																					
	9-Oct-08	L694973-7	<0.030	<0.000050	<0.0050	2.55	0.169	<0.000010	0.00164	0.00095	<0.30	0.975	0.00122	1.36	<0.000010	<2.0	0.167	<0.00010	<0.00010	<0.010	0.000099	<0.0010	0.0216																					
	29-Oct-08	L703445-7	0.090	0.000065	<0.0050	3.74	0.213	<0.000010	0.00198	0.00190	<0.30	1.300	0.00184	1.97	<0.000010	<2.0	0.227	<0.00010	<0.00010	<0.010	0.000238	<0.0010	0.0395																					
	6-Dec-08	L717413-15	<0.030	<0.000050	<0.0050	4.74	0.231	0.000012	0.00229	0.00166	<0.30	1.520	0.00201	2.20	<0.000010	<2.0	0.298	<0.00010	<0.00010	<0.010	0.000299	<0.0010	0.0432																					
	4-Mar-09	L740333-6	<0.030	<0.000050	<0.0050	5.69	0.274	<0.000010	0.00244	0.00168	<0.30	1.820	0.00232	2.53	<0.000010	<2.0	0.386	<0.00010	<0.00010	<0.010	0.000427	<0.0010	0.0513																					
	4-Mar-09	L740333-5	<0.030	<0.000050	<0.0050	5.57	0.272	<0.000010	0.00240	0.00169	<0.30	1.780	0.00223	2.52	<0.000010	<2.0	0.375	<0.00010	<0.00010	<0.010	0.000418	<0.0010	0.0478																					
	28-Mar-09	L748538-9	<0.030	<0.000050	<0.0050	6.10	0.237	<0.000010	0.00231	0.00127	<0.30	1.750	0.00207	2.42	<0.000010	<2.0	0.352	<0.00010	<0.00010	<0.010	0.000444	<0.0010	0.0465																					
	28-Apr-09	L759011-2	<0.030	<0.000050	<0.0050	5.71	0.182	<0.000010	0.00204	0.00171	<0.30	1.630	0.00304	2.39	<0.000010	<2.0	0.313	<0.00010	<0.00010	<0.010	0.000437	<0.0010	0.0186																					
	27-May-09	L771080-7	<0.030	<0.000050	<0.0050	4.00	0.270	<0.000010	0.00202	0.00270	<0.30	1.140	0.00207	1.83	<0.000010	<2.0	0.237	<0.00010	<0.00010	<0.010	0.000029	<0.0010	0.1500																					
	8-Jun-09	L776835-8	<0.030	<0.000050	<0.0050	2.74	0.249	<0.000010	0.00143	0.00169	<0.30	1.050	0.00118	1.24	<0.000010	<2.0	0.182	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0832																					
	13-Jun-09	L778602-7	<0.030	<0.000050	<0.0050	2.19	0.278	<0.000010	0.000837	0.00213	<0.30	0.968	0.00102	1.39	<0.000010	<2.0	0.143	<0.00010	<0.00010	<0.010	0.000015	<0.0010	0.1180																					
	19-Jun-09	L781603-3	<0.030	<0.000050	<0.0050	2.10	0.243	<0.000010	0.00103	0.00178	<0.30	0.865	0.00097	1.36	<0.000010	<2.0	0.142	<0.00010	<0.00010	<0.010	0.000017	<0.0010	0.0757																					
	19-Jun-09	L781603-4	<0.030	<0.000050	<0.0050	2.17	0.246	<0.000010	0.00103	0.00193	<0.30	0.873	0.00098	1.37	<0.000010	<2.0	0.145	<0.00010	<0.00010	<0.010	0.000016	<0.0010	0.0970																					
	5-Jul-09	L788462-4	0.123	<0.000050	<0.0050	1.77	0.148	<0.000010	0.00119	0.00127	<0.30	0.813	0.00098	1.12	<0.000010	<2.0	0.109	<0.00010	<0.00010	<0.010	0.000012	<0.0010	0.0600																					

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Sulphurets Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals																				
			Molybdenum						Selenium			Sodium			Strontium		Thallium		Titanium				
			Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	(Mo)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	(Se)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	(Na)	(Sr)	(Tl)	Tin (Sn) (mg/L)	(Ti)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
	29-Mar-09	L749298-6	<0.030	<0.000050	<0.0050	5.86	0.194	<0.000010	0.00219	0.00172	<0.30	1.630	0.00224	2.43	<0.000010	3.4	0.362	<0.00010	<0.00010	<0.010	0.000398	<0.0010	0.0234
	28-Apr-09	L759011-3	<0.030	<0.000050	<0.0050	5.79	0.212	<0.000010	0.00178	0.00157	<0.30	0.631	0.00027	2.00	<0.000010	<2.0	0.326	<0.00010	<0.00010	<0.010	0.000093	<0.0010	0.0245
	2-Jul-09	L787346-24	<0.030	<0.000050	<0.0050	3.10	0.229	<0.000010	0.00140	0.00168	<0.30	0.815	0.00124	1.43	<0.000010	<2.0	0.196	<0.00010	<0.00010	<0.010	0.000075	<0.0010	0.0371
	22-Aug-09	L809879-18	<0.030	0.000083	<0.0050	1.11	0.0649	<0.000010	0.000951	<0.00050	<0.30	0.650	0.00057	0.73	<0.000010	<2.0	0.089	<0.00010	<0.00010	<0.010	0.000019	<0.0010	0.0042
	26-Nov-09	L844495-23	<0.030	<0.000050	<0.0050	4.78	0.214	<0.000010	0.00216	0.00173	<0.30	1.350	0.00173	2.18	<0.000010	2.3	0.327	<0.00010	0.00019	<0.010	0.000299	<0.0010	0.0250
	17-Jan-10	L855505-9	<0.030	<0.000050	<0.0050	4.90	0.183	<0.000010	0.00217	0.00151	<0.30	1.410	0.00194	2.34	<0.000010	2.7	0.339	<0.00010	<0.00010	<0.010	0.000350	<0.0010	0.0235
	3-Mar-10	L866873-9	<0.030	<0.000050	<0.0050	5.06	0.189	<0.000010	0.00212	0.00123	<0.30	1.310	0.00176	2.30	<0.000010	2.8	0.356	<0.00010	<0.00010	<0.010	0.000348	<0.0010	0.0158
	28-Mar-10	L873293-11	<0.030	<0.000050	<0.0050	4.44	0.183	<0.000010	0.00183	0.00110	<0.30	1.180	0.00166	2.26	<0.000010	2.5	0.306	<0.00010	<0.00010	<0.010	0.000308	<0.0010	0.0158
	1-May-10	L884476-15	<0.030	<0.000050	<0.0050	4.81	0.206	<0.000010	0.00235	0.00132	<0.30	1.230	0.00260	1.83	<0.000010	2.0	0.312	<0.00010	<0.00010	<0.010	0.000311	<0.0010	0.0200
	26-May-10	L891484-12	<0.030	<0.000050	<0.0050	2.44	0.133	<0.000010	0.00159	0.00068	<0.30	0.840	0.00126	1.29	<0.000010	<2.0	0.177	<0.00010	<0.00010	<0.010	0.000070	<0.0010	0.0266
	5-Jul-10	L905787-25	<0.030	<0.000050	<0.0050	2.21	0.146	<0.000010	0.00138	0.00057	<0.30	0.830	0.00087	1.16	<0.000010	<2.0	0.157	<0.00010	<0.00010	<0.010	0.000043	<0.0010	0.0086
	3-Aug-10	L916942-12	<0.030	<0.000050	<0.0050	0.87	0.0217	<0.000010	0.000802	<0.00050	<0.30	0.720	0.00063	0.64	<0.000010	<2.0	0.077	<0.00010	<0.00010	<0.010	0.000026	<0.0010	<0.0010
	27-Aug-10	L926457-25	<0.030	<0.000050	<0.0050	1.47	0.0994	<0.000010	0.00107	<0.00050	<0.30	0.707	0.00071	0.91	<0.000010	<2.0	0.111	<0.00010	<0.00010	<0.010	0.000031	<0.0010	0.0113
	28-Sep-10	L938295-12	0.048	<0.000050	<0.0050	1.65	0.0727	<0.000010	0.00147	<0.00050	<0.30	1.350	0.00089	1.12	<0.000010	<2.0	0.129	<0.00010	<0.00010	<0.010	0.000116	<0.0010	<0.0030
	21-Oct-10	L946803-2	<0.030	<0.000050	<0.0050	4.12	0.202	<0.000010	0.00214	0.00224	<0.30	1.300	0.00185	1.87	<0.000010	<2.0	0.260	<0.00010	<0.00010	<0.010	0.000171	<0.0010	0.0165
	15-Nov-10	L955725-24	<0.030	<0.000050	<0.0050	4.31	0.184	<0.000010	0.00206	0.00168	<0.30	1.320	0.00182	2.17	<0.000010	<2.0	0.277	<0.00010	<0.00010	<0.010	0.000274	<0.0010	0.0164
	1-Feb-11	L975149-4	<0.030	<0.000050	<0.0050	5.72	0.239	<0.000010	0.00230	0.00165	<0.30	1.640	0.00192	2.54	<0.000010	3.1	0.389	<0.00010	<0.00010	<0.010	0.000330	<0.0010	0.0380
	5-Mar-11	L985810-4	<0.030	<0.000050	<0.0050	5.76	0.191	<0.000010	0.00220	0.00134	<0.30	1.770	0.00189	2.31	<0.000010	3.2	0.385	<0.00010	<0.00010	<0.010	0.000363	<0.0010	0.0258
	31-Mar-11	L991777-5	<0.030	<0.000050	<0.0050	5.54	0.191	<0.000010	0.00201	0.00118	<0.30	1.380	0.00168	2.40	<0.000010	3.0	0.365	<0.00010	<0.00010	<0.010	0.000307	<0.0010	0.0216
	2-May-11	L1002688-10	<0.030	<0.000050	<0.0050	6.10	0.177	<0.000010	0.00198	0.00144	<0.30	1.480	0.00213	2.41	<0.000010	2.5	0.388	<0.00010	<0.00010	<0.010	0.000333	<0.0010	0.0126
	4-Jun-11	L1014013-10	<0.030	<0.000050	<0.0050	1.99	0.119	<0.000010	0.00175	0.00070	<0.30	0.913	0.00098	1.18	<0.000010	<2.0	0.145	<0.00010	<0.00010	<0.010	0.000052	<0.0010	0.0079
	4-Jul-11	L1028827-6	<0.030	<0.000050	0.0009	2.03	0.154	<0.000010	0.00131	0.00072	<0.30	0.805	0.00086	1.14	<0.000010	<2.0	0.142	<0.00010	<0.00010	<0.010	0.000050	<0.0010	0.0077
	1-Aug-11	L1039955-14	<0.030	<0.000050	0.0005	1.49	0.0984	&															

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Physical Parameter						Anions and Nutrients						Alkalinity, Total (as CaCO <sub>3</sub> ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)
			Colour, True (colour unit)	Conductivity (μS/cm)	Hardness (as CaCO <sub>3</sub> ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as CaCO <sub>3</sub> ) (mg/L)	Bicarbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Carbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Hydroxide (as CaCO <sub>3</sub> ) (mg/L)				
SNO1	25-Jun-08	L650936-9	<5.0	123	31.9	7.63	25.9	75	14.90	1.7	31.5	<2.0	<2.0	31.5	<0.0050	<0.050	
	9-Sep-08	L682706-4	<5.0	158	63.2	7.88	11.4	94	14.20	2.7	35.7	<2.0	<2.0	35.7	<0.0050	<0.050	
	6-Dec-08	L717413-24	<5.0	174	76.3	7.87	3.5	103	2.17	1.2	63.4	<2.0	<2.0	63.4	0.0121	<0.050	
	29-Mar-09	L749298-2	<5.0	213	99.8	7.93	<3.0	130	1.57	3.8	71.2	<2.0	<2.0	71.2	0.0093	<0.050	
	29-Mar-09	L749298-1	<5.0	212	99.7	7.72	<3.0	129	1.68	4.2	70.9	<2.0	<2.0	70.9	0.0128	<0.050	
	3-Jul-09	L787346-12	<5.0	107	51.1	7.82	10.5	67	15.50	2.9	28.2	<2.0	<2.0	28.2	<0.0050	<0.050	
	23-Aug-09	L809851-6	<5.0	114	52.3	7.89	151.0	82	52.30	1.5	29.3	<2.0	<2.0	29.3	<0.0050	<0.050	
	25-Nov-09	L844495-13	<5.0	170	83.5	7.91	<3.0	108	1.43	1.4	48.6	<2.0	<2.0	48.6	0.0058	<0.050	
SNO2	25-Jun-08	L650936-10	<5.0	91.6	39.9	7.58	10.9	63	5.99	1.8	25.2	<2.0	<2.0	25.2	<0.0050	<0.050	
	9-Sep-08	L682706-3	<5.0	148	61.8	7.81	4.4	85	5.42	2.8	36.0	<2.0	<2.0	36.0	0.0086	<0.050	
	6-Dec-08	L717413-26	<5.0	145	64.8	7.84	<3.0	75	1.06	1.1	43.9	<2.0	<2.0	43.9	<0.0050	<0.050	
	28-Mar-09	L748538-14	<5.0	184	81.4	7.90	<3.0	108	0.43	2.2	62.7	<2.0	<2.0	62.7	<0.0050	<0.050	
	3-Jul-09	L787346-13	<5.0	89.9	43.4	7.82	12.0	51	7.98	2.7	25.9	<2.0	<2.0	25.9	<0.0050	<0.050	
	23-Aug-09	L809851-11	5.3	126	57	7.87	207	76	36.80	1.7	30.9	<2.0	<2.0	30.9	<0.0050	<0.050	
	25-Nov-09	L844495-14	<5.0	151	74.6	7.86	4.4	86	0.61	1.3	42.5	<2.0	<2.0	42.5	<0.0050	<0.050	
	28-Mar-10	L873293-5	6.6	135	62.2	7.81	17.7	79	7.66	2.3	42.9	<2.0	<2.0	42.9	0.0075	<0.050	
	5-Jul-10	L905787-10	<5.0	109	50.9	7.91	12.3	66	17.40	3.1	29.1	<2.0	<2.0	29.1	<0.0050	<0.050	
	27-Aug-10	L926457-10	<5.0	146	64.5	6.90	12.0	91	10.30	6.7	36.5	<2.0	<2.0	36.5	<0.0050	<0.050	
	15-Nov-10	L955725-10	6.6	136	58.6	7.88	4.1	73	1.34	2.5	39.9	<2.0	<2.0	39.9	<0.0050	<0.050	
	1-Apr-11	L991777-19	<5.0	185	77.9	7.66	<3.0	111	1.59	5.6	44.1	<2.0	<2.0	44.1	0.0074	<0.050	
	3-Jul-11	L1026874-10	<5.0	112	49.5	7.61	12.0	73	9.83	1.3	29.1	<2.0	<2.0	29.1	0.0057	<0.050	
	5-Sep-11	L1054953-18	<5.0	117	51.1	8.06	22.8	73	17.7	4.7	30.5	<2.0	<2.0	30.5	<0.0050	<0.050	
	28-Nov-11	L1091310-24	<5.0	169	75.8	8.02	<3.0	93	1.46	2.1	48.7	<2.0	<2.0	48.7	<0.0050	<0.050	
	28-Nov-11	L1091310-22	<5.0	168	69.3	8.02	<3.0	95	1.26	2.1	48.0	<2.0	<2.0	48.0	<0.0050	<0.050	
STE1	25-Jun-08	L650936-7	6.0	72.9	31.8	7.09	<3.0	51	4.30	2.2	15.5	<2.0	<2.0	15.5	<0.0050	<0.050	
	9-Sep-08	L682706-17	<5.0	144	58.2	7.63	25.4	82	7.05	2.4	23.8	<2.0	<2.0	23.8	<0.0050	<0.050	
	6-Dec-08	L717413-3	<5.0	127	54	7.38	<3.0	74	0.94	1.3	23.9	<2.0	<2.0	23.9	<0.0050	<0.050	
	2-Jul-09	L787346-7	8.6	61.5	28.9	6.60	8.5	34	4.76	4.5	14.8	<2.0	<2.0	14.8	<0.0050	<0.050	
	23-Aug-09	L809851-9	<5.0	116	51.6	7.85	7.3	78	13.3	1.4	20.0	<2.0	<2.0	20.0	<0.0050	<0.050	
	26-Nov-09	L844495-8	<5.0	129	62.6	7.54	<3.0	81	1.03	1.6	22.8	<2.0	<2.0	22.8	<0.0050	<0.050	
STE1A	26-May-10	L891484-4	<5.0	94.3	41.0	7.82	14.5	66	7.70	2.4	21.4	<2.0	<2.0	21.4	<0.0050	<0.050	
	5-Jul-10	L905787-5	-	-	61.8	-	-	-	-	-	-	-	-	-	-	-	
	3-Aug-10	L916942-4	<5.0	95.2	39.2	7.73	27.8	65	30.1	2.3	16.1	<1.0	<1.0	16.1	<0.0050	<0.050	
	27-Aug-10	L926457-5	<5.0	147	64.4	7.97	49.0	95	21.1	6.1	24.6	<2.0	<2.0	24.6	<0.0050	<0.050	
	28-Sep-10	L938295-4	<5.0	108	44.9	7.60	22.8	80	24.7	6.2	20.8	<2.0	<2.0	20.8	<0.0050	<0.050	
	15-Nov-10	L955725-5	<5.0	217	97.2	7.91	<3.0	123	0.80	2.3	36.9	<2.0	<2.0	36.9	<0.0050	<0.050	
	15-Dec-10	L963832-4	<5.0	250	110	8.05	<3.0	153	0.43	4.7	40.3	<2.0	<2.0	40.3	<0.0050	<0.050	
	5-Mar-11	L985810-12	<5.0	284	127	7.34	<3.0	188	0.40	5.7	44.6	<2.0	<2.0	44.6	<0.0050	<0.050	
	5-Mar-11	L985810-9	<5.0	286	130	8.14	<3.0	194	0.52	3.8	44.3	<2.0	<2.0	44.3	<0.0050	<0.050	
	31-Mar-11	L991777-16	<5.0	295	131	7.72	<3.0	192									

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Physical Parameter							Anions and Nutrients						
			Colour, True (colour unit)	Conductivity (µS/cm)	Hardness (as CaCO <sub>3</sub> ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Bicarbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Carbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Hydroxide (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Total (as CaCO <sub>3</sub> ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)
STE2	28-Nov-11	L1091310-18	<5.0	253	103	7.96	<3.0	154	0.46	2.3	41.2	<2.0	<2.0	41.2	<0.0050	<0.050
	28-May-08	L635965-1	20.7	15	49.4	7.85	39.0	25	14.2	3.4	11.6	<2.0	<2.0	11.6	<0.0050	<0.050
	5-Jun-08	L639617-3	28.3	13.6	67.7	7.53	47.0	4	3.52	1.7	14.5	<2.0	<2.0	14.5	<0.0050	<0.050
	11-Jun-08	L642688-13	28.3	9.9	74.1	7.57	52.0	4	2.73	1.3	16.1	<2.0	<2.0	16.1	<0.0050	<0.050
	25-Jun-08	L650936-8	7.3	71.9	30.0	7.38	5.9	42	4.18	1.8	15.9	<2.0	<2.0	15.9	<0.0050	<0.050
	21-Aug-08	50155637	5.0	-	44.3	-	-	72	9.00	-	26.0	<0.5	-	22.0	<0.05	-
	9-Sep-08	L682706-18	<5.0	156	65.0	7.67	13.4	91	4.92	2.4	26.8	<2.0	<2.0	26.8	<0.0050	<0.050
	17-Sep-08	L686098-6	<5.0	130	57.0	7.94	<3.0	79	5.28	4.1	23.6	<2.0	<2.0	23.6	<0.0050	<0.050
	17-Sep-08	L686098-7	<5.0	130	59.5	7.92	<3.0	78	5.22	4.0	24.2	<2.0	<2.0	24.2	<0.0050	<0.050
	25-Sep-08	L688714-6	<5.0	178	73.8	7.71	<3.0	106	0.66	1.4	31.1	<2.0	<2.0	31.1	<0.0050	<0.050
	2-Oct-08	L691752-3	8.1	103	42.6	7.46	5.1	69	7.49	1.4	20.4	<2.0	<2.0	20.4	<0.0050	<0.050
	9-Oct-08	L694973-6	6.0	130	53.2	7.73	<3.0	76	0.90	2.2	25.6	<2.0	<2.0	25.6	<0.0050	<0.050
	29-Oct-08	L703445-3	<5.0	136	57.9	7.74	<3.0	80	0.83	<1.0	26.6	<2.0	<2.0	26.6	<0.0050	<0.050
	28-Apr-09	L759011-6	9.5	138	55.6	7.92	<3.0	92	1.02	3.3	29.4	<2.0	<2.0	29.4	<0.0050	<0.050
	8-Jun-09	L776835-2	13.5	48.4	20.7	7.62	41.5	32	17.9	1.3	11.2	<2.0	<2.0	11.2	<0.0050	<0.050
	13-Jun-09	L778602-1	9.6	65.2	27.4	7.56	36.7	55	39.5	1.4	13.5	<2.0	<2.0	13.5	<0.0050	<0.050
	19-Jun-09	L781603-9	8.3	66.4	28.2	7.56	12.5	44	9.78	1.5	14.8	<2.0	<2.0	14.8	<0.0050	<0.050
	5-Jul-09	L788462-7	6.1	59.9	24	7.88	9.8	38	7.77	2.4	12.9	<2.0	<2.0	12.9	<0.0050	<0.050
	4-Aug-09	L801967-11	<5.0	114	49.8	7.79	24.0	84	39.6	1.4	19.1	<2.0	<2.0	19.1	<0.0050	<0.050
	23-Aug-09	L809851-2	<5.0	136	62.6	8.12	3.8	86	9.40	<1.0	25.3	<2.0	<2.0	25.3	<0.0050	<0.050
	13-Sep-09	L817873-3	<5.0	109	45.7	7.86	27.8	90	74.0	2.1	28.2	<1.0	<1.0	28.2	<0.0050	<0.050
	27-Sep-09	L824535-4	6.3	103	43.1	7.65	<3.0	56	2.62	2.3	20.6	<2.0	<2.0	20.6	<0.0050	<0.050
	31-Oct-09	L837185-4	<5.0	138	57.1	7.72	<3.0	87	0.72	1.2	24.7	<2.0	<2.0	24.7	<0.0050	<0.050
	25-Nov-09	L844495-9	<5.0	153	73.0	7.72	<3.0	92	0.68	1.4	26.7	<2.0	<2.0	26.7	<0.0050	<0.050
	26-May-10	L891484-5	15.3	53.5	23.0	7.72	6.5	45	3.25	2.4	13.0	<2.0	<2.0	13.0	<0.0050	<0.050
	5-Jul-10	L905787-7	<5.0	93.1	41.3	7.91	<3.0	57	3.11	2.7	19.0	<2.0	<2.0	19.0	<0.0050	<0.050
	3-Aug-10	L916942-5	<5.0	113	47	7.74	9.3	83	14.3	2.3	22.6	<1.0	<1.0	22.6	<0.0050	<0.050
	27-Aug-10	L926457-7	<5.0	149	62.0	7.99	5.0	99	11.9	4.2	29.8	<1.0	<1.0	29.8	<0.0050	<0.050
	28-Sep-10	L938295-5	21.8	65	27.5	7.42	19.8	59	13.9	5.3	14.9	<2.0	<2.0	14.9	<0.0050	<0.050
	15-Nov-10	L955725-7	9.0	135	57.1	7.81	<3.0	79	0.96	2.3	27.4	<2.0	<2.0	27.4	<0.0050	<0.050
	5-Mar-11	L985810-10	<5.0	209	94.5	8.14	<3.0	135	0.37	3.7	38.3	<2.0	<2.0	38.3	<0.0050	<0.050
	31-Mar-11	L991777-17	<5.0	205	86.6	7.67	<3.0	127	0.32	4.5	30.9	<2.0	<2.0	30.9	<0.0050	<0.050
	4-Jun-11	L1014013-5	9.1	68.8	28.4	7.73	20.7	56	19.2	3.2	14.4	<2.0	<2.0	14.4	<0.0050	<0.050
	4-Jul-11	L1028827-12	<5.0	107	44	7.86	<3.0	77	2.36	3.0	21.0	<2.0	<2.0	21.0	<0.0050	<0.050
	4-Jul-11	L1028827-14	<5.0	106	46.2	7.84	<3.0	77	2.19	3.1	20.7	<2.0	<2.0	20.7	<0.0050	<0.050
	1-Aug-11	L1039955-5	<5.0	132	55.7	8.28	7.3	90	16.9	2.3	24.6	<2.0	<2.0	24.6	<0.0050	<0.050
	4-Sep-11	L1054465-10	8.3	94.2	40.4	8.04	14.9	80	34.1	4.2	18.1	<2.0	<2.0	18.1	<0.0050	<0.050
	30-Sep-11	L1067383-21	17.3	95.4	40.5	7.91	<3.0	66	1.53	3.1	20.4	<2.0	<2.0	20.4	<0.0050	<0.050
	24-Oct-11	L1079029-2	8.9	126	54.1	7.81	<3.0	75	0.68	3.1	26.2	<2.0	<2.0	26.2	<0.0050	<0.050
STE3	17-Jan-10	L855505-10	<5.0													

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Physical Parameter						Anions and Nutrients						Alkalinity, Total (as CaCO <sub>3</sub> ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)
			Colour, True (colour unit)	Conductivity (μS/cm)	Hardness (as CaCO <sub>3</sub> ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as CaCO <sub>3</sub> ) (mg/L)	Bicarbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Carbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Hydroxide (as CaCO <sub>3</sub> ) (mg/L)				
TEC1	25-Jun-08	L650936-12	5.2	59.1	25.0	7.53	<3.0	38	0.84	1.5	16.8	<2.0	<2.0	16.8	<0.0050	<0.050	
	9-Sep-08	L682706-16	<5.0	92.0	39.2	7.69	<3.0	55	0.92	2.3	22.9	<2.0	<2.0	22.9	<0.0050	<0.050	
	6-Dec-08	L717413-5	<5.0	76.5	33.5	7.65	<3.0	36	0.44	<1.0	23.5	<2.0	<2.0	23.5	<0.0050	<0.050	
	28-Mar-09	L748538-3	<5.0	95.4	41.9	7.77	<3.0	66	0.33	2.0	28.3	<2.0	<2.0	28.3	<0.0050	<0.050	
	2-Jul-09	L787346-10	5.3	57.7	27.3	7.96	<3.0	36	1.89	2.1	16.4	<2.0	<2.0	16.4	<0.0050	<0.050	
	23-Aug-09	L809851-3	<5.0	88.7	40.9	7.99	<3.0	59	1.69	1.0	22.2	<2.0	<2.0	22.2	<0.0050	<0.050	
	25-Nov-09	L844495-11	<5.0	77.2	38.1	7.36	<3.0	47	0.33	1.6	21.0	<2.0	<2.0	21.0	<0.0050	<0.050	
	17-Jan-10	L855505-4	<5.0	89.6	40.0	7.83	<3.0	57	0.50	2.6	26.3	<2.0	<2.0	26.3	<0.0050	<0.050	
	3-Mar-10	L866873-4	<5.0	95.4	42.3	7.94	<3.0	58	0.52	2.6	27.7	<2.0	<2.0	27.7	<0.0050	<0.050	
	28-Mar-10	L873293-3	5.5	82.0	37.6	7.74	<3.0	51	1.12	2.1	25.3	<2.0	<2.0	25.3	<0.0050	<0.050	
	2-May-10	L884476-12	12.3	56.0	26.9	7.99	7.5	41	1.60	2.8	18.3	<2.0	<2.0	18.3	<0.0050	<0.050	
	26-May-10	L891484-17	10.1	47.7	20.8	7.99	4.0	32	1.62	3.2	14.2	<2.0	<2.0	14.2	<0.0050	<0.050	
	5-Jul-10	L905787-8	5.5	69.0	30.7	7.91	<3.0	42	0.89	2.7	19.8	<2.0	<2.0	19.8	<0.0050	<0.050	
	3-Aug-10	L916942-17	<5.0	84.2	36.1	7.70	4.3	58	4.72	2.6	21.3	<2.0	<2.0	21.3	<0.0050	<0.050	
	27-Aug-10	L926457-8	<5.0	101	43.5	8.04	5.0	53	2.87	3.8	26.7	<2.0	<2.0	26.7	<0.0050	<0.050	
	28-Sep-10	L938295-17	13.3	60.3	27.4	7.56	9.3	39	4.41	4.1	18.6	<2.0	<2.0	18.6	<0.0050	<0.050	
	21-Oct-10	L946803-6	10.9	65	28.4	7.99	<3.0	42	0.89	3.6	19.1	<2.0	<2.0	19.1	<0.0050	<0.050	
	15-Nov-10	L955725-8	7.2	74	31.5	7.72	<3.0	46	0.62	2.2	22.0	<2.0	<2.0	22.0	<0.0050	<0.050	
	15-Dec-10	L963831-7	<5.0	89.4	37.7	7.87	<3.0	38	0.34	4.5	25.6	<2.0	<2.0	25.6	<0.0050	<0.050	
	5-Mar-11	L985810-11	<5.0	96	42.3	8.19	<3.0	66	0.30	2.7	26.8	<2.0	<2.0	26.8	<0.0050	<0.050	
	31-Mar-11	L991777-18	<5.0	102	43	6.70	11.3	62	1.10	5.6	23.7	<2.0	<2.0	23.7	<0.0050	<0.050	
	1-May-11	L1002688-5	5.2	89.5	40.6	7.91	<3.0	53	0.49	3.4	30.2	<1.0	<1.0	30.2	<0.0050	<0.050	
	4-Jun-11	L1014013-6	9.2	43.8	18.9	7.73	11.3	30	5.72	1.5	13.5	<2.0	<2.0	13.5	<0.0050	<0.050	
	4-Jul-11	L1028827-13	<5.0	73.9	30.9	7.86	<3.0	48	0.72	1.4	19.8	<2.0	<2.0	19.8	<0.0050	<0.050	
	1-Aug-11	L1039955-6	<5.0	86.2	36.2	8.39	<3.0	54	0.92	<1.0	23.6	<1.0	<1.0	23.6	<0.0050	<0.050	
	5-Sep-11	L1054953-16	7.1	71.9	31.2	8.15	11.5	44	1.62	3.6	20.1	<2.0	<2.0	20.1	<0.0050	<0.050	
	30-Sep-11	L1067383-22	11.0	72.1	31.7	7.90	15.3	51	21.3	3.1	21.0	<2.0	<2.0	21.0	<0.0050	<0.050	
	24-Oct-11	L1079029-3	7.6	72.2	31.5	7.83	6.2	45	8.85	2.8	20.8	<2.0	<2.0	20.8	0.0171	<0.050	
	28-Nov-11	L1091310-23	<5.0	88.7	38.2	7.82	<3.0	50	3.24	2.2	26.2	<2.0	<2.0	26.2	<0.0050	<0.050	
TEC1B	1-Aug-11	L1041095-5	<5.0	125	54.9	7.88	<3.0	73	0.76	1.9	35.2	<2.0	<2.0	35.2	0.0117	<0.050	
	4-Sep-11	L1054465-12	9.0	97.9	44.1	8.07	7.6	61	6.64	4.3	29.3	<2.0	<2.0	29.3	<0.0050	<0.050	
	30-Sep-11	L1067383-23	9.7	107	48	7.92	8.0	67	12.8	3.2	33.5	<2.0	<2.0	33.5	<0.0050	<0.050	
	23-Oct-11	L1079029-4	6.6	110	49.1	7.88	<3.0	65	5.51	3.0	33.9	<2.0	<2.0	33.9	0.0161	<0.050	
	28-Nov-11	L1091310-25	<5.0	148	67.9	8.02	<3.0	77	1.41	2.0	46.3	<2.0	<2.0	46.3	<0.0050	<0.050	
TEC2	28-May-08	L635965-11	23.8	12.6	53.4	7.87	41.0	34	18.1	3.0	15.1	<2.0	<2.0	15.1	<0.0050	<0.050	
	5-Jun-08	L639617-4	29.5	12.9	68.4	7.64	47.0	16	12.0	1.6	18.0	<2.0	<2.0	18.0	<0.0050	<0.050	
	11-Jun-08	L642688-6	34.2	7.5	81.1	7.68	50.0	4	2.40	1.1	22.0	<2.0	<2.0	22.0	<0.0050	<0.050	
	25-Jun-08	L650936-11	5.5	84.1	35.7	7.53	3.4	59	3.01	1.6	20.7	<2.0	<2.0	20.7	<0.0050	<0.050	
	3-Jul-08	L652071-3	5.3	72.8	32.1	8.00	39.3	64	64.6	4.5	15.5	<2.0	<2.0	15.5	<0.0050	<0.050	
	25-Jul-08	L662220-4	<5.0	116	56.0	7.83	<3.0	64	1.63	1.4	27.2	<2.0	<2.0	27.2	<0.0050	<0.050	
	9-Sep-08	L682706-19	<5.0	1													

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Physical Parameter						Anions and Nutrients						Alkalinity, Total (as CaCO <sub>3</sub> ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)
			Colour, True (colour unit)	Conductivity (µS/cm)	Hardness (as CaCO <sub>3</sub> ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as CaCO <sub>3</sub> ) (mg/L)	Bicarbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Carbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Hydroxide (as CaCO <sub>3</sub> ) (mg/L)				
	28-Apr-09	L759011-7	<5.0	142	57.8	8.00	<3.0	90	0.93	3.3	43.8	<2.0	<2.0	43.8	0.0083	<0.050	
	27-May-09	L771080-6	12.6	60.5	26.1	6.81	16.1	44	7.80	3.9	20.6	<2.0	<2.0	20.6	<0.0050	<0.050	
	8-Jun-09	L776835-1	12.1	56.2	23.9	7.90	101	39	56.7	1.4	14.6	<2.0	<2.0	14.6	<0.0050	<0.050	
	13-Jun-09	L778602-4	8.6	68.5	27.5	7.67	28.2	49	20.3	1.2	17.6	<2.0	<2.0	17.6	<0.0050	<0.050	
	19-Jun-09	L781603-6	6.0	72.7	31.8	7.66	9.5	45	7.82	1.6	18.6	<2.0	<2.0	18.6	<0.0050	<0.050	
	2-Jul-09	L787346-11	5.9	81.3	38.8	7.83	4.5	51	2.91	2.9	23.8	<2.0	<2.0	23.8	<0.0050	<0.050	
	4-Aug-09	L801967-7	<5.0	118	53.4	7.94	16.5	68	12.1	1.3	26.5	<2.0	<2.0	26.5	<0.0050	<0.050	
	23-Aug-09	L809851-12	<5.0	139	64.9	7.94	9.8	85	5.61	1.5	34.0	<2.0	<2.0	34.0	0.0051	<0.050	
	13-Sep-09	L817873-4	<5.0	118	50.2	7.93	17.8	77	44.5	2.2	34.5	<1.0	<1.0	34.5	<0.0050	<0.050	
	27-Sep-09	L824535-5	<5.0	102	44.1	7.70	4.0	52	2.60	2.2	25.7	<2.0	<2.0	25.7	<0.0050	<0.050	
	31-Oct-09	L837185-5	<5.0	130	55.2	7.87	<3.0	79	0.88	1.1	32.7	<2.0	<2.0	32.7	<0.0050	<0.050	
	25-Nov-09	L844495-12	<5.0	144	72.3	7.84	<3.0	90	0.40	1.3	37.4	<2.0	<2.0	37.4	<0.0050	<0.050	
	17-Jan-10	L855505-5	<5.0	172	78.6	7.93	<3.0	106	0.31	3.0	47.5	<2.0	<2.0	47.5	<0.0050	<0.050	
	3-Mar-10	L866873-5	<5.0	172	75.7	7.99	<3.0	105	0.35	2.9	48.9	<2.0	<2.0	48.9	<0.0050	<0.050	
	28-Mar-10	L873293-4	<5.0	148	68.3	7.89	<3.0	85	0.46	2.1	42.9	<2.0	<2.0	42.9	<0.0050	<0.050	
	2-May-10	L884476-13	13.9	76.1	35.6	7.96	<3.0	58	1.59	3.2	23.6	<2.0	<2.0	23.6	<0.0050	<0.050	
	26-May-10	L891484-6	10.9	63.4	27.4	7.77	7.5	50	3.30	2.4	18.5	<2.0	<2.0	18.5	<0.0050	<0.050	
	5-Jul-10	L905787-9	<5.0	105	47.1	7.96	<3.0	61	0.76	2.8	26.4	<2.0	<2.0	26.4	<0.0050	<0.050	
	3-Aug-10	L916942-6	<5.0	120	50.3	7.88	6.3	79	9.93	2.3	29.5	<1.0	<1.0	29.5	<0.0050	<0.050	
	27-Aug-10	L926457-9	<5.0	156	68.6	8.04	3.0	93	5.44	4.2	37.9	<2.0	<2.0	37.9	<0.0050	<0.050	
	28-Sep-10	L938295-6	16.0	81.7	35.3	7.57	25.8	62	13.1	5.5	21.6	<2.0	<2.0	21.6	<0.0050	<0.050	
	21-Oct-10	L946802-4	10.9	104	46.9	8.04	<3.0	62	1.16	3.4	29.3	<2.0	<2.0	29.3	<0.0050	<0.050	
	15-Nov-10	L955725-9	6.0	130	55.5	7.91	<3.0	92	0.67	2.1	36.5	<2.0	<2.0	36.5	<0.0050	<0.050	
	15-Dec-10	L963832-5	<5.0	161	73.6	7.00	<3.0	93	0.24	8.6	45.6	<2.0	<2.0	45.6	<0.0050	<0.050	
	1-Apr-11	L991777-30	<5.0	194	86.1	7.79	<3.0	115	0.28	4.9	43.5	<2.0	<2.0	43.5	<0.0050	<0.050	
	1-May-11	L1002688-4	<5.0	142	68.6	8.00	<3.0	83	0.94	3.4	44.7	<1.0	<1.0	44.7	<0.0050	<0.050	
	4-Jun-11	L1014013-7	8.4	69	29.2	7.77	38.0	45	24.5	3.0	18.1	<2.0	<2.0	18.1	<0.0050	<0.050	
	3-Jul-11	L1026874-16	<5.0	109	47.5	7.67	<3.0	68	1.74	1.2	27.6	<2.0	<2.0	27.6	<0.0050	<0.050	
	1-Aug-11	L1039955-7	<5.0	134	56.7	8.29	<3.0	84	3.43	1.6	30.5	<2.0	<2.0	30.5	<0.0050	<0.050	
	5-Sep-11	L1054953-17	6.2	110	48.3	8.04	<3.0	66	3.68	4.9	28.0	<2.0	<2.0	28.0	0.0077	<0.050	
	30-Sep-11	L1067383-24	11.1	110	49.2	7.93	4.0	74	10.1	3.2	30.9	<2.0	<2.0	30.9	<0.0050	<0.050	
	24-Oct-11	L1079029-5	6.8	121	53.9	7.90	<3.0	89	4.04	2.8	33.5	<2.0	<2.0	33.5	<0.0050	<0.050	
	28-Nov-11	L1091310-27	<5.0	162	70.4	8.00	<3.0	88	1.24	2.1	44.6	<2.0	<2.0	44.6	<0.0050	<0.050	
UNK1	3-Jul-09	L787346-8	7.9	27.4	13.1	7.82	<3.0	18	0.51	2.4	11.0	<2.0	<2.0	11.0	<0.0050	<0.050	
	23-Aug-09	L809851-1	<5.0	110	28.2	9.82	<3.0	58	0.26	<1.0	17.0	30.5	<1.0	47.5	<0.0050	<0.050	
UNK2	1-Dec-09	L845898-1	6.7	60.0	26.6	7.97	5.4	40	0.76	1.0	19.2	<2.0	<2.0	19.2	<0.0050	<0.050	
	25-Jun-08	L650936-13	<5.0	217	101	8.00	<3.0	124	0.31	1.7	69.2	<2.0	<2.0	69.2	<0.0050	<0.050	
	21-Aug-08	50155641	5.0	-	108	-	<4	150	0.40	-	100.0	<0.5	-	83.0	<0.05	-	
	9-Sep-08	L682706-20	<5.0	271	121	8.15	<3.0	169	0.12	1.9	83.6	<2.0	<2.0	83.6	0.0140	<0.050	
	5-Dec-08	L717413-1	<5.0	242	115	8.20	<3.0	137	0.33	<1.0	82.9	<2.0	<2.0	82.9	<0.0050	<0.050	
	2-Jul-09	L787346-9	<5.0	205	107	7.96	4.0	122	1.20								

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Anions and Nutrients									Cyanides			Carbon	Total Metals		
			Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Ortho Phosphate (as P) (mg/L)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)	Total Organic Carbon (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)
SNO1	25-Jun-08	L650936-9	<0.50	0.032	0.0609	<0.0010	<0.050	0.110	-	0.0375	26.9	-	<0.0010	-	<0.50	0.264	<0.00010	0.00021
	9-Sep-08	L682706-4	<0.50	0.038	0.0191	<0.0010	<0.050	<0.05	<0.0010	0.0167	32.2	-	<0.0010	-	0.72	0.709	<0.00010	0.00030
	6-Dec-08	L717413-24	<0.50	0.040	0.2250	<0.0010	0.065	0.290	0.0026	0.0069	33.9	-	<0.0010	-	1.01	0.0277	<0.00010	0.00015
	29-Mar-09	L749298-2	<0.50	0.059	0.2650	0.0011	<0.050	0.300	0.0017	0.0043	37.3	-	<0.0010	-	0.89	0.0134	<0.00010	0.00013
	29-Mar-09	L749298-1	<0.50	0.059	0.2680	0.0012	<0.050	0.300	0.0013	0.0047	37.2	-	<0.0010	-	0.63	0.0172	<0.00010	0.00012
	3-Jul-09	L787346-12	<0.50	0.028	0.0451	<0.0010	<0.050	0.050	0.0015	0.0172	21.8	-	<0.0010	-	<0.50	0.648	<0.00010	0.00033
	23-Aug-09	L809851-6	<0.50	0.032	0.0201	0.0017	<0.050	0.052	0.0020	0.0780	26.1	-	<0.0010	-	0.85	1.80	0.00011	0.00066
	25-Nov-09	L844495-13	<0.50	0.047	0.2480	<0.0010	0.102	0.350	0.0011	0.0057	34.5	-	0.0015	-	1.02	0.0896	<0.00010	0.00018
SNO2	25-Jun-08	L650936-10	<0.50	0.027	0.0600	<0.0010	0.060	0.120	-	0.0138	17.4	-	<0.0010	-	1.34	0.286	<0.00010	0.00018
	9-Sep-08	L682706-3	<0.50	0.031	0.0217	<0.0010	<0.050	<0.05	<0.0010	0.0069	31.9	-	<0.0010	-	0.80	0.124	<0.00010	0.00017
	6-Dec-08	L717413-26	<0.50	0.030	0.2120	<0.0010	0.058	0.270	0.0023	0.0055	29.0	-	<0.0010	-	1.24	0.0261	<0.00010	0.00040
	28-Mar-09	L748538-14	<0.50	0.038	0.2430	<0.0010	0.067	0.310	0.0023	0.0034	34.5	-	<0.0010	-	0.77	0.0052	<0.00010	0.00011
	3-Jul-09	L787346-13	<0.50	0.022	0.0499	<0.0010	<0.050	0.060	0.0018	0.0137	17.0	-	0.0011	-	1.08	0.404	<0.00010	0.00023
	23-Aug-09	L809851-11	<0.50	0.028	0.0523	<0.0010	<0.050	<0.050	0.0011	0.1540	29.0	-	0.0019	-	0.52	0.715	<0.00010	0.00040
	25-Nov-09	L844495-14	<0.50	0.035	0.1920	<0.0010	0.088	0.280	<0.0010	0.0076	31.3	-	<0.0010	-	0.96	0.0351	<0.00010	0.00013
	28-Mar-10	L873293-5	<0.50	0.035	0.4820	<0.0010	0.086	0.568	0.0020	0.0236	22.8	-	0.0026	-	2.35	0.615	<0.00010	0.00042
	5-Jul-10	L905787-10	<0.50	0.025	0.0196	<0.0010	<0.050	0.050	<0.0010	0.0249	23.2	-	0.0014	-	1.12	0.735	<0.00010	0.00043
	27-Aug-10	L926457-10	<0.50	0.028	0.0537	<0.0010	<0.050	0.080	<0.0010	0.0196	33.3	-	<0.0010	-	<0.50	0.312	<0.00010	0.00032
	15-Nov-10	L955725-10	<0.50	0.036	0.2030	<0.0010	0.057	0.260	0.0013	0.0061	25.1	-	0.002	-	1.80	0.0633	<0.00010	0.00013
	1-Apr-11	L991777-19	<0.50	0.035	0.2380	<0.0010	0.122	0.360	<0.0010	0.0057	32.8	-	0.0015	-	1.16	0.0205	<0.00010	0.00013
	3-Jul-11	L1026874-10	<0.50	0.036	0.0211	<0.0010	0.088	0.100	<0.0010	0.0141	24.8	-	0.0014	-	1.11	0.347	<0.00010	0.00023
	5-Sep-11	L1054953-18	<0.50	0.034	0.0459	<0.0010	0.084	0.130	<0.0010	0.0225	24.7	-	0.002	-	1.66	0.847	<0.00010	0.00038
	28-Nov-11	L1091310-24	<0.50	0.043	0.1620	<0.0010	<0.050	0.130	0.0015	0.0069	31.0	-	0.0018	-	1.33	0.0729	<0.00010	0.00015
	28-Nov-11	L1091310-22	<0.50	0.043	0.1620	<0.0010	<0.050	0.130	0.0011	0.0065	31.0	-	0.0015	-	1.32	0.0652	<0.00010	0.00015
STE1	25-Jun-08	L650936-7	<0.50	0.022	<0.0050	<0.0010	0.070	0.070	-	0.0147	18.0	-	0.0014	-	1.47	0.311	<0.00010	0.00016
	9-Sep-08	L682706-17	<0.50	0.028	<0.0050	<0.0010	0.050	0.050	<0.0010	0.0235	38.6	-	<0.0010	-	1.00	0.103	<0.00010	0.00021
	6-Dec-08	L717413-3	<0.50	0.025	0.0241	<0.0010	<0.050	0.050	0.0011	0.0053	36.3	-	<0.0010	-	1.19	0.0245	<0.00010	<0.00010
	2-Jul-09	L787346-7	<0.50	<0.020	<0.0050	<0.0010	<0.050	<0.050	<0.0010	0.0086	14.7	-	<0.0010	-	1.34	0.324	<0.00010	0.00018
	23-Aug-09	L809851-9	<0.50	0.027	<0.0050	<0.0010	<0.050	<0.050	0.0015	0.0078	32.5	-	<0.0010	-	<0.50	0.609	<0.00010	0.00026
	26-Nov-09	L844495-8	<0.50	0.022	0.0327	<0.0010	<0.050	0.070	0.0014	0.0034	40.1	-	0.0018	-	1.09	0.0425	<0.00010	0.00011
STE1A	26-May-10	L891484-4	<0.50	0.033	0.0600	<0.0010	<0.050	0.090	0.0053	0.0288	21.6	-	0.0020	-	0.99	0.560	<0.00010	0.00038
	5-Jul-10	L905787-5	-	-	-	-	<0.050	-	-	-	-	-	<0.0010	-	0.52	0.245	0.00011	0.00014
	3-Aug-10	L916942-4	<0.50	0.021	<0.0050	<0.0010	<0.050	<0.050	0.0020	0.0377	26.5	-	<0.0010	-	0.82	1.47	<0.00010	0.00046
	27-Aug-10	L926457-5	<0.50	0.022	<0.0050	<0.0010	<0.050	<0.050	0.0017	0.0550	43.1	-	<0.0010	-	<0.50	0.46		

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Anions and Nutrients									Cyanides			Carbon	Total Metals		
			Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Ortho Phosphate (as P) (mg/L)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)	Total Organic Carbon (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)
STE2	28-Nov-11	L1091310-18	<0.50	0.047	0.0589	<0.0010	<0.050	<0.050	0.0045	0.0064	76.9	-	<0.0011	-	0.51	0.0210	<0.00010	0.00010
	28-May-08	L635965-1	<0.50	0.024	0.0800	<0.0010	0.050	0.130	-	0.0330	10.1	-	0.0035	-	4.07	0.775	<0.00010	0.00040
	5-Jun-08	L639617-3	<0.50	0.021	0.0300	<0.0010	<0.050	0.060	-	0.0123	15.1	-	-	-	2.66	0.256	<0.00010	0.00017
	11-Jun-08	L642688-13	<0.50	0.023	0.0134	<0.0010	<0.050	<0.05	-	0.0073	16.0	-	0.0022	-	2.18	0.0936	<0.00010	<0.00010
	25-Jun-08	L650936-8	<0.50	0.021	<0.0050	<0.0010	0.060	0.060	-	0.0137	17.0	-	<0.0010	-	1.74	0.246	<0.00010	0.00021
	21-Aug-08	50155637	<0.5	-	0.0120	0.0030	<0.02	<0.02	0.0070	-	31.0	-	-	-	1.20	0.0569	0.00006	0.00013
	9-Sep-08	L682706-18	<0.50	0.030	<0.0050	<0.0010	<0.050	<0.05	<0.0010	0.0160	41.4	-	<0.0010	-	0.75	0.0491	<0.00010	<0.00010
	17-Sep-08	L686098-6	<0.50	0.025	<0.0050	<0.0010	<0.050	<0.05	0.0016	0.0054	35.9	-	<0.0010	-	0.54	0.127	<0.00010	0.00014
	17-Sep-08	L686098-7	<0.50	0.026	<0.0050	<0.0010	<0.050	<0.05	0.0016	0.0059	36.0	-	<0.0010	-	0.55	0.302	<0.00010	0.00014
	25-Sep-08	L688714-6	<0.50	0.036	<0.0050	<0.0010	<0.050	<0.05	0.0013	0.0033	50.6	-	<0.0010	-	0.78	0.0257	<0.00010	<0.00010
	2-Oct-08	L691752-3	<0.50	<0.020	<0.0050	<0.0010	<0.050	<0.05	0.0019	0.0116	26.2	-	0.0021	-	1.41	0.334	<0.00010	0.00016
	9-Oct-08	L694973-6	<0.50	0.028	0.0081	<0.0010	0.072	0.080	0.0014	0.0038	34.6	-	<0.0010	-	1.65	0.0543	<0.00010	<0.00010
	29-Oct-08	L703445-3	<0.50	0.029	0.0191	<0.0010	<0.050	<0.05	0.0015	0.0055	38.3	-	0.0016	-	1.40	0.0392	<0.00010	<0.00010
	28-Apr-09	L759011-6	<0.50	0.035	0.5040	<0.0010	0.108	0.612	0.0018	0.0059	32.6	-	0.002	-	2.24	0.0560	<0.00010	0.00010
	8-Jun-09	L776835-2	<0.50	<0.020	0.0380	<0.0010	0.079	0.117	0.0023	0.0393	9.7	-	0.0026	-	2.87	1.33	<0.00010	0.00047
	13-Jun-09	L778602-1	<0.50	0.021	0.0217	<0.0010	0.077	0.099	0.0023	0.0432	14.3	-	0.0021	-	2.54	2.19	<0.00010	0.00078
	19-Jun-09	L781603-9	<0.50	<0.020	0.0130	<0.0010	<0.050	0.050	0.0023	0.0150	14.5	-	<0.0010	-	1.61	0.544	<0.00010	0.00025
	5-Jul-09	L788462-7	<0.50	<0.020	<0.0050	<0.0010	0.060	0.060	0.0017	0.0106	12.9	-	0.0017	-	1.23	0.578	<0.00010	0.00024
	4-Aug-09	L801967-11	<0.50	0.022	0.0053	<0.0010	0.085	0.090	0.0021	0.0260	30.1	-	<0.0010	-	0.59	1.62	0.00011	0.00053
	23-Aug-09	L809851-2	<0.50	0.028	<0.0050	<0.0010	<0.050	<0.050	0.0018	0.0080	37.8	-	<0.0010	-	0.64	0.475	<0.00010	0.00018
	13-Sep-09	L817873-3	<0.50	0.028	<0.0050	<0.0010	0.060	0.060	0.0019	0.0440	28.1	<0.0010	0.0013	<0.50	1.38	2.26	0.00014	0.00112
	27-Sep-09	L824535-4	<0.50	0.022	0.0160	<0.0010	<0.050	<0.050	0.0020	0.0038	26.3	<0.0010	0.0029	<0.50	2.07	0.127	<0.00010	0.00013
	31-Oct-09	L837185-4	<0.50	0.024	0.0212	<0.0010	<0.050	<0.050	0.0011	0.0038	37.5	<0.0010	0.0026	<0.50	1.92	0.0896	<0.00010	0.00011
	25-Nov-09	L844495-9	<0.50	0.026	0.0413	<0.0010	0.059	0.100	<0.0010	0.0031	47.2	<0.0020	0.0020	<0.50	1.35	0.0653	<0.00010	0.00010
	26-May-10	L891484-5	<0.50	0.021	0.0412	<0.0010	0.079	0.120	0.0016	0.0111	10.2	<0.0010	0.0048	<0.50	3.18	0.286	<0.00010	0.00023
	5-Jul-10	L905787-7	<0.50	<0.020	<0.0050	<0.0010	<0.050	<0.050	<0.0010	0.0059	22.7	<0.0010	0.0017	<0.50	1.24	0.180	<0.00010	0.00011
	3-Aug-10	L916942-5	<0.50	0.026	<0.0050	<0.0010	<0.050	<0.050	0.0038	0.0190	29.9	<0.0011	<0.0010	4.2	0.60	0.499	<0.00010	0.00021
	27-Aug-10	L926457-7	<0.50	0.025	<0.0050	<0.0010	<0.050	<0.050	<0.0010	0.0107	41.4	<0.0010	0.0011	0.62	<0.50	0.323	<0.00010	0.00021
	28-Sep-10	L938295-5	<0.50	<0.020	0.0245	<0.0010	0.076	0.100	0.0025	0.0309	14.4	<0.0010	0.0056	0.62	4.22	0.681	<0.00010	0.00036
	15-Nov-10	L955725-7	<0.50	0.032	0.0240	<0.0010	<0.050	0.070	0.0011	0.0036	35.7	<0.0010	0.0026	<0.50	2.03	0.0427	<0.00010	<0.00010
	5-Mar-11	L985810-10	<0.50	0.037	0.0609	<0.0010	<0.050	0.076	<0.0010	0.0028	61.4	-	<0.0010	-	0.95	0.0103	<0.00010	<0.00010
	31-Mar-11	L991777-17	<0.50	0.034	0.0818	<0.0010	0.088	0.170	0.0011	0.9600	57.9	<0.0010	0.0014	<0.50	1.47	0.0108	<0.00010	<0.00010
	4-Jun-11	L1014013-5	<0.50	0.024	0.0193	<0.0010	0.141</											

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Anions and Nutrients									Cyanides			Carbon	Total Metals		
			Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Ortho Phosphate (as P) (mg/L)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)	Total Organic Carbon (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)
TEC1	25-Jun-08	L650936-12	<0.50	<0.020	0.0056	<0.0010	0.064	0.070	-	0.0065	9.5	-	<0.0010	-	1.58	0.0518	<0.00010	<0.00010
	9-Sep-08	L682706-16	<0.50	0.027	<0.0050	<0.0010	<0.050	<0.05	<0.0010	0.0044	17.6	-	<0.0010	-	1.00	0.0593	<0.00010	<0.00010
	6-Dec-08	L717413-5	<0.50	<0.020	0.0447	<0.0010	<0.050	0.080	<0.0010	0.0030	14.3	-	<0.0010	-	-	0.0240	<0.00010	<0.00010
	28-Mar-09	L748538-3	<0.50	<0.020	0.0643	<0.0010	<0.050	0.100	<0.0010	0.0024	17.8	-	<0.0010	-	1.16	0.0075	<0.00010	<0.00010
	2-Jul-09	L787346-10	<0.50	<0.020	0.0053	<0.0010	<0.050	<0.050	<0.0010	0.0032	9.6	-	0.0012	-	1.51	0.123	<0.00010	<0.00010
	23-Aug-09	L809851-3	<0.50	<0.020	0.0056	<0.0010	<0.050	<0.050	<0.0010	<0.0020	18.7	-	<0.0010	-	0.63	0.0564	<0.00010	<0.00010
	25-Nov-09	L844495-11	<0.50	<0.020	0.0404	<0.0010	<0.050	0.090	<0.0010	<0.0020	15.6	-	0.0013	-	1.33	0.0253	<0.00010	<0.00010
	17-Jan-10	L855505-4	<0.50	<0.020	0.0673	<0.0010	<0.050	0.110	0.0013	0.0021	15.8	-	<0.0010	-	1.10	0.0382	<0.00010	<0.00010
	3-Mar-10	L866873-4	<0.50	0.020	0.0856	<0.0010	0.054	0.140	0.0015	0.0023	17.4	-	0.0015	-	1.50	0.0225	<0.00020	<0.00020
	28-Mar-10	L873293-3	<0.50	<0.020	0.1270	<0.0010	<0.050	0.150	<0.0010	0.0037	14.2	-	0.0015	-	1.75	0.0563	<0.00010	<0.00010
	2-May-10	L884476-12	<0.50	<0.020	0.1660	<0.0010	0.145	0.310	<0.0010	0.0094	7.3	-	0.0030	-	2.58	0.0991	<0.00010	<0.00010
	26-May-10	L891484-17	<0.50	<0.020	0.0301	<0.0010	0.060	0.090	<0.0010	0.0062	6.1	-	0.0022	-	2.34	0.157	<0.00010	0.00021
	5-Jul-10	L905787-8	<0.50	<0.020	<0.0050	<0.0010	<0.050	<0.050	<0.0010	0.0022	11.9	-	0.0013	-	1.64	0.0424	<0.00010	<0.00010
	3-Aug-10	L916942-17	<0.50	<0.020	<0.0050	<0.0010	<0.050	<0.050	<0.0010	0.0054	16.7	-	0.0011	-	1.11	0.193	<0.00010	0.00012
	27-Aug-10	L926457-8	<0.50	<0.020	<0.0050	<0.0010	<0.050	<0.050	<0.0010	0.0050	21.1	-	0.0016	-	0.77	0.103	<0.00010	0.00010
	28-Sep-10	L938295-17	<0.50	<0.020	0.0356	<0.0010	0.064	0.100	<0.0010	0.0212	10.0	-	0.0033	-	3.07	0.195	<0.00010	0.00016
	21-Oct-10	L946803-6	<0.50	<0.020	0.0259	<0.0010	<0.050	<0.050	<0.0010	<0.0020	10.7	-	0.0029	-	2.92	0.0780	<0.00010	<0.00010
	15-Nov-10	L955725-8	<0.50	<0.020	0.0283	<0.0010	<0.050	0.070	<0.0010	0.0023	12.9	-	0.0017	-	2.11	0.0351	<0.00010	<0.00010
	15-Dec-10	L963831-7	<0.50	<0.020	0.0477	<0.0010	<0.050	0.060	<0.0010	<0.0020	16.9	-	0.0022	-	1.69	0.0272	<0.00010	<0.00010
	5-Mar-11	L985810-11	<0.50	<0.020	0.0635	<0.0010	<0.050	0.093	<0.0010	<0.0020	18.1	-	<0.0010	-	1.20	0.0118	<0.00010	<0.00010
	31-Mar-11	L991777-18	<0.50	<0.020	0.0722	<0.0010	0.098	0.170	<0.0010	0.9610	18.5	-	0.0019	-	1.59	0.101	<0.00010	0.00011
	1-May-11	L1002688-5	<0.50	<0.020	0.2710	<0.0010	0.179	0.450	<0.0010	0.0029	13.0	-	0.0023	-	2.84	0.0309	<0.00010	<0.00010
	4-Jun-11	L1014013-6	<0.50	<0.020	0.0129	<0.0010	0.127	0.140	<0.0010	0.0110	6.6	-	<0.0010	-	2.65	0.351	<0.00010	0.00015
	4-Jul-11	L1028827-13	<0.50	<0.020	<0.0050	<0.0010	<0.050	<0.050	<0.0010	0.0022	14.0	-	<0.0010	-	1.24	0.0478	<0.00010	<0.00010
	1-Aug-11	L1039955-6	<0.50	<0.020	<0.0050	<0.0010	<0.050	<0.050	<0.0010	0.0023	17.0	-	<0.0010	-	0.95	0.0497	<0.00010	<0.00010
	5-Sep-11	L1054953-16	<0.50	<0.020	<0.0050	<0.0010	0.110	0.110	<0.0010	0.0034	13.0	-	0.001	-	1.95	0.115	<0.00010	<0.00010
	30-Sep-11	L1067383-22	<0.50	<0.020	0.0155	0.0011	<0.050	<0.050	<0.0010	0.0256	12.2	-	0.0033	-	3.00	1.51	<0.00010	0.00052
	24-Oct-11	L1079029-3	<0.50	<0.020	0.0188	<0.0010	0.081	0.100	<0.0010	0.0126	11.9	-	0.0028	-	2.57	0.522	<0.00010	0.00018
	28-Nov-11	L1091310-23	<0.50	0.022	0.0302	<0.0010	<0.050	<0.050	<0.0010	0.0053	15.7	-	0.0022	-	1.81	0.198	<0.00010	0.00012
TEC1B	1-Aug-11	L1041095-5	<0.50	0.031	<0.025	<0.0010	0.120	0.120	<0.0010	0.0048	24.8	-	0.0013	-	0.94	0.206	<0.00010	0.00018
	4-Sep-11	L1054465-12	<0.50	<0.020	<0.0050	<0.0010	0.120	0.120	<0.0010	0.0113	<0.50	-	0.0027	-	2.10	0.397	<0.00010	0.00022
	30-Sep-11	L1067383-23	<0.50	0.028	0.0669	<0.0010	0.063	0.130	0.0014	0.0164	18.1	-	<0.0011	-	2.66	0.773	<0.00010	0.00027
	23-Oct-11	L1079029-4	<0.50	0.030	0.0742	<0.0010	0.066	0.140	<0.0010	0.0068	17.5	-	0.0025	-	2.34	0.295	&lt	

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

			Anions and Nutrients										Cyanides			Carbon	Total Metals		
			Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Ortho Phosphate (as P) (mg/L)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)	Total Organic Carbon (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	
Site Name	Date	ALS Sample No.																	
	28-Apr-09	L759011-7	<0.50	0.041	0.5380	<0.0010	0.086	0.624	0.0026	0.0062	23.6	-	<0.0010	-	1.72	0.0668	<0.00010	0.00011	
	27-May-09	L771080-6	<0.50	0.024	0.1770	<0.0010	0.074	0.250	<0.0010	0.0162	9.6	-	<0.0010	-	2.97	0.376	<0.00010	0.00010	
	8-Jun-09	L776835-1	<0.50	<0.020	0.0759	<0.0010	0.148	0.224	0.0035	0.1030	9.5	-	0.0035	-	3.82	4.46	0.00011	0.00123	
	13-Jun-09	L778602-4	<0.50	0.024	0.0583	<0.0010	<0.050	0.098	0.0016	0.0100	12.7	-	<0.0010	-	2.15	1.09	<0.00010	0.00040	
	19-Jun-09	L781603-6	<0.50	<0.020	0.0459	<0.0010	<0.050	0.060	0.0013	0.0150	13.6	-	<0.0010	-	1.35	0.368	<0.00010	0.00018	
	2-Jul-09	L787346-11	<0.50	<0.020	0.0266	<0.0010	<0.050	<0.050	<0.0010	0.0062	15.8	-	0.0015	-	1.34	0.159	<0.00010	0.00012	
	4-Aug-09	L801967-7	<0.50	0.022	<0.0050	<0.0010	0.060	0.060	0.0017	0.0074	26.6	-	<0.0010	-	<0.50	0.190	<0.00010	0.00020	
	23-Aug-09	L809851-12	<0.50	0.024	0.0395	<0.0010	<0.050	<0.050	0.0021	0.0049	33.8	-	<0.0010	-	<0.50	0.203	<0.00010	0.00014	
	13-Sep-09	L817873-4	<0.50	0.028	0.0236	<0.0010	0.056	0.080	0.0017	0.0220	26.8	-	<0.0010	-	1.11	1.83	<0.00010	0.00063	
	27-Sep-09	L824535-5	2.38	<0.020	0.0350	0.0607	<0.050	0.060	<0.0010	0.0042	7.8	-	0.0025	-	1.74	0.111	<0.00010	0.00011	
	31-Oct-09	L837185-5	<0.50	0.020	0.0701	<0.0010	<0.050	0.060	<0.0010	0.0040	27.1	-	0.0020	-	1.46	0.0274	<0.00010	<0.00010	
	25-Nov-09	L844495-12	<0.50	0.030	0.1180	<0.0010	0.162	0.280	0.0012	0.0037	32.5	-	0.0013	-	1.62	0.0487	<0.00010	0.00011	
	17-Jan-10	L855505-5	<0.50	0.027	0.1800	<0.0010	<0.050	0.210	0.0053	0.0047	34.9	-	<0.0010	-	0.82	0.0118	<0.00010	0.00010	
	3-Mar-10	L866873-5	<0.50	0.037	0.1680	<0.0010	0.062	0.230	0.0033	0.0048	36.1	<0.0010	0.0015	<0.50	1.02	0.0128	<0.00010	<0.00010	
	28-Mar-10	L873293-4	<0.50	0.031	0.1700	<0.0010	<0.050	0.190	0.0020	0.0050	29.2	-	0.0014	-	1.52	0.0331	<0.00010	0.00011	
	2-May-10	L884476-13	<0.50	<0.020	0.2830	<0.0010	0.147	0.430	<0.0010	0.0058	11.4	-	0.0034	-	2.40	0.121	<0.00010	0.00011	
	26-May-10	L891484-6	<0.50	0.020	0.0797	<0.0010	<0.050	0.120	0.0011	0.0116	10.2	-	0.0035	-	2.45	0.278	<0.00010	0.00023	
	5-Jul-10	L905787-9	<0.50	<0.020	0.0173	<0.0010	<0.050	<0.050	<0.0010	0.0035	21.8	-	0.0017	-	1.42	0.0712	<0.00010	<0.00010	
	3-Aug-10	L916942-6	<0.50	0.021	0.0124	<0.0010	<0.050	<0.050	0.0018	0.0105	22.1	-	0.001	-	0.62	0.351	<0.00010	0.00015	
	27-Aug-10	L926457-9	<0.50	0.025	0.0519	<0.0010	<0.050	0.090	<0.0010	0.0076	36.7	-	0.0012	-	<0.50	0.155	<0.00010	0.00014	
	28-Sep-10	L938295-6	<0.50	0.021	0.0676	<0.0010	0.062	0.130	0.0014	0.0331	16.5	-	0.0038	-	3.47	0.540	<0.00010	0.00031	
	21-Oct-10	L946802-4	<0.50	0.027	0.0857	<0.0010	0.165	0.110	0.0012	0.0039	19.6	-	0.002	-	2.81	0.0799	<0.00010	<0.00010	
	15-Nov-10	L955725-9	<0.50	0.031	0.1110	<0.0010	<0.050	0.150	0.0016	0.0041	25.2	-	0.002	-	2.01	0.0338	<0.00010	<0.00010	
	15-Dec-10	L963832-5	<0.50	0.034	0.1550	<0.0010	<0.050	0.150	0.0028	0.0045	34.9	-	0.0017	-	1.35	0.0161	<0.00010	<0.00010	
	1-Apr-11	L991777-30	<0.50	0.032	0.1840	<0.0010	0.066	0.250	0.0022	0.0037	38.4	-	0.0012	-	0.86	0.0067	<0.00010	<0.00010	
	1-May-11	L1002688-4	<0.50	0.020	0.3660	<0.0010	0.080	0.446	<0.0010	0.0040	24.4	-	0.0023	-	2.51	0.0488	<0.00010	0.00013	
	4-Jun-11	L1014013-7	<0.50	0.022	0.0521	<0.0010	0.128	0.180	0.0018	0.0419	13.0	-	0.0025	-	2.88	1.42	<0.00010	0.00050	
	3-Jul-11	L1026874-16	<0.50	0.027	<0.0050	<0.0010	<0.050	<0.050	<0.0010	0.0039	24.8	-	0.0014	-	1.36	0.104	<0.00010	0.00010	
	1-Aug-11	L1039955-7	<0.50	0.032	<0.0050	<0.0010	<0.050	<0.050	<0.0010	0.0041	31.1	-	0.001	-	0.85	0.172	<0.00010	0.00013	
	5-Sep-11	L1054953-17	<0.50	0.027	0.0210	<0.0010	0.099	0.120	<0.0010	0.0059	24.1	-	0.0021	-	1.76	0.236	<0.00010	0.00013	
	30-Sep-11	L1067383-24	<0.50	0.028	0.0579	0.0013	0.071	0.130	0.0013	0.0129	21.8	-	0.0013	-	2.96	0.577	<0.00010	0.00024	
	24-Oct-11	L1079029-5	<0.50	0.032	0.0627	<0.0010	0.067	0.130	<0.0010	0.0055	23.2	-	0.0025	-	2.36	0.211	<0.00010	0.00015	
	28-Nov-11	L1091310-27	<0.50	0.036															

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

			Total Metals																	
Site Name	Date	ALS Sample No.	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)
SNO1	25-Jun-08	L650936-9	0.0153	<0.00050	<0.00050	<0.010	<0.000017	15.4	0.00108	0.00042	0.00117	0.361	0.000142	<0.0050	2.98	0.0274	<0.000010	0.000273	0.00195	<0.30
	9-Sep-08	L682706-4	0.0249	<0.00050	<0.00050	<0.010	<0.000017	21.8	0.00249	0.00047	<0.0012	0.715	0.000172	<0.0050	3.98	0.0394	0.000012	0.000397	0.00297	<0.30
	6-Dec-08	L717413-24	0.0208	<0.00050	<0.00050	<0.010	<0.000017	23.9	<0.00050	0.00014	0.00044	0.236	<0.000050	<0.0050	4.28	0.0623	<0.000010	0.000267	0.00092	<0.30
	29-Mar-09	L749298-2	0.0221	<0.00050	<0.00050	<0.010	<0.000017	29.5	<0.00050	<0.00010	0.00038	0.248	<0.000050	<0.0050	5.42	0.0652	<0.000010	0.000390	0.00103	<0.30
	29-Mar-09	L749298-1	0.0226	<0.00050	<0.00050	<0.010	<0.000017	29.5	<0.00050	<0.00010	<0.00050	0.259	<0.000050	<0.0050	5.29	0.0663	<0.000010	0.000414	0.00113	<0.30
	3-Jul-09	L787346-12	0.0196	<0.00050	<0.00050	<0.010	0.000015	16.8	0.00254	0.00057	0.00145	0.708	0.000176	<0.0050	3.75	0.0389	<0.000010	0.000328	0.00314	<0.30
	23-Aug-09	L809851-6	0.0325	<0.00050	<0.00050	<0.010	0.000023	17.9	0.00634	0.00124	0.00305	1.90	0.000490	<0.0050	3.90	0.0658	<0.000010	0.000402	0.00669	<0.30
	25-Nov-09	L844495-13	0.0225	<0.00050	<0.00050	<0.010	<0.000010	27.9	0.00051	0.00024	<0.00070	0.313	0.000059	<0.0050	5.20	0.0975	<0.000010	0.000342	0.00142	<0.30
SNO2	25-Jun-08	L650936-10	0.0140	<0.00050	<0.00050	<0.010	<0.000017	12.5	0.00122	0.00027	0.00120	0.352	0.000099	<0.0050	2.69	0.0176	<0.000010	0.000240	0.00162	<0.30
	9-Sep-08	L682706-3	0.0162	<0.00050	<0.00050	<0.010	<0.000017	18.6	<0.00050	0.00017	0.00045	0.181	0.000064	<0.0050	3.78	0.0171	<0.000010	0.000281	0.00073	<0.30
	6-Dec-08	L717413-26	0.0167	<0.00050	<0.00050	<0.010	<0.000017	19.4	<0.00050	0.00010	0.00049	0.085	<0.000050	<0.0050	4.11	0.0186	<0.000010	0.000240	0.00054	<0.30
	28-Mar-09	L748538-14	0.0198	<0.00050	<0.00050	<0.010	<0.000017	24.5	<0.00050	<0.00010	0.00028	0.057	<0.000050	<0.0050	5.18	0.0184	<0.000010	0.000345	<0.00050	<0.30
	3-Jul-09	L787346-13	0.0153	<0.00050	<0.00050	<0.010	0.000013	13.8	0.00164	0.00034	0.00128	0.440	0.000119	<0.0050	3.40	0.0222	<0.000010	0.000253	0.00197	<0.30
	23-Aug-09	L809851-11	0.0227	<0.00050	<0.00050	<0.010	0.000016	17.8	0.00243	0.00066	0.00171	0.852	0.000237	<0.0050	4.10	0.0381	<0.000010	0.000325	0.00325	<0.30
	25-Nov-09	L844495-14	0.0178	<0.00050	<0.00050	<0.010	<0.000010	23.0	<0.00050	<0.00010	<0.00050	0.085	<0.000050	<0.0050	4.97	0.0211	<0.000010	0.000284	0.00068	<0.30
	28-Mar-10	L873293-5	0.0243	<0.00050	<0.00050	<0.010	0.000022	20.3	0.00207	0.00055	0.00151	1.17	0.000192	<0.0050	4.17	0.0769	<0.000010	0.000298	0.00306	<0.30
	5-Jul-10	L905787-10	0.0216	<0.00050	<0.00050	<0.010	0.000018	15.5	0.00271	0.00078	0.00187	0.955	0.000294	<0.0050	3.35	0.0480	<0.000010	0.000298	0.00358	<0.30
	27-Aug-10	L926457-10	0.0195	<0.00050	<0.00050	<0.010	<0.000017	18.9	0.00117	0.00047	0.00201	0.562	0.000272	<0.0050	3.81	0.0313	<0.000010	0.000268	0.00237	<0.30
	15-Nov-10	L955725-10	0.0146	<0.00050	<0.00050	<0.010	<0.000010	16.9	0.00046	0.00010	0.00071	0.145	<0.000050	<0.0050	3.84	0.0202	<0.000010	0.000258	0.00090	<0.30
	1-Apr-11	L991777-19	0.0216	<0.00050	<0.00050	<0.010	<0.000010	23.3	0.00021	0.00012	<0.00050	0.226	<0.000050	<0.0050	5.21	0.0580	<0.000010	0.000345	0.00071	<0.30
	3-Jul-11	L1026874-10	0.0160	<0.00010	<0.00050	<0.010	0.000014	14.3	0.00135	0.00033	0.00102	0.407	0.000112	0.00096	3.10	0.0220	<0.000010	0.000257	0.00165	<0.30
	5-Sep-11	L1054953-18	0.0216	<0.00010	<0.00050	<0.010	0.000015	15.3	0.00265	0.00058	0.00171	0.870	0.000209	0.00149	3.46	0.0351	<0.000010	0.000292	0.00324	<0.30
	28-Nov-11	L1091310-24	0.0198	<0.00010	<0.00050	<0.010	<0.000010	23.3	0.00045	0.00017	0.00055	0.170	<0.000050	0.00060	4.81	0.0465	<0.000010	0.000351	0.00108	<0.30
	28-Nov-11	L1091310-22	0.0189	<0.00010	<0.00050	<0.010	<0.000010	22.2	0.00043	0.00014	0.00055	0.160	<0.000050	<0.00050	4.66	0.0444	<0.000010	0.000320	0.00098	<0.30
STE1	25-Jun-08	L650936-7	0.0147	<0.00050	<0.00050	<0.010	<0.000017	9.54	0.00204	0.00025	0.00159	0.330	0.000123	<0.0050	2.38	0.0157	<0.000010	0.000300	0.00159	<0.30
	9-Sep-08	L682706-17	0.0208	<0.00050	<0.00050	<0.010	0.000019	17.6	<0.00050	0.00043	<0.00090	0.272	0.000142	<0.0050	4.24	0.0421	<0.000010	0.000375	0.00131	<0.30
	6-Dec-08	L717413-3	0.0188	<0.00050	<0.00050	<0.010	<0.000017	15.3	<0.00050	0.00016	0.									

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

			Total Metals																	
Site Name	Date	ALS Sample No.	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)
			<0.0274	<0.00010	<0.00050	<0.010	<0.000010	30.3	0.00037	<0.00010	<0.00050	<0.030	<0.000050	0.00179	7.62	0.0007	<0.000010	0.000596	0.00431	<0.30
STE2	28-Nov-11	L1091310-18																		
	28-May-08	L635965-1	0.0201	<0.00050	<0.00050	<0.010	0.000038	6.26	0.00287	0.00076	0.00269	0.967	0.000325	<0.0050	1.71	0.0390	0.000011	0.000215	0.00335	<0.30
	5-Jun-08	L639617-3	0.0127	<0.00050	<0.00050	<0.010	<0.000017	8.82	0.00107	0.00022	0.00239	0.270	0.000075	<0.0050	2.04	0.0132	<0.000010	0.000247	0.00141	<0.30
	11-Jun-08	L642688-13	0.0098	<0.00050	<0.00050	<0.010	<0.000017	8.22	<0.00050	0.00011	0.00069	0.113	<0.000050	<0.0050	1.86	0.0074	<0.000010	0.000165	0.00069	<0.30
	25-Jun-08	L650936-8	0.0140	<0.00050	<0.00050	<0.010	0.000022	9.90	0.00116	0.00039	0.00204	0.319	0.000268	<0.0050	2.24	0.0205	<0.000010	0.000242	0.00181	<0.30
	21-Aug-08	50155637	0.0135	<0.00001	<0.000005	<0.05	0.000008	13.1	0.00030	0.00017	0.00071	0.105	0.000063	0.00100	2.80	0.0119	<0.000010	0.000350	0.00074	0.01
	9-Sep-08	L682706-18	0.0169	<0.00050	<0.00050	<0.010	<0.000017	18.5	<0.00050	0.00012	0.00017	0.088	<0.000050	<0.0050	4.00	0.0159	<0.000010	0.000355	0.00059	<0.30
	17-Sep-08	L686098-6	0.0164	<0.00050	<0.00050	<0.010	<0.000017	16.2	0.00067	0.00024	0.00074	0.234	0.000082	<0.0050	3.91	0.0184	<0.000010	0.000348	0.00129	<0.30
	17-Sep-08	L686098-7	0.0192	<0.00050	<0.00050	<0.010	<0.000017	17.8	0.00120	0.00023	0.00104	0.306	0.000103	<0.0050	4.54	0.0191	<0.000010	0.000405	0.00150	<0.30
	25-Sep-08	L688714-6	0.0183	<0.00050	<0.00050	<0.010	<0.000017	20.6	<0.00050	0.00011	0.00035	0.073	<0.000050	<0.0050	4.47	0.0200	<0.000010	0.000367	0.00062	<0.30
	2-Oct-08	L691752-3	0.0166	<0.00050	<0.00050	<0.010	<0.000017	12.2	0.00120	0.00026	0.00119	0.421	0.000105	<0.0050	2.80	0.0187	<0.000010	0.000328	0.00155	<0.30
	9-Oct-08	L694973-6	0.0157	<0.00050	<0.00050	<0.010	<0.000017	17.0	<0.00050	0.00011	<0.00070	0.106	<0.000050	<0.0050	3.61	0.0188	<0.000010	0.000286	0.00093	<0.30
	29-Oct-08	L703445-3	0.0177	<0.00050	<0.00050	<0.010	0.000115	17.1	<0.00050	0.00014	<0.00050	0.086	<0.000050	<0.0050	3.70	0.0200	<0.000010	0.000406	0.00083	<0.30
	28-Apr-09	L759011-6	0.0159	<0.00050	0.00061	<0.010	<0.000017	19.4	<0.00050	0.00011	0.00084	0.172	<0.000050	<0.0050	3.60	0.0195	<0.000010	0.000223	0.00102	<0.30
	8-Jun-09	L776835-2	0.0230	<0.00050	<0.00050	<0.010	0.000026	6.23	0.00417	0.00086	0.00280	1.45	0.000363	<0.0050	1.89	0.0550	<0.000010	0.000289	0.00469	<0.30
	13-Jun-09	L778602-1	0.0366	<0.00050	<0.00050	<0.010	0.000069	8.92	0.00810	0.00164	0.00533	2.51	0.000768	<0.0050	2.85	0.0695	<0.000010	0.000327	0.00866	<0.30
	19-Jun-09	L781603-9	0.0166	<0.00050	<0.00050	<0.010	0.000025	9.49	0.00217	0.00042	0.00166	0.538	0.000172	<0.0050	2.10	0.0202	<0.000010	0.000253	0.00241	<0.30
	5-Jul-09	L788462-7	0.0147	<0.00050	<0.00050	<0.010	0.000011	8.29	0.00247	0.00045	0.00140	0.492	0.000165	<0.0050	2.01	0.0213	<0.000010	0.000234	0.00265	<0.30
	4-Aug-09	L801967-11	0.0387	<0.00050	<0.00050	<0.010	0.000027	15.1	0.00533	0.00107	0.00343	1.60	0.000493	<0.0050	3.87	0.0619	<0.000010	0.000505	0.00531	<0.30
	23-Aug-09	L809851-2	0.0208	<0.00050	<0.00050	<0.010	0.000011	18.2	0.00132	0.00032	0.00110	0.399	0.000121	<0.0050	4.15	0.0250	<0.000010	0.000412	0.00171	<0.30
	13-Sep-09	L817873-3	0.0550	<0.00050	<0.00050	<0.010	0.000060	14.6	0.00782	0.00263	0.00862	2.85	0.00112	<0.0050	3.89	0.147	<0.000010	0.000425	0.00987	<0.30
	27-Sep-09	L824535-4	0.0154	<0.00050	<0.00050	<0.010	<0.000030	13.2	<0.0010	0.00015	0.00098	0.162	<0.00020	<0.0050	2.80	0.0144	<0.000010	0.000272	<0.0020	<0.30
	31-Oct-09	L837185-4	0.0167	<0.00050	<0.00050	<0.010	0.000014	18.3	<0.00050	0.00016	<0.00080	0.155	<0.000050	<0.0050	4.04	0.0242	<0.000010	0.000268	0.00112	<0.30
	25-Nov-09	L844495-9	0.0206	<0.00050	<0.00050	<0.010	<0.000010	23.7	<0.00050	0.00014	<0.00070	0.124	<0.000050	<0.0050	5.30	0.0258	<0.000010	0.000303	0.00107	<0.30
	26-May-10	L891484-5	0.0115	<0.00050	<0.00050	<0.010	0.000011	6.99	0.00112	0.00023	0.00154	0.298	<0.00020	<0.0050	1.69	0.0152	<0.000010	0.000159	0.00141	<0.30
	5-Jul-10	L905787-7	0.0136	<0.00050	<0.00050	<0.010	0.000011	12.9	0.00092	0.00015	0.00065	0.188	0.000057	<0.0050	2.82					

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Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals																	
			Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)
TEC1	25-Jun-08	L650936-12	0.0062	<0.00050	<0.00050	<0.010	<0.000017	8.46	<0.00050	<0.00010	0.00050	0.042	<0.000050	<0.0050	1.60	0.0028	<0.000010	0.000126	0.00060	<0.30
	9-Sep-08	L682706-16	0.0083	<0.00050	<0.00050	<0.010	<0.000017	13.2	<0.00050	<0.00010	<0.00030	0.062	<0.000050	<0.0050	2.17	0.0030	<0.000010	0.000202	0.00067	<0.30
	6-Dec-08	L717413-5	0.0071	<0.00050	<0.00050	<0.010	<0.000017	10.3	<0.00050	<0.00010	0.00042	<0.030	<0.000050	<0.0050	1.86	0.0012	<0.000010	0.000120	<0.00050	<0.30
	28-Mar-09	L748538-3	0.0085	<0.00050	<0.00050	<0.010	<0.000017	13.0	<0.00050	<0.00010	0.00039	<0.030	<0.000050	<0.0050	2.25	0.0016	<0.000010	0.000190	<0.00050	<0.30
	2-Jul-09	L787346-10	0.0077	<0.00050	<0.00050	<0.010	<0.000010	9.15	0.00067	0.00012	0.00074	0.116	<0.000050	<0.0050	2.03	0.0063	<0.000010	0.000142	0.00086	<0.30
	23-Aug-09	L809851-3	0.0082	<0.00050	<0.00050	<0.010	<0.000010	12.4	<0.00050	<0.00010	0.00033	0.062	<0.000050	<0.0050	2.13	0.0027	<0.000010	0.000203	0.00054	<0.30
	25-Nov-09	L844495-11	0.0080	<0.00050	<0.00050	<0.010	<0.000010	12.9	<0.00050	<0.00010	<0.00090	<0.030	<0.000050	<0.0050	2.35	0.0015	<0.000010	0.000153	0.00051	<0.30
	17-Jan-10	L855505-4	0.0085	<0.00050	<0.00050	<0.010	<0.000017	12.7	<0.00050	<0.00010	0.00114	0.059	<0.000050	<0.0050	2.28	0.0023	<0.000010	0.000225	0.00062	<0.30
	3-Mar-10	L866873-4	0.0090	<0.0010	<0.0010	<0.020	<0.000020	13.6	<0.0010	<0.00020	0.00064	0.060	<0.00010	<0.010	2.28	0.0017	<0.000010	0.000220	<0.0010	<0.30
	28-Mar-10	L873293-3	0.0085	<0.00050	<0.00050	<0.010	<0.000010	11.9	<0.00050	<0.00010	0.00061	0.102	0.000142	<0.0050	2.28	0.0029	<0.000010	0.000187	0.00071	<0.30
	2-May-10	L884476-12	0.0072	<0.00050	<0.00050	<0.010	<0.000010	8.93	<0.00050	<0.00010	0.00091	0.095	<0.000050	<0.0050	1.51	0.0031	<0.000010	0.000114	0.00078	<0.30
	26-May-10	L891484-17	0.0062	<0.00050	<0.00050	<0.010	<0.000010	6.50	0.00058	0.00011	0.00115	0.148	<0.000050	<0.0050	1.22	0.0055	<0.000010	0.000079	0.00076	<0.30
	5-Jul-10	L905787-8	0.0070	<0.00050	<0.00050	0.011	<0.000010	10.2	0.00047	<0.00010	0.00050	0.042	<0.000050	<0.0050	1.85	0.0024	<0.000010	0.000165	<0.0010	<0.30
	3-Aug-10	L916942-17	0.0096	<0.00050	<0.00050	<0.010	<0.000010	11.7	0.00090	0.00016	0.00052	0.209	<0.000050	<0.0050	1.88	0.0065	<0.000010	0.000228	0.00097	<0.30
	27-Aug-10	L926457-8	0.0093	<0.00050	<0.00050	<0.010	<0.000010	13.6	0.00038	0.00012	<0.00070	0.097	0.000072	<0.0050	2.12	0.0052	<0.000010	0.000203	0.00091	<0.30
	28-Sep-10	L938295-17	0.0082	<0.00050	<0.00050	<0.010	<0.000010	9.19	0.00096	0.00015	0.00090	0.184	0.000057	<0.0050	1.48	0.0075	<0.000010	0.000165	0.00115	<0.30
	21-Oct-10	L946803-6	0.0069	<0.00050	<0.00050	<0.010	<0.000010	9.23	0.00055	<0.00010	0.00071	0.060	<0.000050	<0.0050	1.81	0.0028	<0.000010	0.000126	0.00072	<0.30
	15-Nov-10	L955725-8	0.0069	<0.00050	<0.00050	<0.010	<0.000010	9.96	0.00026	<0.00010	0.00063	0.031	<0.000050	<0.0050	1.96	0.0018	<0.000010	0.000142	0.00060	<0.30
	15-Dec-10	L963831-7	0.0079	<0.00050	<0.00050	<0.010	<0.000010	12.7	0.00025	<0.00010	0.00055	<0.030	<0.000050	<0.0050	2.29	0.0014	<0.000010	0.000165	0.00059	<0.30
	5-Mar-11	L985810-11	0.0084	<0.00050	<0.00050	<0.010	<0.000010	14.1	0.00026	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.22	0.0004	<0.000010	0.000237	0.00053	<0.30
	31-Mar-11	L991777-18	0.0107	<0.00050	<0.00050	<0.010	0.000015	13.9	0.00040	0.00015	0.00087	0.136	0.000074	<0.0050	2.53	0.0077	<0.000010	0.000221	0.00097	<0.30
	1-May-11	L1002688-5	0.0093	<0.00050	<0.00050	<0.010	<0.000010	13.0	<0.00030	<0.00010	0.00079	0.063	<0.000050	<0.0050	2.30	0.0022	<0.000010	0.000186	0.00075	<0.30
	4-Jun-11	L1014013-6	0.0083	<0.00050	<0.00050	<0.010	<0.000010	5.62	0.00142	0.00022	0.00242	0.380	0.000081	<0.0050	1.15	0.0100	<0.000010	0.000102	0.00147	<0.30
	4-Jul-11	L1028827-13	0.0067	<0.00010	<0.00050	<0.010	<0.000010	10.0	0.00025	<0.00010	<0.00050	0.050	<0.000050	<0.0050	1.84	0.0020	<0.000010	0.000159	0.00055	<0.30
	1-Aug-11	L1039955-6	0.0076	<0.00010	<0.00050	<0.010	<0.000010	11.8	0.00032	<0.00010	<0.00050	0.043	<0.000050	<0.0050	2.01	0.0017	<0.000010	0.000214	0.00051	<0.30
	5-Sep-11	L1054953-16	0.0072	<0.00010	<0.00050	<0.010	<0.000010	10.0	0.00048	<0.00010	0.00051	0.096	<0.000050	0.00054	1.81	0.0035	<0.000010	0.000169	0.00074	<0.30
	30-Sep-11	L1067383-22	0.0248	&lt																

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

			Total Metals																	
Site Name	Date	ALS Sample No.	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)
	28-Apr-09	L759011-7	0.0149	<0.00050	<0.00050	<0.010	<0.000017	20.4	<0.00050	<0.00010	0.00088	0.088	0.000199	<0.0050	4.11	0.0039	<0.000010	0.000282	0.00082	<0.30
	27-May-09	L771080-6	0.0126	<0.00050	<0.00050	<0.010	0.000040	9.10	0.00183	0.00029	0.00138	0.446	0.000126	<0.0050	2.26	0.0147	<0.000010	0.000149	0.00196	<0.30
	8-Jun-09	L776835-1	0.0570	<0.00050	<0.00050	<0.010	0.000062	8.14	0.0133	0.00284	0.00738	4.87	0.00114	<0.0050	3.27	0.156	<0.000010	0.000303	0.0151	<0.30
	13-Jun-09	L778602-4	0.0225	<0.00050	<0.00050	<0.010	0.000020	9.00	0.00445	0.00082	0.00235	1.25	0.000319	<0.0050	2.34	0.0352	<0.000010	0.000197	0.00454	<0.30
	19-Jun-09	L781603-6	0.0127	<0.00050	<0.00050	<0.010	0.000022	10.3	0.00148	0.00030	0.00117	0.392	0.000142	<0.0050	2.27	0.0137	<0.000010	<0.00020	0.00171	<0.30
	2-Jul-09	L787346-11	0.0112	<0.00050	<0.00050	<0.010	<0.000010	12.0	0.00079	0.00015	0.00078	0.167	<0.000050	<0.0050	3.14	0.0077	<0.000010	0.000214	0.00097	<0.30
	4-Aug-09	L801967-7	0.0148	<0.00050	<0.00050	<0.010	0.000011	15.3	0.00079	0.00035	0.00107	0.356	0.000140	<0.0050	3.49	0.0155	<0.000010	0.000284	0.00143	<0.30
	23-Aug-09	L809851-12	0.0171	<0.00050	<0.00050	<0.010	<0.000010	20.1	0.00086	0.00018	0.00073	0.189	0.000065	<0.0050	4.79	0.0076	<0.000010	0.000346	0.00099	<0.30
	13-Sep-09	L817873-4	0.0367	<0.00050	<0.00050	<0.010	0.000026	15.5	0.00649	0.00128	0.00392	1.97	0.000537	<0.0050	4.04	0.0598	<0.000010	0.000367	0.00669	<0.30
	27-Sep-09	L824535-5	0.0121	<0.00050	<0.00050	<0.010	<0.000010	13.7	<0.0010	0.00011	<0.00090	0.121	<0.00010	<0.0050	2.84	0.0059	<0.000010	0.000217	<0.0020	<0.30
	31-Oct-09	L837185-5	0.0118	<0.00050	<0.00050	<0.010	<0.000010	15.9	<0.00050	<0.00010	0.00044	0.031	<0.000050	<0.0050	3.69	0.0021	<0.000010	0.000215	<0.00050	<0.30
	25-Nov-09	L844495-12	0.0167	<0.00050	<0.00050	<0.010	<0.000010	22.3	<0.00050	<0.00010	<0.00060	0.058	<0.000050	<0.0050	5.50	0.0031	<0.000010	0.000287	0.00059	<0.30
	17-Jan-10	L855505-5	0.0175	<0.00050	<0.00050	<0.010	<0.000017	23.1	<0.00050	<0.00010	0.00133	<0.030	<0.000050	<0.0050	5.70	0.0008	<0.000010	0.000349	<0.00050	<0.30
	3-Mar-10	L866873-5	0.0175	<0.00050	<0.00050	<0.010	<0.000010	22.8	<0.00050	<0.00010	0.00040	<0.030	<0.000050	<0.0050	5.73	0.0006	<0.000010	0.000337	<0.00050	<0.30
	28-Mar-10	L873293-4	0.0152	<0.00050	<0.00050	<0.010	<0.000010	21.3	<0.00050	<0.00010	0.00046	0.041	0.000065	<0.0050	4.81	0.0015	<0.000010	0.000309	<0.00050	<0.30
	2-May-10	L884476-13	0.0103	<0.00050	<0.00050	<0.010	<0.000010	11.4	0.00070	<0.00010	0.00110	0.119	<0.000050	<0.0050	2.47	0.0045	<0.000010	0.000165	0.00098	<0.30
	26-May-10	L891484-6	0.0104	<0.00050	<0.00050	<0.010	<0.000010	8.56	0.00111	0.00021	0.00126	0.292	<0.00010	<0.0050	2.05	0.0102	<0.000010	0.000120	0.00123	<0.30
	5-Jul-10	L905787-9	0.0114	<0.00050	<0.00050	<0.010	<0.000010	14.0	0.00055	<0.00010	0.00053	0.071	<0.000050	<0.0050	3.10	0.0034	<0.000010	0.000247	<0.0010	<0.30
	3-Aug-10	L916942-6	0.0171	<0.00050	<0.00050	<0.010	<0.000010	14.9	0.00151	0.00033	0.00103	0.402	0.000137	<0.0050	3.30	0.0121	<0.000010	0.000325	0.00166	<0.30
	27-Aug-10	L926457-9	0.0167	<0.00050	<0.00050	<0.010	0.000012	19.4	0.00065	0.00017	0.00081	0.190	0.000088	<0.0050	4.37	0.0081	<0.000010	0.000324	0.00122	<0.30
	28-Sep-10	L938295-6	0.0157	<0.00050	<0.00050	<0.010	0.000015	11.5	0.00232	0.00050	0.00187	0.622	0.000180	<0.0050	2.48	0.0230	<0.000010	0.000229	0.00273	<0.30
	21-Oct-10	L946802-4	0.0120	<0.00050	<0.00050	<0.010	0.000019	13.7	0.00059	<0.00010	0.00088	0.067	<0.000050	<0.0050	3.32	0.0034	<0.000010	0.000231	0.00087	<0.30
	15-Nov-10	L955725-9	0.0129	<0.00050	<0.00050	<0.010	<0.000010	17.1	0.00031	<0.00010	0.00056	0.035	0.000097	<0.0050	4.07	0.0018	<0.000010	0.000252	0.00076	<0.30
	15-Dec-10	L963832-5	0.0165	<0.00050	<0.00050	<0.010	<0.000010	20.7	0.00033	<0.00010	0.00050	<0.030	<0.000050	<0.0050	5.52	0.0007	<0.000010	0.000333	0.00083	<0.30
	1-Apr-11	L991777-30	0.0198	<0.00050	<0.00050	<0.010	<0.000010	23.9	0.00024	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	6.34	0.0003	<0.000010	0.000375	<0.00050	<0.30
	1-May-11	L1002688-4	0.0161	<0.00050	<0.00050	<0.010	<0.000010	19.7	<0.00050	<0.00010	0.00									

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals										Dissolved Metals						
			Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)
SNO1	25-Jun-08	L650936-9	0.256	0.00042	2.03	<0.000010	<2.0	0.112	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0027	0.0187	<0.000010	<0.000010	0.0078	<0.000050
	9-Sep-08	L682706-4	0.407	0.00046	2.78	0.000022	<2.0	0.167	<0.000010	<0.000010	0.023	0.000017	0.0021	<0.0040	0.0180	<0.000010	0.000010	0.0151	<0.000050
	6-Dec-08	L717413-24	0.278	0.00054	2.77	<0.000010	<2.0	0.162	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010	<0.0040	<0.000010	<0.000010	0.0199	<0.000050
	29-Mar-09	L749298-2	0.291	0.00049	2.80	<0.000010	2.7	0.193	<0.000010	<0.000010	<0.010	0.000011	<0.0010	0.0027	0.0029	<0.000010	0.000010	0.0227	<0.000050
	29-Mar-09	L749298-1	0.294	0.00048	2.80	<0.000010	2.6	0.194	<0.000010	<0.000010	<0.010	0.000012	<0.0010	0.0013	0.0023	<0.000010	0.000010	0.0224	<0.000050
	3-Jul-09	L787346-12	0.348	0.00064	2.43	<0.000010	<2.0	0.151	<0.000010	<0.000010	0.017	<0.000010	0.0018	0.0043	0.0314	<0.000010	<0.000010	0.0108	<0.000050
	23-Aug-09	L809851-6	0.616	0.00045	4.39	0.000023	<2.0	0.152	<0.000010	<0.000010	0.050	0.000025	0.0049	0.0080	0.0245	<0.000010	0.000017	0.0128	<0.000050
	25-Nov-09	L844495-13	0.301	0.00050	2.57	<0.000010	<2.0	0.212	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0017	0.0053	<0.000010	0.000010	0.0199	<0.000050
SNO2	25-Jun-08	L650936-10	0.243	0.00040	2.12	<0.000010	<2.0	0.094	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0018	0.0186	<0.000010	<0.000010	0.0103	<0.000050
	9-Sep-08	L682706-3	0.232	0.00048	1.99	<0.000010	<2.0	0.146	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0026	<0.0060	<0.000010	<0.000010	0.0142	<0.000050
	6-Dec-08	L717413-26	0.236	0.00047	2.37	<0.000010	<2.0	0.142	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010	<0.0050	<0.000010	<0.000010	0.0164	<0.000050
	28-Mar-09	L748538-14	0.302	0.00053	2.45	<0.000010	2.3	0.168	<0.000010	<0.000010	<0.010	0.000011	<0.0010	<0.0010	0.0022	<0.000010	<0.000010	0.0193	<0.000050
	3-Jul-09	L787346-13	0.270	0.00060	2.08	<0.000010	<2.0	0.128	<0.000010	<0.000010	0.011	<0.000010	0.0011	0.0035	0.0179	<0.000010	<0.000010	0.0100	<0.000050
	23-Aug-09	L809851-11	0.381	0.00045	2.68	0.000012	<2.0	0.156	<0.000010	<0.000010	0.021	0.000012	0.0021	0.0038	0.0210	<0.000010	<0.000010	0.0139	<0.000050
	25-Nov-09	L844495-14	0.262	0.00046	2.13	<0.000010	<2.0	0.181	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010	<0.0045	<0.000010	<0.000010	0.0172	<0.000050
	28-Mar-10	L873293-5	0.408	0.00036	3.22	0.000013	<2.0	0.140	<0.000010	<0.000010	0.019	0.000015	0.0018	0.0048	0.0103	<0.000010	0.00012	0.0163	<0.000050
	5-Jul-10	L905787-10	0.350	0.00042	3.04	<0.000010	<2.0	0.125	<0.000010	<0.000010	0.020	0.000013	0.0022	0.0034	0.0123	<0.000010	<0.000010	0.0121	<0.000050
	27-Aug-10	L926457-10	0.264	0.00034	2.01	<0.000010	<2.0	0.151	<0.000010	<0.000010	<0.010	0.000013	<0.0010	0.0039	0.0067	<0.000010	<0.000010	0.0160	<0.000050
	15-Nov-10	L955725-10	0.219	0.00031	2.36	<0.000010	<2.0	0.141	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030	0.0115	<0.000010	0.00012	0.0141	<0.000050
	1-Apr-11	L991777-19	0.286	0.00044	2.52	<0.000010	2.2	0.199	<0.000010	<0.000010	<0.010	0.000012	<0.0010	<0.0030	<0.0030	<0.000010	0.00011	0.0212	<0.000050
	3-Jul-11	L1026874-10	0.260	0.00037	2.18	<0.000010	<2.0	0.129	<0.000010	<0.000010	<0.010	0.000011	0.0010	<0.0030	0.0095	<0.000010	<0.000010	0.0116	<0.000050
	5-Sep-11	L1054953-18	0.362	0.00034	3.08	0.000010	<2.0	0.136	<0.000010	<0.000010	0.021	0.000014	0.0022	0.0040	0.0384	<0.000010	<0.000010	0.0122	<0.000050
	28-Nov-11	L1091310-24	0.279	0.00042	2.63	<0.000010	<2.0	0.187	<0.000010	<0.000010	<0.010	0.000012	<0.0010	<0.0030	0.0060	<0.000010	0.00012	0.0185	<0.000050
	28-Nov-11	L1091310-22	0.269	0.00042	2.68	<0.000010	<2.0	0.178	<0.000010	<0.000010	<0.010	0.000012	<0.0010	<0.0030	0.0056	<0.000010	0.00012	0.0182	<0.000050
STE1	25-Jun-08	L650936-7	0.264	0.00044	2.03	<0.000010	<2.0	0.093	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0024	0.0316	<0.000010	<0.000010	0.0111	<0.000050
	9-Sep-08	L682706-17	0.266	0.00065	1.79	<0.000010	<2.0	0.167	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030	0.0104	<0.000010	<0.000010	0.0182	<0.000050
	6-Dec-08	L717413-3	0.222	0.00064	2.15	<0.000010	<2.0	0.142	<0.000010	<0.0000									

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals											Dissolved Metals					
			Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)
	28-Nov-11	L1091310-18	0.324	0.00138	2.59	<0.000010	2.5	0.331	<0.000010	<0.000010	<0.010	0.000019	<0.0010	<0.0030	<0.0030	<0.000010	<0.000010	0.0267	<0.000010
STE2	28-May-08	L635965-1	0.350	0.00024	2.78	0.000012	<2.0	0.059	<0.000010	<0.000010	0.012	0.000013	0.0022	0.0071	0.0669	<0.000010	<0.000010	0.0090	<0.000050
	5-Jun-08	L639617-3	0.246	0.00054	2.01	<0.000010	<2.0	0.087	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0031	0.0535	<0.000010	<0.000010	0.0099	<0.000050
	11-Jun-08	L642688-13	0.142	0.00031	1.80	<0.000010	<2.0	0.073	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0020	0.0414	<0.000010	<0.000010	0.0092	<0.000050
	25-Jun-08	L650936-8	0.259	0.00044	1.86	<0.000010	<2.0	0.092	<0.000010	0.00021	<0.010	<0.000010	<0.0010	0.0045	0.0372	<0.000010	<0.000010	0.0097	<0.000050
	21-Aug-08	50155637	0.000	0.00069	1.47	<0.005	0.0	0.124	0.00000	0.03000	<0.0005	0.000005	<0.002	0.0017					
	9-Sep-08	L682706-18	0.223	0.00067	1.94	<0.000010	<2.0	0.171	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0010	<0.010	<0.000010	<0.000010	0.0169	<0.000050
	17-Sep-08	L686098-6	0.232	0.00074	2.12	<0.000010	<2.0	0.163	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0027	0.0175	<0.000010	<0.000010	0.0151	<0.000050
	17-Sep-08	L686098-7	0.316	0.00059	2.03	<0.000010	<2.0	0.164	<0.000010	<0.000010	<0.010	0.000011	<0.0010	0.0023	0.0182	<0.000010	<0.000010	0.0154	<0.000050
	25-Sep-08	L688714-6	0.256	0.00089	2.03	<0.000010	<2.0	0.181	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010	0.0066	<0.000010	<0.000010	0.0183	<0.000050
	2-Oct-08	L691752-3	0.282	0.00038	2.11	<0.000010	<2.0	0.118	<0.000010	<0.000010	<0.010	<0.000010	0.0010	0.0023	0.0277	<0.000010	<0.000010	0.0130	<0.000050
STE3	9-Oct-08	L694973-6	0.239	0.00050	2.05	<0.000010	<2.0	0.152	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0020	0.0188	<0.000010	<0.000010	0.0150	<0.000050
	29-Oct-08	L703445-3	0.245	0.00054	2.11	<0.000010	<2.0	0.147	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0028	0.0288	<0.000010	<0.000010	0.0163	<0.000050
	28-Apr-09	L759011-6	0.298	0.00053	2.39	<0.000010	<2.0	0.148	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0040	0.0207	<0.000010	<0.000010	0.0150	<0.000050
	8-Jun-09	L776835-2	0.404	0.00031	3.36	0.000015	<2.0	0.077	<0.000010	0.00022	0.018	0.000013	0.0031	<0.0080	0.0563	<0.000010	<0.000010	0.0084	<0.000050
	13-Jun-09	L778602-1	0.749	0.00051	5.87	0.000029	<2.0	0.083	<0.000010	<0.000010	0.051	0.000038	0.0068	0.0135	0.0916	0.00021	0.0011	0.0102	<0.000050
	19-Jun-09	L781603-9	0.297	0.00046	2.23	<0.000010	<2.0	0.088	<0.000010	<0.000010	<0.010	<0.000010	0.0016	<0.0040	0.0488	<0.000010	<0.000010	0.0093	<0.000050
	5-Jul-09	L788462-7	0.273		1.90	<0.000010	<2.0	0.088	<0.000010	<0.000010	<0.010	<0.000010	0.0016	<0.0050	0.0378	<0.000010	<0.000010	0.0079	<0.000050
	4-Aug-09	L801967-11	0.642	0.00057	4.30	0.000014	<2.0	0.147	<0.000010	<0.000010	0.031	0.000026	0.0049	0.0114	0.104	<0.000010	<0.000010	0.0161	<0.000050
	23-Aug-09	L809851-2	0.328	0.00062	2.18	<0.000010	<2.0	0.182	<0.000010	<0.000010	<0.010	<0.000010	0.0012	0.0032	0.0320	<0.000010	<0.000010	0.0162	<0.000050
	13-Sep-09	L817873-3	0.785	0.00066	6.46	0.000026	<2.0	0.149	<0.000010	<0.000010	0.057	0.000043	0.0069	0.0176	0.0550	<0.000010	0.0012	0.0159	<0.000050
STE3	27-Sep-09	L824535-4	0.283	0.00056	1.99	<0.000010	<2.0	0.127	<0.000010	0.00015	<0.010	<0.000010	<0.0010	<0.0040	0.0351	<0.000010	<0.000010	0.0140	<0.000050
	31-Oct-09	L837185-4	0.262	0.00071	2.23	<0.000010	<2.0	0.179	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0018	0.0232	<0.000010	<0.000010	0.0152	<0.000050
	25-Nov-09	L844495-9	0.271	0.00069	2.34	<0.000010	<2.0	0.236	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0139	<0.000010	<0.000010	0.0185	<0.000050	
	26-May-10	L891484-5	0.202	0.00023	2.00	0.000066	<2.0	0.071	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0022	0.0536	<0.000010	<0.000010	0.0082	<0.000050
	5-Jul-10	L905787-7	0.198	0.00044	1.85	<0.000010	<2.0	0.123	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0111	0.0187	<0.000010	<0.000010	0.0113	<0.000050
	3-Aug-10	L916942-5	0.314	0.00059	2.														

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals											Dissolved Metals						
			Silicon		Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)
			K (mg/L)	Si (mg/L)																
TEC1	25-Jun-08	L650936-12	0.107	0.00018	1.27	<0.000010	<2.0	0.057	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.000010	0.0171	<0.000010	<0.000010	0.0056	<0.00050	
	9-Sep-08	L682706-16	0.108	0.00020	1.31	<0.000010	<2.0	0.082	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.000013	<0.0070	<0.000010	<0.000010	0.0074	<0.00050	
	6-Dec-08	L717413-5	0.096	0.00017	1.56	<0.000010	<2.0	0.070	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.000010	<0.0060	<0.000010	<0.000010	0.0070	<0.00050	
	28-Mar-09	L748538-3	0.118	0.00023	1.56	<0.000010	<2.0	0.086	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.000010	0.0046	<0.000010	<0.000010	0.0086	<0.00050	
	2-Jul-09	L787346-10	0.133	<0.000010	1.42	<0.000010	<2.0	0.079	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	0.0015	0.0166	<0.000010	<0.000010	0.0057	<0.00050	
	23-Aug-09	L809851-3	0.105	0.00013	1.31	<0.000010	<2.0	0.085	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.000010	0.0064	<0.000010	<0.000010	0.0076	<0.00050	
	25-Nov-09	L844495-11	0.103	<0.000020	1.42	<0.000010	<2.0	0.093	<0.000010	0.00014	<0.010	<0.000010	<0.000010	<0.000010	0.0081	<0.000010	<0.000010	0.0075	<0.00050	
	17-Jan-10	L855505-4	0.112	<0.000020	1.55	<0.000010	<2.0	0.096	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.000010	0.0062	<0.000010	<0.000010	0.0082	<0.00050	
	3-Mar-10	L866873-4	<0.10	<0.000040	1.59	<0.000020	<2.0	0.099	<0.000020	0.00022	<0.010	<0.000020	<0.000020	<0.000020	<0.0070	<0.000010	0.00017	0.0086	<0.00050	
	28-Mar-10	L873293-3	0.137	<0.000020	1.55	<0.000010	<2.0	0.094	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	0.0011	<0.010	<0.000010	<0.000010	0.0078	<0.00050	
	2-May-10	L884476-12	0.113	<0.000020	1.67	<0.000010	<2.0	0.068	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	0.0010	0.0340	<0.000010	<0.000010	0.0060	<0.00050	
	26-May-10	L891484-17	0.104	<0.000020	1.44	<0.000010	<2.0	0.048	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	0.0016	0.0274	<0.000010	<0.000010	0.0048	<0.00050	
	5-Jul-10	L905787-8	0.091	<0.000020	1.25	<0.000010	<2.0	0.072	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.0010	0.0103	<0.000010	<0.000010	0.0063	<0.00050	
	3-Aug-10	L916942-17	0.132	0.00027	1.39	<0.000010	<2.0	0.079	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.0010	0.0140	<0.000010	<0.000010	0.0068	<0.00050	
	27-Aug-10	L926457-8	0.127	<0.000020	1.30	<0.000010	<2.0	0.088	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	0.0013	0.0074	<0.000010	<0.000010	0.0086	<0.00050	
	28-Sep-10	L938295-17	0.176	<0.000020	1.65	<0.000010	<2.0	0.066	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.0030	0.0365	<0.000010	<0.000010	0.0060	<0.00050	
	21-Oct-10	L946803-6	0.105	0.00012	1.64	<0.000010	<2.0	0.072	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.0030	0.0297	<0.000010	<0.000010	0.0063	<0.00050	
	15-Nov-10	L955725-8	0.092	0.00014	1.63	<0.000010	<2.0	0.077	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.0030	0.0154	<0.000010	<0.000010	0.0064	<0.00050	
	15-Dec-10	L963831-7	0.117	0.00014	1.75	<0.000010	<2.0	0.089	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.0030	0.0081	<0.000010	<0.000010	0.0076	<0.00050	
	5-Mar-11	L985810-11	0.147	0.00018	1.60	<0.000010	<2.0	0.117	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.0030	0.0049	<0.000010	<0.000010	0.0079	<0.00050	
	31-Mar-11	L991777-18	0.130	0.00019	1.83	<0.000010	<2.0	0.111	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.0030	0.0055	<0.000010	<0.000010	0.0092	<0.00050	
	1-May-11	L1002688-5	0.131	0.00016	1.88	<0.000010	<2.0	0.111	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.0030	0.0163	<0.000010	<0.000010	0.0089	<0.00050	
	4-Jun-11	L1014013-6	0.144	0.00010	1.82	<0.000010	<2.0	0.043	<0.000010	<0.000010	0.011	<0.000010	<0.000010	<0.0030	0.0347	<0.000010	<0.000010	0.0047	<0.00050	
	4-Jul-11	L1028827-13	0.093	0.00016	1.38	<0.000010	<2.0	0.072	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.0030	0.0105	<0.000010	<0.000010	0.0061	<0.00050	
	1-Aug-11	L1039955-6	0.094	0.00018	1.30	<0.000010	<2.0	0.081	<0.000010	<0.000010	<0.010	<0.000010	<0.000010	<0.0030	0.0070	&lt				

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals											Dissolved Metals					
			Silicon																
			Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)
	28-Apr-09	L759011-7	0.297	0.00036	2.29	<0.000010	<2.0	0.129	<0.000010	<0.000010	<0.010	0.000011	<0.0010	<0.0030	0.0113	<0.00010	<0.00010	0.0136	<0.00050
	27-May-09	L771080-6	0.297	0.00034	2.23	<0.000010	<2.0	0.068	<0.000010	<0.000010	<0.010	<0.000010	0.0010	0.0024	0.0409	<0.00010	<0.00010	0.0077	<0.00050
	8-Jun-09	L776835-1	0.780	0.00044	7.46	0.000038	<2.0	0.086	<0.000010	<0.000010	0.129	0.000047	0.0092	0.0163	0.0571	<0.00010	<0.00010	0.0078	<0.00050
	13-Jun-09	L778602-4	0.391	0.00030	3.41	0.000012	<2.0	0.073	<0.000010	<0.000010	0.034	0.000018	0.0033	<0.0070	0.0549	<0.00010	<0.00010	0.0078	<0.00050
	19-Jun-09	L781603-6	0.227	0.00044	1.95	<0.000010	<2.0	0.081	<0.000010	<0.000010	<0.010	<0.000010	0.0011	<0.0040	0.0416	<0.00010	<0.00010	0.0082	<0.00050
	2-Jul-09	L787346-11	0.204	0.00044	1.69	<0.000010	<2.0	0.119	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0016	0.0186	<0.00010	<0.00010	0.0088	<0.00050
	4-Aug-09	L801967-7	0.203	0.00042	1.73	<0.000010	<2.0	0.132	<0.000010	<0.000010	<0.010	0.000011	<0.0010	0.0024	0.0239	<0.00010	<0.00010	0.0126	<0.00050
	23-Aug-09	L809851-12	0.274	0.00056	1.94	<0.000010	<2.0	0.178	<0.000010	<0.000010	<0.010	0.000010	<0.0010	0.0018	0.0092	<0.00010	<0.00010	0.0139	<0.00050
	13-Sep-09	L817873-4	0.623	0.00050	5.50	0.000020	<2.0	0.138	<0.000010	<0.000010	0.055	0.000039	0.0054	<0.010	0.113	<0.00010	0.00012	0.0135	<0.00050
	27-Sep-09	L824535-5	0.175	0.00035	1.78	<0.000010	<2.0	0.115	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0020	0.0194	<0.00010	<0.00010	0.0102	<0.00050
	31-Oct-09	L837185-5	0.177	0.00048	1.89	<0.000010	<2.0	0.135	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0110	<0.00010	<0.00010	<0.00010	0.0117	<0.00050
	25-Nov-09	L844495-12	0.240	0.00039	2.06	<0.000010	<2.0	0.190	<0.000010	<0.000010	<0.010	0.000013	<0.0010	<0.0010	0.0072	<0.00010	<0.00010	0.0152	<0.00050
	17-Jan-10	L855505-5	0.258	0.00054	2.20	<0.000010	2.3	0.199	<0.000010	<0.000010	<0.010	0.000019	<0.0010	<0.0010	0.0041	<0.00010	<0.00010	0.0174	<0.00050
	3-Mar-10	L866873-5	0.257	0.00045	2.19	<0.000010	2.0	0.201	<0.000010	<0.000010	<0.010	0.000017	<0.0010	<0.0010	<0.0040	<0.00010	<0.00010	0.0169	<0.00050
	28-Mar-10	L873293-4	0.258	0.00038	2.05	<0.000010	<2.0	0.161	<0.000010	<0.000010	<0.010	0.000017	<0.0010	0.0010	0.0064	<0.00010	<0.00010	0.0147	<0.00050
	2-May-10	L884476-13	0.181	<0.00020	2.03	<0.000010	<2.0	0.096	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0013	0.0378	<0.00010	<0.00010	0.0087	<0.00050
	26-May-10	L891484-6	0.185	<0.00020	1.94	0.000024	<2.0	0.072	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0100	0.0325	<0.00010	<0.00010	0.0070	<0.00050
	5-Jul-10	L905787-9	0.168	0.00032	1.64	<0.000010	<2.0	0.117	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010	0.0103	<0.00010	<0.00010	0.0106	<0.00050
	3-Aug-10	L916942-6	0.260	0.00059	1.95	<0.000010	<2.0	0.136	<0.000010	<0.000010	<0.010	<0.000010	0.0011	0.0018	0.0214	<0.00010	<0.00010	0.0115	<0.00050
	27-Aug-10	L926457-9	0.246	0.00048	1.90	<0.000010	<2.0	0.164	<0.000010	<0.000010	<0.010	0.000012	<0.0010	0.0018	0.0081	<0.00010	<0.00010	0.0153	<0.00050
	28-Sep-10	L938295-6	0.330	0.00022	2.46	0.000011	<2.0	0.100	<0.000010	<0.000010	0.013	0.000012	0.0015	<0.0030	0.0476	<0.00010	0.00011	0.0089	<0.00050
	21-Oct-10	L946802-4	0.186	0.00032	2.09	<0.000010	<2.0	0.124	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030	0.0273	<0.00010	<0.00010	0.0108	<0.00050
	15-Nov-10	L955725-9	0.190	0.00036	2.20	<0.000010	<2.0	0.143	<0.000010	<0.000010	<0.010	0.000011	<0.0010	<0.0030	0.0137	<0.00010	0.00014	0.0127	<0.00050
	15-Dec-10	L963832-5	0.245	0.00047	2.47	<0.000010	<2.0	0.186	<0.000010	<0.000010	<0.010	0.000014	<0.0010	<0.0030	0.0064	<0.00010	<0.00010	0.0157	<0.00050
	1-Apr-11	L991777-30	0.284	0.00048	2.38	<0.000010	2.3	0.215	<0.000010	<0.000010	<0.010	0.000022	<0.0010	<0.0030	0.0039	<0.00010	0.00019	0.0195	<0.00050
	1-May-11	L1002688-4	0.270	0.00037	2.37	<0.000010	<2.0	0.179	<0.000010	<0.000010	<0.010	0.000012	<0.0010	<0.0030	0.0126	<0.00010	<0.00010	0.0153	<0.00050
	4-Jun-11	L1014013-7	0.433	0.00029	4.52	0.000011	<2.0	0.076	<0.000010	<0.000010	0.050								

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals															
			Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)
SNO1	25-Jun-08	L650936-9	<0.00050	<0.010	<0.000017	10.5	<0.00050	<0.00010	0.00035	<0.030	<0.000050	<0.0050	1.40	0.0010	<0.000010	0.000147	<0.00050	<0.30
	9-Sep-08	L682706-4	<0.00050	<0.010	<0.000017	19.8	<0.00050	<0.00010	<0.00020	<0.030	<0.000050	<0.0050	3.37	0.0071	<0.000010	0.000359	0.00063	<0.30
	6-Dec-08	L717413-24	<0.00050	<0.010	<0.000017	23.7	<0.00050	<0.00010	0.00034	0.048	<0.000050	<0.0050	4.13	0.0553	0.000012	0.000277	0.00080	<0.30
	29-Mar-09	L749298-2	<0.00050	<0.010	<0.000017	30.5	<0.00050	<0.00010	0.00049	0.037	<0.000050	<0.0050	5.72	0.0615	<0.000010	0.000381	0.00089	<0.30
	29-Mar-09	L749298-1	<0.00050	<0.010	<0.000017	30.6	<0.00050	<0.00010	0.00030	<0.030	<0.000050	<0.0050	5.65	0.0611	<0.000010	0.000373	0.00079	<0.30
	3-Jul-09	L787346-12	<0.00050	<0.010	<0.000010	15.1	<0.00050	<0.00010	0.00037	0.039	<0.000050	<0.0050	3.27	0.0073	<0.000010	0.000259	0.00060	<0.30
	23-Aug-09	L809851-6	<0.00050	<0.010	<0.000010	16.3	<0.00050	<0.00010	0.00035	<0.030	<0.000050	<0.0050	2.81	0.0127	<0.000010	0.000324	0.00071	<0.30
	25-Nov-09	L844495-13	<0.00050	<0.010	<0.000010	25.5	<0.00050	<0.00010	0.00030	0.045	<0.000050	<0.0050	4.79	0.0727	<0.000010	0.000315	0.00079	<0.30
SNO2	25-Jun-08	L650936-10	<0.00050	<0.010	<0.000017	11.9	<0.00050	<0.00010	0.00047	<0.030	<0.000050	<0.0050	2.48	0.0006	<0.000010	0.000236	<0.00050	<0.30
	9-Sep-08	L682706-3	<0.00050	<0.010	<0.000017	18.6	<0.00050	<0.00010	<0.00030	<0.030	<0.000050	<0.0050	3.75	0.0032	<0.000010	0.000322	<0.00050	<0.30
	6-Dec-08	L717413-26	<0.00050	<0.010	<0.000017	19.4	<0.00050	<0.00010	0.00035	<0.030	<0.000050	<0.0050	3.95	0.0157	0.000012	0.000252	<0.00050	<0.30
	28-Mar-09	L748538-14	<0.00050	<0.010	<0.000017	24.2	<0.00050	<0.00010	0.00024	<0.030	<0.000050	<0.0050	5.11	0.0174	<0.000010	0.000332	<0.00050	<0.30
	3-Jul-09	L787346-13	<0.00050	<0.010	<0.000010	12.5	<0.00050	<0.00010	0.00041	<0.030	<0.000050	<0.0050	2.96	0.0049	<0.000010	0.000214	0.00051	<0.30
	23-Aug-09	L809851-11	<0.00050	<0.010	<0.000010	16.9	<0.00050	<0.00010	0.00031	<0.030	<0.000050	<0.0050	3.61	0.0028	<0.000010	0.000328	0.00054	<0.30
	25-Nov-09	L844495-14	<0.00050	<0.010	<0.000010	21.9	<0.00050	<0.00010	0.00030	<0.030	<0.000050	<0.0050	4.81	0.0178	<0.000010	0.000268	0.00054	<0.30
	28-Mar-10	L873293-5	<0.00050	<0.010	<0.000010	18.9	<0.00050	0.00013	0.00049	0.075	<0.000050	<0.0050	3.66	0.0437	<0.000010	0.000272	0.00077	<0.30
	5-Jul-10	L905787-10	<0.00050	<0.010	<0.000010	15.3	<0.00020	<0.00010	0.00041	<0.030	<0.000050	<0.0050	3.06	0.0049	<0.000010	0.000274	0.00050	<0.30
	27-Aug-10	L926457-10	<0.00050	<0.010	<0.000010	19.7	<0.00020	<0.00010	0.00028	<0.030	<0.000050	<0.0050	3.74	0.0103	<0.000010	0.000315	<0.00050	<0.30
	15-Nov-10	L955725-10	<0.00050	<0.010	<0.000010	17.0	0.00016	<0.00010	0.00052	0.045	<0.000050	<0.0050	3.91	0.0164	<0.000010	0.000258	0.00071	<0.30
	1-Apr-11	L991777-19	<0.00050	<0.010	<0.000010	22.6	0.00016	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	5.22	0.0548	<0.000010	0.000342	0.00065	<0.30
	3-Jul-11	L1026874-10	<0.00050	<0.010	<0.000010	14.8	0.00022	<0.00010	<0.00050	<0.030	<0.000050	0.00070	3.03	0.0078	<0.000010	0.000271	0.00051	<0.30
	5-Sep-11	L1054953-18	<0.00050	<0.010	<0.000010	15.3	0.00022	<0.00010	<0.00050	0.036	<0.000050	0.00086	3.15	0.0078	<0.000010	0.000269	0.00073	<0.30
	28-Nov-11	L1091310-24	<0.00050	<0.010	<0.000010	22.6	0.00013	<0.00010	<0.00050	0.031	<0.000050	0.00054	4.73	0.0411	<0.000010	0.000326	0.00086	<0.30
	28-Nov-11	L1091310-22	<0.00050	<0.010	<0.000010	20.2	0.00013	<0.00010	<0.00050	0.031	<0.000050	0.00050	4.58	0.0410	<0.000010	0.000294	0.00091	<0.30
STE1	25-Jun-08	L650936-7	<0.00050	<0.010	<0.000017	9.1	<0.00050	<0.00010	0.00059	<0.030	<0.000050	<0.0050	2.20	0.0053	<0.000010	0.000301	0.00063	<0.30
	9-Sep-08	L682706-17	<0.00050	<0.010	<0.000017	16.6	<0.00050	<0.00010	<0.00020	<0.030	<0.000050	<0.0050	4.07	0.0237	<0.000010	0.000379	0.00081	<0.30
	6-Dec-08	L717413-3	<0.00050	<0.010	<0.000017	15.4	<0.00050	0.00013	0.00041	0.044	<0.000050	<0.0050	3.78	0.0419	0.000013	0.000186	0.00111	<0.30
	2-Jul-09	L787346-7	<0.00050	<0.010	<0.000010	7.9	<0.00050	<0.00010	0.00041	<0.030	<0.000050	<0.0050	2.25	0.0064	<0.000010	0.000214	0.00056	<0.30
	23-Aug-09	L809851-9	<0.00050	<0.010	<0.000010	14.6	<0.00050	<0.00010	0.00021	<0.030</td								

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals															
			Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)
			<0.00050	<0.010	<0.000010	28.9	0.00026	<0.00010	<0.00050	<0.030	<0.000050	0.00164	7.55	0.0001	<0.000010	0.000550	<0.00050	<0.30
STE2	28-Nov-11	L1091310-18	<0.00050	<0.010	<0.000010	28.9	0.00026	<0.00010	<0.00050	<0.030	<0.000050	0.00164	7.55	0.0001	<0.000010	0.000550	<0.00050	<0.30
	28-May-08	L635965-1	<0.00050	<0.010	<0.000017	6.0	<0.00050	<0.00010	0.00101	0.045	<0.000050	<0.0050	1.39	0.0049	<0.000010	0.000158	0.00066	<0.30
	5-Jun-08	L639617-3	<0.00050	<0.010	<0.000017	8.2	<0.00050	<0.00010	<0.00080	0.040	<0.000050	<0.0050	1.89	0.0048	<0.000010	0.000200	0.00075	<0.30
	11-Jun-08	L642688-13	<0.00050	<0.010	<0.000017	8.3	<0.00050	<0.00010	0.00051	0.034	<0.000050	<0.0050	1.85	0.0042	<0.000010	0.000197	0.00053	<0.30
	25-Jun-08	L650936-8	<0.00050	<0.010	<0.000017	8.8	<0.00050	<0.00010	0.00058	<0.030	<0.000050	<0.0050	1.93	0.0023	<0.000010	0.000242	0.00055	<0.30
	21-Aug-08	50155637																
	9-Sep-08	L682706-18	<0.00050	<0.010	<0.000017	19.1	<0.00050	<0.00010	<0.00010	<0.030	<0.000050	<0.0050	4.20	0.0137	<0.000010	0.000364	0.00059	<0.30
	17-Sep-08	L686098-6	<0.00050	<0.010	<0.000017	16.4	<0.00050	<0.00010	0.00026	<0.030	<0.000050	<0.0050	3.88	0.0113	<0.000010	0.000390	0.00064	<0.30
	17-Sep-08	L686098-7	<0.00050	<0.010	<0.000017	17.1	<0.00050	<0.00010	0.00026	<0.030	<0.000050	<0.0050	4.11	0.0114	<0.000010	0.000388	0.00061	<0.30
	25-Sep-08	L688714-6	<0.00050	<0.010	<0.000017	21.6	<0.00050	<0.00010	0.00026	<0.030	<0.000050	<0.0050	4.81	0.0199	<0.000010	0.000383	0.00066	<0.30
	2-Oct-08	L691752-3	<0.00050	<0.010	<0.000017	12.6	<0.00050	<0.00010	0.00044	<0.030	<0.000050	<0.0050	2.72	0.0047	<0.000010	0.000314	<0.00050	<0.30
	9-Oct-08	L694973-6	<0.00050	<0.010	<0.000017	15.8	<0.00050	<0.00010	0.00044	0.047	<0.000050	<0.0050	3.32	0.0152	<0.000010	0.000287	0.00075	<0.30
	29-Oct-08	L703445-3	<0.00050	<0.010	<0.000017	17.1	<0.00050	<0.00010	0.00041	0.041	<0.000050	<0.0050	3.68	0.0186	<0.000010	0.000255	0.00079	<0.30
	28-Apr-09	L759011-6	<0.00050	<0.010	<0.000017	16.9	<0.00050	<0.00010	0.00062	0.068	<0.000050	<0.0050	3.27	0.0091	<0.000010	0.000210	0.00075	<0.30
	8-Jun-09	L776835-2	<0.00050	<0.010	0.000012	6.1	<0.00050	<0.00010	0.00077	0.046	<0.000050	<0.0050	1.32	0.0081	<0.000010	0.000170	0.00092	<0.30
	13-Jun-09	L778602-1	<0.00050	<0.010	0.000012	8.1	<0.00050	<0.00010	0.00095	0.064	0.000118	<0.0050	1.76	0.0086	<0.000010	0.000210	0.00084	<0.30
	19-Jun-09	L781603-9	<0.00050	<0.010	<0.000010	8.4	<0.00050	<0.00010	0.00058	0.036	<0.000050	<0.0050	1.74	0.0046	<0.000010	0.000209	0.00061	<0.30
	5-Jul-09	L788462-7	<0.00050	<0.010	<0.000010	7.2	<0.00050	<0.00010	0.00037	0.031	<0.000050	<0.0050	1.48	0.0035	<0.000010	0.000192	<0.00050	<0.30
	4-Aug-09	L801967-11	<0.00050	<0.010	<0.000010	14.8	<0.00050	<0.00010	<0.00050	0.074	<0.000050	<0.0050	3.13	0.0115	<0.000010	0.000454	0.00061	<0.30
	23-Aug-09	L809851-2	<0.00050	<0.010	<0.000010	18.5	<0.00050	<0.00010	0.00026	<0.030	<0.000050	<0.0050	4.00	0.0121	<0.000010	0.000397	0.00050	<0.30
	13-Sep-09	L817873-3	<0.00050	<0.010	0.000011	13.8	<0.00050	<0.00010	0.00053	0.037	<0.000050	<0.0050	2.76	0.0044	<0.000010	0.000391	0.00056	<0.30
	27-Sep-09	L824535-4	<0.00050	<0.010	0.000012	12.8	<0.00050	<0.00010	0.00065	0.047	<0.000050	<0.0050	2.71	0.0100	<0.000010	0.000273	0.00063	<0.30
	31-Oct-09	L837185-4	<0.00050	<0.010	<0.000010	16.7	<0.00050	<0.00010	<0.00050	0.053	<0.000050	<0.0050	3.73	0.0181	<0.000010	0.000258	0.00075	<0.30
	25-Nov-09	L844495-9	<0.00050	<0.010	<0.000010	21.3	<0.00050	<0.00010	0.00036	<0.030	<0.000050	<0.0050	4.79	0.0183	<0.000010	0.000269	0.00072	<0.30
	26-May-10	L891484-5	<0.00050	<0.010	<0.000010	6.7	0.00030	<0.00010	0.00069	0.037	<0.000050	<0.0050	1.55	0.0047	<0.000010	0.000144	0.00074	<0.30
	5-Jul-10	L905787-7	<0.00050	<0.010	<0.000010	12.2	<0.00020	<0.00010	0.00034	<0.030	<0.000050	<0.0050	2.66	0.0042	<0.000010	0.000293	<0.00050	<0.30
	3-Aug-10	L916942-5	<0.00050	<0.010	<0.000010	13.9	0.00044	<0.00010	0.00023	0.050	<0.000050	<0.0050	2.96	0.0065	<0.000010	0.000396	<0.00050	<0.30
	27-Aug-10	L926457-7	<0.00050	<0.010	0.000010	18.4	0.00023	<0.00010										

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

			Dissolved Metals															
Site Name	Date	ALS Sample No.	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
TEC1	25-Jun-08	L650936-12	<0.00050	<0.010	<0.000017	7.6	<0.00050	<0.00010	0.00042	<0.030	<0.000050	<0.0050	1.45	0.0002	<0.000010	0.000117	<0.00050	<0.30
	9-Sep-08	L682706-16	<0.00050	<0.010	<0.000017	12.4	<0.00050	<0.00010	<0.00020	<0.030	<0.000050	<0.0050	2.00	0.0003	<0.000010	0.000200	<0.00050	<0.30
	6-Dec-08	L717413-5	<0.00050	<0.010	<0.000017	10.4	<0.00050	<0.00010	0.00040	<0.030	<0.000050	<0.0050	1.83	0.0007	0.000013	0.000136	<0.00050	<0.30
	28-Mar-09	L748538-3	<0.00050	<0.010	<0.000017	13.1	<0.00050	<0.00010	0.00035	<0.030	<0.000050	<0.0050	2.26	0.0013	<0.000010	0.000181	0.00058	<0.30
	2-Jul-09	L787346-10	<0.00050	<0.010	<0.000010	8.0	<0.00050	<0.00010	0.00032	<0.030	<0.000050	<0.0050	1.80	0.0005	<0.000010	0.000108	<0.00050	<0.30
	23-Aug-09	L809851-3	<0.00050	<0.010	<0.000010	12.8	<0.00050	<0.00010	0.00023	<0.030	<0.000050	<0.0050	2.19	0.0004	<0.000010	0.000225	<0.00050	<0.30
	25-Nov-09	L844495-11	<0.00050	<0.010	<0.000010	11.6	<0.00050	<0.00010	0.00033	<0.030	<0.000050	<0.0050	2.21	0.0016	<0.000010	0.000141	<0.00050	<0.30
	17-Jan-10	L855505-4	<0.00050	<0.010	<0.000017	12.4	<0.00050	<0.00010	0.00035	<0.030	<0.000050	<0.0050	2.23	0.0009	<0.000010	0.000197	<0.00050	<0.30
	3-Mar-10	L866873-4	<0.00050	<0.010	<0.000010	13.1	<0.00050	<0.00010	0.00038	0.034	<0.000050	<0.0050	2.35	0.0009	<0.000010	0.000196	0.00051	<0.30
	28-Mar-10	L873293-3	<0.00050	<0.010	<0.000010	11.5	<0.00050	<0.00010	0.00043	0.041	<0.000050	<0.0050	2.16	0.0014	<0.000010	0.000164	0.00052	<0.30
	2-May-10	L884476-12	<0.00050	<0.010	<0.000010	8.4	<0.00050	<0.00010	0.00074	<0.030	<0.000050	<0.0050	1.43	0.0007	<0.000010	0.000090	0.00060	<0.30
	26-May-10	L891484-17	<0.00050	<0.010	<0.000010	6.4	<0.00020	<0.00010	0.00045	<0.030	<0.000050	<0.0050	1.16	0.0007	<0.000010	0.000075	<0.00050	<0.30
	5-Jul-10	L905787-8	<0.00050	<0.010	<0.000010	9.5	<0.00020	<0.00010	0.00031	<0.030	<0.000050	<0.0050	1.71	0.0001	<0.000010	0.000158	<0.00050	<0.30
	3-Aug-10	L916942-17	<0.00050	<0.010	<0.000010	11.4	0.00020	<0.00010	0.00021	<0.030	<0.000050	<0.0050	1.83	0.0002	<0.000010	0.000195	<0.00050	<0.30
	27-Aug-10	L926457-8	<0.00050	<0.010	<0.000010	13.9	<0.00020	<0.00010	0.00025	<0.030	<0.000050	<0.0050	2.13	0.0008	<0.000010	0.000215	<0.00050	<0.30
	28-Sep-10	L938295-17	<0.00050	<0.010	<0.000010	8.6	<0.00020	<0.00010	0.00057	<0.030	<0.000050	<0.0050	1.41	0.0011	<0.000010	0.000135	0.00064	<0.30
	21-Oct-10	L946803-6	<0.00050	<0.010	<0.000010	8.5	0.00023	<0.00010	0.00088	<0.030	<0.000050	<0.0050	1.72	0.0006	<0.000010	0.000127	0.00067	<0.30
	15-Nov-10	L955725-8	<0.00050	<0.010	<0.000010	9.6	0.00013	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	1.86	0.0004	<0.000010	0.000122	<0.00050	<0.30
	15-Dec-10	L963831-7	<0.00050	<0.010	<0.000010	11.5	0.00011	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.16	0.0004	<0.000010	0.000153	<0.00050	<0.30
	5-Mar-11	L985810-11	<0.00050	<0.010	<0.000010	13.4	0.00017	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.13	0.0002	<0.000010	0.000201	0.00062	<0.30
	31-Mar-11	L991777-18	<0.00050	<0.010	0.000011	13.2	0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.42	0.0006	<0.000010	0.000227	0.00059	<0.30
	1-May-11	L1002688-5	<0.00050	<0.010	<0.000010	12.5	0.00022	<0.00010	0.00091	0.037	<0.000050	<0.0050	2.27	0.0013	<0.000010	0.000187	0.00072	<0.30
	4-Jun-11	L1014013-6	<0.00050	<0.010	<0.000010	5.9	0.00026	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	1.04	0.0014	<0.000010	0.000091	<0.00050	<0.30
	4-Jul-11	L1028827-13	<0.00050	<0.010	<0.000010	9.5	0.00012	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	1.73	0.0002	<0.000010	0.000153	<0.00050	<0.30
	1-Aug-11	L1039955-6	<0.00050	<0.010	<0.000010	11.3	0.00016	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	1.92	0.0004	<0.000010	0.000214	<0.00050	<0.30
	5-Sep-11	L1054953-16	<0.00050	<0.010	<0.000010	9.7	0.00015	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	1.72	0.0004	<0.000010	0.000155	0.00051	<0.30
	30-Sep-11	L1067383-22	<0.00050	<0.010	<0.000010	9.7	0.00043	<0.00010	0.00096	0.087	<0.000050	<0.0050	1.81	0.0045	<0.000010	0.000148	0.00088	<0.30
	24-Oct-11	L1079029-3	<0.00050	<0.010	<0.000010	9.8	0.00020	<0.00010	0.00073	<0.030	<0.000050	<0.0050	1.72	0.0015	<0.000010	0.000143	0.00068	<0.30
	28-Nov-11	L1091310																

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

			Dissolved Metals															
Site Name	Date	ALS Sample No.	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	
	28-Apr-09	L759011-7	<0.00050	<0.010	<0.000017	17.2	<0.00050	<0.00010	0.00057	<0.030	<0.000050	<0.0050	3.58	0.0007	<0.000010	0.000251	<0.00050	<0.30
	27-May-09	L771080-6	<0.00050	<0.010	<0.000017	7.7	<0.00050	<0.00010	0.00064	0.038	<0.000050	<0.0050	1.68	0.0024	<0.000010	0.000112	0.00060	<0.30
	8-Jun-09	L776835-1	<0.00050	<0.010	<0.000010	7.0	<0.00050	<0.00010	0.00078	0.051	<0.000050	<0.0050	1.52	0.0062	<0.000010	0.000174	0.00084	<0.30
	13-Jun-09	L778602-4	<0.00050	<0.010	<0.000010	8.1	<0.00050	<0.00010	0.00063	0.033	<0.000050	<0.0050	1.76	0.0038	<0.000010	0.000171	0.00059	<0.30
	19-Jun-09	L781603-6	<0.00050	<0.010	<0.000010	9.5	<0.00050	<0.00010	0.00066	<0.030	<0.000050	<0.0050	1.99	0.0020	<0.000010	0.000170	0.00055	<0.30
	2-Jul-09	L787346-11	<0.00050	<0.010	<0.000010	10.8	<0.00050	<0.00010	0.00039	<0.030	<0.000050	<0.0050	2.86	0.0012	<0.000010	0.000193	<0.00050	<0.30
	4-Aug-09	L801967-7	<0.00050	<0.010	<0.000010	15.7	<0.00050	<0.00010	<0.00040	<0.030	<0.000050	<0.0050	3.47	0.0025	<0.000010	0.000326	<0.00050	<0.30
	23-Aug-09	L809851-12	<0.00050	<0.010	<0.000010	18.6	<0.00050	<0.00010	0.00023	<0.030	<0.000050	<0.0050	4.50	0.0010	<0.000010	0.000340	<0.00050	<0.30
	13-Sep-09	L817873-4	<0.00050	<0.010	<0.000010	14.9	<0.00050	<0.00010	0.00052	0.071	<0.000050	<0.0050	3.17	0.0019	<0.000010	0.000298	0.00052	<0.30
	27-Sep-09	L824535-5	<0.00050	<0.010	<0.000010	13.1	<0.00050	<0.00010	0.00043	<0.030	<0.000050	<0.0050	2.74	0.0015	<0.000010	0.000217	<0.00050	<0.30
	31-Oct-09	L837185-5	<0.00050	<0.010	<0.000010	16.0	<0.00050	<0.00010	<0.00040	<0.030	<0.000050	<0.0050	3.71	0.0011	<0.000010	0.000225	<0.00050	<0.30
	25-Nov-09	L844495-12	<0.00050	<0.010	<0.000010	20.6	<0.00050	<0.00010	0.00030	<0.030	<0.000050	<0.0050	5.10	0.0007	<0.000010	0.000258	<0.00050	<0.30
	17-Jan-10	L855505-5	<0.00050	<0.010	<0.000017	22.3	<0.00050	<0.00010	0.00027	<0.030	<0.000050	<0.0050	5.56	0.0003	<0.000010	0.000325	<0.00050	<0.30
	3-Mar-10	L866873-5	<0.00050	<0.010	<0.000010	21.5	<0.00050	<0.00010	0.00030	<0.030	<0.000050	<0.0050	5.38	0.0002	<0.000010	0.000326	<0.00050	<0.30
	28-Mar-10	L873293-4	<0.00050	<0.010	<0.000010	19.8	<0.00050	<0.00010	0.00032	<0.030	<0.000050	<0.0050	4.58	0.0007	<0.000010	0.000289	<0.00050	<0.30
	2-May-10	L884476-13	<0.00050	<0.010	<0.000010	10.5	<0.00050	<0.00010	0.00085	<0.030	<0.000050	<0.0050	2.26	0.0015	<0.000010	0.000146	0.00061	<0.30
	26-May-10	L891484-6	<0.00050	<0.010	<0.000010	8.0	<0.00020	<0.00010	0.00053	<0.030	<0.000050	<0.0050	1.80	0.0014	<0.000010	0.000137	<0.00050	<0.30
	5-Jul-10	L905787-9	<0.00050	<0.010	<0.000010	13.8	<0.00020	<0.00010	0.00031	<0.030	<0.000050	<0.0050	3.04	0.0003	<0.000010	0.000269	<0.00050	<0.30
	3-Aug-10	L916942-6	<0.00050	<0.010	<0.000010	14.8	0.00029	<0.00010	0.00016	<0.030	<0.000050	<0.0050	3.21	0.0005	<0.000010	0.000313	<0.00050	<0.30
	27-Aug-10	L926457-9	<0.00050	<0.010	<0.000010	20.3	0.00024	<0.00010	0.00028	<0.030	<0.000050	<0.0050	4.39	0.0014	<0.000010	0.000343	<0.00050	<0.30
	28-Sep-10	L938295-6	<0.00050	<0.010	<0.000010	10.4	0.00031	<0.00010	0.00085	0.045	<0.000050	<0.0050	2.25	0.0027	<0.000010	0.000197	0.00070	<0.30
	21-Oct-10	L946802-4	<0.00050	<0.010	<0.000010	13.5	0.00031	<0.00010	0.00066	<0.030	<0.000050	<0.0050	3.20	0.0010	<0.000010	0.000200	0.00061	<0.30
	15-Nov-10	L955725-9	<0.00050	<0.010	<0.000010	15.8	0.00020	<0.00010	0.00057	<0.030	0.00062	<0.0050	3.90	0.0008	<0.000010	0.000238	0.00053	<0.30
	15-Dec-10	L963832-5	<0.00050	<0.010	<0.000010	20.5	0.00022	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	5.48	0.0002	<0.000010	0.000303	0.00071	<0.30
	1-Apr-11	L991777-30	<0.00050	<0.010	<0.000010	23.9	0.00023	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	6.41	0.0002	<0.000010	0.000349	<0.00050	<0.30
	1-May-11	L1002688-4	<0.00050	<0.010	<0.000010	19.1	0.00024	<0.00010	0.00062	<0.030	<0.000050	<0.0050	5.08	0.0018	<0.000010	0.000283	0.00056	<0.30
	4-Jun-11	L1014013-7	<0.00050	<0.010	<0.000010	8.5	0.00041	<0.00010	0.00066	0.047	<0.000050	<0.0050	1.90	0.0038	<0.000010	0.000175	0.00064	<0.30
	3-Jul-11	L1026874-16	<0.00050	<0.010	<0.000010	13.8	0.00022	<0.00010	<0.00050	<0.030	<0.000050	0.00057	3.15	0.0011	<0.000010	0.000255	<0.00050	<0.30
	1-Aug-11	L1039955-7	<0.00050	<0.010</														

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals											
			Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
SNO1														
	25-Jun-08	L650936-9	0.102	0.00021	1.38	<0.000010	<2.0	0.078	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	9-Sep-08	L682706-4	0.215	0.00045	1.62	<0.000010	<2.0	0.155	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	6-Dec-08	L717413-24	0.270	0.00039	2.67	<0.000010	<2.0	0.161	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	29-Mar-09	L749298-2	0.317	0.00064	2.78	<0.000010	2.6	0.198	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	29-Mar-09	L749298-1	0.310	0.00063	2.77	<0.000010	2.5	0.197	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	3-Jul-09	L787346-12	0.187	0.00064	1.54	<0.000010	<2.0	0.128	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	23-Aug-09	L809851-6	0.186	0.00028	1.27	<0.000010	<2.0	0.138	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	25-Nov-09	L844495-13	0.270	0.00045	2.51	<0.000010	2.0	0.195	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0018
SNO2														
	25-Jun-08	L650936-10	0.172	0.00027	1.66	<0.000010	<2.0	0.093	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	9-Sep-08	L682706-3	0.205	0.00040	1.67	<0.000010	<2.0	0.145	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	6-Dec-08	L717413-26	0.233	0.00039	2.23	<0.000010	<2.0	0.140	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	28-Mar-09	L748538-14	0.297	0.00037	2.45	<0.000010	2.3	0.165	<0.00010	<0.00010	<0.010	0.000011	<0.0010	<0.0010
	3-Jul-09	L787346-13	0.175	0.00031	1.59	<0.000010	<2.0	0.114	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0011
	23-Aug-09	L809851-11	0.215	0.00035	1.57	<0.000010	<2.0	0.146	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	25-Nov-09	L844495-14	0.244	0.00039	2.12	<0.000010	<2.0	0.175	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	28-Mar-10	L873293-5	0.266	0.00029	2.19	<0.000010	<2.0	0.135	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	5-Jul-10	L905787-10	0.180	0.00039	1.68	<0.000010	<2.0	0.123	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	27-Aug-10	L926457-10	0.226	0.00025	1.60	<0.000010	<2.0	0.158	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	15-Nov-10	L955725-10	0.215	0.00035	2.34	<0.000010	<2.0	0.142	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	1-Apr-11	L991777-19	0.299	0.00044	2.44	<0.000010	2.2	0.193	<0.00010	<0.00010	<0.010	0.000013	<0.0010	<0.0030
	3-Jul-11	L1026874-10	0.179	0.00039	1.66	<0.000010	<2.0	0.135	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	5-Sep-11	L1054953-18	0.187	0.00035	1.79	<0.000010	<2.0	0.135	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	28-Nov-11	L1091310-24	0.259	0.00042	2.44	<0.000010	<2.0	0.181	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	28-Nov-11	L1091310-22	0.257	0.00041	2.48	<0.000010	<2.0	0.163	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
STE1														
	25-Jun-08	L650936-7	0.182	0.00039	1.55	<0.000010	<2.0	0.092	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	9-Sep-08	L682706-17	0.247	0.00066	1.74	<0.000010	<2.0	0.166	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0010
	6-Dec-08	L717413-3	0.225	0.00058	2.13	<0.000010	<2.0	0.142	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0015
	2-Jul-09	L787346-7	0.160	0.00036	1.37	<0.000010	<2.0	0.093	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	23-Aug-09	L809851-9	0.245	0.00058	1.42	<0.000010	<2.0	0.161	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	26-Nov-09	L844495-8	0.237	0.00058	2.14	<0.000010	<2.0	0.185	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0014
STE1A														
	26-May-10	L891484-4	0.247	0.00074	2.11	<0.000010	<2.0	0.121	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	5-Jul-10	L905787-5	0.274	0.00081	1.76	<0.000010	<2.0	0.183	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	3-Aug-10	L916942-4	0.221	0.00056	1.20	<0.000010	<2.0	0.124	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	27-Aug-10	L926457-5	0.283	0.00060	1.50	<0.000010	<2.0	0.193	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	28-Sep-10	L938295-4	0.246	0.00074	1.61	<0.000010	<2.0	0.143	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	15-Nov-10	L955725-5	0.292	0.00129	2.41	<0.000010	2.1	0.286	<0.00010	<0.00010	<0.010	0.000014	<0.0010	<0.0030
	15-Dec-10	L963832-4	0.337	0.00140	2.45	<0.000010	2.5	0.326	<0.00010	<0.00010	<0.010	0.000018	&	

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals											
			Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
STE2	28-Nov-11	L1091310-18	0.325	0.00138	2.49	<0.000010	2.4	0.313	<0.000010	<0.00010	<0.010	0.000018	<0.0010	<0.0030
	28-May-08	L635965-1	0.177	0.00026	1.63	<0.000010	<2.0	0.056	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	5-Jun-08	L639617-3	0.193	0.00036	1.69	<0.000010	<2.0	0.084	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	11-Jun-08	L642688-13	0.137	0.00031	1.66	<0.000010	<2.0	0.076	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	25-Jun-08	L650936-8	0.157	0.00039	1.56	<0.000010	<2.0	0.085	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	21-Aug-08	50155637												
	9-Sep-08	L682706-18	0.235	0.00067	1.81	<0.000010	<2.0	0.174	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	17-Sep-08	L686098-6	0.226	0.00058	1.55	<0.000010	<2.0	0.162	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	17-Sep-08	L686098-7	0.234	0.00069	1.55	<0.000010	<2.0	0.161	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	25-Sep-08	L688714-6	0.263	0.00077	1.92	<0.000010	<2.0	0.186	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	2-Oct-08	L691752-3	0.215	0.00040	1.59	<0.000010	<2.0	0.121	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	9-Oct-08	L694973-6	0.214	0.00057	2.03	<0.000010	<2.0	0.146	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	29-Oct-08	L703445-3	0.237	0.00053	2.10	<0.000010	<2.0	0.148	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	28-Apr-09	L759011-6	0.245	0.00043	2.43	<0.000010	<2.0	0.139	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	8-Jun-09	L776835-2	0.179	0.00039	1.49	<0.000010	<2.0	0.077	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0024
	13-Jun-09	L778602-1	0.191	0.00035	1.71	<0.000010	<2.0	0.074	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	19-Jun-09	L781603-9	0.159	0.00038	1.51	<0.000010	<2.0	0.080	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	5-Jul-09	L788462-7	0.124	0.00030	1.27	<0.000010	<2.0	0.059	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	4-Aug-09	L801967-11	0.247	0.00054	1.54	<0.000010	<2.0	0.146	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0020
	23-Aug-09	L809851-2	0.230	0.00068	1.65	<0.000010	<2.0	0.186	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	13-Sep-09	L817873-3	0.228	0.00060	1.51	<0.000010	<2.0	0.138	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	27-Sep-09	L824535-4	0.182	0.00063	1.86	<0.000010	<2.0	0.125	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	31-Oct-09	L837185-4	0.223	0.00064	2.12	<0.000010	<2.0	0.170	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	25-Nov-09	L844495-9	0.234	0.00060	2.25	<0.000010	<2.0	0.212	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	26-May-10	L891484-5	0.146	<0.00020	1.70	<0.000010	<2.0	0.069	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	5-Jul-10	L905787-7	0.161	0.00042	1.64	<0.000010	<2.0	0.117	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	3-Aug-10	L916942-5	0.195	0.00062	1.48	<0.000010	<2.0	0.137	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	27-Aug-10	L926457-7	0.236	0.00058	1.67	<0.000010	<2.0	0.179	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0015
	28-Sep-10	L938295-5	0.231	0.00029	1.69	<0.000010	<2.0	0.085	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0089
	15-Nov-10	L955725-7	0.203	0.00055	2.34	<0.000010	<2.0	0.172	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	5-Mar-11	L985810-10	0.294	0.00074	2.50	<0.000010	2.2	0.263	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	31-Mar-11	L991777-17	0.257	0.00076	2.60	<0.000010	2.2	0.275	<0.00010	<0.00010	<0.010	0.000010	<0.0010	<0.0030
	4-Jun-11	L1014013-5	0.165	0.00038	1.66	<0.000010	<2.0	0.086	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	4-Jul-11	L1028827-12	0.175	0.00052	1.68	<0.000010	<2.0	0.127	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	4-Jul-11	L1028827-14												
	1-Aug-11	L1039955-5	0.207	0.00061	1.75	<0.000010	<2.0	0.161	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	4-Sep-11	L1054465-10	0.186	0.00042	1.70	<0.000010	<2.0	0.119	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	30-Sep-11	L1067383-21	0.181	0.00040	1.96	<0.000010	<2.0	0.118	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	24-Oct-11	L1079029-2	0.208	0.00052	2.28	<0.000010	<2.0	0.156	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
STE3	17-Jan-10	L855505-10	0.267	0.00102										

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Teigen Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals											
			Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
TEC1	25-Jun-08	L650936-12	0.091	<0.00010	1.27	<0.000010	<2.0	0.054	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	9-Sep-08	L682706-16	0.099	0.00011	1.23	<0.000010	<2.0	0.079	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	6-Dec-08	L717413-5	0.095	0.00028	1.47	<0.000010	<2.0	0.069	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	28-Mar-09	L748538-3	0.123	0.00025	1.55	<0.000010	<2.0	0.087	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	2-Jul-09	L787346-10	0.098	0.00012	1.26	<0.000010	<2.0	0.065	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	23-Aug-09	L809851-3	0.101	0.00015	1.18	<0.000010	<2.0	0.087	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	25-Nov-09	L844495-11	0.095	<0.00020	1.38	<0.000010	<2.0	0.086	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	17-Jan-10	L855505-4	0.108	<0.00020	1.56	<0.000010	<2.0	0.095	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	3-Mar-10	L866873-4	0.101	0.00061	1.57	<0.000010	<2.0	0.101	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	28-Mar-10	L873293-3	0.124	<0.00020	1.53	<0.000010	<2.0	0.092	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	2-May-10	L884476-12	0.103	<0.00020	1.64	<0.000010	<2.0	0.063	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	26-May-10	L891484-17	0.084	<0.00020	1.28	<0.000010	<2.0	0.049	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	5-Jul-10	L905787-8	0.088	<0.00020	1.24	<0.000010	<2.0	0.067	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	3-Aug-10	L916942-17	0.094	0.00024	1.05	<0.000010	<2.0	0.075	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	27-Aug-10	L926457-8	0.108	<0.00020	1.16	<0.000010	<2.0	0.091	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0011
	28-Sep-10	L938295-17	0.139	<0.00020	1.45	<0.000010	<2.0	0.063	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	21-Oct-10	L946803-6	0.101	0.00010	1.51	<0.000010	<2.0	0.068	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	15-Nov-10	L955725-8	0.086	0.00013	1.58	<0.000010	<2.0	0.074	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	15-Dec-10	L963831-7	0.104	0.00016	1.65	<0.000010	<2.0	0.086	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	5-Mar-11	L985810-11	0.133	0.00015	1.55	<0.000010	<2.0	0.094	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	31-Mar-11	L991777-18	0.118	0.00015	1.62	<0.000010	<2.0	0.107	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	1-May-11	L1002688-5	0.134	0.00016	1.84	<0.000010	<2.0	0.110	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	4-Jun-11	L1014013-6	0.083	<0.00010	1.27	<0.000010	<2.0	0.045	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	4-Jul-11	L1028827-13	0.086	0.00015	1.24	<0.000010	<2.0	0.069	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	1-Aug-11	L1039955-6	0.085	0.00017	1.21	<0.000010	<2.0	0.078	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	5-Sep-11	L1054953-16	0.086	0.00014	1.37	<0.000010	<2.0	0.075	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	30-Sep-11	L1067383-22	0.126	0.00013	1.70	<0.000010	<2.0	0.071	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	24-Oct-11	L1079029-3	0.106	0.00010	1.62	<0.000010	<2.0	0.072	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	28-Nov-11	L1091310-23	0.116	0.00014	1.68	<0.000010	<2.0	0.090	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
TEC1B	1-Aug-11	L1041095-5	0.153	0.00028	1.63	<0.000010	<2.0	0.118	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	4-Sep-11	L1054465-12	0.162	0.00022	1.71	<0.000010	<2.0	0.098	<0.000010	0.00013	<0.010	<0.000010	<0.0010	<0.0030
	30-Sep-11	L1067383-23	0.172	0.00023	1.94	<0.000010	<2.0	0.103	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	23-Oct-11	L1079029-4	0.180	0.00022	2.01	<0.000010	<2.0	0.106	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	28-Nov-11	L1091310-25	0.223	0.00030	2.23	<0.000010	<2.0	0.150	<0.000010	<0.000010	<0.010	0.000013	<0.0010	<0.0030
TEC2	28-May-08	L635965-11	0.160	0.00024	1.65	<0.000010	<2.0	0.056	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	5-Jun-08	L639617-4	0.177	0.00028	1.65	<0.000010	<2.0	0.073	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	11-Jun-08	L642688-6	0.142	0.00027	1.66	<0.000010	<2.0	0.079	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	25-Jun-08	L650936-11	0.156	0.00028	1.56	<0.000010	<2.0	0.						

## Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011

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Site Name	Date	ALS Sample No.	Dissolved Metals											
			Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zinc (Zn)
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
UNK1	28-Apr-09	L759011-7	0.234	0.00023	2.26	<0.000010	<2.0	0.116	<0.00010	<0.00010	<0.010	0.000012	<0.0010	<0.0010
	27-May-09	L771080-6	0.156	0.00015	1.83	<0.000010	<2.0	0.061	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	8-Jun-09	L776835-1	0.176	0.00026	1.55	<0.000010	<2.0	0.079	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	13-Jun-09	L778602-4	0.137	0.00030	1.52	<0.000010	<2.0	0.067	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0012
	19-Jun-09	L781603-6	0.142	0.00033	1.51	<0.000010	<2.0	0.077	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	2-Jul-09	L787346-11	0.156	0.00028	1.50	<0.000010	<2.0	0.107	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	4-Aug-09	L801967-7	0.203	0.00046	1.46	<0.000010	<2.0	0.133	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0020
	23-Aug-09	L809851-12	0.210	0.00036	1.63	<0.000010	<2.0	0.172	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	13-Sep-09	L817873-4	0.210	0.00046	1.68	<0.000010	<2.0	0.131	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	27-Sep-09	L824535-5	0.146	0.00039	1.66	<0.000010	<2.0	0.111	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	31-Oct-09	L837185-5	0.176	0.00044	1.84	<0.000010	<2.0	0.138	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	25-Nov-09	L844495-12	0.215	0.00043	1.97	<0.000010	<2.0	0.178	<0.00010	<0.00010	<0.010	0.000013	<0.0010	<0.0010
	17-Jan-10	L855505-5	0.250	0.00048	2.26	<0.000010	2.0	0.193	<0.00010	<0.00010	<0.010	0.000017	<0.0010	<0.0010
	3-Mar-10	L866873-5	0.239	0.00048	2.21	<0.000010	2.1	0.187	<0.00010	<0.00010	<0.010	0.000018	<0.0010	<0.0010
	28-Mar-10	L873293-4	0.245	0.00039	2.03	<0.000010	<2.0	0.155	<0.00010	<0.00010	<0.010	0.000016	<0.0010	<0.0010
	2-May-10	L884476-13	0.155	<0.00020	1.97	<0.000010	<2.0	0.088	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	26-May-10	L891484-6	0.122	<0.00020	1.61	<0.000010	<2.0	0.069	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	5-Jul-10	L905787-9	0.159	0.00037	1.60	<0.000010	<2.0	0.118	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	3-Aug-10	L916942-6	0.170	0.00057	1.43	<0.000010	<2.0	0.130	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	27-Aug-10	L926457-9	0.217	0.00027	1.64	<0.000010	<2.0	0.169	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	28-Sep-10	L938295-6	0.203	0.00027	1.71	<0.000010	<2.0	0.096	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	21-Oct-10	L946802-4	0.173	0.00029	1.96	<0.000010	<2.0	0.119	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	15-Nov-10	L955725-9	0.187	0.00038	2.13	<0.000010	<2.0	0.138	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	15-Dec-10	L963832-5	0.247	0.00045	2.37	<0.000010	<2.0	0.181	<0.00010	<0.00010	<0.010	0.000015	<0.0010	<0.0030
	1-Apr-11	L991777-30	0.288	0.00050	2.35	<0.000010	2.3	0.210	<0.00010	<0.00010	<0.010	0.000022	<0.0010	<0.0030
	1-May-11	L1002688-4	0.265	0.00036	2.21	<0.000010	<2.0	0.178	<0.00010	<0.00010	<0.010	0.000012	<0.0010	<0.0030
	4-Jun-11	L1014013-7	0.155	0.00026	1.63	<0.000010	<2.0	0.076	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	3-Jul-11	L1026874-16	0.170	0.00041	1.60	<0.000010	<2.0	0.133	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	1-Aug-11	L1039955-7	0.176	0.00043	1.56	<0.000010	<2.0	0.147	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	5-Sep-11	L1054953-17	0.152	0.00033	1.67	<0.000010	<2.0	0.131	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	30-Sep-11	L1067383-24	0.186	0.00039	1.97	<0.000010	<2.0	0.115	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	24-Oct-11	L1079029-5	0.192	0.00030	2.11	<0.000010	<2.0	0.127	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	28-Nov-11	L1091310-27	0.210	0.00042	2.30	<0.000020	<2.0	0.181	<0.000020	<0.00020	<0.010	<0.000020	<0.0020	<0.0060
UNK2	3-Jul-09	L787346-8	0.064	0.00016	1.23	<0.000010	<2.0	0.036	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	23-Aug-09	L809851-1	0.058	0.00024	1.78	<0.000010	<2.0	0.071	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
HLO	1-Dec-09	L845898-1	0.093	<0.00020	2.09	<0.000010	<2.0	0.073	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	25-Jun-08	L650936-13	0.339	0.00054	2.82	<0.000010	2.1	0.195	<0.00010	<0.00010	<0.010	0.000025	<0.0010	<0.0010
	21-Aug-08	50155641												
	9-Sep-08	L682706-20	0.404	0.00062	3.34	<0.000010	2.6	0.221	<0.00010	<0.00010	<0.010	0.000035	<0.0010	<0.0010
	5-Dec-08	L717413-1	0.407	0.00079	3.45	<0.000010	2.7	0.208	<0.00010	0.00010	<0.010	0.000035	<0.0010	0.0033
	2-Jul-09	L787346-9	0.342	0.00070	2.73	<0.000010	<2.0	0.231	<0.00010	<0.00010	<0.010	0.000025	<0.0010	<0.0010
	23-Aug-09	L809851-4	0.388	0.00059	3.38	<0.000010	2.6	0.245	<0.00010	<0.00010	<0.010	0.000037	<0.0010	<0.0010
	25-Nov-09	L844495-10	0.404	0.00071	3.34	<0.000010	2.8	0.247	<0.00010	<0.00010	<0.010	0.000037	<0.0010	<0.0010
	9-Sep-08	L682706-15	0.093	<0.00010	1.05	<0.000010	<2.0	0.080	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0011

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## Notes:

< indicates that the value is below the analytical detection limit

- indicates parameter was not analyzed

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Treaty Creek Watershed**

		Physical Parameter							Anions and Nutrients											
		Site Name	Date	ALS Sample No.	Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Total (as $\text{CaCO}_3$ ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)
NTR1	25-Jun-08	L650936-6	7.8	78.7	32.9	7.45	69.9	118	0.53	1.8	20.9	<2.0	<2.0	20.9	0.0051	<0.050	<0.50	0.036	0.128	<0.0010
	9-Sep-08	L682706-9	5.2	132	52.2	7.75	4.4	66	1.06	2.5	26.6	<2.0	<2.0	26.6	<0.0050	<0.050	<0.50	0.037	0.0503	<0.0010
	2-Jul-09	L787346-17	7.5	95.2	43.1	7.70	3.0	56	0.88	3.5	25.5	<2.0	<2.0	25.5	<0.0050	<0.050	<0.50	0.031	0.113	<0.0010
	22-Aug-09	L809879-9	<5.0	139	61.2	7.61	<3.0	84	1.18	3.0	27.5	<2.0	<2.0	27.5	<0.0050	<0.050	<0.50	0.031	0.0312	<0.0010
	5-Jul-10	L905787-14	5.5	115	48.7	7.83	7.5	71	2.01	3.1	27.1	<2.0	<2.0	27.1	0.0053	<0.050	<0.50	0.028	0.0979	<0.0010
	27-Aug-10	L926457-14	<5.0	146	62.4	7.87	<3.0	85	0.73	6.7	32.0	<2.0	<2.0	32.0	<0.0050	<0.050	<0.50	0.034	0.0478	<0.0010
	15-Nov-10	L955725-13	5.7	110	46.9	7.83	<3.0	68	0.64	2.2	28.1	<2.0	<2.0	28.1	<0.0050	<0.050	<0.50	0.040	0.191	<0.0010
	3-Jul-11	L1026874-4	6	101	42.7	7.50	<3.0	66	0.76	1.2	24.8	<2.0	<2.0	24.8	0.0103	<0.050	<0.50	0.045	0.0382	<0.0010
	4-Sep-11	L1054465-17	<5.0	135	56.4	7.95	<3.0	77	0.71	5.6	30.0	<2.0	<2.0	30.0	<0.0050	<0.050	<0.50	0.038	0.0561	<0.0010
NTR1A	26-May-10	L891484-7	12.0	63.9	26.9	7.75	4.0	50	1.22	2.3	17.7	<2.0	<2.0	17.7	<0.0050	<0.050	<0.50	0.031	0.541	<0.0010
	5-Jul-10	L905787-16	<5.0	98.1	42.4	7.14	<3.0	60	0.56	4.7	25.9	<2.0	<2.0	25.9	0.0064	<0.050	<0.50	0.025	0.129	<0.0010
	3-Aug-10	L916942-7	<5.0	121	49.2	7.86	<3.0	75	0.35	2.5	27.5	<2.0	<2.0	27.5	<0.0050	<0.050	<0.50	0.037	0.0971	<0.0010
	27-Aug-10	L926457-16	<5.0	137	58.1	8.69	<3.0	81	0.48	<1.0	31.5	<1.0	<1.0	31.5	<0.0050	<0.050	<0.50	0.034	0.135	<0.0010
	28-Sep-10	L938295-7	20	81.7	35.0	7.56	6.8	64	2.84	5.6	21.2	<2.0	<2.0	21.2	<0.0050	<0.050	<0.50	0.028	0.430	<0.0010
	15-Nov-10	L955725-15	6.3	99.6	43.7	7.27	<3.0	54	0.42	2.8	26.5	<2.0	<2.0	26.5	<0.0050	<0.050	<0.50	0.034	0.394	<0.0010
	15-Dec-10	L963832-6	<5.0	117	51.2	8.04	<3.0	66	0.35	5.7	28.5	<2.0	<2.0	28.5	<0.0050	<0.050	<0.50	0.035	0.346	<0.0010
	31-Mar-11	L991777-15	<5.0	139	55.5	7.76	<3.0	84	0.30	4.0	24.3	<2.0	<2.0	24.3	<0.0050	<0.050	<0.50	0.028	0.315	<0.0010
	1-May-11	L1002688-2	<5.0	104	47.1	7.88	23.3	64	3.81	3.5	25.7	<1.0	<1.0	25.7	<0.0050	<0.050	<0.50	0.020	1.17	<0.0010
	4-Jun-11	L1014013-9	9.6	66	27.3	7.82	7.3	45	4.13	3.1	17.6	<2.0	<2.0	17.6	0.0051	<0.050	<0.50	0.029	0.273	<0.0010
	3-Jul-11	L1026874-6	<5.0	99.5	42.8	7.62	<3.0	67	1.20	1.1	25.4	<2.0	<2.0	25.4	<0.0050	<0.050	<0.50	0.035	0.0976	<0.0010
	1-Aug-11	L1039955-10	<5.0	124	51.1	8.30	<3.0	83	0.52	<1.0	30.1	<1.0	<1.0	30.1	<0.0050	<0.050	<0.50	0.042	0.0797	<0.0010
	4-Sep-11	L1054465-19	6.6	121	50.8	8.03	<3.0	81	1.12	5.0	29.2	<2.0	<2.0	29.2	<0.0050	<0.050	<0.50	0.034	0.105	<0.0010
	30-Sep-11	L1067383-17	12.4	86.3	36.0	7.98	<3.0	60	1.30	3.8	23.8	<2.0	<2.0	23.8	<0.0050	<0.050	<0.50	0.032	0.266	0.0012
	24-Oct-11	L1079029-11	7.3	95.1	40.8	7.88	<3.0	68	0.72	2.8	25.0	<2.0	<2.0	25.0	<0.0050	<0.050	<0.50	0.037	0.292	<0.0010
	24-Oct-11	L1079029-9	7.3	95.1	39.9	7.90	5.5	61	2.72	2.8	24.6	<2.0	<2.0	24.6	<0.0050	<0.050	<0.50	0.037	0.301	<0.0010
NTR2	28-May-08	L635965-13	23.7	9.1	54.6	7.81	56.0	76.3	51.9	2.9	14.5	<2.0	<2.0	14.5	<0.0050	<0.050	<0.50	0.031	0.565	<0.0010
	5-Jun-08	L639617-6	28	8.4	74.5	7.92	47.0	5.8	6.31	1.3	17.5	<2.0	<2.0	17.5	<0.0050	<0.050	<0.50	0.030	0.291	<0.0010
	11-Jun-08	L642688-8	31.1	<5.0	77.0	7.65	52.0	3.8	4.01	1.1	19.8	<2.0	<2.0	19.8	<0.0050	<0.050	<0.50	0.028	0.196	<0.0010
	25-Jun-08	L650936-1	<5.0	73.1	32.2	7.23	4.9	64	2.39	2.3	19.3	<2.0	<2.0	19.3	<0.0050	<0.050	<0.50	0.025	0.0744	<0.0010
	3-Jul-08	L652071-5	<5.0	58.6	25.7	6.78	50.3	49	55.4	8.3	13.7	<2.0	<2.0	13.7	<0.0050	<0.050	<0.50	0.024	0.0498	<0.0010
	25-Jul-08	L662220-7	-	-	35.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	25-Jul-08	L662220-6	<5.0	80.3	36.1	7.67	3.2	45												

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

		Physical Parameter							Anions and Nutrients											
		Site Name	Date	ALS Sample No.	Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	pH (pH unit)	Total Suspended Solids ( $\text{mg/L}$ )	Total Dissolved Solids ( $\text{mg/L}$ )	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Alkalinity, Total (as $\text{CaCO}_3$ ) ( $\text{mg/L}$ )	Ammonia (as N) ( $\text{mg/L}$ )	Bromide (Br) ( $\text{mg/L}$ )	Chloride (Cl) ( $\text{mg/L}$ )	Fluoride (F) ( $\text{mg/L}$ )
TRC0	13-Jun-09	L778602-5	5.7	59.1	24.3	7.07	37.2	51	39.7	2.3	15.0	<2.0	<2.0	15.0	<0.0050	<0.050	<0.50	0.024	0.171	<0.0010
	19-Jun-09	L781603-7	<5.0	66.3	27.4	7.63	6.5	42	9.15	1.5	7.1	<2.0	<2.0	7.1	<0.0050	<0.050	<0.50	0.023	0.103	<0.0010
	5-Jul-09	L788462-6	<5.0	64.1	26.4	7.98	10.8	44	10.5	2.3	16.5	<2.0	<2.0	16.5	<0.0050	<0.050	<0.50	<0.020	0.0167	<0.0010
	4-Aug-09	L801967-6	<5.0	66.5	28.1	7.73	21.5	42	14.1	1.4	14.5	<2.0	<2.0	14.5	<0.0050	<0.050	<0.50	0.020	0.0083	<0.0010
	22-Aug-09	L809879-25	<5.0	76.4	33.0	7.68	11.8	46	10.3	1.8	16.6	<2.0	<2.0	16.6	<0.0050	<0.050	<0.50	0.022	0.0152	<0.0010
	22-Aug-09	L809879-10	<5.0	76.4	33.0	7.82	5.8	48	10.3	1.3	17.7	<2.0	<2.0	17.7	-	<0.050	<0.50	0.023	0.0152	<0.0010
	13-Sep-09	L817873-6	<5.0	80	33.2	7.92	37.8	61	49.2	1.9	25.6	<1.0	<1.0	25.6	<0.0050	<0.050	<0.50	0.025	0.0300	<0.0010
	27-Sep-09	L824535-7	<5.0	101	42.1	7.72	16.0	55	12.2	2.1	24.0	<2.0	<2.0	24.0	<0.0050	<0.050	<0.50	0.028	0.201	<0.0010
	31-Oct-09	L837185-7	<5.0	108	45.8	7.76	<3.0	58	0.88	1.1	25.2	<2.0	<2.0	25.2	<0.0050	<0.050	<0.50	0.025	0.310	<0.0010
	25-Nov-09	L844495-17	<5.0	118	53.7	7.71	<3.0	69	0.47	1.4	27.4	<2.0	<2.0	27.4	<0.0050	<0.050	<0.50	0.031	0.274	<0.0010
	1-May-10	L884476-3	8.4	83.3	35.1	7.91	<3.0	57	2.05	3.5	21.4	<2.0	<2.0	21.4	<0.0050	<0.050	<0.50	0.029	1.17	<0.0010
	5-Jul-10	L905787-15	<5.0	89.9	38.6	7.92	<3.0	61	2.39	2.6	22.4	<2.0	<2.0	22.4	<0.0050	<0.050	<0.50	0.021	0.0368	<0.0010
	27-Aug-10	L926457-15	<5.0	98.8	42.1	7.54	3.0	55	3.64	5.9	25.1	<1.0	<1.0	25.1	<0.0050	<0.050	<0.50	<0.020	0.0325	<0.0010
	15-Nov-10	L955725-14	<5.0	105	46.3	7.85	<3.0	58	0.92	2.1	27.2	<2.0	<2.0	27.2	<0.0050	<0.050	<0.50	0.033	0.300	<0.0010
	1-Apr-11	L991777-26	<5.0	141	59.2	7.66	<3.0	85	0.31	4.5	26.0	<2.0	<2.0	26.0	<0.0050	<0.050	<0.50	0.027	0.281	<0.0010
	3-Jul-11	L1026874-17	<5.0	80.2	35.2	7.54	4.7	53	6.30	<1.0	19.9	<2.0	<2.0	19.9	0.0074	<0.050	<0.50	0.030	0.0148	<0.0010
	3-Jul-11	L1026874-5	<5.0	79.7	33.9	7.54	4.7	52	6.40	2.4	19.4	<2.0	<2.0	19.4	0.0083	<0.050	<0.50	0.027	0.0153	<0.0010
	4-Sep-11	L1054465-18	<5.0	87.4	36.2	8.06	11.6	69	21.2	4.4	19.7	<2.0	<2.0	19.7	<0.0050	<0.050	<0.50	0.024	0.0297	<0.0010
	27-Nov-11	L1091310-14	<5.0	129	56.0	7.90	<3.0	65	0.49	2.2	33.5	<2.0	<2.0	33.5	<0.0050	<0.050	<0.50	0.038	0.198	<0.0010
TRC1	1-Aug-11	L1041095-1	<5.0	104	43.7	7.84	425	105	276	1.6	21.5	<2.0	<2.0	21.5	0.0102	<0.050	<0.50	0.046	<0.025	<0.0010
	5-Sep-11	L1054953-14	<5.0	119	51.0	8.34	605	88	642	<1.0	31.7	<1.0	<1.0	31.7	0.0054	<0.050	<0.50	0.040	0.0106	<0.0020
	30-Sep-11	L1067383-18	<5.0	307	137.0	8.01	112	200	105	4.3	57.1	<2.0	<2.0	57.1	<0.0050	<0.050	<0.50	0.104	0.0091	0.0011
	24-Oct-11	L1079029-6	<5.0	421	194.0	7.99	38.2	274	32.7	3.3	72.3	<2.0	<2.0	72.3	<0.0050	<0.050	<0.50	0.143	0.0052	<0.0010
TRC1B	25-Jun-08	L650936-2	<5.0	74.1	32.6	7.51	<3.0	65	0.43	1.7	21.7	<2.0	<2.0	21.7	0.0095	<0.050	<0.50	0.034	<0.0050	<0.0010
	9-Sep-08	L682706-11	<5.0	158	65.7	7.87	176	107	234	2.5	37.5	<2.0	<2.0	37.5	<0.0050	<0.050	<0.50	0.036	0.0079	<0.0010
	2-Jul-09	L787346-14	<5.0	148	72.2	7.93	127	115	123	2.7	36.1	<2.0	<2.0	36.1	<0.0050	<0.050	<0.50	0.041	0.0164	<0.0010
	23-Aug-09	L809851-8	<5.0	199	94.8	7.96	16.3	128	3.69	1.9	45.5	<2.0	<2.0	45.5	<0.0050	<0.050	<0.50	0.066	<0.0050	<0.0010
	1-Dec-09	L845898-8	<5.0	417	208.0	8.17	3.3	282	0.70	1.6	93.1	<2.0	<2.0	93.1	<0.0050	<0.050	<0.50	0.090	0.0291	<0.0010
	1-Dec-09	L845898-2	<5.0	421	203.0	8.19	<3.0	283	0.70	1.4	95.8	<2.0	<2.0	95.8	<0.0050	<0.050	<0.50	0.089	0.0303	<0.0010
	5-Jul-10	L905787-11	<5.0	142																

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

		Physical Parameter							Anions and Nutrients											
		ALS Sample No.	Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Total (as $\text{CaCO}_3$ ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)
Site Name	Date																			
	17-Sep-08	L686098-2	5.9	128	61.4	8.02	423	103	463	3.5	40.1	<2.0	<2.0	40.1	<0.0050	<0.050	<0.50	0.029	0.0084	<0.0010
	25-Sep-08	L688714-2	<5.0	200	86.5	7.86	18.9	135	23.5	1.5	46.8	<2.0	<2.0	46.8	<0.0050	<0.050	<0.50	0.053	0.0226	<0.0010
	2-Oct-08	L691752-5	<5.0	134	63.6	7.82	790	115	695	1.2	44.4	<1.0	<1.0	44.4	<0.0050	<0.050	<0.50	0.021	0.0205	<0.0010
	9-Oct-08	L694973-3	<5.0	210	93.6	8.01	22.2	135	25.4	2.3	49.8	<2.0	<2.0	49.8	<0.0050	<0.050	<0.50	0.052	0.0396	<0.0010
	9-Oct-08	L694973-2	<5.0	210	93.9	7.98	41.2	134	37.6	2.5	49.5	<2.0	<2.0	49.5	<0.0050	<0.050	<0.50	0.052	0.0407	<0.0010
	29-Oct-08	L703445-2	<5.0	264	119.0	8.06	4.3	168	5.03	1.1	65.2	<2.0	<2.0	65.2	<0.0050	<0.050	<0.50	0.069	0.113	<0.0010
	6-Dec-08	L717413-4	<5.0	316	145.0	8.07	10.0	201	3.41	1.1	83.7	<2.0	<2.0	83.7	<0.0050	<0.050	<0.50	0.066	0.122	<0.0010
	6-Jan-09	L723686-4	<5.0	336	169.0	7.97	4.3	215	1.40	3.4	92.2	<2.0	<2.0	92.2	0.0105	<0.050	<0.50	0.052	0.187	<0.0010
	1-Feb-09	L732103-4	<5.0	381	213.0	7.95	27.8	266	6.01	2.3	103	<2.0	<2.0	103	<0.0050	<0.050	<0.50	0.066	0.0618	<0.0010
	4-Mar-09	L740333-4	<5.0	332	166.0	8.00	<3.0	216	0.92	3.3	89.2	<2.0	<2.0	89.2	<0.0050	<0.050	<0.50	0.086	0.140	<0.0010
	28-Mar-09	L748538-4	<5.0	341	162.0	8.02	4.8	220	1.10	2.2	95.1	<2.0	<2.0	95.1	<0.0050	<0.050	<0.50	0.086	0.127	<0.0010
	28-Apr-09	L759011-4	<5.0	272	118.0	8.06	46.3	174	42.5	3.4	71.5	<2.0	<2.0	71.5	0.0298	<0.050	<0.50	0.066	0.783	<0.0010
	27-May-09	L771080-5	6.5	171	78.8	7.92	104	105	81.3	2.7	47.6	<2.0	<2.0	47.6	<0.0050	<0.050	<0.50	0.064	0.488	0.0022
	8-Jun-09	L776835-4	<5.0	111	51.7	7.92	207	82	167	1.3	33.9	<1.0	<1.0	33.9	0.0200	<0.050	<0.50	0.037	0.150	<0.0010
	8-Jun-09	L776835-3	<5.0	110	52.7	7.90	218	85	170	1.3	33.8	<1.0	<1.0	33.8	0.0400	<0.050	<0.50	0.037	0.169	<0.0010
	13-Jun-09	L778602-6	<5.0	132	60.2	7.75	93.7	89	217	1.8	40.8	<1.0	<1.0	40.8	<0.0050	<0.050	<0.50	0.053	0.112	<0.0010
	19-Jun-09	L781603-8	<5.0	122	54.4	7.85	93.5	90	98.5	1.3	32.5	<2.0	<2.0	32.5	<0.0050	<0.050	<0.50	0.033	0.0657	<0.0010
	2-Jul-09	L787346-15	<5.0	155	76.4	7.96	93.0	113	78.8	2.7	41.1	<2.0	<2.0	41.1	<0.0050	<0.050	<0.50	0.042	0.0354	<0.0010
	4-Aug-09	L801967-2	<5.0	96.7	44.1	7.96	421	68	364	1.3	35.5	<1.0	<1.0	35.5	<0.0050	<0.050	<0.50	0.023	0.0100	<0.0010
	22-Aug-09	L809879-7	<5.0	113	54.5	7.96	425	80	300	1.4	34.6	<1.0	<1.0	34.6	<0.0050	<0.050	<0.50	<0.020	<0.0050	<0.0010
	13-Sep-09	L817873-9	<5.0	117	55.2	7.97	411	68	421	2.1	43.3	<1.0	<1.0	43.3	<0.0050	<0.050	<0.50	0.034	0.0129	<0.0010
	13-Sep-09	L817873-5	<5.0	118	52.7	8.15	464	67	422	1.4	43.8	<1.0	<1.0	43.8	<0.0050	<0.050	<0.50	0.034	0.0130	<0.0010
	27-Sep-09	L824535-6	<5.0	197	87.7	7.89	45.5	120	69.1	2.3	46.2	<2.0	<2.0	46.2	<0.0050	<0.050	<0.50	0.051	0.0710	<0.0010
	31-Oct-09	L837185-6	<5.0	276	119.0	8.09	3.0	176	4.91	1.1	74.0	<2.0	<2.0	74.0	<0.0050	<0.050	<0.50	0.061	0.119	<0.0010
	25-Nov-09	L844495-15	<5.0	285	145.0	8.07	5.9	183	1.19	1.3	76.9	<2.0	<2.0	76.9	0.0081	<0.050	<0.50	0.071	0.111	<0.0010
	28-Mar-10	L873293-6	<5.0	258	124.0	8.02	<3.0	145	4.64	2.3	81.1	<2.0	<2.0	81.1	<0.0050	<0.050	<0.50	0.062	0.322	<0.0010
	5-Jul-10	L905787-12	<5.0	139	62.4	7.99	28.5	100	40.0	3.0	35.6	<2.0	<2.0	35.6	<0.0050	<0.050	<0.50	0.039	0.0183	<0.0010
	27-Aug-10	L926457-12	<5.0	133	60.4	8.03	59.0	90	68.6	4.5	35.4	<1.0	<1.0	35.4	<0.0050	<0.050	<0.50	0.033	0.0132	<0.0010
	15-Nov-10	L955725-11	<5.0	274	127.0	8.12	12.1	162	1.62	1.8	75.2	<2.0	<2.0	75.2	<0.0050	<0.050	<0.50	0.078	0.140	<0.0010
	1-Apr-11	L991777-25	<5.0	349	163.0	8.12	<3.0	223	1.95	3.5	66.7	<2.0	<2.0	66.7	<0.0050	<0.050	<0.50	0.071	0.141	<0.0010
	3-Jul-11	L1026874-2	<5.0	136	60.															

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

Site Name	Date	ALS Sample No.	Physical Parameter						Anions and Nutrients											
			Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Total (as $\text{CaCO}_3$ ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)
5-Mar-11	L985810-8	<5.0	311	155.0	8.10	<3.0	190	0.25	4.7	131	<2.0	<2.0	131	0.0173	<0.050	<0.50	0.039	0.0486	<0.0010	
1-Apr-11	L991777-23	<5.0	334	158.0	7.82	<3.0	218	0.82	5.9	75.0	<2.0	<2.0	75.0	<0.0050	<0.050	<0.50	0.055	0.119	<0.0010	
1-May-11	L1002688-1	<5.0	247	124.0	7.92	3.3	150	4.65	4.0	77.3	<1.0	<1.0	77.3	0.0061	<0.050	<0.50	0.037	0.511	<0.0010	
4-Jun-11	L1014013-8	<5.0	140	63.3	7.97	179	91	125	1.4	42.9	<1.0	<1.0	42.9	0.0051	<0.050	<0.50	0.044	0.101	<0.0010	
3-Jul-11	L1026874-3	<5.0	149	69.0	7.82	61.3	114	78.4	2.3	41.2	<2.0	<2.0	41.2	0.0073	<0.050	<0.50	0.048	0.0227	<0.0010	
1-Aug-11	L1039955-9	<5.0	126	58.5	8.27	72.0	89	70.9	2.6	33.5	<2.0	<2.0	33.5	<0.0050	<0.050	<0.50	0.039	0.0129	<0.0010	
4-Sep-11	L1054465-16	<5.0	151	70.0	8.23	133	162	1410	3.0	47.3	<2.0	<2.0	47.3	0.0070	<0.050	<0.50	0.040	0.0141	<0.0010	
30-Sep-11	L1067383-19	5.2	209		8.10	15.3	134	31.4	3.6	64.1	<2.0	<2.0	64.1	<0.050	<0.50	0.055	0.0840	0.0021		
30-Sep-11	L1067383-15	5.1	207	94.9	7.99	18.7	130	30.4	4.7	60.3	<2.0	<2.0	60.3	<0.0050	<0.050	<0.50	0.058	0.0819	<0.0010	
24-Oct-11	L1079029-8	<5.0	241	112.0	8.13	<3.0	143	6.48	2.2	70.4	<2.0	<2.0	70.4	<0.0050	<0.050	<0.50	0.066	0.0981	<0.0010	
28-Nov-11	L1091310-16	<5.0	309	144.0	8.23	<3.0	174	1.32	1.6	90.6	<2.0	<2.0	90.6	<0.0050	<0.050	<0.50	0.069	0.0998	<0.0010	

Notes:

< indicates that the value is below the analytical detection limit

- indicates parameter was not analyzed

Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011

Treaty Creek Watershed

Site Name	Date	ALS Sample No.	Anions and Nutrients					Cyanides		Carbon (mg/L)	Total Metals											
			Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Ortho Phosphate (as P) (mg/L)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)		Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	
NTR1	25-Jun-08	L650936-6	0.072	0.200	-	0.0109	15.3	-	<0.0010	-	1.96	0.0237	<0.00010	<0.00010	0.0128	<0.00050	<0.00050	<0.010	<0.000017	9.32	<0.00050	<0.00010
	9-Sep-08	L682706-9	<0.050	0.050	0.0048	0.0151	30.2	-	<0.0010	-	1.50	0.0214	<0.00010	<0.00010	0.0189	<0.00050	<0.00050	<0.010	<0.000017	16.5	<0.00050	<0.00010
	2-Jul-09	L787346-17	<0.050	0.130	0.0053	0.0117	20.1	-	0.0015	-	1.80	0.0396	<0.00010	<0.00010	0.0164	<0.00050	<0.00050	<0.010	0.000015	13.0	<0.00050	<0.00010
	22-Aug-09	L809879-9	<0.050	0.060	0.006	0.0122	36.7	-	0.0011	-	1.15	0.0268	<0.00010	<0.00010	0.0210	<0.00050	<0.00050	<0.010	0.000013	18.0	<0.00050	<0.00010
	5-Jul-10	L905787-14	<0.050	0.140	0.0039	0.0262	25.6	-	0.0022	-	1.71	0.0310	<0.00010	<0.00010	0.0174	<0.00050	<0.00050	<0.010	0.000015	15.0	0.00045	<0.00010
	27-Aug-10	L926457-14	<0.050	0.080	0.0032	0.0132	37.0	-	<0.0010	-	1.03	0.0106	<0.00010	<0.00010	0.0210	<0.00050	<0.00050	<0.010	0.000013	20.6	0.00038	<0.00010
	15-Nov-10	L955725-13	0.089	0.280	0.0039	0.0424	23.8	-	0.0021	-	1.95	0.0209	<0.00010	<0.00010	0.0151	<0.00050	<0.00050	<0.010	0.000083	13.2	0.00031	<0.00010
	3-Jul-11	L1026874-4	0.102	0.130	0.0041	0.0101	23.2	-	<0.0010	-	1.60	0.0304	<0.00010	<0.00010	0.0158	<0.00050	<0.00050	<0.010	<0.000010	12.8	0.00039	<0.00010
	4-Sep-11	L1054465-17	0.094	0.150	0.0043	0.0118	32.1	-	0.0020	-	1.53	0.0150	<0.00010	<0.00010	0.0187	<0.00050	<0.00050	<0.010	0.000012	16.2	0.00037	<0.00010
NTR1A	26-May-10	L891484-7	0.128	0.669	0.0069	0.0108	9.50	<0.0010	0.0043	<0.50	2.79	0.113	<0.00010	0.00022	0.0109	<0.00050	<0.00050	<0.010	<0.000010	8.47	0.00071	0.00011
	5-Jul-10	L905787-16	<0.050	0.150	0.0027	0.0069	19.6	<0.0010	0.0019	<0.50	1.69	0.0926	<0.00010	0.00010	0.0149	<0.00050	<0.00050	0.010	0.000012	13.4	0.00059	<0.00010
	3-Aug-10	L916942-7	<0.050	0.120	0.0028	0.0058	28.2	<0.0010	<0.0010	2.45	1.08	0.0270	<0.00010	<0.00010	0.0165	<0.00050	<0.00050	<0.010	0.000010	14.8	0.00033	<0.00010
	27-Aug-10	L926457-16	0.055	0.190	0.0026	0.0071	32.1	<0.0010	0.0015	<0.50	0.80	0.0188	<0.00010	<0.00010	0.0192	<0.00050	<0.00050	<0.010	<0.000010	19.7	0.00040	<0.00010
	28-Sep-10	L938295-7	0.070	0.500	0.0037	0.0185	15.5	<0.0010	0.0050	<0.50	4.64	0.135	<0.00010	0.00021	0.0142	<0.00050	<0.00050	<0.010	0.000012	10.6	0.00082	0.00016
	15-Nov-10	L955725-15	0.070	0.464	0.0026	0.0053	20.3	<0.0010	0.0020	<0.50	1.99	0.0267	<0.00010	<0.00010	0.0132	<0.00050	<0.00050	<0.010	<0.000010	13.1	0.00027	<0.00010
	15-Dec-10	L963832-6	<0.050	0.350	0.0025	0.0041	27	<0.0010	0.0014	<0.50	1.64	0.0185	<0.00010	<0.00010	0.0148	<0.00050	<0.00050	<0.010	<0.000010	14.5	0.00033	<0.00010
	31-Mar-11	L991777-15	0.145	0.460	0.0022	0.0046	32.4	<0.0010	0.0018	<0.50	1.40	0.0138	<0.00010	<0.00010	0.0177	<0.00050	<0.00050	<0.010	<0.000010	17.0	0.00022	<0.00010
	1-May-11	L1002688-2	0.135	1.310	0.002	0.0499	19.7	<0.0010	0.0030	<0.50	2.37	0.0918	<0.00010	0.00010	0.0164	<0.00050	<0.00050	<0.010	0.000013	14.3	<0.00060	0.00012
	4-Jun-11	L1014013-9	0.147	0.420	0.0024	0.015	11.5	<0.0010	0.0057	<0.50	3.28	0.241	<0.00010	0.00015	0.0131	<0.00050	<0.00050	<0.010	<0.000010	7.90	0.00118	0.00021
	3-Jul-11	L1026874-6	0.107	0.190	0.002	0.0056	21.7	<0.0010	<0.0010	<0.50	1.53	0.0592	<0.00010	<0.00010	0.0130	<0.00050	<0.00050	<0.010	<0.000010	12.5	0.00044	<0.00010
	1-Aug-11	L1039955-10	0.070	0.150	0.0011	0.0036	27.8	<0.0010	0.0019	<0.50	1.10	0.0587	<0.00010	0.00010	0.0175	<0.00050	<0.00050	<0.010	<0.000010	16.3	0.00049	<0.00010
	4-Sep-11	L1054465-19	0.075	0.180	0.0016	0.0074	27	<0.0010	0.0020	<0.50	1.96	0.0430	<0.00010	<0.00010	0.0173	<0.00050	<0.00050	<0.010	<0.000010	14.9	0.00038	<0.00010
	30-Sep-11	L1067383-17	0.093	0.360	0.0026	0.0078	16	<0.0010	0.0036	<0.50	3.36	0.1000	<0.00010	<0.00010	0.0132	<0.00050	<0.00050	<0.010	<0.000010	11.3	0.00061	<0.00010
	24-Oct-11	L1079029-11	<0.068	0.340	0.0014	0.0941	18.2	-	0.0021	-	2.73	0.0476	<0.00010	<0.00010	0.0135	<0.00050	<0.00050	<0.010	<0.000010	12.6	0.00036	<0.00010
	24-Oct-11	L107902																				

Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011

Treaty Creek Watershed

ALS Sample		Anions and Nutrients					Cyanides			Carbon	Total Metals											
		Total Kjeldahl Nitrogen	Total Nitrogen	Ortho Phosphate (as P)	Total Phosphate (as P)	Sulphate (SO <sub>4</sub> )	Cyanide, Weak Acid Dissociable	Cyanide, Total	Thiocyanate	Total Organic Carbon	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	
Date	No.	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)		
13-Jun-09	L778602-5	0.079	0.249	0.0042	0.022	11.3	<0.0010	<0.0010	1.11	1.73	1.85	<0.00010	0.00068	0.0325	<0.00050	<0.00050	<0.010	0.000032	8.23	0.00627	0.00140	
19-Jun-09	L781603-7	0.067	0.170	0.0032	0.0115	12.2	<0.0010	<0.0010	<0.50	0.99	0.475	<0.00010	0.00021	0.0169	<0.00050	<0.00050	<0.010	0.000012	9.24	0.00173	0.00033	
5-Jul-09	L788462-6	<0.050	0.060	0.0028	0.0154	12.3	<0.0010	<0.0010	<0.50	0.62	0.484	<0.00010	0.00022	0.0171	<0.00050	<0.00050	<0.010	<0.000010	8.74	0.00208	0.00041	
4-Aug-09	L801967-6	0.072	0.080	0.0031	0.0126	13.6	<0.0010	<0.0010	<0.50	0.61	0.226	<0.00010	0.00020	0.0150	<0.00050	<0.00050	<0.010	0.000013	8.50	0.00085	0.00039	
22-Aug-09	L809879-25	<0.050	<0.050	0.0024	0.0066	17.7	<0.0010	<0.0010	0.50	<0.50	0.472	<0.00010	0.00018	0.0190	<0.00050	<0.00050	<0.010	<0.000010	9.75	0.00149	0.00029	
22-Aug-09	L809879-10	<0.050	<0.050	0.0023	0.0084	17.7	<0.0010	<0.0010	<0.50	<0.50	0.434	<0.00010	0.00018	0.0190	<0.00050	<0.00050	<0.010	<0.000010	9.91	0.00134	0.00029	
13-Sep-09	L817873-6	<0.050	<0.050	0.0018	0.04	17.5	<0.0010	<0.0010	<0.50	0.70	2.53	0.00018	0.00130	0.0527	<0.00050	<0.00050	<0.010	0.000054	10.8	0.00675	0.00150	
27-Sep-09	L824535-7	<0.050	0.180	0.0029	0.0162	21.6	<0.0010	<0.0010	<0.50	1.12	0.643	0.00012	0.00060	0.0281	<0.00050	<0.00050	<0.010	<0.000040	13.6	0.00175	0.00052	
31-Oct-09	L837185-7	<0.050	0.310	0.0014	0.0041	22.4	<0.0010	0.0010	<0.50	1.26	0.0389	<0.00010	<0.00010	0.0161	<0.00050	<0.00050	<0.010	<0.000010	13.0	<0.00050	<0.00010	
25-Nov-09	L844495-17	0.126	0.400	0.0015	0.0053	26.9	<0.0010	<0.0010	<0.50	0.94	0.0305	<0.00010	<0.00010	0.0198	<0.00050	<0.00050	<0.010	<0.000010	17.6	<0.00050	<0.00010	
1-May-10	L884476-3	0.153	1.630	0.0019	0.0097	12.6	<0.0010	0.0027	<0.50	1.91	0.226	<0.00010	0.00016	0.0160	<0.00050	<0.00050	<0.010	0.000011	11.9	0.00094	0.00020	
5-Jul-10	L905787-15	<0.050	0.050	0.0011	0.0054	18.4	<0.0010	<0.0010	<0.50	0.82	0.127	<0.00010	0.00012	0.0154	<0.00050	<0.00050	<0.010	<0.000010	12.0	0.00073	0.00011	
27-Aug-10	L926457-15	<0.050	0.050	0.0058	0.0160	21.9	<0.0020	<0.0010	<0.50	<0.50	0.151	0.00038	<0.00010	0.0192	<0.00050	<0.00050	<0.010	0.000015	14.0	0.00080	0.00013	
15-Nov-10	L955725-14	0.111	0.410	0.0021	0.0049	21.3	<0.0010	0.0013	<0.50	1.60	0.0599	<0.00010	0.00883	0.0164	<0.00050	<0.00050	<0.010	0.000021	15.2	0.00052	<0.00010	
1-Apr-11	L991777-26	0.079	0.360	0.0019	0.0031	32.1	-	0.0014	-	1.05	0.0157	<0.00010	<0.00010	0.0199	<0.00050	<0.00050	<0.010	<0.000010	18.2	0.00026	<0.00010	
3-Jul-11	L1026874-17	0.092	0.100	0.0017	0.0092	17.6	-	<0.0010	-	0.79	0.268	<0.00010	0.00015	0.0150	<0.00010	<0.00050	<0.010	<0.000010	9.59	0.00114	0.00021	
3-Jul-11	L1026874-5	0.080	0.080	0.002	0.0083	17.5	-	<0.0010	-	0.60	0.300	<0.00010	0.00016	0.0152	<0.00010	<0.00050	<0.010	<0.000010	9.63	0.00113	0.00021	
4-Sep-11	L1054465-18	0.090	0.120	0.0016	0.0209	19.7	-	0.0011	-	0.78	1.10	<0.00010	0.00038	0.0299	<0.00010	<0.00050	<0.010	0.000011	10.5	0.00359	0.00068	
27-Nov-11	L1091310-14	<0.050	0.190	0.0018	0.0048	27.2	-	0.0012	-	1.10	0.0259	<0.00010	<0.00010	0.0192	<0.00050	<0.00050	<0.010	<0.000010	16.5	0.00035	<0.00010	
TRC0	1-Aug-11	L1041095-1	0.140	0.140	0.0012	0.516	24	-	<0.0010	-	1.56	9.38	0.00277	0.0215	0.309	0.00032	<0.00050	<0.010	0.000580	21.1	0.0151	0.00700
	5-Sep-11	L1054953-14	0.109	0.120	0.0011	0.71	26.5	-	<0.0010	-	2.48	16.7	0.00321	0.0346	0.408	0.00049	<0.00050	<0.010	0.00178	33.7	0.0133	0.0107
	30-Sep-11	L1067383-18	<0.050	<0.050	<0.0010	0.131	92.6	-	<0.0010	-	<0.50	4.75	0.00140	0.00539	0.137	0.00013	<0.00050	<0.010	0.000407	46.1	0.00386	0.00293
	24-Oct-11	L1079029-6	<0.050	<0.050	<0.0010	0.0429	137	-	<0.0011	-	<0.50	0.864	0.00114	0.00179	0.0723	<0.00010	<0.00050	<0.010	0.000331	64.4	0.00056	0.00190
TRC1	25-Jun-08	L650936-2	0.070	0.070	-	0.0082	13.1	-	<0.0010	-	0.93	0.0201	<0.00010	<0.00010	0.0117	<0.00050	<0.00050	<0.010	<0.000017	9.20	<0.00050	<0.00010
	9-Sep-08	L682706-11	<0.050	<0.05	<0.0010	0.243	32.7	-	<0.0010	-	0.74	8.30	0.00152	0.0106	0.185	<0.00050	<0.00050	<0.010	0.000442	23.6	0.00974	0.00402
	2-Jul-09	L787346-14</td																				

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

ALS Sample		Anions and Nutrients					Cyanides			Carbon	Total Metals										
		Total Kjeldahl Nitrogen	Total Nitrogen	Ortho Phosphate (as P)	Total Phosphate (as P)	Sulphate (SO <sub>4</sub> )	Cyanide, Weak Acid Dissociable	Cyanide, Total	Thiocyanate	Total Organic Carbon	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)
Date	No.	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	
17-Sep-08	L686098-2	<0.050	0.050	0.0019	0.397	23.7	-	<0.0010	-	1.03	15.4	0.00207	0.0156	0.282	<0.0010	<0.0010	<0.020	0.000908	25.5	0.0219	0.00908
25-Sep-08	L688714-2	<0.050	<0.05	0.0017	0.0202	48.6	-	<0.0010	-	<0.50	0.875	0.00042	0.00139	0.0417	<0.00050	<0.00050	<0.010	0.000078	28.5	0.00148	0.00065
2-Oct-08	L691752-5	0.264	0.280	0.0019	0.777	23.5	-	0.0037	-	3.74	16.8	0.00291	0.0245	0.355	<0.0010	<0.0010	<0.020	0.00109	30.6	0.0230	0.0121
9-Oct-08	L694973-3	0.070	0.110	0.0025	0.0334	50.9	-	<0.0010	-	0.57	1.28	0.00051	0.00143	0.0500	<0.00050	<0.00050	<0.010	0.000088	31.1	0.00175	0.00062
9-Oct-08	L694973-2	0.073	0.110	0.0015	0.0565	50.8	-	<0.0010	-	1.05	2.29	0.00053	0.00184	0.0535	<0.00050	<0.00050	<0.010	0.000102	31.0	0.00187	0.00080
29-Oct-08	L703445-2	<0.050	0.100	<0.0010	0.0135	68.4	-	<0.0010	-	0.71	0.154	0.00033	0.00039	0.0301	<0.00050	<0.00050	<0.010	0.000039	38.0	<0.00050	0.00014
6-Dec-08	L717413-4	0.098	0.220	0.002	0.0152	83.1	-	<0.0010	-	<0.50	0.0621	0.00031	0.00047	0.0326	<0.00050	<0.00050	<0.010	0.000050	45.1	<0.00050	<0.00010
6-Jan-09	L723686-4	0.083	0.270	0.0014	0.0142	79.3	-	<0.0010	-	<0.50	0.111	0.00045	0.00065	0.0589	<0.00050	<0.00050	<0.010	0.000068	59.6	<0.00050	0.00017
1-Feb-09	L732103-4	<0.050	0.060	0.0012	0.017	99.1	-	<0.0010	-	<0.50	1.52	0.00070	0.00321	0.0981	<0.00050	<0.00050	<0.010	0.000158	77.3	0.00182	0.00114
4-Mar-09	L740333-4	<0.050	0.130	<0.0010	0.0062	89.3	-	<0.0010	-	<0.50	0.0164	0.00026	0.00032	0.0309	<0.00050	<0.00050	<0.010	0.000043	50.0	<0.00050	<0.00010
28-Mar-09	L748538-4	<0.050	0.160	0.0021	0.0059	88.4	-	<0.0010	-	<0.50	0.0376	0.00026	0.00033	0.0295	<0.00050	<0.00050	<0.010	0.000047	49.0	<0.00050	<0.00010
28-Apr-09	L759011-4	0.173	0.956	0.0016	0.0788	59.5	-	<0.0010	-	1.90	1.58	0.00035	0.00213	0.0426	<0.00050	0.00067	<0.010	0.000106	41.4	0.00399	0.00142
27-May-09	L771080-5	0.171	0.662	0.0018	0.0879	34.6	<0.0010	<0.0010	1.19	2.51	3.24	0.00074	0.00437	0.0833	<0.00050	<0.00050	<0.010	0.000238	26.0	0.00542	0.00216
8-Jun-09	L776835-4	0.097	0.247	0.0029	0.192	20.6	<0.0010	<0.0010	2.25	2.11	7.94	0.00097	0.00762	0.163	<0.00050	<0.00050	<0.010	0.000389	16.6	0.0119	0.00426
8-Jun-09	L776835-3	0.102	0.271	0.0032	0.228	20.7	-	<0.0010	-	2.43	6.60	0.00088	0.00732	0.159	<0.00050	<0.00050	<0.010	0.000391	17.7	0.00961	0.00452
13-Jun-09	L778602-6	0.092	0.204	0.0033	0.209	25.9	<0.0010	<0.0010	5.03	1.87	7.90	0.00130	0.00898	0.139	<0.00050	<0.00050	<0.010	0.000386	21.7	0.0125	0.00524
19-Jun-09	L781603-8	0.064	0.130	0.0025	0.101	24.1	<0.0010	<0.0010	1.57	1.22	4.89	0.00076	0.00431	0.0946	<0.00050	<0.00050	<0.010	0.000244	19.3	0.00798	0.00249
2-Jul-09	L787346-15	<0.050	<0.050	0.0022	0.118	34.9	<0.0010	<0.0010	1.82	0.92	3.67	0.00077	0.00425	0.0902	<0.00050	<0.00050	<0.010	0.000227	27.4	0.00605	0.00241
4-Aug-09	L801967-2	0.314	0.324	0.0019	0.473	16.9	<0.0010	<0.0010	<0.50	2.17	11.3	0.00179	0.0140	0.239	<0.00050	<0.00050	<0.010	0.000551	19.9	0.0181	0.00745
22-Aug-09	L809879-7	0.076	0.076	0.0022	0.445	23.1	<0.0010	<0.0010	<0.50	1.86	11.8	0.00193	0.0139	0.226	<0.00050	<0.00050	<0.011	0.000445	22.1	0.0206	0.00720
13-Sep-09	L817873-9	0.053	0.066	0.0021	0.535	21.3	<0.0010	<0.0010	<0.50	2.01	5.96	0.00092	0.00640	0.159	<0.00050	<0.00050	<0.010	0.000473	26.0	0.00976	0.00574
13-Sep-09	L817873-5	0.080	0.093	0.0021	0.478	21.3	<0.0010	<0.0010	<0.50	2.54	11.7	0.00167	0.0119	0.201	<0.00050	<0.00050	<0.010	0.000561	24.9	0.0214	0.00863
27-Sep-09	L824535-6	<0.050	0.108	0.0027	0.065	47.5	<0.0010	<0.0010	<0.50	0.89	2.25	0.00056	0.00242	0.0612	<0.00050	<0.00050	<0.010	0.000108	29.4	0.00386	0.00151
31-Oct-09	L837185-6	<0.050	0.090	0.0014	0.0078	68.2	<0.0010	<0.0010	<0.50	0.75	0.0672	0.00028	0.00034	0.0271	<0.00050	<0.00050	<0.010	0.000039	36.3	<0.00050	0.00014
25-Nov-09	L844495-15	<0.050	0.160	0.0014	0.0164	75.0	<0.0010	<0.0010	<0.50	0.63	0.0997	0.00028	0.00034	0.0329	<0.00050	<0.00050	<0.010	0.000038	47.6	<0.00050	0.00012
28-Mar-10	L873293-6	0.088	0.410	0.0014	<0.0020	61.9	<0.0010	0.0014	<0.50	1.25	0.498	0.00028	0.00097	0.0363	<0.00050	<0.00050	<0.010	0.000064	41.9	0.00105</	

Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011

Treaty Creek Watershed

Site Name	Date	ALS Sample No.	Anions and Nutrients					Cyanides		Carbon	Total Metals												
			Total					Cyanide, Weak Acid Dissociable	Cyanide, Total		Cyanide, Weak Acid Dissociable	Cyanide, Total	Thiocyanate	Total Organic Carbon	Antimony			Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium
			Kjeldahl Nitrogen	Total Nitrogen	Ortho Phosphate (as P)	Total Phosphate (as P)	Sulphate (SO <sub>4</sub> )	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	Aluminum (Al)	(Sb)	Arsenic (As)	Barium (Ba)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
	5-Mar-11	L985810-8	<0.050	0.096	<0.0010	<0.0020	37.7	-	<0.0010	-	1.18	0.0051	0.00022	0.00020	0.0541	<0.00050	<0.00050	<0.010	0.000029	51.6	0.00015	<0.00010	
	1-Apr-11	L991777-23	0.071	0.190	<0.0010	0.0037	73.3	<0.0010	<0.0014	<0.50	0.79	0.0284	0.00030	0.00030	0.0428	<0.00050	<0.00050	<0.010	0.000028	51.6	0.00011	<0.00010	
	1-May-11	L1002688-1	0.096	0.607	<0.0010	0.0128	49	<0.0010	0.0029	<0.50	1.71	0.0825	0.00023	0.00056	0.0358	<0.00050	<0.00050	<0.010	0.000051	39.0	<0.00040	0.00018	
	4-Jun-11	L1014013-8	0.159	0.260	0.0016	0.131	25.7	<0.0010	0.0013	4.47	2.45	7.34	0.00117	0.00867	0.122	<0.00050	<0.00050	<0.010	0.000391	21.0	0.00962	0.00424	
	3-Jul-11	L1026874-3	0.103	0.120	0.0015	0.0989	30.3	<0.0010	<0.0010	1.82	1.04	3.48	0.00061	0.00319	0.0815	<0.00010	<0.00050	<0.010	0.000151	22.6	0.00460	0.00177	
	1-Aug-11	L1039955-9	<0.050	<0.050	0.0012	0.0884	23.9	<0.0010	<0.0010	2.28	0.89	1.28	0.00043	0.00201	0.0505	<0.00010	<0.00050	<0.010	0.000122	18.8	0.00189	0.00105	
	4-Sep-11	L1054465-16	0.186	0.200	0.0017	1.04	23.7	<0.0010	<0.0010	<0.50	3.88	30.2	0.00501	0.0455	0.488	0.00089	<0.0010	<0.020	0.00216	40.1	0.0453	0.0226	
	30-Sep-11	L1067383-19	-	-	0.0018	0.0361	41.6	-	0.0020	-	-	-	-	-	-	-	-	-	-	-	-	-	
	30-Sep-11	L1067383-15	0.058	0.140	0.0016	0.035	41.6	<0.0010	0.0022	1.28	1.58	1.15	0.00036	0.00106	0.0402	<0.00010	<0.00050	<0.010	0.000073	29.5	0.00240	0.00073	
	24-Oct-11	L1079029-8	<0.050	0.130	<0.0010	0.0078	49.1	<0.0010	<0.0011	<0.50	1.43	0.198	0.00031	0.00043	0.0329	<0.00010	<0.00050	<0.010	0.000035	35.1	0.00046	0.00018	
	28-Nov-11	L1091310-16	<0.050	0.090	<0.0010	0.0065	64.7	<0.0011	0.0014	<0.50	0.91	0.0582	0.00034	0.00030	0.0392	<0.00020	<0.0010	<0.020	0.000034	46.8	0.00032	<0.00020	

Notes:

< indicates that the value is below the analytical detection limit

- indicates parameter was not analyzed

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals																			
			Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)
NTR1	25-Jun-08	L650936-6	0.00056	0.123	<0.000050	<0.0050	2.28	0.0117	<0.000010	0.000260	0.00061	<0.30	0.147	0.00032	2.35	<0.000010	<2.0	0.097	<0.00010	<0.00010	<0.010	<0.000010
	9-Sep-08	L682706-9	<0.00020	0.272	<0.000050	<0.0050	4.01	0.0235	<0.000010	0.000253	0.00075	<0.30	0.231	0.00047	2.55	<0.000010	2.1	0.149	<0.00010	<0.00010	<0.010	<0.000010
	2-Jul-09	L787346-17	0.00066	0.174	<0.000050	<0.0050	3.64	0.0178	<0.000010	0.000284	0.00084	<0.30	0.204	0.00052	2.45	<0.000010	<2.0	0.152	<0.00010	<0.00010	<0.010	<0.000010
	22-Aug-09	L809879-9	0.00034	0.207	<0.000050	<0.0050	4.16	0.0291	<0.000010	0.000256	0.00066	<0.30	0.255	0.00062	2.62	<0.000010	<2.0	0.184	<0.00010	<0.00010	<0.010	<0.000010
	5-Jul-10	L905787-14	0.00045	0.162	<0.000050	<0.0050	3.62	0.0177	<0.000010	0.000294	<0.0010	<0.30	0.210	0.00051	2.69	<0.000010	<2.0	0.149	<0.00010	<0.00010	<0.010	<0.000010
	27-Aug-10	L926457-14	0.00027	0.262	<0.000050	<0.0050	4.43	0.0388	<0.000010	0.000298	0.00058	<0.30	0.269	0.00059	2.47	0.000021	2.0	0.184	<0.00010	<0.00010	<0.010	<0.000010
	15-Nov-10	L955725-13	<0.00050	0.125	0.000107	<0.0050	3.38	0.0108	<0.000010	0.000259	0.00069	<0.30	0.236	0.00047	3.16	<0.000010	<2.0	0.138	<0.00010	<0.00010	<0.010	<0.000010
	3-Jul-11	L1026874-4	<0.00050	0.213	<0.000050	0.00059	3.08	0.0197	<0.000010	0.000267	0.00065	<0.30	0.150	0.00047	2.57	<0.000010	<2.0	0.146	<0.00010	<0.00010	<0.010	<0.000010
	4-Sep-11	L1054465-17	<0.00050	0.177	<0.000050	<0.0050	3.82	0.0187	<0.000010	0.000268	0.00074	<0.30	0.257	0.00054	2.61	<0.000010	<2.0	0.167	<0.00010	<0.00010	<0.010	<0.000010
NTR1A	26-May-10	L891484-7	0.00078	0.173	<0.000050	<0.0050	1.80	0.0159	<0.000010	0.000230	0.00075	<0.30	0.230	0.00029	2.49	0.000013	<2.0	0.088	<0.00010	<0.00010	<0.010	<0.000010
	5-Jul-10	L905787-16	0.00060	0.132	<0.000050	<0.0050	2.64	0.0122	<0.000010	0.000285	<0.0010	<0.30	0.208	0.00036	2.53	<0.000010	<2.0	0.134	<0.00010	<0.00010	<0.010	<0.000010
	3-Aug-10	L916942-7	0.00031	0.054	<0.000050	<0.0050	2.86	0.0069	<0.000010	0.000335	<0.0050	<0.30	0.217	0.00059	2.43	0.000029	<2.0	0.156	<0.00010	<0.00010	<0.010	<0.000010
	27-Aug-10	L926457-16	0.00042	0.077	<0.000050	<0.0050	3.64	0.0118	<0.000010	0.000268	<0.0050	<0.30	0.265	0.00044	2.63	<0.000010	<2.0	0.181	<0.00010	<0.00010	<0.010	<0.000010
	28-Sep-10	L938295-7	0.00116	0.243	0.000058	<0.0050	2.10	0.0225	<0.000010	0.000195	0.00121	<0.30	0.363	0.00035	2.53	<0.000010	<2.0	0.116	<0.00010	<0.00010	<0.010	<0.000010
	15-Nov-10	L955725-15	0.00068	0.042	<0.000050	<0.0050	2.83	0.0041	<0.000010	0.000259	0.00060	<0.30	0.237	0.00041	2.93	<0.000010	<2.0	0.136	<0.00010	<0.00010	<0.010	<0.000010
	15-Dec-10	L963832-6	0.00051	<0.030	<0.000050	<0.0050	3.28	0.0023	<0.000010	0.000263	0.00088	<0.30	0.260	0.00047	2.93	<0.000010	<2.0	0.155	<0.00010	<0.00010	<0.010	<0.000010
	31-Mar-11	L991777-15	<0.00050	<0.030	<0.000050	<0.0050	3.91	0.0029	<0.000010	0.000270	<0.0050	<0.30	0.283	0.00056	2.91	<0.000010	2.2	0.189	<0.00010	<0.00010	<0.010	<0.000010
	1-May-11	L1002688-2	0.00074	0.155	<0.000050	<0.0050	3.29	0.0200	<0.000010	0.000250	0.00094	<0.30	0.286	0.00046	3.06	<0.000010	<2.0	0.160	<0.00010	<0.00010	<0.010	<0.000010
	4-Jun-11	L1014013-9	0.00253	0.318	0.000086	<0.0050	1.79	0.0198	<0.000010	0.000237	0.00138	<0.30	0.251	0.00034	2.78	<0.000010	<2.0	0.085	<0.00010	<0.00010	<0.010	<0.000010
	3-Jul-11	L1026874-6	0.00053	0.089	<0.000050	0.00066	2.55	0.0073	<0.000010	0.000282	0.00053	<0.30	0.191	0.00043	2.50	<0.000010	<2.0	0.144	<0.00010	<0.00010	<0.010	<0.000010
	1-Aug-11	L1039955-10	<0.00050	0.091	<0.000050	0.00067	3.34	0.0092	<0.000010	0.000326	0.00064	<0.30	0.236	0.00051	2.60	<0.000010	<2.0	0.167	<0.00010	<0.00010	<0.010	<0.000010
	4-Sep-11	L1054465-19	<0.00050	0.119	<0.000050	<0.0050	3.10	0.0109	<0.000010	0.000290	0.00064	<0.30	0.240	0.00045	2.55	<0.000010	<2.0	0.164	<0.00010	<0.00010	<0.010	<0.000010
	30-Sep-11	L1067383-17	0.00089	0.123	<0.000050	0.00062	2.31	0.0098	<0.000010	0.000240	0.00102	<0.30	0.237	0.00030	3.05	<0.000010	<2.0	0.119	<0.00010	<0.00010	<0.010	<0.000010
	24-Oct-11	L1079029-11	0.00060	0.062	<0.000050	0.00096</																

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

		Total Metals																				
		ALS Sample No.	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)
Site Name	Date																					
TRC0	13-Jun-09	L778602-5	0.00414	2.07	0.000579	<0.0050	2.36	0.0605	<0.000010	0.000419	0.00653	<0.30	0.716	0.00054	5.59	0.000024	<2.0	0.077	<0.00010	<0.00010	0.044	0.000035
	19-Jun-09	L781603-7	0.00134	0.473	0.000138	<0.0050	2.00	0.0170	<0.000010	0.000385	0.00180	<0.30	0.334	0.00047	2.56	<0.000010	<2.0	0.088	<0.00010	<0.00010	<0.010	<0.000010
	5-Jul-09	L788462-6	0.00130	0.519	0.000276	<0.0050	1.95	0.0168	<0.000010	0.000429	0.00231	<0.30	0.339	0.00045	2.34	<0.000010	<2.0	0.078	<0.00010	<0.00010	<0.010	<0.000010
	4-Aug-09	L801967-6	0.00119	0.462	0.000169	<0.0050	1.88	0.0174	<0.000010	0.000300	0.00147	<0.30	0.204	0.00042	1.74	<0.000010	<2.0	0.089	<0.00010	<0.00010	<0.010	<0.000010
	22-Aug-09	L809879-25	0.00108	0.430	0.000123	<0.0050	2.17	0.0136	<0.000010	0.000418	0.00141	<0.30	0.307	0.00036	2.17	<0.000010	<2.0	0.104	<0.00010	<0.00010	<0.010	<0.000010
	22-Aug-09	L809879-10	0.00103	0.395	0.000129	<0.0050	2.18	0.0131	<0.000010	0.000459	0.00130	<0.30	0.306	0.00056	2.12	<0.000010	<2.0	0.106	<0.00010	<0.00010	<0.010	<0.000010
	13-Sep-09	L817873-6	0.00477	2.92	0.000942	<0.0050	2.99	0.0737	<0.000010	0.000608	0.00712	<0.30	0.876	0.00063	7.02	0.000030	<2.0	0.114	<0.00010	<0.00010	0.095	0.000061
	27-Sep-09	L824535-7	0.00186	0.896	<0.00050	<0.0050	2.83	0.0324	<0.000010	0.000518	<0.0030	<0.30	0.416	0.00070	3.13	<0.000010	<2.0	0.136	<0.00010	<0.00010	0.020	0.000016
	31-Oct-09	L837185-7	0.00054	0.038	<0.000050	<0.0050	2.72	0.0016	<0.000010	0.000342	<0.00050	<0.30	0.228	0.00066	2.37	<0.000010	<2.0	0.139	<0.00010	<0.00010	<0.010	<0.000010
	25-Nov-09	L844495-17	<0.00050	0.041	<0.000050	<0.0050	3.77	0.0036	<0.000010	0.000468	<0.00050	<0.30	0.286	0.00060	2.47	<0.000010	<2.0	0.188	<0.00010	<0.00010	<0.010	<0.000010
	1-May-10	L884476-3	0.00129	0.287	0.000075	<0.0050	2.38	0.0167	<0.000010	0.000294	0.00138	<0.30	0.281	0.00029	2.87	<0.000010	<2.0	0.114	<0.00010	<0.00010	<0.010	<0.000010
	5-Jul-10	L905787-15	0.00061	0.130	0.000072	<0.0050	2.53	0.0057	<0.000010	0.000449	<0.0010	<0.30	0.237	0.00056	2.01	<0.000010	<2.0	0.120	<0.00010	<0.00010	<0.010	<0.000010
	27-Aug-10	L926457-15	0.00056	0.132	0.000061	<0.0050	2.77	0.0075	<0.000010	0.000465	0.00058	<0.30	0.267	0.00046	1.86	<0.000010	<2.0	0.138	<0.00010	<0.00010	<0.010	<0.000010
	15-Nov-10	L955725-14	0.00072	0.049	0.000269	<0.0050	2.93	0.0029	<0.000010	0.000371	0.00058	<0.30	0.232	0.00057	2.71	<0.000010	<2.0	0.149	<0.00010	<0.00010	<0.010	<0.000010
	1-Apr-11	L991777-26	<0.00050	<0.030	<0.000050	<0.0050	3.78	0.0005	<0.000010	0.000461	<0.00050	<0.30	0.260	0.00071	2.44	<0.000010	2.1	0.195	<0.00010	<0.00010	<0.010	<0.000010
	3-Jul-11	L1026874-17	0.00083	0.262	0.000089	0.00108	2.20	0.0093	<0.000010	0.000385	0.00095	<0.30	0.253	0.00050	2.04	<0.000010	<2.0	0.111	<0.00010	<0.00010	<0.010	<0.000010
	3-Jul-11	L1026874-5	0.00083	0.298	0.000087	0.00111	2.20	0.0101	<0.000010	0.000401	0.00102	<0.30	0.253	0.00050	2.13	<0.000010	<2.0	0.111	<0.00010	<0.00010	<0.010	<0.000010
	4-Sep-11	L1054465-18	0.00219	1.11	0.000277	0.00143	2.68	0.0333	<0.000050	0.000471	0.00372	<0.30	0.495	0.00052	3.40	0.000010	<2.0	0.121	0.00001	<0.00010	0.020	0.000021
	27-Nov-11	L1091310-14	<0.00050	<0.030	<0.000050	0.00105	3.55	0.0014	<0.000010	0.000458	<0.00050	<0.30	0.260	0.00068	2.74	<0.000010	<2.0	0.176	<0.00010	<0.00010	<0.010	<0.000010
TRC1	1-Aug-11	L1041095-1	0.0288	17.8	0.0123	0.00938	6.45	0.438	0.000065	0.00255	0.0221	0.54	2.39	0.00082	14.70	0.000234	<2.0	0.148	0.00025	<0.00010	0.319	0.000265
	5-Sep-11	L1054953-14	0.0393	27.1	0.0207	0.0140	9.80	0.768	0.000077	0.00683	0.0279	0.78	3.02	0.00209	31.00	0.000394	2.0	0.188	0.00067	<0.00010	0.890	0.000503
	30-Sep-11	L1067383-18	0.00857	4.98	0.00343	0.00359	6.58	0.246	0.000020	0.00374	0.00657	<0.30	1.33	0.00086	10.10	0.000064	<2.0	0.310	0.00012	<0.00010	0.171	0.000280
	24-Oct-11	L1079029-6	0.00416	0.751	0.000921	0.00242	8.19	0.193	<0.000010	0.00423	0.00345	<0.30	0.735	0.00065	3.73	<0.000010	2.6	0.442	0.00003	<0.00010	0.024	0.000330
TRC1B	25-Jun-08	L650936-2	<0.00060	0.035	<0.000050	<0.0050	2.82	0.0087														

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

		Total Metals																				
		Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	
Site Name	Date	ALS Sample No.																				
	17-Sep-08	L686098-2	0.0289	18.7	0.0126	0.0150	9.88	0.538	0.000077	0.00349	0.02880	0.52	3.64	0.00152	24.80	0.000274	<2.0	0.175	0.00037	<0.00020	0.522	0.000480
	25-Sep-08	L688714-2	0.00225	1.14	0.000867	<0.0050	5.12	0.0438	0.000010	0.00141	0.00272	<0.30	0.499	0.00062	3.23	0.000015	<2.0	0.198	<0.00010	<0.00010	0.035	0.000087
	2-Oct-08	L691752-5	0.0466	26.7	0.0227	0.01700	10.10	0.763	0.000070	0.00330	0.0318	0.95	3.72	0.00173	29.80	0.000325	2.1	0.195	0.00037	0.00021	0.613	0.000531
	9-Oct-08	L694973-3	0.00277	1.36	0.000928	<0.0050	5.61	0.0503	<0.000010	0.00162	0.00279	<0.30	0.661	0.00066	4.59	0.000017	2.1	0.231	<0.00010	<0.00010	0.052	0.000109
	9-Oct-08	L694973-2	0.00403	1.70	0.00125	<0.0050	5.60	0.0645	<0.000010	0.00160	0.00341	<0.30	0.637	0.00065	4.52	0.000020	2.1	0.227	<0.00010	<0.00010	0.060	0.000115
	29-Oct-08	L703445-2	<0.00070	0.259	0.000179	<0.0050	6.79	0.0205	<0.000010	0.00138	0.00128	<0.30	0.315	0.00067	2.67	<0.000010	<2.0	0.266	<0.00010	<0.00010	<0.010	0.000077
	6-Dec-08	L717413-4	0.00060	0.159	0.000202	<0.0050	7.94	0.0160	<0.000010	0.00135	0.00087	<0.30	0.304	0.00100	2.71	<0.000010	2.4	0.326	<0.00010	<0.00010	<0.010	0.000084
	6-Jan-09	L723686-4	0.00088	0.468	0.000349	<0.0050	7.67	0.0434	0.000024	0.00163	0.00097	<0.30	0.380	0.00114	2.64	<0.000010	2.6	0.396	<0.00010	<0.00010	<0.010	0.000063
	1-Feb-09	L732103-4	0.00404	2.68	0.00192	<0.0050	10.10	0.0856	0.000018	0.00188	0.00336	<0.30	0.595	0.00169	3.75	0.000039	3.3	0.471	<0.00010	<0.00010	0.103	0.000193
	4-Mar-09	L740333-4	0.00035	0.098	0.000065	<0.0050	8.00	0.0240	<0.000010	0.00126	0.00088	<0.30	0.300	0.00085	3.02	<0.000010	3.0	0.350	<0.00010	<0.00010	<0.010	0.000083
	28-Mar-09	L748538-4	<0.00050	0.212	0.000098	<0.0050	8.61	0.0266	<0.000010	0.00120	0.00098	<0.30	0.309	0.00065	2.80	<0.000010	3.1	0.344	<0.00010	<0.00010	<0.010	0.000080
	28-Apr-09	L759011-4	0.00419	2.20	0.00135	<0.0050	7.91	0.0769	0.000015	0.000914	0.00549	<0.30	0.801	0.00086	5.43	0.000035	2.6	0.258	<0.00010	<0.00010	0.047	0.000088
	27-May-09	L771080-5	0.00846	4.16	0.00417	<0.0050	6.51	0.145	0.000036	0.000988	0.00768	<0.30	1.15	0.00090	8.22	0.000064	<2.0	0.182	<0.00010	<0.00010	0.132	0.000120
	8-Jun-09	L776835-4	0.0143	8.87	0.00555	0.00700	5.63	0.298	0.000016	0.00117	0.0166	<0.30	1.76	0.00077	14.20	0.000113	<2.0	0.154	0.00012	<0.00010	0.261	0.000153
	8-Jun-09	L776835-3	0.0147	7.44	0.00617	0.00640	5.12	0.346	0.000023	0.00107	0.0155	0.38	1.55	0.00079	12.30	0.000079	<2.0	0.160	0.00011	<0.00010	0.209	0.000165
	13-Jun-09	L778602-6	0.0147	10.7	0.00604	0.00870	6.52	0.260	0.000022	0.00163	0.0151	<0.30	2.23	0.00080	15.50	0.000115	<2.0	0.160	0.00015	0.00010	0.293	0.000225
	19-Jun-09	L781603-8	0.00817	4.98	0.00314	0.00530	4.98	0.142	0.000013	0.00122	0.00880	<0.30	1.57	0.00079	11.40	0.000068	<2.0	0.146	<0.00010	<0.00010	0.196	0.000163
	2-Jul-09	L787346-15	0.00799	4.27	0.00253	0.00530	6.50	0.189	<0.000010	0.00142	0.00823	<0.30	1.11	0.00089	7.38	0.000051	<2.0	0.248	<0.00010	<0.00010	0.131	0.000105
	4-Aug-09	L801967-2	0.0242	16.3	0.00967	0.0116	6.49	0.460	<0.000010	0.00172	0.0235	0.56	2.60	0.00082	17.60	0.000184	<2.0	0.136	0.00020	0.00011	0.383	0.000271
	22-Aug-09	L809879-7	0.0200	16.7	0.00836	0.0128	7.27	0.396	0.000026	0.00202	0.0244	0.43	2.65	0.00083	22.40	0.000159	<2.0	0.162	0.00019	0.00013	0.537	0.000258
	13-Sep-09	L817873-9	0.0157	8.20	0.00733	0.00610	4.50	0.411	0.000020	0.00105	0.0146	0.63	1.61	0.00070	12.90	0.000067	<2.0	0.164	0.00011	<0.00010	0.222	0.000218
	13-Sep-09	L817873-5	0.0231	19.5	0.00868	0.0137	7.73	0.517	0.000025	0.00205	0.0274	0.67	2.26	0.00099	24.20	0.000154	<2.0	0.162	0.00020	0.00012	0.571	0.000275
	27-Sep-09	L824535-6	0.00437	3.17	0.00140	<0.0050	5.45	0.0894	<0.000010	0.00136	<0.0050	<0.30	0.777	0.00081	6.30	<0.000040	<2.0	0.225	<0.00010	<0.00010	0.105	0.000098
	31-Oct-09	L837185-6	0.00056	0.163	0.000085	<0.0050	6.36	0.0189	<0.000010	0.00107	0.00120	<0.30	0.266	0.00072	2.69	<0.000010	2.2	0.303	<0.00010	<0.00010	<0.010	0.000065
	25-Nov-09	L844495-15	0.0497	0.178	0.000129	<0.0050	8.85	0.0184	<0.000010	0.0013												

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals																			
			Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)
5-Mar-11	L985810-8	0.00052	<0.030	<0.000050	<0.0050	7.03	0.0221	<0.000010	0.000744	0.00050	<0.30	0.388	0.00034	3.27	<0.000010	2.4	0.349	<0.00010	<0.00010	<0.010	0.000050	
1-Apr-11	L991777-23	<0.00050	0.116	<0.000050	<0.0050	8.65	0.0312	<0.000010	0.00115	0.00063	<0.30	0.328	0.00079	2.63	<0.000010	2.7	0.398	<0.00010	<0.00010	<0.010	0.000069	
1-May-11	L1002688-1	0.00081	0.370	0.000140	<0.0050	7.31	0.0619	<0.000010	0.000846	0.00119	<0.30	0.352	0.00069	2.69	<0.000010	2.1	0.333	<0.00010	<0.00010	<0.010	0.000049	
4-Jun-11	L1014013-8	0.0161	10.1	0.00537	0.00700	5.93	0.282	0.000024	0.00157	0.0146	<0.30	1.35	0.00077	17.80	0.000116	<2.0	0.164	0.00012	<0.00010	0.317	0.000132	
3-Jul-11	L1026874-3	0.00544	3.88	0.00180	0.00395	4.57	0.122	<0.000010	0.00120	0.00544	<0.30	1.10	0.00058	8.12	<0.000050	2.2	0.196	0.00007	<0.00010	0.133	0.000105	
1-Aug-11	L1039955-9	0.00341	1.60	0.00142	0.00170	3.09	0.0853	0.000018	0.000847	0.00316	<0.30	0.500	0.00038	3.73	0.000017	<2.0	0.143	0.00003	<0.00010	0.046	0.000063	
4-Sep-11	L1054465-16	0.0670	49.8	0.0294	0.0348	17.30	1.48	0.000151	0.00541	0.0717	1.29	5.33	0.00252	46.80	0.000517	2.7	0.254	0.00066	0.00021	1.070	0.000718	
30-Sep-11	L1067383-19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
30-Sep-11	L1067383-15	0.00252	1.52	0.000564	0.00241	5.26	0.0636	<0.000010	0.00123	0.00380	<0.30	0.568	0.00064	4.88	0.000015	<2.0	0.225	0.00003	<0.00010	0.042	0.000069	
24-Oct-11	L1079029-8	0.00076	0.258	0.000089	0.00167	5.89	0.0345	<0.000010	0.00122	0.00125	<0.30	0.350	0.00070	2.93	<0.000010	<2.0	0.262	<0.000010	<0.00010	<0.010	0.000052	
28-Nov-11	L1091310-16	<0.0010	0.106	<0.00010	<0.0010	7.17	0.0315	<0.000010	0.00137	<0.0010	<0.30	0.320	0.00078	2.73	<0.000020	2.2	0.360	<0.000020	<0.00020	<0.010	0.000061	

Notes:

< indicates that the value is below the analytical detection limit

- indicates parameter was not analyzed

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

		Total Metals		Dissolved Metals																		
		Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	
Site Name	Date	ALS Sample No.																				
NTR1	25-Jun-08	L650936-6	<0.0010	<0.0010	0.0102	<0.00010	<0.00010	0.0125	<0.00050	<0.00050	<0.010	<0.000017	9.42	<0.00050	<0.00010	0.00056	0.045	0.000060	<0.0050	2.28	0.00198	<0.000010
	9-Sep-08	L682706-9	<0.0010	<0.0020	<0.0060	<0.00010	<0.00010	0.0176	<0.00050	<0.00050	<0.010	<0.000017	15.0	<0.00050	<0.00010	<0.00010	0.055	<0.000050	<0.0050	3.60	0.00302	<0.000010
	2-Jul-09	L787346-17	<0.0010	0.0015	0.0099	<0.00010	<0.00010	0.0146	<0.00050	<0.00050	<0.010	0.000012	11.8	<0.00050	<0.00010	0.00040	0.057	0.000085	<0.0050	3.31	0.0107	<0.000010
	22-Aug-09	L809879-9	<0.0010	0.0019	0.0032	<0.00010	<0.00010	0.0203	<0.00050	<0.00050	<0.010	0.000011	17.8	<0.00050	<0.00010	0.00022	0.048	<0.000050	<0.0050	4.07	0.0140	<0.000010
	5-Jul-10	L905787-14	<0.0010	<0.0010	0.0045	<0.00010	<0.00010	0.0166	<0.00050	<0.00050	<0.010	0.000011	14.0	<0.00020	<0.00010	0.00035	0.038	<0.000050	<0.0050	3.35	0.00206	<0.000010
	27-Aug-10	L926457-14	<0.0010	0.0014	0.0019	<0.00010	<0.00010	0.0197	<0.00050	<0.00050	<0.010	0.000011	17.9	<0.00020	<0.00010	0.00019	0.076	<0.000050	<0.0050	4.27	0.0316	<0.000010
	15-Nov-10	L955725-13	<0.0010	<0.0030	0.0086	<0.00010	<0.00010	0.0149	<0.00050	<0.00050	<0.010	0.000011	13.3	0.00019	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	3.35	0.00360	<0.000010
	3-Jul-11	L1026874-4	<0.0010	<0.0030	0.0061	<0.00010	<0.00010	0.0148	<0.00050	<0.00050	<0.010	<0.000010	12.2	0.00021	<0.00010	<0.00050	0.053	<0.000050	<0.0050	2.99	0.0105	<0.000010
	4-Sep-11	L1054465-17	<0.0010	<0.0030	0.0037	<0.00010	<0.00010	0.0190	<0.00050	<0.00050	<0.010	0.000012	16.2	0.00020	<0.00010	<0.00050	0.044	<0.000050	<0.0050	3.86	0.0120	<0.000010
NTR1A	26-May-10	L891484-7	<0.0010	0.0030	0.0274	<0.00010	<0.00010	0.0094	<0.00050	<0.00050	<0.010	<0.000010	7.98	0.00027	<0.00010	0.00058	<0.030	<0.000050	<0.0050	1.69	0.00136	<0.000010
	5-Jul-10	L905787-16	<0.0010	0.0013	0.0102	<0.00010	<0.00010	0.0134	<0.00050	<0.00050	<0.010	<0.000010	12.8	<0.00020	<0.00010	0.00030	<0.030	<0.000050	<0.0050	2.54	0.00029	<0.000010
	3-Aug-10	L916942-7	<0.0010	<0.0010	0.0041	<0.00010	<0.00010	0.0154	<0.00050	<0.00050	<0.010	<0.000010	14.9	0.00025	<0.00010	0.00018	<0.030	<0.000050	<0.0050	2.91	0.00012	<0.000010
	27-Aug-10	L926457-16	<0.0010	0.0018	0.0038	<0.00010	<0.00010	0.0171	<0.00050	<0.00050	<0.010	<0.000010	17.6	<0.00020	<0.00010	0.00022	<0.030	<0.000050	<0.0050	3.43	0.00204	<0.000010
	28-Sep-10	L938295-7	<0.0010	<0.0030	0.0412	<0.00010	0.00011	0.0122	<0.00050	<0.00050	<0.010	<0.000010	10.5	0.00034	<0.00010	0.00081	0.046	<0.000050	<0.0050	2.10	0.00258	<0.000010
	15-Nov-10	L955725-15	<0.0010	<0.0030	0.0134	<0.00010	<0.00010	0.0129	<0.00050	<0.00050	<0.010	<0.000010	12.9	0.00024	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.77	0.00158	<0.000010
	15-Dec-10	L963832-6	<0.0010	<0.0030	0.0085	<0.00010	<0.00010	0.0145	<0.00050	<0.00050	<0.010	<0.000010	15.1	0.00020	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	3.30	0.00031	<0.000010
	31-Mar-11	L991777-15	<0.0010	<0.0030	0.0044	<0.00010	<0.00010	0.0171	<0.00050	<0.00050	<0.010	<0.000010	16.0	0.00017	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	3.74	0.00060	<0.000010
	1-May-11	L1002688-2	<0.0010	<0.0030	0.0154	<0.00010	<0.00010	0.0145	<0.00050	<0.00050	<0.010	<0.000010	13.6	0.00027	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	3.19	0.00105	<0.000010
	4-Jun-11	L1014013-9	<0.0010	<0.0030	0.0313	<0.00010	<0.00010	0.0098	<0.00050	<0.00050	<0.010	<0.000010	8.12	0.00034	<0.00010	0.00070	<0.030	<0.000050	<0.0050	1.70	0.00229	<0.000010
	3-Jul-11	L1026874-6	<0.0010	<0.0030	0.0099	<0.00010	<0.00010	0.0129	<0.00050	<0.00050	<0.010	<0.000010	12.9	0.00023	<0.00010	<0.00050	<0.030	<0.000050	0.00058	2.60	0.00293	<0.000010
	1-Aug-11	L1039955-10	<0.0010	<0.0030	0.0067	<0.00010	<0.00010	0.0159	<0.00050	<0.00050	<0.010	<0.000010	15.3	0.00017	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	3.13	0.00339	<0.000010
	4-Sep-11	L1054465-19	<0.0010	<0.0030	0.0090	<0.00010	<0.00010	0.0168	<0.00050	<0.00050	<0.010	<0.000010	15.2	0.00021	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	3.12	0.00349	<0.000010
	30-Sep-11	L1067383-17	<0.0010	<0.0030	0.0320	<0.00010	<0.00010	0.0118	<0.00050	<0.00050												

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

		Total Metals		Dissolved Metals																		
		ALS Sample No.	Zinc (Zn) (mg/L)	Vanadium (V) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)
Site Name	Date																					
TRC0	13-Jun-09	L778602-5	0.0060	0.0103	0.149	<0.00010	0.00011	0.0115	<0.00050	<0.00050	<0.010	<0.000010	7.21	0.00058	<0.00010	0.00064	0.100	<0.000050	<0.0050	1.52	0.00430	<0.000010
	19-Jun-09	L781603-7	0.0015	<0.0040	0.0329	<0.00010	<0.00010	0.0102	<0.00050	<0.00050	<0.010	<0.000010	8.27	<0.00050	<0.00010	0.00042	<0.030	<0.000050	<0.0050	1.65	0.00181	<0.000010
	5-Jul-09	L788462-6	0.0016	0.0054	0.0266	<0.00010	<0.00010	0.0098	<0.00050	<0.00050	<0.010	<0.000010	7.91	<0.00050	<0.00010	0.00024	<0.030	<0.000050	<0.0050	1.61	0.00218	<0.000010
	4-Aug-09	L801967-6	<0.0010	0.0029	0.0615	<0.00010	<0.00010	0.0122	<0.00050	<0.00050	<0.010	<0.000010	8.38	<0.00050	<0.00010	0.00035	0.046	<0.000050	<0.0050	1.74	0.00249	<0.000010
	22-Aug-09	L809879-25	0.0015	0.0032	0.0743	<0.00010	<0.00010	0.0131	<0.00050	<0.00050	<0.010	<0.000010	9.73	<0.00050	<0.00010	0.00022	<0.030	<0.000050	<0.0050	2.11	0.00156	<0.000010
	22-Aug-09	L809879-10	0.0014	0.0026	0.0306	<0.00010	<0.00010	0.0131	<0.00050	<0.00050	<0.010	<0.000010	9.85	<0.00050	<0.00010	0.00022	<0.030	<0.000050	<0.0050	2.04	0.00152	<0.000010
	13-Sep-09	L817873-6	0.0076	0.0145	0.160	<0.00010	0.00014	0.0170	<0.00050	<0.00050	<0.010	<0.000010	10.1	<0.00050	<0.00010	0.00047	0.095	<0.000050	<0.0050	1.95	0.00402	<0.000010
	27-Sep-09	L824535-7	0.0019	<0.0060	0.0245	<0.00010	0.00010	0.0170	<0.00050	<0.00050	<0.010	<0.000010	12.8	<0.00050	<0.00010	0.00046	<0.030	<0.000050	<0.0050	2.47	0.00389	<0.000010
	31-Oct-09	L837185-7	<0.0010	<0.0010	0.0151	<0.00010	<0.00010	0.0161	<0.00050	<0.00050	<0.010	<0.000010	13.6	<0.00050	<0.00010	<0.00060	<0.030	<0.000050	<0.0050	2.85	0.00066	<0.000010
	25-Nov-09	L844495-17	<0.0010	<0.0010	0.0073	<0.00010	<0.00010	0.0184	<0.00050	<0.00050	<0.010	<0.000013	15.8	<0.00050	<0.00010	0.00033	<0.030	<0.000050	<0.0050	3.46	0.00131	<0.000010
	1-May-10	L884476-3	<0.0010	0.0020	0.0281	<0.00010	<0.00010	0.0121	<0.00050	<0.00050	<0.010	<0.000010	10.5	<0.00050	<0.00010	0.00067	<0.030	<0.000050	<0.0050	2.15	0.00101	<0.000010
	5-Jul-10	L905787-15	<0.0010	0.0015	0.0065	<0.00010	<0.00010	0.0134	<0.00050	<0.00050	<0.010	<0.000010	11.6	0.00020	<0.00010	0.00026	<0.030	<0.000050	<0.0050	2.35	0.00018	<0.000010
	27-Aug-10	L926457-15	<0.0010	0.0016	0.0158	<0.00010	<0.00010	0.0157	<0.00050	<0.00050	<0.010	<0.000010	12.6	0.00021	<0.00010	0.00018	<0.030	<0.000050	<0.0050	2.57	0.00106	<0.000010
	15-Nov-10	L955725-14	<0.0010	<0.0030	0.0170	<0.00010	<0.00010	0.0154	<0.00050	<0.00050	<0.010	<0.000010	13.8	0.00029	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.87	0.00051	<0.000010
	1-Apr-11	L991777-26	<0.0010	<0.0030	<0.0030	<0.00010	<0.00010	0.0197	<0.00050	<0.00050	<0.010	<0.000010	17.5	0.00023	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	3.75	0.00017	<0.000010
	3-Jul-11	L1026874-17	<0.0010	<0.0030	0.0160	<0.00010	<0.00010	0.0135	<0.00050	<0.00050	<0.010	<0.000010	9.97	0.00040	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.49	0.00148	<0.000010
	3-Jul-11	L1026874-5	<0.0010	<0.0030	0.0143	<0.00010	<0.00010	0.0116	<0.00050	<0.00050	<0.010	<0.000010	10.0	0.00029	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.15	0.00152	<0.000010
	4-Sep-11	L1054465-18	0.0034	0.0060	0.0222	<0.00010	<0.00010	0.0145	<0.00050	<0.00050	<0.010	<0.000010	10.8	0.00024	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.27	0.00251	<0.000010
	27-Nov-11	L1091310-14	<0.0010	<0.0030	0.0079	<0.00010	<0.00010	0.0189	<0.00050	<0.00050	<0.010	<0.000010	16.8	0.00033	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	3.43	0.00034	<0.000010
TRC1	1-Aug-11	L1041095-1	0.0271	0.0754	0.130	0.00052	0.00063	0.0335	<0.00010	<0.00050	<0.010	<0.000010	14.8	0.00012	<0.00010	<0.00050	<0.030	<0.000050	0.00080	1.64	0.00059	<0.000010
	5-Sep-11	L1054953-14	0.0497	0.178	0.117	0.00069	0.00102	0.0355	<0.00010	<0.00050	<0.010	<0.000012	17.4	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	0.00091	1.86	0.00067	<0.000010
	30-Sep-11	L1067383-18	0.0103	0.0326	0.0544	0.00084	0.00030	0.0541	<0.00010	<0.00050	<0.010	<0.0000154	45.7	<0.00010	0.00076	<0.00050	<0.030	<0.000050	0.00102	5.54	0.1100	<0.000010
	24-Oct-11	L1079029-6</td																				

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals		Dissolved Metals																	
			Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)
TRC3	17-Sep-08	L686098-2	0.0405	0.103	0.0459	0.00038	0.00046	0.0262	<0.0010	<0.0020	<0.000034	20.2	<0.0010	<0.00020	0.00025	<0.030	<0.00010	<0.010	2.68	0.00066	<0.000010	
	25-Sep-08	L688714-2	0.0028	0.0074	0.0246	0.00032	0.00032	0.0255	<0.00050	<0.010	0.000029	27.2	<0.00050	<0.00010	0.00020	0.054	<0.00050	<0.0050	4.53	0.00553	<0.000010	
	2-Oct-08	L691752-5	0.0473	0.126	0.0645	0.00070	0.00084	0.0463	<0.0010	<0.020	<0.000034	21.4	<0.0010	<0.00020	0.00034	<0.030	<0.00010	<0.010	2.46	0.00079	<0.000010	
	9-Oct-08	L694973-3	0.0039	<0.0090	0.0299	0.00037	0.00036	0.0272	<0.00050	<0.0010	0.000033	29.2	<0.00050	<0.00010	0.00026	<0.030	<0.000050	<0.0050	5.01	0.00333	<0.000010	
	9-Oct-08	L694973-2	0.0039	0.0104	0.0255	0.00037	0.00036	0.0271	<0.00050	<0.00050	<0.010	0.000027	29.4	<0.00050	<0.00010	0.00026	<0.030	<0.000050	<0.0050	4.99	0.00127	<0.000010
	29-Oct-08	L703445-2	<0.0010	0.0029	0.0300	0.00030	0.00038	0.0276	<0.00050	<0.00050	<0.010	0.000044	36.9	<0.00050	0.00013	<0.00040	0.107	0.000182	<0.0050	6.48	0.0201	<0.000010
	6-Dec-08	L717413-4	<0.0010	0.0022	0.0177	0.00031	0.00019	0.0301	<0.00050	<0.00050	<0.010	0.000034	45.0	<0.00050	<0.00010	0.00025	<0.030	<0.000050	<0.0050	7.91	0.00511	<0.000010
	6-Jan-09	L723686-4	<0.0010	0.0048	0.0011	0.00036	0.00015	0.0477	<0.00050	<0.00050	<0.010	0.000034	55.7	<0.00050	<0.00010	0.00019	<0.030	<0.000050	<0.0050	7.13	0.0278	<0.000010
	1-Feb-09	L732103-4	0.0042	0.0157	0.0023	0.00038	0.00017	0.0443	<0.00050	<0.00050	<0.010	0.000033	70.5	<0.00050	<0.00010	0.00024	<0.030	<0.000050	<0.0050	8.87	0.00024	<0.000010
	4-Mar-09	L740333-4	<0.0010	0.0021	<0.0030	0.00027	0.00020	0.0317	<0.00050	<0.00050	<0.010	0.000037	53.0	<0.00050	<0.00010	0.00020	<0.030	<0.000050	<0.0050	8.24	0.0181	<0.000010
	28-Mar-09	L748538-4	<0.0010	0.0034	0.0022	0.00024	0.00019	0.0289	<0.00050	<0.00050	<0.010	0.000037	50.2	<0.00050	<0.00010	0.00020	<0.030	<0.000050	<0.0050	8.86	0.0182	<0.000010
	28-Apr-09	L759011-4	0.0047	0.0155	0.0169	0.00018	0.00021	0.0235	<0.00050	<0.00050	<0.010	0.000034	36.2	<0.00050	<0.00010	0.00062	<0.030	<0.000050	<0.0050	6.67	0.00833	<0.000010
	27-May-09	L771080-5	0.0091	0.0246	0.0506	0.00026	0.00033	0.0207	<0.00050	<0.00050	<0.010	0.000043	23.4	<0.00050	<0.00010	0.00111	<0.030	<0.000050	<0.0050	4.91	0.00537	<0.000010
	8-Jun-09	L776835-4	0.0172	0.0443	0.0608	0.00024	0.00036	0.0204	<0.00050	<0.00050	<0.010	0.000020	14.3	<0.00050	<0.00010	0.00064	0.047	<0.000050	<0.0050	3.87	0.00355	<0.000010
	8-Jun-09	L776835-3	0.0142	0.0406	0.0632	0.00023	0.00037	0.0208	<0.00050	<0.00050	<0.010	0.000023	14.7	<0.00050	<0.00010	0.00065	0.046	<0.000050	<0.0050	3.89	0.00447	<0.000010
	13-Jun-09	L778602-6	0.0225	0.0496	0.0414	0.00029	0.00039	0.0185	<0.00050	<0.00050	<0.010	0.000019	19.1	<0.00050	<0.00010	0.00061	<0.030	<0.000050	<0.0050	3.02	0.00052	<0.000010
	19-Jun-09	L781603-8	0.0136	0.0269	0.0557	0.00024	0.00034	0.0189	<0.00050	<0.00050	<0.010	0.000024	16.7	<0.00050	<0.00010	0.00046	<0.030	<0.000050	<0.0050	3.10	0.00287	<0.000010
	2-Jul-09	L787346-15	0.0097	0.0262	0.0470	0.00032	0.00037	0.0206	<0.00050	<0.00050	<0.010	0.000034	23.3	<0.00050	<0.00010	0.00045	<0.030	<0.000050	<0.0050	4.40	0.0102	<0.000010
	4-Aug-09	L801967-2	0.0292	0.0714	0.218	0.00029	0.00047	0.0286	<0.00050	<0.00050	<0.010	0.000011	14.8	<0.00050	<0.00010	<0.00050	0.130	0.000079	<0.0050	1.73	0.00255	<0.000010
	22-Aug-09	L809879-7	0.0317	0.0662	0.142	0.00031	0.00043	0.0280	<0.00050	<0.00050	<0.010	<0.000010	18.4	<0.00050	<0.00010	0.00021	0.076	<0.000050	<0.0050	2.09	0.00240	<0.000010
	13-Sep-09	L817873-9	0.0164	0.0513	0.0817	0.00028	0.00033	0.0207	<0.00050	<0.00050	<0.010	<0.000010	18.7	<0.00050	<0.00010	0.00011	<0.030	<0.000050	<0.0050	2.04	0.00043	<0.000010
	13-Sep-09	L817873-5	0.0325	0.0760	0.0829	0.00027	0.00035	0.0214	<0.00050	<0.00050	<0.010	<0.000010	18.0	<0.00050	<0.00010	0.00015	0.034	<0.000050	<0.0050	1.90	0.00046	<0.000010
	27-Sep-09	L824535-6	0.0062	0.0140	0.0442	0.00029	0.00034	0.0243	<0.00050	<0.00050	<0.010	0.000034	28.0	<0.00050	<0.00010	0.00029	0.033	<0.000050	<0.0050	4.31	0.0132	<0.000010
	31-Oct-09	L837185-6	<0.0010	0.0020	0.0098	0.00028	0.00021	0.0258	<0.00050	<0.00050	<0.010	0.000033	37.3	<0.00050	<0.00010	<0.00040	<0.030	<0.000050	<0.0050	6.38	0.0123	&lt

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

Site Name	Date	ALS Sample No.	Total Metals		Dissolved Metals																	
			Zinc	Vanadium (V)	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)
			(Zn) (mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
5-Mar-11	L985810-8	<0.0010	<0.0030	<0.0030	0.00021	0.00019	0.0520	<0.00050	<0.010	0.000024	50.7	0.00023	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	6.82	0.0183	<0.000010		
1-Apr-11	L991777-23	<0.0010	<0.0030	<0.0030	0.00028	0.00019	0.0416	<0.00050	<0.010	0.000024	49.6	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	8.28	0.0250	<0.000010		
1-May-11	L1002688-1	<0.0010	0.0040	0.0079	0.00021	0.00024	0.0324	<0.00050	<0.010	0.000032	37.5	0.00011	<0.00010	0.00066	0.057	<0.000050	<0.0050	7.35	0.0446	<0.000010		
4-Jun-11	L1014013-8	0.0146	0.0460	0.0350	0.00033	0.00039	0.0227	<0.00050	<0.010	0.000023	20.1	0.00018	<0.00010	0.00067	<0.030	<0.000050	<0.0050	3.19	0.00268	<0.000010		
3-Jul-11	L1026874-3	0.0090	0.0197	0.0605	0.00029	0.00034	0.0232	<0.00010	<0.010	0.000024	22.0	0.00023	<0.00010	<0.00050	<0.030	<0.000050	0.00093	3.45	0.00713	<0.000010		
1-Aug-11	L1039955-9	0.0032	0.0133	0.0361	0.00026	0.00030	0.0198	<0.00010	<0.010	0.000026	19.2	0.00011	<0.00010	<0.00050	<0.030	<0.000050	0.00077	2.58	0.00639	<0.000010		
4-Sep-11	L1054465-16	0.0798	0.260	0.0960	0.00068	0.00051	0.0338	<0.00020	<0.010	<0.020	<0.000020	23.6	0.00025	<0.00020	<0.010	0.044	<0.00010	<0.010	2.71	0.00086	<0.000010	
30-Sep-11	L1067383-19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
30-Sep-11	L1067383-15	0.0028	0.0076	0.0266	0.00028	0.00028	0.0232	<0.00010	<0.00050	<0.010	0.000033	29.9	0.00013	<0.00010	0.00069	<0.030	<0.000050	0.00126	4.91	0.0236	<0.000010	
24-Oct-11	L1079029-8	<0.0010	<0.0030	0.0145	0.00031	0.00028	0.0289	<0.00010	<0.00050	<0.010	0.000024	35.6	0.00010	<0.00010	<0.00050	<0.030	<0.000050	0.00133	5.63	0.0258	<0.000010	
28-Nov-11	L1091310-16	<0.0020	<0.0060	<0.0060	0.00033	0.00023	0.0376	<0.00020	<0.010	<0.020	0.000022	46.3	<0.00020	<0.00020	<0.010	<0.030	<0.00010	<0.010	7.00	0.0242	<0.000010	

Notes:

< indicates that the value is below the analytical detection limit

- indicates parameter was not analyzed

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals														
			Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
NTR1																	
	25-Jun-08	L650936-6	0.000258	0.00059	<0.30	0.152	0.00031	2.34	<0.000010	<2.0	0.096	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	9-Sep-08	L682706-9	0.000232	0.00050	<0.30	0.209	0.00048	2.59	<0.000010	<2.0	0.140	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	2-Jul-09	L787346-17	0.000251	0.00070	<0.30	0.178	0.00040	2.44	<0.000010	<2.0	0.131	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0020
	22-Aug-09	L809879-9	0.000252	0.00056	<0.30	0.249	0.00055	2.60	<0.000010	<2.0	0.184	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	5-Jul-10	L905787-14	0.000267	0.00058	<0.30	0.198	0.00061	2.65	<0.000010	<2.0	0.140	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0010
	27-Aug-10	L926457-14	0.000244	<0.00050	<0.30	0.255	0.00057	2.48	0.000012	2.0	0.173	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	15-Nov-10	L955725-13	0.000242	0.00058	<0.30	0.230	0.00046	3.13	<0.000010	<2.0	0.137	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	3-Jul-11	L1026874-4	0.000254	0.00058	<0.30	0.143	0.00045	2.43	<0.000010	<2.0	0.141	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	4-Sep-11	L1054465-17	0.000258	0.00073	<0.30	0.258	0.00053	2.67	<0.000010	<2.0	0.168	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
NTR1A																	
	26-May-10	L891484-7	0.000201	<0.00050	<0.30	0.205	<0.00020	2.44	<0.000010	<2.0	0.084	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	5-Jul-10	L905787-16	0.000285	<0.00050	<0.30	0.198	0.00038	2.48	<0.000010	<2.0	0.131	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	3-Aug-10	L916942-7	0.000328	<0.00050	<0.30	0.218	0.00059	2.45	<0.000010	<2.0	0.150	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	27-Aug-10	L926457-16	0.000281	<0.00050	<0.30	0.246	0.00041	2.58	<0.000010	<2.0	0.166	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	28-Sep-10	L938295-7	0.000212	0.00090	<0.30	0.343	0.00029	2.56	<0.000010	<2.0	0.114	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	15-Nov-10	L955725-15	0.000228	0.00056	<0.30	0.226	0.00040	2.88	<0.000010	<2.0	0.132	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	15-Dec-10	L963832-6	0.000260	0.00065	<0.30	0.262	0.00049	2.95	<0.000010	<2.0	0.157	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	31-Mar-11	L991777-15	0.000266	<0.00050	<0.30	0.267	0.00057	2.83	<0.000010	2.1	0.184	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	1-May-11	L1002688-2	0.000225	0.00060	<0.30	0.271	0.00045	2.86	<0.000010	<2.0	0.154	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	4-Jun-11	L1014013-9	0.000228	0.00060	<0.30	0.208	0.00031	2.42	<0.000010	<2.0	0.086	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	3-Jul-11	L1026874-6	0.000290	<0.00050	<0.30	0.195	0.00044	2.37	<0.000010	<2.0	0.146	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	1-Aug-11	L1039955-10	0.000304	<0.00050	<0.30	0.220	0.00049	2.41	<0.000010	<2.0	0.156	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	4-Sep-11	L1054465-19	0.000266	0.00052	<0.30	0.238	0.00046	2.51	<0.000010	<2.0	0.160	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	30-Sep-11	L1067383-17	0.000220	0.00080	<0.30	0.219	0.00032	2.82	<0.000010	<2.0	0.113	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	24-Oct-11	L1079029-11	0.000228	0.00058	<0.30	0.228	0.00036	2.89	<0.000010	<2.0	0.121	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	24-Oct-11	L1079029-9	0.000234	0.00062	<0.30	0.221	0.00034	2.87	<0.000010	<2.0	0.124	<0.000010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
NTR2																	
	28-May-08	L635965-13	0.000269	<0.00050	<0.30	0.243	0.00024	2.24	<0.000010	<2.0	0.066	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	5-Jun-08	L639617-6	0.000318	<0.00050	<0.30	0.235	0.00031	2.15	<0.000010	<2.0	0.085	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	11-Jun-08	L642688-8	0.000326	<0.00050	<0.30	0.197	0.00040	2.07	<0.000010	<2.0	0.086	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	25-Jun-08	L650936-1	0.000374	<0.00050	<0.30	0.214	0.00059	1.84	<0.000010	<2.0	0.098	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	3-Jul-08	L652071-5	0.000388	0.00064	<0.30	0.214	0.00042	1.67	<0.000010	<2.0	0.071	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0020
	25-Jul-08	L662220-7	0.000438														

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

		Dissolved Metals														
		Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zinc (Zn)
Site Name	Date	ALS Sample No.	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
TRC0	13-Jun-09	L778602-5	0.000277	0.00066	<0.30	0.227	0.00034	2.13	<0.000010	<2.0	0.070	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	19-Jun-09	L781603-7	0.000316	<0.00050	<0.30	0.185	0.00052	1.86	<0.000010	<2.0	0.081	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	5-Jul-09	L788462-6	0.000361	<0.00050	<0.30	0.179	0.00040	1.57	<0.000010	<2.0	0.069	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	4-Aug-09	L801967-6	0.000430	0.00070	<0.30	0.201	0.00031	1.31	<0.000010	<2.0	0.087	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	22-Aug-09	L809879-25	0.000418	<0.00050	<0.30	0.200	0.00047	1.41	<0.000010	<2.0	0.105	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	22-Aug-09	L809879-10	0.000417	<0.00050	<0.30	0.196	0.00053	1.39	<0.000010	<2.0	0.104	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	13-Sep-09	L817873-6	0.000431	<0.00050	<0.30	0.250	0.00045	1.62	<0.000010	<2.0	0.105	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	27-Sep-09	L824535-7	0.000464	<0.00050	<0.30	0.236	0.00055	2.03	<0.000010	<2.0	0.127	<0.000010	<0.000010	<0.010	<0.000010	0.0103
	31-Oct-09	L837185-7	0.000375	<0.00050	<0.30	0.240	0.00063	2.28	<0.000010	<2.0	0.146	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	25-Nov-09	L844495-17	0.000367	<0.00050	<0.30	0.258	0.00067	2.36	<0.000010	<2.0	0.172	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	1-May-10	L884476-3	0.000229	0.00053	<0.30	0.224	0.00037	2.71	<0.000010	<2.0	0.102	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	5-Jul-10	L905787-15	0.000451	<0.00050	<0.30	0.208	0.00057	1.87	<0.000010	<2.0	0.115	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	27-Aug-10	L926457-15	0.000426	<0.00050	<0.30	0.218	0.00043	1.62	<0.000010	<2.0	0.128	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	15-Nov-10	L955725-14	0.000352	<0.00050	<0.30	0.218	0.00052	2.59	<0.000010	<2.0	0.137	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	1-Apr-11	L991777-26	0.000471	<0.00050	<0.30	0.257	0.00078	2.39	<0.000010	2.1	0.188	<0.000010	<0.000010	<0.010	<0.000010	<0.0030
	3-Jul-11	L1026874-17	0.000425	<0.00050	<0.30	0.233	0.00053	1.65	<0.000010	<2.0	0.116	<0.000010	<0.000010	<0.010	<0.000010	<0.0030
	3-Jul-11	L1026874-5	0.000437	<0.00050	<0.30	0.189	0.00051	1.65	<0.000010	<2.0	0.117	<0.000010	<0.000010	<0.010	<0.000010	<0.0030
	4-Sep-11	L1054465-18	0.000440	<0.00050	<0.30	0.195	0.00051	1.48	<0.000010	<2.0	0.119	<0.000010	<0.000010	<0.010	<0.000010	<0.0030
	27-Nov-11	L1091310-14	0.000442	<0.00050	<0.30	0.255	0.00069	2.68	<0.000010	<2.0	0.173	<0.000010	<0.000010	<0.010	<0.000010	<0.0030
TRC0	1-Aug-11	L1041095-1	0.00116	<0.00050	<0.30	0.221	0.00027	0.63	<0.000010	<2.0	0.103	<0.000010	<0.000010	<0.010	0.000046	<0.0010
	5-Sep-11	L1054953-14	0.00272	<0.00050	<0.30	0.319	0.00064	0.70	<0.000010	<2.0	0.114	0.00001	<0.000010	<0.010	0.000071	<0.0010
	30-Sep-11	L1067383-18	0.00311	0.00108	<0.30	0.446	0.00070	1.72	<0.000010	<2.0	0.306	0.00001	<0.000010	<0.010	0.000190	<0.0010
	24-Oct-11	L1079029-6	0.00447	0.00223	<0.30	0.589	0.00065	2.31	<0.000010	2.4	0.445	0.00002	<0.000010	<0.010	0.000294	<0.0010
TRC1	25-Jun-08	L650936-2	0.000100	<0.00050	<0.30	0.104	0.00023	1.69	<0.000010	<2.0	0.100	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	9-Sep-08	L682706-11	0.00225	<0.00050	<0.30	0.250	0.00046	0.77	<0.000010	<2.0	0.150	<0.000010	<0.000010	<0.010	0.000078	<0.0010
	2-Jul-09	L787346-14	0.00136	<0.00050	<0.30	0.271	0.00050	0.99	<0.000010	<2.0	0.193	<0.000010	<0.000010	<0.010	0.000056	<0.0010
	23-Aug-09	L809851-8	0.000225	<0.00050	<0.30	0.143	0.00061	2.56	<0.000010	2.3	0.260	<0.000010	<0.000010	<0.010	<0.000010	<0.0010
	1-Dec-09	L845898-8	0.00284	0.00133	<0.30	0.467	0.00054	1.66	<0.000010	2.6	0.552	<0.000010	<0.000010	<0.010	0.000190	<0.0010
	1-Dec-09	L845898-2	0.00287	0.00116	<0.30	0.468	0.00049	1.67	<0.000010	2.5	0.555	<0.000010	<0.000010	<0.010	0.000195	<0.0010
	5-Jul-10	L905787-11	0.00138	<0.00050	<0.30	0.238	0.00046	0.89	<0.000010	<2.0	0.159	<0.000010	<0.000010	<0.010	0.000051	<0.0010
	27-Aug-10	L926457-11	0.00139	<0.00050	<0.30	0.205	0.00022	0.63	<0.000010	<2.0	0.133	<0.000010	<0.000010	<0.010	0.000051	<0.0010
	1-Apr-11	L991777-27	0.00251	0.00119	<0.30	0.534	0.00041	2.01	<0.000010	3.3	0.688	<0.000010</td				

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

		Dissolved Metals														
		Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
Site Name	Date	ALS Sample No.														
	17-Sep-08	L686098-2	0.00190	<0.0010	<0.30	0.270	0.00051	0.92	<0.000020	<2.0	0.137	<0.000020	<0.000020	<0.010	0.000054	<0.0020
	25-Sep-08	L688714-2	0.00138	0.00066	<0.30	0.232	0.00054	1.54	<0.000010	<2.0	0.193	<0.000010	<0.000010	<0.010	0.000061	<0.0010
	2-Oct-08	L691752-5	0.00194	<0.0010	<0.30	0.320	0.00050	1.03	<0.000020	<2.0	0.138	<0.000020	<0.000020	<0.010	0.000063	<0.0020
	9-Oct-08	L694973-3	0.00146	0.00072	<0.30	0.277	0.00066	1.85	<0.000010	<2.0	0.221	<0.000010	<0.000010	<0.010	0.000074	<0.0010
	9-Oct-08	L694973-2	0.00152	0.00064	<0.30	0.274	0.00056	1.83	<0.000010	<2.0	0.218	<0.000010	<0.000010	<0.010	0.000075	<0.0010
	29-Oct-08	L703445-2	0.00124	0.00114	<0.30	0.275	0.00061	2.44	<0.000010	<2.0	0.256	<0.000010	<0.000010	<0.010	0.000072	<0.0010
	6-Dec-08	L717413-4	0.00148	0.00082	<0.30	0.295	0.00094	2.56	<0.000010	2.3	0.325	<0.000010	<0.000010	<0.010	0.000084	<0.0010
	6-Jan-09	L723686-4	0.00151	0.00066	<0.30	0.330	0.00117	2.56	<0.000010	2.7	0.361	<0.000010	<0.000010	<0.010	0.000060	<0.0010
	1-Feb-09	L732103-4	0.00166	<0.00050	<0.30	0.314	0.00160	1.98	<0.000010	2.8	0.449	<0.000010	<0.000010	<0.010	0.000071	<0.0010
	4-Mar-09	L740333-4	0.00133	0.00089	<0.30	0.306	0.00066	2.92	<0.000010	3	0.369	<0.000010	<0.000010	<0.010	0.000082	<0.0010
	28-Mar-09	L748538-4	0.00120	0.00083	<0.30	0.309	0.00060	2.84	<0.000010	3.2	0.352	<0.000010	<0.000010	<0.010	0.000079	<0.0010
	28-Apr-09	L759011-4	0.000772	0.00087	<0.30	0.310	0.00077	2.63	<0.000010	2.1	0.234	<0.000010	<0.000010	<0.010	0.000053	<0.0010
	27-May-09	L771080-5	0.000714	0.00108	<0.30	0.315	0.00061	2.22	<0.000010	<2.0	0.171	<0.000010	<0.000010	<0.010	0.000035	<0.0010
	8-Jun-09	L776835-4	0.000712	0.00092	<0.30	0.259	0.00050	1.73	<0.000010	<2.0	0.139	<0.000010	<0.000010	<0.010	0.000025	<0.0010
	8-Jun-09	L776835-3	0.000699	0.00089	<0.30	0.263	0.00056	1.73	<0.000010	<2.0	0.141	<0.000010	<0.000010	<0.010	0.000025	<0.0010
	13-Jun-09	L778602-6	0.000978	0.00072	<0.30	0.254	0.00054	1.62	<0.000010	<2.0	0.131	<0.000010	<0.000010	<0.010	0.000043	<0.0010
	19-Jun-09	L781603-8	0.000848	0.00064	<0.30	0.224	0.00056	1.60	<0.000010	<2.0	0.125	<0.000010	<0.000010	<0.010	0.000031	<0.0010
	2-Jul-09	L787346-15	0.000997	0.00066	<0.30	0.237	0.00057	1.67	<0.000010	<2.0	0.205	<0.000010	<0.000010	<0.010	0.000039	<0.0010
	4-Aug-09	L801967-2	0.000699	<0.00050	<0.30	0.239	0.00028	1.09	<0.000010	<2.0	0.100	<0.000010	<0.000010	<0.010	0.000032	<0.0010
	22-Aug-09	L809879-7	0.000951	<0.00050	<0.30	0.238	0.00030	1.07	<0.000010	<2.0	0.126	<0.000010	<0.000010	<0.010	0.000039	<0.0010
	13-Sep-09	L817873-9	0.001000	<0.00050	<0.30	0.233	0.00041	0.87	<0.000010	<2.0	0.126	<0.000010	<0.000010	<0.010	0.000037	<0.0010
	13-Sep-09	L817873-5	0.000923	<0.00050	<0.30	0.226	0.00039	0.86	<0.000010	<2.0	0.119	<0.000010	<0.000010	<0.010	0.000032	<0.0010
	27-Sep-09	L824535-6	0.00120	0.00082	<0.30	0.243	0.00058	1.78	<0.000010	<2.0	0.215	<0.000010	<0.000010	<0.010	0.000055	<0.0010
	31-Oct-09	L837185-6	0.00119	0.00101	<0.30	0.264	0.00065	2.52	<0.000010	2.2	0.311	<0.000010	<0.000010	<0.010	0.000066	<0.0010
	25-Nov-09	L844495-15	0.00124	0.00111	<0.30	0.301	0.00074	2.56	<0.000010	2.5	0.364	<0.000010	<0.000010	<0.010	0.000072	<0.0010
	28-Mar-10	L873293-6	0.000873	0.00073	<0.30	0.272	0.00057	2.50	<0.000010	2.5	0.287	<0.000010	<0.000010	<0.010	0.000056	<0.0010
	5-Jul-10	L905787-12	0.000873	<0.00050	<0.30	0.204	0.00049	1.58	<0.000010	<2.0	0.148	<0.000010	<0.000010	<0.010	0.000033	<0.0010
	27-Aug-10	L926457-12	0.00119	<0.00050	<0.30	0.180	0.00021	1.02	<0.000010	<2.0	0.137	<0.000010	<0.000010	<0.010	0.000033	<0.0010
	15-Nov-10	L955725-11	0.00119	0.00101	<0.30	0.281	0.00067	2.79	<0.000010	2.2	0.311	<0.000010	<0.000010	<0.010	0.000059	<0.0010
	1-Apr-11	L991777-25	0.00124	0.00079	<0.30	0.303	0.00069	2.80	<0.000010	3	0.418	<0.000010	<0.000010	<0.010	0.000077	<0.0010
	3-Jul-11	L1026874-2	0.000822	<0.00050	<0.30	0.207	0.00050	1.53	<0.000010	<2.0	0.159	<0.000010	<0.000010	<0.010	0.000028	<0.0010
	4-Sep-11	L1054465-15	0.00239	<0.0010	<0.30	0.350	0.00062	1.11	<0.000020	<2.0	0.154	<0.000020	<0.000020	<0.010	0.000073	<0.0020
	27-Nov-11	L1091310-13	0.00159	0.00103	<0.30	0.319	0.00075	2.73	<							

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

Treaty Creek Watershed

Site Name	Date	ALS Sample No.	Dissolved Metals														
			Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
5-Mar-11	L985810-8	0.000684	0.00052	<0.30	0.374	0.00032	3.16	<0.000010	2.3	0.340	<0.00010	<0.00010	<0.010	0.000047	<0.0010	<0.0030	
1-Apr-11	L991777-23	0.00109	0.00053	<0.30	0.309	0.00075	2.51	<0.000010	2.6	0.382	<0.00010	<0.00010	<0.010	0.000064	<0.0010	<0.0030	
1-May-11	L1002688-1	0.000804	0.00076	<0.30	0.332	0.00067	2.45	<0.000010	<2.0	0.312	<0.00010	<0.00010	<0.010	0.000046	<0.0010	<0.0030	
4-Jun-11	L1014013-8	0.00107	0.00074	<0.30	0.245	0.00051	1.59	<0.000010	<2.0	0.154	<0.00010	<0.00010	<0.010	0.000038	<0.0010	<0.0030	
3-Jul-11	L1026874-3	0.000988	<0.00050	<0.30	0.213	0.00049	1.49	<0.000010	<2.0	0.188	<0.000010	<0.00010	<0.010	0.000039	<0.0010	<0.0030	
1-Aug-11	L1039955-9	0.000931	<0.00050	<0.30	0.163	0.00034	1.03	<0.000010	<2.0	0.145	<0.000010	<0.00010	<0.010	0.000035	<0.0010	<0.0030	
4-Sep-11	L1054465-16	0.00190	<0.0010	<0.30	0.310	0.00061	1.11	<0.000020	<2.0	0.156	<0.000020	<0.00020	<0.010	0.000065	<0.0020	<0.0060	
30-Sep-11	L1067383-19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
30-Sep-11	L1067383-15	0.00117	0.00104	<0.30	0.300	0.00066	2.26	<0.000010	<2.0	0.230	<0.000010	<0.00010	<0.010	0.000045	<0.0010	<0.0030	
24-Oct-11	L1079029-8	0.00127	0.00090	<0.30	0.298	0.00068	2.46	<0.000010	<2.0	0.266	<0.000010	<0.00010	<0.010	0.000052	<0.0010	<0.0030	
28-Nov-11	L1091310-16	0.00130	<0.0010	<0.30	0.310	0.00078	2.60	<0.000020	2.2	0.355	<0.000020	<0.00020	<0.010	0.000055	<0.0020	<0.0060	

Notes:

< indicates that the value is below the analytical detection limit

- indicates parameter was not analyzed

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

Site Name	Date	ALS Sample No.	Physical Parameter							Anions and Nutrients											
			Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Total (as $\text{CaCO}_3$ ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)	Kjeldahl Nitrogen (mg/L)
CC1	26-Jun-08	L650936-20	<5.0	73.8	32.6	7.58	<3.0	40	0.46	1.7	25.1	<2.0	<2.0	25.1	<0.0050	<0.050	<0.50	0.026	0.0313	<0.0010	<0.050
	10-Sep-08	L683687-14	<5.0	101	44.7	7.47	<3.0	61	0.18	2.1	33.4	<2.0	<2.0	33.4	<0.0050	<0.050	<0.50	0.042	0.0395	<0.0010	<0.050
	6-Dec-08	L717413-11	<5.0	116	51.3	7.44	3.5	59	0.47	1.5	36.6	<2.0	<2.0	36.6	<0.0050	<0.050	<0.50	0.030	0.0530	<0.0010	<0.050
	2-Jul-09	L787346-3	<5.0	56.5	26.5	7.89	<3.0	32	0.63	2.2	18.6	<2.0	<2.0	18.6	<0.0050	<0.050	<0.50	<0.020	0.0122	<0.0010	<0.050
	22-Aug-09	L809879-2	<5.0	113	49.5	7.7	5.3	66	0.30	2.7	32.1	<2.0	<2.0	32.1	<0.0050	<0.050	<0.50	0.028	0.0546	<0.0010	<0.050
	26-Nov-09	L844495-27	<5.0	156	81.7	7.91	<3.0	90	<0.10	1.2	41.7	<2.0	<2.0	41.7	<0.0050	<0.050	<0.50	0.032	0.0398	<0.0010	<0.050
	26-Nov-09	L844495-3	<5.0	156	74.8	7.89	<3.0	96	0.14	1.4	41.6	<2.0	<2.0	41.6	<0.0050	<0.050	<0.50	0.027	0.0412	<0.0010	<0.050
ECM7	26-Jun-08	L650936-18	<5.0	111	52.7	7.83	44.9	74	43.7	1.6	39.9	<2.0	<2.0	39.9	<0.0050	<0.050	<0.50	<0.020	0.0233	<0.0010	<0.050
	10-Sep-08	L683687-16	<5.0	123	55.4	7.89	27.7	90	49.2	1.4	41.0	<2.0	<2.0	41.0	<0.0050	<0.050	<0.50	0.022	0.0193	<0.0010	<0.050
	22-Aug-09	L809879-20	<5.0	101	50.5	7.24	309	76	171	4.7	43.0	<1.0	<1.0	43.0	<0.0050	<0.050	<0.50	<0.020	0.0115	<0.0010	<0.050
ECM8	26-Jun-08	L650936-19	<5.0	90.2	41.7	7.76	30.4	60	23.5	1.5	31.7	<2.0	<2.0	31.7	<0.0050	<0.050	<0.50	<0.020	0.0179	<0.0010	<0.050
	10-Sep-08	L683687-17	<5.0	117	53.1	7.89	19.7	79	30.9	1.4	37.8	<2.0	<2.0	37.8	<0.0050	<0.050	<0.50	<0.020	0.0236	<0.0010	<0.050
	6-Dec-08	L717413-18	<5.0	179	78.9	8.03	<3.0	100	1.24	<1.0	59.2	<2.0	<2.0	59.2	<0.0050	<0.050	<0.50	0.034	0.0839	<0.0010	0.096
	28-Mar-09	L748538-15	<5.0	246	110	8.04	<3.0	152	0.36	1.9	75.5	<2.0	<2.0	75.5	<0.0050	<0.050	<0.50	0.047	0.110	<0.0010	<0.050
	2-Jul-09	L787346-2	<5.0	82.6	39.1	7.9	10	50	12.8	2.5	30.2	<2.0	<2.0	30.2	<0.0050	<0.050	<0.50	<0.020	0.0145	<0.0010	<0.050
	22-Aug-09	L809879-1	<5.0	101	51.5	7.21	73.8	83	159	4.7	42.4	<1.0	<1.0	42.4	<0.0050	<0.050	<0.50	<0.020	0.0111	<0.0010	<0.050
	27-Nov-09	L844495-26	<5.0	180	90.6	8.02	4.4	105	0.91	1.2	53.1	<2.0	<2.0	53.1	<0.0050	<0.050	<0.50	0.033	0.0693	<0.0010	<0.050
	27-Nov-09	L844495-2	<5.0	176	85.3	7.97	<3.0	107	0.53	1.3	59.9	<2.0	<2.0	59.9	<0.0050	<0.050	<0.50	0.029	0.0711	<0.0010	<0.050
EUR1	25-Jun-08	L650936-16	5.2	56.6	21.8	7.49	5.9	33	4.92	1.6	16.6	<2.0	<2.0	16.6	<0.0050	<0.050	<0.50	0.030	<0.0050	<0.0010	0.070
	9-Sep-08	L682706-7	<5.0	104	42.2	7.79	4.4	52	0.90	2.5	29.8	<2.0	<2.0	29.8	<0.0050	<0.050	<0.50	0.047	<0.0050	<0.0010	<0.050
EUR2	26-Jun-08	L650936-17	<5.0	117	56.0	7.76	8.9	64	3.92	1.7	37.8	<2.0	<2.0	37.8	<0.0050	<0.050	<0.50	0.029	0.0068	<0.0010	<0.050
	25-Jul-08	L662220-1	<5.0	136	70.1	7.98	3.2	75	2.70	1.4	39.8	<2.0	<2.0	39.8	<0.0050	<0.050	<0.50	0.031	<0.0050	<0.0010	<0.050
	21-Aug-08	50155642b	5.0	-	52.5	-	12	70	7.40	-	41.0	<0.5	-	34.0	<0.05	-	<0.5	-	0.0050	0.0030	<0.02
	21-Aug-08	50155642a	5.0	-	52.3	-	11	82	5.60	-	42.0	<0.5	-	35.0	<0.05	-	<0.5	-	<0.002	<0.002	<0.02
	9-Sep-08	L682706-8	<5.0	189	83.7	8.01	<3.0	107	1.14	2.4	54.5	<2.0	<2.0	54.5	<0.0050	<0.050	<0.50	0.035	<0.0050	<0.0010	<0.050
	17-Sep-08	L686098-5	22.1	132	65.6	8.01	<3.0	77	8.94	4.0	40.8	<2.0	<2.0	40.8	<0.0050	<0.050	<0.50	0.025	<0.0050	<0.0010	<0.050
	25-Sep-08	L688714-5	<5.0	240	106	8.01	<3.0	102	0.53	1.5	70.0	<2.0	<2.0	70.0	<0.0050	<0.050	<0.50	0.045	<0.0050	<0.0010	<0.050
	2-Oct-08	L691752-1	<5.0	127	55.6	7.81	10.6	87	19.5	1.2	39.6	<2.0	<2.0	39.6	<0.0050	<0.050	<0.50	0.026	0.0104	<0.0010	<0.050
	9-Oct-08	L694973-5	<5.0	205	90.9	8.08	<3.0	116	0.96	2.2	69.1	<2.0	<2.0	69.1	<0.0050	<0.050	<0.50	0.039	0.0053	<0.0010	<0.050
	29-Oct-08	L703445-																			

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

Site Name	Date	ALS Sample No.	Physical Parameter							Anions and Nutrients												Total Kjeldahl Nitrogen (mg/L)
			Colour, True (colour unit)	Conductivity (µS/cm)	Hardness (as CaCO <sub>3</sub> ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Bicarbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Carbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Hydroxide (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Total (as CaCO <sub>3</sub> ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)		
UR1	25-Nov-09	L844495-28	<5.0	220	117	8.06	<3.0	139	0.21	1.2	63.7	<2.0	<2.0	63.7	<0.0050	<0.050	<0.50	0.053	0.0295	<0.0010	<0.050	
	28-May-08	L635965-3	51.9	6.2	114	6.89	85	186	122	5.4	36.2	<1.0	<1.0	36.2	<0.0050	<0.050	<0.50	0.048	0.0982	<0.0010	<0.050	
	5-Jun-08	L639617-1	55.6	<5.0	124	7.58	78	50	48.0	2.0	29.8	<2.0	<2.0	29.8	<0.0050	<0.050	<0.50	0.053	0.0642	<0.0010	<0.050	
	11-Jun-08	L642688-10	53.1	<5.0	138	7.64	85	34	28.1	1.8	33.9	<2.0	<2.0	33.9	<0.0050	<0.050	<0.50	0.057	0.0594	<0.0010	<0.050	
	26-Jun-08	L650936-22	<5.0	139	61.7	7.71	77.9	79	62.2	1.7	30.5	<2.0	<2.0	30.5	<0.0050	<0.050	<0.50	0.062	0.0359	<0.0010	<0.050	
	3-Jul-08	L652071-1	<5.0	127	52.5	7.99	379	74	88.8	4.9	22.7	<2.0	<2.0	22.7	<0.0050	<0.050	<0.50	0.060	0.0212	<0.0010	<0.050	
	25-Jul-08	L662220-2	<5.0	125	52.5	7.87	89.7	72	69.9	1.4	31.1	<2.0	<2.0	31.1	<0.0050	<0.050	<0.50	0.045	0.0239	<0.0010	<0.050	
	10-Sep-08	L683687-8	<5.0	144	63.7	7.83	57.2	98	50.8	1.5	36.3	<2.0	<2.0	36.3	<0.0050	<0.050	<0.50	0.053	0.0245	<0.0010	<0.050	
	6-Dec-08	L717413-14	<5.0	244	108	8.09	9.0	146	14.0	<1.0	70.2	<2.0	<2.0	70.2	<0.0050	<0.050	<0.50	0.066	0.108	<0.0010	0.073	
	6-Dec-08	L717413-13	<5.0	244	108	8.08	13	151	13.8	<1.0	71.9	<2.0	<2.0	71.9	<0.0050	<0.050	<0.50	0.066	0.107	<0.0010	<0.050	
	29-Mar-09	L749298-3	<5.0	330	152	8.04	5.0	205	4.37	3.5	91.8	<2.0	<2.0	91.8	<0.0050	<0.050	<0.50	0.084	0.0901	<0.0010	<0.050	
	2-Jul-09	L787346-4	<5.0	129	60.6	7.84	20.5	73	28.0	3.2	33.0	<2.0	<2.0	33.0	<0.0050	<0.050	<0.50	0.046	0.0387	<0.0010	<0.050	
	22-Aug-09	L809879-3	<5.0	105	48.7	7.85	153	63	129	1.8	29.6	<2.0	<2.0	29.6	<0.0050	<0.050	<0.50	0.027	0.0146	<0.0010	<0.050	
	26-Nov-09	L844495-4	<5.0	238	116	8.02	6.4	151	8.05	1.3	69.4	<2.0	<2.0	69.4	<0.0050	<0.050	<0.50	0.061	0.0792	<0.0010	<0.050	
	17-Jan-10	L855505-1	<5.0	256	121	7.81	9.3	166	6.82	3.8	70.4	<2.0	<2.0	70.4	<0.0050	<0.050	<0.50	0.061	0.0986	<0.0010	<0.050	
	3-Mar-10	L866873-1	<5.0	275	125	8.16	<3.0	175	5.33	2.6	65.5	<2.0	<2.0	65.5	<0.0050	<0.050	<0.50	0.066	0.0996	<0.0010	0.060	
	28-Mar-10	L873292-4	6.3	211	98.0	8.00	6.7	135	7.81	2.5	68.3	<2.0	<2.0	68.3	<0.0050	<0.050	<0.50	0.052	0.140	<0.0010	0.060	
	1-May-10	L884476-7	<5.0	200	93.8	8.08	11.0	126	14.7	3.1	49.9	<2.0	<2.0	49.9	<0.0050	<0.050	<0.50	0.062	0.203	<0.0010	0.767	
	26-May-10	L891484-1	<5.0	136	60.3	8.00	54	74	31.2	2.1	35.0	<2.0	<2.0	35.0	<0.0050	<0.050	<0.50	0.046	0.0538	<0.0010	<0.050	
	5-Jul-10	L905787-1	<5.0	138	62.2	7.85	39.3	87	47.4	2.0	33.7	<2.0	<2.0	33.7	<0.0050	<0.050	<0.50	0.053	0.0296	<0.0010	<0.050	
	3-Aug-10	L916942-1	<5.0	98	45.6	7.9	257	54	173.0	2.5	33.4	<1.0	<1.0	33.4	<0.0050	<0.050	<0.50	0.029	0.0133	<0.0010	0.053	
	27-Aug-10	L926457-1	<5.0	124	55.9	7.92	84.0	69	62.7	4.8	54.3	<1.0	<1.0	54.3	<0.0050	<0.050	<0.50	0.034	0.0175	<0.0010	<0.050	
	28-Sep-10	L938295-1	<5.0	135	59.8	7.9	448	92	296.0	2.4	44.7	<1.0	<1.0	44.7	<0.0050	<0.050	<0.50	0.035	0.0426	<0.0010	0.103	
	21-Oct-10	L946802-1	<5.0	195	87.1	7.14	14.3	122	21.9	6.9	47.3	<2.0	<2.0	47.3	<0.0050	<0.050	<0.50	0.074	0.0995	<0.0010	<0.050	
	15-Nov-10	L955725-1	<5.0	220	108	8.05	5.1	126	10.9	2.3	63.1	<2.0	<2.0	63.1	<0.0050	<0.050	<0.50	0.074	0.110	<0.0010	0.060	
	15-Dec-10	L963832-1	<5.0	297	128	8.05	8.0	177	14.3	4.8	77.1	<2.0	<2.0	77.1	<0.0050	<0.050	<0.50	0.095	0.0987	<0.0010	<0.050	
	1-Feb-11	L975149-2	<5.0	297	134	8.01	<3.0	189	3.08	2.3	83.5	<2.0	<2.0	83.5	<0.0050	<0.050	<0.50	0.078	0.0908	<0.0010	<0.050	

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

Site Name	Date	ALS Sample No.	Physical Parameter							Anions and Nutrients												Total Kjeldahl Nitrogen (mg/L)
			Colour, True (colour unit)	Conductivity (µS/cm)	Hardness (as CaCO <sub>3</sub> ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Bicarbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Carbonate (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Hydroxide (as CaCO <sub>3</sub> ) (mg/L)	Alkalinity, Total (as CaCO <sub>3</sub> ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)		
UR2	3-Mar-10	L866873-2	<5.0	193	90.8	8.10	<3.0	118	0.61	2.4	68.2	<2.0	<2.0	68.2	<0.0050	<0.050	<0.50	0.037	0.0840	<0.0010	<0.050	
	28-Mar-10	L873293-1	8.7	153	74.5	7.83	4.2	91	1.16	2.6	62.2	<2.0	<2.0	62.2	<0.0050	<0.050	<0.50	0.031	0.0938	<0.0010	<0.050	
	1-May-10	L884476-8	<5.0	135	63.5	8.10	<3.0	80	1.50	2.8	47.6	<2.0	<2.0	47.6	<0.0050	<0.050	<0.50	0.027	0.175	<0.0010	0.095	
	26-May-10	L891484-2	<5.0	90.2	45.1	7.49	<3.0	65	16.0	3.0	34.2	<2.0	<2.0	34.2	<0.0050	<0.050	<0.50	0.020	0.0465	<0.0010	<0.050	
	5-Jul-10	L905787-3	<5.0	111	53.1	7.97	8.8	69	20.7	3.2	39.5	<2.0	<2.0	39.5	<0.0050	<0.050	<0.50	<0.020	0.0234	<0.0010	<0.050	
	3-Aug-10	L916942-2	<5.0	100	49.1	8.07	190	72	148	2.1	42.7	<1.0	<1.0	42.7	<0.0050	<0.050	<0.50	<0.020	0.0139	<0.0010	0.094	
	27-Aug-10	L926457-3	<5.0	109	50.9	7.77	36.5	75	43.0	4.9	40.2	<1.0	<1.0	40.2	<0.0050	<0.050	<0.50	<0.020	0.0184	<0.0010	<0.050	
	28-Sep-10	L938295-2	5.8	115	52.6	7.94	333	89	225	11.9	47.4	<1.0	<1.0	47.4	<0.0050	<0.050	<0.50	0.021	0.0378	<0.0010	0.132	
	21-Oct-10	L946802-2	5.3	138	62.6	8.04	6.8	85	4.93	3.8	48.4	<2.0	<2.0	48.4	<0.0050	<0.050	<0.50	0.029	0.0802	<0.0010	<0.050	
	15-Nov-10	L955725-3	<5.0	153	74.1	8.07	<3.0	85	1.17	2.1	56.7	<2.0	<2.0	56.7	<0.0050	<0.050	<0.50	0.033	0.0822	<0.0010	<0.050	
	15-Dec-10	L963832-2	<5.0	206	93.9	8.15	7.5	117	0.69	3.7	73.5	<2.0	<2.0	73.5	<0.0050	<0.050	<0.50	0.037	0.0903	<0.0010	<0.050	
	1-Feb-11	L975149-3	<5.0	200	86.3	7.99	<3.0	121	0.89	2.3	76.4	<2.0	<2.0	76.4	<0.0050	<0.050	<0.50	0.035	0.0859	<0.0010	<0.050	
	5-Mar-11	L985810-3	<5.0	229	109	8.07	<3.0	140	0.39	4.4	78.6	<2.0	<2.0	78.6	<0.0050	<0.050	<0.50	0.032	0.0852	<0.0010	<0.050	
	31-Mar-11	L991777-4	<5.0	209	96.4	7.86	<3.0	124	0.55	4.7	52.1	<2.0	<2.0	52.1	<0.0050	<0.050	<0.50	0.028	0.0934	<0.0010	0.057	
	2-May-11	L1002688-9	<5.0	200	91.5	8.08	<3.0	115	0.44	3.1	68.3	<2.0	<2.0	68.3	<0.0050	<0.050	<0.50	0.024	0.174	<0.0010	0.086	
	4-Jun-11	L1014013-2	<5.0	89.2	41.3	7.81	51.3	64	46.7	3.8	33.1	<2.0	<2.0	33.1	<0.0050	<0.050	<0.50	0.021	0.0359	<0.0010	0.124	
	4-Jul-11	L1026874-13	<5.0	105	47.3	7.78	14.7	71	25.1	2.3	37.2	<2.0	<2.0	37.2	<0.0050	<0.050	<0.50	0.024	0.0235	<0.0010	0.090	
	1-Aug-11	L1039955-2	<5.0	106	46.9	8.55	72.7	71	35.7	<1.0	38.8	<1.0	<1.0	38.8	<0.0050	<0.050	<0.50	0.023	0.0146	<0.0010	<0.050	
	4-Sep-11	L1054465-3	<5.0	112	51.7	8.26	415	122	380	2.3	47.3	<1.0	<1.0	47.3	0.0055	<0.050	<0.50	0.024	0.0264	<0.0010	0.114	
	1-Oct-11	L1067383-2	<5.0	155	71.2	8.05	11.3	85	10.7	2.9	59.1	<2.0	<2.0	59.1	<0.0050	<0.050	<0.50	0.034	0.0573	0.0019	0.051	
	26-Oct-11	L1079029-13	5.1	159	71.5	8.07	<3.0	110	3.94	2.4	59.2	<2.0	<2.0	59.2	<0.0050	<0.050	<0.50	0.035	0.0650	<0.0010	<0.050	
	27-Nov-11	L1091310-12	<5.0	202	91.5	8.17	<3.0	111	0.76	1.7	69.5	<2.0	<2.0	69.5	<0.0050	<0.050	<0.50	0.041	0.0648	<0.0010	<0.050	
	27-Nov-11	L1091310-3	<5.0	201	90.3	8.16	<3.0	116	0.86	1.8	71.9	<2.0	<2.0	71.9	<0.0050	<0.050	<0.50	0.041	0.0644	<0.0010	<0.050	
	26-Jun-08	L650936-24	<5.0	117	50.4	7.74	38.9	75	36.5	1.6	32.3	<2.0	<2.0	32.3	<0.0050	<0.050	<0.50	0.044	0.0672	<0.0010	<0.050	
	10-Sep-08	L683687-10	<5.0	115	51.2	7.73	38.2	74	40.4	1.6	34.5	<2.0	<2.0	34.5	<0.0050	<0.050	<0.50	0.045	0.0389	<0.0010	<0.050	
	6-Dec-08	L717413-9	<5.0	179	78.0	8.04	3.0	97	2.49	<1.0	64.1	<2.0	<2.0	64.1	<0.0050	<0.050	<0.50	0.045	0.157	<0.0010	0.113	
	28-Mar-09	L748538-8	<5.0	242	114	7.73	<3.0	155	1.11	2.9	78.1	<2.0	<2.0	78.1	<0.0050	<0.050	0.69	0.062	0.137	<0.0010	<0.050	
	27-May-09	L771080-9	<5.0	130	57.0	6.99	51.6	85	39.5	4.5	42.3	<2.0	<2.0	42.3	<0.0050	<0.050	<0.50	0.058	0.218	&lt		

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

Site Name	Date	ALS Sample No.	Anions and Nutrients				Cyanides			Carbon Total Organic Carbon (mg/L)	Total Metals											
			Total Nitrogen (mg/L)	Ortho Phosphate (as P) (mg/L)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)		Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)
CC1	26-Jun-08	L650936-20	<0.05	-	0.0047	10.3	-	<0.0010	-	0.50	0.0407	<0.00010	<0.00010	0.0135	<0.00050	<0.00050	<0.010	0.000280	10.4	<0.00050	<0.00010	<0.00080
	10-Sep-08	L683687-14	<0.05	<0.0010	0.0021	16.1	-	<0.0010	-	<0.50	0.0041	0.00013	<0.00010	0.0206	<0.00050	<0.00050	<0.010	0.000531	13.1	<0.00050	<0.00010	0.00023
	6-Dec-08	L717413-11	0.100	0.0013	0.0036	21.9	-	<0.0010	-	0.81	0.0215	0.00011	<0.00010	0.0203	<0.00050	<0.00050	<0.010	0.000429	15.2	<0.00050	<0.00010	0.00038
	2-Jul-09	L787346-3	<0.050	<0.0010	<0.0020	8.62	-	<0.0010	-	<0.50	0.0270	<0.00010	<0.00010	0.0114	<0.00050	<0.00050	<0.010	0.000357	8.4	<0.00050	<0.00010	0.00050
	22-Aug-09	L809879-2	<0.050	0.0013	<0.0020	22	-	<0.0010	-	<0.50	0.0091	0.00014	<0.00010	0.0217	<0.00050	<0.00050	<0.010	0.000478	15.1	<0.00050	<0.00010	0.00030
	26-Nov-09	L844495-27	0.060	<0.0010	0.0021	32.8	-	<0.0010	-	0.51	0.0136	<0.00010	<0.00010	0.0243	<0.00050	<0.00050	<0.010	0.000590	25.3	<0.00050	<0.00010	<0.00040
ECM7	26-Jun-08	L650936-18	0.050	-	0.0995	14.3	-	<0.0010	-	0.65	2.47	0.00053	0.00370	0.0547	<0.00050	<0.00050	<0.010	0.000054	18.4	0.00426	0.00149	0.00631
	10-Sep-08	L683687-16	<0.05	<0.0010	0.0393	18.8	-	<0.0010	-	<0.50	2.00	0.00045	0.00244	0.0490	<0.00050	<0.00050	<0.010	0.000039	17.8	0.00325	0.00109	0.00497
	22-Aug-09	L809879-20	<0.050	<0.0010	0.340	11.3	-	<0.0010	-	0.78	7.38	0.00131	0.0155	0.132	<0.00050	<0.00050	<0.010	0.000199	22.1	0.0152	0.00453	0.0174
ECM8	26-Jun-08	L650936-19	0.050	-	0.0608	11.7	-	<0.0010	-	0.75	1.50	0.00201	0.00256	0.0436	<0.00050	<0.00050	<0.010	0.000054	14.7	0.00277	0.00105	0.00447
	10-Sep-08	L683687-17	<0.05	<0.0010	0.0194	18.9	-	<0.0010	-	<0.50	1.56	0.00533	0.00197	0.0440	<0.00050	<0.00050	<0.010	0.000039	17.1	0.00247	0.00088	0.00385
	6-Dec-08	L717413-18	0.180	<0.0010	0.0076	34.7	-	<0.0010	-	0.62	0.0453	0.00668	0.00039	0.0312	<0.00050	<0.00050	<0.010	0.000036	24.5	<0.00050	0.00014	0.00062
	28-Mar-09	L748538-15	0.140	<0.0010	0.0029	51	-	<0.0010	-	0.57	0.0153	0.00867	0.00032	0.0423	<0.00050	<0.00050	<0.010	0.000026	33.4	<0.00050	<0.00010	0.00061
	2-Jul-09	L787346-2	<0.050	<0.0010	0.0123	11.4	-	<0.0010	-	<0.50	0.461	0.00139	0.00062	0.0229	<0.00050	<0.00050	<0.010	0.000024	13.0	0.00100	0.00031	0.00134
	22-Aug-09	L809879-1	<0.050	0.0014	0.259	11.9	-	<0.0010	-	0.66	7.51	0.00291	0.0147	0.135	<0.00050	<0.00050	<0.010	0.000160	21.9	0.01490	0.00454	0.0169
	27-Nov-09	L844495-26	0.100	<0.0010	0.0052	33.6	-	<0.0010	-	0.82	0.0788	0.00627	0.00033	0.0344	<0.00050	<0.00050	<0.010	0.000094	28.8	<0.00050	<0.00010	<0.00070
EUR1	27-Nov-09	L844495-2	0.110	<0.0010	<0.0020	34.9	-	0.0013	-	0.82	0.0461	0.00650	0.00030	0.0357	<0.00050	<0.00050	<0.010	0.000027	28.3	<0.00050	<0.00010	0.00462
	25-Jun-08	L650936-16	0.070	-	0.0156	9.45	-	0.0014	-	1.01	0.193	<0.00010	0.00014	0.0103	<0.00050	<0.00050	<0.010	<0.000017	6.8	0.00070	0.00039	0.00083
EUR2	9-Sep-08	L682706-7	<0.05	0.0017	0.0068	17.8	-	<0.0010	-	0.70	<0.013	<0.00010	<0.00010	0.0114	<0.00050	<0.00050	<0.010	<0.000017	11.7	<0.00050	<0.00010	<0.00010
	26-Jun-08	L650936-17	<0.05	-	0.0205	20.2	-	0.0016	-	0.59	0.192	<0.00010	0.00021	0.0202	<0.00050	<0.00050	<0.010	0.000019	14.5	0.00072	0.00049	0.00107
URO	25-Jul-08	L662220-1	<0.05	-	0.0055	24.5	-	<0.0010	-	<0.50	0.0936	<0.00010	<0.00010	0.0229	<0.00050	<0.00050	<0.010	<0.000017	16.2	<0.00050	0.00019	0.00032
	21-Aug-08	50155642b	<0.02	0.0070	-	22	-	-	-	0.60	0.0412	0.00004	0.00012	0.0206	<0.00001	0.00001	<0.05	0.000012	12.4	<0.0001	0.00008	0.00036
	21-Aug-08	50155642a	<0.02	0.0040	-	22	-	-	-	<0.5	0.0260	0.00004	0.00008	0.0200	<0.00001	0.00001	<0.05	0.000008	12.5	<0.0001	0.00008	0.00021
	9-Sep-08	L682706-8	<0.05	<0.0010	0.0077	35.6	-	<0.0010	-	<0.50	0.0415	<0.00010	<0.00010	0.0271	<0.00050	<0.00050	<0.010	<0.000017	19.4	<0.00050	<	

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

Site Name	Date	ALS Sample No.	Anions and Nutrients				Cyanides			Carbon	Total Metals												
			Total Nitrogen (mg/L)	Ortho Phosphate (as P) (mg/L)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)		Total Organic Carbon (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)
UR1	25-Nov-09	L844495-28	0.060	<0.0010	<0.0020	48.7	-	<0.0010	-	<0.50	<0.010	<0.00010	0.00010	0.0358	<0.00050	<0.00050	<0.010	<0.000010	33.7	<0.00050	<0.00010	<0.00020	
	28-May-08	L635965-3	0.120	-	0.426	23.4	-	-	-	1.55	5.06	0.00199	0.0136	0.108	<0.00050	<0.00050	<0.010	0.000894	20.6	0.00840	0.00446	0.0661	
	5-Jun-08	L639617-1	0.090	-	0.167	26.4	-	0.0011	-	0.88	2.48	0.00174	0.00542	0.0650	<0.00050	<0.00050	<0.010	0.000724	20.2	0.00366	0.00217	0.0883	
	11-Jun-08	L642688-10	<0.05	-	0.133	29.9	-	<0.0010	-	0.71	1.06	0.00128	0.00215	0.0353	<0.00050	<0.00050	<0.010	0.000707	19.0	0.00090	0.00145	0.0978	
	26-Jun-08	L650936-22	0.060	-	0.132	32.9	-	<0.0010	-	0.51	2.38	0.00136	0.00417	0.0680	<0.00050	<0.00050	<0.010	0.000936	22.3	0.00268	0.00249	0.1220	
	3-Jul-08	L652071-1	<0.05	-	0.505	34.0	-	0.0013	-	1.58	8.64	0.00198	0.0263	0.199	<0.00050	<0.00050	<0.010	0.00212	24.2	0.0119	0.00838	0.1740	
	25-Jul-08	L662220-2	<0.05	-	0.151	26.0	-	0.0016	-	<0.50	2.76	0.00181	0.00318	0.0833	<0.00050	<0.00050	<0.010	0.000674	20.5	0.00294	0.00210	0.0747	
	10-Sep-08	L683687-8	<0.05	<0.0010	0.0688	32.3	-	<0.0010	-	<0.50	2.09	0.00208	0.00248	0.0582	<0.00050	<0.00050	<0.010	0.000554	22.0	0.00204	0.00150	0.0421	
	6-Dec-08	L717413-14	0.180	<0.0010	0.0136	56.9	-	<0.0010	-	0.55	0.328	0.00202	0.00146	0.0326	<0.00050	<0.00050	<0.010	0.000731	36.7	<0.00050	0.00070	0.0712	
	6-Dec-08	L717413-13	0.150	<0.0010	0.0177	57.1	-	<0.0010	-	0.51	0.322	0.00199	0.00146	0.0326	<0.00050	<0.00050	<0.010	0.000728	36.8	<0.00050	0.00070	0.0710	
	29-Mar-09	L749298-3	0.090	<0.0010	0.0100	80	-	<0.0010	-	<0.50	0.175	0.00186	0.00141	0.0383	<0.00050	<0.00050	<0.010	0.000699	52.0	0.00064	0.00057	0.0269	
	2-Jul-09	L787346-4	0.053	<0.0010	0.0416	28.6	-	<0.0010	-	<0.50	1.17	0.00107	0.00198	0.0426	<0.00050	<0.00050	<0.010	0.000727	21.8	0.00122	0.00145	0.0980	
	22-Aug-09	L809879-3	<0.050	<0.0010	0.169	20.1	-	<0.0010	-	<0.50	4.08	0.00129	0.00493	0.109	<0.00050	<0.00050	<0.010	0.000455	19.1	0.00471	0.00257	0.0398	
	26-Nov-09	L844495-4	0.110	<0.0010	0.0145	62.3	-	0.0015	-	0.67	0.702	0.00191	0.00194	0.0412	<0.00050	<0.00050	<0.010	0.000955	40.7	<0.00050	0.00110	0.1020	
	17-Jan-10	L855505-1	0.140	<0.0010	0.0086	59.6	-	<0.0010	-	0.61	0.237	0.00176	0.00082	0.0344	<0.00050	<0.00050	<0.010	0.000522	42.7	<0.00050	0.00061	0.0339	
	3-Mar-10	L866873-1	0.160	<0.0010	0.0078	64.3	-	0.0013	-	0.77	0.130	0.00148	0.00063	0.0344	<0.00050	<0.00050	<0.010	0.000429	42.9	<0.00050	0.00052	0.0244	
	28-Mar-10	L873292-4	0.200	<0.0010	0.0183	44.5	-	0.0022	-	1.55	0.340	0.00148	0.00097	0.0335	<0.00050	<0.00050	<0.010	0.000395	34.8	<0.00050	0.00055	0.0310	
	1-May-10	L884476-7	0.970	0.0031	0.154	46.3	-	0.0015	-	0.76	0.495	0.00142	0.00897	0.0311	<0.00050	<0.00050	<0.010	0.000779	34.7	<0.00050	0.00118	0.0567	
	26-May-10	L891484-1	0.100	0.0017	0.130	27.8	-	0.0015	-	0.76	1.46	0.00122	0.00496	0.0522	<0.00050	<0.00050	<0.010	0.000679	21.4	0.00172	0.00149	0.0414	
	5-Jul-10	L905787-1	0.060	<0.0010	0.0615	32.1	-	<0.0010	-	0.51	1.93	0.00151	0.00234	0.0595	<0.00050	<0.00050	<0.010	0.000717	22.1	0.00202	0.00176	0.0885	
	3-Aug-10	L916942-1	0.066	0.0019	0.237	15.3	-	<0.0010	-	0.88	3.69	0.00099	0.00463	0.117	<0.00050	<0.00050	<0.010	0.000412	18.0	0.00450	0.00286	0.0390	
	27-Aug-10	L926457-1	<0.050	<0.0010	0.0996	25.6	-	<0.0010	-	<0.50	0.766	0.00079	0.00178	0.0442	<0.00050	<0.00050	<0.010	0.000431	19.1	0.00084	0.00114	0.0436	
	28-Sep-10	L938295-1	0.146	0.0022	0.751	23.3	-	0.0021	-	2.53	10.20	0.00197	0.00987	0.209	<0.00050	<0.00050	<0.010	0.000568	27.8	0.0158	0.00695	0.0547	
	21-Oct-10	L946802-1	0.110	0.0014	0.0956	45.9	-	0.0026	-	1.20	0.763	0.00154	0.00605	0.0359	<0.00050	<0.00050	<0.010	0.000755	28.2	0.00091	0.00151	0.0896	
	15-Nov-10	L955725-1	0.170	<0.0010	0.0457	50.1	-	0.0017	-	1.15	0.337	0.00131	0.00262	0.0309	<0.00050	<0.00050	<0.010	0.000695	38.2	0.00030	0.00097	0.0662	
	15-Dec-10	L963832-1	0.090	<0.0																			

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

Site Name	Date	ALS Sample No.	Anions and Nutrients				Cyanides			Carbon	Total Metals												
			Total Nitrogen (mg/L)	Ortho Phosphate (as P) (mg/L)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)		Total Organic Carbon (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)
UR2	3-Mar-10	L866873-2	0.130	<0.0010	<0.0020	29.6	-	0.0015	-	0.88	0.0316	0.00231	0.00031	0.0325	<0.00050	<0.00050	<0.010	0.000025	30.7	<0.00050	<0.00010	0.00049	
	28-Mar-10	L873293-1	0.110	<0.0010	0.0070	22.4	<0.0010	0.0022	<0.50	1.78	0.176	0.00212	0.00056	0.0292	<0.00050	<0.00050	<0.010	0.000046	26.5	<0.00050	0.00017	0.00131	
	1-May-10	L884476-8	0.270	<0.0010	0.0063	18.6	-	0.0011	-	0.96	0.0971	0.00169	0.00031	0.0226	<0.00050	<0.00050	<0.010	0.000047	21.5	<0.00050	<0.00010	0.00095	
	26-May-10	L891484-2	0.050	0.0011	0.0243	11.4	-	0.0010	-	0.88	0.814	0.00134	0.00094	0.0291	<0.00050	<0.00050	<0.010	0.000052	14.3	0.00166	0.00055	0.00238	
	5-Jul-10	L905787-3	<0.050	<0.0010	0.0260	14.8	-	<0.0010	-	<0.50	1.01	0.00197	0.00120	0.0338	<0.00050	<0.00050	<0.010	0.000048	16.8	0.00220	0.00057	0.00253	
	3-Aug-10	L916942-2	0.108	<0.0010	0.254	8.82	-	<0.0010	-	1.18	5.10	0.00130	0.00671	0.112	<0.00050	<0.00050	<0.010	0.000118	19.1	0.00864	0.00333	0.0139	
	27-Aug-10	L926457-3	<0.050	<0.0010	0.0738	13.3	-	<0.0010	-	<0.50	0.545	0.00109	0.00153	0.0320	<0.00050	<0.00050	<0.010	0.000044	16.7	0.00083	0.00075	0.00632	
	28-Sep-10	L938295-2	0.170	0.0020	0.512	12.7	-	0.0018	-	3.09	8.27	0.00233	0.00899	0.177	<0.00050	<0.00050	0.012	0.000278	24.8	0.0161	0.00603	0.0247	
	21-Oct-10	L946802-2	0.080	0.0011	0.0216	18.5	-	0.0023	-	1.41	0.209	0.00215	0.00051	0.0287	<0.00050	<0.00050	<0.010	0.000054	20.4	0.00062	0.00019	0.00128	
	15-Nov-10	L955725-3	0.120	<0.0010	0.0052	21.2	-	0.0016	-	1.23	0.0745	0.00175	0.00049	0.0257	<0.00050	<0.00050	<0.010	0.000039	23.5	0.00029	<0.00010	0.00079	
	15-Dec-10	L963832-2	0.090	<0.0010	0.0020	33	-	<0.0010	-	0.57	0.0358	0.00219	0.00034	0.0339	<0.00050	<0.00050	<0.010	0.000024	29.4	0.00021	<0.00010	0.00054	
	1-Feb-11	L975149-3	0.070	<0.0010	0.0039	30.4	-	<0.0010	-	0.88	0.0492	0.00278	0.00037	0.0332	<0.00050	<0.00050	<0.010	0.000021	29.0	0.00019	<0.00010	<0.00050	
	5-Mar-11	L985810-3	0.075	<0.0010	<0.0020	37	-	<0.0010	-	<0.50	0.0151	0.00204	0.00032	0.0357	<0.00050	<0.00050	<0.010	0.000016	37.7	0.00020	<0.00010	<0.00050	
	31-Mar-11	L991777-4	0.150	<0.0010	0.0050	32.6	-	0.0011	-	1.44	0.0385	0.00196	0.00035	0.0335	<0.00050	<0.00050	<0.010	0.000020	30.3	0.00016	<0.00010	<0.00050	
	2-May-11	L1002688-9	0.260	<0.0010	0.0033	30.2	-	0.0011	-	1.27	0.0274	0.00161	0.00033	0.0333	<0.00050	<0.00050	<0.010	0.000030	29.0	<0.00030	<0.00010	0.00067	
	4-Jun-11	L1014013-2	0.160	0.0014	0.0907	10.9	-	0.0016	-	1.63	2.69	0.00108	0.00229	0.0531	<0.00050	<0.00050	<0.010	0.000069	13.6	0.00450	0.00138	0.00754	
	4-Jul-11	L1026874-13	0.100	<0.0010	0.0170	14.1	-	<0.0010	-	0.60	1.05	0.00101	0.00124	0.0339	<0.00010	<0.00050	<0.010	0.000039	14.7	0.00195	0.00056	0.00268	
	1-Aug-11	L1039955-2	0.050	<0.0010	0.0697	13.1	-	<0.0010	-	<0.50	1.13	0.00102	0.00172	0.0368	<0.00010	<0.00050	<0.010	0.000044	15.4	0.00190	0.00077	0.00327	
	4-Sep-11	L1054465-3	0.140	0.0017	0.675	10.4	-	<0.0010	-	2.30	17.0	0.00268	0.0198	0.297	0.00056	<0.00050	0.013	0.000425	30.5	0.0297	0.01100	0.0458	
	1-Oct-11	L1067383-2	0.110	<0.0010	0.0191	22.8	-	0.0016	-	1.05	0.594	0.00159	0.00077	0.0349	<0.00010	<0.00050	<0.010	0.000048	23.3	0.00123	0.00035	0.0159	
	26-Oct-11	L1079029-13	0.090	<0.0010	0.0057	22.5	-	0.0021	-	1.42	0.416	0.00165	0.00064	0.0347	<0.00010	<0.00050	<0.010	0.000050	24.6	0.00090	0.00031	0.00151	
	27-Nov-11	L1091310-12	<0.050	<0.0010	0.0021	30.8	-	0.0011	-	0.70	0.0508	0.00213	0.00034	0.0327	<0.00010	<0.00050	<0.010	0.000025	31.1	0.00020	<0.00010	<0.00050	
	27-Nov-11	L1091310-3	0.050	<0.0010	0.0023	30.8	-	0.0011	-	0.77	0.0470	0.00202	0.00033	0.0333	<0.00010	<0.00050	<0.010	0.000027	29.4	0.00018	<0.00010	<0.00050	
	26-Jun-08	L650936-24	0.110	-	0.0791	21.4	-	0.0010	-	0.51	1.51	0.00072	0.00204	0.0473	<0.00050	<0.00050	<0.010	0.000373	19.2	0.00201	0.00131	0.0485	
	10-Sep-08	L683687-10	<0.05	<0.0010	0.0499	21.0	-	<0.0010	-	<0.50	1.51	0.00089	0.00124	0.0469	<0.00050	<0.00050	<0.010	0.00					

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

		Total Metals																					
		Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)		
Site Name	Date	ALS Sample No.																					
CC1	26-Jun-08	L650936-20	0.054	<0.000050	<0.0050	2.04	0.00277	0.000045	0.000284	0.00134	<0.30	0.150	0.00044	1.61	<0.000010	<2.0	0.091	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0121
	10-Sep-08	L683687-14	<0.030	<0.000050	<0.0050	2.80	0.00039	<0.000010	0.000356	0.00163	<0.30	0.182	0.00098	2.19	<0.000010	<2.0	0.121	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0206
	6-Dec-08	L717413-11	0.043	<0.000050	<0.0050	3.20	0.00215	<0.000010	0.000329	0.00150	<0.30	0.162	0.00119	1.95	<0.000010	<2.0	0.131	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0176
	2-Jul-09	L787346-3	0.030	<0.000050	<0.0050	1.91	0.00146	<0.000010	0.000197	0.00143	<0.30	0.112	0.00038	1.33	<0.000010	<2.0	0.094	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0171
	22-Aug-09	L809879-2	<0.030	<0.000050	<0.0050	3.27	0.00036	<0.000010	0.000472	0.00135	<0.30	0.169	0.00102	2.05	<0.000010	<2.0	0.161	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0138
	26-Nov-09	L844495-27	<0.030	0.000053	<0.0050	6.06	0.00173	<0.000010	0.000485	0.00224	<0.30	0.203	0.00104	1.93	<0.000010	<2.0	0.244	<0.00010	<0.00010	<0.010	0.000020	<0.0010	0.0211
ECM7	26-Jun-08	L650936-18	2.94	0.00187	<0.0050	3.94	0.0805	<0.000010	0.000666	0.00341	<0.30	1.13	0.00067	6.36	0.000059	<2.0	0.152	<0.00010	<0.00010	0.118	0.000060	0.0115	0.0098
	10-Sep-08	L683687-16	2.61	0.00111	<0.0050	3.72	0.0568	0.000013	0.000659	0.00259	<0.30	0.901	0.00047	4.73	0.000087	<2.0	0.146	<0.00010	<0.00010	0.087	0.000060	0.0087	0.0074
	22-Aug-09	L809879-20	10.5	0.00733	<0.0050	5.85	0.281	0.000017	0.000889	0.0109	0.38	2.09	0.00065	15.2	0.000145	<2.0	0.153	<0.00010	<0.00010	0.403	0.000140	0.0362	0.0345
ECM8	26-Jun-08	L650936-19	2.02	0.00257	<0.0050	3.01	0.0604	0.000012	0.000639	0.00271	<0.30	0.745	0.00043	4.05	0.000041	<2.0	0.125	<0.00010	<0.00010	0.068	0.000038	0.0072	0.0091
	10-Sep-08	L683687-17	2.07	0.00127	<0.0050	3.52	0.0474	0.000012	0.000878	0.00215	<0.30	0.767	0.00051	3.79	0.000079	<2.0	0.145	<0.00010	<0.00010	0.068	0.000060	0.0068	0.0066
	6-Dec-08	L717413-18	0.093	0.000748	<0.0050	4.53	0.00779	<0.000010	0.000941	0.00071	<0.30	0.472	0.00072	1.81	<0.000010	2.3	0.254	<0.00010	<0.00010	<0.010	0.000049	<0.0010	0.0042
	28-Mar-09	L748538-15	<0.030	0.000240	<0.0050	6.20	0.00271	<0.000010	0.00121	0.00075	<0.30	0.611	0.00076	1.90	<0.000010	4.3	0.340	<0.00010	<0.00010	<0.010	0.000086	<0.0010	0.0036
	2-Jul-09	L787346-2	0.514	0.000628	<0.0050	2.91	0.0169	<0.000010	0.000551	0.00106	<0.30	0.375	0.00028	1.80	0.000010	<2.0	0.160	<0.00010	<0.00010	0.016	0.000022	0.0019	0.0040
	22-Aug-09	L809879-1	10.0	0.00705	0.0052	5.93	0.277	0.000016	0.00103	0.0110	0.33	2.17	0.00071	14.8	0.000133	<2.0	0.157	<0.00010	<0.00010	0.378	0.000146	0.0351	0.0308
	27-Nov-09	L844495-26	0.110	0.000446	<0.0050	5.50	0.00560	<0.000010	0.000995	0.00076	<0.30	0.530	0.00056	1.74	<0.000010	2.4	0.307	<0.00010	<0.00010	<0.010	0.000044	<0.0010	0.0033
EUR1	27-Nov-09	L844495-2	0.066	0.000357	<0.0050	5.43	0.00388	<0.000010	0.00108	0.00071	<0.30	0.519	0.00060	1.76	<0.000010	2.5	0.320	<0.00010	0.00033	<0.010	0.000040	<0.0010	0.0032
	25-Jun-08	L650936-16	0.250	0.000107	<0.0050	2.15	0.0178	<0.000010	0.000101	0.00160	<0.30	0.148	0.00029	1.85	<0.000010	<2.0	0.068	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0018
EUR2	9-Sep-08	L682706-7	0.045	<0.000050	<0.0050	3.86	0.00717	<0.000010	0.000115	0.00061	<0.30	0.109	0.00023	2.00	<0.000010	2.1	0.119	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	26-Jun-08	L650936-17	0.304	0.000142	<0.0050	5.67	0.0235	<0.000010	0.000195	0.00216	<0.30	0.253	0.00046	1.46	<0.000010	<2.0	0.155	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0027
	25-Jul-08	L662220-1	0.083	0.000070	<0.0050	6.95	0.00797	<0.000010	0.000283	0.00086	<0.30	0.241	0.00033	1.17	<0.000010	<2.0	0.210	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0011
	21-Aug-08	50155642b	0.074	0.000072	0.0014	5.21	0.00503	-	0.000190	0.00055	0.01	0.000	0.00029	0.82	<0.005	0.0	0.147	0.00000	0.03000	<0.005	0.00009	<0.002	0.0014
	21-Aug-08	50155642a	0.043	0.000032	0.0014	5.16	0.00460	-	0.000200	0.00045	0.01	0.000	0.00031</td										

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

		Total Metals																					
		Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)		
Site Name	Date	ALS Sample No.																					
UR1	25-Nov-09	L844495-28	<0.030	<0.000050	<0.0050	7.22	0.00030	<0.000010	0.000537	<0.00050	<0.30	0.273	0.00067	2.00	<0.000010	2.3	0.361	<0.00010	<0.00010	<0.010	0.000015	<0.0010	<0.0010
	28-May-08	L635965-3	9.50	0.00678	<0.0050	4.29	0.214	0.000040	0.00146	0.00919	0.39	1.78	0.00072	10.9	0.000116	<2.0	0.127	<0.00010	<0.00010	0.243	0.000208	0.0207	0.0755
	5-Jun-08	L639617-1	4.51	0.00275	<0.0050	3.31	0.117	0.000012	0.00145	0.00348	<0.30	1.25	0.00081	6.28	0.000053	<2.0	0.141	<0.00010	<0.00010	0.105	0.000199	0.0103	0.0542
	11-Jun-08	L642688-10	2.86	0.00213	<0.0050	2.49	0.0805	<0.000010	0.00101	0.00221	<0.30	0.684	0.00070	3.20	0.000031	<2.0	0.120	<0.00010	<0.00010	0.044	0.000182	0.0037	0.0472
	26-Jun-08	L650936-22	4.49	0.00339	<0.0050	3.30	0.151	<0.000010	0.00131	0.00283	<0.30	1.22	0.00095	5.72	0.000061	<2.0	0.148	<0.00010	0.00011	0.119	0.000215	0.0083	0.0657
	3-Jul-08	L652071-1	18.4	0.01020	0.0063	5.78	0.407	0.000023	0.00291	0.0117	0.78	3.18	0.00191	15.8	0.000207	<2.0	0.141	0.00014	0.00017	0.430	0.000446	0.0382	0.1660
	25-Jul-08	L662220-2	4.24	0.00385	<0.0050	3.25	0.154	0.000016	0.00132	0.00243	<0.30	1.25	0.00078	6.08	0.000047	<2.0	0.149	<0.00010	0.00012	0.130	0.000170	0.0098	0.0512
	10-Sep-08	L683687-8	3.17	0.00195	<0.0050	3.03	0.105	0.000012	0.00128	0.00213	<0.30	1.23	0.00066	4.74	0.000111	<2.0	0.135	<0.00010	<0.00010	0.098	0.000153	0.0070	0.0386
	6-Dec-08	L717413-14	1.53	0.00122	<0.0050	3.96	0.0838	<0.000010	0.00158	0.00085	<0.30	0.878	0.00123	2.49	<0.000010	<2.0	0.223	<0.00010	<0.00010	<0.010	0.000230	<0.0010	0.0539
	6-Dec-08	L717413-13	1.53	0.00122	<0.0050	3.94	0.0842	<0.000010	0.00153	0.00079	<0.30	0.879	0.00140	2.49	<0.000010	2.0	0.223	<0.00010	<0.00010	<0.010	0.000223	<0.0010	0.0538
	29-Mar-09	L749298-3	0.699	0.000506	<0.0050	5.88	0.0983	<0.000010	0.00172	0.00109	<0.30	1.21	0.00184	2.35	<0.000010	3.1	0.316	<0.00010	<0.00010	<0.010	0.000244	<0.0010	0.0483
	2-Jul-09	L787346-4	2.15	0.00171	<0.0050	3.28	0.111	<0.000010	0.00120	0.00170	<0.30	0.727	0.00078	2.89	0.000018	<2.0	0.187	<0.00010	<0.00010	0.037	0.000146	0.0034	0.0496
	22-Aug-09	L809879-3	5.36	0.00421	<0.0050	3.13	0.192	<0.000010	0.00103	0.00394	<0.30	1.67	0.00052	8.77	0.000069	<2.0	0.115	<0.00010	<0.00010	0.177	0.000187	0.0152	0.0411
	26-Nov-09	L844495-4	2.55	0.00180	<0.0050	4.72	0.124	<0.000010	0.00176	0.00152	<0.30	0.970	0.00106	2.78	0.000012	2.2	0.274	<0.00010	<0.00010	0.021	0.000268	0.0019	0.0729
	17-Jan-10	L855505-1	0.884	0.000622	<0.0050	4.67	0.0899	<0.000010	0.00165	0.00106	<0.30	0.945	0.00122	2.28	0.000012	2.7	0.283	<0.00010	<0.00010	0.011	0.000216	<0.0010	0.0366
	3-Mar-10	L866873-1	0.642	0.000366	<0.0050	4.64	0.0837	<0.000010	0.00156	0.00077	<0.30	0.869	0.00099	2.18	<0.000010	2.6	0.280	<0.00010	<0.00010	<0.010	0.000199	<0.0010	0.0269
	28-Mar-10	L873292-4	1.11	0.000727	<0.0050	4.00	0.0738	<0.000010	0.00127	0.00101	<0.30	0.754	0.00082	2.40	<0.000010	2.0	0.214	<0.00010	<0.00010	0.015	0.000168	<0.0010	0.0296
	1-May-10	L884476-7	2.38	0.00126	<0.0050	3.84	0.0844	<0.000010	0.00136	0.00117	<0.30	0.692	0.00120	2.36	<0.000010	<2.0	0.222	<0.00010	<0.00010	0.017	0.000182	0.0015	0.0576
	26-May-10	L891484-1	2.93	0.00191	<0.0050	2.88	0.0923	<0.000010	0.00110	0.00203	<0.30	0.876	0.00078	4.25	0.000067	<2.0	0.148	<0.00010	<0.00010	0.058	0.000135	0.0050	0.0545
	5-Jul-10	L905787-1	3.46	0.00237	<0.0050	3.10	0.126	<0.000010	0.00137	0.00222	<0.30	1.08	0.00062	4.94	0.000099	<2.0	0.147	<0.00010	<0.00010	0.080	0.000180	0.0068	0.0444
	3-Aug-10	L916942-1	5.82	0.00543	<0.0050	2.85	0.223	0.000025	0.000854	0.00419	0.32	1.61	0.00071	8.80	0.000077	<2.0	0.109	<0.00010	<0.00010	0.183	0.000187	0.0146	0.0360
	27-Aug-10	L926457-1	1.67	0.00207	<0.0050	2.09	0.107	<0.000010	0.000765	0.00164	<0.30	0.734	0.00060	2.03	0.000026	<2.0	0.114	<0.00010	<0.00010	0.034	0.000108	0.0028	0.0347
	28-Sep-10	L938295-1	16.7	0.00778	0.0064	7.08	0.453	0.000044	0.00176	0.0129	0.53	3.37	0.00116	21.4	0.000195	<2.0	0.179	0.00012	<0.00010	0.572	0.000347	0.0428	0.0610
	21-Oct-10	L946802-1	2.80	0.00119	<0.0050	3.69	0.0981	<0.000010	0.00152	0.00187	<0.30	0.820	0.00113	2.80	0.0000								

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

		Total Metals																					
		Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)		
Site Name	Date	ALS Sample No.																					
UR2	3-Mar-10	L866873-2	0.088	0.000051	<0.0050	4.79	0.00858	<0.000010	0.001000	<0.00050	<0.30	0.483	0.00051	2.00	<0.000010	2.5	0.253	<0.00010	<0.00010	<0.010	0.000038	<0.0010	0.0019
	28-Mar-10	L873293-1	0.331	0.000284	<0.0050	4.16	0.0166	<0.000010	0.000788	0.00086	<0.30	0.464	0.00056	2.21	0.000012	2.1	0.211	<0.00010	0.00010	<0.010	0.000034	<0.0010	0.0047
	1-May-10	L884476-8	0.156	0.000176	<0.0050	3.32	0.00731	<0.000010	0.000586	0.00063	<0.30	0.353	0.00043	1.93	<0.000010	<2.0	0.179	<0.00010	<0.00010	<0.010	0.000022	<0.0010	0.0037
	26-May-10	L891484-2	1.10	0.001000	<0.0050	2.58	0.0309	<0.000010	0.000477	0.00165	<0.30	0.527	0.00035	2.88	0.000035	<2.0	0.125	<0.00010	<0.00010	0.029	0.000028	0.0033	0.0060
	5-Jul-10	L905787-3	1.36	0.000779	<0.0050	3.04	0.0319	<0.000010	0.000839	0.00173	<0.30	0.657	0.00047	3.26	0.000032	<2.0	0.140	<0.00010	<0.00010	0.043	0.000040	0.0049	0.0047
	3-Aug-10	L916942-2	7.42	0.00459	<0.0050	4.04	0.211	0.000024	0.000701	0.00756	0.31	1.77	0.00079	10.4	0.000086	<2.0	0.128	<0.00010	0.00012	0.223	0.000113	0.0236	0.0204
	27-Aug-10	L926457-3	1.02	0.00122	<0.0050	2.51	0.0484	<0.000010	0.000781	0.00163	<0.30	0.483	0.00046	1.64	<0.000010	<2.0	0.126	<0.00010	<0.00010	0.019	0.000034	0.0028	0.0093
	28-Sep-10	L938295-2	13.1	0.00726	0.0071	6.45	0.383	0.000053	0.000984	0.0161	0.54	2.75	0.00077	20.4	0.000145	<2.0	0.188	0.00011	<0.00010	0.377	0.000171	0.0394	0.0390
	21-Oct-10	L946802-2	0.297	0.000325	<0.0050	3.55	0.0149	<0.000010	0.000767	0.00094	<0.30	0.442	0.00046	2.25	<0.000010	<2.0	0.191	<0.00010	<0.00010	<0.010	0.000026	<0.0010	0.0051
	15-Nov-10	L955725-3	0.121	0.000095	<0.0050	3.63	0.00873	<0.000010	0.000821	0.00059	<0.30	0.394	0.00049	2.14	<0.000010	<2.0	0.197	<0.00010	<0.00010	<0.010	0.000025	<0.0010	0.0048
	15-Dec-10	L963832-2	0.084	0.000066	<0.0050	5.06	0.00890	<0.000010	0.00115	0.00083	<0.30	0.550	0.00071	2.09	<0.000010	2.2	0.264	<0.00010	<0.00010	<0.010	0.000040	<0.0010	<0.030
	1-Feb-11	L975149-3	0.129	0.000056	<0.0050	4.72	0.0135	<0.000010	0.00104	<0.00050	<0.30	0.508	0.00071	2.12	<0.000010	2.5	0.254	<0.00010	<0.00010	<0.010	0.000035	<0.0010	<0.030
	5-Mar-11	L985810-3	0.063	<0.000050	<0.0050	5.59	0.00882	<0.000010	0.00105	<0.00050	<0.30	0.598	0.00083	1.99	<0.000010	2.6	0.266	<0.00010	<0.00010	<0.010	0.000037	<0.0010	<0.030
	31-Mar-11	L991777-4	0.138	0.000068	<0.0050	4.82	0.0109	<0.000010	0.000910	<0.00050	<0.30	0.518	0.00061	2.03	<0.000010	2.7	0.255	<0.00010	<0.00010	<0.010	0.000038	<0.0010	<0.030
	2-May-11	L1002688-9	0.092	0.000073	<0.0050	5.46	0.00865	<0.000010	0.000830	<0.00050	<0.30	0.494	0.00067	2.14	<0.000010	2.4	0.273	<0.00010	<0.00010	<0.010	0.000034	<0.0010	<0.030
	4-Jun-11	L1014013-2	3.44	0.00157	<0.0050	3.13	0.0744	0.000010	0.000581	0.00449	<0.30	0.909	0.00037	7.36	0.000038	<2.0	0.117	<0.00010	<0.00010	0.121	0.000047	0.0096	0.0122
	4-Jul-11	L1026874-13	1.30	0.000777	0.0013	2.78	0.0332	<0.000010	0.000628	0.00170	<0.30	0.594	0.00038	3.16	<0.000020	<2.0	0.139	0.00001	<0.00010	0.040	0.000031	0.0046	0.0072
	1-Aug-11	L1039955-2	1.52	0.00113	0.0009	2.73	0.0494	<0.000010	0.000570	0.00180	<0.30	0.603	0.00036	3.13	0.000017	<2.0	0.125	0.00002	<0.00010	0.046	0.000033	0.0050	0.0068
	4-Sep-11	L1054465-3	23.6	0.0105	0.0124	10.70	0.651	0.000067	0.00135	0.0283	0.77	4.55	0.00097	32.1	0.000253	2.4	0.205	0.00017	0.00014	0.666	0.000300	0.0763	0.0780
	1-Oct-11	L1067383-2	0.733	0.000373	0.0015	3.73	0.0236	<0.000010	0.00108	0.00148	<0.30	0.688	0.00063	3.36	<0.000010	<2.0	0.195	0.00001	<0.00010	0.026	0.000039	0.0023	0.0058
	26-Oct-11	L1079029-13	0.590	0.000364	0.0018	3.86	0.0247	<0.000010	0.00103	0.00133	<0.30	0.589	0.00051	2.80	<0.000010	<2.0	0.197	0.00001	<0.00010	0.021	0.000036	0.0017	0.0054
	27-Nov-11	L1091310-12	0.082	<0.000050	0.0013	4.59	0.0102	<0.000010	0.00126	0.00057	<0.30	0.576	0.00063	2.08	<0.000010	<2.0	0.261	<0.000010	<0.00010	<0.010	0.000038	<0.0010	0.0040
	27-Nov-11	L1091310-3	0.083	0.000058	0.0012	4.50	0.0104	<0.000010	0.00118	0.00057	<0.30	0.569	0.00065	2.08	<0.000010	<2.0	0.245	<0.000010	<0.00010	<0.010	0.000037</td		

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

Site Name	Date	ALS Sample No.	Dissolved Metals																		
			Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)
CC1	26-Jun-08	L650936-20	0.0068	<0.00010	<0.00010	0.0128	<0.00050	<0.00050	<0.010	0.000262	9.83	<0.00050	<0.00010	<0.00040	<0.030	<0.000050	<0.0050	1.96	0.000305	<0.000010	0.000257
	10-Sep-08	L683687-14	0.0021	0.00013	<0.00010	0.0208	<0.00050	<0.00050	<0.010	0.000502	13.3	<0.00050	<0.00010	<0.00030	<0.030	<0.000050	<0.0050	2.82	0.000169	0.000014	0.000339
	6-Dec-08	L717413-11	<0.0020	0.00010	<0.00010	0.0202	<0.00050	<0.00050	<0.010	0.000394	15.3	<0.00050	<0.00010	0.00029	<0.030	<0.000050	<0.0050	3.20	0.000135	0.000012	0.000371
	2-Jul-09	L787346-3	0.0082	<0.00010	<0.00010	0.0101	<0.00050	<0.00050	<0.010	0.000339	7.68	<0.00050	<0.00010	0.00027	<0.030	<0.000050	<0.0050	1.78	0.000598	<0.000010	0.000192
	22-Aug-09	L809879-2	0.0075	0.00012	<0.00010	0.0208	<0.00050	<0.00050	<0.010	0.000456	14.7	<0.00050	<0.00010	0.00025	<0.030	<0.000050	<0.0050	3.14	0.000231	<0.000010	0.000447
	26-Nov-09	L844495-27	0.0084	<0.00010	<0.00010	0.0231	<0.00050	<0.00050	<0.010	0.000570	23.3	<0.00050	<0.00010	0.00024	<0.030	<0.000050	<0.0050	5.70	0.000669	<0.000010	0.000463
ECM7	26-Jun-08	L650936-18	0.0894	0.00026	0.00061	0.0215	<0.00050	<0.00050	<0.010	<0.000017	16.7	<0.00050	<0.00010	0.00076	0.094	0.000078	<0.0050	2.68	0.00244	<0.000010	0.000651
	10-Sep-08	L683687-16	0.0796	0.00026	0.00045	0.0214	<0.00050	<0.00050	<0.010	<0.000017	17.4	<0.00050	<0.00010	<0.00070	0.074	0.000051	<0.0050	2.93	0.00268	0.000015	0.000633
	22-Aug-09	L809879-20	0.102	0.00029	0.00083	0.0241	<0.00050	<0.00050	<0.010	<0.000010	17.1	<0.00050	<0.00010	0.00026	0.067	0.000050	<0.0050	1.89	0.00125	<0.000010	0.000633
ECM8	26-Jun-08	L650936-19	0.0677	0.00177	0.00045	0.0183	<0.00050	<0.00050	<0.010	<0.000017	13.1	<0.00050	<0.00010	0.00056	0.069	0.000069	<0.0050	2.18	0.00324	<0.000010	0.000640
	10-Sep-08	L683687-17	0.0477	0.00541	0.00045	0.0211	<0.00050	<0.00050	<0.010	<0.000017	16.5	<0.00050	<0.00010	<0.00040	0.043	<0.000050	<0.0050	2.86	0.00245	<0.000010	0.000820
	6-Dec-08	L717413-18	<0.0070	0.00659	0.00023	0.0304	<0.00050	<0.00050	<0.010	0.000035	24.3	<0.00050	<0.00010	0.00055	<0.030	0.000072	<0.0050	4.40	0.00388	<0.000010	0.00101
	28-Mar-09	L748538-15	0.0040	0.00856	0.00027	0.0418	<0.00050	<0.00050	<0.010	0.000028	33.8	<0.00050	<0.00010	0.00034	<0.030	<0.000050	<0.0050	6.28	0.00186	<0.000010	0.00124
	2-Jul-09	L787346-2	0.0480	0.00131	0.00025	0.0153	<0.00050	<0.00050	<0.010	0.000014	11.6	<0.00050	<0.00010	0.00037	0.054	0.000062	<0.0050	2.45	0.00485	<0.000010	0.000464
	22-Aug-09	L809879-1	0.0476	0.00195	0.00069	0.0233	<0.00050	<0.00050	<0.010	<0.000010	17.4	<0.00050	<0.00010	0.00014	<0.030	<0.000050	<0.0050	1.95	0.000449	<0.000010	0.000698
	27-Nov-09	L844495-26	0.0064	0.00644	0.00024	0.0332	<0.00050	<0.00050	<0.010	0.000022	27.5	<0.00050	<0.00010	0.00046	<0.030	<0.000050	<0.0050	5.34	0.00182	<0.000010	0.000999
EUR1	27-Nov-09	L844495-2	0.0055	0.00625	0.00023	0.0331	<0.00050	<0.00050	<0.010	0.000021	25.9	<0.00050	<0.00010	0.00032	<0.030	<0.000050	<0.0050	4.98	0.00173	<0.000010	0.000990
	25-Jun-08	L650936-16	0.0066	<0.00010	<0.00010	0.0070	<0.00050	<0.00050	<0.010	<0.000017	5.74	<0.00050	<0.00010	0.00034	<0.030	0.000059	<0.0050	1.80	0.000373	<0.000010	0.00063
EUR2	9-Sep-08	L682706-7	<0.0050	<0.00010	<0.00010	0.0118	<0.00050	<0.00050	<0.010	<0.000017	11.0	<0.00050	<0.00010	<0.00010	<0.030	<0.000050	<0.0050	3.57	0.00343	<0.000010	0.000113
	26-Jun-08	L650936-17	0.0102	<0.00010	<0.00010	0.0173	<0.00050	<0.00050	<0.010	<0.000017	13.6	<0.00050	<0.00010	0.00033	<0.030	<0.000050	<0.0050	5.34	0.000419	<0.000010	0.000169
URO	25-Jul-08	L662220-1	0.0139	<0.00010	<0.00010	0.0220	<0.00050	<0.00050	<0.010	<0.000017	16.6	<0.00050	<0.00010	0.00024	<0.030	<0.000050	<0.0050	6.96	0.00114	<0.000010	0.000260
	21-Aug-08	50155642b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	21-Aug-08	50155642a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	9-Sep-08	L682706-8	<0.0050	<0.00010	0.0265	<0.00050	<0.00050	<0.010	<0.000017	20.2	<0.00050	<0.00010	<0.00010	<0.030	<0.000050	<0.0050	8.10	0.000447	<0.000010	0.000272	
	17-Sep-08	L686098-5	0.0204	<0.00010	<0.00010	0.0226	<0.00050	<0.00050	<0.010	<0.000017	15.1	<0.00050	<0.00010	0.00015	<0.030	<0.000050	<0.0050	6.79	0.00193	<0.000010	0.000238</td

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

Site Name	Date	ALS Sample No.	Dissolved Metals																		
			Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)
			0.0030	<0.00010	<0.00010	0.0354	<0.00050	<0.00050	<0.010	<0.000010	34.6	<0.00050	<0.00010	0.00024	<0.030	<0.000050	<0.0050	7.36	0.000121	<0.000010	0.000552
UR1	25-Nov-09	L844495-28	0.0030	<0.00010	<0.00010	0.0354	<0.00050	<0.00050	<0.010	<0.000010	34.6	<0.00050	<0.00010	0.00024	<0.030	<0.000050	<0.0050	7.36	0.000121	<0.000010	0.000552
	28-May-08	L635965-3	0.0730	0.00136	0.00045	0.0218	<0.00050	<0.00050	<0.010	0.000117	17.7	<0.00050	0.00019	0.00266	0.049	<0.000050	<0.0050	1.86	0.0239	<0.000010	0.000909
	5-Jun-08	L639617-1	0.0607	0.00141	0.00015	0.0202	<0.00050	<0.00050	<0.010	0.000276	18.6	<0.00050	0.00077	0.00331	0.036	<0.000050	<0.0050	2.21	0.0528	<0.000010	0.000957
	11-Jun-08	L642688-10	0.0495	0.00111	<0.00010	0.0182	<0.00050	<0.00050	<0.010	0.000364	17.8	<0.00050	0.00083	0.00317	<0.030	<0.000050	<0.0050	2.12	0.0570	<0.000010	0.000776
	26-Jun-08	L650936-22	0.0558	0.00107	0.00010	0.0281	<0.00050	<0.00050	<0.010	0.000331	20.9	<0.00050	0.00070	0.00152	<0.030	<0.000050	<0.0050	2.33	0.0800	<0.000010	0.00101
	3-Jul-08	L652071-1	0.0057	0.00063	<0.00010	0.0281	<0.00050	<0.00050	<0.010	0.000636	18.4	<0.00050	0.00152	0.00093	<0.030	<0.000050	<0.0050	1.61	0.0959	<0.000010	0.00115
	25-Jul-08	L662220-2	0.0351	0.00132	<0.00010	0.0244	<0.00050	<0.00050	<0.010	0.000281	17.8	<0.00050	0.00054	0.00133	<0.030	<0.000050	<0.0050	1.94	0.0610	<0.000010	0.000873
	10-Sep-08	L683687-8	0.0453	0.00196	0.00012	0.0270	<0.00050	<0.00050	<0.010	0.000282	21.7	<0.00050	0.00040	0.00125	<0.030	<0.000050	<0.0050	2.30	0.0512	<0.000010	0.001140
	6-Dec-08	L717413-14	0.0497	0.00190	0.00015	0.0302	<0.00050	<0.00050	<0.010	0.000403	37.0	<0.00050	0.00053	0.00651	0.065	0.000054	<0.0050	3.85	0.0752	<0.000010	0.001590
	6-Dec-08	L717413-13	0.0347	0.00189	<0.00010	0.0302	<0.00050	<0.00050	<0.010	0.000388	37.0	<0.00050	0.00053	0.00355	<0.030	<0.000050	<0.0050	3.83	0.0752	0.000013	0.001520
	29-Mar-09	L749298-3	0.0415	0.00175	0.00019	0.0364	<0.00050	<0.00050	<0.010	0.000450	51.6	<0.00050	0.00050	0.00246	<0.030	<0.000050	<0.0050	5.67	0.0914	<0.000010	0.001700
	2-Jul-09	L787346-4	0.0438	0.00090	<0.00010	0.0214	<0.00050	<0.00050	<0.010	0.000398	19.9	<0.00050	0.00075	0.00313	<0.030	<0.000050	<0.0050	2.68	0.0687	<0.000010	0.000899
	22-Aug-09	L809879-3	0.0350	0.00083	0.00012	0.0308	<0.00050	<0.00050	<0.010	0.000093	17.2	<0.00050	0.00011	0.00036	<0.030	<0.000050	<0.0050	1.42	0.0274	<0.000010	0.000931
	26-Nov-09	L844495-4	0.0523	0.00180	0.00013	0.0318	<0.00050	<0.00050	<0.010	0.000383	39.3	<0.00050	0.00062	0.00380	<0.030	<0.000050	<0.0050	4.42	0.0918	<0.000010	0.00153
	17-Jan-10	L855505-1	0.0271	0.00173	0.00016	0.0320	<0.00050	<0.00050	<0.010	0.000348	41.0	<0.00050	0.00046	0.00292	<0.030	<0.000050	<0.0050	4.48	0.0716	<0.000010	0.00158
	3-Mar-10	L866873-1	0.0458	0.00149	0.00018	0.0331	<0.00050	<0.00050	<0.010	0.000270	42.4	<0.00050	0.00040	0.00302	<0.030	<0.000050	<0.0050	4.60	0.0760	<0.000010	0.00150
	28-Mar-10	L873292-4	0.0279	0.00139	0.00017	0.0277	<0.00050	<0.00050	<0.010	0.000214	33.2	<0.00050	0.00028	0.00522	<0.030	<0.000050	<0.0050	3.65	0.0526	<0.000010	0.00115
	1-May-10	L884476-7	0.260	0.00130	0.00825	0.0262	<0.00050	<0.00050	<0.010	0.000720	31.8	<0.00050	0.00101	0.0507	2.150	0.00106	<0.0050	3.49	0.0719	<0.000010	0.00118
	26-May-10	L891484-1	0.0257	0.00100	0.00023	0.0219	<0.00050	<0.00050	<0.010	0.000272	20.3	<0.00020	0.00047	0.00250	<0.030	<0.000050	<0.0050	2.32	0.0434	<0.000010	0.000807
	5-Jul-10	L905787-1	0.0487	0.00125	<0.00010	0.0284	<0.00050	<0.00050	<0.010	0.000312	21.1	<0.00020	0.00044	0.00149	<0.030	<0.000050	<0.0050	2.31	0.0659	<0.000010	0.00109
	3-Aug-10	L916942-1	0.0824	0.00054	0.00021	0.0345	<0.00050	<0.00050	<0.010	0.000030	16.2	0.00023	<0.00010	0.00030	<0.030	<0.000050	<0.0050	1.26	0.00824	<0.000010	0.000765
	27-Aug-10	L926457-1	0.0368	0.00066	<0.00010	0.0268	<0.00050	<0.00050	<0.010	0.000223	19.4	<0.00020	0.00037	0.00095	<0.030	<0.000050	<0.0050	1.80	0.0611	<0.000010	0.000938
	28-Sep-10	L938295-1	0.0550	0.00099	0.00025	0.0252	<0.00050	<0.00050	<0.010	0.000042	20.4	0.00015	0								

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

		Dissolved Metals																			
		ALS Sample		Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)
Site Name	Date	Sample No.																			
UR2	3-Mar-10	L866873-2	<0.0070	0.00232	0.00027	0.0316	<0.00050	<0.00050	<0.010	0.000022	28.8	<0.00050	<0.00010	0.00031	<0.030	<0.000050	<0.0050	4.57	0.00669	<0.000010	0.000960
	28-Mar-10	L873293-1	0.0174	0.00193	0.00026	0.0261	<0.00050	<0.00050	<0.010	0.000033	23.5	<0.00050	<0.00010	0.00053	0.041	<0.000050	<0.0050	3.82	0.00785	<0.000010	0.000737
	1-May-10	L884476-8	0.0126	0.00165	0.00021	0.0212	<0.00050	<0.00050	<0.010	0.000041	20.2	<0.00050	<0.00010	0.00062	<0.030	<0.000050	<0.0050	3.15	0.00336	<0.000010	0.000581
	26-May-10	L891484-2	0.0243	0.00131	0.00025	0.0162	<0.00050	<0.00050	<0.010	0.000026	14.2	<0.00020	<0.00010	0.00044	<0.030	<0.000050	<0.0050	2.33	0.00582	<0.000010	0.000453
	5-Jul-10	L905787-3	0.0229	0.00207	0.00039	0.0204	<0.00050	<0.00050	<0.010	0.000017	17.0	<0.00020	<0.00010	0.00033	<0.030	<0.000050	<0.0050	2.60	0.00263	<0.000010	0.000809
	3-Aug-10	L916942-2	0.108	0.00076	0.00047	0.0231	<0.00050	<0.00050	<0.010	<0.000010	16.8	0.00026	<0.00010	0.00017	0.064	<0.000050	<0.0050	1.76	0.00141	<0.000010	0.000574
	27-Aug-10	L926457-3	0.0357	0.00110	0.00039	0.0211	<0.00050	<0.00050	<0.010	0.000016	16.6	<0.00020	<0.00010	0.00024	<0.030	<0.000050	<0.0050	2.28	0.00816	<0.000010	0.000710
	28-Sep-10	L938295-2	0.0467	0.00143	0.00047	0.0212	<0.00050	<0.00050	<0.010	0.000012	17.0	<0.00020	<0.00010	0.00096	0.040	<0.000050	<0.0050	2.47	0.00336	<0.000010	0.000570
	21-Oct-10	L946802-2	0.0203	0.00210	0.00028	0.0239	<0.00050	<0.00050	<0.010	0.000034	19.5	0.00016	<0.00010	0.00056	<0.030	<0.000050	<0.0050	3.39	0.00523	<0.000010	0.000717
	15-Nov-10	L955725-3	0.0112	0.00171	0.00029	0.0243	<0.00050	<0.00050	<0.010	0.000034	23.8	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	3.59	0.00542	<0.000010	0.000780
	15-Dec-10	L963832-2	0.0052	0.00213	0.00029	0.0330	<0.00050	<0.00050	<0.010	0.000021	29.4	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	4.99	0.00580	<0.000010	0.00109
	1-Feb-11	L975149-3	0.0036	0.00270	0.00026	0.0312	<0.00050	<0.00050	<0.010	0.000018	27.4	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	4.37	0.0113	<0.000010	0.000991
	5-Mar-11	L985810-3	<0.0030	0.00200	0.00023	0.0358	<0.00050	<0.00050	<0.010	0.000018	35.1	0.00013	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	5.22	0.00663	<0.000010	0.00101
	31-Mar-11	L991777-4	0.0081	0.00199	0.00027	0.0330	<0.00050	<0.00050	<0.010	0.000017	30.5	<0.00010	<0.00010	0.00096	<0.030	<0.000050	<0.0050	4.89	0.00902	<0.000010	0.000910
	2-May-11	L1002688-9	0.0076	0.00162	0.00026	0.0319	<0.00050	<0.00050	<0.010	0.000026	27.8	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	5.40	0.00630	<0.000010	0.000806
	4-Jun-11	L1014013-2	0.0619	0.00084	0.00027	0.0159	<0.00050	<0.00050	<0.010	0.000016	13.2	0.00018	<0.00010	0.00058	0.057	<0.000050	<0.0050	2.04	0.00807	<0.000010	0.000472
	4-Jul-11	L1026874-13	0.0303	0.00100	0.00035	0.0179	<0.00010	<0.00050	<0.010	0.000020	15.0	0.00022	<0.00010	<0.00050	0.031	<0.000050	0.0007	2.39	0.00647	<0.000010	0.000650
	1-Aug-11	L1039955-2	0.108	0.00095	0.00046	0.0199	<0.00010	<0.00050	<0.010	0.000014	15.1	0.00023	<0.00010	<0.00050	0.096	0.000065	<0.0050	2.23	0.00756	<0.000010	0.000637
	4-Sep-11	L1054465-3	0.0727	0.00091	0.00071	0.0240	<0.00010	<0.00050	<0.010	<0.000010	17.1	0.00017	<0.00010	0.00095	0.033	<0.000050	<0.0050	2.19	0.00746	<0.000010	0.000625
	1-Oct-11	L1067383-2	0.0306	0.00161	0.00033	0.0258	<0.00010	<0.00050	<0.010	0.000034	22.8	0.00014	<0.00010	0.00065	0.031	<0.000050	0.0011	3.43	0.00992	<0.000010	0.00105
	26-Oct-11	L1079029-13	0.0255	0.00165	0.00033	0.0271	<0.00010	<0.00050	<0.010	0.000033	22.8	0.00010	<0.00010	0.00055	0.033	<0.000050	0.0011	3.56	0.00950	<0.000010	0.000957
	27-Nov-11	L1091310-12	0.0317	0.00198	0.00035	0.0312	<0.00010	<0.00050	<0.010	0.000021	29.4	0.00010	<0.00010	<0.00050	0.072	0.000070	0.0012	4.41	0.01070	<0.000010	0.00114
	27-Nov-11	L1091310-3	0.0070	0.00199	0.00027	0.0320	<0.00010	<0.00050	<0.010	0.000021	28.9	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	0.0012	4.43	0.00792	<0.000010	0.00113
	26-Jun-08	L650936-24	0.0625	0.00060	0.00015	0.0															

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

Site Name	Date	ALS Sample No.	Dissolved Metals													
			Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
CC1																
	26-Jun-08	L650936-20	0.00110	<0.30	0.128	0.00033	1.61	<0.000010	<2.0	0.090	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0106
	10-Sep-08	L683687-14	0.00175	<0.30	0.187	0.00082	2.16	<0.000010	<2.0	0.122	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0178
	6-Dec-08	L717413-11	0.00151	<0.30	0.166	0.00123	1.87	<0.000010	<2.0	0.132	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0156
	2-Jul-09	L787346-3	0.00123	<0.30	0.100	0.00021	1.35	<0.000010	<2.0	0.080	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0157
	22-Aug-09	L809879-2	0.00130	<0.30	0.162	0.00102	2.01	<0.000010	<2.0	0.155	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0132
	26-Nov-09	L844495-27	0.00203	<0.30	0.180	0.00113	1.93	<0.000010	<2.0	0.234	<0.000010	<0.000010	<0.010	0.000016	<0.0010	0.0200
	26-Nov-09	L844495-3	0.00200	<0.30	0.157	0.00093	1.91	<0.000010	<2.0	0.220	<0.000010	<0.000010	<0.010	0.000016	<0.0010	0.0195
ECM7																
	26-Jun-08	L650936-18	<0.00050	<0.30	0.420	0.00042	1.20	<0.000010	<2.0	0.140	<0.000010	<0.000010	<0.010	0.000020	<0.0010	0.0012
	10-Sep-08	L683687-16	<0.00050	<0.30	0.365	0.00056	0.92	<0.000010	<2.0	0.141	<0.000010	<0.000010	<0.010	0.000025	<0.0010	<0.0010
	22-Aug-09	L809879-20	<0.00050	<0.30	0.357	0.00051	0.74	<0.000010	<2.0	0.117	<0.000010	0.000010	<0.010	0.000020	<0.0010	<0.0010
ECM8																
	26-Jun-08	L650936-19	<0.00050	<0.30	0.322	0.00025	1.15	<0.000010	<2.0	0.117	<0.000010	<0.000010	<0.010	0.000015	<0.0010	<0.0010
	10-Sep-08	L683687-17	<0.00050	<0.30	0.352	0.00043	0.93	<0.000010	<2.0	0.141	<0.000010	<0.000010	<0.010	0.000028	<0.0010	<0.0010
	6-Dec-08	L717413-18	0.00071	<0.30	0.493	0.00055	1.72	<0.000010	2.4	0.251	<0.000010	<0.000010	<0.010	0.000050	<0.0010	0.0034
	28-Mar-09	L748538-15	0.00071	<0.30	0.613	0.00065	1.84	<0.000010	4.4	0.339	<0.000010	<0.000010	<0.010	0.000080	<0.0010	0.0035
	2-Jul-09	L787346-2	<0.00050	<0.30	0.251	0.00028	1.19	<0.000010	<2.0	0.130	<0.000010	<0.000010	<0.010	0.000015	<0.0010	0.0011
	22-Aug-09	L809879-1	<0.00050	<0.30	0.348	0.00042	0.66	<0.000010	<2.0	0.125	<0.000010	<0.000010	<0.010	0.000024	<0.0010	<0.0010
	27-Nov-09	L844495-26	0.00057	<0.30	0.490	0.00066	1.67	<0.000010	2.5	0.305	<0.000010	<0.000010	<0.010	0.000036	<0.0010	0.0020
	27-Nov-09	L844495-2	0.00059	<0.30	0.464	0.00051	1.67	<0.000010	2.5	0.292	<0.000010	<0.000010	<0.010	0.000037	<0.0010	0.0021
EUR1																
	25-Jun-08	L650936-16	<0.00050	<0.30	0.092	0.00012	1.45	<0.000010	<2.0	0.059	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	9-Sep-08	L682706-7	<0.00050	<0.30	0.101	0.00022	2.07	<0.000010	<2.0	0.115	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
EUR2																
	26-Jun-08	L650936-17	0.00052	<0.30	0.201	0.00034	1.29	<0.000010	<2.0	0.153	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	25-Jul-08	L662220-1	0.00052	<0.30	0.235	0.00030	1.02	<0.000010	<2.0	0.213	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	21-Aug-08	50155642b	-	-	-	-	-	-	-	-	-	-	-	-	-	
	21-Aug-08	50155642a	-	-	-	-	-	-	-	-	-	-	-	-	-	
	9-Sep-08	L682706-8	<0.00050	<0.30	0.243	0.00039	1.15	<0.000010	<2.0	0.230	<0.000010	<0.000010	<0.010	0.000015	<0.0010	<0.0010
	17-Sep-08	L686098-5	<0.00050	<0.30	0.231	0.00034	0.88	<0.000010	<2.0	0.187	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	25-Sep-08	L688714-5	0.00055	<0.30	0.284	0.00048	1.41	<0.000010	<2.0	0.275	<0.000010	<0.000010	<0.010	0.000024	<0.0010	<0.0010
	2-Oct-08	L691752-1	0.00050	<0.30	0.225	0.00016	1.13	<0.000010	<2.0	0.163	<0.000010	<0.000010	<0.010	0.000015	<0.0010	<0.0030
	9-Oct-08	L694973-5	0.00065	<0.30	0.257	0.00049	1.64	<0.000010	<2.0	0.251	<0.000010	<0.000010	<0.010	0.000019	<0.0010	<0.0010
	29-Oct-08	L703445-6	0.00052	<0.30	0.252	0.00065	1.73	<0.000010	<2.0	0.251	<0.000010	<0.000010	<0.010	0.000021	<0.0010	<0.0010
	29-Oct-08	L703445-5	0.00053	<0.30	0.258	0.00054	1.75	<0.000010	<2.0	0.255	<0.000010	<0.000010	<0.010	0.000020	<0.0010	<0.0010
	27-May-09	L771080-10	0.00090	<0.30	0.269	0.00045	1.75	<0.000010	<2.0	0.154	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	8-Jun-09	L776835-6	0.00069	<0.30	0.185	0.00031	1.25	<0.000010	<2.0	0.152	<0.000010	<0.000010	<0.010	<0.000		

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

Site Name	Date	ALS Sample No.	Dissolved Metals													
			Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
			<0.00050	<0.30	0.280	0.00062	1.97	<0.000010	2.2	0.365	<0.00010	<0.00010	<0.010	0.000016	<0.0010	<0.0010
UR1	25-Nov-09	L844495-28	<0.00050	<0.30	0.280	0.00062	1.97	<0.000010	2.2	0.365	<0.00010	<0.00010	<0.010	0.000016	<0.0010	<0.0010
	28-May-08	L635965-3	<0.00050	<0.30	0.568	0.00075	1.37	<0.000010	<2.0	0.107	<0.00010	<0.00010	<0.010	0.000044	<0.0010	0.0025
	5-Jun-08	L639617-1	0.00068	<0.30	0.543	0.00088	1.36	<0.000010	<2.0	0.132	<0.00010	<0.00010	<0.010	0.000056	<0.0010	0.0084
	11-Jun-08	L642688-10	<0.00050	<0.30	0.426	0.00049	1.37	<0.000010	<2.0	0.114	<0.00010	<0.00010	<0.010	0.000051	<0.0010	0.0122
	26-Jun-08	L650936-22	<0.00050	<0.30	0.604	0.00065	1.22	<0.000010	<2.0	0.139	<0.00010	<0.00010	<0.010	0.000052	<0.0010	0.0057
	3-Jul-08	L652071-1	0.00076	<0.30	0.658	0.00050	0.85	<0.000010	<2.0	0.101	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0223
	25-Jul-08	L662220-2	0.00069	<0.30	0.527	0.00042	0.97	<0.000010	<2.0	0.123	<0.00010	0.00014	<0.010	0.000035	<0.0010	0.0078
	10-Sep-08	L683687-8	0.00054	<0.30	0.675	0.00063	1.09	<0.000010	<2.0	0.133	<0.00010	<0.00010	<0.010	0.000069	<0.0010	0.0071
	6-Dec-08	L717413-14	0.00080	<0.30	0.863	0.00111	2.07	<0.000010	<2.0	0.223	<0.00010	<0.00010	<0.010	0.000160	<0.0010	0.0178
	6-Dec-08	L717413-13	0.00078	<0.30	0.863	0.00124	2.10	<0.000010	2.0	0.222	<0.00010	<0.00010	<0.010	0.000160	<0.0010	0.0162
	29-Mar-09	L749298-3	0.00119	<0.30	1.190	0.00167	2.18	<0.000010	3.1	0.310	<0.00010	<0.00010	<0.010	0.000220	<0.0010	0.0204
	2-Jul-09	L787346-4	0.00081	<0.30	0.489	0.00066	1.32	<0.000010	<2.0	0.158	<0.00010	<0.00010	<0.010	0.000066	<0.0010	0.0145
	22-Aug-09	L809879-3	<0.00050	<0.30	0.601	0.00045	0.72	<0.000010	<2.0	0.100	<0.00010	<0.00010	<0.010	0.000027	<0.0010	0.0024
	26-Nov-09	L844495-4	0.00085	<0.30	0.862	0.00098	1.99	<0.000010	2.2	0.265	<0.00010	<0.00010	<0.010	0.000158	<0.0010	0.0145
	17-Jan-10	L855505-1	0.00069	<0.30	0.898	0.00122	2.06	<0.000010	2.4	0.277	<0.00010	<0.00010	<0.010	0.000165	<0.0010	0.0144
	3-Mar-10	L866873-1	0.00068	<0.30	0.858	0.00107	2.12	<0.000010	2.6	0.284	<0.00010	<0.00010	<0.010	0.000172	<0.0010	0.0100
	28-Mar-10	L873292-4	0.00065	<0.30	0.681	0.00092	2.03	<0.000010	<2.0	0.204	<0.00010	<0.00010	<0.010	0.000115	<0.0010	0.0103
	1-May-10	L884476-7	0.00080	<0.30	0.589	0.00112	2.05	<0.000010	<2.0	0.199	<0.00010	<0.00010	<0.010	0.000158	<0.0010	0.0541
	26-May-10	L891484-1	<0.00050	<0.30	0.479	0.00060	1.33	<0.000010	<2.0	0.143	<0.00010	<0.00010	<0.010	0.000052	<0.0010	0.0126
	5-Jul-10	L905787-1	<0.00050	<0.30	0.581	0.00049	1.15	0.000025	<2.0	0.142	<0.00010	<0.00010	<0.010	0.000049	<0.0010	0.0045
	3-Aug-10	L916942-1	<0.00050	<0.30	0.621	0.00053	0.71	<0.000010	<2.0	0.092	<0.00010	<0.00010	<0.010	0.000029	<0.0010	<0.0010
	27-Aug-10	L926457-1	<0.00050	<0.30	0.609	0.00046	0.86	<0.000010	<2.0	0.117	<0.00010	<0.00010	<0.010	0.000039	<0.0010	0.0059
	28-Sep-10	L938295-1	<0.00050	<0.30	0.922	0.00057	1.25	<0.000010	<2.0	0.132	<0.00010	<0.00010	<0.010	0.000071	<0.0010	<0.0030
	21-Oct-10	L946802-1	0.00115	<0.30	0.721	0.00098	1.89	<0.000010	<2.0	0.212	<0.00010	<0.00010	<0.010	0.000097	<0.0010	0.0105
	15-Nov-10	L955725-1	0.00099	<0.30	0.764	0.00106	2.07	<0.000010	<2.0	0.224	<0.00010	<0.00010	<0.010	0.000122	<0.0010	0.0112
	15-Dec-10	L963832-1	0.00118	<0.30	1.140	0.00134	2.13	<0.000010	2.3	0.296	<0.00010	<0.00010	<0.010	0.000208	<0.0010	0.0140
	1-Feb-11	L975149-2	0.00083	<0.30	1.060	0.00132	2.24	<0.000010	2.6	0.311	<0.00010	<0.00010	<0.010	0.000157	<0.0010	0.0225
	5-Mar-11	L985810-2	0.00079	<0.30	1.160	0.00141	2.10	<0.000010	2.8	0.316	<0.00010	<0.00010	<0.010	0.000195	<0.0010	0.0202
	31-Mar-11	L991777-3	0.00075	<0.30	0.906	0.00112	2.16	<0.000010	2.7	0.297	<0.00010	<0.00010	<0.010	0.000159	<0.0010	0.0159
	2-May-11	L1002688-8	0.00081	<0.30	0.874	0.00124	2.16	<0.000010	2.3	0.312	<0.00010	<0.00010	<0.010	0.000149	<0.0010	0.0091
	4-Jun-11	L1014013-1	0.00057	<0.30	0.538	0.00053	1.22	<0.000010	<2.0	0.123	<0.00010	<0.00010	<0.010	0.000048	<0.0010	0.0036
	4-Jul-11	L1026874-11	0.00055	<0.30	0.567	0.00060	1.13	<0.000010</td								

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Unuk River Watershed**

		Dissolved Metals														
Site Name	Date	ALS Sample No.		Phosphorus (P)	Potassium (K)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Thallium (Tl)	Tin (Sn)	Titanium (Ti)	Uranium (U)	Vanadium (V)	Zinc (Zn)
		Nickel (Ni) (mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	
UR2	3-Mar-10	L866873-2	<0.00050	<0.30	0.457	0.00063	1.96	<0.000010	2.4	0.241	<0.00010	<0.00010	<0.010	0.000038	<0.0010	0.0013
	28-Mar-10	L873293-1	<0.00050	<0.30	0.396	0.00048	2.00	<0.000010	<2.0	0.200	<0.00010	<0.00010	<0.010	0.000025	<0.0010	0.0021
	1-May-10	L884476-8	<0.00050	<0.30	0.322	0.00051	1.87	<0.000010	<2.0	0.169	<0.00010	<0.00010	<0.010	0.000018	<0.0010	0.0025
	26-May-10	L891484-2	<0.00050	<0.30	0.315	0.00034	1.33	<0.000010	<2.0	0.126	<0.00010	<0.00010	<0.010	0.000014	<0.0010	<0.0010
	5-Jul-10	L905787-3	<0.00050	<0.30	0.388	0.00037	1.15	<0.000010	<2.0	0.142	<0.00010	<0.00010	<0.010	0.000022	<0.0010	<0.0010
	3-Aug-10	L916942-2	<0.00050	<0.30	0.413	0.00045	0.83	<0.000010	<2.0	0.107	<0.00010	<0.00010	<0.010	0.000017	<0.0010	<0.0010
	27-Aug-10	L926457-3	<0.00050	<0.30	0.412	0.00042	0.83	<0.000010	<2.0	0.127	<0.00010	<0.00010	<0.010	0.000019	<0.0010	<0.0010
	28-Sep-10	L938295-2	<0.00050	<0.30	0.540	0.00044	1.34	<0.000010	<2.0	0.134	<0.00010	<0.00010	<0.010	0.000019	<0.0010	<0.0030
	21-Oct-10	L946802-2	0.00061	<0.30	0.393	0.00049	1.87	<0.000010	<2.0	0.184	<0.00010	<0.00010	<0.010	0.000021	<0.0010	<0.0030
	15-Nov-10	L955725-3	<0.00050	<0.30	0.378	0.00052	1.99	<0.000010	<2.0	0.191	<0.00010	<0.00010	<0.010	0.000023	<0.0010	0.0032
	15-Dec-10	L963832-2	0.00064	<0.30	0.549	0.00072	1.95	<0.000010	2.1	0.255	<0.00010	<0.00010	<0.010	0.000036	<0.0010	<0.0030
	1-Feb-11	L975149-3	<0.00050	<0.30	0.487	0.00068	2.03	<0.000010	2.3	0.242	<0.00010	<0.00010	<0.010	0.000033	<0.0010	<0.0030
	5-Mar-11	L985810-3	<0.00050	<0.30	0.551	0.00075	1.91	<0.000010	2.6	0.260	<0.00010	<0.00010	<0.010	0.000037	<0.0010	<0.0030
	31-Mar-11	L991777-4	<0.00050	<0.30	0.522	0.00062	1.95	<0.000010	2.7	0.254	<0.00010	<0.00010	<0.010	0.000038	<0.0010	<0.0030
	2-May-11	L1002688-9	<0.00050	<0.30	0.487	0.00068	2.02	<0.000010	2.3	0.269	<0.00010	<0.00010	<0.010	0.000033	<0.0010	<0.0030
	4-Jun-11	L1014013-2	0.00065	<0.30	0.332	0.00030	1.30	<0.000010	<2.0	0.112	<0.00010	<0.00010	<0.010	0.000014	<0.0010	<0.0030
	4-Jul-11	L1026874-13	<0.00050	<0.30	0.343	0.00037	1.14	<0.000010	<2.0	0.141	<0.00010	<0.00010	<0.010	0.000017	<0.0010	<0.0030
	1-Aug-11	L1039955-2	<0.00050	<0.30	0.355	0.00037	1.04	<0.000010	<2.0	0.123	<0.00010	<0.00010	<0.010	0.000018	<0.0010	<0.0030
	4-Sep-11	L1054465-3	<0.00050	<0.30	0.511	0.00042	1.26	<0.000010	<2.0	0.129	<0.00010	<0.00010	<0.010	0.000024	<0.0010	<0.0030
	1-Oct-11	L1067383-2	0.00062	<0.30	0.505	0.00059	1.86	<0.000010	<2.0	0.189	<0.00010	<0.00010	<0.010	0.000029	<0.0010	<0.0030
	26-Oct-11	L1079029-13	0.00059	<0.30	0.482	0.00051	1.98	<0.000010	<2.0	0.183	<0.00010	<0.00010	<0.010	0.000028	<0.0010	<0.0030
	27-Nov-11	L1091310-12	0.00050	<0.30	0.544	0.00062	1.96	<0.000010	<2.0	0.248	<0.00010	<0.00010	<0.010	0.000034	<0.0010	0.0031
	27-Nov-11	L1091310-3	<0.00050	<0.30	0.548	0.00063	1.94	<0.000010	<2.0	0.240	<0.00010	<0.00010	<0.010	0.000038	<0.0010	<0.0030
	26-Jun-08	L650936-24	<0.00050	<0.30	0.646	0.00045	1.58	<0.000010	<2.0	0.106	<0.00010	<0.00010	<0.010	0.000132	<0.0010	0.0030
	10-Sep-08	L683687-10	<0.00050	<0.30	0.768	0.00039	1.37	<0.000010	<2.0	0.097	<0.00010	<0.00010	<0.010	0.000165	<0.0010	0.0028
	6-Dec-08	L717413-9	<0.00050	<0.30	0.965	0.00076	2.51	<0.000010	<2.0	0.141	<0.00010	<0.00010	<0.010	0.000259	<0.0010	0.0066
	28-Mar-09	L748538-8	<0.00050	<0.30	1.270	0.00088	2.57	<0.000010	2.9	0.195	<0.00010	<0.00010	<0.010	0.000362	<0.0010	0.0067
	27-May-09	L771080-9	0.00051	<0.30	0.672	0.00055	2.09	<0.000010	<2.0	0.106	<0.00010	<0.00010	<0.010	0.000155	<0.0010	0.0055
	8-Jun-09	L776835-7	<0.00050	<0.30	0.750	0.00050	1.47	<0.000010	<2.0	0.120	<0.00010	<0.00010	<0.010	0.000119	<0.0010	0.0014
	13-Jun-09	L778602-3	<0.00050	<0.30	0.611	0.00037	1.49	<0.000010	<2.0	0.081	<0.00010	<0.00010	<0.010	0.000113	<0.0010	0.0019
	13-Jun-09	L778602-2	0.00199	<0.30	0.732	0.00045	3.07	<0.000010	<2.0	0.088	<0.00010	<0.00010	0.065	0.000245	0.0035	0.0292
	19-Jun-09	L781603-5	<0.00050	<0.30	0.622	0.00040	1.54	<0.000010	<2.0	0.086	<0.00010	<0.00010	<0.010	0.000119	<0.0010	0.0027
	2-Jul-09	L787346-5	<0.00050	<0.30	0.605	0.00057	1.61	<								

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Reference Sites**

Site Name	Date	ALS Sample No.	Physical Parameter							Anions and Nutrients											
			Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) (mg/L)	pH	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Total (as $\text{CaCO}_3$ ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)
SCR																					
	28-Mar-09	L748538-5	<5.0	108	46.5	7.73	<3.0	62	0.11	2.1	30.8	<2.0	<2.0	30.8	<0.0050	<0.050	<0.50	0.029	0.288	<0.0010	0.082
	5-Jul-09	L788462-5	<5.0	114	50.0	8.09	190	84	190	2.5	45.9	<1.0	<1.0	45.9	<0.0050	<0.050	<0.50	0.022	0.0095	<0.0010	0.095
	23-Aug-09	L809851-7	<5.0	97.5	48.4	8.05	183	88	207	1.2	94.0	<1.0	<1.0	94.0	<0.0050	<0.050	<0.50	<0.020	0.0085	<0.0010	<0.050
	31-Oct-09	L837185-15	<5.0	243	111	8.10	<3.0	150	3.46	1.1	76.9	<2.0	<2.0	76.9	<0.0050	<0.050	<0.50	0.036	0.0185	<0.0010	<0.050
	1-Dec-09	L845898-5	<5.0	107	47.2	7.89	3.3	63	0.81	1.6	30.8	<2.0	<2.0	30.8	<0.0050	<0.050	<0.50	0.037	0.502	<0.0010	0.057
	28-Mar-10	L873293-12	5.0	279	138	8.16	7.2	165	3.65	1.7	98.0	<2.0	<2.0	98.0	<0.0050	<0.050	<0.50	0.048	0.0863	<0.0010	<0.050
	5-Jul-10	L905787-26	<5.0	127	61.2	8.04	97.0	98	136	2.7	47.8	<1.0	<1.0	47.8	<0.0050	<0.050	<0.50	<0.020	0.0130	<0.0010	<0.050
	27-Aug-10	L926457-26	<5.0	106	49.7	8.10	141	77	86.4	3.6	37.7	<1.0	<1.0	37.7	<0.0050	<0.050	<0.50	<0.020	0.0105	<0.0010	<0.050
	15-Nov-10	L955725-25	<5.0	90.8	42.5	7.91	<3.0	49	0.31	2.2	28.6	<2.0	<2.0	28.6	<0.0050	<0.050	<0.50	0.037	0.558	<0.0010	0.052
	1-Apr-11	L991777-24	<5.0	337	172	7.91	<3.0	206	0.40	5.4	79.8	<2.0	<2.0	79.8	<0.0050	<0.050	<0.50	0.046	0.0243	<0.0010	0.066
	3-Jul-11	L1026874-7	<5.0	122	56.1	7.93	137	93	165	2.2	41.2	<2.0	<2.0	41.2	0.0064	<0.050	<0.50	0.027	0.0113	<0.0010	0.104
	4-Sep-11	L1054465-20	<5.0	117	64.0	8.13	152	91	179	3.9	38.9	<2.0	<2.0	38.9	<0.0050	<0.050	<0.50	<0.020	0.0133	<0.0010	0.097
	27-Nov-11	L1091310-11	<5.0	299	142	8.27	7.8	178	2.38	1.3	97.5	<2.0	<2.0	97.5	<0.0050	<0.050	<0.50	0.062	0.0179	<0.0010	<0.050
SUNR																					
	28-May-08	L635965-5	48.6	5.5	107	7.91	72	56	48.6	3.6	36.0	<2.0	<2.0	36.0	<0.0050	<0.050	<0.50	0.054	0.226	<0.0010	<0.050
	5-Jun-08	L639617-2	52.1	<5.0	120	7.99	74	17	15.5	1.4	38.2	<2.0	<2.0	38.2	<0.0050	<0.050	<0.50	0.056	0.173	<0.0010	<0.050
	11-Jun-08	L642688-12	53.1	<5.0	127	7.91	78	8	8.59	1.2	41.4	<2.0	<2.0	41.4	<0.0050	<0.050	<0.50	0.062	0.163	<0.0010	<0.050
	11-Jun-08	L642688-11	51.6	<5.0	124	7.75	80	13	9.58	1.4	41.0	<2.0	<2.0	41.0	<0.0050	<0.050	<0.50	0.062	0.161	<0.0010	<0.050
	26-Jun-08	L650936-25	<5.0	113	48.9	7.79	38.4	63	16.6	1.6	36.3	<2.0	<2.0	36.3	<0.0050	<0.050	<0.50	0.149	0.0931	<0.0010	<0.050
	3-Jul-08	L652071-2	<5.0	65.1	28.0	8.10	107	44	62.3	4.6	21.5	<2.0	<2.0	21.5	<0.0050	<0.050	<0.50	0.032	0.0466	<0.0010	<0.050
	25-Jul-08	L662220-3	<5.0	83.8	42.7	7.83	47.2	52	20.3	1.3	27.3	<2.0	<2.0	27.3	<0.0050	<0.050	<0.50	0.039	0.0412	<0.0010	<0.050
	21-Aug-08	L50155635	5.0	-	29.0	-	87.0	46	57.6	-	33.0	<0.5	-	27.0	<0.05	-	<0.5	-	0.0220	0.0110	<0.02
	9-Sep-08	L682706-6	<5.0	97.9	40.9	7.82	30.9	56	24.8	2.4	29.5	<2.0	<2.0	29.5	<0.0050	<0.050	<0.50	0.038	0.0408	<0.0010	<0.050
	2-Oct-08	L691752-2	6.7	69.9	30.7	7.70	192	53	104	1.0	28.8	<1.0	<1.0	28.8	<0.0050	<0.050	<0.50	0.024	0.0388	<0.0010	<0.050
	29-Oct-08	L703445-13	<5.0	165	74.7	8.02	11.8	100	8.24	1.0	55.3	<2.0	<2.0	55.3	0.0065	<0.050	<0.50	0.057	0.238	<0.0010	<0.050
	6-Dec-08	L717413-8	<5.0	179	83.1	8.07	5.5	104	1.75	<1.0	60.9	<2.0	<2.0	60.9	<0.0050	<0.050	<0.50	0.053	0.241	<0.0010	0.099
	6-Dec-08	L717413-7	<5.0	178	83.8	8.10	4.5	110	2.04	<1.0	59.2	<2.0	<2.0	59.2	<0.0050	<0.050	<0.50	0.052	0.235	<0.0010	0.165
	7-Jan-09	L723686-1	<5.0	225	108	8.05	<3.0	143	0.54	2.6	69.7	<2.0	<2.0	69.7	<0.0050	<0.050	<0.50	0.065	0.244	<0.0010	0.146
	1-Feb-09	L732103-3	<5.0	206	97.3	7.95	<3.0	132	0.58	1.5	69.0	<2.0	<2.0	69.0	<0.0050	<0.050	<0.50	0.076	0.266	<0.0010	<0.050
	4-Mar-09	L740333-3	<5.0	229	108	8.04	<3.0	151	0.22	3.2	74.4	<2.0	<2.0								

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Reference Sites**

Site Name	Date	ALS Sample No.	Physical Parameter						Anions and Nutrients												
			Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) (mg/L)	pH	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Total (as $\text{CaCO}_3$ ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)
15-Dec-10		L963832-3	<5.0	221	96.8	8.12	<3.0	125	0.49	4.0	71.5	<2.0	<2.0	71.5	<0.0050	<0.050	<0.50	0.076	0.241	<0.0010	<0.050
1-Feb-11		L975149-1	<5.0	231	102	7.82	<3.0	143	0.59	2.5	74.2	<2.0	<2.0	74.2	<0.0050	<0.050	<0.50	0.073	0.219	<0.0010	<0.050
5-Mar-11		L985810-1	<5.0	245	112	7.93	3.8	152	0.83	5.5	76.9	<2.0	<2.0	76.9	<0.0050	<0.050	<0.50	0.072	0.220	<0.0010	<0.050
31-Mar-11		L991777-2	<5.0	248	117	7.83	<3.0	158	0.35	4.9	53.4	<2.0	<2.0	53.4	<0.0050	<0.050	<0.50	0.067	0.220	<0.0010	0.060
2-May-11		L1002688-7	<5.0	240	112	8.07	<3.0	134	0.53	3.1	73.8	<2.0	<2.0	73.8	<0.0050	<0.050	<0.50	0.050	0.292	<0.0010	0.128
4-Jun-11		L1014013-3	<5.0	113	51.1	7.89	25.3	71	30.1	2.9	37.0	<2.0	<2.0	37.0	<0.0050	<0.050	<0.50	0.053	0.121	<0.0010	0.110
4-Jul-11		L1026874-14	<5.0	105	46.5	7.73	28.0	66	17.8	1.0	33.8	<2.0	<2.0	33.8	<0.0050	<0.050	<0.50	0.055	0.0578	<0.0010	0.082
1-Aug-11		L1039955-8	<5.0	84.8	36.5	8.36	16.7	53	17.6	<1.0	28.7	<1.0	<1.0	28.7	<0.0050	<0.050	<0.50	0.041	0.0367	<0.0010	0.063
1-Aug-11		L1039955-3	<5.0	85.2	36.3	8.36	20.0	55	16.8	<1.0	28.3	<1.0	<1.0	28.3	<0.0050	<0.050	<0.50	0.041	0.0478	<0.0010	0.062
4-Sep-11		L1054465-4	<5.0	83.3	37.1	8.19	528	77	325	3.2	34.4	<1.0	<1.0	34.4	<0.0050	<0.050	<0.50	0.030	0.0349	<0.0010	0.075
1-Oct-11		L1067383-3	<5.0	162	75.0	8.05	6.0	96	9.32	3.0	59.2	<2.0	<2.0	59.2	<0.0050	<0.050	<0.50	0.062	0.151	0.0021	<0.050
26-Oct-11		L1079029-14	<5.0	190	87.5	8.11	4.2	125	7.89	2.2	65.5	<2.0	<2.0	65.5	<0.0050	<0.050	<0.50	0.069	0.195	<0.0010	<0.050
27-Nov-11		L1091310-1	<5.0	224	102	8.17	<3.0	131	0.49	1.8	75.8	<2.0	<2.0	75.8	<0.0050	<0.050	<0.50	0.080	0.209	<0.0010	<0.050

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Reference Sites**

Site Name	Date	ALS Sample No.	Anions and Nutrients				Cyanides		Carbon Total Organic Carbon (mg/L)	Total Metals												
			Ortho Phosphate		Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)		Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	
			Total Nitrogen (mg/L)	Ortho Phosphate (mg/L)	Total Phosphate (mg/L)	Sulphate (mg/L)																
SCR	28-Mar-09	L748538-5	0.370	0.0025	0.0022	20.9	-	<0.0010	-	0.82	<0.0050	<0.00010	<0.00010	0.0159	<0.00050	<0.00050	<0.010	<0.000017	13.3	<0.00050	<0.00010	<0.00060
	5-Jul-09	L788462-5	0.104	0.0019	0.274	13.6	-	<0.0010	-	0.63	5.81	0.00089	0.00656	0.108	<0.00050	<0.00050	<0.010	0.000364	21.1	0.00480	0.00340	0.00612
	23-Aug-09	L809851-7	<0.050	0.0014	0.272	11.4	-	<0.0010	-	<0.50	7.74	0.00083	0.00905	0.160	<0.00050	<0.00050	<0.010	0.000124	20.3	0.00470	0.00396	0.00696
	31-Oct-09	L837185-15	<0.050	<0.0010	0.0068	47.1	-	<0.0010	-	0.61	0.049	0.00030	0.00039	0.0408	<0.00050	<0.00050	<0.010	0.000032	35.5	<0.00050	<0.00010	0.00025
	1-Dec-09	L845898-5	0.558	0.0024	0.0047	17.2	-	<0.0010	-	0.79	0.014	<0.00010	<0.00010	0.0140	<0.00050	<0.00050	<0.010	0.000012	12.2	<0.00050	<0.00010	0.00039
	28-Mar-10	L873293-12	0.090	<0.0010	0.0108	55.8	-	0.0018	-	1.33	0.376	0.00025	0.00091	0.0526	<0.00050	<0.00050	<0.010	0.000044	47.9	<0.00050	0.00030	0.00086
	5-Jul-10	L905787-26	<0.050	<0.0010	0.153	17.0	-	<0.0010	-	<0.50	4.44	0.00063	0.00401	0.114	<0.00050	<0.00050	0.010	0.000198	22.0	0.00318	0.00219	0.00382
	27-Aug-10	L926457-26	<0.050	0.0011	0.0860	13.6	-	<0.0010	-	0.51	0.352	0.00027	0.00156	0.0588	<0.00050	<0.00050	<0.010	0.000112	20.5	0.00043	0.00075	0.00158
	15-Nov-10	L955725-25	0.610	0.0019	0.0038	13.5	-	0.0026	-	1.57	0.024	<0.00010	<0.00010	0.0133	<0.00050	<0.00050	<0.010	<0.000010	12.4	0.00027	<0.00010	0.00069
	1-Apr-11	L991777-24	0.090	<0.0010	0.0022	71.8	-	<0.0010	-	0.53	0.017	0.00024	0.00030	0.0526	<0.00050	<0.00050	<0.010	0.000034	58.1	0.00012	<0.00010	<0.00050
	3-Jul-11	L1026874-7	0.110	<0.0010	0.232	16.4	-	<0.0010	-	<0.50	1.51	0.00039	0.00251	0.0802	<0.00010	<0.00050	<0.010	0.000180	20.3	0.00104	0.00145	0.00294
	4-Sep-11	L1054465-20	0.110	<0.0010	0.291	15.2	-	<0.0010	-	0.78	7.34	0.00094	0.00804	0.153	0.00021	<0.00050	<0.010	0.000238	21.0	0.00484	0.00396	0.00678
	27-Nov-11	L1091310-11	<0.050	<0.0010	0.0186	57.0	-	<0.0011	-	0.58	0.050	0.00032	0.00040	0.0525	<0.00020	<0.0010	<0.020	0.000034	46.7	0.00030	<0.00020	<0.010
SUNR	28-May-08	L635965-5	0.230	-	0.0789	14.3	-	0.0011	-	0.78	1.71	0.00016	0.00099	0.0425	<0.00050	<0.00050	<0.010	0.000073	19.3	0.00305	0.00123	0.00623
	5-Jun-08	L639617-2	0.180	-	0.0211	16.6	-	<0.0010	-	<0.50	0.825	0.00013	0.00055	0.0312	<0.00050	<0.00050	<0.010	0.000053	20.7	0.00176	0.00055	0.00463
	11-Jun-08	L642688-12	0.120	-	0.0120	18.6	-	<0.0010	-	<0.50	0.369	0.00012	0.00037	0.0285	<0.00050	<0.00050	<0.010	0.000042	21.1	0.00082	0.00033	0.00193
	11-Jun-08	L642688-11	0.120	-	0.0155	18.6	-	<0.0010	-	<0.50	0.472	0.00012	0.00037	0.0291	<0.00050	<0.00050	<0.010	0.000038	20.4	0.00105	0.00040	0.00199
	26-Jun-08	L650936-25	0.130	-	0.0685	16.8	-	<0.0010	-	<0.50	0.534	0.00012	0.00055	0.0339	<0.00050	<0.00050	<0.010	0.000047	17.3	0.00088	0.00058	0.00274
	3-Jul-08	L652071-2	<0.05	-	0.0830	7.6	-	<0.0010	-	<0.50	3.71	0.00024	0.00181	0.0667	<0.00050	<0.00050	<0.010	0.000142	13.7	0.00948	0.00316	0.0104
	25-Jul-08	L662220-3	<0.05	-	0.0709	11.6	-	<0.0010	-	<0.50	1.11	0.00015	0.00087	0.0320	<0.00050	<0.00050	<0.010	0.000060	14.2	0.00252	0.00098	0.00544
	21-Aug-08	L50155635	<0.02	0.0140	-	7.1	-	-	-	0.60	0.243	0.00011	0.00063	0.0198	<0.00001	0.00004	<0.05	0.000038	10.5	0.00040	0.00038	0.00251
	9-Sep-08	L682706-6	<0.05	<0.0010	0.0304	14.4	-	<0.0010	-	<0.50	1.39	0.00013	0.00062	0.0382	<0.00050	<0.00050	<0.010	0.000073	16.9	0.00207	0.00071	0.00274
	2-Oct-08	L691752-2	<0.05	0.0020	0.168	8.3	-	<0.0010	-	<0.50	4.19	0.00020	0.00153	0.0708	<0.00050	<0.00050	<0.010	0.000106	12.7	0.00827	0.00275	0.01000
	29-Oct-08	L703445-13	0.230	<0.0010	0.0352	26.3	-	<0.0010	-	0.78	0.313	0.00013	0.00049	0.0333	<0.00050	<0.00050	<0.010	0.000054	28.0	0.00102	0.00037	0.00354
	6-Dec-08	L717413-8	0.340	0.0011	0.0084	31.3	-	<0.0010	-	0.51	0.082	0.00011	0.00037	0.0340	<0.00050	<0.00050	<0.010	0.000041	30.8	0.00		

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Reference Sites**

Site Name	Date	ALS Sample No.	Anions and Nutrients				Cyanides		Carbon Total Organic Carbon (mg/L)	Total Metals												
			Ortho																			
			Total Nitrogen (mg/L)	Phosphate (as P) (mg/L)	Total Phosphate (as P) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	
	15-Dec-10	L963832-3	0.240	<0.0010	<0.0020	40.6	<0.0010	0.001	<0.50	0.58	0.045	<0.00010	0.00028	0.0436	<0.00050	<0.00050	<0.010	0.000015	37.8	0.00033	<0.00010	0.00076
	1-Feb-11	L975149-1	0.200	<0.0010	0.0029	43.8	<0.0010	<0.0010	<0.50	<0.50	0.024	0.00011	0.00024	0.0468	<0.00050	<0.00050	<0.010	0.000011	39.4	0.00017	<0.00010	0.00055
	5-Mar-11	L985810-1	0.226	<0.0010	0.0056	48.8	<0.0010	<0.0010	<0.50	<0.50	0.071	<0.00010	0.00022	0.0445	<0.00050	<0.00050	<0.010	0.000016	43.4	0.00036	<0.00010	0.00084
	31-Mar-11	L991777-2	0.280	<0.0010	<0.0020	49.7	<0.0010	0.0011	<0.50	<0.50	0.017	<0.00010	0.00020	0.0467	<0.00050	<0.00050	<0.010	0.000016	41.7	0.00015	<0.00010	0.00052
	2-May-11	L1002688-7	0.420	0.0013	0.0058	43.9	<0.0010	<0.0010	<0.50	0.68	0.016	0.00012	0.00025	0.0477	<0.00050	<0.00050	<0.010	0.000011	41.8	<0.00020	<0.00010	0.00068
	4-Jun-11	L1014013-3	0.230	<0.0010	0.0328	16.9	<0.0010	<0.0010	1.18	0.95	1.84	0.00018	0.00091	0.0452	<0.00050	<0.00050	<0.010	0.000051	18.6	0.00373	0.00122	0.00697
	4-Jul-11	L1026874-14	0.130	<0.0010	0.0512	16.5	<0.0010	<0.0010	<0.50	0.68	0.899	0.00012	0.00058	0.0322	<0.00010	<0.00050	<0.010	0.000038	16.4	0.00173	0.00069	0.00417
	1-Aug-11	L1039955-8	0.100	0.0011	0.0175	12.2	-	<0.0010	-	<0.50	0.867	0.00016	0.00066	0.0293	<0.00010	<0.00050	<0.010	0.000045	14.4	0.00175	0.00069	0.00457
	1-Aug-11	L1039955-3	0.110	<0.0010	0.0281	12.2	<0.0010	<0.0010	0.58	<0.50	0.781	0.00014	0.00065	0.0278	<0.00010	<0.00050	<0.010	0.000043	13.9	0.00161	0.00063	0.00424
	4-Sep-11	L1054465-4	0.110	0.0024	0.580	8.0	<0.0011	0.0013	<0.50	1.00	16.3	0.00061	0.00721	0.221	0.00031	<0.00050	<0.010	0.000424	26.0	0.0387	0.0127	0.0525
	1-Oct-11	L1067383-3	0.200	<0.0010	0.0107	24.2	<0.0010	<0.0011	<0.50	0.75	0.933	0.00015	0.00070	0.0445	<0.00010	<0.00050	<0.010	0.000059	28.6	0.00294	0.00090	0.00482
	26-Oct-11	L1079029-14	0.230	<0.0010	0.0069	29.9	<0.0011	<0.0011	<0.50	0.88	0.339	0.00012	0.00040	0.0448	<0.00010	<0.00050	<0.010	0.000020	33.6	0.00125	0.00042	0.00226
	27-Nov-11	L1091310-1	0.230	<0.0010	0.0042	38.8	<0.0011	0.0124	<0.50	0.64	0.034	0.00011	0.00024	0.0464	<0.00010	<0.00050	<0.010	0.000011	38.1	0.00025	<0.00010	<0.00050

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Reference Sites**

		Total Metals																					
		Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	
Site Name	Date	ALS Sample No.																					
SCR	28-Mar-09	L748538-5	<0.030	<0.000050	<0.0050	3.34	0.0008	<0.000010	0.000182	0.00052	<0.30	0.159	0.00036	2.20	<0.000010	<2.0	0.117	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	0.0014
	5-Jul-09	L788462-5	8.34	0.00354	<0.0050	3.54	0.243	0.000015	0.00118	0.00479	0.34	2.22	0.00071	9.84	0.000078	<2.0	0.122	0.00013	<0.000010	0.117	0.000180	0.0145	0.0382
	23-Aug-09	L809851-7	9.95	0.00412	<0.0050	4.06	0.339	<0.000010	0.00115	0.00465	0.31	2.54	0.00043	14.60	0.000069	<2.0	0.134	0.00013	<0.000010	0.195	0.000165	0.0153	0.0282
	31-Oct-09	L837185-15	0.095	0.00006	<0.0050	4.18	0.0070	<0.000010	0.00121	<0.00050	<0.30	0.269	0.00111	1.76	<0.000010	<2.0	0.277	<0.000010	<0.000010	<0.010	0.000092	<0.0010	0.0013
	1-Dec-09	L845898-5	<0.030	<0.000050	<0.0050	3.79	0.0028	<0.000010	0.000154	0.00052	<0.30	0.159	0.00030	2.64	<0.000010	<2.0	0.123	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0010
	28-Mar-10	L873293-12	0.631	0.00032	<0.0050	7.22	0.0314	<0.000010	0.000928	0.00078	<0.30	0.429	0.00054	2.61	<0.000010	2.1	0.402	<0.000010	<0.000010	<0.010	0.000108	<0.0010	0.0042
	5-Jul-10	L905787-26	6.18	0.00252	<0.0050	3.52	0.170	0.000018	0.00107	0.00299	<0.30	1.77	0.00036	9.79	0.000043	<2.0	0.155	<0.000010	<0.000010	0.130	0.000123	0.0100	0.0201
	27-Aug-10	L926457-26	0.668	0.00143	<0.0050	1.66	0.131	0.000016	0.000743	0.00052	<0.30	0.277	0.00023	0.96	<0.000010	<2.0	0.130	<0.000010	<0.000010	<0.010	0.000075	<0.0010	0.0067
	15-Nov-10	L955725-25	<0.030	<0.000050	<0.0050	3.23	0.0016	<0.000010	0.000137	0.00066	<0.30	0.154	0.00030	2.68	<0.000010	<2.0	0.107	<0.000010	<0.000010	<0.010	<0.000010	<0.0010	<0.0030
	1-Apr-11	L991777-24	<0.030	<0.000050	<0.0050	7.92	0.0010	<0.000010	0.00116	<0.00050	<0.30	0.356	0.00048	2.26	<0.000010	2.2	0.456	<0.000010	<0.000010	<0.010	0.000132	<0.0010	<0.0030
	3-Jul-11	L1026874-7	1.94	0.00246	0.0013	2.35	0.192	0.000014	0.000659	0.00137	<0.30	0.705	0.00032	3.46	<0.000015	<2.0	0.153	0.00004	<0.000010	0.045	0.000098	0.0033	0.0151
	4-Sep-11	L1054465-20	9.26	0.00481	0.0044	3.94	0.318	<0.000050	0.00116	0.00489	0.35	2.27	0.00035	8.99	0.000061	<2.0	0.144	0.00014	<0.000010	0.074	0.000184	0.0141	0.0368
	27-Nov-11	L1091310-11	0.064	<0.00010	<0.0010	6.37	0.0039	<0.000010	0.00129	<0.010	<0.30	0.330	0.00096	2.33	<0.000020	<2.0	0.410	<0.000020	<0.000020	<0.010	0.000113	<0.0020	<0.0060
SUNR	28-May-08	L635965-5	1.87	0.00389	<0.0050	1.74	0.0536	<0.000010	0.00412	0.00217	<0.30	1.28	0.00023	4.29	0.000016	<2.0	0.124	<0.000010	<0.000010	0.113	0.000392	0.0050	0.0099
	5-Jun-08	L639617-2	0.838	0.00121	<0.0050	1.48	0.0221	<0.000010	0.00616	0.00119	<0.30	1.13	0.00051	3.02	<0.000010	<2.0	0.161	<0.000010	<0.000010	0.057	0.000442	0.0027	0.0048
	11-Jun-08	L642688-12	0.496	0.00076	<0.0050	1.26	0.0126	<0.000010	0.00675	0.00058	<0.30	0.993	0.00033	2.23	<0.000010	<2.0	0.152	<0.000010	<0.000010	0.032	0.000497	0.0013	<0.0040
	11-Jun-08	L642688-11	0.611	0.00076	<0.0050	1.29	0.0145	<0.000010	0.00630	0.00074	<0.30	0.977	0.00022	2.47	<0.000010	<2.0	0.147	<0.000010	<0.000010	0.040	0.000486	0.0016	<0.0040
	26-Jun-08	L650936-25	0.766	0.00150	<0.0050	1.25	0.0236	<0.000010	0.00516	0.00088	<0.30	0.928	0.00023	2.33	<0.000010	<2.0	0.156	<0.000010	<0.000010	0.045	0.000422	0.0018	<0.0040
	3-Jul-08	L652071-2	4.89	0.00639	<0.0050	2.73	0.117	<0.000010	0.00341	0.00648	<0.30	1.42	0.00027	7.92	0.000058	<2.0	0.099	<0.000010	<0.000010	0.333	0.000497	0.0131	0.0184
	25-Jul-08	L662220-3	1.38	0.00240	<0.0050	1.39	0.0419	<0.000010	0.00378	0.00151	<0.30	0.831	0.00025	2.86	0.000017	<2.0	0.121	<0.000010	0.00011	0.087	0.000321	0.0036	<0.0070
	21-Aug-08	L50155635	0.281	0.00134	<0.0005	0.64	0.0210		0.00207	0.00075	0.01	0.001	0.00015	1.07	0.0240	0.0003	0.074	0.00001	0.0700	0.010	0.000154	0.0007	0.0026
	9-Sep-08	L682706-6	1.27	0.00175	<0.0050	1.50	0.0318	<0.000010	0.00460	0.00137	<0.30	1.000	0.00023	3.52	0.000016	<2.0	0.126	<0.000010	<0.000010	0.092	0.000356	0.0036	<0.0060
	2-Oct-08	L691752-2	5.31	0.00596	<0.0050	2.69	0.122	0.000011	0.00321	0.00516	<0.30	1.39	0.00014	9.91	0.000033	<2.0	0.098	<0.000010					

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Reference Sites**

Site Name	Date	ALS Sample No.	Total Metals																				
			Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
	15-Dec-10	L963832-3	0.063	0.00017	<0.0050	2.16	0.0030	<0.00010	0.00796	0.00064	<0.30	1.38	0.00046	2.47	<0.00010	<2.0	0.315	<0.00010	<0.00010	<0.010	0.000759	<0.0010	<0.0030
	1-Feb-11	L975149-1	<0.030	0.00013	<0.0050	2.27	0.0014	<0.00010	0.00752	<0.00050	<0.30	1.43	0.00049	2.35	<0.00010	<2.0	0.334	<0.00010	<0.00010	<0.010	0.000829	<0.0010	<0.0030
	5-Mar-11	L985810-1	0.105	0.00027	<0.0050	2.31	0.0040	<0.00010	0.00773	<0.00050	<0.30	1.31	0.00052	2.39	<0.00010	<2.0	0.348	<0.00010	<0.00010	0.011	0.000857	<0.0010	<0.0030
	31-Mar-11	L991777-2	<0.030	0.00008	<0.0050	2.39	0.0013	<0.00010	0.00781	<0.00050	<0.30	1.41	0.00051	2.32	<0.00010	<2.0	0.379	<0.00010	<0.00010	<0.010	0.000905	<0.0010	<0.0030
	2-May-11	L1002688-7	<0.030	0.00007	<0.0050	2.49	0.0012	<0.00010	0.00756	<0.00050	<0.30	1.56	0.00049	2.29	<0.00010	<2.0	0.385	<0.00010	<0.00010	<0.010	0.000974	<0.0010	<0.0030
	4-Jun-11	L1014013-3	2.21	0.00283	<0.0050	1.88	0.0486	<0.00010	0.00503	0.00282	<0.30	1.16	0.00023	5.35	0.00017	<2.0	0.145	<0.00010	<0.00010	0.137	0.000361	0.0053	0.0082
	4-Jul-11	L1026874-14	1.06	0.00189	0.0005	1.29	0.0303	<0.00010	0.00445	0.00129	<0.30	0.934	0.00021	2.79	<0.00015	<2.0	0.147	0.00001	<0.00010	0.067	0.000345	0.0027	0.0064
	1-Aug-11	L1039955-8	1.01	0.00350	<0.00050	1.16	0.0312	<0.00010	0.00342	0.00136	<0.30	0.773	0.00018	2.59	0.00012	<2.0	0.118	0.00001	<0.00010	0.058	0.000275	0.0027	0.0060
	1-Aug-11	L1039955-3	0.887	0.00336	<0.00050	1.08	0.0284	<0.00010	0.00332	0.00122	<0.30	0.736	0.00017	2.27	0.00011	<2.0	0.113	0.00001	<0.00010	0.049	0.000265	0.0023	0.0054
	4-Sep-11	L1054465-4	21.2	0.0334	0.0075	9.74	0.546	<0.00050	0.00363	0.0262	0.82	3.48	0.00031	27.90	0.000187	2.1	0.164	0.00019	0.00016	1.310	0.000815	0.0526	0.0623
	1-Oct-11	L1067383-3	1.46	0.00209	0.0007	1.94	0.0354	<0.00010	0.00641	0.00197	<0.30	1.30	0.00036	4.07	0.00013	<2.0	0.213	0.00002	<0.00010	0.088	0.000546	0.0036	0.0039
	26-Oct-11	L1079029-14	0.488	0.00095	0.0007	1.98	0.0146	<0.00010	0.00694	0.00093	<0.30	1.40	0.00039	2.78	<0.00010	<2.0	0.246	0.00001	<0.00010	0.030	0.000623	0.0015	<0.0030
	27-Nov-11	L1091310-1	0.034	0.00006	<0.00050	2.13	0.0012	<0.00010	0.00755	<0.00050	<0.30	1.45	0.00047	2.44	<0.00010	<2.0	0.306	<0.000010	<0.00010	<0.010	0.000731	<0.0010	<0.0030

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Reference Sites**

		Dissolved Metals																				
		Site Name	Date	ALS Sample No.	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)
SCR																						
	28-Mar-09	L748538-5	0.0024	<0.00010	<0.00010	0.0156	<0.00050	<0.00050	<0.010	<0.000017	13.2	<0.00050	<0.00010	0.00044	<0.030	<0.000050	<0.0050	3.28	0.0005	<0.000010	0.000148	0.00053
	5-Jul-09	L788462-5	0.0836	0.00023	0.00041	0.0225	<0.00050	<0.00050	<0.010	0.000019	17.2	<0.00050	<0.00010	0.00016	0.056	<0.000050	<0.0050	1.70	0.0019	<0.000010	0.000821	<0.00050
	23-Aug-09	L809851-7	0.196	0.00018	0.00049	0.0249	<0.00050	<0.00050	<0.010	<0.000010	17.1	<0.00050	<0.00010	0.00017	0.110	0.00006	<0.0050	1.40	0.0015	<0.000010	0.000836	<0.00050
	31-Oct-09	L837185-15	0.0054	0.00031	0.00028	0.0405	<0.00050	<0.00050	<0.010	0.000024	37.1	<0.00050	<0.00010	<0.00030	<0.030	<0.000050	<0.0050	4.39	0.0012	<0.000010	0.00137	<0.00050
	1-Dec-09	L845898-5	0.0046	<0.00010	<0.00010	0.0141	<0.00050	<0.00050	<0.010	<0.000010	12.6	<0.00050	<0.00010	0.00036	<0.030	<0.000050	<0.0050	3.84	0.0009	<0.000010	0.000157	0.00050
	28-Mar-10	L873293-12	0.0076	0.00019	0.00025	0.0431	<0.00050	<0.00050	<0.010	0.000025	44.6	<0.00050	<0.00010	0.00026	<0.030	<0.000050	<0.0050	6.60	0.0014	<0.000010	0.000869	<0.00050
	5-Jul-10	L905787-26	0.0396	0.00020	0.00039	0.0308	<0.00050	<0.00050	<0.010	0.000020	21.0	<0.00020	<0.00010	0.00011	<0.030	<0.000050	<0.0050	2.10	0.0005	<0.000010	0.000923	<0.00050
	27-Aug-10	L926457-26	0.105	0.00021	0.00039	0.0268	<0.00050	<0.00050	<0.010	0.000017	17.5	<0.00020	<0.00010	0.00046	0.051	<0.000050	<0.0050	1.47	0.0105	<0.000010	0.000855	<0.00050
	15-Nov-10	L955725-25	0.0099	<0.00010	<0.00010	0.0145	<0.00050	<0.00050	<0.010	<0.000010	11.8	0.00019	<0.00010	0.00054	<0.030	<0.000050	<0.0050	3.17	0.0007	<0.000010	0.000144	0.00065
	1-Apr-11	L991777-24	0.0037	0.00022	0.00031	0.0515	<0.00050	<0.00050	<0.010	0.000034	56.3	<0.00010	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	7.73	0.0003	<0.000010	0.00114	<0.00050
	3-Jul-11	L1026874-7	0.0536	0.00024	0.00037	0.0286	<0.00010	<0.00050	<0.010	0.000019	19.2	0.00013	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	1.98	0.0014	<0.000010	0.000912	<0.00050
	4-Sep-11	L1054465-20	0.491	0.00036	0.00304	0.0884	<0.00010	<0.00050	<0.010	0.000233	22.3	0.00035	0.00192	0.00378	1.240	0.00373	0.0006	2.01	0.305	<0.000010	0.000453	0.00138
	27-Nov-11	L1091310-11	<0.0060	0.00030	0.00031	0.0500	<0.00020	<0.0010	<0.020	0.000028	46.9	<0.00020	<0.00020	<0.0010	<0.030	<0.00010	0.0010	6.08	0.0005	<0.000010	0.00125	<0.0010
SUNR																						
	28-May-08	L635965-5	0.0629	0.00011	0.00039	0.0207	<0.00050	<0.00050	<0.010	<0.000030	17.9	<0.00050	<0.00010	0.00092	0.040	0.00010	<0.0050	0.93	0.0056	<0.000010	0.00433	<0.00050
	5-Jun-08	L639617-2	0.0530	0.00011	0.00031	0.0214	<0.00050	<0.00050	<0.010	0.000029	19.2	<0.00050	<0.00010	<0.00070	0.034	0.00006	<0.0050	1.03	0.0033	<0.000010	0.00585	<0.00050
	11-Jun-08	L642688-12	0.0242	<0.00010	0.00027	0.0215	<0.00050	<0.00050	<0.010	0.000032	19.6	<0.00050	<0.00010	0.00042	<0.030	<0.000050	<0.0050	1.03	0.0017	<0.000010	0.00640	<0.00050
	11-Jun-08	L642688-11	0.0255	<0.00010	0.00025	0.0212	<0.00050	<0.00050	<0.010	0.000028	19.0	<0.00050	<0.00010	0.00047	<0.030	<0.000050	<0.0050	1.00	0.0017	<0.000010	0.00635	<0.00050
	26-Jun-08	L650936-25	0.0298	0.00012	0.00029	0.0230	<0.00050	<0.00050	<0.010	0.000025	17.9	<0.00050	<0.00010	<0.00040	<0.030	<0.000050	<0.0050	0.99	0.0015	<0.000010	0.00586	<0.00050
	3-Jul-08	L652071-2	0.0365	0.00011	0.00026	0.0157	<0.00050	<0.00050	<0.010	0.000019	10.4	<0.00050	<0.00010	0.00031	<0.030	0.00006	<0.0050	0.51	0.0066	<0.000010	0.00311	<0.00050
	25-Jul-08	L662220-3	0.0301	0.00011	0.00035	0.0189	<0.00050	<0.00050	<0.010	0.000025	15.7	<0.00050	<0.00010	0.00035	<0.030	0.00005	<0.0050	0.85	0.0056	<0.000010	0.00451	<0.00050
	21-Aug-08	L50155635	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	9-Sep-08	L682706-6	0.0602	0.00011	0.00035	0.0201	<0.00050	<0.00050	<0.010	0.000024	15.0	<0.00050	<0.00010	<0.00010	0.044	0.00009	<0.0050	0.83	0.0038	<0.000010	0.00440	<0.00050
	2-Oct-08	L691752-2	0.0537	0.00010	0.00033	0.0171	<0.00050	<0.00050	<0.010	0.000022	11.4	<0.00050	<0.00010	0.00029	<0.030	0.00006	<0.0050	0.58	0.0063	<0.000010	0.00328	<0.00050</td

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Reference Sites**

Site Name	Date	ALS Sample No.	Dissolved Metals																			
			Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)
			(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
	15-Dec-10	L963832-3	0.0052	<0.00010	0.00022	0.0413	<0.00050	<0.00050	<0.010	0.000012	35.3	0.00012	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.07	0.0002	<0.000010	0.00763	<0.00050
	1-Feb-11	L975149-1	0.0040	0.00010	0.00023	0.0447	<0.00050	<0.00050	<0.010	<0.000010	37.5	0.00014	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.10	0.0002	<0.000010	0.00740	0.00057
	5-Mar-11	L985810-1	0.0035	<0.00010	0.00015	0.0424	<0.00050	<0.00050	<0.010	0.000011	41.1	0.00012	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.15	0.0002	<0.000010	0.00743	<0.00050
	31-Mar-11	L991777-2	0.0035	<0.00010	0.00018	0.0469	<0.00050	<0.00050	<0.010	0.000011	42.9	0.00011	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	2.38	0.0004	<0.000010	0.00757	<0.00050
	2-May-11	L1002688-7	0.0055	0.00011	0.00024	0.0454	<0.00050	<0.00050	<0.010	0.000012	41.0	0.00019	<0.00010	0.00053	<0.030	<0.000050	<0.0050	2.43	0.0006	<0.000010	0.00721	<0.00050
	4-Jun-11	L1014013-3	0.0295	0.00012	0.00028	0.0215	<0.00050	<0.00050	<0.010	0.000014	18.8	0.00021	<0.00010	0.00161	<0.030	0.00015	<0.0050	1.01	0.0040	<0.000010	0.00532	<0.00050
	4-Jul-11	L1026874-14	0.0281	<0.00010	0.00027	0.0204	<0.00010	<0.00050	<0.010	0.000010	17.1	0.00012	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	0.91	0.0022	<0.000010	0.00499	<0.00050
	1-Aug-11	L1039955-8	0.0453	<0.00010	0.00031	0.0172	<0.00010	<0.00050	<0.010	0.000021	13.4	0.00014	<0.00010	<0.00050	0.032	0.00021	<0.00050	0.72	0.0032	<0.000010	0.00359	<0.00050
	1-Aug-11	L1039955-3	0.0461	<0.00010	0.00032	0.0172	<0.00010	<0.00050	<0.010	0.000012	13.4	0.00018	<0.00010	<0.00050	0.033	0.00010	<0.00050	0.71	0.0031	<0.000010	0.00355	<0.00050
	4-Sep-11	L1054465-4	0.0713	0.00010	0.00047	0.0226	<0.00010	<0.00050	<0.010	0.000010	13.8	0.00014	<0.00010	0.00056	<0.030	0.00007	<0.00050	0.61	0.0141	<0.000010	0.00259	<0.00050
	1-Oct-11	L1067383-3	0.0239	0.00011	0.00029	0.0324	<0.00010	<0.00050	<0.010	0.000031	27.7	0.00014	<0.00010	0.00134	<0.030	<0.000050	<0.00050	1.42	0.0034	<0.000010	0.00614	<0.00050
	26-Oct-11	L1079029-14	0.0140	0.00011	0.00030	0.0378	<0.00010	<0.00050	<0.010	0.000011	32.1	0.00012	<0.00010	0.00058	<0.030	0.00007	<0.00050	1.76	0.0017	<0.000010	0.00691	<0.00050
	27-Nov-11	L1091310-1	0.0176	0.00010	0.00025	0.0470	<0.00010	<0.00050	<0.010	0.000013	37.1	0.00018	<0.00010	0.00053	<0.030	0.00009	<0.00050	2.17	0.0013	<0.000010	0.00729	<0.00050

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Reference Sites**

Site Name	Date	ALS Sample No.	Dissolved Metals												
			Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
SCR															
	28-Mar-09	L748538-5	<0.30	0.159	0.00040	2.23	<0.000010	<2.0	0.114	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	5-Jul-09	L788462-5	<0.30	0.185	0.00042	1.00	<0.000010	<2.0	0.104	<0.00010	<0.00010	<0.010	0.000047	<0.0010	<0.0010
	23-Aug-09	L809851-7	<0.30	0.245	0.00021	0.84	<0.000010	<2.0	0.114	<0.00010	<0.00010	<0.010	0.000046	<0.0010	<0.0010
	31-Oct-09	L837185-15	<0.30	0.273	0.00106	1.62	<0.000010	<2.0	0.287	<0.00010	<0.00010	<0.010	0.000094	<0.0010	<0.0010
	1-Dec-09	L845898-5	<0.30	0.165	0.00021	2.54	<0.000010	<2.0	0.127	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	28-Mar-10	L873293-12	<0.30	0.308	0.00050	2.05	<0.000010	<2.0	0.391	<0.00010	<0.00010	<0.010	0.000094	<0.0010	<0.0010
	5-Jul-10	L905787-26	<0.30	0.213	0.00037	0.98	<0.000010	<2.0	0.147	<0.00010	<0.00010	<0.010	0.000059	<0.0010	<0.0010
	27-Aug-10	L926457-26	<0.30	0.212	0.00024	0.72	<0.000010	<2.0	0.118	<0.00010	<0.00010	<0.010	0.000049	<0.0010	<0.0010
	15-Nov-10	L955725-25	<0.30	0.147	0.00028	2.60	<0.000010	<2.0	0.106	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0030
	1-Apr-11	L991777-24	<0.30	0.353	0.00051	2.22	<0.000010	2.2	0.445	<0.00010	<0.00010	<0.010	0.000125	<0.0010	<0.0030
	3-Jul-11	L1026874-7	<0.30	0.207	0.00036	0.90	<0.000010	<2.0	0.148	<0.000010	<0.00010	<0.010	0.000049	<0.0010	<0.0030
	4-Sep-11	L1054465-20	0.46	0.259	0.00031	1.14	<0.000010	<2.0	0.145	0.00003	<0.00010	<0.010	0.000090	0.0012	0.0179
	27-Nov-11	L1091310-11	<0.30	0.310	0.00101	2.20	<0.000020	<2.0	0.409	<0.000020	<0.00020	<0.010	0.000115	<0.0020	<0.0060
SUNR															
	28-May-08	L635965-5	<0.30	0.927	0.00021	1.41	<0.000010	<2.0	0.113	<0.00010	<0.00010	<0.010	0.000303	<0.0010	<0.0010
	5-Jun-08	L639617-2	<0.30	0.939	0.00032	1.51	<0.000010	<2.0	0.144	<0.00010	<0.00010	<0.010	0.000386	<0.0010	<0.0010
	11-Jun-08	L642688-12	<0.30	0.848	0.00029	1.51	<0.000010	<2.0	0.142	<0.00010	<0.00010	<0.010	0.000457	<0.0010	<0.0010
	11-Jun-08	L642688-11	<0.30	0.839	0.00018	1.52	<0.000010	<2.0	0.139	<0.00010	<0.00010	<0.010	0.000437	<0.0010	<0.0010
	26-Jun-08	L650936-25	<0.30	0.845	0.00023	1.35	<0.000010	<2.0	0.156	<0.00010	<0.00010	<0.010	0.000393	<0.0010	<0.0010
	3-Jul-08	L652071-2	<0.30	0.567	0.00012	0.80	<0.000010	<2.0	0.073	<0.00010	<0.00010	<0.010	0.000177	<0.0010	<0.0010
	25-Jul-08	L662220-3	<0.30	0.691	<0.00010	0.96	<0.000010	<2.0	0.135	<0.00010	0.00020	<0.010	0.000287	<0.0010	<0.0010
	21-Aug-08	L50155635	-	-	-	-	-	-	-	-	-	-	-	-	-
	9-Sep-08	L682706-6	<0.30	0.708	0.00020	1.19	<0.000010	<2.0	0.114	<0.00010	<0.00010	<0.010	0.000280	<0.0010	<0.0010
	2-Oct-08	L691752-2	<0.30	0.637	0.00018	0.82	<0.000010	<2.0	0.079	<0.00010	<0.00010	<0.010	0.000165	<0.0010	<0.0010
	29-Oct-08	L703445-13	<0.30	1.080	0.00036	1.94	<0.000010	<2.0	0.181	<0.00010	<0.00010	<0.010	0.000518	<0.0010	<0.0010
	6-Dec-08	L717413-8	<0.30	1.220	0.00047	2.07	<0.000010	<2.0	0.220	<0.00010	<0.00010	<0.010	0.000648	<0.0010	<0.0010
	6-Dec-08	L717413-7	<0.30	1.220	0.00052	2.06	<0.000010	<2.0	0.223	<0.00010	<0.00010	<0.010	0.000661	<0.0010	<0.0010
	7-Jan-09	L723686-1	<0.30	1.420	0.00052	2.35	<0.000010	<2.0	0.320	<0.00010	<0.00010	<0.010	0.000809	<0.0010	<0.0010
	1-Feb-09	L732103-3	<0.30	1.260	0.00044	2.19	<0.000010	<2.0	0.325	<0.00010	<0.00010	<0.010	0.000740	<0.0010	<0.0010
	4-Mar-09	L740333-3	<0.30	1.390	0.00045	2.42	<0.000010	<2.0	0.303	<0.00010	<0.00010	<0.010	0.000880	<0.0010	<0.0010
	29-Mar-09	L749298-8	<0.30	1.380	0.00070	2.38	<0.000010	<2.0	0.338	<0.00010	<0.00010	<0.010	0.00101	<0.0010	<0.0010
	28-Apr-09	L759011-9	<0.30	1.380	0.00045	2.26	<0.000010	<2.0	0.268	<0.00010	<0.00010	<0.010	0.000936	<0.0010	<0.0010
	27-May-09	L771080-11	<0.30	1.120	0.00040	1.80	<0.000010	<2.0	0.166	<0.00010	<0.00010	<0.010	0.000493	<0.0010	<0.0010
	2-Jul-09	L787346-26	<0.30	0.926	0.00026	1.47	<0.000010	<2.0	0.199	<0.00010	<0.00010	<0.010	0.000419	<0.0010	<0.0010
	4-Aug-09	L801967-12	<0.30	0.584	<0.00010	1.40	<0.000010	<2.0	0.072	<0.00010	<0.00010	0.022	0.000146	0.0013	<0.0030
	22-Aug-09	L809879-24	<0.30	0.509	<0.00010	0.82	<0.000010	<2.0	0.079	<0.00010	<0.00010	<0.010	0.000153	<0.0010	<0.0010
	22-Aug-09	L809879-6	<0.30	0.533	0.00012	0.95	<0.000010	<2.0	0.081	<0.00010	<0.00010	<0.010	0.00		

**Appendix 4-1. Stream Water Quality Data, KSM Project, 2007 to 2011**

**Reference Sites**

Site Name	Date	ALS Sample No.	Dissolved Metals												
			Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
15-Dec-10		L963832-3	<0.30	1.350	0.00044	2.31	<0.000010	<2.0	0.304	<0.000010	<0.000010	<0.010	0.000734	<0.0010	<0.0030
1-Feb-11		L975149-1	<0.30	1.330	0.00049	2.30	<0.000010	<2.0	0.327	<0.000010	<0.000010	<0.010	0.000813	<0.0010	<0.0030
5-Mar-11		L985810-1	<0.30	1.240	0.00046	2.22	<0.000010	<2.0	0.336	<0.000010	<0.000010	<0.010	0.000825	<0.0010	<0.0030
31-Mar-11		L991777-2	<0.30	1.410	0.00051	2.29	<0.000010	<2.0	0.373	<0.000010	<0.000010	<0.010	0.000900	<0.0010	<0.0030
2-May-11		L1002688-7	<0.30	1.530	0.00051	2.17	<0.000010	<2.0	0.371	<0.000010	<0.000010	<0.010	0.000904	<0.0010	<0.0030
4-Jun-11		L1014013-3	<0.30	0.862	0.00026	1.31	<0.000010	<2.0	0.143	<0.000010	<0.000010	<0.010	0.000326	<0.0010	<0.0030
4-Jul-11		L1026874-14	<0.30	0.773	0.00023	1.19	<0.000010	<2.0	0.154	<0.000010	<0.000010	<0.010	0.000321	<0.0010	<0.0030
1-Aug-11		L1039955-8	<0.30	0.605	0.00018	1.01	<0.000010	<2.0	0.108	<0.000010	<0.000010	<0.010	0.000217	<0.0010	<0.0030
1-Aug-11		L1039955-3	<0.30	0.604	0.00017	1.01	<0.000010	<2.0	0.107	<0.000010	<0.000010	<0.010	0.000216	<0.0010	<0.0030
4-Sep-11		L1054465-4	<0.30	0.780	0.00014	0.92	<0.000010	<2.0	0.094	<0.000010	<0.000010	<0.010	0.000240	<0.0010	<0.0030
1-Oct-11		L1067383-3	<0.30	1.160	0.00035	1.85	<0.000010	<2.0	0.200	<0.000010	<0.000010	<0.010	0.000495	<0.0010	<0.0030
26-Oct-11		L1079029-14	<0.30	1.320	0.00039	2.10	<0.000010	<2.0	0.237	<0.000010	<0.000010	<0.010	0.000612	<0.0010	<0.0030
27-Nov-11		L1091310-1	<0.30	1.470	0.00047	2.32	<0.000010	<2.0	0.294	<0.000010	<0.000010	<0.010	0.000732	<0.0010	<0.0030

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## Appendix 4-2

Lake Water Quality Data, KSM Project, 2008 to 2010

**Appendix 4-2. Lake Water Quality Data, KSM Project, 2008-2010**

Site Name	Depth	Date	ALS Sample No.	Physical Parameter							Anions and Nutrients											
				Colour, True (colour unit)	Conductivity ( $\mu\text{S}/\text{cm}$ )	Hardness (as $\text{CaCO}_3$ ) (mg/L)	pH (pH unit)	Total Suspended Solids (mg/L)	Total Dissolved Solids (mg/L)	Turbidity (NTU)	Acidity (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Bicarbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Carbonate (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Hydroxide (as $\text{CaCO}_3$ ) (mg/L)	Alkalinity, Total (as $\text{CaCO}_3$ ) (mg/L)	Ammonia (as N) (mg/L)	Bromide (Br) (mg/L)	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate (as N) (mg/L)	Nitrite (as N) (mg/L)	
KGL			L683687-11	<5.0	109	52.0	7.86	17.2	71	30.4	1.4	38.4	<2.0	<2.0	38.4	<0.0050	<0.050	<0.50	0.039	<0.0050	<0.0010	
LAL	top	19-Aug-09	L809309-3	<5.0	117	54.9	7.50	12	88	52.4	2.9	44.1	<2.0	<2.0	44.1	<0.0050	<0.050	<0.50	0.044	<0.0050	<0.0010	
	top	19-Aug-09	L809309-1	<5.0	118	55.2	8.02	11	83	49.1	2.4	43.7	<2.0	<2.0	43.7	<0.0050	<0.050	<0.50	0.045	<0.0050	<0.0010	
	mid	19-Aug-09	L809309-2	<5.0	112	49.9	8.02	11	85	53.9	2.3	41.3	<2.0	<2.0	41.3	<0.0050	<0.050	<0.50	0.042	<0.0050	<0.0010	
		10-Sep-08	L683687-13	<5.0	170	75.4	7.89	14.7	107	6.15	1.5	44.3	<2.0	<2.0	44.3	0.0071	<0.050	<0.50	0.089	<0.0050	<0.0010	
SUL	top	15-Aug-09	L806458-2	<5.0	176	80.6	7.59	<3.0	101	1.01	2.9	44.9	<2.0	<2.0	44.9	0.0060	<0.050	<0.50	0.058	<0.0050	<0.0010	
	mid	15-Aug-09	L806458-3	<5.0	179	80.8	7.96	<3.0	101	1.24	2.3	47.8	<2.0	<2.0	47.8	0.0144	<0.050	<0.50	0.058	<0.0050	<0.0010	
		10-Sep-08	L683687-12	<5.0	95.3	46.4	7.70	36.7	70	57.2	1.4	22.0	<2.0	<2.0	22.0	<0.0050	<0.050	<0.50	<0.020	0.0113	<0.0010	
TDL	top	16-Aug-09	L807858-1	<5.0	71.6	31.2	7.79	47.2	37	57.2	<1.0	18.1	<2.0	<2.0	18.1	<0.0050	<0.050	<0.50	<0.020	0.0090	<0.0010	
	mid	16-Aug-09	L807858-2	<5.0	76.1	34.3	7.80	27.7	49	46.8	<1.0	18.2	<2.0	<2.0	18.2	<0.0050	<0.050	<0.50	<0.020	0.0087	<0.0010	
		17-Aug-09	L807858-3	<5.0	139	66.5	8.04	3.7	75	1.32	<1.0	48.9	<2.0	<2.0	48.9	<0.0050	<0.050	<0.50	0.056	<0.0050	<0.0010	
	mid	17-Aug-09	L807858-4	5.7	150	70.9	7.93	<3.0	81	1.12	1.1	53.3	<2.0	<2.0	53.3	<0.0050	<0.050	<0.50	0.053	<0.0050	<0.0010	
	top	25-Aug-10	L927354-3	<5.0	143	66.2	7.98	<3.0	95	0.44	4.1	54.8	<1.0	<1.0	54.8	<0.0050	<0.050	<0.50	0.063	<0.0050	<0.0010	
	deep	25-Aug-10	L927354-4	5.9	155	71.9	7.82	6.6	94	1.78	5.7	62.6	<2.0	<2.0	62.6	<0.0050	<0.050	<0.50	0.061	<0.0050	<0.0010	

Site Name	Depth	Date	ALS Sample No.	Anions and Nutrients (cont'd)					Cyanides			Carbon		Total Metals								
				Total Kjeldahl Nitrogen (mg/L)	Total Nitrogen (mg/L)	Ortho Phosphate (as P) (mg/L)	Total Phosphate (as P) (mg/L)	Sulphate ( $\text{SO}_4$ ) (mg/L)	Cyanide, Weak Acid Dissociable (mg/L)	Cyanide, Total (mg/L)	Thiocyanate (mg/L)	Total Organic Carbon (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	
KGL	top	19-Aug-09	L809309-3	<0.050	<0.05	<0.0010	0.0157	14.4	-	<0.0010	-	<0.50	1.41	0.00043	0.00125	0.0674	<0.00050	<0.00050	<0.010	0.000028	19.4	
	top	19-Aug-09	L809309-1	<0.050	<0.050	<0.0010	<0.010	12.6	-	<0.0010	-	<0.50	2.34	0.00022	0.00129	0.0976	<0.00050	<0.00050	<0.010	0.000036	21.3	
	mid	19-Aug-09	L809309-2	<0.050	<0.050	<0.0010	<0.010	12.5	-	0.0012	-	<0.50	1.75	0.00019	0.00103	0.0885	<0.00050	<0.00050	<0.010	0.000033	21.5	
		10-Sep-08	L683687-13	<0.050	<0.05	<0.0010	0.0308	37.7	-	0.0015	-	1.12	0.162	<0.00010	0.00032	0.0139	<0.00050	<0.00050	<0.010	<0.000017	21.2	
LAL	top	15-Aug-09	L806458-2	0.120	0.120	<0.0010	0.0044	39.7	-	<0.0010	-	1.01	0.0139	<0.00010	0.00020	0.0159	<0.00050	<0.00050	<0.010	<0.000010	22.3	
	mid	15-Aug-09	L806458-3	0.150	0.150	0.0011	0.0074	37.3	-	<0.0010	-	1.19	0.00990	<0.00010	0.00020	0.0167	<0.00050	<0.00050	<0.010	<0.000010	22.1	
		10-Sep-08	L683687-12	<0.050	<0.05	<0.0010	0.0477	21.6	-	<0.0010	-	<0.50	2.30	0.00136	0.00409	0.0698	<0.00050	<0.00050	<0.010	0.000077	15.4	
SUL	top	16-Aug-09	L807858-1	<0.050	<0.050	0.0012	0.0039	14.0	-	<0.0010	-	<0.50	1.96	0.00128	0.00376	0.0690	<0.00050	<0.00050	<0.010	0.000072	12.0	
	mid	16-Aug-09	L807858-2	<0.050	<0.050	0.0012	<0.0020	15.8	-	<0.0010	-	<0.50	1.46	0.00111	0.00273	0.0591	<0.00050	<0.00050	<0.010	0.000059	12.6	
		17-Aug-09	L807858-3	0.060	0.060	<																

**Appendix 4-2. Lake Water Quality Data, KSM Project, 2008-2010**

Site Name	Depth	Date	ALS Sample No.	Total Metals																			
				Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)
KGL																							
LAL	top	10-Sep-08	L683687-11	<0.00050	0.00039	0.00101	1.02	0.000477	<0.00050	1.26	0.0308	<0.000010	0.000894	0.00064	<0.30	0.852	0.00023	2.72	0.000091	<2.0	0.092	<0.00010	<0.00010
	top	19-Aug-09	L809309-3	0.00089	0.00073	0.00157	1.82	0.00110	<0.0050	1.35	0.0526	<0.000010	0.000599	0.00067	<0.30	1.15	0.00026	4.40	0.000026	<2.0	0.082	<0.00010	<0.00010
	top	19-Aug-09	L809309-1	0.00078	0.00059	0.00163	1.37	0.000843	<0.0050	1.22	0.0489	<0.000010	0.000519	0.00072	<0.30	0.883	<0.00010	3.58	0.000018	<2.0	0.080	<0.00010	<0.00010
	mid	19-Aug-09	L809309-2	0.00081	0.00080	0.00142	1.78	0.000854	<0.0050	1.27	0.0597	<0.000010	0.000531	0.00069	<0.30	1.06	0.00018	4.15	0.000026	<2.0	0.077	<0.00010	<0.00010
SUL	top	10-Sep-08	L683687-13	0.00057	0.00027	<0.0010	0.277	0.000120	<0.0050	5.73	0.0274	<0.000010	0.000214	0.00148	<0.30	0.185	0.00041	1.83	0.000069	2.1	0.188	<0.00010	<0.00010
	top	15-Aug-09	L806458-2	<0.00050	<0.00010	0.00036	<0.030	0.000059	<0.0050	5.88	0.0065	<0.000010	0.000228	0.00063	<0.30	0.151	0.00061	2.07	<0.000010	2.0	0.216	<0.00010	<0.00010
	mid	15-Aug-09	L806458-3	<0.00050	<0.00010	0.00033	<0.030	<0.000050	<0.0050	5.50	0.0123	<0.000010	0.000212	0.00059	<0.30	0.196	0.00061	2.13	<0.000010	2.1	0.208	<0.00010	<0.00010
	top	16-Aug-09	L807858-1	0.00171	0.00114	0.00901	2.39	0.00257	<0.0050	1.93	0.0874	0.000017	0.000850	0.00130	<0.30	0.997	0.00020	4.23	0.000131	<2.0	0.080	<0.00010	<0.00010
TDL	top	16-Aug-09	L807858-1	0.00120	0.00102	0.00970	2.07	0.00251	<0.0050	1.56	0.0936	0.000012	0.000697	0.00123	<0.30	0.809	<0.00010	3.99	0.000039	<2.0	0.067	<0.00010	<0.00010
	mid	16-Aug-09	L807858-2	0.00088	0.00082	0.0105	1.56	0.00217	<0.0050	1.38	0.0838	<0.000010	0.000637	0.00079	<0.30	0.661	<0.00010	3.37	0.000026	<2.0	0.073	<0.00010	<0.00010
	top	17-Aug-09	L807858-3	<0.00050	<0.00010	0.00049	<0.030	0.000124	<0.0050	5.49	0.0046	<0.000010	0.000062	0.00064	<0.30	0.175	<0.00010	2.38	<0.000010	<2.0	0.258	<0.00010	<0.00010
	mid	17-Aug-09	L807858-4	<0.00050	<0.00010	0.00014	<0.030	<0.000050	<0.0050	6.08	0.0097	<0.000010	0.000061	0.00060	<0.30	0.197	<0.00010	2.28	<0.000010	2.1	0.273	<0.00010	<0.00010
LAL	top	25-Aug-10	L927354-3	<0.00050	<0.00010	0.00019	<0.030	<0.000050	<0.0050	5.73	0.0043	<0.000010	0.000089	0.00053	<0.30	0.175	<0.00020	2.29	<0.000010	2.0	0.279	<0.00010	<0.00010
	deep	25-Aug-10	L927354-4	<0.00050	<0.00010	0.00025	0.125	0.000198	<0.0050	6.47	0.101	<0.000010	0.000111	0.00064	<0.30	0.234	<0.000020	2.72	<0.000010	2.2	0.307	<0.00010	<0.00010

Site Name	Depth	Date	ALS Sample No.	Total Metals				Dissolved Metals															
				Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Cadmium (Cd) (mg/L)	Calcium (Ca) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)	Lithium (Li) (mg/L)	Magnesium (Mg) (mg/L)
KGL	top	10-Sep-08	L683687-11	0.025	0.000123	0.0033	0.0041	0.0166	0.00036	0.00060	0.0442	<0.00050	<0.00050	<0.010	<0.000017	19.3	<0.00050	<0.00010	<0.00050	<0.030	<0.000050	<0.0050	0.95
	top	19-Aug-09	L809309-3	0.045	0.000103	0.0053	0.0074	0.0134	<0.00010	0.00020	0.0518	<0.00050	<0.00050	<0.010	<0.000010	20.7	<0.00050	<0.00010	<0.00020	<0.030	<0.000050	<0.0050	0.77
	top	19-Aug-09	L809309-1	0.036	0.000092	0.0038	0.0056	0.0300	<0.00010	0.00021	0.0518	<0.00050	<0.00050	<0.010	<0.000010	20.8	<0.00050	<0.00010	<0.00020	<0.030	<0.000050	<0.0050	0.78
	mid	19-Aug-09	L809309-2	0.044	0.000090	0.0050	0.0063	0.0371	<0.00010	0.00019	0.0493	<0.00050	<0.00050	<0.010	<0.000010	18.8	<0.00050	<0.00010	<0.00020	<0.030	<0.000050	<0.0050	0.70
SUL	top	10-Sep-08	L683687-13	<0.010	<0.000010	<0.0010	0.0017	0.0026	<0.00010	0.00021	0.0115	<0.00050	<0.00050	<0.010	<0.000017	21.0	<0.00050	<0.00010	<0.00040	<0.030			

Appendix 4-2. Lake Water Quality Data, KSM Project, 2008-2010

Site Name	Depth	Date	ALS Sample No.	Dissolved Metals																
				Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Phosphorus (P) (mg/L)	Potassium (K) (mg/L)	Selenium (Se) (mg/L)	Silicon (Si) (mg/L)	Silver (Ag) (mg/L)	Sodium (Na) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
KGL																				
KGL		10-Sep-08	L683687-11	0.0019	<0.000010	0.000905	<0.00050	<0.30	0.307	0.00020	0.650	<0.000010	<2.0	0.092	<0.00010	<0.00010	<0.010	0.000098	<0.0010	<0.0010
	top	19-Aug-09	L809309-3	0.0062	<0.000010	0.000573	<0.00050	<0.30	0.223	0.00021	0.716	<0.000010	<2.0	0.080	<0.00010	<0.00010	<0.010	0.000059	<0.0010	<0.0010
	top	19-Aug-09	L809309-1	0.0064	<0.000010	0.000570	<0.00050	<0.30	0.231	0.00022	0.742	<0.000010	<2.0	0.080	<0.00010	<0.00010	<0.010	0.000060	<0.0010	<0.0010
	mid	19-Aug-09	L809309-2	0.0033	<0.000010	0.000517	<0.00050	<0.30	0.212	0.00013	0.693	<0.000010	<2.0	0.074	<0.00010	<0.00010	<0.010	0.000060	<0.0010	<0.0010
LAL																				
LAL		10-Sep-08	L683687-13	0.0001	<0.000010	0.000241	0.00053	<0.30	0.153	0.00056	1.63	<0.000010	2.1	0.187	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	top	15-Aug-09	L806458-2	<0.000050	<0.000010	0.000230	<0.00050	<0.30	0.157	0.00071	2.04	<0.000010	2.0	0.216	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	mid	15-Aug-09	L806458-3	0.0001	<0.000010	0.000242	<0.00050	<0.30	0.210	0.00053	2.06	<0.000010	2.0	0.212	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
SUL																				
SUL		10-Sep-08	L683687-12	0.0008	<0.000010	0.000749	<0.00050	<0.30	0.171	0.00010	0.561	<0.000010	<2.0	0.079	<0.00010	<0.00010	<0.010	0.000018	<0.0010	<0.0010
	top	16-Aug-09	L807858-1	0.0075	<0.000010	0.000536	<0.00050	<0.30	0.145	<0.00010	0.433	<0.000010	<2.0	0.061	<0.00010	<0.00010	<0.010	0.000018	<0.0010	<0.0010
	mid	16-Aug-09	L807858-2	0.0170	<0.000010	0.000585	<0.00050	<0.30	0.152	0.00010	0.489	<0.000010	<2.0	0.068	<0.00010	<0.00010	<0.010	0.000018	<0.0010	0.0011
TDL																				
TDL	top	17-Aug-09	L807858-3	0.0001	<0.000010	0.000061	0.00066	<0.30	0.177	<0.00010	2.43	<0.000010	2.0	0.263	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	0.0010
	mid	17-Aug-09	L807858-4	0.0003	<0.000010	0.000065	0.00054	<0.30	0.199	<0.00010	2.26	<0.000010	2.1	0.283	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	top	25-Aug-10	L927354-3	0.0001	<0.000010	0.000075	<0.00050	<0.30	0.162	<0.00020	2.22	<0.000010	2.0	0.261	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010
	deep	25-Aug-10	L927354-4	0.0485	<0.000010	0.000093	0.00055	<0.30	0.199	<0.00020	2.57	<0.000010	2.2	0.284	<0.00010	<0.00010	<0.010	<0.000010	<0.0010	<0.0010

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## Appendix 4.1-1

### Stream Hydrocarbon Data, KSM Project 2008

**Appendix 4.1-1. Stream Hydrocarbon Data, KSM Project, 2008**

Site Name	TEC2	SC2
Date Sampled	10-Sep-08	10-Sep-08
ALS Sample ID	L683687-18	L683687-2
Matrix	Water	Water
<b>Hydrocarbons</b>		
EPH10-19	<0.25	<0.25
EPH19-32	<0.25	<0.25
LEPH	<0.25	<0.25
HEPH	<0.25	<0.25
<b>Polycyclic Aromatic Hydrocarbons</b>		
Acenaphthene	<0.000050	<0.000050
Acenaphthylene	<0.000050	<0.000050
Acridine	<0.000050	<0.000050
Anthracene	<0.000050	<0.000050
Benz(a)anthracene	<0.000050	<0.000050
Benzo(a)pyrene	<0.000010	<0.000010
Benzo(b)fluoranthene	<0.000050	<0.000050
Benzo(g,h,i)perylene	<0.000050	<0.000050
Benzo(k)fluoranthene	<0.000050	<0.000050
Chrysene	<0.000050	<0.000050
Dibenz(a,h)anthracene	<0.000050	<0.000050
Fluoranthene	<0.000050	<0.000050
Fluorene	<0.000050	<0.000050
Indeno(1,2,3-c,d)pyrene	<0.000050	<0.000050
2-Methylnaphthalene	-	-
Naphthalene	<0.000050	<0.000050
Phenanthrene	<0.000050	<0.000050
Pyrene	<0.000050	<0.000050
Quinoline	<0.000050	<0.000050
d10-Acenaphthene (SS)	97	94
d9-Acidine (SS) (	93	86
d12-Chrysene (SS)	82	77
d8-Naphthalene (SS)	95	94
d10-Phenanthrene (SS)	96	92

Notes:

All values are in mg/L unless otherwise noted

< indicates value is below the analytical detection limit

- indicates the parameter was not analyzed

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## **Appendix 4.1-2**

### **Summary of Stream Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2007 to 2011**

Appendix 4.1-2a. Summary of Stream Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2007

Appendix 4.1-2b. Summary of Stream Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2008

Appendix 4.1-2c. Summary of Stream Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2009

Appendix 4.1-2d. Summary of Stream Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2010

Appendix 4.1-2e. Summary of Stream Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2011

**Appendix 4.1-2a. Summary of Stream Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2007**

Parameter Guideline Jurisdiction	pH 6.5 - 9 CCME = BC Maximum	Fluoride (F) Hardness-dependent BC Maximum	Fluoride (F) 0.12 mg/L CCME	Sulphate (SO <sub>4</sub> ) 100 mg/L BC Maximum	Aluminum (Al) pH-dependent CCME	Dissolved Aluminum (Al) pH-dependent BC 30-d Average	Arsenic (As) 0.005 mg/L CCME = BC Maximum	Cadmium (Cd) Hardness-dependent CCME = BC Maximum
Watershed	N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
Teigen Creek	0	-	-	-	-	-	-	-
Bell-Irving River	0	-	-	-	-	-	-	-
Treaty Creek	0	-	-	-	-	-	-	-
SCR - Reference Site	0	-	-	-	-	-	-	-
SUNR - Reference Site	0	-	-	-	-	-	-	-
Unuk River	0	-	-	-	-	-	-	-
Mitchell Creek	5	40	-	0	1.3	20	-	100
Sulphurets Creek	5	0	-	0	-	0	-	100
Bowser	0	-	-	-	-	-	-	-

Parameter Guideline Jurisdiction	Chromium (Cr) 0.001 mg/L CCME = BC Maximum	Cobalt (Cu) 0.004 mg/L BC 30-d Average	Copper (Cu) Hardness-dependent BC 30-d Average	Copper (Cu) Hardness-dependent CCME	Iron (Fe) 1.0 mg/L BC Maximum	Iron (Fe) 0.3 mg/L CCME	Dissolved Iron (Fe) 0.35 mg/L BC Maximum	Lead (Pb) Hardness-dependent BC 30-d Average
Watershed	N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
Teigen Creek	0	-	-	-	-	-	-	-
Bell-Irving River	0	-	-	-	-	-	-	-
Treaty Creek	0	-	-	-	-	-	-	-
SCR - Reference Site	0	-	-	-	-	-	-	-
SUNR - Reference Site	0	-	-	-	-	-	-	-
Unuk River	0	-	-	-	-	-	-	-
Mitchell Creek	5	60	3.2	60	1.8	80	81.2	80
Sulphurets Creek	5	80	3.7	40	-	100	36.5	100
Bowser	0	-	-	-	-	-	-	-

Parameter Guideline Jurisdiction	Lead (Pb) Hardness-dependent CCME	Manganese (Mn) Hardness-dependent BC Maximum	Mercury (Hg) 0.00002 mg/L BC 30-d Average	Mercury (Hg) 0.000026 mg/L CCME	Nickle (Ni) Hardness-dependent BC Maximum	Nickle (Ni) Hardness-dependent CCME	Selenium (Se) 0.001 mg/L CCME	Selenium (Se) 0.002 mg/L BC 30-d Average
Watershed	N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
Teigen Creek	0	-	-	-	-	-	-	-
Bell-Irving River	0	-	-	-	-	-	-	-
Treaty Creek	0	-	-	-	-	-	-	-
SCR - Reference Site	0	-	-	-	-	-	-	-
SUNR - Reference Site	0	-	-	-	-	-	-	-
Unuk River	0	-	-	-	-	-	-	-
Mitchell Creek	5	60	3.2	0	1.6	40	1.6	40
Sulphurets Creek	5	60	2.7	0	-	60	-	60
Bowser	0	-	-	-	-	-	-	-

Parameter Guideline Jurisdiction	Silver (Ag) Hardness-dependent BC 30-d Average	Silver (Ag) 0.0001 mg/L CCME	Thallium (Tl) 0.0003 mg/L BC Maximum	Thallium (Tl) 0.0008 mg/L CCME	Zinc (Zn) Hardness-dependent BC 30-d Average	Zinc (Zn) 0.03 mg/L CCME
Watershed	N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
Teigen Creek	0	-	-	-	-	-
Bell-Irving River	0	-	-	-	-	-
Treaty Creek	0	-	-	-	-	-
SCR - Reference Site	0	-	-	-	-	-
SUNR - Reference Site	0	-	-	-	-	-
Unuk River	0	-	-	-	-	-
Mitchell Creek	5	40	-	60	1.6	0
Sulphurets Creek	5	80	2.4	40	1.2	0
Bowser	0	-	-	-	-	-

#### **Appendix 4.1-2b. Summary of Stream Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2008**

Parameter Guideline Jurisdiction	pH 6.5 - 9 CCME = BC Maximum	Fluoride (F) Hardness- dependent BC Maximum	Fluoride (F) 0.12 mg/L CCME	Sulphate (SO <sub>4</sub> ) 100 mg/L BC Maximum	Aluminum (Al) pH-dependent CCME	Dissolved Aluminum (Al) pH-dependent BC 30-d Average	Arsenic (As) 0.005 mg/L CCME = BC Maximum	Cadmium (Cd) Hardness-dependent CCME = BC Maximum							
Watershed	N	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor
Teigen Creek	43	0	-	0	-	0	-	0	-	44	2.0	7	-	0	-
Bell-Irving River	4	0	-	0	-	0	-	0	-	50	9.0	50	-	0	-
Treaty Creek	37	0	-	0	-	0	-	0	-	70	24.9	25	-	16	-
SCR - Reference Site	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUNR - Reference Site	12	0	-	0	-	8	-	0	-	85	12.5	33	-	0	-
Unuk River	34	0	-	0	-	0	-	0	-	67	11.8	26	-	8	-
Mitchell Creek	31	32	-	0	-	32	2.0	28	-	94	63.6	35	47.7	31	5.4
Sulphurets Creek	32	0	-	0	-	25	-	9	-	94	45.2	32	1.0	38	2.0
Bowser	2	0	-	0	-	0	-	0	-	50	6.3	0	-	0	-

Parameter Guideline Jurisdiction	Chromium (Cr) 0.001 mg/L CCME = BC Maximum		Cobalt (Cu) 0.004 mg/L BC 30-d Average		Copper (Cu) Hardness-dependent BC 30-d Average		Copper (Cu) Hardness-dependent CCME		Iron (Fe) 1.0 mg/L BC Maximum		Iron (Fe) 0.3 mg/L CCME		Dissolved Iron (Fe) 0.35 mg/L BC Maximum		Lead (Pb) Hardness-dependent BC 30-d Average		
Watershed	N	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor
Teigen Creek	43	28	-	0	-	9	-	12	-	5	-	26	-	0	-	0	-
Bell-Irving River	4	50	2.4	0	-	25	-	50	-	50	1.2	50	3.8	0	-	0	-
Treaty Creek	37	57	4.1	14	-	41	2.0	51	2.7	51	3.3	57	10.9	0	-	0	-
SCR - Reference Site	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUNR - Reference Site	12	69	2.5	0	-	62	1.3	69	1.9	38	1.4	77	4.7	0	-	0	-
Unuk River	34	42	1.7	6	-	50	9.0	50	11.9	47	2.0	53	6.5	0	-	0	-
Mitchell Creek	31	50	1.6	41	2.1	66	70.5	81	132.5	72	16.1	94	53.5	32	16.5	0	-
Sulphurets Creek	32	75	4.4	31	1.0	97	26.9	97	43.0	88	8.4	94	28.1	6	-	0	-
Bowser	2	50	-	0	-	50	-	50	-	50	-	50	2.0	0	-	0	-

Parameter Guideline Jurisdiction	Lead (Pb) Hardness-dependent CCME		Manganese (Mn) Hardness-dependent BC Maximum		Mercury (Hg) 0.00002 mg/L BC 30-d Average		Mercury (Hg) 0.000026 mg/L CCME		Nickel (Ni) Hardness-dependent BC Maximum		Nickel (Ni) Hardness-dependent CCME		Selenium (Se) 0.001 mg/L CCME		Selenium (Se) 0.002 mg/L BC 30-d Average		
Watershed	N	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor
Teigen Creek	43	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
Bell-Irving River	4	0	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
Treaty Creek	37	30	1.1	0	-	17	-	17	-	3	-	0	-	11	-	0	-
SCR - Reference Site	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUNR - Reference Site	12	54	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
Unuk River	34	28	-	0	-	6	-	6	-	0	-	0	-	11	-	0	-
Mitchell Creek	31	38	1.5	13	-	16	-	16	-	0	-	0	-	94	3.6	72	1.8
Sulphurets Creek	32	63	1.5	0	-	16	-	16	-	0	-	0	-	53	1.3	25	-
Bowser	2	0	-	0	-	0	-	0	-	0	-	0	-	50	-	0	-

**Appendix 4.1-2c. Summary of Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2009**

Parameter Guideline Jurisdiction	pH 6.5 - 9 CCME = BC Maximum		Fluoride (F) Hardness-dependent BC Maximum		Fluoride (F) 0.12 mg/L CCME		Sulphate (SO <sub>4</sub> ) 100 mg/L BC Maximum		Aluminum (Al) pH-dependent CCME		Dissolved Aluminum (Al) pH-dependent BC Maximum		Arsenic (As) 0.005 mg/L CCME = BC Maximum		Cadmium (Cd) Hardness-dependent CCME = BC Maximum		
Watershed	N	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor
Teigen Creek	47	2	-	0	-	0	-	0	-	51	5.0	15	-	0	-	32	-
Bell-Irving River	9	0	-	0	-	0	-	0	-	56	7.0	22	-	0	-	44	-
Treaty Creek	46	0	-	0	-	0	-	4	-	65	23.7	30	-	20	-	59	4.8
SCR - Reference Site	5	0	-	0	-	0	-	0	-	40	27.2	40	1.2	40	-	40	5.1
SUNR - Reference Site	13	0	-	0	-	0	-	0	-	54	7.5	15	1.1	0	-	85	1.9
Unuk River	49	0	-	0	-	0	-	0	-	67	16.3	33	1.2	12	-	76	9.1
Mitchell Creek	37	19	-	0	-	19	1.4	27	-	73	31.9	28	15.4	24	3.1	92	79.7
Sulphurets Creek	34	0	-	0	-	29	-	38	-	94	27.6	32	-	44	1.3	100	33.9
Bowser	4	0	-	0	-	0	-	0	-	75	19.2	25	-	0	-	75	2.9

Parameter Guideline Jurisdiction	Chromium (Cr) 0.001 mg/L CCME = BC Maximum		Cobalt (Cu) 0.004 mg/L BC 30-d Average		Copper (Cu) Hardness-dependent BC 30-d Average		Copper (Cu) Hardness-dependent CCME		Iron (Fe) 1.0 mg/L BC Maximum		Iron (Fe) 0.3 mg/L CCME		Dissolved Iron (Fe) 0.35 mg/L BC Maximum		Lead (Pb) Hardness-dependent BC 30-d Average		
Watershed	N	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor
Teigen Creek	47	38	1.8	0	-	17	-	17	-	17	-	43	2	0	-	0	-
Bell-Irving River	9	56	2.1	0	-	44	-	44	-	22	-	56	2	0	-	0	-
Treaty Creek	46	57	4.3	17	-	39	1.8	41	2.5	41	3.1	61	10	0	-	0	-
SCR - Reference Site	5	60	2.1	0	-	40	1.1	40	1.3	40	3.7	40	12	0	-	0	-
SUNR - Reference Site	13	54	2.0	0	-	46	1.1	46	1.6	38	-	46	3	8	-	0	-
Unuk River	49	51	2.7	6	-	49	6.1	51	7.8	43	2.2	61	7	2	-	0	-
Mitchell Creek	37	43	1.6	30	1.3	62	48.4	65	82.2	65	8.4	73	28	14	5.4	0	-
Sulphurets Creek	34	50	2.3	26	-	94	22.5	94	37.4	79	5.2	82	17	0	-	0	-
Bowser	4	50	1.9	0	-	50	1.8	50	2.6	50	2.2	75	7	0	-	0	-

Parameter Guideline Jurisdiction	Lead (Pb) Hardness-dependent CCME		Manganese (Mn) Hardness-dependent BC Maximum		Mercury (Hg) 0.00002 mg/L BC 30-d Average		Mercury (Hg) 0.000026 mg/L CCME		Nickle (Ni) Hardness-dependent BC Maximum		Nickle (Ni) Hardness-dependent CCME		Selenium (Se) 0.001 mg/L CCME		Selenium (Se) 0.002 mg/L BC 30-d Average		
Watershed	N	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor
Teigen Creek	47	2	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
Bell-Irving River	9	0	-	0	-	0	-	0	-	0	-	0	-	11	-	0	-
Treaty Creek	46	26	-	0	-	4	-	4	-	2	-	0	-	7	-	0	-
SCR - Reference Site	5	40	-	0	-	0	-	0	-	0	-	0	-	20	-	0	-
SUNR - Reference Site	13	46	-	0	-	0	-	0	-	0	-	0	-	0	-	0	-
Unuk River	49	35	-	0	-	2	-	2	-	0	-	0	-	8	-	0	-
Mitchell Creek	37	38	1.1	11	-	3	-	3	-	0	-	0	-	81	3.3	68	1.7
Sulphurets Creek	34	50	-	0	-	0	-	0	-	0	-	0	-	62	1.5	29	-
Bowser	4	50	-	0	-	0	-	0	-	0	-	0	-	25	-	0	-

Parameter Guideline Jurisdiction	Silver (Ag) Hardness-dependent BC 30-d Average		Silver (Ag) 0.0001 mg/L CCME		Thallium (Tl) 0.0003 mg/L BC Maximum		Thallium (Tl) 0.0008 mg/L CCME		Zinc (Zn) Hardness-dependent BC 30-d Average		Zinc (Zn) 0.03 mg/L CCME						
Watershed	N	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor	Frequency (%)	Factor
Teigen Creek	47	0	-	0	-	0	-	0	-	11	-	0	-				
Bell-Irving River	9	0	-	0	-	0	-	0	-	11	-	0	-				
Treaty Creek	46	26	-	13	-	0	-	0	-	37	-	20	-				
SCR - Reference Site	5	40	-	0	-	0	-	0	-	40							

**Appendix 4.1-2d. Summary of Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2010**

Parameter Guideline Jurisdiction	pH 6.5 - 9 CCME = BC Maximum	Fluoride (F) Hardness-dependent BC Maximum	Fluoride (F) 0.12 mg/L CCME	Sulphate (SO <sub>4</sub> ) 100 mg/L BC Maximum	Aluminum (Al) pH-dependent CCME	Dissolved Aluminum (Al) pH-dependent BC Maximum	Arsenic (As) 0.005 mg/L CCME = BC Maximum	Cadmium (Cd) Hardness-dependent CCME = BC Maximum
Watershed	N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
Teigen Creek	48	0 -	0 -	0 -	0 -	52 2.4	13 -	0 -
Bell-Irving River	8	0 -	0 -	0 -	0 -	88 7.8	0 -	0 -
Treaty Creek	29	0 -	0 -	0 -	0 -	62 13.3	10 -	14 -
SCR - Reference Site	4	0 -	0 -	0 -	0 -	75 13.0	25 -	0 -
SUNR - Reference Site	12	0 -	0 -	0 -	0 -	75 10.9	33 -	0 -
Unuk River	28	0 -	0 -	0 -	0 -	86 14.4	29 -	18 -
Mitchell Creek	38	37 -	8 0.3	58 3.6	47 1.5	92 80.1	50 76.7	66 10.6
Sulphurets Creek	38	0 -	0 -	26 -	45 1.0	84 19.4	29 -	37 1.4
Bowser	0	- -	- -	- -	- -	- -	- -	- -

Parameter Guideline Jurisdiction	Chromium (Cr) 0.001 mg/L CCME = BC Maximum	Cobalt (Cu) 0.004 mg/L BC 30-d Average	Copper (Cu) Hardness-dependent BC 30-d Average	Copper (Cu) Hardness-dependent CCME	Iron (Fe) 1.0 mg/L BC Maximum	Iron (Fe) 0.3 mg/L CCME	Dissolved Iron (Fe) 0.35 mg/L BC Maximum	Lead (Pb) Hardness-dependent BC 30-d Average
Watershed	N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
Teigen Creek	48	35 1.0	0 -	10 -	15 -	4 -	29 -	0 -
Bell-Irving River	8	75 2.4	0 -	13 -	25 -	25 -	75 2.7	0 -
Treaty Creek	29	31 2.4	7 -	31 1.3	31 1.7	34 1.8	41 6.0	0 -
SCR - Reference Site	4	50 1.0	0 -	25 -	25 -	25 1.9	75 6.2	0 -
SUNR - Reference Site	12	50 2.2	8 -	50 1.8	58 2.5	17 1.3	50 4.2	0 -
Unuk River	28	36 2.3	7 -	75 9.7	79 13.6	68 2.6	82 8.7	4 -
Mitchell Creek	38	55 1.6	71 3.1	87 159.0	87 262.8	87 25.5	89 85.1	29 24.7
Sulphurets Creek	38	47 1.7	21 -	92 18.7	97 31.3	82 4.5	84 15.0	0 -
Bowser	0	- -	- -	- -	- -	- -	- -	- -

Parameter Guideline Jurisdiction	Lead (Pb) Hardness-dependent CCME	Manganese (Mn) Hardness-dependent BC Maximum	Mercury (Hg) 0.00002 mg/L BC 30-d Average	Mercury (Hg) 0.000026 mg/L CCME	Nickle (Ni) Hardness-dependent BC Maximum	Nickle (Ni) Hardness-dependent CCME	Selenium (Se) 0.001 mg/L CCME	Selenium (Se) 0.002 mg/L BC 30-d Average
Watershed	N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
Teigen Creek	48	0 -	0 -	0 -	0 -	0 -	0 -	4 -
Bell-Irving River	8	0 -	0 -	0 -	0 -	0 -	0 -	0 -
Treaty Creek	29	17 -	0 -	7 -	7 -	0 -	0 -	7 -
SCR - Reference Site	4	50 -	0 -	0 -	0 -	0 -	0 -	0 -
SUNR - Reference Site	12	33 1.4	0 -	0 -	0 -	0 -	0 -	0 -
Unuk River	28	29 -	0 -	7 -	7 -	0 -	0 -	21 -
Mitchell Creek	38	68 4.3	21 -	26 -	26 -	0 -	0 -	89 3.8
Sulphurets Creek	38	45 -	0 -	8 -	8 -	0 -	0 -	53 1.4
Bowser	0	- -	- -	- -	- -	- -	- -	- -

Parameter Guideline Jurisdiction	Silver (Ag) Hardness-dependent BC 30-d Average	Silver (Ag) 0.0001 mg/L CCME	Thallium (Tl) 0.0003 mg/L BC Maximum	Thallium (Tl) 0.0008 mg/L CCME	Zinc (Zn) Hardness-dependent BC 30-d Average	Zinc (Zn) 0.03 mg/L CCME
Watershed	N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
Teigen Creek	48	2 -	0 -	0 -	2 -	0 -
Bell-Irving River	8	0 -	0 -	0 -	13 -	0 -
Treaty Creek	29	10 -	7 -	3 -	31 -	7 -
SCR - Reference Site	4	0 -	0 -	0 -	25 -	0 -
SUNR - Reference Site	12	8 -	0 -	0 -	17 -	8 -
Unuk River	28	21 -	7 -	0 -	64 2.4	39 -
Mitchell Creek	38	34 -	37 1.5	3 -	82 14.8	76 20.5
Sulphurets Creek	38	29 -	11 -	0 -	71 1.9	66 2.7
Bowser	0	- -	- -	- -	- -	- -

**Appendix 4.1-2e. Summary of Water Quality Frequency and Magnitude of Guideline Exceedances, KSM Project, 2011**

Parameter Guideline Jurisdiction	pH 6.5 - 9 CCME = BC Maximum	Fluoride (F) Hardness-dependent BC Maximum	Fluoride (F) 0.12 mg/L CCME	Sulphate (SO <sub>4</sub> ) 100 mg/L BC Maximum	Aluminum (Al) pH-dependent CCME	Dissolved Aluminum (Al) pH-dependent BC Maximum	Arsenic (As) 0.005 mg/L CCME = BC Maximum	Cadmium (Cd) Hardness-dependent CCME = BC Maximum
Watershed	N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
Teigen Creek	54	0 -	0 -	0 -	0 -	59 4.6	15 -	0 -
Bell-Irving River	8	0 -	0 -	0 -	0 -	50 40.0	25 5.3	13 -
Treaty Creek	43	0 -	2 -	2 -	5 -	58 40.5	23 -	23 1.4
SCR - Reference Site	4	0 -	0 -	0 -	0 -	50 22.3	50 2.8	25 -
SUNR - Reference Site	12	0 -	0 -	0 -	0 -	58 18.4	8 -	8 -
Unuk River	27	0 -	0 -	0 -	0 -	74 37.8	48 -	19 -
Mitchell Creek	53	32 -	0 -	55 2.5	51 1.3	85 48.5	42 31.4	58 4.4
Sulphurets Creek	37	0 -	0 -	30 -	46 -	81 27.5	35 -	35 1.1
Bowser	0	- -	- -	- -	- -	- -	- -	- -

Parameter Guideline Jurisdiction	Chromium (Cr) 0.001 mg/L CCME = BC Maximum	Cobalt (Cu) 0.004 mg/L BC 30-d Average	Copper (Cu) Hardness-dependent BC 30-d Average	Copper (Cu) Hardness-dependent CCME	Iron (Fe) 1.0 mg/L BC Maximum	Iron (Fe) 0.3 mg/L CCME	Dissolved Iron (Fe) 0.35 mg/L BC Maximum	Lead (Pb) Hardness-dependent BC 30-d Average
Watershed	N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
Teigen Creek	54	33 1.7	2 -	17 -	17 -	15 -	31 1.7	0 -
Bell-Irving River	8	50 8.5	25 -	38 2.6	38 3.8	38 6.2	50 20.8	13 1.9
Treaty Creek	43	47 6.0	16 -	35 2.9	37 4.1	37 6.8	51 22.6	0 -
SCR - Reference Site	4	75 1.6	0 -	50 -	50 -	50 2.8	50 9.4	25 -
SUNR - Reference Site	12	67 4.4	8 -	50 2.1	58 3.1	42 2.4	58 7.9	0 -
Unuk River	27	48 5.5	15 -	70 9.8	70 14.3	52 5.6	78 18.8	4 -
Mitchell Creek	53	32 1.2	57 1.9	79 81.2	79 141.4	79 13.6	85 45.5	32 9.0
Sulphurets Creek	37	43 2.6	16 -	81 16.4	89 28.1	78 5.3	81 17.6	0 -
Bowser	0	- -	- -	- -	- -	- -	- -	- -

Parameter Guideline Jurisdiction	Lead (Pb) Hardness-dependent CCME	Manganese (Mn) Hardness-dependent BC Maximum	Mercury (Hg) 0.00002 mg/L BC 30-d Average	Mercury (Hg) 0.000026 mg/L CCME	Nickle (Ni) Hardness-dependent BC Maximum	Nickle (Ni) Hardness-dependent CCME	Selenium (Se) 0.001 mg/L CCME	Selenium (Se) 0.002 mg/L BC 30-d Average
Watershed	N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
Teigen Creek	54	2 -	0 -	0 -	0 -	0 -	0 -	13 -
Bell-Irving River	8	25 1.0	0 -	13 -	13 -	13 -	0 -	13 -
Treaty Creek	43	21 1.6	7 -	14 -	14 -	9 -	5 -	12 -
SCR - Reference Site	4	50 -	0 -	0 -	0 -	0 -	0 -	0 -
SUNR - Reference Site	12	42 1.7	0 -	0 -	0 -	8 -	0 -	0 -
Unuk River	27	33 1.1	4 -	15 -	15 -	15 -	0 -	37 -
Mitchell Creek	53	47 1.3	17 -	2 -	2 -	0 -	0 -	72 2.5
Sulphurets Creek	37	35 -	3 -	0 -	0 -	0 -	0 -	57 1.4
Bowser	0	- -	- -	- -	- -	- -	- -	- -

Parameter Guideline Jurisdiction	Silver (Ag) Hardness-dependent BC 30-d Average	Silver (Ag) 0.0001 mg/L CCME	Thallium (Tl) 0.0003 mg/L BC Maximum	Thallium (Tl) 0.0008 mg/L CCME	Zinc (Zn) Hardness-dependent BC 30-d Average	Zinc (Zn) 0.03 mg/L CCME
Watershed	N	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor	Frequency (%) Factor
Teigen Creek	54	2 -	0 -	0 -	6 -	0 -
Bell-Irving River	8	25 -	13 -	13 -	25 2.1	25 -
Treaty Creek	43	21 -	19 -	12 -	28 1.7	21 1.3
SCR - Reference Site	4	25 -	0 -	0 -	50 -	25 -
SUNR - Reference Site	12	8 -	8 -	0 -	17 -	8 -
Unuk River	27	19 -	15 -	0 -	48 2.3	48 1.2
Mitchell Creek	53	26 -	17 -	0 -	75 7.0	66 11.6
Sulphurets Creek	37	27 -	8 -	0 -	70 1.6	62 2.5
Bowser	0	- -	- -	- -	- -	- -

**KSM PROJECT**  
**2007 to 2011 Baseline Water Quality Report**

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## **Appendix 4.1-3**

**Stream Water Quality Field and Travel Blanks,  
KSM Project, 2007 to 2011**

#### **Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

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**Notes:**

- indicates not analyzed

#### **Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

**Notes:**

- indicates not analyzed

#### **Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

Sample	Date Sampled	Units	Field Blank															
			28-Apr-09	27-May-09	8-Jun-09	13-Jun-09	19-Jun-09	2-Jul-09	5-Jul-09	4-Aug-09	17-Aug-09	22-Aug-09	13-Sep-09	27-Sep-09	31-Oct-09	1-Dec-09	17-Jan-10	3-Mar-10
<b>Physical Parameters</b>																		
Colour, True	colour unit	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity	uS/cm	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Hardness (as CaCO <sub>3</sub> )	mg/L	<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.48	<0.50	<0.50	-	<0.50
pH	pH unit	5.57	5.8	5.56	5.6	5.65	5.62	5.78	5.81	5.61	5.61	5.75	5.68	5.57	5.47	5.57	-	5.86
Total Suspended Solids	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	4.3	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	mg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Turbidity	NTU	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
<b>Anions and Nutrients</b>																		
Acidity (as CaCO <sub>3</sub> )	mg/L	1.3	<1.0	1.2	<1.0	1.4	<1.0	<1.0	1.2	1.1	<1.0	1.8	1.1	1.1	<1.0	1.9	-	1.9
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Ammonia (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0069	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Bromide	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0081
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Total Nitrogen	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Ortho-Phosphate (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Phosphate (as P)	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Sulphate	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
<b>Cyanides</b>																		
Cyanide, Weak Acid Dissociable	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide, Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Thiocyanate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Carbon</b>																		
Total Organic Carbon	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
<b>Total Metals</b>																		
Aluminum (Al)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	0.0053	<0.0010	<0.0010	-	<0.0010
Antimony (Sb)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	-
Arsenic (As)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	-
Barium (Ba)	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000285	<0.000050	<0.000050	-
Beryllium (Be)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	-
Bismuth (Bi)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	-
Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)	mg/L	<0.000017	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000033	<0.000010	<0.000017	-
Calcium (Ca)	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	0.056	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.968	<0.020	<0.020	<0.020	<0.020
Chromium (Cr)	mg/L	<0.0																

## Notes:

- indicates not analyzed

#### Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011

**Notes:**

- indicates not analyzed

#### **Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

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### *Notes:*

- indicates not analyzed

#### **Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

**Notes:**

- indicates not analyzed

#### **Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

Sample	Date Sampled	Units	Field Blank			Travel Blank												
			30-Sep-11	26-Oct-11	28-Nov-11	23-Sep-07	28-May-08	5-Jun-08	11-Jun-08	26-Jun-08	3-Jul-08	25-Jul-08	10-Sep-08	17-Sep-08	25-Sep-08	2-Oct-08	9-Oct-08	29-Oct-08
<b>Physical Parameters</b>																		
Colour, True	colour unit	<5.0	<5.0	<5.0	-	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity	uS/cm	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Hardness (as CaCO <sub>3</sub> )	mg/L	<0.50	<0.50	<0.50	-	<2.0	<2.0	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
pH	pH unit	5.53	5.56	5.63	5.57	5.5	5.55	5.7	5.59	5.6	5.59	5.56	5.57	5.53	5.58	5.55	5.54	-
Total Suspended Solids	mg/L	<3.0	<3.0	<3.0	<3.0	<10	<10	<10	<10	<3.0	<3.0	<3.0	<3.0	3.3	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	mg/L	<10	<10	<10	<10	<3.0	<3.0	<3.0	<3.0	<10	<10	<10	<10	<10	<10	<10	<10	<10
Turbidity	NTU	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
<b>Anions and Nutrients</b>																		
Acidity (as CaCO <sub>3</sub> )	mg/L	2.7	3.5	2.5	<1.0	1.5	1.5	1.3	1.3	2.4	1.3	1.4	1.7	1.2	1.2	1.4	1.1	-
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Ammonia (as N)	mg/L	<0.0050	0.0121	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0067	<0.0050	<0.0050	0.0063	0.0104	0.0088	<0.0050	<0.0050	<0.0050
Bromide	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Total Nitrogen	mg/L	<0.050	<0.050	<0.050	-	<0.05	<0.060	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ortho-Phosphate (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Phosphate (as P)	mg/L	<0.0020	<0.0020	<0.0020	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Sulphate	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
<b>Cyanides</b>																		
Cyanide, Weak Acid Dissociable	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide, Total	mg/L	<0.0011	<0.0011	<0.0011	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Thiocyanate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Carbon</b>																		
Total Organic Carbon	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.86	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.76	<0.50	<0.50	<0.50
<b>Total Metals</b>																		
Aluminum (Al)	mg/L	<0.0030	<0.0030	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Antimony (Sb)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium (Ba)	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Beryllium (Be)	mg/L	<0.00010	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Bismuth (Bi)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)	mg/L	<0.000010	<0.000010	<0.000010	<0.000050	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017
Calcium (Ca)	mg/L	<0.020	<0.020	<0.020	<0.050	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00050	<												

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**Notes:**

- indicates not analyzed

**Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

Sample	Units	Field Blank			Travel Blank												
		30-Sep-11	26-Oct-11	28-Nov-11	23-Sep-07	28-May-08	5-Jun-08	11-Jun-08	26-Jun-08	3-Jul-08	25-Jul-08	10-Sep-08	17-Sep-08	25-Sep-08	2-Oct-08	9-Oct-08	29-Oct-08
Magnesium (Mg)	mg/L	<0.0050	<0.0050	<0.0050	<0.10	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Manganese (Mn)	mg/L	0.000059	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Mercury (Hg)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel (Ni)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)	mg/L	<0.050	<0.050	<0.050	<2.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Selenium (Se)	mg/L	<0.00010	<0.00010	<0.00010	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silicon (Si)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Silver (Ag)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Strontium (Sr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Thallium (Tl)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium (V)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	mg/L	<0.0030	<0.0030	<0.0030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
<b>Dissolved Metals</b>																	
Aluminum (Al)	mg/L	<0.0030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	mg/L	<0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	mg/L	<0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	mg/L	<0.000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)	mg/L	<0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	mg/L	<0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	mg/L	<0.010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/L	<0.000010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L	<0.020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/L	<0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)	mg/L	<0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)	mg/L	<0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)	mg/L	<0.030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/L	<0.000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)	mg/L	<0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L	<0.0050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/L	<0.000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)	mg/L	<0.000010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	mg/L	<0.000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)	mg/L	<0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)	mg/L	<0.30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L	<0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/L	<0.00010	-	-	-	-	-										

**Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

Sample Date Sampled	Units	Travel Blank																
		6-Jan-09	4-Mar-09	29-Mar-09	28-Apr-09	27-May-09	8-Jun-09	13-Jun-09	19-Jun-09	2-Jul-09	5-Jul-09	12-Jul-09	4-Aug-09	16-Aug-09	22-Aug-09	13-Sep-09	27-Sep-09	31-Oct-09
<b>Physical Parameters</b>																		
Colour, True	colour unit	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Conductivity	µS/cm	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Hardness (as CaCO <sub>3</sub> )	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
pH	pH unit	5.65	5.67	5.6	5.55	5.77	5.52	5.57	5.6	5.55	5.57	5.66	5.66	5.65	5.58	5.71	5.63	5.55
Total Suspended Solids	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Total Dissolved Solids	mg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Turbidity	NTU	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
<b>Anions and Nutrients</b>																		
Acidity (as CaCO <sub>3</sub> )	mg/L	1.2	1.6	1.4	1.4	1.1	1.3	1.1	1.7	1.3	1.2	1.4	1.2	1.1	1.2	1.9	1.2	1.1
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Ammonia (as N)	mg/L	0.0116	0.0109	0.0091	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0089	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Bromide	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloride	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Total Nitrogen	mg/L	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Ortho-Phosphate (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Total Phosphate (as P)	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Sulphate	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
<b>Cyanides</b>																		
Cyanide, Weak Acid Dissociable	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide, Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010
Thiocyanate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Carbon</b>																		
Total Organic Carbon	mg/L	<0.50	1.58	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
<b>Total Metals</b>																		
Aluminum (Al)	mg/L	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Antimony (Sb)	mg/L	<0.00010	<0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)	mg/L	<0.00010	<0.00010</td															

**Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

Sample	Date Sampled	Units	Travel Blank															
			6-Jan-09	4-Mar-09	29-Mar-09	28-Apr-09	27-May-09	8-Jun-09	13-Jun-09	19-Jun-09	2-Jul-09	5-Jul-09	12-Jul-09	4-Aug-09	16-Aug-09	22-Aug-09	13-Sep-09	27-Sep-09
Magnesium (Mg)	mg/L	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Manganese (Mn)	mg/L	<0.000050	<0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Mercury (Hg)	mg/L	<0.000010	<0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)	mg/L	<0.000050	<0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel (Ni)	mg/L	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)	mg/L	<0.30	<0.30	-	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)	mg/L	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Selenium (Se)	mg/L	<0.00010	<0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silicon (Si)	mg/L	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Silver (Ag)	mg/L	<0.000010	<0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)	mg/L	<2.0	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Strontium (Sr)	mg/L	<0.00010	<0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Thallium (Tl)	mg/L	<0.00010	<0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)	mg/L	<0.00010	<0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)	mg/L	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)	mg/L	<0.000010	<0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium (V)	mg/L	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	mg/L	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
<b>Dissolved Metals</b>																		
Aluminum (Al)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/L	-	-															

#### **Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

Sample	Date Sampled	Units	Travel Blank																
			1-Dec-09	17-Jan-10	3-Mar-10	28-Mar-10	1-May-10	26-May-10	5-Jul-10	3-Aug-10	27-Aug-10	28-Sep-10	21-Oct-10	15-Dec-10	1-Feb-11	5-Mar-11	31-Mar-11	2-May-11	4-Jun-11
<b>Physical Parameters</b>																			
Colour, True	colour unit	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Conductivity	uS/cm	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Hardness (as CaCO <sub>3</sub> )	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	48	4.98	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
pH	pH unit	5.45	5.58	5.66	6.05	5.94	5.62	5.79	5.61	5.98	5.58	5.81	5.7	5.89	5.57	5.4	5.72	5.62	
Total Suspended Solids	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	
Total Dissolved Solids	mg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Turbidity	NTU	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
<b>Anions and Nutrients</b>																			
Acidity (as CaCO <sub>3</sub> )	mg/L	<1.0	2.3	2	1.8	2.7	2.2	2.7	1.8	2.6	3.2	2.4	2.7	1.4	1.1	2.9	3.1	1	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
Ammonia (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	0.0076	<0.0050	0.0086	0.0111	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0066	0.0067	0.0067	
Bromide	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Chloride	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Fluoride	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	0.0074	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Total Kjeldahl Nitrogen	mg/L	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.05	<0.050	<0.050	
Total Nitrogen	mg/L	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.05	<0.050	<0.050	
Ortho-Phosphate (as P)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Total Phosphate (as P)	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
Sulphate	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>Cyanides</b>																			
Cyanide, Weak Acid Dissociable	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cyanide, Total	mg/L	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Thiocyanate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Carbon</b>																			
Total Organic Carbon	mg/L	<0.50	<0.50	-	<0.50	0.36	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.72	0.52	<0.50	<0.50
<b>Total Metals</b>																			
Aluminum (Al)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0336	0.0022	<0.0010	<0.0010	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	
Antimony (Sb)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Arsenic (As)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Barium (Ba)	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.00325	0.000111	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
Beryllium (Be)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Bismuth (Bi)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Cadmium (Cd)	mg/L	<0.000010	<0.000017	<0.000010	<0.000010	<0.000010	0.000066	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Calcium (Ca)	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	18.9	1.96	<0.020	<0.020	<0.0								

## Notes:

- indicates not analyzed

**Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

Sample	Date Sampled	Units	Travel Blank															
			1-Dec-09	17-Jan-10	3-Mar-10	28-Mar-10	1-May-10	26-May-10	5-Jul-10	3-Aug-10	27-Aug-10	28-Sep-10	21-Oct-10	15-Dec-10	1-Feb-11	5-Mar-11	31-Mar-11	2-May-11
Magnesium (Mg)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.223	0.0237	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Manganese (Mn)	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.00157	0.000173	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Mercury (Hg)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000538	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel (Ni)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)	mg/L	<0.050	<0.050	<0.050	<0.050	0.183	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Selenium (Se)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00083	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silicon (Si)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Silver (Ag)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000024	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Strontium (Sr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00943	0.00111	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Thallium (Tl)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000023	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium (V)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0029	<0.0010	<0.0010	<0.0010	<0.0010	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
<b>Dissolved Metals</b>																		
Aluminum (Al)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony (Sb)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic (As)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium (Ba)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium (Be)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt (Co)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper (Cu)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (Hg)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel (Ni)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L	-	-</															

**Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

Sample Date Sampled	Units	Travel Blank						
		4-Jul-11	1-Aug-11	5-Sep-11	1-Oct-11	26-Oct-11	28-Nov-11	9-Jan-12
<b>Physical Parameters</b>								
Colour, True	colour unit	<5.0	<5.0	<5.0	-	<5.0	<5.0	<5.0
Conductivity	µS/cm	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0
Hardness (as CaCO <sub>3</sub> )	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
pH	pH unit	5.57	5.99	5.75	-	5.58	5.54	5.61
Total Suspended Solids	mg/L	<3.0	<3.0	<3.0	-	<3.0	<3.0	<3.0
Total Dissolved Solids	mg/L	<10	<10	<10	-	<10	<10	<10
Turbidity	NTU	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10
<b>Anions and Nutrients</b>								
Acidity (as CaCO <sub>3</sub> )	mg/L	<1.0	2	2.3	-	3.5	2.6	3
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	<2.0	-	<2.0	<2.0	<2.0
Ammonia (as N)	mg/L	<0.0050	<0.0050	0.0084	0.0123	<0.0050	0.0076	0.0448
Bromide	mg/L	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Chloride	mg/L	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50
Fluoride	mg/L	<0.020	<0.020	<0.020	-	<0.020	<0.020	<0.020
Nitrate (as N)	mg/L	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050
Nitrite (as N)	mg/L	<0.0010	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	<0.050	<0.050	<0.050	-	<0.050	<0.050	<0.050
Total Nitrogen	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Ortho-Phosphate (as P)	mg/L	<0.0010	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010
Total Phosphate (as P)	mg/L	<0.0020	<0.0020	<0.0020	-	<0.0020	<0.0020	<0.0020
Sulphate	mg/L	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50
<b>Cyanides</b>								
Cyanide, Weak Acid Dissociable	mg/L	-	-	-	-	-	-	-
Cyanide, Total	mg/L	<0.0013	<0.0010	<0.0010	<0.0010	<0.0011	<0.0011	<0.0011
Thiocyanate	mg/L	-	-	-	-	-	-	-
<b>Carbon</b>								
Total Organic Carbon	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
<b>Total Metals</b>								
Aluminum (Al)	mg/L	<0.0030	<0.0030	<0.0030	0.0193	<0.0030	<0.0030	<0.0030
Antimony (Sb)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium (Ba)	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Beryllium (Be)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Calcium (Ca)	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)	mg/L	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Lead (Pb)	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Notes:

- indicates not analyzed

**Appendix 4.1-3. Stream Water Quality Field and Travel Blanks, KSM Project, 2007 to 2011**

Sample	Date Sampled	Units	Travel Blank							
			4-Jul-11	1-Aug-11	5-Sep-11	1-Oct-11	26-Oct-11	28-Nov-11	9-Jan-12	30-Jan-12
Magnesium (Mg)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Manganese (Mn)	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Mercury (Hg)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel (Ni)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)	mg/L	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Selenium (Se)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silicon (Si)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Silver (Ag)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)	mg/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Strontium (Sr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Thallium (Tl)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin (Sn)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium (V)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
<b>Dissolved Metals</b>										
Aluminum (Al)	mg/L	-	-	-	-	-	-	-	-	-
Antimony (Sb)	mg/L	-	-	-	-	-	-	-	-	-
Arsenic (As)	mg/L	-	-	-	-	-	-	-	-	-
Barium (Ba)	mg/L	-	-	-	-	-	-	-	-	-
Beryllium (Be)	mg/L	-	-	-	-	-	-	-	-	-
Bismuth (Bi)	mg/L	-	-	-	-	-	-	-	-	-
Boron (B)	mg/L	-	-	-	-	-	-	-	-	-
Cadmium (Cd)	mg/L	-	-	-	-	-	-	-	-	-
Calcium (Ca)	mg/L	-	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/L	-	-	-	-	-	-	-	-	-
Cobalt (Co)	mg/L	-	-	-	-	-	-	-	-	-
Copper (Cu)	mg/L	-	-	-	-	-	-	-	-	-
Iron (Fe)	mg/L	-	-	-	-	-	-	-	-	-
Lead (Pb)	mg/L	-	-	-	-	-	-	-	-	-
Lithium (Li)	mg/L	-	-	-	-	-	-	-	-	-
Magnesium (Mg)	mg/L	-	-	-	-	-	-	-	-	-
Manganese (Mn)	mg/L	-	-	-	-	-	-	-	-	-
Mercury (Hg)	mg/L	-	-	-	-	-	-	-	-	-
Molybdenum (Mo)	mg/L	-	-	-	-	-	-	-	-	-
Nickel (Ni)	mg/L	-	-	-	-	-	-	-	-	-
Phosphorus (P)	mg/L	-	-	-	-	-	-	-	-	-
Potassium (K)	mg/L	-	-	-	-	-	-	-	-	-
Selenium (Se)	mg/L	-	-	-	-	-	-	-	-	-
Silicon (Si)	mg/L	-	-	-	-	-	-	-	-	-
Silver (Ag)	mg/L	-	-	-	-	-	-	-	-	-
Sodium (Na)	mg/L	-	-	-	-	-	-	-	-	-
Strontium (Sr)	mg/L	-	-	-	-	-	-	-	-	-
Thallium (Tl)	mg/L	-	-	-	-	-	-	-	-	-
Tin (Sn)	mg/L	-	-	-	-	-	-	-	-	-
Titanium (Ti)	mg/L	-	-	-	-	-	-	-	-	-
Uranium (U)	mg/L	-	-	-	-	-	-	-	-	-
Vanadium (V)	mg/L	-	-	-	-	-	-	-	-	-
Zinc (Zn)	mg/L	-	-	-	-	-	-	-	-	-

Notes:

- indicates not analyzed

**KSM PROJECT**  
**2007 to 2011 Baseline Water Quality Report**

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## **Appendix 4.1-4a**

**Relative Percent Difference (RPD) Results for Stream  
Water Quality Duplicate Samples, KSM Project, 2008**

**Appendix 4.1-4a. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2008**

Date Sampled	25-Jul-07			28-May-08			5-Jun-08			11-Jun-08			3-Jul-08			25-Jul-08		
	Sample ID	SC3-1	SC3-2	RPD%	SC1-2	SC1-1	RPD%	MC1	MC1-2	RPD%	SUNR-1	SUNR-2	RPD%	SC2-1	SC2-2	RPD%	NTR2-1	NTR2-2
<b>Physical Tests</b>																		
Colour, True				<b>2.5</b>	<b>2.5</b>		17.4	17.4		<b>2.5</b>	<b>2.5</b>		<b>2.5</b>	<b>2.5</b>		<b>2.5</b>		
Conductivity (uS/cm)	0.0000	0.0000		211	211	0.00	702	742	5.54	124	127	2.39	186	186	0.00	80.3		
Hardness (as CaCO <sub>3</sub> )	63.0000	63.4000	0.63	93.9	94.2	0.32	99.8	98.9	0.91	51.6	53.1	2.87	68.2	67	1.78	36.1	35	3.09
pH	7.7400	7.7300	0.13	7.76	7.91	1.91	3.18	3.16	0.63	7.75	7.91	2.04	6.92	6.65	3.98	7.67		
Total Suspended Solids	0.0000	0.0000		20.8	30.3	<b>37.18</b>	298	313	4.91	12.8	8.3		545	150	<b>113.67</b>	3.2		
Total Dissolved Solids	86.0000	98.0000	13.04	141	140	0.71	359	358	0.28	80	78	2.53	115	106	8.14	45		
Turbidity (NTU)				45.1	46.1	2.19	280	335	17.89	9.58	8.59	10.90	339	344	1.46	3.85		
<b>Anions and Nutrients</b>																		
Acidity (as CaCO <sub>3</sub> )	0.5000	0.5000		5.6	3.9		170	177	4.03	1.4	1.2		9.9	12.1	<b>20.00</b>	1.7		
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )				39.1	38.6	1.29	1	1		41	41.4	0.97	1	2.8		18		
Alkalinity, Carbonate (as CaCO <sub>3</sub> )				1	1		1	1		1	1		1	1		1		
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )				1	1		1	1		1	1		1	1		1		
Alkalinity, Total (as CaCO <sub>3</sub> )	25.0000	25.2000	0.80	39.1	38.6	1.29	1	1		41	41.4	0.97	1	2.8		18		
Ammonia as N	0.0053	0.0025		<b>0.0025</b>	<b>0.0025</b>		<b>0.0025</b>	<b>0.0025</b>		<b>0.0025</b>	<b>0.0025</b>		<b>0.0025</b>	<b>0.0025</b>		<b>0.0025</b>		
Bromide (Br)	0.0250	0.0250		<b>0.025</b>	<b>0.025</b>		<b>0.025</b>	<b>0.025</b>		<b>0.025</b>	<b>0.025</b>		<b>0.025</b>	<b>0.025</b>		<b>0.025</b>		
Chloride (Cl)	0.2500	0.2500		<b>0.25</b>	<b>0.25</b>		<b>0.25</b>	<b>0.25</b>		<b>0.25</b>	<b>0.25</b>		<b>0.25</b>	<b>0.25</b>		<b>0.25</b>		
Fluoride (F)	0.0820	0.0810		0.052	0.052		0.88	0.87	1.14	0.062	0.062		0.125	0.122	2.43	0.028		
Nitrate (as N)	0.0211	0.0225		0.034	0.0335	1.48	0.0192	0.0201		0.161	0.163	1.23	0.0219	0.0206		0.0253		
Nitrite (as N)	0.0005	0.0005		<b>0.0005</b>	<b>0.0005</b>		<b>0.0005</b>	<b>0.0005</b>		<b>0.0005</b>	<b>0.0005</b>		<b>0.0005</b>	<b>0.0005</b>		<b>0.0005</b>		
Total Kjeldahl Nitrogen				<b>0.025</b>	<b>0.025</b>		<b>0.025</b>	<b>0.025</b>		<b>0.025</b>	<b>0.025</b>		<b>0.025</b>	<b>0.025</b>		<b>0.025</b>		
Total Nitrogen				<b>0.025</b>	<b>0.025</b>		<b>0.025</b>	<b>0.025</b>		0.12	0.12		<b>0.025</b>	<b>0.025</b>		<b>0.025</b>		
Ortho Phosphate as P	0.0005	0.0005																
Total Dissolved Phosphate As P				0.0253	0.0364	<b>35.98</b>	2.55	2.67	4.60	0.0155	0.012	<b>25.45</b>	1.02	1.42	<b>32.79</b>	0.0064		
Total Phosphate as P	40.6000	40.5000	0.25	58.4	58.6	0.34	268	267	0.37	18.6	18.6	0.00	76.6	77	0.52	17		
<b>Cyanides</b>																		
Cyanide, Total				0.0013	0.0005		<b>0.0005</b>	<b>0.0005</b>		<b>0.0005</b>	<b>0.0005</b>		<b>0.0005</b>	<b>0.0005</b>		<b>0.0005</b>	<b>0.0005</b>	
<b>Organic / Inorganic Carbon</b>																		
Dissolved Organic Carbon																		
Total Organic Carbon	0.2500	0.2500		<b>0.25</b>	<b>0.25</b>		<b>0.25</b>	<b>0.25</b>		<b>0.25</b>	<b>0.25</b>		1.43	1.46		0.52	0.53	
<b>Total Metals</b>																		
Aluminum (Al)	8.0300	9.0900	12.38	1.87	1.97	5.21	13.1	13.9	5.93	0.472	0.369	<b>24.49</b>	10.2	11.2	9.35	0.084	0.0904	7.34
Antimony (Sb)	0.0015	0.0016	9.58	<b>0.00145</b>	<b>0.00145</b>	0.00	0.00169	0.00171	1.18	0.00012	0.00012		0.00202	0.00205	1.47	<b>0.00005</b>	<b>0.00005</b>	
Arsenic (As)	0.0134	0.0146	8.57	0.00416	0.00436	4.69	0.0893	0.0922	3.20	0.00037	0.00037		0.0568	0.059	3.80	0.00011	0.00011	
Barium (Ba)	0.1700	0.1880	10.06	0.0612	0.0643	4.94	0.286	0.287	0.35	0.0291	0.0285	2.08	0.287	0.288	0.35	0.0129	0.0129	0.00
Beryllium (Be)	0.0003	0.0003		<b>0.00025</b>	<b>0.00025</b>		0.0026	0.0028		<b>0.00025</b>	<b>0.00025</b>		0.00083	0.00084		<b>0.00025</b>	<b>0.00025</b>	
Bismuth (Bi)	0.0003	0.0003		<b>0.00025</b>	<b>0.00025</b>		<b>0.0005</b>	<b>0.0005</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>	
Boron (B)	0.0050	0.0050		<b>0.005</b>	<b>0.005</b>		0.01	0.01		<b>0.005</b>	<b>0.005</b>		<b>0.005</b>	<b>0.005</b>		<b>0.005</b>	<b>0.005</b>	
Cadmium (Cd)	0.0016	0.0017	4.31	0.000116	0.000135	15.14	0.0197	0.0202	2.51	0.000038	0.000042		0.00541	0.00559	3.27	<b>0.000085</b>	<b>0.000085</b>	
Calcium (Ca)	30.4000	30.9000	1.63	34.8	35.3	1.43	34.3	35	2.02	20.4	21.1	3.37	28.4	29.6	4.14	10.2	10	

**Appendix 4.1-4a. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2008**

Date Sampled	25/Jul/07			28/May/08			5/Jun/08			11/Jun/08			3/Jul/08			25/Jul/08		
	Sample ID	SC3-1	SC3-2	RPD%	SC1-2	SC1-1	RPD%	MC1	MC1-2	RPD%	SUNR-1	SUNR-2	RPD%	SC2-1	SC2-2	RPD%	NTR2-1	NTR2-2
Nickel (Ni)	0.0083	0.0092	10.06	0.00133	0.00145		0.0083	0.0081	2.44	0.00074	0.00058		0.0116	0.00957	19.18	0.00065	0.00064	
Phosphorus (P)	0.6400	0.5900		<b>0.15</b>	<b>0.15</b>		2.44	2.44	0.00	<b>0.15</b>	<b>0.15</b>		1.4	1.41		<b>0.15</b>	<b>0.15</b>	
Potassium (K)	3.1000	3.4000		1.11	1.16	4.41	1.96	2.27	14.66	0.977	0.993	1.62	3.57	3.91	9.09	0.199	0.205	
Selenium (Se)	0.0015	0.0016		0.00041	0.00039		0.00602	0.00651	7.82	0.00022	0.00033		0.00339	0.00367	7.93	0.00075	0.00069	8.33
Silicon (Si)	15.4000	17.7000	13.90	4.5	4.55	1.10	13	13.3	2.28	2.47	2.23	10.21	18.5	19	2.67	1.74	1.77	1.71
Silver (Ag)	0.0002	0.0003	<b>50.61</b>	0.000043	0.000045		0.000276	0.000257	7.13	<b>0.000005</b>	<b>0.000005</b>		0.000283	0.000296	4.49	<b>0.000005</b>	<b>0.000005</b>	
Sodium (Na)	1.0000	1.0000		1	1		1	1		1	1		1	1		1	1	
Strontium (Sr)	0.1380	0.1450	4.95	0.167	0.17	1.78	0.223	0.235	5.24	0.147	0.152	3.34	0.145	0.153	5.37	0.113	0.11	2.69
Thallium (Tl)	0.0001	0.0001		<b>0.00005</b>	<b>0.00005</b>		<b>0.0001</b>	0.00021		<b>0.00005</b>	<b>0.00005</b>		0.0002	0.00021		<b>0.00005</b>	<b>0.00005</b>	
Tin (Sn)	0.0001	0.0002		<b>0.00005</b>	<b>0.00005</b>		<b>0.0001</b>	<b>0.0001</b>		<b>0.00005</b>	<b>0.00005</b>		0.00016	0.00019		0.00014	0.00005	
Titanium (Ti)	0.4340	0.5400	<b>21.77</b>	0.053	0.053	0.00	0.272	0.271	0.37	0.04	0.032		0.636	0.643	1.09	<b>0.005</b>	<b>0.005</b>	
Uranium (U)	0.0005	0.0006	17.66	0.000083	0.000089	6.98	0.00282	0.00298	5.52	0.000486	0.000497	2.24	0.000816	0.000832	1.94	<b>0.00005</b>	<b>0.00005</b>	
Vanadium (V)	0.0315	0.0367	15.25	0.0061	0.0065	6.35	0.0289	0.0318	9.56	0.0016	0.0013		0.0408	0.0426	4.32	<b>0.0005</b>	<b>0.0005</b>	
Zinc (Zn)	0.1250	0.1310	4.69	0.0128	0.0149	15.16	1.22	1.24	1.63	<b>0.002</b>	<b>0.002</b>		0.385	0.395	2.56	0.0012	0.002	
<b>Dissolved Metals</b>																		
Aluminum (Al)	0.0188	0.0179	4.90	0.0493	0.0389	<b>23.58</b>	8.32	8.52	2.38	0.0255	0.0242	5.23	0.208	0.215	3.31	0.0255	0.0156	48.18
Antimony (Sb)	0.0004	0.0004		0.00094	0.00093	1.07	<b>0.0001</b>	<b>0.0001</b>		<b>0.00005</b>	<b>0.00005</b>		<b>0.00005</b>	<b>0.00005</b>		<b>0.00005</b>	<b>0.00005</b>	
Arsenic (As)	0.0002	0.0002		0.00047	0.00043		0.0057	0.00566	0.70	0.00025	0.00027		<b>0.00005</b>	<b>0.00005</b>		<b>0.00005</b>	<b>0.00005</b>	
Barium (Ba)	0.0258	0.0265	2.68	0.0276	0.0276	0.00	0.0593	0.0591	0.34	0.0212	0.0215	1.41	0.045	0.0456	1.32	0.0122	0.0119	2.49
Beryllium (Be)	0.0003	0.0003		<b>0.00025</b>	<b>0.00025</b>		0.0025	0.0028		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>	
Bismuth (Bi)	0.0003	0.0003		<b>0.00025</b>	<b>0.00025</b>		<b>0.0005</b>	<b>0.0005</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>	
Boron (B)	0.0050	0.0050		0.005	0.005		0.01	0.01		0.005	0.005		0.005	0.005		0.005	0.005	
Cadmium (Cd)	0.0007	0.0008	1.07	<b>0.00004</b>	<b>0.000035</b>		0.0197	0.02	1.51	0.000028	0.000032		0.00485	0.00483	0.41	<b>0.000085</b>	<b>0.000017</b>	
Calcium (Ca)	22.4000	22.4000	0.00	33.8	33.9	0.30	33.9	33.5	1.19	19	19.6	3.11	24.6	24.1	2.05	10.7	10.1	5.77
Chromium (Cr)	0.0003	0.0003		<b>0.00025</b>	<b>0.00025</b>		<b>0.0005</b>	<b>0.0005</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>	
Cobalt (Co)	0.0020	0.0021	5.30	0.0003	0.00029		0.029	0.0293	1.03	<b>0.00005</b>	<b>0.00005</b>		0.0076	0.00761	0.13	<b>0.00005</b>	<b>0.00005</b>	
Copper (Cu)	0.0013	0.0014	7.35	0.001	0.00094	6.19	2.51	2.54	1.19	0.00047	0.00042		0.256	0.257	0.39	0.00028	0.00005	
Iron (Fe)	0.0150	0.0150		0.015	0.015		38.4	38.1	0.78	0.015	0.015		2.13	1.84	14.61	0.015	0.015	
Lead (Pb)	0.0000	0.0000		<b>0.000025</b>	<b>0.000025</b>		0.0238	0.0242	1.67	<b>0.000025</b>	<b>0.000025</b>		0.0001	0.000143		<b>0.000025</b>	<b>0.000025</b>	
Lithium (Li)	0.0025	0.0025		0.0025	0.0025		0.005	0.005		0.0025	0.0025		0.0025	0.0025		0.0025	0.0025	
Magnesium (Mg)	1.7100	1.8200	6.23	2.34	2.35	0.43	3.65	3.69	1.09	1	1.03	2.96	1.68	1.67	0.60	2.31	2.35	1.72
Manganese (Mn)	0.1310	0.1340	2.26	0.0899	0.0878	2.36	1.29	1.3	0.77	0.00174	0.00174	0.00	0.312	0.308	1.29	0.00126	0.00119	5.71
Mercury (Hg)	0.0000	0.0000		<b>0.000005</b>	<b>0.000005</b>		<b>0.000005</b>	<b>0.000005</b>		<b>0.000005</b>	<b>0.000005</b>		<b>0.000005</b>	<b>0.000005</b>		<b>0.000005</b>	<b>0.000005</b>	
Molybdenum (Mo)	0.0010	0.0010	0.32	0.00126	0.0013	3.12	0.00077	0.00057	<b>29.85</b>	0.00635	0.0064	0.78	<b>0.000025</b>	<b>0.000025</b>		0.000436	0.000438	0.46
Nickel (Ni)	0.0014	0.0015		<b>0.00025</b>	<b>0.00025</b>		0.0076	0.0076	0.00	<b>0.00025</b>	<b>0.00025</b>		0.00325	0.00242		<b>0.00025</b>	<b>0.00025</b>	
Phosphorus (P)	0.1500	0.1500		<b>0.15</b>	<b													

**Appendix 4.1-4a. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2008**

Date Sampled	21-Aug-08			9-Sep-08			17-Sep-08			25-Sep-08			2-Oct-08			9-Oct-08		
	Sample ID	EUR2	EUR2	RPD%	TRC3-1	TRC3-2	RPD%	STE2-1	STE2-2	RPD%	SC2-1	SC2-2	RPD%	SC1-1	SC1-2	RPD%	TRC2-1	TRC2-2
<b>Physical Tests</b>																		
Colour, True	5	5		<b>2.5</b>	<b>2.5</b>		<b>2.5</b>	<b>2.5</b>		<b>2.5</b>	<b>2.5</b>		<b>2.5</b>	<b>6.6</b>		<b>2.5</b>	<b>2.5</b>	
Conductivity (uS/cm)				162	162	0.00	130	130	0.00	193	193	0.00	114	114	0.00	210	210	0.00
Hardness (as CaCO <sub>3</sub> )	52.3	52.5	0.38	<b>72.9</b>	<b>72.7</b>	0.27	<b>57</b>	<b>59.5</b>	4.29	<b>79.1</b>	<b>79.6</b>	0.63	<b>50.6</b>	<b>50.3</b>	0.59	<b>93.9</b>	<b>93.6</b>	0.32
pH				8.02	8.01	0.12	<b>7.94</b>	<b>7.92</b>	0.25	<b>7.71</b>	<b>7.74</b>	0.39	<b>7.87</b>	<b>7.74</b>	1.67	<b>7.98</b>	<b>8.01</b>	0.38
Total Suspended Solids	11	12		59.8	57.8	3.40	<b>1.5</b>	<b>1.5</b>		<b>51.4</b>	<b>52.4</b>	1.93	<b>293</b>	<b>291</b>	0.68	<b>41.2</b>	<b>22.2</b>	<b>59.94</b>
Total Dissolved Solids	82	70	15.79	118	129	8.91	79	78	1.27	123	119	3.31	94	75	<b>22.49</b>	134	135	0.74
Turbidity (NTU)	5.6	7.4	27.69	101	97.1	3.94	5.28	5.22	1.14	38.5	40.9	6.05	352	350	0.57	37.6	25.4	38.73
<b>Anions and Nutrients</b>																		
Acidity (as CaCO <sub>3</sub> )				2.3	2.3		4.1	4		1.5	1.4		<b>0.5</b>	<b>1.2</b>		2.5	2.3	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	42	41	2.41	46.8	47.1	0.64	23.6	24.2	2.51	33.8	33.9	0.30	34.2	34.1	0.29	49.5	49.8	0.60
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	<b>0.25</b>	<b>0.25</b>		<b>0.5</b>	<b>0.5</b>		<b>1</b>	<b>1</b>		<b>1</b>	<b>1</b>		<b>0.5</b>	<b>0.5</b>		<b>1</b>	<b>1</b>	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )				<b>0.5</b>	<b>0.5</b>		<b>1</b>	<b>1</b>		<b>1</b>	<b>1</b>		<b>0.5</b>	<b>0.5</b>		<b>1</b>	<b>1</b>	
Alkalinity, Total (as CaCO <sub>3</sub> )	35	34	2.90	46.8	47.1	0.64	23.6	24.2	2.51	33.8	33.9	0.30	34.2	34.1	0.29	49.5	49.8	0.60
Ammonia as N	<b>0.025</b>	<b>0.025</b>		<b>0.0025</b>	<b>0.0025</b>		<b>0.0025</b>	<b>0.0025</b>		<b>0.0025</b>	<b>0.0025</b>		<b>0.0025</b>	<b>0.0025</b>		<b>0.0025</b>	<b>0.0025</b>	
Bromide (Br)				<b>0.025</b>	<b>0.025</b>		<b>0.025</b>	<b>0.025</b>		<b>0.025</b>	<b>0.025</b>		<b>0.025</b>	<b>0.025</b>		<b>0.025</b>	<b>0.025</b>	
Chloride (Cl)	<b>0.25</b>	<b>0.25</b>		<b>0.25</b>	<b>0.25</b>		<b>0.25</b>	<b>0.25</b>		<b>0.25</b>	<b>0.25</b>		<b>0.25</b>	<b>0.25</b>		<b>0.25</b>	<b>0.25</b>	
Fluoride (F)				0.039	0.038		0.025	0.026		0.093	0.094		0.01	0.01		0.052	0.052	
Nitrate (as N)	0.001	0.005		0.0168	0.0164		0.0025	0.0025		0.0218	0.0222		0.0137	0.0157		0.0407	0.0396	2.74
Nitrite (as N)	0.001	0.003		0.0005	0.0005		0.0005	0.0005		0.0005	0.0005		0.0005	0.0005		<b>0.0005</b>	<b>0.0005</b>	
Total Kjeldahl Nitrogen	0.01	0.01		0.025	0.025		0.025	0.025		0.025	0.025		0.025	0.025		0.073	0.07	
Total Nitrogen	0.01	0.01		0.025	0.025		0.025	0.025		0.025	0.025		0.025	0.025		0.11	0.11	
Ortho Phosphate as P	0.004	0.007		0.0005	0.0005		0.0016	0.0016		0.0005	0.0005		0.0005	0.0011		0.0015	0.0025	
Total Dissolved Phosphate As P				0.0022	0.002		0.0035	0.0026		0.001	0.001		0.0023	0.0051		0.0024	0.0056	
Total Phosphate as P				0.0833	0.0882	5.71	0.0054	0.0059		0.0456	0.0609	28.73	0.163	0.163	0.00	0.0565	0.0334	51.39
Sulfate (SO <sub>4</sub> )	22	22	0.00	32.5	32.5	0.00	35.9	36	0.28	54.4	54.2	0.37	22.4	22.4	0.00	50.8	50.9	0.20
<b>Cyanides</b>																		
Cyanide, Total				<b>0.0005</b>	<b>0.0005</b>		<b>0.0005</b>	<b>0.0005</b>		<b>0.0005</b>	<b>0.0005</b>		<b>0.0005</b>	<b>0.0005</b>		<b>0.0005</b>	<b>0.0005</b>	
<b>Organic / Inorganic Carbon</b>																		
Dissolved Organic Carbon				<b>0.25</b>	<b>0.25</b>													
Total Organic Carbon	<b>0.25</b>	<b>0.6</b>		0.81	0.53		0.54	0.55		<b>0.25</b>	<b>0.25</b>		0.79	0.59		1.05	0.57	
<b>Total Metals</b>																		
Aluminum (Al)-Total	0.026	0.0412	45.24	3.08	2.95	4.31	0.127	0.302	81.59	1.74	1.9	8.79	10.6	9.02	16.11	2.29	1.28	56.58
Antimony (Sb)-Total	0.00004	0.00004		0.00071	0.00074	4.14	<b>0.00005</b>	<b>0.00005</b>		0.00076	0.00078	2.60	0.00405	0.00364	10.66	0.00053	0.00051	3.85
Arsenic (As)-Total	0.00008	0.00012		0.00379	0.00377	0.53	0.00014	0.00014		0.00225	0.00231	2.63	0.0124	0.0111	11.06	0.00184	0.00143	25.08
Barium (Ba)-Total	0.02	0.0206	2.96	0.0758	0.0739	2.54	0.0164	0.0192	15.73	0.0506	0.0516	1.96	0.251	0.223	11.81	0.0535	0.05	6.76
Beryllium (Be)-Total	<b>0.000005</b>	<b>0.000005</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>	
Bismuth (Bi)-Total	0.000005	0.000005		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>	
Boron (B)-Total	<b>0.025</b> </																	

**Appendix 4.1-4a. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2008**

Date Sampled	21/Aug/08			9/Sep/08			17/Sep/08			25/Sep/08			2/Oct/08			9/Oct/08			
	Sample ID	EUR2	EUR2	RPD%	TRC3-1	TRC3-2	RPD%	STE2-1	STE2-2	RPD%	SC2-1	SC2-2	RPD%	SC1-1	SC1-2	RPD%	TRC2-1	TRC2-2	RPD%
Nickel (Ni)-Total		<b>0.00045</b>	<b>0.00055</b>	20.00	0.00473	0.00452	4.54	0.00129	0.0015		0.00234	0.00229		0.00485	0.00427	12.72	0.00341	0.00279	20.00
Phosphorus (P)-Total		0.006	0.012	66.67	<b>0.15</b>	<b>0.15</b>		<b>0.15</b>	<b>0.15</b>		<b>0.15</b>	<b>0.15</b>		<b>0.15</b>	<b>0.15</b>		<b>0.15</b>	<b>0.15</b>	
Potassium (K)-Total		0.00018	0.00019		1.1	1.07	2.76	0.232	0.316		1.46	1.48	1.36	4.22	3.71	12.86	0.637	0.661	3.70
Selenium (Se)-Total		0.00031	0.00029	6.67	0.00057	0.0006	5.13	0.00074	0.00059	22.56	0.00118	0.00108	8.85	0.00042	0.00038		0.00065	0.00066	1.53
Silicon (Si)-Total		0.823	0.824	0.12	6.15	6.31	2.57	2.12	2.03	4.34	4.29	4.39	2.30	22	19.5	12.05	4.52	4.59	1.54
Silver (Ag)-Total		<b>0.0000025</b>	<b>0.0000025</b>		0.000065	0.000049		<b>0.000005</b>	<b>0.000005</b>		0.000035	0.000038		0.000195	0.000162	18.49	0.00002	0.000017	
Sodium (Na)-Total		0.00078	0.0007		1	1		1	1		1	1		1	1		2.1	2.1	
Strontium (Sr)-Total		0.15	0.147	2.02	0.172	0.169	1.76	0.163	0.164	0.61	0.149	0.148	0.67	0.106	0.099	6.83	0.227	0.231	1.75
Thallium (Tl)-Total		0.000003	0.000003		<b>0.00005</b>	<b>0.00005</b>		<b>0.00005</b>	<b>0.00005</b>		<b>0.00005</b>	<b>0.00005</b>		0.00017	0.00016		<b>0.00005</b>	<b>0.00005</b>	
Tin (Sn)-Total		0.015	0.03	66.67	0.00015	0.00005		0.00005	0.00005		0.00005	0.0002		0.00018	0.00015		<b>0.00005</b>	<b>0.00005</b>	
Titanium (Ti)-Total		0.00025	0.00025		0.097	0.101	4.04	0.005	0.005		0.064	0.068	6.06	0.261	0.229	13.06	0.06	0.052	14.29
Uranium (U)-Total		0.000008	0.000009		0.000166	0.000112	38.85	<b>0.000005</b>	0.000011		0.0003	0.000294	2.02	0.000227	0.000263	14.69	0.000115	0.000109	5.36
Vanadium (V)-Total		<b>0.0001</b>	<b>0.0001</b>		0.0082	0.008	2.47	<b>0.0005</b>	<b>0.0005</b>		0.0051	0.0054	5.71	0.033	0.0282	15.69	0.0039	0.0039	
Zinc (Zn)-Total		0.0008	0.0014	54.55	0.0192	0.0187	2.64	0.0027	0.0023		0.081	0.0817	0.86	0.0423	0.0374	12.30	0.0104	0.0045	
<b>Dissolved Metals</b>																			
Aluminum (Al)-Dissolved					0.0389	0.0354	9.42	0.0175	0.0182	3.92	0.0398	0.039	2.03	0.0762	0.0749	1.72	0.0255	0.0299	15.88
Antimony (Sb)-Dissolved					0.00033	0.00032		<b>0.00005</b>	<b>0.00005</b>		0.00047	0.00047		0.00137	0.00138	0.73	0.00037	0.00037	
Arsenic (As)-Dissolved					0.00036	0.00036		<b>0.00005</b>	<b>0.00005</b>		<b>0.00005</b>	<b>0.00005</b>		0.0008	0.00086	7.23	0.00036	0.00036	
Barium (Ba)-Dissolved					0.0266	0.0261	1.90	0.0151	0.0154	1.97	0.0298	0.0297	0.34	0.0304	0.0302	0.66	0.0271	0.0272	0.37
Beryllium (Be)-Dissolved					<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>	
Bismuth (Bi)-Dissolved					<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>	
Boron (B)-Dissolved					0.005	0.005		0.005	0.005		0.005	0.005		0.005	0.005		0.005	0.005	
Cadmium (Cd)-Dissolved					0.000024	0.000025		<b>0.0000085</b>	<b>0.0000085</b>		0.000698	0.000707	1.28	<b>0.0000085</b>	<b>0.0000085</b>		0.000027	0.000033	
Calcium (Ca)-Dissolved					23.6	23.5	0.42	16.4	17.1	4.18	27.9	28.1	0.71	18.2	18.1	0.55	29.4	29.2	0.68
Chromium (Cr)-Dissolved					0.00025	0.00025		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>	
Cobalt (Co)-Dissolved					0.00005	0.00005		<b>0.00005</b>	<b>0.00005</b>		0.0012	0.00116	3.39	<b>0.00005</b>	<b>0.00005</b>		<b>0.00005</b>	<b>0.00005</b>	
Copper (Cu)-Dissolved					0.00006	0.00015		0.00026	0.00026		0.00201	0.00197	2.01	0.00022	0.00018		0.00026	0.00026	
Iron (Fe)-Dissolved					0.034	0.015		0.015	0.015		0.015	0.015		0.015	0.015		0.015	0.015	
Lead (Pb)-Dissolved					0.000025	0.000025		<b>0.000025</b>	<b>0.000025</b>		<b>0.000025</b>	<b>0.000025</b>		<b>0.000025</b>	<b>0.000025</b>		<b>0.000025</b>	<b>0.000025</b>	
Lithium (Li)-Dissolved					0.0025	0.0025		0.0025	0.0025		0.0025	0.0025		0.0025	0.0025		0.0025	0.0025	
Magnesium (Mg)-Dissolved					3.41	3.39	0.59	3.88	4.11	5.76	2.28	2.31	1.31	1.24	1.24	0.00	4.99	5.01	0.40
Manganese (Mn)-Dissolved					0.0014	0.0013	21.34	0.0113	0.0114	0.88	0.129	0.126	2.35	0.000348	0.000355	1.99	0.00127	0.00333	89.57
Mercury (Hg)-Dissolved					<b>0.000005</b>	<b>0.000005</b>		<b>0.000005</b>	<b>0.000005</b>		<b>0.000005</b>	<b>0.000005</b>		<b>0.000005</b>	<b>0.000005</b>		<b>0.000005</b>	<b>0.000005</b>	
Molybdenum (Mo)-Dissolved					0.00138	0.00131	5.20	0.00039	0.000388	0.51	0.00147	0.00147	0.00	0.0013	0.00134	3.03	0.00152	0.00146	4.03
Nickel (Ni)-Dissolved					<b>0.00025</b>	<b>0.00025</b>		0.00064	0.00061		0.00113	0.00109		<b>0.00025</b>	<b>0.00025</b>		0.00064	0.00072	
Phosphorus (P)-Dissolved					0.15	0.15		0.15	0.15		0.15	0.15		0.15</td					

**Appendix 4.1-4a. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2008**

Date Sampled Sample ID	29-Oct-08			5-Dec-08			6-Dec-08			6-Dec-08		
	EUR2-1	EUR2-2	RPD%	MCTR-2	MCTR-1	RPD%	UR-1-1 (DUP)	UR-1-2 (DUP)	RPD%	SUNR-1 (DUP)	SUNR-2 (DUP)	RPD%
<b>Physical Tests</b>												
Colour, True	2.5	2.5		2.5	2.5		2.5	2.5		2.5	2.5	
Conductivity (uS/cm)	217	217	0.00	353	354	0.28	244	244	0.00	178	179	0.56
Hardness (as CaCO <sub>3</sub> )	101	98.4	2.61	165	164	0.61	108	108	0.00	83.8	83.1	0.84
pH	8.07	8.09	0.25	8.2	8.23	0.37	8.08	8.09	0.12	8.1	8.07	0.37
Total Suspended Solids	5.3	4.3		12	13		13	9		4.5	5.5	
Total Dissolved Solids	130	124	4.72	237	213	10.67	151	146	3.37	110	104	5.61
Turbidity (NTU)	1.63	1.38	16.61	7.05	6.01	15.93	13.8	14	1.44	2.04	1.75	15.30
<b>Anions and Nutrients</b>												
Acidity (as CaCO <sub>3</sub> )	0.5	1.1		0.5	0.5		0.5	0.5		0.5	0.5	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	66.9	64.2	4.12	110	109	0.91	71.9	70.2	2.39	59.2	60.9	2.83
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	1	1		1	1		1	1		1	1	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	1	1		1	1		1	1		1	1	
Alkalinity, Total (as CaCO <sub>3</sub> )	66.9	64.2	4.12	110	109	0.91	71.9	70.2	2.39	59.2	60.9	2.83
Ammonia as N	0.0066	0.0073		0.0025	0.0025		0.0025	0.0025		0.0025	0.0025	
Bromide (Br)	0.025	0.025		0.025	0.025		0.025	0.025		0.025	0.025	
Chloride (Cl)	0.25	0.25		0.25	0.25		0.25	0.25		0.25	0.25	
Fluoride (F)	0.043	0.043		0.04	0.042		0.066	0.066		0.052	0.053	
Nitrate (as N)	0.0137	0.0152		0.0954	0.0959	0.52	0.107	0.108	0.93	0.235	0.241	2.52
Nitrite (as N)	0.0005	0.0005		0.0005	0.0005		0.0005	0.0005		0.0005	0.0005	
Total Kjeldahl Nitrogen	0.025	0.025		0.025	0.025		0.025	0.073		0.165	0.099	
Total Nitrogen	0.025	0.025		0.13	0.14		0.15	0.18		0.4	0.34	16.22
Ortho Phosphate as P	0.0005	0.0015		0.0019	0.002		0.0005	0.0005		0.001	0.0011	
Total Dissolved Phosphate As P												
Total Phosphate as P	0.0103	0.0086		0.0237	0.0286	18.74	0.0177	0.0136	26.20	0.0119	0.0084	
Sulfate (SO <sub>4</sub> )	47.5	47.6	0.21	82.2	82.6	0.49	57.1	56.9	0.35	30.6	31.3	2.26
<b>Cyanides</b>												
Cyanide, Total	0.0005	0.0005		0.0005	0.0005		0.0005	0.0005		0.0005	0.0005	
<b>Organic / Inorganic Carbon</b>												
Dissolved Organic Carbon												
Total Organic Carbon	0.25	0.25		0.25	0.25		0.51	0.55		0.88	0.51	
<b>Total Metals</b>												
Aluminum (Al)-Total	0.0967	0.114	16.42	0.132	0.137	3.72	0.322	0.328	1.85	0.0773	0.0817	5.53
Antimony (Sb)-Total	0.00005	0.00005		0.00045	0.00048		0.00199	0.00202	1.50	0.00011	0.00011	
Arsenic (As)-Total	0.00015	0.00014		0.00071	0.00069	2.86	0.00146	0.00146	0.00	0.00038	0.00037	
Barium (Ba)-Total	0.0332	0.0347	4.42	0.0247	0.0246	0.41	0.0326	0.0326	0.00	0.0347	0.034	2.04
Beryllium (Be)-Total	0.00025	0.00025		0.00025	0.00025		0.00025	0.00025		0.00025	0.00025	
Bismuth (Bi)-Total	0.00025	0.00025		0.00025	0.00025		0.00025	0.00025		0.00025	0.00025	
Boron (B)-Total	0.005	0.005		0.005	0.005		0.005	0.005		0.005	0.005	
Cadmium (Cd)-Total	0.000028	0.000086		0.000131	0.000131	0.00	0.000728	0.000731	0.41	0.000037	0.000041	
Calcium (Ca)-Total	26.7	27	1.12	56.6	56.6	0.00	36.8	36.7	0.27	30.6	30.8	0.65
Chromium (Cr)-Total	0.00025	0.00025		0.00025	0.00025		0.00025	0.00025		0.00025	0.00052	
Cobalt (Co)-Total	0.00019	0.00019		0.00029	0.00029		0.0007	0.0007	0.00	0.0001	0.00005	
Copper (Cu)-Total	0.00035	0.00035		0.00195	0.00176	10.24	0.071	0.0712	0.28	0.00141	0.00129	8.89
Iron (Fe)-Total	0.175	0.214	20.05	0.363	0.386	6.14	1.53	1.53	0.00	0.115	0.106	
Lead (Pb)-Total	0.000094	0.000118		0.000202	0.000189		0.00122	0.00122	0.00	0.000439	0.000356	20.88
Lithium (Li)-Total	0.0025	0.0025		0.0025	0.0025		0.0025	0.0025		0.0025	0.0025	
Magnesium (Mg)-Total	8.89	9.03	1.56	6.29	6.39	1.58	3.94	3.96	0.51	1.64	1.65	0.61
Manganese (Mn)-Total	0.00923	0.0109	16.59	0.0168	0.0168	0.00	0.0842	0.0838	0.48	0.00653	0.00525	21.73
Mercury (Hg)-Total	0.000005	0.000005		0.000005	0.000005		0.000005	0.000005		0.000005	0.000005	
Molybdenum (Mo)-Total	0.000287	0.00029	1.04	0.00279	0.0028	0.36	0.00153	0.00158	3.22	0.00601	0.00623	3.59

All measurements are mg/L unless otherwise noted

\*Highlighted values indicate RPD results greater than 20%

Bolded values indicate half detection limits

**Appendix 4.1-4a. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2008**

Date Sampled Sample ID	29/Oct/08			5/Dec/08			6/Dec/08			6/Dec/08		
	EUR2-1	EUR2-2	RPD%	MCTR-2	MCTR-1	RPD%	UR-1-1 (DUP)	UR-1-2 (DUP)	RPD%	SUNR-1 (DUP)	SUNR-2 (DUP)	RPD%
Nickel (Ni)-Total	0.00112	0.00127		0.00212	0.00236		0.00079	0.00085		0.00025	0.00025	
Phosphorus (P)-Total	0.15	0.15		0.15	0.15		0.15	0.15		0.15	0.15	
Potassium (K)-Total	0.286	0.29	1.39	0.998	0.999	0.10	0.879	0.878	0.11	1.22	1.22	0.00
Selenium (Se)-Total	0.00042	0.00055		0.00572	0.00554	3.20	0.0014	0.00123	12.93	0.00055	0.00061	10.34
Silicon (Si)-Total	1.81	1.96	7.96	2.46	2.53	2.81	2.49	2.49	0.00	2.26	2.25	0.44
Silver (Ag)-Total	0.000005	0.000005		0.000005	0.000005		0.000005	0.000005	0.00	0.000005	0.000005	
Sodium (Na)-Total	1	1		1	1		2	1		1	1	
Strontium (Sr)-Total	0.261	0.264	1.14	0.229	0.23	0.44	0.223	0.223	0.00	0.221	0.222	0.45
Thallium (Tl)-Total	0.00005	0.00005		0.00005	0.00005		0.00005	0.00005		0.00005	0.00005	
Tin (Sn)-Total	0.00005	0.00005		0.00005	0.00005		0.00005	0.00005		0.00005	0.00005	
Titanium (Ti)-Total	0.005	0.005		0.005	0.01		0.005	0.005		0.005	0.005	
Uranium (U)-Total	0.000022	0.000027		0.000605	0.000588	2.85	0.000223	0.00023	3.09	0.000642	0.000628	2.20
Vanadium (V)-Total	0.0005	0.0005		0.0005	0.0005		0.0005	0.0005		0.0005	0.0005	
Zinc (Zn)-Total	0.0018	0.0054		0.0069	0.0069	0.00	0.0538	0.0539	0.19	0.0005	0.0005	
<b>Dissolved Metals</b>												
Aluminum (Al)-Dissolved	0.0046	0.0038		<b>0.004</b>	<b>0.002</b>		0.0347	0.0497	<b>35.55</b>	<b>0.0045</b>	0.0113	
Antimony (Sb)-Dissolved	0.00005	0.00005		0.00045	0.00045		0.00189	0.0019	0.53	0.00011	<b>0.00005</b>	
Arsenic (As)-Dissolved	0.00005	0.00005		0.00028	0.00027		<b>0.00005</b>	0.00015		0.00028	0.00026	
Barium (Ba)-Dissolved	0.031	0.0304	1.95	0.0227	0.0228	0.44	0.0302	0.0302	0.00	0.0338	0.0335	0.89
Beryllium (Be)-Dissolved	0.00025	0.00025		0.00025	0.00025		0.00025	0.00025		0.00025	0.00025	
Bismuth (Bi)-Dissolved	0.00025	0.00025		0.00025	0.00025		0.00025	0.00025		0.00025	0.00025	
Boron (B)-Dissolved	0.005	0.005		0.005	0.005		0.005	0.005		0.005	0.005	
Cadmium (Cd)-Dissolved	0.0000085	0.0000085		0.00008	0.000078		0.000388	0.000403	3.79	0.000032	0.000032	
Calcium (Ca)-Dissolved	26.3	25.4	3.48	56.2	55.6	1.07	37	37	0.00	30.9	30.6	0.98
Chromium (Cr)-Dissolved	0.00025	0.00025		0.00025	0.00025		<b>0.00025</b>	<b>0.00025</b>		<b>0.00025</b>	<b>0.00025</b>	
Cobalt (Co)-Dissolved	0.00005	0.00005		0.00005	0.00005		0.00053	0.00053	0.00	0.00005	0.00005	
Copper (Cu)-Dissolved	0.00019	0.00016		0.0003	0.00045		0.00355	0.00651	<b>58.85</b>	0.00054	0.0005	
Iron (Fe)-Dissolved	0.015	0.015		0.015	0.015		0.015	0.065		0.015	0.015	
Lead (Pb)-Dissolved	0.000025	0.000025		0.000025	0.000025		0.000025	0.000054		0.000025	0.000025	
Lithium (Li)-Dissolved	0.0025	0.0025		0.0025	0.0025		0.0025	0.0025		0.0025	0.0025	
Magnesium (Mg)-Dissolved	8.63	8.51	1.40	6.02	6.01	0.17	3.83	3.85	0.52	1.61	1.6	0.62
Manganese (Mn)-Dissolved	0.00023	0.000236		0.0001	0.000078		0.0752	0.0752	0.00	0.000623	0.000644	3.31
Mercury (Hg)-Dissolved	0.000005	0.000005		0.000005	0.000005		0.000013	<b>0.000005</b>		0.000011	0.000012	
Molybdenum (Mo)-Dissolved	0.000275	0.000267	2.95	0.00306	0.00302	1.32	0.00152	0.00159	4.50	0.00649	0.00644	0.77
Nickel (Ni)-Dissolved	0.00053	0.00052		0.00158	0.00179		0.00078	0.0008		<b>0.00025</b>	<b>0.00025</b>	
Phosphorus (P)-Dissolved	0.15	0.15		0.15	0.15		0.15	0.15		0.15	0.15	
Potassium (K)-Dissolved	0.258	0.252	2.35	0.973	0.972	0.10	0.863	0.863	0.00	1.22	1.22	0.00
Selenium (Se)-Dissolved	0.00054	0.00065	18.49	0.00489	0.00497	1.62	0.00124	0.00111	11.06	0.00052	0.00047	
Silicon (Si)-Dissolved	1.75	1.73	1.15	2.19	2.19	0.00	2.1	2.07	1.44	2.06	2.07	0.48
Silver (Ag)-Dissolved	0.000005	0.000005		0.000005	0.000005		0.000005	0.000005		0.000005	0.000005	
Sodium (Na)-Dissolved	1	1		1	1		2	1		1	1	
Strontium (Sr)-Dissolved	0.255	0.251	1.58	0.227	0.225	0.88	0.222	0.223	0.45	0.223	0.22	1.35
Thallium (Tl)-Dissolved	0.00005	0.00005		0.00005	0.00005		0.00005	0.00005		0.00005	0.00005	
Tin (Sn)-Dissolved	0.00005	0.00005		0.00005	0.00005		0.00005	0.00005		0.00005	0.00005	
Titanium (Ti)-Dissolved	0.005	0.005		0.005	0.005		0.005	0.005		0.005	0.005	
Uranium (U)-Dissolved	0.00002	0.000021		0.000602	0.000602	0.00	0.00016	0.00016	0.00	0.000661	0.000648	1.99
Vanadium (V)-Dissolved	0.0005	0.0005		0.0005	0.0005		0.0005	0.0005		0.0005	0.0005	
Zinc (Zn)-Dissolved	0.0005	0.0005		0.0027	0.0026		0.0162	0.0178	9.41	0.0005	0.0005	

All measurements are mg/L unless otherwise noted

\*Highlighted values indicate RPD results greater than 20%

Bolded values indicate half detection limits

**KSM PROJECT**  
**2007 to 2011 Baseline Water Quality Report**

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## **Appendix 4.1-4b**

**Relative Percent Difference (RPD) Results for Stream  
Water Quality Duplicate Samples, KSM Project, 2009**

**Appendix 4.1-4b. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2009**

Sample ID	TEC2			SC1			NTR2			MTC2			SUNR			TRC1			NTR2		
	Date Sampled	28-Apr-09	28-Apr-09	04-Aug-09	04-Aug-09	22-Aug-09	22-Aug-09	22-Aug-09	22-Aug-09	22-Aug-09	22-Aug-09	22-Aug-09	1-Dec-09	1-Dec-09	06-Jan-09	06-Jan-09	06-Jan-09	06-Jan-09			
Time Sampled	12:30	12:30	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00			
ALS Sample ID	L759011-7	L759011-8	L801967-8	L801967-9	L809879-25	L809879-10	L809879-14	L809879-21	L809879-24	L809879-6	L845898-2	L845898-8	L723686-2	L723686-3							
Matrix	5 x DL	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD		
<b>Physical Tests</b>																					
Colour, True (color units)	25.00	2.5	2.5		2.5	2.5		2.5	2.5		2.50	2.50		2.50	2.50		2.50	2.50			
Conductivity (uS/cm)	10.00	142	142	0.00	68.3	66.5	2.67	76.4	76.4	0.00	58.70	58.20	0.86	67.50	68.50	1.47	421.00	417.00	0.95		
Hardness (as CaCO <sub>3</sub> )	2.50	57.8	60	3.74	31	29.8	3.95	33	33	0.00	25.70	27.50	6.77	29.70	30.80	3.64	203.00	208.00	2.43		
pH (pH units)	0.50	8	8.01	0.12	8.08	7.93	1.87	7.68	7.82	1.81	8.00	7.75	3.17	7.47	7.89	5.47	8.19	8.17	0.24		
Total Suspended Solids	15.00	1.5	1.5		110	115	4.44	11.8	5.8	68.18	69.80	75.30	7.58	63.80	62.80	1.58	1.50	3.30	1.50		
Total Dissolved Solids	50.00	90	88	2.25	42	40		46	48	4.26	57.00	47.00		46.00	49.00		283.00	282.00	0.35		
Turbidity (NTU)	0.50	0.93	0.75	21.43	137	132	3.72	10.3	10.3	0.00	65.30	65.80	0.76	40.00	39.30	1.77	0.70	0.70	0.00		
<b>Anions and Nutrients</b>																					
Acidity (as CaCO <sub>3</sub> )	5.00	3.3	2.9		0.5	1.1		1.8	1.3	32.26	0.50	1.80		2.60	1.30		1.40	1.60			
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	10.00	43.8	42.1	3.96	26	25.3	2.73	16.6	17.7	6.41	19.40	19.40	0.00	21.60	22.10	2.29	95.80	93.10	2.86		
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	10.00	1	1		0.5	0.5		1	1		1.00	1.00		1.00	1.00		1.00	1.00	0.00		
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	10.00	1	1		0.5	0.5		1	1		1.00	1.00		1.00	1.00		1.00	1.00	0.00		
Alkalinity, Total (as CaCO <sub>3</sub> )	10.00	43.8	42.1	3.96	26	25.3	2.73	16.6	17.7	6.41	19.40	19.40	0.00	21.60	22.10	2.29	95.80	93.10	2.86		
Ammonia as N	0.03	0.0083	0.0025		0.0025	0.0025		0.0025	-		0.00	0.00		0.00	0.00		0.00	0.00			
Bromide (Br)	0.25	0.025	0.025		0.025	0.025		0.025	0.025		0.03	0.03		0.03	0.03		0.03	0.03			
Chloride (Cl)	2.50	0.25	0.25		0.25	0.25		0.25	0.25		0.25	0.25		0.25	0.25		0.25	0.25			
Fluoride (F)	0.10	0.041	0.034		0.01	0.01		0.022	0.023	4.44	0.01	0.01		0.03	0.01		0.09	0.09			
Nitrate (as N)	0.03	0.538	0.535	0.56	0.011	0.012		0.0152	0.0152	0.00	0.01	0.01		0.03	0.00		0.03	0.03	0.63		
Nitrite (as N)	0.01	0.0005	0.0005		0.0005	0.0005		0.0005	0.0005		0.00	0.00		0.00	0.00		0.00	0.00			
Total Kjeldahl Nitrogen	0.25	0.086	0.107		0.075	0.056		0.025	0.025		0.03	0.03		0.03	0.03		0.03	0.03			
Total Nitrogen	0.25	0.624	0.642	2.84	0.086	0.068		0.025	0.025		0.03	0.03		0.03	0.03		0.03	0.03	2.11		
Ortho Phosphate as P	0.01	0.0026	0.0024		0.0005	0.0011		0.0024	0.0023	4.26	0.00	0.00		0.00	0.00		0.00	0.00			
Total Phosphate as P	0.10	0.0062	0.005		0.105	0.112	6.45	0.0066	0.0084	24.00	0.10	0.11		0.04	0.08		0.00	0.00	0.01		
Sulfate (SO <sub>4</sub> )	2.50	23.6	23.6	0.00	10.1	10.1	0.00	17.7	17.7		7.11	7.08	0.42	9.09	9.59	5.35	126.00	123.00	2.41		
<b>Cyanides</b>																					
Cyanide, Weak Acid Dissociable	0.01							0.0005	0.0005		-	-		0.00	0.00						
Cyanide, Total	0.01	0.0005	0.0005		0.0005	0.0005		0.0005	0.0005		0.00	0.00		0.00	0.00		0.00	0.00			
Thiocyanate (SCN)	2.50				-	-		0.5	0.25		-	-		0.80	0.91						
<b>Organic / Inorganic Carbon</b>	0.00																				
Total Organic Carbon	2.50	1.72	1.74		0.25	0.25		0.25	0.25		0.25	0.25		0.25	0.25		0.82	0.69	17.22		
<b>Total Metals</b>																					
Aluminum (Al)	0.01	0.0668	0.064	4.28	4.78	4.83	1.04	0.472	0.434	8.39	2.94	2.89	1.72	1.88	1.53	20.53	0.02	0.02	3.54		
Antimony (Sb)	0.00	0.00005	0.00005		0.002	0.00204	1.98	0.00005	0.00005		0.00	0.00		0.00	0.00		3.85	0.00	0.00		
Arsenic (As)	0.00	0.00011	0.00011		0.00773	0.00778	0.64	0.00018	0.00018	0.00	0.00	0.00	11.16	0.00	0.00	9.80	0.00	0.00	0.00		
Barium (Ba)	0.00	0.0149	0.0148	0.67	0.128	0.132	3.08	0.019	0.019	0.00	0.05	0.05	0.84	0.04	0.04	6.45	0.04	0.04	4.53		
Beryllium (Be)	0.00	0.00025	0.00025		0.00025	0.00025		0.00025	0.00025		0.00	0.00		0.00	0.00		0.00	0.00	0.00		
Bismuth (Bi)	0.00	0.00025																			

**Appendix 4.1-4b. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2009**

Sample ID	TEC2			SC1			NTR2			MTC2			SUNR			TRC1			NTR2			
	Date Sampled	28-Apr-09	28-Apr-09	04-Aug-09	04-Aug-09	22-Aug-09	22-Aug-09	22-Aug-09	22-Aug-09	22-Aug-09	22-Aug-09	22-Aug-09	1-Dec-09	1-Dec-09	06-Jan-09	06-Jan-09	00:00	00:00	00:00	00:00		
Time Sampled		12:30		00:00		00:00		00:00		00:00		00:00		00:00		00:00		00:00		00:00		
ALS Sample ID	L759011-7	L759011-8	L801967-8	L801967-9	L809879-25	L809879-10	L809879-14	L809879-21	L809879-24	L809879-6	L845898-2	L845898-8	L723686-2	L723686-3								
Matrix	5 x DL	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD
Molybdenum (Mo)	0.00	0.000282	0.000277	1.79	0.000703	0.000698	0.71	0.000418	0.000459	9.35	0.00	0.00	0.00	0.00	0.00	5.03	0.00	0.00	3.22	0.00	0.00	23.92
Nickel (Ni)	0.02	0.00082	0.00076		0.00222	0.00233		0.00141	0.0013	8.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Phosphorus (P)	1.50	0.15	0.15		0.15	0.15		0.15	0.15		0.15	0.15		0.15	0.15		0.15	0.15		0.15	0.15	
Potassium (K)	0.25	0.297	0.291	2.04	1.84	1.89	2.68	0.307	0.306	0.33	1.16	1.18	1.71	0.86	0.78	8.92	0.47	0.45	4.34	0.29	0.32	9.56
Selenium (Se)	0.00	0.00036	0.00041		0.00013	0.00022		0.00036	0.00056	43.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Silicon (Si)	0.25	2.29	2.25	1.76	7.31	7.35	0.55	2.17	2.12	2.33	6.13	6.15	0.33	4.28	3.41	22.63	1.76	1.72	2.30	2.57	2.51	2.36
Silver (Ag)	0.00	0.000005	0.000005		0.000103	0.000089		0.000005	0.000005		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Sodium (Na)	10.00	1	1		1	1		1	1		1.00	1.00		1.00	1.00		2.50	2.50		1.00	1.00	
Strontium (Sr)	0.00	0.129	0.123	4.76	0.0614	0.0628	2.25	0.104	0.106	1.90	0.08	0.08	0.76	0.09	0.09	1.08	0.55	0.53	3.72	0.18	0.20	10.31
Thallium (Tl)	0.00	0.00005	0.00005		0.00005	0.00005		0.00005	0.00005		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Tin (Sn)	0.00	0.00005	0.00005		0.00005	0.00005		0.00005	0.00005		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Titanium (Ti)	0.05	0.005	0.005		0.114	0.111		2.67	0.005	0.005	0.15	0.16	5.19	0.14	0.11	28.57	0.01	0.01	0.01	0.01	0.01	
Uranium (U)	0.00	0.000011	0.000013		0.000122	0.000099	20.81	0.000005	0.000005		0.00	0.00	34.32	0.00	0.00	7.29	0.00	0.00	6.38	0.00	0.00	
Vanadium (V)	0.01	0.0005	0.0005		0.0149	0.0147	1.35	0.0015	0.0014	6.90	0.01	0.01	2.08	0.01	0.00		0.00	0.00		0.00	0.00	
Zinc (Zn)	0.04	0.0015	0.0015		0.0242	0.025		0.0032	0.0026	20.69	0.01	0.01		0.01	0.01		0.00	0.00		0.00	0.00	
<b>Dissolved Metals</b>																						
Aluminum (Al)	0.01	0.0113	0.0118	4.33	0.417	0.0724	140.83	0.0743	0.0306	83.32	0.10	0.10	2.03	0.04	0.15	108.65	0.00	0.00	0.01	0.01	3.70	
Antimony (Sb)	0.00	0.00005	0.00005		0.00066	0.00058	12.90	0.00005	0.00005		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Arsenic (As)	0.00	0.00005	0.00005		0.00096	0.00058	49.35	0.00005	0.00005		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Barium (Ba)	0.00	0.0136	0.0137	0.73	0.0329	0.0237	32.51	0.0131	0.0131	0.00	0.01	0.01	0.16	0.02	0.02	10.09	0.04	0.04	2.88	0.02	0.02	1.30
Beryllium (Be)	0.00	0.00025	0.00025		0.00025	0.00025		0.00025	0.00025		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Bismuth (Bi)	0.00	0.00025	0.00025		0.00025	0.00025		0.00025	0.00025		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Boron (B)	0.05	0.005	0.005		0.005	0.005		0.005	0.005		0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01	
Cadmium (Cd)	0.00	0.0000085	0.0000085		0.000016	0.00001		0.000005	0.000005		0.00	0.00		0.00	0.00		11.76	0.00	0.00	3.59	0.00	0.00
Calcium (Ca)	0.10	17.2	18	4.55	11.2	10.8	3.64	9.73	9.85	1.23	9.49	10.10	6.23	10.90	11.30	3.60	61.30	63.20	3.05	18.20	18.50	1.63
Chromium (Cr)	0.00	0.00025	0.00025		0.00025	0.00025		0.00025	0.00025		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Cobalt (Co)	0.00	0.00005	0.00005		0.00014	0.00005		0.00005	0.00005		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Copper (Cu)	0.00	0.00057	0.00057	0.00	0.00159	0.00108	38.20	0.00022	0.00022	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Iron (Fe)	0.15	0.015	0.015		0.291	0.015	180.39	0.015	0.015		0.09	0.09		0.03	0.09		0.02	0.02		0.02	0.02	
Lead (Pb)	0.00	0.000025	0.000025		0.000379	0.000079	131.00	0.000025	0.000025		0.00	0.00		0.00	0.00		0.00					

**Appendix 4.1-4b. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2009**

Sample ID	UR1A			BIR1			MCT2			TRC2			UR2			SC2			
	Date Sampled	02-Jul-09	02-Jul-09	03-Jul-09	03-Jul-09	02-Jul-09	02-Jul-09	08-Jun-09	08-Jun-09	13-Jun-09	13-Jun-09	19-Jun-09	19-Jun-09	10:30	10:40				
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	
ALS Sample ID	L787346-6	L787346-30	L787346-32	L787346-28	L787346-31	L787346-21	L776835-3	L776835-4	L778602-2	L778602-3	L781603-3	L781603-4							
Matrix	5 x DL	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD
<b>Physical Tests</b>																			
Colour, True (color units)	25.00	6.60	<b>2.50</b>		<b>2.50</b>	<b>2.50</b>		<b>2.50</b>	<b>2.50</b>		<b>2.50</b>	5.10		<b>2.50</b>	<b>2.50</b>				
Conductivity (uS/cm)	10.00	90.70	91.00	0.33	85.90	86.10	0.23	145.00	160.00	9.84	110.00	111.00	0.90	105.00	105.00	0.00	184.00	187.00	1.62
Hardness (as CaCO <sub>3</sub> )	2.50	43.70	45.10	3.15	43.60	42.90	1.62	70.80	72.90	2.92	52.70	51.70	1.92	48.20	44.10	8.88	76.30	79.20	3.73
pH (pH units)	0.50	7.90	7.89	0.13	7.90	7.88	0.25	8.00	8.00	0.00	7.90	7.92	0.25	7.84	7.85	0.13	7.01	7.32	4.33
Total Suspended Solids	15.00	8.50	7.50		21.00	21.00	0.00	41.00	51.00	<b>21.74</b>	218.00	207.00	5.18	146.00	137.00	6.36	173.00	172.00	0.58
Total Dissolved Solids	50.00	50.00	57.00		53.00	50.00		93.00	96.00	3.17	85.00	82.00	3.59	66.00	67.00	1.50	116.00	113.00	2.62
Turbidity (NTU)	0.50	12.60	12.80	1.57	15.80	15.40	2.56	37.70	45.40	18.53	170.00	167.00	1.78	94.70	93.00	1.81	138.00	132.00	4.44
<b>Anions and Nutrients</b>																			
Acidity (as CaCO <sub>3</sub> )	5.00	z	2.70		2.30	2.70		2.60	2.70		1.30	1.30		1.20	1.20		3.20	2.80	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	10.00	35.30	32.70	7.65	32.30	34.80	7.45	44.90	48.10	6.88	33.80	33.90	0.30	28.80	29.10	1.04	21.80	21.80	0.00
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	10.00	1.00	1.00		1.00	1.00		1.00	1.00		0.50	0.50		1.00	1.00		1.00	1.00	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	10.00	1.00	1.00		1.00	1.00		1.00	1.00		0.50	0.50		1.00	1.00		1.00	1.00	
Alkalinity, Total (as CaCO <sub>3</sub> )	10.00	35.30	32.70	7.65	32.30	34.80	7.45	44.90	48.10	6.88	33.80	33.90	0.30	28.80	29.10	1.04	21.80	21.80	0.00
Ammonia as N	0.03	0.00	0.00		0.00	0.00		0.00	0.00		0.04	0.02		0.00	0.00		0.00	0.00	
Bromide (Br)	0.25	0.03	0.03		0.03	0.03		0.03	0.03		0.03	0.03		0.03	0.03		0.03	0.03	
Chloride (Cl)	2.50	0.25	0.25		0.25	0.25		0.25	0.25		0.25	0.25		0.25	0.25		0.25	0.25	
Fluoride (F)	0.10	0.01	0.01		0.02	0.01		0.01	0.01		0.04	0.04		0.05	0.05		0.12	0.10	11.87
Nitrate (as N)	0.03	0.03	0.03	4.55	0.03	0.03		6.10	0.02	0.02	0.17	0.15	11.91	0.10	0.10	1.10	0.05	0.05	0.39
Nitrite (as N)	0.01	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Total Kjeldahl Nitrogen	0.25	0.03	0.03		0.03	0.03		0.03	0.03		0.10	0.10		0.03	0.03		0.03	0.03	
Total Nitrogen	0.25	0.03	0.03		0.03	0.03		0.03	0.03		0.27	0.25		0.14	0.13		0.07	0.07	
Ortho Phosphate as P	0.01	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Total Phosphate as P	0.10	0.01	0.02		0.01	0.02		0.07	0.08		0.23	0.19	17.14	0.21	0.06		0.27	0.27	1.48
Sulfate (SO <sub>4</sub> )	2.50	11.60	11.70	0.86	11.00	11.00	0.00	27.20	32.80	18.67	20.70	20.60	0.48	18.00	18.00	0.00	61.60	61.30	0.49
<b>Cyanides</b>																			
Cyanide, Weak Acid Dissociable	0.01	-	-		-	-		-	-		0.00			-	-		-	-	
Cyanide, Total	0.01	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Thiocyanate (SCN)	2.50	-	-		-	-		-	-		2.25			-	-		-	-	
<b>Organic / Inorganic Carbon</b>	0.00																		
Total Organic Carbon	2.50	0.60	0.52		0.98	0.85		0.25	0.25		2.43	2.11		1.01	0.98		0.25	0.25	
<b>Total Metals</b>																			
Aluminum (Al)	0.01	0.53	0.43	<b>21.06</b>	0.99	1.00	0.90	1.73	1.73	0.00	6.60	7.94	18.43	5.35	4.67	13.57	4.10	5.00	19.78
Antimony (Sb)	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	5.63	0.00	0.00	9.73	0.00	0.00	16.67	0.00	0.00	10.99
Arsenic (As)	0.00	0.00	0.00	<b>25.00</b>	0.00	0.00		0.00	0.00	16.19	0.01	0.01	4.02	0.01	0.00	<b>25.00</b>	0.01	0.01	8.46
Barium (Ba)	0.00	0.02	0.02	13.51	0.04	0.05	11.22	0.04	0.04	6.16	0.16	0.16	2.48	0.09	0.08	3.93	0.09	0.11	16.48
Beryllium (Be)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Bismuth (Bi)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	

#### **Appendix 4.1-4b. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2009**

Sample ID	UR1A			BIR1			MCT2			TRC2			UR2			SC2				
	Date Sampled		02-Jul-09	02-Jul-09		03-Jul-09	Time Sampled		03-Jul-09	Matrix		02-Jul-09	ALS Sample ID		08-Jun-09	08-Jun-09		19-Jun-09	19-Jun-09	
			00:00	00:00		00:00			00:00	L787346-6	L787346-30	00:00	L787346-32	L787346-28	00:00	00:00	00:00	10:30	10:40	
	5 x DL	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	L787346-31	L787346-21	Water	Water	Water	L778602-2	L778602-3	L781603-3	L781603-4
Molybdenum (Mo)	0.00	0.00	0.00	3.88	0.00	0.00	4.09	0.00	0.00	21.65	0.00	0.00	8.93	0.00	0.00	13.98	0.00	0.00	8.53	
Nickel (Ni)	0.02	0.00	0.00		0.00	0.00		0.00	0.01		0.02	0.02	6.85	0.01	0.01		0.00	0.01		
Phosphorus (P)	1.50	0.15	0.15		0.15	0.15		0.15	0.15		0.38	0.15		0.15	0.15		0.15	0.15		
Potassium (K)	0.25	0.46	0.42	7.29	0.49	0.51	4.23	1.41	1.50	6.19	1.55	1.76	12.69	2.05	1.69	19.25	1.84	2.03	9.82	
Selenium (Se)	0.00	0.00	0.00		0.00	0.00	6.78	0.00	0.00	48.82	0.00	0.00	2.56	0.00	0.00	4.44	0.00	0.00	7.26	
Silicon (Si)	0.25	2.04	1.88	8.16	2.95	2.89	2.05	4.07	4.19	2.91	12.30	14.20	14.34	11.70	10.70	8.93	7.21	8.80	19.86	
Silver (Ag)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Sodium (Na)	10.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00		
Strontium (Sr)	0.00	0.16	0.16	3.13	0.12	0.13	10.44	0.17	0.19	9.42	0.16	0.15	3.82	0.10	0.10	5.49	0.16	0.17	3.64	
Thallium (Tl)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Tin (Sn)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Titanium (Ti)	0.05	0.02	0.01		0.02	0.01		0.11	0.11	1.85	0.21	0.26	22.13	0.36	0.30	15.76	0.14	0.21	37.75	
Uranium (U)	0.00	0.00	0.00		0.00	0.00		0.00	0.00	26.19	0.00	0.00	7.55	0.00	0.00	15.74	0.00	0.00	20.19	
Vanadium (V)	0.01	0.00	0.00		0.00	0.00		0.01	0.01	3.11	0.01	0.02	19.11	0.02	0.02	25.32	0.01	0.02	19.58	
Zinc (Zn)	0.04	0.00	0.00		0.00	0.00		0.01	0.01		0.04	0.04	8.72	0.05	0.04		0.16	0.17	3.70	
<b>Dissolved Metals</b>																				
Aluminum (Al)	0.01	0.04	0.08	77.08	0.03	0.03	0.34	0.03	0.04	26.39	0.06	0.06	3.87	0.83	0.08	166.54	0.02	0.02	5.22	
Antimony (Sb)	0.00	0.00	0.00	3.57	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	5.41	0.00	0.00		
Arsenic (As)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Barium (Ba)	0.00	0.02	0.02	10.84	0.03	0.03	0.36	0.01	0.01	3.51	0.02	0.02	1.94	0.04	0.02	65.74	0.03	0.03	1.27	
Beryllium (Be)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Bismuth (Bi)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Boron (B)	0.05	0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01		
Cadmium (Cd)	0.00	0.00	0.00		0.00	0.00		0.00	0.00	33.85	0.00	0.00		0.00	0.00	123.08	0.00	0.00	7.28	
Calcium (Ca)	0.10	13.30	13.70	2.96	9.06	8.76	3.37	23.90	24.50	2.48	14.70	14.30	2.76	16.50	15.50	6.25	27.10	28.20	3.98	
Chromium (Cr)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Cobalt (Co)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	7.45	
Copper (Cu)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	1.55	0.05	0.00	183.20	0.01	0.01	23.81	
Iron (Fe)	0.15	0.05	0.19		0.02	0.02		0.02	0.04		0.05	0.05		3.50	0.05		0.02	0.02		
Lead (Pb)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Lithium (Li)	0.03	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Magnesium (Mg)	0.03	2.56	2.67	4.21	5.11	5.10	0.20	2.72	2.85	4.67	3.89	3.87	0.52	1.73	1.32	26.89	2.10	2.17	3.28	
Manganese (Mn)	0.00	0.01	0.01	83.55	0.00	0.00	4.38	0.00	0.00	46.03	0.00	0.00	22.94	0.10	0.03	100.00	0.24	0.25	1.23	
Mercury (Hg)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Molybdenum (Mo)	0.00	0.00	0.00	17.67	0.00	0.00	8.21	0.00	0.00	10.00	0.00	0.00	1.84	0.00	0.00	25.07	0.00	0.00	0.00	
Nickel (Ni)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Phosphorus (P)	1.50	0.15	0.15		0.15	0.15		0.15	0.15		0.15	0.15		0.15	0.15		0.15	0.15		
Potassium (K)	0.25	0.29	0.30	1.69	0.25	0.25	0.40	1.03	1.00	2.96	0.26	0.26	1.53	0.73	0.61	18.02	0.87	0.87	0.92	
Selenium (Se)	0.00	0.00	0.00		0.00	0.00		0.00	0.00	14.88	0.00	0.00		0.00	0.00		0.00	0.00	1.03	
Silicon (Si)	0.25	1.25	1.27	1.59	1.48	1.47	0.68	1.04	1.10	5.61	1.73	1.73	0.00	3.07	1.49	69.30	1.36	1.37	0.73	
Silver (Ag)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Sodium (Na)	10.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00		
Strontium (Sr)	0.00	0.13	0.14	2.96	0.10	0.11	5.77	0.15	0.15	0.00	0.14	0.14	1.43	0.09	0.08	8.20	0.14	0.15	2.09	
Thallium (Tl)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Tin (Sn)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Titanium (Ti)	0.05	0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01		0.07	0.01		0.01	0.01		
Uranium (U)	0.00	0.00	0.00		0.00	0.00		0.00	0.00	10.95	0.00	0.00		0.00	0.00	73.74	0.00	0.00		
Vanadium (V)	0.01	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		
Zinc (Zn)	0.01	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.03	0.00		0.08	0.10	24.67	

**Notes:** All measurements are in mg/L unless otherwise noted; bold indicates values at half detection limits; highlighted values indicate RPD calculations over 20%

**Appendix 4.1-4b. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2009**

Sample ID	SC2			SCR			SC3			SNO1			SC1			ECM8		
	Date Sampled	04-Mar-09	04-Mar-09	28-Mar-09	28-Mar-09	29-Mar-09	29-Mar-09	29-Mar-09	29-Mar-09	27-May-09	27-May-09	27-Nov-09	27-Nov-09	27-Nov-09	27-Nov-09	27-Nov-09		
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00		
ALS Sample ID	L740333-5	L740333-6	L748538-5	L748538-6	L749298-6	L749298-7	L749298-1	L749298-2	L771080-1	L771080-2	L844495-2	L844495-26						
Matrix	5 x DL	Water	Water	RPD														
<b>Physical Tests</b>																		
Colour, True (color units)	25.00	<b>2.50</b>	<b>2.50</b>															
Conductivity (uS/cm)	10.00	419.00	418.00	0.24	108.00	109.00	0.92	417.00	417.00	0.00	212.00	213.00	0.47	330.00	331.00	0.30		
Hardness (as CaCO <sub>3</sub> )	2.50	193.00	197.00	2.05	46.50	46.10	0.86	194.00	188.00	3.14	99.70	99.80	0.10	170.00	166.00	2.38		
pH (pH units)	0.50	7.98	7.97	0.13	7.73	7.67	0.78	8.10	8.12	0.25	7.72	7.93	2.68	7.76	7.86	1.28		
Total Suspended Solids	15.00	5.50	6.00		<b>1.50</b>	<b>1.50</b>		7.50	5.00		<b>1.50</b>	<b>1.50</b>		11.00	8.50	<b>1.50</b>		
Total Dissolved Solids	50.00	293.00	291.00	0.68	62.00	63.00	1.60	276.00	277.00	0.36	129.00	130.00	0.77	227.00	225.00	0.88		
Turbidity (NTU)	0.50	12.60	11.70	7.41	0.11	0.14		7.58	8.63	12.95	1.68	1.57	6.77	10.50	10.00	4.88		
																0.53	0.91	52.78
<b>Anions and Nutrients</b>																		
Acidity (as CaCO <sub>3</sub> )	5.00	3.90	3.60		2.10	2.20		3.00	2.90		4.20	3.80		3.80	3.50	1.30		
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	10.00	95.00	94.40	0.63	30.80	30.20	1.97	97.40	100.00	2.63	70.90	71.20	0.42	63.20	73.80	15.47		
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	10.00	<b>1.00</b>	<b>1.00</b>		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00			
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	10.00	<b>1.00</b>	<b>1.00</b>		1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00			
Alkalinity, Total (as CaCO <sub>3</sub> )	10.00	95.00	94.40	0.63	30.80	30.20	1.97	97.40	100.00	2.63	70.90	71.20	0.42	63.20	73.80	15.47		
Ammonia as N	0.03	<b>0.00</b>	<b>0.00</b>		0.00	0.00		0.00	0.00		0.01	0.01		0.00	0.00			
Bromide (Br)	0.25	<b>0.03</b>	<b>0.03</b>		0.03	0.03		0.03	0.03		0.03	0.03		0.03	0.03			
Chloride (Cl)	2.50	<b>0.25</b>	<b>0.25</b>		0.25	0.25		0.25	0.25		0.25	0.25		0.25	0.25			
Fluoride (F)	0.10	0.16	0.16	1.23	0.03	0.03		0.12	0.12	1.64	0.06	0.06		0.08	0.08	0.03		
Nitrate (as N)	0.03	0.09	0.08	2.48	0.29	0.29	0.70	0.10	0.10	0.71	0.27	0.27	1.13	0.06	0.05	19.29		
Nitrite (as N)	0.01	<b>0.00</b>	<b>0.00</b>		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00			
Total Kjeldahl Nitrogen	0.25	<b>0.03</b>	<b>0.03</b>		0.08	0.08		<b>0.03</b>	<b>0.03</b>		<b>0.03</b>	<b>0.03</b>		<b>0.03</b>	<b>0.03</b>			
Total Nitrogen	0.25	0.07	0.09		0.37	0.37	0.00	0.10	0.08		0.30	0.30	0.00	0.05	0.07	0.11		
Ortho Phosphate as P	0.01	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00			
Total Phosphate as P	0.10	0.03	0.04		0.00	0.00		0.02	0.02		0.00	0.00		0.01	0.01			
Sulfate (SO <sub>4</sub> )	2.50	134.00	134.00	0.00	20.90	20.90	0.00	122.00	121.00	0.82	37.20	37.30	0.27	110.00	110.00	0.00		
																34.90	33.60	3.80
<b>Cyanides</b>																		
Cyanide, Weak Acid Dissociable	0.01													-	-	-	-	
Cyanide, Total	0.01	<b>0.00</b>	<b>0.00</b>		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00			
Thiocyanate (SCN)	2.50												-	-	-	-		
<b>Organic / Inorganic Carbon</b>	0.00																	
Total Organic Carbon	2.50	<b>0.25</b>	<b>0.25</b>		0.82	0.79		<b>0.25</b>	<b>0.25</b>		0.63	0.89		<b>0.25</b>	<b>0.25</b>	0.82	0.82	
<b>Total Metals</b>																		
Aluminum (Al)	0.01	0.37	0.37	1.63	0.00	0.00		0.32	0.32	0.62	0.02	0.01	24.84	0.14	0.13	6.69	0.05	0.08
Antimony (Sb)	0.00	0.00	0.00	1.60	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00	6.45	0.01	0.01
Arsenic (As)	0.00	0.00	0.00	1.23	0.00	0.00		0.00	0.00	1.17	0.00	0.00		0.00	0.00	24.72	0.00	0.00
Barium (Ba)	0.00	0.04	0.04	1.32	0.02	0.02	3.85	0.04	0.04	1.57	0.02	0.02	2.24	0.04	0.03	2.56	0.04	0.03
Beryllium (Be)	0.00	<b>0.00</b>	<b>0.00</b>		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
Bismuth (Bi)	0.00	<b>0.00</b>	<b>0.00</b>		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
Boron (B)	0.05	<b>0.01</b>	<b>0.01</b>		0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01
Cadmium (Cd)	0.00	0.00	0.00	2.60	0.00	0.00		0.00	0.00	0.68	0.00	0.00		0.00	0.00		0.00	0.00
Calcium (Ca)	0.10	68.60	67.20	2.06	13.30	13.00	2.28	68.60	68.90	0.44	29.50	29.50	0.00	54.50	55.90	2.54		

**Appendix 4.1-4b. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2009**

Sample ID	SC2			SCR			SC3			SNO1			SC1			ECM8			
	Date Sampled	04-Mar-09	04-Mar-09	28-Mar-09	28-Mar-09	29-Mar-09	29-Mar-09	29-Mar-09	29-Mar-09	27-May-09	27-May-09	27-Nov-09	27-Nov-09	00:00	00:00	00:00	00:00		
Time Sampled	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00	00:00		
ALS Sample ID	L740333-5	L740333-6	L748538-5	L748538-6	L749298-6	L749298-7	L749298-1	L749298-2	L771080-1	L771080-2	L844495-2	L844495-26							
Matrix	5 x DL	Water	Water	Water	Water	Water	Water												
	RPD	RPD	RPD	RPD	RPD	RPD	RPD	RPD	RPD	RPD	RPD	RPD	RPD	RPD	RPD	RPD	RPD		
Molybdenum (Mo)	0.00	0.00	0.00	5.13	0.00	0.00	45.76	0.00	0.00	0.44	0.00	0.00	5.97	0.00	0.00	3.66	0.00	0.00	8.19
Nickel (Ni)	0.02	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Phosphorus (P)	1.50	0.15	0.15		0.15	0.15		0.15	0.15		0.15	0.15		0.15	0.15		0.15	0.15	
Potassium (K)	0.25	1.78	1.78	0.00	0.16	0.16		1.68	1.68	0.00	0.29	0.29	1.03	0.57	0.54	5.24	0.52	0.53	2.10
Selenium (Se)	0.00	0.00	0.00	4.17	0.00	0.00		0.00	0.00	1.56	0.00	0.00		0.00	0.00	3.57	0.00	0.00	6.90
Silicon (Si)	0.25	2.88	2.89	0.35	2.20	2.35	6.59	2.67	2.68	0.37	2.80	2.80	0.00	1.91	1.81	5.38	1.76	1.74	1.14
Silver (Ag)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Sodium (Na)	10.00	3.50	3.50		1.00	1.00		3.50	3.40		2.60	2.70		1.00	1.00		2.50	2.40	
Strontium (Sr)	0.00	0.37	0.39	4.52	0.12	0.11	4.37	0.37	0.37	0.54	0.19	0.19	0.52	0.27	0.25	4.24	0.32	0.31	4.15
Thallium (Tl)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Tin (Sn)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Titanium (Ti)	0.05	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 (U)	0.00	0.00	0.00	0.57	0.00	0.00		0.00	0.00	1.05	0.00	0.00		0.00	0.00	1.18	0.00	0.00	
Vanadium (V)	0.01	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Zinc (Zn)	0.04	0.12	0.13	1.60	0.00	0.00		0.10	0.10	1.50	0.00	0.00		0.01	0.01		0.00	0.00	
<b>Dissolved Metals</b>																			
Aluminum (Al)	0.01	0.04	0.04	1.29	0.00	0.00		0.05	0.05	2.81	0.00	0.00		0.03	0.03	9.52	0.01	0.01	15.13
Antimony (Sb)	0.00	0.00	0.00	1.83	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	0.95	0.01	0.01	2.99
Arsenic (As)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Barium (Ba)	0.00	0.04	0.04	3.26	0.02	0.02	1.29	0.04	0.04	0.84	0.02	0.02	1.33	0.03	0.03	2.64	0.03	0.03	0.30
Beryllium (Be)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Bismuth (Bi)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Boron (B)	0.05	0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01	
Cadmium (Cd)	0.00	0.00	0.00	5.58	0.00	0.00		0.00	0.00	1.74	0.00	0.00		0.00	0.00	7.25	0.00	0.00	
Calcium (Ca)	0.10	68.10	69.70	2.32	13.20	13.10	0.76	67.90	65.90	2.99	30.60	30.50	0.33	60.30	58.40	3.20	25.90	27.50	5.99
Chromium (Cr)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Cobalt (Co)	0.00	0.00	0.00	1.74	0.00	0.00		0.00	0.00	0.91	0.00	0.00		0.00	0.00	4.48	0.00	0.00	
Copper (Cu)	0.00	0.00	0.00	3.07	0.00	0.00		0.00	0.00	3.36	0.00	0.00		0.01	0.01	4.96	0.00	0.00	
Iron (Fe)	0.15	0.02	0.02		0.02	0.02		0.02	0.02		0.02	0.04		0.02	0.02		0.02	0.02	
Lead (Pb)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Lithium (Li)	0.03	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Magnesium (Mg)	0.03	5.57	5.69	2.13	3.28	3.25	0.92	5.86	5.61	4.36	5.65	5.72	1.23	4.63	4.93	6.28	4.98	5.34	6.98
Manganese (Mn)	0.00	0.27	0.27	0.73	0.00	0.00	1.10	0.19	0.19	2.61	0.06	0.06	0.65	0.18	0.19	2.71	0.00	0.00	5.07
Mercury (Hg)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Molybdenum (Mo)	0.00	0.00	0.00	1.65	0.00	0.00		0.00	0.00	0.92	0.00	0.00	2.12	0.00	0.00	1.99	0.00	0.00	0.90
Nickel (Ni)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Phosphorus (P)	1.50	0.15	0																

Appendix 4.1-4b. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2009

Sample ID	CC1			EUR2			TRC2			UR2			
	Date Sampled	26-Nov-09	26-Nov-09	31-Oct-09	31-Oct-09	13-Sep-09	13-Sep-09	27-Sep-09	27-Sep-09	00:00	00:00		
Time Sampled	00:00	00:00											
ALS Sample ID	L844495-27	L844495-3		L837185-1	L837185-12		L817873-5	L817873-9		L824535-2	L824535-12		
Matrix	5 x DL	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD
<b>Physical Tests</b>													
Colour, True (color units)	25.00	<b>2.50</b>	<b>2.50</b>		<b>2.50</b>	<b>2.50</b>		<b>2.50</b>	<b>2.50</b>		<b>2.50</b>	<b>2.50</b>	
Conductivity (uS/cm)	10.00	156.00	156.00	0.00	204.00	209.00	2.42	118.00	117.00	0.85	119.00	120.00	0.84
Hardness (as CaCO <sub>3</sub> )	2.50	81.70	74.80	8.82	88.60	90.50	2.12	52.70	55.20	4.63	52.10	50.90	2.33
pH (pH units)	0.50	7.91	7.89	0.25	7.95	8.05	1.25	8.15	7.97	2.23	7.76	7.83	0.90
Total Suspended Solids	15.00	<b>1.50</b>	<b>1.50</b>		<b>1.50</b>	<b>1.50</b>		464.00	411.00	12.11	44.00	41.00	7.06
Total Dissolved Solids	50.00	90.00	96.00	6.45	126.00	127.00	0.79	67.00	68.00	1.48	70.00	86.00	20.51
Turbidity (NTU)	0.50	<b>0.05</b>	0.14		0.54	0.76	33.85	422.00	421.00	0.24	49.20	51.70	4.96
<b>Anions and Nutrients</b>													
Acidity (as CaCO <sub>3</sub> )	5.00	1.20	1.40		1.40	1.10		1.40	2.10		2.50	2.20	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	10.00	41.70	41.60	0.24	69.20	67.30	2.78	43.80	43.30	1.15	37.00	36.50	1.36
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	10.00	<b>1.00</b>	<b>1.00</b>		<b>1.00</b>	<b>1.00</b>		<b>0.50</b>	<b>0.50</b>		<b>1.00</b>	<b>1.00</b>	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	10.00	<b>1.00</b>	<b>1.00</b>		<b>1.00</b>	<b>1.00</b>		<b>0.50</b>	<b>0.50</b>		<b>1.00</b>	<b>1.00</b>	
Alkalinity, Total (as CaCO <sub>3</sub> )	10.00	41.70	41.60	0.24	69.20	67.30	2.78	43.80	43.30	1.15	37.00	36.50	1.36
Ammonia as N	0.03	<b>0.00</b>	<b>0.00</b>		0.00	0.01		0.00	0.00		0.00	<b>0.00</b>	
Bromide (Br)	0.25	<b>0.03</b>	0.03		0.03	0.03		0.03	0.03		0.03	0.03	
Chloride (Cl)	2.50	<b>0.25</b>	<b>0.25</b>		0.25	0.25		0.25	0.25		0.25	0.25	
Fluoride (F)	0.10	0.03	0.03		0.04	0.04		0.03	0.03		0.04	0.04	
Nitrate (as N)	0.03	0.04	0.04	3.46	0.01	0.01		0.01	0.01		0.10	0.10	2.00
Nitrite (as N)	0.01	<b>0.00</b>	<b>0.00</b>		0.00	0.00		0.00	0.00		0.00	<b>0.00</b>	
Total Kjeldahl Nitrogen	0.25	<b>0.03</b>	<b>0.03</b>		0.03	0.03		0.08	0.05		<b>0.03</b>	<b>0.03</b>	
Total Nitrogen	0.25	0.06	0.06		0.03	0.03		0.09	0.07		0.10	0.12	
Ortho Phosphate as P	0.01	<b>0.00</b>	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Total Phosphate as P	0.10	0.00	<b>0.00</b>		0.00	0.00		0.48	0.54	11.25	0.07	0.06	
Sulfate (SO <sub>4</sub> )	2.50	32.80	33.90	3.30	45.10	45.10	0.00	21.30	21.30	0.00	19.40	19.50	0.51
<b>Cyanides</b>													
Cyanide, Weak Acid Dissociable	0.01	-	-		-	-		0.00	0.00		-	-	
Cyanide, Total	0.01	<b>0.00</b>	<b>0.00</b>		0.00	0.00		0.00	0.00		<b>0.00</b>	<b>0.00</b>	
Thiocyanate (SCN)	2.50	-	-		-	-		0.25	0.25		-	-	
<b>Organic / Inorganic Carbon</b>	0.00												
Total Organic Carbon	2.50	0.51	<b>0.25</b>		0.55	<b>0.25</b>		2.54	2.01		0.67	0.86	
<b>Total Metals</b>													
Aluminum (Al)	0.01	0.01	0.01	20.24	0.01	0.01	2.86	11.70	5.96	65.01	2.02	2.06	1.96
Antimony (Sb)	0.00	<b>0.00</b>	<b>0.00</b>		0.00	<b>0.00</b>		0.00	0.00	57.92	0.00	0.00	8.56
Arsenic (As)	0.00	<b>0.00</b>	<b>0.00</b>		0.00	<b>0.00</b>		0.01	0.01	60.11	0.00	0.00	7.11
Barium (Ba)	0.00	0.02	0.02	0.41	0.03	0.03	4.41	0.20	0.16	23.33	0.05	0.05	2.97
Beryllium (Be)	0.00	<b>0.00</b>	<b>0.00</b>		0.00	<b>0.00</b>		0.00	0.00		0.00	<b>0.00</b>	
Bismuth (Bi)	0.00	<b>0.00</b>	<b>0.00</b>		0.00	<b>0.00</b>		0.00	0.00		0.00	<b>0.00</b>	
Boron (B)	0.05	<b>0.01</b>	0.01		0.01	0.01		0.01	0.01		0.01	0.01	
Cadmium (Cd)	0.00	0.00	0.00	2.23	0.00	0.00		0.00	0.00	17.02	0.00	0.00	
Calcium (Ca)	0.10	25.30	23.40	7.80	22.00	23.70	7.44	24.90	26.00	4.32	20.20	18.80	7.18
Chromium (Cr)	0.00	<b>0.00</b>	<b>0.00</b>		0.00	<b>0.00</b>		0.02	0.01	74.71	0.00	0.00	6.54
Cobalt (Co)	0.00	<b>0.00</b>	<b>0.00</b>		0.00	<b>0.00</b>		0.01	0.01	40.22	0.00	0.00	7.94
Copper (Cu)	0.00	<b>0.00</b>	<b>0.00</b>		0.00	<b>0.00</b>		0.02	0.02	38.14	0.02	0.02	6.58
Iron (Fe)	0.15	<b>0.02</b>	<b>0.02</b>		<b>0.02</b>	<b>0.02</b>		19.50	8.20	81.59	3.11	2.93	5.96
Lead (Pb)	0.00	0.00	0.00		0.00	0.00		0.01	0.01	16.86	0.00	0.00	21.88
Lithium (Li)	0.03	<b>0.00</b>	<b>0.00</b>		0.00	<b>0.00</b>		0.01	0.01		<b>0.00</b>	<b>0.00</b>	
Magnesium (Mg)	0.03	6.06	5.58	8.25	7.62	7.62	0.00	7.73	4.50	52.82	2.51	2.34	7.01
Manganese (Mn)	0.00	0.00	0.00	46.26	0.00	0.00	24.77	0.52	0.41	22.84	0.08	0.08	3.05
Mercury (Hg)	0.00	<b>0.00</b>	<b>0.00</b>		0.00	<b>0.00</b>		0.00	0.00		<b>0.00</b>	<b>0.00</b>	

Notes: All measurements are in mg/L unless otherwise noted; bold indicates values at half detection limits; highlighted values indicate RPD calculations over 20%

**Appendix 4.1-4b. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2009**

Sample ID	CC1			EUR2			TRC2			UR2			
	Date Sampled		26-Nov-09 26-Nov-09	31-Oct-09 31-Oct-09		13-Sep-09 13-Sep-09	27-Sep-09 27-Sep-09		00:00 00:00				
	Time Sampled		00:00 00:00	L844495-27 L844495-3	L837185-1 L837185-12	L817873-5 L817873-9	L824535-2 L824535-12	Water Water RPD					
Matrix	5 x DL	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD	Water	Water	RPD
Molybdenum (Mo)	0.00	0.00	0.00	0.62	0.00	0.00	3.91	0.00	0.00	64.52	0.00	0.00	6.34
Nickel (Ni)	0.02	0.00	0.00		0.00	0.00		0.03	0.01		0.00	0.00	
Phosphorus (P)	1.50	<b>0.15</b>	<b>0.15</b>		0.15	<b>0.15</b>		0.67	0.63		0.15	<b>0.15</b>	
Potassium (K)	0.25	0.20	0.17		0.22	0.24		2.26	1.61	33.59	1.28	1.20	6.45
Selenium (Se)	0.00	0.00	0.00	6.97	0.00	0.00		0.00	0.00	34.32	0.00	0.00	20.47
Silicon (Si)	0.25	1.93	1.91	1.04	1.90	1.87	1.59	24.20	12.90	60.92	6.24	6.06	2.93
Silver (Ag)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		0.00	0.00		0.00	<b>0.00</b>	
Sodium (Na)	10.00	<b>1.00</b>	<b>1.00</b>		2.10	2.10		1.00	1.00		1.00	<b>1.00</b>	
Strontium (Sr)	0.00	0.24	0.24	1.24	0.25	0.26	5.51	0.16	0.16	1.23	0.11	0.11	6.45
Thallium (Tl)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		0.00	0.00	58.06	0.00	<b>0.00</b>	
Tin (Sn)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		0.00	<b>0.00</b>	82.35	0.00	<b>0.00</b>	
Titanium (Ti)	0.05	<b>0.01</b>	<b>0.01</b>		0.01	<b>0.01</b>		0.57	0.22	88.02	0.15	0.14	6.14
Uranium (U)	0.00	0.00	0.00		0.00	0.00		0.00	0.00	23.12	0.00	0.00	8.42
Vanadium (V)	0.01	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		0.03	0.02	65.85	0.01	0.01	5.56
Zinc (Zn)	0.04	0.02	0.02		0.00	0.00		0.08	0.05	38.81	0.02	0.02	
<b>Dissolved Metals</b>													
Aluminum (Al)	0.01	0.01	0.01	2.41	0.00	0.00		0.08	0.08	1.46	0.05	0.04	23.23
Antimony (Sb)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		0.00	0.00		0.00	0.00	8.45
Arsenic (As)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		0.00	0.00		0.00	0.00	
Barium (Ba)	0.00	0.02	0.02	0.87	0.03	0.03	3.38	0.02	0.02	3.33	0.02	0.02	6.90
Beryllium (Be)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	
Bismuth (Bi)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	
Boron (B)	0.05	<b>0.01</b>	<b>0.01</b>		0.01	<b>0.01</b>	0.00	0.01	<b>0.01</b>		0.01	<b>0.01</b>	
Cadmium (Cd)	0.00	0.00	0.00	4.85	0.00	0.00	0.00	0.00	0.00		0.00	0.00	3.12
Calcium (Ca)	0.10	23.30	21.40	8.50	22.80	23.70	3.87	18.00	18.70	3.81	18.40	18.00	2.20
Chromium (Cr)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	
Cobalt (Co)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	
Copper (Cu)	0.00	0.00	0.00		<b>0.00</b>	<b>0.00</b>		0.00	0.00		0.00	0.00	7.86
Iron (Fe)	0.15	<b>0.02</b>	<b>0.02</b>		0.02	<b>0.02</b>		0.03	<b>0.02</b>		0.04	<b>0.02</b>	
Lead (Pb)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	
Lithium (Li)	0.03	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	
Magnesium (Mg)	0.03	5.70	5.20	9.17	7.71	7.62	1.17	1.90	2.04	7.11	1.49	1.43	4.11
Manganese (Mn)	0.00	0.00	0.00	7.44	0.00	0.00		0.00	0.00	6.32	0.02	0.02	2.25
Mercury (Hg)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	
Molybdenum (Mo)	0.00	0.00	0.00	1.52	0.00	0.00	2.26	0.00	0.00	8.01	0.00	0.00	7.95
Nickel (Ni)	0.00	0.00	0.00		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	
Phosphorus (P)	1.50	<b>0.15</b>	<b>0.15</b>		<b>0.15</b>	<b>0.15</b>		<b>0.15</b>	<b>0.15</b>		<b>0.15</b>	<b>0.15</b>	
Potassium (K)	0.25	0.18	0.16		0.23	0.24		0.23	0.23		0.73	0.73	0.28
Selenium (Se)	0.00	0.00	0.00	19.42	0.00	0.00		0.00	0.00		0.00	0.00	
Silicon (Si)	0.25	1.93	1.91	1.04	1.83	1.82	0.55	0.86	0.87	0.58	1.75	1.74	0.57
Silver (Ag)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	
Sodium (Na)	10.00	<b>1.00</b>	<b>1.00</b>		2.00	2.00		1.00	1.00		1.00	<b>1.00</b>	
Strontium (Sr)	0.00	0.23	0.22	6.17	0.26	0.26	2.31	0.12	0.13	5.71	0.10	0.09	6.67
Thallium (Tl)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	
Tin (Sn)	0.00	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	
Titanium (Ti)	0.05	<b>0.01</b>	<b>0.01</b>		0.01	<b>0.01</b>		0.01	<b>0.01</b>		0.01	<b>0.01</b>	
Uranium (U)	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	8.10
Vanadium (V)	0.01	<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>	<b>0.00</b>	
Zinc (Zn)	0.01	0.02	0.02	2.53	0.00	0.00		0.00	0.00		0.00	0.00	

Notes: All measurements are in mg/L unless otherwise noted; bold indicates values at half detection limits; highlighted values indicate RPD calculations over 20%

**KSM PROJECT**  
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## **Appendix 4.1-4c**

**Relative Percent Difference (RPD) Results for Stream  
Water Quality Duplicate Samples, KSM Project, 2010**

**Appendix 4.1-4c. Relative Percent Difference (RPD) Results for Stream Water Qulaity Duplicate Samples, KSM Project, 2010**

Station Name	UR1		UR1 Duplicate		SC2		SC2 Duplicate		SC3		SC3 Duplicate		STE1A		STE1A Duplicate		
Date	1/17/2010		1/17/2010		12/15/2010		12/15/2010		5/26/2010		5/26/2010		8/3/2010		8/3/2010		
ALS Sample ID	L855505-1		L855505-11		L963831-1		L963831-5		L891484-12		L891484-15		L916942-4		L916942-15		
Sampling Session	5 MDL	Jan-10	5 MDL	Jan-10	RPD (%)	5 MDL	10-Dec	10-Dec	RPD (%)	5 MDL	May-10	May-10	RPD (%)	5 MDL	Jul-10	Jul-10	RPD (%)
<b>Physical Tests</b>																	
Colour, True	color unit	25	<5.0	<5.0		25	<5.0	<5.0		25	<5.0	<5.0		25	<5.0	<5.0	
Conductivity	µS/cm	10	256	260	1.6	10	409	410	0.2	10	210	210		10	95.2	95.2	
Hardness (as CaCO <sub>3</sub> )	mg/L	2.5	121	118	2.5	2.5	167	197	16.5	2.5	94.1	93.9	0.2	2.5	39.2	39.8	1.5
pH	pH unit	0.5	7.81	8.05	3.0	0.5	7.85	7.9	0.6	0.5	7.96	7.98	0.3	0.5	7.73	7.6	1.7
Total Suspended Solids	mg/L	15	9.3	9.3		15	15.5	15.5		15	89.5	85.5	4.6	15	27.8	23.8	15.5
Total Dissolved Solids	mg/L	50	166	167	0.6	50	267	256	4.2	50	143	140	2.1	50	65	79	19.4
Turbidity	NTU	0.5	6.82	6.74	1.2	0.5	27.5	27.3	0.7	0.5	80.6	72.2	11.0	0.5	30.1	27.8	7.9
<b>Anions and Nutrients</b>																	
Acidity (as CaCO <sub>3</sub> )	mg/L	5	3.8	2.7	33.8	5	6.2	5.9	5.0	5	4.1	3.9		5	2.3	2.5	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	10	70.4	70.9	0.7	10	74.7	74.5	0.3	10	34.6	35.8	3.4	5	16.1	15.9	1.3
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	10	<2.0	<2.0		10	<2.0	<2.0		10	<2.0	<2.0		5	<1.0	<1.0	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	10	<2.0	<2.0		10	<2.0	<2.0		10	<2.0	<2.0		5	<1.0	<1.0	
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	10	70.4	70.9	0.7	10	74.7	74.5	0.3	10	34.6	35.8	3.4	5	16.1	15.9	1.3
Ammonia as N	mg/L	0.025	<0.0050	<0.0050		0.025	<0.0050	<0.0050		0.025	<0.0050	<0.0050		0.025	<0.0050	<0.0050	
Bromide (Br)	mg/L	0.25	<0.050	<0.050		0.25	<0.050	<0.050		0.25	<0.050	<0.050		0.25	<0.050	<0.050	
Chloride (Cl)	mg/L	2.5	<0.50	<0.50		2.5	<0.50	<0.50		2.5	<0.50	<0.50		2.5	<0.50	<0.50	
Fluoride (F)	mg/L	0.1	0.061	0.053		0.1	0.191	0.191		0.1	0.100	0.100		0.1	0.021	0.021	
Nitrate (as N)	mg/L	0.025	0.0986	0.102		0.025	0.085	0.0853	0.4	0.025	0.0697	0.0698	0.1	0.025	<0.0050	<0.0050	
Nitrite (as N)	mg/L	0.005	<0.0010	<0.0010		0.005	<0.0010	<0.0010		0.005	<0.0010	<0.0010		0.005	<0.0010	<0.0010	
Total Kjeldahl Nitrogen	mg/L	0.25	<0.050	<0.050		0.25	<0.050	<0.050		0.25	<0.050	<0.050		0.25	<0.050	<0.050	
Total Nitrogen	mg/L	0.25	0.140	0.110		0.25	0.08	0.07		0.25	0.050	0.080		0.25	<0.050	<0.050	
Ortho Phosphate as P	mg/L	0.005	<0.0010	<0.0010		0.005	<0.0010	<0.0010		0.005	0.0017	0.0016		0.005	0.002	0.0021	
Total Phosphate as P	mg/L	0.01	0.0086	0.0209	Dif>2DL	0.01	0.0701	0.0678	3.3	0.1	0.303	0.265	13.4	0.01	0.0377	0.0375	0.5
Sulphate (SO <sub>4</sub> )	mg/L	2.5	59.6	60.6	1.7	2.5	132	132		2.5	65.2	64.9	0.5	2.5	26.5	26.4	0.4
<b>Cyanides</b>																	
Cyanide, Weak Acid Dissociable	mg/L																
Cyanide, Total	mg/L	0.005	<0.0010	<0.0010		0.005	<0.0010	<0.0010		0.005	<0.0010	<0.0010		0.005	<0.0010	<0.0010	
Thiocyanate	mg/L																
<b>Organic / Inorganic Carbon</b>																	
Total Organic Carbon	mg/L	2.5	0.61	0.60		2.5	0.54	<0.50		2.5	<0.50	<0.50		2.5	0.82	<0.50	
<b>Total Metals</b>																	
Aluminum (Al)	mg/L	0.005	0.237	0.231	2.6	0.015	0.898	0.849	5.6	0.005	2.57	2.58	0.4	0.005	1.47	1.28	13.8
Antimony (Sb)	mg/L	0.0005	0.00176	0.00177	0.6	0.0005	0.00069	0.00068	1.5	0.0005	0.00101	0.00104	2.9	0.0005	<0.00010	<0.00010	
Arsenic (As)	mg/L	0.0005	0.00082	0.00080	2.5	0.0005	0.00463	0.00443	4.4	0.0005	0.0164	0.0162	1.2	0.0005	0.0046	0.00043	
Barium (Ba)	mg/L	0.00025	0.0344	0.0346	0.6	0.00025	0.0415	0.0394	5.2	0.00025	0.0974	0.0945	3.0	0.00025	0.0362	0.0318	12.9
Beryllium (Be)	mg/L	0.0025	<0.00050	<0.00050		0.0025	<0.00050	<0.00050		0.0025	<0.00050	<0.00050		0.0025	<0.00050	<0.00050	
Bismuth (Bi)	mg/L	0.0025	<0.00050	<0.00050		0.0025	<0.00050	<0.00050		0.0025	<0.00050	<0.00050		0.0025	<0.00050	<0.00050	
Boron (B)	mg/L	0.05	<0.010	<0.010		0.05	<0.010	<0.010		0.05	<0.010	<0.010		0.05	<0.010	<0.010	
Cadmium (Cd)	mg/L	0.000085	0.000522	0.000515	1.4	0.00005	0.00288	0.0028	2.8	0.00005	0.00219	0.00220	0.5	0.00005	0.00021	0.000019	
Calcium (Ca)	mg/L	0.1	42.7	40.9	4.3	0.1	71.2	69.6	2.3								

**Appendix 4.1-4c. Relative Percent Difference (RPD) Results for Stream Water Qulaity Duplicate Samples, KSM Project, 2010**

Station Name	UR1		UR1 Duplicate		SC2		SC2 Duplicate		SC3		SC3 Duplicate		STE1A		STE1A Duplicate		
Date	1/17/2010		1/17/2010		12/15/2010		12/15/2010		5/26/2010		5/26/2010		8/3/2010		8/3/2010		
ALS Sample ID	L855505-1		L855505-11		L963831-1		L963831-5		L891484-12		L891484-15		L916942-4		L916942-15		
Sampling Session	5 MDL	Jan-10	5 MDL	Jan-10	RPD (%)	5 MDL	10-Dec	10-Dec	RPD (%)	5 MDL	May-10	May-10	RPD (%)	5 MDL	Jul-10	Jul-10	RPD (%)
<b>Total Metals (cont'd)</b>																	
Mercury (Hg)	mg/L	0.00005	<0.000010	<0.000010		0.00005	<0.000010	<0.000010	0.00005	<0.000010	<0.000010	0.00005	0.00005	<0.000010	<0.000010	<0.000010	
Molybdenum (Mo)	mg/L	0.00025	0.00165	0.00159	3.7	0.00025	0.00282	0.00272	3.6	0.00025	0.00233	0.00240	3.0	0.00025	0.000496	0.000462	7.1
Nickel (Ni)	mg/L	0.0025	0.00106	0.00113		0.0025	0.00283	0.00258	9.2	0.0025	0.00217	0.00232		0.0025	0.00575	0.00467	20.7
Phosphorus (P)	mg/L	1.5	<0.30	<0.30		1.5	<0.30	<0.30	1.5	0.30	<0.30	1.5	<0.30	<0.30	<0.30	<0.30	
Potassium (K)	mg/L	0.25	0.945	0.933	1.3	0.25	1.83	1.75	4.5	0.25	1.46	1.49	2.0	0.25	0.601	0.543	10.1
Selenium (Se)	mg/L	0.001	0.00122	0.00117	4.2	0.0005	0.00226	0.00227	0.4	0.001	0.00170	0.00189	10.6	0.001	0.00076	0.00058	
Silicon (Si)	mg/L	0.25	2.28	2.27	0.4	0.25	3	2.88	4.1	0.25	6.05	5.68	6.3	0.25	3.91	3.36	15.1
Silver (Ag)	mg/L	0.00005	0.000012	<0.000010		0.00005	<0.000010	<0.000010	0.00005	0.000081	0.000075	7.7	0.00005	0.000018	<0.000010		
Sodium (Na)	mg/L	10	2.7	2.7		10	2.9	2.8		10	<2.0	<2.0		10	<2.0	<2.0	
Strontium (Sr)	mg/L	0.0005	0.283	0.276	2.5	0.0005	0.375	0.371	1.1	0.0005	0.186	0.187	0.5	0.0005	0.133	0.123	7.8
Thallium (Tl)	mg/L	0.0005	<0.00010	<0.00010		0.0005	<0.00010	<0.00010	0.0005	<0.00010	<0.00010	0.0005	<0.00010	<0.00010	<0.00010	<0.00010	
Tin (Sn)	mg/L	0.0005	<0.00010	<0.00010		0.0005	<0.00010	<0.00010	0.0005	<0.00010	<0.00010	0.0005	<0.00010	<0.00010	<0.00010	<0.00010	
Titanium (Ti)	mg/L	0.05	0.011	0.011		0.05	<0.010	<0.010	0.05	0.115	0.132	13.8	0.05	0.024	0.021		
Uranium (U)	mg/L	0.00005	0.000216	0.000215	0.5	0.00005	0.000528	0.000521	1.3	0.00005	0.000357	0.000351	1.7	0.00005	0.000025	0.000021	
Vanadium (V)	mg/L	0.005	<0.0010	<0.0010		0.005	0.0012	0.0011	0.005	0.0075	0.0077	2.6	0.005	0.0046	0.004		
Zinc (Zn)	mg/L	0.005	0.0366	0.0366		0.015	0.191	0.184	3.7	0.005	0.170	0.171	0.6	0.005	0.0069	0.0058	17.3
<b>Dissolved Metals</b>																	
Aluminum (Al)	mg/L	0.005	0.0271	0.0289	6.4	0.015	0.0151	0.0717	130.4	0.005	0.0155	0.0158	1.9	0.005	0.11	0.109	0.9
Antimony (Sb)	mg/L	0.0005	0.00173	0.00171	1.2	0.0005	0.00055	0.00057	3.6	0.0005	0.00047	0.00046		0.0005	<0.00010	<0.00010	
Arsenic (As)	mg/L	0.0005	0.00016	0.00013		0.0005	0.00041	<0.00010		0.0005	0.00012	0.00014		0.0005	<0.00010	<0.00010	
Barium (Ba)	mg/L	0.00025	0.0320	0.0320		0.00025	0.0419	0.0365	13.8	0.00025	0.0277	0.0285	2.8	0.00025	0.0143	0.0139	2.8
Beryllium (Be)	mg/L	0.0025	<0.00050	<0.00050		0.0025	<0.00050	<0.00050		0.0025	<0.00050	<0.00050		0.0025	<0.00050	<0.00050	
Bismuth (Bi)	mg/L	0.0025	<0.00050	<0.00050		0.0025	<0.00050	<0.00050		0.0025	<0.00050	<0.00050		0.0025	<0.00050	<0.00050	
Boron (B)	mg/L	0.05	<0.010	<0.010		0.05	<0.010	<0.010		0.05	<0.010	<0.010		0.05	<0.010	<0.010	
Cadmium (Cd)	mg/L	0.000085	0.000348	0.000342	1.7	0.00005	0.000055	0.00115	181.7	0.00005	0.000682	0.000660	3.3	0.00005	<0.000010	<0.000010	
Calcium (Ca)	mg/L	0.1	41.0	40.1	2.2	0.1	59	68.6	15.0	0.1	33.6	33.5	0.3	0.1	11.4	11.4	
Chromium (Cr)	mg/L	0.0025	<0.00050	<0.00050		0.0005	<0.00010	0.00014		0.001	<0.00020	<0.00020		0.001	0.00075	0.00049	
Cobalt (Co)	mg/L	0.0005	0.00046	0.00047		0.0005	0.00023	0.00244	Dif>2DL	0.0005	0.00164	0.00158	3.7	0.0005	<0.00010	<0.00010	
Copper (Cu)	mg/L	0.0005	0.00292	0.00301	3.0	0.0025	0.00371	0.00402	8.0	0.0005	0.00123	0.00148	18.5	0.0005	0.00021	0.00021	
Iron (Fe)	mg/L	0.15	<0.030	<0.030		0.15	<0.030	<0.030		0.15	<0.030	<0.030		0.15	0.073	0.069	
Lead (Pb)	mg/L	0.00025	<0.000050	<0.000050		0.00025	<0.000050	<0.000050		0.00025	<0.000050	<0.000050		0.00025	<0.000050	<0.000050	
Lithium (Li)	mg/L	0.025	<0.0050	<0.0050		0.025	<0.0050	<0.0050		0.025	<0.0050	<0.0050		0.025	<0.0050	<0.0050	
Magnesium (Mg)	mg/L	0.025	4.48	4.43	1.1	0.025	4.76	6.27	27.4	0.025	2.44	2.47	1.2	0.025	2.63	2.74	4.1
Manganese (Mn)	mg/L	0.00025	0.0716	0.0733	2.3	0.00025	0.0417	0.325	154.5	0.00025	0.133	0.130	2.3	0.00025	0.00308		

**Appendix 4.1-4c. Relative Percent Difference (RPD) Results for Stream Water Qulaity Duplicate Samples, KSM Project, 2010**

Station Name	BIR1		BIR1 Duplicate		MC2		MC2 Duplicate		UR2		UR2 Duplicate		STE3		STE3 Duplicate	
Date	8/27/2010		8/27/2010		8/27/2010		8/27/2010		8/27/2010		8/27/2010		11/15/2010		11/15/2010	
ALS Sample ID	L926457-27		L926457-31		L926457-19		L926457-33		L926457-2		L926457-32		L955725-6		L955725-29	
Sampling Session	5 MDL	Aug-10	5 MDL	Aug-10	RPD (%)	5 MDL	Aug-10	RPD (%)	5 MDL	Aug-10	5 MDL	Aug-10	RPD (%)	5 MDL	Nov-10	RPD (%)
<b>Physical Tests</b>																
Colour, True	color unit	25	<5.0	<5.0		25.0	<5.0	<5.0	25.0	<5.0	25	7.5	8.1			
Conductivity	µS/cm	10	136	137	0.7	10	176	178	1.1	10	99.1	101	1.9	10	168	1.8
Hardness (as CaCO <sub>3</sub> )	mg/L	2.5	60.8	60.7	0.2	2.5	71.0	73.9	4.0	2.5	43.4	44.2	1.8	2.5	72.5	9.8
pH	pH unit	0.5	8.08	8.08		0.5	7.32	7.86	7.1	0.5	8.03	8.05	0.2	0.5	7.85	1.2
Total Suspended Solids	mg/L	15	8.0	7.0		15.0	87.5	89.0	1.7	15.0	48.5	48.0	1.0	15.0	<3.0	<3.0
Total Dissolved Solids	mg/L	50	104	91	13.3	50	109	115	5.4	50	58	79	30.7	50	101	134
Turbidity	NTU	0.5	18.3	19.1	4.3	0.5	66.8	68.4	2.4	0.5	39.1	35.9	8.5	0.5	1.06	20.8
<b>Anions and Nutrients</b>																
Acidity (as CaCO <sub>3</sub> )	mg/L	5	3.9	4.3		5.0	5.9	5.0	16.5	5	4.1	4.1		5	2.3	2.1
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	5	43.3	43.2	0.2	10.0	21.0	24.0	13.3	5	32.8	31.9	2.8	10	31.2	31.1
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	5	<1.0	<1.0		10.0	<2.0	<1.0		5.0	<1.0	<1.0		10.0	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	5	<1.0	<1.0		10.0	<2.0	<1.0		5.0	<1.0	<1.0		10.0	<2.0	<2.0
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	5	43.3	43.2	0.2	10.0	21.0	24.0	13.3	5	32.8	31.9	2.8	10	31.2	31.1
Ammonia as N	mg/L	0.025	<0.0050	<0.0050		0.0250	<0.0050	<0.0050	0.0250	<0.0050	<0.0050	<0.0050	0.0250	<0.0050	<0.0050	<0.0050
Bromide (Br)	mg/L	0.25	<0.050	<0.050		0.250	<0.050	<0.050	0.250	<0.050	<0.050	<0.050	0.250	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	2.5	<0.50	<0.50		2.50	<0.50	<0.50	2.50	<0.50	<0.50	<0.50	2.50	<0.50	<0.50	<0.50
Fluoride (F)	mg/L	0.1	0.022	<0.020		0.1	0.115	0.101	13.0	0.100	0.032	<0.020	0.1	0.033	0.034	
Nitrate (as N)	mg/L	0.025	0.0176	0.0179		0.025	0.0190	0.0175	0.025	0.0290	0.0155	Dif>2DL	0.025	0.071	0.0686	3.4
Nitrite (as N)	mg/L	0.005	<0.0010	<0.0010		0.0050	<0.0010	<0.0010	0.0050	<0.0010	<0.0010	<0.0010	0.0050	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	0.25	<0.050	<0.050		0.250	<0.050	<0.050	0.250	<0.050	<0.050	<0.050	0.25	0.059	0.051	
Total Nitrogen	mg/L	0.25	<0.050	<0.050		0.250	<0.050	<0.050	0.250	<0.050	<0.050	<0.050	0.25	0.13	0.12	
Ortho Phosphate as P	mg/L	0.005	<0.0010	<0.0010		0.0050	<0.0010	<0.0010	0.0050	<0.0010	<0.0010	<0.0010	0.005	<0.0010	0.0015	
Total Phosphate as P	mg/L	0.01	0.0135	0.0111	19.5	0.1	0.101	0.148	37.8	0.01	0.0584	0.0577	1.2	0.01	0.0037	0.004
Sulphate (SO <sub>4</sub> )	mg/L	2.5	22.0	20.1	9.0	2.5	58.8	51.5	13.2	2.50	16.8	9.20	58.5	2.5	47.5	47.6
<b>Cyanides</b>																
Cyanide, Weak Acid Dissociable	mg/L															
Cyanide, Total	mg/L	0.005	<0.0010	<0.0010		0.0050	<0.0010	<0.0010	0.0050	<0.0010	<0.0010	0.0050	0.0024	<0.0010		
Thiocyanate	mg/L															
<b>Organic / Inorganic Carbon</b>																
Total Organic Carbon	mg/L	2.5	<0.50	0.56		2.50	<0.50	<0.50	2.50	<0.50	<0.50	2.5	2.15	2.11		
<b>Total Metals</b>																
Aluminum (Al)	mg/L	0.005	0.962	0.757	23.9	0.005	2.12	2.38	11.6	0.005	0.736	1.92	89.2	0.015	0.0533	0.0605
Antimony (Sb)	mg/L	0.0005	0.00015	0.00014		0.0005	0.00168	0.00058	97.3	0.00050	0.00041	0.00050		0.00050	<0.00010	<0.00010
Arsenic (As)	mg/L	0.0005	0.00040	0.00037		0.0005	0.00311	0.00344	10.1	0.00050	0.00115	0.00160	32.7	0.00050	<0.00010	<0.00010
Barium (Ba)	mg/L	0.00025	0.050	0.053	0.5	0.00025	0.0842	0.0915	8.3	0.00025	0.0354	0.0569	46.6	0.00025	0.0168	0.0174
Beryllium (Be)	mg/L	0.0025	<0.00050	<0.00050		0.00250	<0.00050	<0.00050	0.00250	<0.00050	<0.00050	<0.00050		0.00250	<0.00050	<0.00050
Bismuth (Bi)	mg/L	0.0025	<0.00050	<0.00050		0.00250	<0.00050	<0.00050	0.00250	<0.00050	<0.00050	<0.00050		0.00250	<0.00050	<0.00050
Boron (B)	mg/L	0.05	0.011	0.012		0.050	<0.010	<0.010	0.050	<0.010	<0.010	<0.				

**Appendix 4.1-4c. Relative Percent Difference (RPD) Results for Stream Water Qulaity Duplicate Samples, KSM Project, 2010**

Station Name	BIR1	BIR1 Duplicate	MC2	MC2 Duplicate	UR2	UR2 Duplicate	STE3	STE3 Duplicate
Date	8/27/2010	8/27/2010	8/27/2010	8/27/2010	8/27/2010	8/27/2010	11/15/2010	11/15/2010
ALS Sample ID	L926457-27	L926457-31	L926457-19	L926457-33	L926457-2	L926457-32	L955725-6	L955725-29
Sampling Session	5 MDL	Aug-10	5 MDL	Aug-10	5 MDL	Aug-10	5 MDL	Nov-10
<b>Total Metals (cont'd)</b>								
Mercury (Hg)	mg/L	0.00005	<0.000010	<0.000010	0.000050	<0.000010	0.000050	<0.000010
Molybdenum (Mo)	mg/L	0.00025	0.000976	0.000964	1.2	0.00025	0.00168	0.00158
Nickel (Ni)	mg/L	0.0025	0.00295	0.00254	14.9	0.0025	0.00153	0.00174
Phosphorus (P)	mg/L	1.5	<0.30	<0.30	1.50	<0.30	1.50	<0.30
Potassium (K)	mg/L	0.25	0.607	0.551	9.7	0.25	0.822	0.944
Selenium (Se)	mg/L	0.001	0.00057	0.00048	0.001	0.00127	0.00121	4.8
Silicon (Si)	mg/L	0.25	2.95	2.64	11.1	0.25	3.77	4.95
Silver (Ag)	mg/L	0.00005	<0.000010	<0.000010	0.00005	0.000044	0.000045	0.00005
Sodium (Na)	mg/L	10	<2.0	<2.0	10.0	<2.0	10.0	<2.0
Strontium (Sr)	mg/L	0.0005	0.147	0.149	1.4	0.0005	0.142	0.149
Thallium (Tl)	mg/L	0.0005	<0.00010	<0.00010	0.00050	<0.00010	0.00050	<0.00010
Tin (Sn)	mg/L	0.0005	<0.00010	<0.00010	0.00050	<0.00010	0.00050	<0.00010
Titanium (Ti)	mg/L	0.05	0.022	0.020	0.05	0.072	0.095	27.5
Uranium (U)	mg/L	0.00005	0.000043	0.000033	0.00005	0.000334	0.3	0.00005
Vanadium (V)	mg/L	0.005	0.0028	0.0022	0.005	0.0053	0.0062	15.7
Zinc (Zn)	mg/L	0.005	0.0032	0.0028	0.005	0.146	0.152	4.0
<b>Dissolved Metals</b>								
Aluminum (Al)	mg/L	0.005	0.0202	0.0207	2.4	0.005	0.0154	0.0138
Antimony (Sb)	mg/L	0.0005	0.00010	0.00011	0.0005	0.00022	0.00023	0.00035
Arsenic (As)	mg/L	0.0005	0.00013	0.00014	0.00050	<0.00010	<0.00010	0.00017
Barium (Ba)	mg/L	0.00025	0.0404	0.0404	0.00025	0.0290	0.0306	5.4
Beryllium (Be)	mg/L	0.0025	<0.00050	<0.00050	0.00250	<0.00050	<0.00050	0.00250
Bismuth (Bi)	mg/L	0.0025	<0.00050	<0.00050	0.00250	<0.00050	0.00250	<0.00050
Boron (B)	mg/L	0.05	<0.010	<0.010	0.050	<0.010	0.050	<0.010
Cadmium (Cd)	mg/L	0.00005	<0.000010	<0.000010	0.00005	0.00156	0.00163	4.4
Calcium (Ca)	mg/L	0.1	13.8	13.7	0.7	0.1	25.3	26.3
Chromium (Cr)	mg/L	0.001	0.00028	0.00027	0.00100	<0.00020	0.00100	<0.00020
Cobalt (Co)	mg/L	0.0005	<0.00010	<0.00010	0.0005	0.00240	0.00253	5.3
Copper (Cu)	mg/L	0.0005	0.00026	0.00026	0.0005	0.00411	0.00388	5.8
Iron (Fe)	mg/L	0.15	<0.030	<0.030	0.150	<0.030	<0.030	0.150
Lead (Pb)	mg/L	0.00025	<0.000050	<0.000050	0.000250	<0.000050	0.000250	<0.000050
Lithium (Li)	mg/L	0.025	<0.0050	<0.0050	0.0250	<0.0050	0.0250	<0.0050
Magnesium (Mg)	mg/L	0.025	6.42	6.43	0.2	0.025	1.90	1.97
Manganese (Mn)	mg/L	0.00025	0.00175	0.00180	2.8	0.00025	0.269	0.283
Mercury (Hg)	mg/L	0.00005	<0.000010	<0.000010	0.000050	<0.000010	<0.000010	0.000050
Molybdenum (Mo)	mg/L	0.00025	0.000972	0.000936	3.8	0.00025	0.00104	0.00116
Nickel (Ni)	mg/L	0.0025	<0.00050	<0.00050	0.0025	0.00090	0.00103	0.00250
Phosphorus (P)	mg/L	1.5	<0.30	<0.30	1.50	<0.30	<0.30	1.50
Potassium (K)	mg/L	0.25	0.308	0.315	2.2	0.25	0.361	0.373
Selenium (Se)	mg/L	0.001	0.00056	0.00054	0.001	0.00123	0.00101	19.6
Silicon (Si)	mg/L	0.25	1.32	1.31	0.8	0.25	1.14	1.12
Silver (Ag)	mg/L	0.00005	<0.000010	<0.000010	0.000050	<0.000010	<0.000010	0.000050
Sodium (Na)	mg/L	10	<2.0	<2.0	10.0	<2.0	<2.0	<2.0
Strontium (Sr)	mg/L	0.0005	0.140	0.140	0.0005	0.134	0.141	5.1
Thallium (Tl)	mg/L	0.0005	<0.00010	<0.00010	0.00050	<0.00010	<0.00010	0.00050
Tin (Sn)	mg/L	0.0005	<0.00010	<0.00010	0.00050	<0.00010	<0.00010	0.00050
Titanium (Ti)	mg/L	0.05	<0.010	<0.010	0.050	<0.010	<0.010	0.050
Uranium (U)	mg/L	0.00005	0.000018	0.000017	0.00005	0.000012	0.000011	0.000050
Vanadium (V)	mg/L	0.005	<0.0010	<0.0010	0.0050	<0.0010	<0.0010	0.0050
Zinc (Zn)	mg/L	0.005	<0.0010	<0.0010	0.005	0.0769	0.0811	5.3

"<" - value is below the detection limit.

RPD = Relative Percent Difference relative to mean (in %).

RPD was not calculated if one or more values were less than five times the detection limit.

DL = analytical detection limit.

Bold values have a RPD equal to or greater than 20%.

Grey shaded values have a RPD equal to or greater than 50%.

Dif>2DL - duplicate values that were less than the 5xDL and had a difference between values greater than 2xDL.

**Appendix 4.1-4c. Relative Percent Difference (RPD) Results for Stream Water Qulaity Duplicate Samples, KSM Project, 2010**

Station Name	UR1A		UR1A Duplicate		BIR2		BIR2 Duplicate		MC1A		MCT Duplicate		SNO2		SNO2 Duplicate		SUNR
Date	5/1/2010	5/1/2010	L884476-8	L884476-11	11/15/2010	L955725-27	11/15/2010	L955725-30	9/28/2010	L938295-8	9/28/2010	L938295-15	11/15/2010	L955725-10	11/15/2010	L955725-31	3/3/2010
ALS Sample ID	5 MDL	5 MDL	Apr-10	Apr-10	RPD (%)	5 MDL	Nov-10	Nov-10	RPD (%)	5 MDL	Sep-10	Sep-10	RPD (%)	5 MDL	Nov-10	Nov-10	L866873-3
Sampling Session	<b>Physical Tests</b>																
Colour, True	color unit	25.0	<5.0	<5.0		25	6	5.7	25.0	2.5	<5.0		25	6.6	6.3		<5.0
Conductivity	µS/cm	10	135	135		10	192	155	21.3	10	96.8	97.1	0.3	10	136	136	232
Hardness (as CaCO <sub>3</sub> )	mg/L	2.5	63.5	65.5	3.1	2.5	95.1	74.7	24.0	2.5	38.5	40.9	6.0	2.5	58.6	65.3	10.8
pH	pH unit	0.5	8.10	8.08	0.2	0.5	8.11	8.08	0.4	0.5	7.23	7.24	0.1	0.5	7.88	7.94	0.8
Total Suspended Solids	mg/L	15.0	<3.0	<3.0		15.0	<3.0	<3.0		15	299	286	4.4	15.0	4.1	<3.0	<3.0
Total Dissolved Solids	mg/L	50	80	77	3.8	50	103	81	23.9	50	60	56	6.9	50	73	73	148
Turbidity	NTU	0.50	1.50	2.00	28.6	0.5	1.98	3.3	50.0	0.5	214	185	14.5	0.5	1.34	0.67	66.7
<b>Anions and Nutrients</b>																	
Acidity (as CaCO <sub>3</sub> )	mg/L	5	2.8	2.9		5	1.8	1.8	5	5.5	4.8		5	2.5	2.2		2.7
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	10	47.6	48.3	1.5	10	65.3	62.9	3.7	5	11.4	11.7	2.6	10	39.9	40.9	2.5
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	10.0	<2.0	<2.0		10.0	<2.0	<2.0		5.0	<1.0	<2.0		10.0	<2.0	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	10.0	<2.0	<2.0		10.0	<2.0	<2.0		5.0	<1.0	<2.0		10.0	<2.0	<2.0	<2.0
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	10	47.6	48.3	1.5	10	65.3	62.9	3.7	5	11.4	11.7	2.6	10	39.9	40.9	2.5
Ammonia as N	mg/L	0.0250	<0.0050	<0.0050		0.0250	<0.0050	<0.0050	0.0250	<0.0050	<0.0050	<0.0050	0.0250	<0.0050	<0.0050	<0.0050	<0.0050
Bromide (Br)	mg/L	0.250	<0.050	<0.050		0.250	<0.050	<0.050	0.250	<0.050	<0.050	<0.050	0.250	<0.050	<0.050	<0.050	<0.050
Chloride (Cl)	mg/L	2.50	<0.50	<0.50		2.50	<0.50	<0.50	2.50	<0.50	<0.50	<0.50	2.50	<0.50	<0.50	<0.50	<0.50
Fluoride (F)	mg/L	0.1	0.027	0.028		0.1	0.047	0.035	0.1	0.088	0.088	0.1	0.036	0.036	0.036	0.036	0.082
Nitrate (as N)	mg/L	0.025	0.175	0.174	0.6	0.025	0.168	0.138	19.6	0.025	0.0059	0.0071	0.025	0.203	0.199	2.0	0.218
Nitrite (as N)	mg/L	0.0050	<0.0010	<0.0010		0.0050	<0.0010	<0.0010	0.0050	<0.0010	<0.0010	<0.0010	0.0050	<0.0010	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	0.25	0.095	0.076		0.25	0.062	0.072	0.250	<0.050	<0.050	<0.050	0.25	0.057	0.071	0.072	
Total Nitrogen	mg/L	0.250	0.270	0.250		0.25	0.23	0.21	0.250	<0.050	<0.050	<0.050	0.25	0.26	0.27	3.8	0.290
Ortho Phosphate as P	mg/L	0.0050	<0.0010	<0.0010		0.0050	0.0016	<0.0010	0.0050	<0.0010	<0.0010	<0.0010	0.005	0.0013	0.002	<0.0010	
Total Phosphate as P	mg/L	0.01	0.0063	0.0043	37.7	0.01	0.0049	0.006	0.0	0.1	0.51	0.47	8.2	0.01	0.0061	0.0055	0.0027
Sulphate (SO <sub>4</sub> )	mg/L	2.5	18.6	18.6		2.5	33.5	20.3	49.1	2.5	30.5	30.3	0.7	2.5	25.1	25	48.4
<b>Cyanides</b>																	
Cyanide, Weak Acid Dissociable	mg/L																<0.0010
Cyanide, Total	mg/L	0.005	0.0011	0.0015		0.005	0.0013	0.0019	0.0050	<0.0010	<0.0010	0.005	0.002				<0.0010
Thiocyanate	mg/L																<0.50
<b>Organic / Inorganic Carbon</b>																	
Total Organic Carbon	mg/L	1	0.96	0.94		2.5	1.91	1.95	2.50	<0.50	<0.50		2.5	1.8	1.99		<0.50
<b>Total Metals</b>																	
Aluminum (Al)	mg/L	0.005	0.0971	0.0984	1.3	0.015	0.0949	0.175	59.4	0.015	1.56	4.94	104.0	0.015	0.0633	0.0493	24.9
Antimony (Sb)	mg/L	0.0005	0.00169	0.00177	4.6	0.00050	0.00016	<0.00010		0.0005	0.00079	0.00138	54.4	0.00050	<0.00010	<0.00010	0.00010
Arsenic (As)	mg/L	0.0005	0.00031	0.00031		0.0005	0.00026	0.00015		0.0005	0.00673	0.014	51.5	0.0005	0.00013	0.00014	0.00021
Barium (Ba)	mg/L	0.00025	0.0226	0.0248	9.3	0.00025	0.0337	0.0458	30.4	0.00025	0.113	0.267	81.1	0.00025	0.0146	0.0155	6.0
Beryllium (Be)	mg/L	0.00250	<0.00050	<0.00050		0.00250	<0.00050	<0.00050		0.00250	<0.00050	<0.00050		0.00250	<0.00050	<0.00050	<0.00050
Bismuth (Bi)	mg/L	0.00250	<0.00050	<0.00050		0.00250	<0.00050	<0.00050		0.00250	<0.00050						

**Appendix 4.1-4c. Relative Percent Difference (RPD) Results for Stream Water Qulaity Duplicate Samples, KSM Project, 2010**

Station Name	UR1A		UR1A Duplicate		BIR2		BIR2 Duplicate		MC1A		MCT Duplicate		SNO2		SNO2 Duplicate		SUNR	
Date	5/1/2010	5/1/2010	L884476-8	L884476-11	11/15/2010	11/15/2010	L955725-27	L955725-30	9/28/2010	9/28/2010	L938295-8	L938295-15	11/15/2010	11/15/2010	L955725-10	L955725-31	3/3/2010	
ALS Sample ID	5 MDL	Apr-10	5 MDL	Apr-10	RPD (%)	5 MDL	Nov-10	Nov-10	RPD (%)	5 MDL	Sep-10	Sep-10	RPD (%)	5 MDL	Nov-10	Nov-10	L866873-3	
Sampling Session	5 MDL	Apr-10	5 MDL	Apr-10	RPD (%)	5 MDL	Nov-10	Nov-10	RPD (%)	5 MDL	Sep-10	Sep-10	RPD (%)	5 MDL	Nov-10	Nov-10	Feb-10	
<b>Total Metals (cont'd)</b>																		
Mercury (Hg)	mg/L	0.000050	<0.000010	<0.000010		0.000050	<0.000010	<0.000010		0.00005	0.000097	0.000034	Dif>2DL	0.000050	<0.000010	<0.000010	<0.000010	
Molybdenum (Mo)	mg/L	0.000250	0.000586	0.000660	11.9	0.00025	0.000819	0.000863	5.2	0.00025	0.000866	0.0014	47.1	0.00025	0.000258	0.000263	1.9	0.00822
Nickel (Ni)	mg/L	0.0025	0.00063	0.00064		0.0025	0.00093	0.00115		0.0025	0.00086	0.00195	Dif>2DL	0.0025	0.0009	0.00077		<0.00050
Phosphorus (P)	mg/L	1.50	<0.30	<0.30		1.50	<0.30	<0.30		1.5	0.37	0.46		1.50	<0.30	<0.30	<0.30	
Potassium (K)	mg/L	0.25	0.353	0.378	6.8	0.25	0.296	0.365	20.9	0.25	0.624	1.5	82.5	0.25	0.219	0.232	1.39	
Selenium (Se)	mg/L	0.001	0.00043	0.00034		0.0005	0.00062	0.00073	16.3	0.001	0.0004	0.00074		0.0005	0.00031	0.00037		0.00049
Silicon (Si)	mg/L	0.25	1.93	1.88	2.6	0.25	2.7	2.48	8.5	0.25	2.89	8.7	100.3	0.25	2.36	2.48	5.0	2.21
Silver (Ag)	mg/L	0.000050	<0.000010	<0.000010		0.000050	<0.000010	<0.000010		0.00005	0.000028	0.000157	Dif>2DL	0.000050	<0.000010	<0.000010		<0.000010
Sodium (Na)	mg/L	10.0	<2.0	<2.0		10	2.1	2.5		10.0	<2.0	<2.0		10.0	<2.0	<2.0	<2.0	
Strontium (Sr)	mg/L	0.0005	0.179	0.194	8.0	0.0005	0.214	0.159	29.5	0.0005	0.099	0.11	10.5	0.0005	0.141	0.15	6.2	0.372
Thallium (Tl)	mg/L	0.00050	<0.00010	<0.00010		0.00050	<0.00010	<0.00010		0.00050	<0.00010	<0.00010		0.00050	<0.00010	<0.00010		<0.00010
Tin (Sn)	mg/L	0.00050	<0.00010	<0.00010		0.00050	<0.00010	<0.00010		0.00050	<0.00010	<0.00010		0.00050	<0.00010	<0.00010		<0.00010
Titanium (Ti)	mg/L	0.050	<0.010	<0.010		0.050	<0.010	<0.010		0.05	0.043	0.261	Dif>2DL	0.050	<0.010	<0.010	<0.010	
Uranium (U)	mg/L	0.00005	0.000022	0.000026		0.00005	0.000034	0.000023		0.00005	0.000194	0.000325	50.5	0.000050	<0.000010	<0.000010		0.000948
Vanadium (V)	mg/L	0.0050	<0.010	<0.010		0.0050	<0.010	<0.010		0.005	0.0029	0.0107	Dif>2DL	0.0050	<0.010	<0.010	<0.010	
Zinc (Zn)	mg/L	0.005	0.0037	0.0039		0.0150	<0.0030	<0.0030		0.015	0.0657	0.0821	22.2	0.0150	<0.0030	<0.0030	<0.0010	
<b>Dissolved Metals</b>																		
Aluminum (Al)	mg/L	0.005	0.0126	0.0118	6.6	0.015	0.0148	0.0135		0.015	0.003	0.0035		0.015	0.0115	0.0121		<0.0040
Antimony (Sb)	mg/L	0.0005	0.00165	0.00172	4.2	0.00050	0.00013	<0.00010		0.0005	0.00051	0.00049		0.00050	<0.00010	<0.00010		<0.00010
Arsenic (As)	mg/L	0.0005	0.00021	0.00021		0.0005	0.00018	0.0001		0.00050	<0.00010	<0.00010		0.00050	0.00012	<0.00010		0.00022
Barium (Ba)	mg/L	0.00025	0.0212	0.0222	4.6	0.00025	0.0313	0.0447	35.3	0.00025	0.0478	0.0493	3.1	0.00025	0.0141	0.0142	0.7	0.0434
Beryllium (Be)	mg/L	0.00250	<0.00050	<0.00050		0.00250	<0.00050	<0.00050		0.00250	<0.00050	<0.00050		0.00250	<0.00050	<0.00050		<0.00050
Bismuth (Bi)	mg/L	0.00250	<0.00050	<0.00050		0.00250	<0.00050	<0.00050		0.00250	<0.00050	<0.00050		0.00250	<0.00050	<0.00050		<0.00050
Boron (B)	mg/L	0.050	<0.010	<0.010		0.050	<0.010	<0.010		0.050	<0.010	<0.010		0.050	<0.010	<0.010		<0.010
Cadmium (Cd)	mg/L	0.00005	0.000041	0.000042		0.000050	0.000014	<0.000010		0.00005	0.000681	0.000685	0.6	0.000050	<0.000010	<0.000010		0.000031
Calcium (Ca)	mg/L	0.1	20.2	20.8	2.9	0.1	28.5	17.6	47.3	0.1	14.4	15.4	6.7	0.1	17	19.9	15.7	39.4
Chromium (Cr)	mg/L	0.00250	<0.00050	<0.00050		0.0005	0.00017	0.00026		0.00100	<0.00020	<0.00020		0.0005	0.00016	0.00018		<0.00050
Cobalt (Co)	mg/L	0.00050	<0.00010	<0.00010		0.00050	<0.00010	<0.00010		0.0005	0.00109	0.00116	6.2	0.00050	<0.00010	<0.00010		<0.00010
Copper (Cu)	mg/L	0.0005	0.00062	0.00054	13.8	0.0025	0.00057	0.00054		0.0025	0.00141	0.00138		0.00250	0.00052	<0.00050		0.00027
Iron (Fe)	mg/L	0.150	<0.030	<0.030		0.150	0.032	<0.030		0.150	<0.030	<0.030		0.15	0.045	0.044		<0.030
Lead (Pb)	mg/L	0.000250	<0.000050	<0.000050		0.000250	<0.000050	<0.000050		0.000250	<0.000050	<0.000050		0.000250	<0.000050	<0.000050		<0.000050
Lithium (Li)	mg/L	0.0250	<0.0050	<0.0050		0.0250	<0.0050	<0.0050		0.0250	<0.0050	<0.0						

**Appendix 4.1-4c. Relative Percent Difference (RPD) Results for Stream Water Qulaity Duplicate Samples, KSM Project, 2010**

Station Name	SUNR Duplicate				SUNR				SUNR Duplicate				TEC1		TEC1 Duplicate		NTR1A		NTR1A Duplicate				
Date	3/3/2010			L866873-12	3/28/2010			L873292-3	3/28/2010			L873292-5	10/21/2010	L946803-6	10/21/2010	L946803-5	Oct-10	Oct-10	RPD (%)	5 MDL	Jun-10	Jun-10	RPD (%)
ALS Sample ID																							
Sampling Session	5 MDL	Feb-10	RPD (%)	5 MDL	Mar-10	RPD (%)	5 MDL	Oct-10	5 MDL	Oct-10	RPD (%)	5 MDL	Oct-10	Oct-10	RPD (%)	5 MDL	Jun-10	Jun-10	RPD (%)	Dif>2DL			
<b>Physical Tests</b>																							
Colour, True	color unit	25.0	<5.0	25.0	<5.0	<5.0	25	10.9	10.3	25	<5.0	<5.0	10.3	10.3	25	<5.0	<5.0	<5.0	1.2				
Conductivity	µS/cm	10	233	0.4	10	212	215	1.4	10	65	64.9	0.2	10	98.1	0.2	10	99.3	0.2	10	99.3	1.2		
Hardness (as CaCO <sub>3</sub> )	mg/L	2.5	108	0.9	2.5	101	100	1.0	2.5	28.4	29.5	3.8	2.5	42.4	3.8	2.5	44.8	3.8	2.5	5.5			
pH	pH unit	0.50	8.00	0.9	0.5	7.84	8.03	2.4	0.5	7.99	8.02	0.4	0.5	7.14	0.4	0.5	7.37	0.4	0.5	3.2			
Total Suspended Solids	mg/L	15	3.8		15.0	6.7	<3.0		15.0	<3.0	<3.0		<3.0		15	<3.0	<3.0	<3.0					
Total Dissolved Solids	mg/L	50	144	2.7	50	137	132	3.7	50	42	41	50	60	63	50	60	63	63	4.9				
Turbidity	NTU	0.5	0.94	Dif>2DL	0.5	3.58	3.27	9.1	0.5	0.89	0.88	1.1	0.5	0.56	0.88	0.5	0.56	0.35	Dif>2DL				
<b>Anions and Nutrients</b>																							
Acidity (as CaCO <sub>3</sub> )	mg/L	5.0	3.0		5	3.0	2.3		5	3.6	3.7		5	4.7		4.7	4.2						
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	10	65.1	0.3	10	73.1	75.2	2.8	10	19.1	19.1		10	25.9		25.9	25.8		25.8	0.4			
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	10.0	<2.0		10.0	<2.0	<2.0		10.0	<2.0	<2.0		10	<2.0		<2.0	<2.0		<2.0				
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	10.0	<2.0		10.0	<2.0	<2.0		10.0	<2.0	<2.0		10	<2.0		<2.0	<2.0		<2.0				
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	10	65.1	0.3	10	73.1	75.2	2.8	10	19.1	19.1		10	25.9		25.9	25.8		25.8	0.4			
Ammonia as N	mg/L	0.0250	<0.0050		0.0250	<0.0050	<0.0050		0.0250	<0.0050	<0.0050		0.025	0.0064		0.0064	0.0089						
Bromide (Br)	mg/L	0.250	<0.050		0.250	<0.050	<0.050		0.250	<0.050	<0.050		0.25	<0.050		<0.050	<0.050		<0.050				
Chloride (Cl)	mg/L	2.50	<0.50		2.50	<0.50	<0.50		2.50	<0.50	<0.50		2.5	<0.50		<0.50	<0.50		<0.50				
Fluoride (F)	mg/L	0.1	0.082		0.1	0.074	0.075		0.100	<0.020	<0.020		0.1	0.025		0.025	0.025		0.025				
Nitrate (as N)	mg/L	0.025	0.219	0.5	0.025	0.304	0.304		0.025	0.0259	0.0246		0.025	0.129		0.129	0.126		0.126	2.4			
Nitrite (as N)	mg/L	0.0050	<0.0010		0.0050	<0.0010	<0.0010		0.0050	<0.0010	<0.0010		0.005	<0.0010		<0.0010	<0.0010		<0.0010				
Total Kjeldahl Nitrogen	mg/L	0.25	0.051		0.250	0.066	<0.050		0.250	<0.050	<0.050		0.25	<0.050		<0.050	<0.050		<0.050				
Total Nitrogen	mg/L	0.250	0.270	7.1	0.250	0.370	0.350	5.6	0.25	<0.050	0.06		0.25	0.150		0.150	0.130		0.130				
Ortho Phosphate as P	mg/L	0.0050	<0.0010		0.0050	<0.0010	<0.0010		0.0050	<0.0010	<0.0010		0.005	0.0027		0.0027	0.0018		0.0018				
Total Phosphate as P	mg/L	0.01	0.0106	Dif>2DL	0.01	0.0055	0.0065		0.0100	<0.0020	<0.0020		0.01	0.0069		0.0069	0.0058		0.0058				
Sulphate (SO <sub>4</sub> )	mg/L	2.5	48.4		2.5	42.6	42.6		2.5	10.7	10.7		2.5	19.6		19.6	19.4		19.4	1.0			
<b>Cyanides</b>																							
Cyanide, Weak Acid Dissociable	mg/L	0.0050	<0.0010		0.0050	<0.0010	<0.0010		0				0.005	<0.0010		<0.0010							
Cyanide, Total	mg/L	0.0050	<0.0010		0.0050	<0.0010	<0.0010		0.005	0.0029	0.0028		0.005	0.0019		0.0019	0.0018						
Thiocyanate	mg/L	2.50	<0.50		2.50	<0.50	<0.50		0				2.5	<0.50		<0.50	<0.50						
<b>Organic / Inorganic Carbon</b>																							
Total Organic Carbon	mg/L	2.50	<0.50		2.5	0.59	0.68		2.5	2.92	2.76		5.6	2.5		1.69	1.66						
<b>Total Metals</b>																							
Aluminum (Al)	mg/L	0.0050	0.0190	9.9	0.005	0.178	0.145	20.4	0.015	0.078	0.0666	15.8	0.005	0.0926		0.0670	32.1						
Antimony (Sb)	mg/L	0.00050	0.00010		0.00050	0.00010	<0.00010		0.00050	<0.00010	<0.00010		0.0005	<0.00010		<0.00010	<0.00010		<0.00010				
Arsenic (As)	mg/L	0.0005	0.00023		0.0005	0.00028	0.00027		0.00050	<0.00010	<0.00010		0.0005	0.00010		0.0005	0.00010		<0.00020				
Barium (Ba)	mg/L	0.0003	0.0450	2.2	0.00025	0.0448	0.0441	1.6	0.00025	0.00693	0.00653	5.9	0.00025	0.0149		0.01							

#### **Appendix 4.1-4c. Relative Percent Difference (RPD) Results for Stream Water Qulaity Duplicate Samples, KSM Project, 2010**

Station Name	SUNR Duplicate				SUNR				SUNR Duplicate				TEC1		TEC1 Duplicate			NTR1A		NTR1A Duplicate						
Date	3/3/2010				3/28/2010				3/28/2010				10/21/2010		10/21/2010			7/5/2010		7/5/2010						
ALS Sample ID	L866873-12				L873292-3				L873292-5				L946803-6		L946803-5			L905787-16		L905787-31						
Sampling Session	5 MDL		Feb-10		RPD (%)		5 MDL		Mar-10		RPD (%)		5 MDL		Oct-10		Oct-10		RPD (%)		5 MDL		Jun-10		RPD (%)	
<b>Total Metals (cont'd)</b>																										
Mercury (Hg)	mg/L	0.000050	<0.000010		0.000050	<0.000010		0.000050	<0.000010		0.000050	<0.000010		0.000050	<0.000010		0.000050	<0.000010		0.00005	<0.000010		<0.000010			
Molybdenum (Mo)	mg/L	0.00025	0.00829	0.8	0.00025	0.00822		0.00829	0.8		0.00025	0.000126		0.000125		0.00025	0.000285		0.000303		6.1					
Nickel (Ni)	mg/L	0.00250	<0.00050		0.0025	0.00069		0.00059			0.0025	0.00072		0.00075		0.005	<0.0010		0.00070							
Phosphorus (P)	mg/L	1.50	<0.30		1.50	<0.30		<0.30			1.50	<0.30		<0.30		1.5	<0.30		<0.30							
Potassium (K)	mg/L	0.25	1.41	1.4	0.25	1.44		1.42	1.4		0.25	0.105		0.102		0.25	0.208		0.215							
Selenium (Se)	mg/L	0.001	0.00054		0.001	0.00045		0.00042			0.0005	0.00012		0.00012		0.001	0.00036		0.00040							
Silicon (Si)	mg/L	0.25	2.23	0.9	0.25	2.27		2.22	2.2		0.25	1.64		1.6	2.5	0.25	2.53		2.52	0.4						
Silver (Ag)	mg/L	0.000050	<0.000010		0.000050	<0.000010		<0.000010			0.000050	<0.000010		<0.000010		0.00005	<0.000010		<0.000010							
Sodium (Na)	mg/L	10.0	<2.0		10.0	<2.0		<2.0			10.0	<2.0		<2.0		10	<2.0		<2.0							
Strontium (Sr)	mg/L	0.0005	0.371	0.3	0.0005	0.331		0.321	3.1		0.0005	0.0722		0.0705	2.4	0.0005	0.134		0.139	3.7						
Thallium (Tl)	mg/L	0.00050	<0.00010		0.00050	<0.00010		<0.00010			0.00050	<0.00010		<0.00010		0.0005	<0.00010		<0.00010							
Tin (Sn)	mg/L	0.00050	<0.00010		0.00050	<0.00010		<0.00010			0.00050	<0.00010		<0.00010		0.0005	<0.00010		<0.00010							
Titanium (Ti)	mg/L	0.050	<0.010		0.05	0.014		0.012			0.050	<0.010		<0.010		0.05	<0.010		<0.010							
Uranium (U)	mg/L	0.00005	0.000982	3.5	0.00005	0.000988		0.000983	0.5		0.000050	<0.000010		<0.000010		0.00005	<0.000010		<0.000010							
Vanadium (V)	mg/L	0.0050	<0.0010		0.0050	<0.0010		<0.0010			0.0050	<0.0010		<0.0010		0.005	<0.0010		<0.0010							
Zinc (Zn)	mg/L	0.0050	<0.0010		0.005	0.0014		0.0014			0.0150	<0.0030		<0.0030		0.005	0.0013		<0.0010							
<b>Dissolved Metals</b>																										
Aluminum (Al)	mg/L	0.0200	<0.0040		0.005	0.0061		0.0064	4.8		0.015	0.0297		0.026	13.3	0.005	0.0102		0.0105	2.9						
Antimony (Sb)	mg/L	0.00050	<0.00010		0.0005	<0.00010		0.00011			0.00050	<0.00010		<0.00010		0.0005	<0.00010		<0.00010							
Arsenic (As)	mg/L	0.0005	0.00022		0.0005	0.00021		0.00021			0.00050	<0.00010		<0.00010		0.0005	<0.00010		<0.00010							
Barium (Ba)	mg/L	0.00025	0.0439	1.1	0.00025	0.0405		0.0411	1.5		0.00025	0.00626		0.00607	3.1	0.00025	0.0134		0.0138	2.9						
Beryllium (Be)	mg/L	0.00250	<0.00050		0.00250	<0.00050		<0.00050			0.00250	<0.00050		<0.00050		0.0025	<0.00050		<0.00050							
Bismuth (Bi)	mg/L	0.00250	<0.00050		0.00250	<0.00050		<0.00050			0.00250	<0.00050		<0.00050		0.0025	<0.00050		<0.00050							
Boron (B)	mg/L	0.050	<0.010		0.050	<0.010		<0.010			0.050	<0.010		<0.010		0.05	<0.010		<0.010							
Cadmium (Cd)	mg/L	0.00005	0.000028		0.00005	0.000031		0.000032			0.000050	<0.000010		<0.000010		0.00005	<0.000010		<0.000010							
Calcium (Ca)	mg/L	0.1	39.6	0.5	0.1	36.9		36.8	0.3		0.1	8.53		9.01	5.5	0.1	12.8		13.4	4.6						
Chromium (Cr)	mg/L	0.00250	<0.00050		0.00250	<0.00050		<0.00050			0.0005	0.00023		0.0002		0.001	<0.00020		0.00022							
Cobalt (Co)	mg/L	0.00050	<0.00010		0.00050	<0.00010		<0.00010			0.00050	<0.00010		<0.00010		0.0005	<0.00010		<0.00010							
Copper (Cu)	mg/L	0.0005	0.00025		0.0005	0.00051		0.00055	7.5		0.0025	0.00088		0.00054		0.0005	0.00030		0.00036							
Iron (Fe)	mg/L	0.150	<0.030		0.150	<0.030		<0.030			0.150	<0.030		<0.030		0.15	<0.030		<0.030							
Lead (Pb)	mg/L	0.000250	<0.000050		0.000250	<0.000050		<0.000050			0.000250	<0.000050		<0.000050		0.00025	<0.000050		<0.000050							
Lithium (Li)	mg/L	0.0250	<0.0050		0.0250	<0.0050		<0.0050			0.0250	<0.0050		<0.0050		0.025	<0.0050		<0.0050							
Magnesium (Mg)	mg/L	0.025	2.19	0.9	0.025	2.07		2.06	0.5		0.025	1.72		1.71	0.6	0.025	2.54		2.73	7.2						
Manganese (Mn)	mg/L	0.00025	0.000304	8.6	0.00025	0.00131		0.00120	8.8		0.00025	0.000608		0.000344	55.5	0.00025	0.000293		0.000110	Dif>2DL						
Mercury (Hg)	mg/L	0.000050	<0.000010		0.000050	<0.000010		<0.000010			0.000050	<0.000010		<0.000010		0.00005	<0.000010		<0.000010							
Molybdenum (Mo)	mg/L	0.00025	0.00823	2.7	0.00025	0.00800		0.00817	2.1		0.00025	0.000127		0.000111		0.00025	0.000285		0.000287	0.7						
Nickel (Ni)	mg/L	0.00250	<0.00050		0.00250	<0.00050		<0.00050			0.0025	0.00067		0.00063		0.0025	<0.00050		<0.00050							
Phosphorus (P)	mg/L	1.50	<0.30		1.50	<0.30		<0.30			1.50	<0.30		<0.30		1.5	<0.30		<0.30							
Potassium (K)	mg/L	0.25	1.37	1.5	0.25	1.36		1.36			0.25	0.101		0.096		0.25	0.198		0.209							
Selenium (Se)	mg/L	0.001	0.00052		0.001	0.00057		0.00059			0.0005	0.0001		0.00011		0.001	0.00038		0.00044							
Silicon (Si)	mg/L	0.25	2.25	0.4	0.25	2.04		2.06	1.0		0.25	1.51		1.51		0.25	2.48		2.47	0.4						
Silver (Ag)	mg/L	0.000050	<0.000010		0.000050	<0.000010		<0.000010			0.000050	<0.000010		<0.000010		0.00005	<0.000010		<0.000010							
Sodium (Na)	mg/L	10.0	<2.0		10.0	<2.0		<2.0			10.0	<2.0		<2.0		10	<2.0		<2.0							
Strontium (Sr)	mg/L	0.0005	0.367	1.6	0.0005	0.318		0.317	0.3		0.0005	0.0683		0.0686	0.4	0.0005	0.131</td									

"<" - value is below the detection limit.

*RPD = Relative Percent Difference relative to mean (in %).*

*RPD was not calculated if one or more values were less than five times the detection limit.*

*DL = analytical detection limit.*

*Bold values have a RPD equal to or greater than 20%.*

*Grey shaded values have a RPD equal to or greater than 50%.*

*Dif>2DL - duplicate values that were less than the 5xDL and 1.5xDL*

**Dif>2SD** - duplicate values that were less than the 3xSD and had a difference between values greater than 2xSD.

**KSM PROJECT**  
**2007 to 2011 Baseline Water Quality Report**

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## **Appendix 4.1-4d**

**Relative Percent Difference (RPD) Results for Stream  
Water Quality Duplicate Samples, KSM Project, 2011**

**Appendix 4.1-4d. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2011**

Site Name	SNO2	SNO2	SUNR	SUNR	UR1	UR1	UR1A	UR1A	TRC3	TRC3						
Date	11/28/2011	11/28/2011	8/1/2011	8/1/2011	9/4/2011	9/4/2011	11/27/2011	11/27/2011	9/30/2011	9/30/2011						
ALS Sample ID	L1091310-24	L1091310-22	L1039955-8	L1039955-3	L1054465-6	L1054465-1	L1091310-12	L1091310-3	L1067383-19	L1067383-15						
Parameter	Nov-11	Nov-11	RPD (%)	Aug-11	Aug-11	RPD (%)	Sep-11	RPD (%)	Nov-11	RPD (%)						
<b>Physical Parameter</b>																
Colour, True	color unit	<5.0	<5.0	N/A	<5.0	N/A	-	<5.0	N/A	<5.0	N/A	5.2	5.1	N/A		
Conductivity	µS/cm	169	168	0.6	84.8	85.2	0.5	-	130	N/A	202	201	0.5	209	207	1.0
Hardness (as CaCO <sub>3</sub> )	mg/L	75.8	69.3	9.0	36.5	36.3	0.5	58.1	57.2	1.6	91.5	90.3	1.3	-	94.9	N/A
pH	pH unit	8.02	8.02	0.0	8.36	8.36	0.0	-	8.2	N/A	8.17	8.16	0.1	8.1	7.99	1.4
Total Suspended Solids	mg/L	<3.0	<3.0	N/A	16.7	20	18.0	-	602	N/A	<3.0	<3.0	N/A	15.3	18.7	20.0
Total Dissolved Solids	mg/L	93	95	2.1	53	55	3.7	-	117	N/A	111	116	4.4	134	130	3.0
Turbidity	NTU	1.46	1.26	14.7	17.6	16.8	4.7	-	495	N/A	0.76	0.86	12.3	31.4	30.4	3.2
<b>Anions and Nutrients</b>																
Acidity (as CaCO <sub>3</sub> )	mg/L	2.1	2.1	N/A	<1.0	<1.0	N/A	-	3.2	N/A	1.7	1.8	N/A	3.6	4.7	<b>26.5</b>
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	48.7	48	1.4	28.7	28.3	1.4	-	45.5	N/A	69.5	71.9	3.4	64.1	60.3	6.1
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	N/A	<1.0	<1.0	N/A	-	<1.0	N/A	<2.0	<2.0	N/A	<2.0	<2.0	N/A
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	N/A	<1.0	<1.0	N/A	-	<1.0	N/A	<2.0	<2.0	N/A	<2.0	<2.0	N/A
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	48.7	48	1.4	28.7	28.3	1.4	-	45.5	N/A	69.5	71.9	3.4	64.1	60.3	6.1
Ammonia as N	mg/L	<0.0050	<0.0050	N/A	<0.0050	<0.0050	N/A	0.0129	0.0113	N/A	<0.0050	<0.0050	N/A	-	<0.0050	N/A
Bromide (Br)	mg/L	<0.050	<0.050	N/A	<0.050	<0.050	N/A	-	<0.050	N/A	<0.050	<0.050	N/A	<0.050	<0.050	N/A
Chloride (Cl)	mg/L	<0.50	<0.50	N/A	<0.50	<0.50	N/A	-	<0.50	N/A	<0.50	<0.50	N/A	<0.50	<0.50	N/A
Fluoride (F)	mg/L	0.043	0.043	N/A	0.041	0.041	N/A	-	0.032	N/A	0.041	0.041	N/A	0.055	0.058	5.3
Nitrate (as N)	mg/L	0.162	0.162	0.0	0.0367	0.0478	N/A	-	0.0264	N/A	0.0648	0.0644	N/A	0.084	0.0819	N/A
Nitrite (as N)	mg/L	<0.0010	<0.0010	N/A	<0.0010	<0.0010	N/A	-	<0.0010	N/A	<0.0010	<0.0010	N/A	-	<0.0010	N/A
Total Kjeldahl Nitrogen	mg/L	<0.050	<0.050	N/A	0.063	0.062	N/A	0.258	0.134	N/A	<0.050	<0.050	N/A	0.058	N/A	
Total Nitrogen	mg/L	0.13	0.13	0.0	0.1	0.11	N/A	0.16	0.16	0.0	<0.050	0.05	N/A	-	0.14	N/A
Ortho Phosphate as P	mg/L	0.0015	0.0011	N/A	0.0011	<0.0010	N/A	-	0.0027	N/A	<0.0010	<0.0010	N/A	0.0018	0.0016	N/A
Total Phosphate as P	mg/L	0.0069	0.0065	6.0	0.0175	0.0281	<b>46.5</b>	-	1.02	N/A	0.0021	0.0023	N/A	0.0361	0.035	3.1
Sulphate (SO <sub>4</sub> )	mg/L	31	31	0.0	12.2	12.2	0.0	-	18.7	N/A	30.8	30.8	0.0	41.6	41.6	0.0
<b>Cyanides</b>																
Cyanide, Weak Acid Dissociable	mg/L	-	-	N/A	-	<0.0010	N/A	-	-	N/A	-	-	N/A	-	<0.0010	N/A
Cyanide, Total	mg/L	0.0018	0.0015	N/A	<0.0010	<0.0010	N/A	-	<0.0010	N/A	0.0011	0.0011	N/A	0.002	0.0022	N/A
Thiocyanate	mg/L	-	-	N/A	-	0.58	N/A	-	-	N/A	-	-	N/A	-	1.28	N/A
<b>Carbon</b>																
Total Organic Carbon	mg/L	1.33	1.32	0.8	<0.50	<0.50	N/A	3.26	2.87	12.7	0.7	0.77	N/A	-	1.58	N/A
<b>Total Metals</b>																
Aluminum (Al)	mg/L	0.0729	0.0652	N/A	0.867	0.781	10.4	18	19.2	6.5	0.0508	0.047	N/A	-	1.15	N/A
Antimony (Sb)	mg/L	<0.00010	<0.00010	N/A	0.00016	0.00014	N/A	0.0028	0.0026	7.4	0.00213	0.00202	5.3	-	0.00036	N/A
Arsenic (As)	mg/L	0.00015	0.00015	N/A	0.00066	0.00065	1.5	0.0221	0.0223	0.9	0.00034	0.00033	3.0	-	0.00106	N/A
Barium (Ba)	mg/L	0.0198	0.0189	4.7	0.0293	0.0278	5.3	0.349	0.346	0.9	0.0327	0.0333	1.8	-	0.0402	N/A
Beryllium (Be)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	0.00059	0.00053	N/A	<0.00010	<0.00010	N/A	-	<0.00010	N/A
Boron (B)	mg/L	<0.010	<0.010	N/A	<0.010	<0.010	N/A	0.011	0.01	N/A	<0.010	<0.010	N/A	-	<0.010	N/A
Cadmium (Cd)	mg/L	<0.000010	<0.000010	N/A	0.000045	0.000043	4.5	0.000876	0.000837	4.6	0.000025	0.000027	N/A	-	0.000073	N/A
Calcium (Ca)	mg/L	23.3	22.2	4.8	14.4	13.9	3.5	34.1	34.1	0.0	31.1	29.4	5.6	-	29.5	N/A
Chromium (Cr)	mg/L	0.00045	0.00043	N/A	0.00175	0.00161	8.3	0.0276	0.0291	5.3	0.0002	0.00018	N/A	-	0.0024	N/A
Cobalt (Co)	mg/L	0.00017	0.00014	N/A	0.00069	0.00063	9.1	0.0133	0.0137	3.0	<0.00010	<0.00010	N/A	-	0.00073	N/A
Copper (Cu)	mg/L	0.00055	0.00055	N/A	0.00457	0.00424	7.5	0.0901	0.0912	1.2	<0.00050	<0.00050	N/A	-	0.00252	N/A
Iron (Fe)	mg/L	0.17	0.16	6.1	1.01	0.887	13.0	31.7	31.4	1.0	0.082	0.083	1.2	-	1.52	N/A
Lead (Pb)	mg/L	<0.000050	<0.000050	N/A	0.0035	0.00336	4.1	0.0137	0.0126	8.4	<0.000050	0.000058	N/A	-	0.000564	N/A
Lithium (Li)	mg/L	0.0006	<0.00050	N/A	<0.00050	<0.00050	N/A									

**Appendix 4.1-4d. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2011**

Site Name	SNO2	SNO2	SUNR	SUNR	UR1	UR1	UR1A	UR1A	TRC3	TRC3						
Date	11/28/2011	11/28/2011	8/1/2011	8/1/2011	9/4/2011	9/4/2011	11/27/2011	11/27/2011	9/30/2011	9/30/2011						
ALS Sample ID	L1091310-24	L1091310-22	L1039955-8	L1039955-3	L1054465-6	L1054465-1	L1091310-12	L1091310-3	L1067383-19	L1067383-15						
Parameter	Nov-11	Nov-11	RPD (%)	Aug-11	Aug-11	RPD (%)	Sep-11	RPD (%)	Nov-11	RPD (%)	Sep-11	RPD (%)				
<b>Total Metals (cont'd)</b>																
Potassium (K)	mg/L	0.279	0.269	3.6	0.773	0.736	4.9	4.83	5.2	7.4	0.576	0.569	1.2	-	0.568	N/A
Selenium (Se)	mg/L	0.00042	0.00042	0.0	0.00018	0.00017	5.7	0.0016	0.00151	5.8	0.00063	0.00065	3.1	-	0.00064	N/A
Silicon (Si)	mg/L	2.63	2.68	1.9	2.59	2.27	13.2	34.1	33.2	2.7	2.08	2.08	0.0	-	4.88	N/A
Silver (Ag)	mg/L	<0.000010	<0.000010	N/A	0.000012	0.000011	N/A	0.000413	0.000399	3.4	<0.000010	<0.000010	N/A	-	0.000015	N/A
Sodium (Na)	mg/L	<2.0	<2.0	N/A	<2.0	<2.0	N/A	2.4	2.3	N/A	<2.0	<2.0	N/A	-	<2.0	N/A
Strontium (Sr)	mg/L	0.187	0.178	4.9	0.118	0.113	4.3	0.215	0.199	7.7	0.261	0.245	6.3	-	0.225	N/A
Thallium (Tl)	mg/L	<0.000010	<0.000010	N/A	0.000013	0.000012	N/A	0.000224	0.000209	N/A	<0.000010	<0.000010	N/A	-	0.000025	N/A
Tin (Sn)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	0.00014	0.00015	N/A	<0.00010	<0.00010	N/A	-	<0.00010	N/A
Titanium (Ti)	mg/L	<0.010	<0.010	N/A	0.058	0.049	16.8	1.03	0.978	5.2	<0.010	<0.010	N/A	-	0.042	N/A
Uranium (U)	mg/L	0.000012	0.000012	N/A	0.000275	0.000265	3.7	0.00053	0.000513	3.3	0.000038	0.000037	2.7	-	0.000069	N/A
Vanadium (V)	mg/L	<0.0010	<0.0010	N/A	0.0027	0.0023	N/A	0.0841	0.0859	2.1	<0.0010	<0.0010	N/A	-	0.0028	N/A
Zinc (Zn)	mg/L	<0.0030	<0.0030	N/A	0.006	0.0054	N/A	0.114	0.116	1.7	0.004	0.0041	N/A	-	0.0076	N/A
<b>Dissolved Metals</b>																
Aluminum (Al)	mg/L	0.006	0.0056	N/A	0.0453	0.0461	1.8	0.103	0.0966	6.4	0.0317	0.007	N/A	-	0.0266	N/A
Antimony (Sb)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	0.00083	0.0008	3.7	0.00198	0.00199	0.5	-	0.00028	N/A
Arsenic (As)	mg/L	0.00012	0.00012	N/A	0.00031	0.00032	N/A	0.00061	0.00058	5.0	0.00035	0.00027	N/A	-	0.00028	N/A
Barium (Ba)	mg/L	0.0185	0.0182	1.6	0.0172	0.0172	0.0	0.0313	0.0301	3.9	0.0312	0.032	2.5	-	0.0232	N/A
Beryllium (Be)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	-	<0.00010	N/A
Boron (B)	mg/L	<0.010	<0.010	N/A	<0.010	<0.010	N/A	<0.010	<0.010	N/A	<0.010	<0.010	N/A	-	<0.010	N/A
Cadmium (Cd)	mg/L	<0.000010	<0.000010	N/A	0.000021	0.000012	N/A	0.000014	0.000015	N/A	0.000021	0.000021	N/A	-	0.000033	N/A
Calcium (Ca)	mg/L	22.6	20.2	11.2	13.4	13.4	0.0	20	19.7	1.5	29.4	28.9	1.7	-	29.9	N/A
Chromium (Cr)	mg/L	0.00013	0.00013	N/A	0.00014	0.00018	N/A	0.00017	0.00016	N/A	0.0001	<0.00010	N/A	-	0.00013	N/A
Cobalt (Co)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	-	<0.00010	N/A
Copper (Cu)	mg/L	<0.00050	<0.00050	N/A	<0.00050	<0.00050	N/A	0.00116	0.00113	N/A	<0.00050	<0.00050	N/A	-	0.00069	N/A
Iron (Fe)	mg/L	0.031	0.031	N/A	0.032	0.033	N/A	0.048	0.051	N/A	0.072	<0.030	N/A	-	<0.030	N/A
Lead (Pb)	mg/L	<0.000050	<0.000050	N/A	0.000206	0.000095	N/A	<0.000050	<0.000050	N/A	0.00007	<0.000050	N/A	-	<0.000050	N/A
Lithium (Li)	mg/L	0.00054	<0.00050	N/A	<0.00050	<0.00050	N/A	0.00063	<0.00050	N/A	0.00124	0.00117	N/A	-	0.00126	N/A
Magnesium (Mg)	mg/L	4.73	4.58	3.2	0.724	0.71	2.0	1.97	1.92	2.6	4.41	4.43	0.5	-	4.91	N/A
Manganese (Mn)	mg/L	0.0411	0.041	0.2	0.00319	0.00313	1.9	0.00131	0.00145	10.1	0.0107	0.00792	29.9	-	0.0236	N/A
Mercury (Hg)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	-	<0.000010	N/A
Molybdenum (Mo)	mg/L	0.000326	0.000294	10.3	0.00359	0.00355	1.1	0.001	0.00103	3.0	0.00114	0.00113	0.9	-	0.00117	N/A
Nickel (Ni)	mg/L	0.00086	0.00091	N/A	<0.00050	<0.00050	N/A	<0.00050	<0.00050	N/A	0.0005	<0.00050	N/A	-	0.00104	N/A
Potassium (K)	mg/L	0.259	0.257	0.8	0.605	0.604	0.2	1.08	1.01	6.7	0.544	0.548	0.7	-	0.3	N/A
Selenium (Se)	mg/L	0.00042	0.00041	2.4	0.00018	0.00017	N/A	0.00063	0.00061	3.2	0.00062	0.00063	1.6	-	0.00066	N/A
Silicon (Si)	mg/L	2.44	2.48	1.6	1.01	1.01	0.0	1.25	1.25	0.0	1.96	1.94	1.0	-	2.26	N/A
Silver (Ag)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	-	<0.000010	N/A
Sodium (Na)	mg/L	<2.0	<2.0	N/A	<2.0	<2.0	N/A	<2.0	<2.0	N/A	<2.0	<2.0	N/A	-	<2.0	N/A
Strontium (Sr)	mg/L	0.181	0.163	10.5	0.108	0.107	0.9	0.124	0.125	0.8	0.248	0.24	3.3	-	0.23	N/A
Thallium (Tl)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	0.000013	0.000011	N/A	<0.000010	<0.000010	N/A	-	<0.000010	N/A
Tin (Sn)	mg/L	<0.00010	<0.00010	N/A	<0.00010</td											

**Appendix 4.1-4d. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2011**

Site Name	NTR1A		NTR1A		NTR2		NTR2		MC2		MC2		MCTR		MCTR			
Date	10/24/2011	10/24/2011	L1079029-11	L1079029-9	7/3/2011	7/3/2011	L1026874-17	L1026874-5	10/1/2011	10/1/2011	L1067383-25	L1067383-14	Sep-11	Sep-11	RPD (%)	Jul-11	Jul-11	RPD (%)
ALS Sample ID			Oct-11	Oct-11	RPD (%)		Jul-11	Jul-11	RPD (%)		Jul-11	Jul-11	Sep-11	Sep-11	RPD (%)	Jul-11	Jul-11	RPD (%)
<b>Physical Parameter</b>																		
Colour, True	color unit	7.3	7.3	N/A	<5.0	<5.0	N/A	<5.0	N/A	<5.0	N/A	<5.0	6.8	8.6	<5.0	<5.0	N/A	
Conductivity	µS/cm	95.1	95.1	0	80.2	79.7	0.6	351	352	0.3	192	195	192	195	1.6			
Hardness (as CaCO <sub>3</sub> )	mg/L	40.8	39.9	2.2	35.2	33.9	3.8	152	154	1.3	87.6	87.4	87.6	87.4	0.2			
pH	pH unit	7.88	7.9	0.3	7.54	7.54	0.0	7.41	6.8	8.6	8.06	8	8.06	8	0.7			
Total Suspended Solids	mg/L	<3.0	5.5	N/A	4.7	4.7	N/A	62.7	64	2.1	82	66.9	66.9	20.3				
Total Dissolved Solids	mg/L	68	61	10.9	53	52	1.9	234	241	2.9	141	132	132	6.6				
Turbidity	NTU	0.72	2.72	116.3	6.3	6.4	1.6	94.5	97.6	3.2	62.3	41.7	41.7	39.6				
<b>Anions and Nutrients</b>																		
Acidity (as CaCO <sub>3</sub> )	mg/L	2.8	2.8	0.0	<1.0	2.4	N/A	4.8	7.8	47.6	1.4	1.6	1.6	N/A				
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	25	24.6	1.6	19.9	19.4	2.5	18.3	18.4	0.5	58.9	56.6	56.6	4.0				
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	N/A	<2.0	<2.0	N/A	<2.0	<2.0	N/A	<2.0	<2.0	<2.0	N/A				
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	N/A	<2.0	<2.0	N/A	<2.0	<2.0	N/A	<2.0	<2.0	<2.0	N/A				
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	25	24.6	1.6	19.9	19.4	2.5	18.3	18.4	0.5	58.9	56.6	56.6	4.0				
Ammonia as N	mg/L	<0.0050	<0.0050	N/A	0.0074	0.0083	N/A	<0.0050	<0.0050	N/A	<0.0050	0.0128	0.0128	N/A				
Bromide (Br)	mg/L	<0.050	<0.050	N/A	<0.050	<0.050	N/A	<0.050	<0.050	N/A	<0.050	<0.050	<0.050	N/A				
Chloride (Cl)	mg/L	<0.50	<0.50	N/A	<0.50	<0.50	N/A	<0.50	<0.50	N/A	<0.50	<0.50	<0.50	N/A				
Fluoride (F)	mg/L	0.037	0.037	N/A	0.03	0.027	N/A	0.226	0.233	3.1	0.027	0.025	0.025	N/A				
Nitrate (as N)	mg/L	0.292	0.301	3.0	0.0148	0.0153	N/A	0.0845	0.0845	N/A	0.0321	0.0295	0.0295	N/A				
Nitrite (as N)	mg/L	<0.0010	<0.0010	N/A	<0.0010	<0.0010	N/A	<0.0010	0.002	N/A	<0.0010	<0.0010	<0.0010	N/A				
Total Kjeldahl Nitrogen	mg/L	<0.068	<0.062	N/A	0.092	0.08	N/A	<0.050	<0.050	N/A	0.098	0.101	0.101	N/A				
Total Nitrogen	mg/L	0.34	0.31	9.2	0.1	0.08	N/A	0.13	0.13	0.0	0.13	0.13	0.13	0.0				
Ortho Phosphate as P	mg/L	0.0014	0.0016	N/A	0.0017	0.002	N/A	<0.0010	<0.0010	N/A	0.0017	0.0014	0.0014	N/A				
Total Phosphate as P	mg/L	0.0941	0.0164	140.6	0.0092	0.0083	10.3	0.444	0.466	4.8	0.201	0.172	0.172	15.5				
Sulphate (SO <sub>4</sub> )	mg/L	18.2	18	1.1	17.6	17.5	0.6	145	145	0.0	37.3	37.4	37.4	0.3				
<b>Cyanides</b>																		
Cyanide, Weak Acid Dissociable	mg/L	<0.0010	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Cyanide, Total	mg/L	0.0021	0.0012	N/A	<0.0010	<0.0010	N/A	<0.0010	<0.0011	N/A	<0.0010	<0.0010	<0.0010	N/A	N/A	N/A	N/A	
Thiocyanate	mg/L	<0.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
<b>Carbon</b>																		
Total Organic Carbon	mg/L	2.73	2.44	11.2	0.79	0.6	N/A	<0.50	<0.50	N/A	0.54	<0.50	N/A					
<b>Total Metals</b>																		
Aluminum (Al)	mg/L	0.0476	0.35	N/A	0.268	0.3	11.3	2.98	2.69	10.2	3.47	1.67	1.67	70.0				
Antimony (Sb)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	0.00067	0.00067	0.0	0.00063	0.00047	0.00047	29.1				
Arsenic (As)	mg/L	<0.00010	0.00016	N/A	0.00015	0.00016	N/A	0.0237	0.0237	0.0	0.00289	0.00196	0.00196	38.4				
Barium (Ba)	mg/L	0.0135	0.0164	19.4	0.015	0.0152	1.3	0.0515	0.0469	9.3	0.0622	0.0378	0.0378	48.8				
Beryllium (Be)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	0.00049	0.00046	N/A	0.0001	<0.00010	<0.00010	N/A				
Boron (B)	mg/L	<0.010	<0.010	N/A	<0.010	<0.010	N/A	<0.010	<0.010	N/A	<0.010	<0.010	<0.010	N/A				
Cadmium (Cd)	mg/L	<0.000010	0.000013	N/A	<0.000010	<0.000010	N/A	0.00644	0.00658	2.2	0.000123	0.000118	0.000118	4.1				
Calcium (Ca)	mg/L	12.6	11.4	10	9.59	9.63	0.4	53.8	54	0.4	32.7	32.2	32.2	1.5				
Chromium (Cr)	mg/L	0.00036	0.00098	N/A	0.00114	0.00113	N/A	0.00079	0.00063	N/A	0.00318	0.00138	0.00138	N/A				
Cobalt (Co)	mg/L	<0.00010	0.00025	N/A	0.00021	0.00021	N/A											

**Appendix 4.1-4d. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2011**

Site Name	NTR1A	NTR1A	NTR2	NTR2	MC2	MC2	MCTR	MCTR
Date	10/24/2011	10/24/2011	7/3/2011	7/3/2011	10/1/2011	10/1/2011	7/4/2011	7/4/2011
ALS Sample ID	L1079029-11	L1079029-9	L1026874-17	L1026874-5	L1067383-25	L1067383-14	L1028827-15	L1028827-1
Parameter	Oct-11	Oct-11	RPD (%)	Jul-11	Jul-11	RPD (%)	Sep-11	Jul-11
<b>Total Metals (cont'd)</b>								
Potassium (K)	mg/L	0.238	0.269	12.2	0.253	0.0	0.872	0.822
Selenium (Se)	mg/L	0.00036	0.00036	0	0.0005	0.0	0.00383	0.00391
Silicon (Si)	mg/L	2.98	3.29	9.9	2.04	2.13	4.3	4.52
Silver (Ag)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	0.000035
Sodium (Na)	mg/L	<2.0	<2.0	N/A	<2.0	<2.0	N/A	3
Strontium (Sr)	mg/L	0.127	0.119	6.5	0.111	0.111	0.0	0.284
Thallium (Tl)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	0.000034
Tin (Sn)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	<0.00010
Titanium (Ti)	mg/L	<0.010	<0.010	N/A	<0.010	<0.010	N/A	0.052
Uranium (U)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	0.000829
Vanadium (V)	mg/L	<0.0010	<0.0010	N/A	<0.0010	<0.0010	N/A	0.0062
Zinc (Zn)	mg/L	<0.0030	<0.0030	N/A	<0.0030	<0.0030	N/A	0.441
<b>Dissolved Metals</b>								
Aluminum (Al)	mg/L	0.0199	0.0188	5.7	0.016	0.0143	N/A	0.0333
Antimony (Sb)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	0.00016
Arsenic (As)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	0.0002
Barium (Ba)	mg/L	0.0127	0.0126	0.8	0.0135	0.0116	15.1	0.0283
Beryllium (Be)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	<0.00010
Boron (B)	mg/L	<0.010	<0.010	N/A	<0.010	<0.010	N/A	<0.010
Cadmium (Cd)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	0.0054
Calcium (Ca)	mg/L	12.3	12	2.5	9.97	10	0.3	52.3
Chromium (Cr)	mg/L	0.00025	0.00023	N/A	0.0004	0.00029	N/A	<0.00010
Cobalt (Co)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	0.00778
Copper (Cu)	mg/L	0.00053	0.00051	N/A	<0.00050	<0.00050	N/A	0.036
Iron (Fe)	mg/L	<0.030	<0.030	N/A	<0.030	<0.030	N/A	0.112
Lead (Pb)	mg/L	<0.000050	<0.000050	N/A	<0.000050	<0.000050	N/A	0.000051
Lithium (Li)	mg/L	0.00074	0.00057	N/A	0.0009	0.00087	N/A	0.00259
Magnesium (Mg)	mg/L	2.47	2.43	1.6	2.49	2.15	14.7	5.12
Manganese (Mn)	mg/L	0.00213	0.00124	52.8	0.00148	0.00152	2.7	0.562
Mercury (Hg)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	<0.000010
Molybdenum (Mo)	mg/L	0.000228	0.000234	2.6	0.000425	0.000437	2.8	0.00122
Nickel (Ni)	mg/L	0.00058	0.00062	N/A	<0.00050	<0.00050	N/A	0.00394
Potassium (K)	mg/L	0.228	0.221	3.1	0.233	0.189	20.9	0.711
Selenium (Se)	mg/L	0.00036	0.00034	5.7	0.00053	0.00051	3.8	0.00301
Silicon (Si)	mg/L	2.89	2.87	0.7	1.65	1.65	0.0	2.34
Silver (Ag)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	<0.000010
Sodium (Na)	mg/L	<2.0	<2.0	N/A	<2.0	<2.0	N/A	<2.0
Strontium (Sr)	mg/L	0.121	0.124	2.4	0.116	0.117	0.9	0.274
Thallium (Tl)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	0.000022
Tin (Sn)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	<0.00010
Titanium (Ti)	mg/L	<0.010	<0.010	N/A	<0.010	<0.010	N/A	<0.010
Uranium (U)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	0.000033
Vanadium (V)	mg/L	<0.0010	<0.0010	N/A	<0.0010	<0.0010	N/A	<0.0010
Zinc (Zn)	mg/L	<0.0030	<0.0030	N/A	<0.0030	<0.0030	N/A	0.359

Notes:

- indicates parameter was not analyzed.

"<" - value is below the detection limit.

RPD = Relative Percent Difference relative t mean (in %).

N/A = Not applicable. RPD was not calculated if one or more values were less than five times the detection limit.

DL = analytical detection limit.

**Bold** values have a RPD equal to or greater than 20%.

Grey shaded values have a RPD equal to or greater than 50%.

**Appendix 4.1-4d. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2011**

Site Name	SC1	SC1	STE1A	STE1A	STE1A	STE1A	STE2	STE2
Date	2/1/2011	2/1/2011	3/5/2011	3/5/2011	10/24/2011	10/24/2011	7/4/2011	7/4/2011
ALS Sample ID	L975149-10	L975149-7	L985810-12	L985810-9	L1079029-10	L1079029-1	L1028827-14	L1028827-12
Parameter	Feb-11	Feb-11	RPD (%)	Mar-11	RPD (%)	Oct-11	Oct-11	RPD (%)
<b>Physical Parameter</b>								
Colour, True	color unit	<5.0	<5.0	N/A	<5.0	N/A	<5.0	N/A
Conductivity	µS/cm	391	390	0.3	284	0.7	196	193
Hardness (as CaCO <sub>3</sub> )	mg/L	168	166	1.2	127	2.3	83.5	84.2
pH	pH unit	7.82	7.97	1.9	7.34	8.14	10.3	7.44
Total Suspended Solids	mg/L	<3.0	<3.0	N/A	<3.0	N/A	<3.0	N/A
Total Dissolved Solids	mg/L	261	260	0.4	188	194	3.1	114
Turbidity	NTU	0.23	0.36	<b>44.1</b>	0.4	0.52	<b>26.1</b>	0.66
<b>Anions and Nutrients</b>								
Acidity (as CaCO <sub>3</sub> )	mg/L	3	3	0.0	5.7	3.8	<b>40.0</b>	2.9
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	80.3	81.9	2.0	44.6	44.3	0.7	33
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	N/A	<2.0	N/A	<2.0	33.9
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	N/A	<2.0	N/A	<2.0	N/A
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	80.3	81.9	2.0	44.6	44.3	0.7	33
Ammonia as N	mg/L	<0.0050	<0.0050	N/A	<0.0050	N/A	<0.0050	<0.0050
Bromide (Br)	mg/L	<0.050	<0.050	N/A	<0.050	N/A	<0.050	<0.050
Chloride (Cl)	mg/L	<0.50	<0.50	N/A	<0.50	N/A	<0.50	<0.50
Fluoride (F)	mg/L	0.06	0.062	3.3	0.038	0.038	N/A	0.045
Nitrate (as N)	mg/L	0.0865	0.0888	N/A	0.0641	0.0649	N/A	<0.0050
Nitrite (as N)	mg/L	<0.0010	<0.0010	N/A	<0.0010	N/A	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	<0.050	<0.050	N/A	<0.050	N/A	0.06	<0.050
Total Nitrogen	mg/L	0.06	0.06	N/A	0.081	0.065	N/A	0.06
Ortho Phosphate as P	mg/L	<0.0010	<0.0010	N/A	0.0047	0.0047	0.0	0.0012
Total Phosphate as P	mg/L	<0.0020	<0.0020	N/A	0.0084	0.0075	11.3	0.003
Sulphate (SO <sub>4</sub> )	mg/L	117	119	1.7	94.3	95.3	1.1	57.3
<b>Cyanides</b>								
Cyanide, Weak Acid Dissociable	mg/L			N/A		N/A		N/A
Cyanide, Total	mg/L	<0.0010		N/A	<0.0010	N/A	<0.0011	<0.0011
Thiocyanate	mg/L			N/A		N/A		N/A
<b>Carbon</b>								
Total Organic Carbon	mg/L	<0.50	0.55	N/A	<0.50	<0.50	N/A	0.79
<b>Total Metals</b>								
Aluminum (Al)	mg/L	0.0134	0.0148	N/A	0.0471	0.145	N/A	0.0256
Antimony (Sb)	mg/L	0.00142	0.00136	4.3	<0.00010	<0.00010	N/A	0.0715
Arsenic (As)	mg/L	0.00031	0.00033	6.3	0.00012	0.00019	N/A	0.0001
Barium (Ba)	mg/L	0.0426	0.0435	2.1	0.0305	0.0343	11.7	0.0227
Beryllium (Be)	mg/L	<0.00050	<0.00050	N/A	<0.00050	N/A	<0.00010	<0.00010
Boron (B)	mg/L	<0.010	<0.010	N/A	<0.010	N/A	<0.010	<0.010
Cadmium (Cd)	mg/L	0.000044	0.000037	17.3	0.000011	0.000014	N/A	<0.000010
Calcium (Ca)	mg/L	62.6	63	0.6	36.1	38.6	6.7	24.2
Chromium (Cr)	mg/L	<0.00010	<0.00010	N/A	0.00046	0.00092	N/A	0.00039
Cobalt (Co)	mg/L	0.00016	0.00016	N/A	<0.00010	0.00018	N/A	<0.00010
Copper (Cu)	mg/L	0.00363	0.00362	0.3	<0.00050	0.00078	N/A	<0.00050
Iron (Fe)	mg/L	<0.030	<0.030	N/A	0.075	0.2	N/A	<0.030
Lead (Pb)	mg/L	<0.000050	<0.000050	N/A	0.000053	0.000094	N/A	<0.000050
Lithium (Li)	mg/L	<0.0050	<0.0050	N/A	<0.0050	<0.0050	N/A	0.00213
Magnesium (Mg)	mg/L	5.05	5.12	1.4	8.63	9.53	9.9	6.15
Manganese (Mn)	mg/L	0.0268	0.0273	1.8	0.00388	0.00821	<b>71.6</b>	0.001
Mercury (Hg)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	<0.000010
Molybdenum (Mo)	mg/L	0.00169	0.00163	3.6	0.000625	0.000661	5.6	0.000566
Nickel (Ni)	mg/L	0.00064	0.0006	N/A	0.00058	0.00104	N/A	<0.00050

Notes:

- indicates parameter was not analyzed.

"<" - value is below the detection limit.

RPD = Relative Percent Difference relative t mean (in %).

N/A = Not applicable. RPD was not calculated if one or more values were less than five times the detection limit.

DL = analytical detection limit.

**Bold** values have a RPD equal to or greater than 20%.

Grey shaded values have a RPD equal to or greater than 50%.

**Appendix 4.1-4d. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2011**

Site Name	SC1	SC1	STE1A	STE1A	STE1A	STE1A	STE2	STE2
Date	2/1/2011	2/1/2011	3/5/2011	3/5/2011	10/24/2011	10/24/2011	7/4/2011	7/4/2011
ALS Sample ID	L975149-10	L975149-7	L985810-12	L985810-9	L1079029-10	L1079029-1	L1028827-14	L1028827-12
Parameter	Feb-11	Feb-11	RPD (%)	Mar-11	RPD (%)	Oct-11	Oct-11	RPD (%)
<b>Total Metals (cont'd)</b>								
Potassium (K)	mg/L	0.507	0.518	2.1	0.371	0.416	11.4	0.311
Selenium (Se)	mg/L	0.00089	0.00089	0.0	0.00146	0.00161	9.8	0.00107
Silicon (Si)	mg/L	2.04	2.04	0.0	2.46	2.69	8.9	2.46
Silver (Ag)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	<0.000010
Sodium (Na)	mg/L	<2.0	<2.0	N/A	2.8	2.9	N/A	<2.0
Strontium (Sr)	mg/L	0.418	0.4	4.4	0.372	0.38	2.1	0.245
Thallium (Tl)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	<0.00010
Tin (Sn)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	<0.00010
Titanium (Ti)	mg/L	<0.010	<0.010	N/A	<0.010	<0.010	N/A	<0.010
Uranium (U)	mg/L	0.000128	0.000123	4.0	0.000027	0.000029	7.1	0.000012
Vanadium (V)	mg/L	<0.0010	<0.0010	N/A	<0.0010	<0.0010	N/A	<0.0010
Zinc (Zn)	mg/L	0.0053	0.0053	N/A	<0.0030	0.0033	N/A	<0.0030
<b>Dissolved Metals</b>								
Aluminum (Al)	mg/L	0.0086	0.008	N/A	<0.0030	<0.0030	N/A	0.0039
Antimony (Sb)	mg/L	0.00132	0.00131	0.8	<0.00010	<0.00010	N/A	<0.00010
Arsenic (As)	mg/L	0.00029	0.00032	N/A	<0.00010	0.00011	N/A	<0.00010
Barium (Ba)	mg/L	0.0409	0.0417	1.9	0.0305	0.031	1.6	0.0218
Beryllium (Be)	mg/L	<0.00050	<0.00050	N/A	<0.00050	<0.00050	N/A	<0.00050
Boron (B)	mg/L	<0.010	<0.010	N/A	<0.010	<0.010	N/A	<0.010
Cadmium (Cd)	mg/L	0.000031	0.000033	N/A	0.000011	0.00001	N/A	<0.000010
Calcium (Ca)	mg/L	59.5	58.7	1.4	36.8	37.3	1.3	23.6
Chromium (Cr)	mg/L	<0.00010	<0.00010	N/A	0.00033	0.00034	N/A	0.00032
Cobalt (Co)	mg/L	0.00014	0.00014	N/A	<0.00010	<0.00010	N/A	<0.00010
Copper (Cu)	mg/L	0.0029	0.00294	1.4	<0.00050	<0.00050	N/A	<0.00050
Iron (Fe)	mg/L	<0.030	<0.030	N/A	<0.030	<0.030	N/A	<0.030
Lead (Pb)	mg/L	<0.000050	<0.000050	N/A	<0.000050	<0.000050	N/A	<0.000050
Lithium (Li)	mg/L	<0.0050	<0.0050	N/A	<0.0050	<0.0050	N/A	0.00175
Magnesium (Mg)	mg/L	4.72	4.64	1.7	8.66	8.97	3.5	5.93
Manganese (Mn)	mg/L	0.0245	0.0247	0.8	0.00008	0.000106	28.0	0.000299
Mercury (Hg)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	<0.000010
Molybdenum (Mo)	mg/L	0.0015	0.00153	2.0	0.000619	0.000618	0.2	0.000535
Nickel (Ni)	mg/L	0.0008	0.00057	N/A	<0.00050	<0.00050	N/A	<0.00050
Potassium (K)	mg/L	0.487	0.488	0.2	0.39	0.419	7.2	0.297
Selenium (Se)	mg/L	0.00087	0.00088	1.1	0.00173	0.00157	9.7	0.00116
Silicon (Si)	mg/L	2.01	2	0.5	2.38	2.37	0.4	2.39
Silver (Ag)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A	<0.000010
Sodium (Na)	mg/L	<2.0	<2.0	N/A	2.8	2.8	N/A	<2.0
Strontium (Sr)	mg/L	0.364	0.379	4.0	0.364	0.344	5.6	0.24
Thallium (Tl)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	<0.00010
Tin (Sn)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A	<0.00010
Titanium (Ti)	mg/L	<0.010	<0.010	N/A	<0.010	<0.010	N/A	<0.010
Uranium (U)	mg/L	0.000119	0.000118	0.8	0.000022	0.00002	N/A	0.000011
Vanadium (V)	mg/L	<0.0010	<0.0010	N/A	<0.0010	<0.0010	N/A	<0.0010
Zinc (Zn)	mg/L	0.0042	0.004	N/A	<0.0030	<0.0030	N/A	<0.0030

Notes:

- indicates parameter was not analyzed.

"<" - value is below the detection limit.

RPD = Relative Percent Difference relative t mean (in %).

N/A = Not applicable. RPD was not calculated if one or more values were less than five times the detection limit.

DL = analytical detection limit.

**Bold** values have a RPD equal to or greater than 20%.

Grey shaded values have a RPD equal to or greater than 50%.

**Appendix 4.1-4d. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2011**

Site Name	IC1		IC1		TRC1B	
	Date	8/1/2011	8/1/2011	Date	9/4/2011	9/4/2011
ALS Sample ID	L1041095-9	L1041095-2	Parameter	Aug-11	Aug-11	RPD (%)
<b>Physical Parameter</b>						
Colour, True	color unit	<5.0	<5.0	N/A	<5.0	9
Conductivity	µS/cm	106	106	0.0	147	97.5
Hardness (as CaCO <sub>3</sub> )	mg/L	44.8	44	1.8	68.5	43.6
pH	pH unit	7.75	7.83	1.0	8.23	8.07
Total Suspended Solids	mg/L	37.2	37.8	1.6	1540	7.6
Total Dissolved Solids	mg/L	62	77	<b>21.6</b>	149	63
Turbidity	NTU	31	31.1	0.3	2010	5.72
<b>Anions and Nutrients</b>						
Acidity (as CaCO <sub>3</sub> )	mg/L	1.9	1.6	N/A	3.2	4.5
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	18.9	18.8	0.5	46.1	29.2
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	N/A	<1.0	<2.0
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	<2.0	<2.0	N/A	<1.0	<2.0
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	18.9	18.8	0.5	46.1	29.2
Ammonia as N	mg/L	0.015	0.0058	N/A	0.0089	<0.0050
Bromide (Br)	mg/L	<0.050	<0.050	N/A	<0.050	<0.050
Chloride (Cl)	mg/L	<0.50	<0.50	N/A	<0.50	<0.50
Fluoride (F)	mg/L	0.042	0.042	N/A	0.037	0.022
Nitrate (as N)	mg/L	<0.025	<0.025	N/A	0.0098	0.0342
Nitrite (as N)	mg/L	<0.0010	<0.0010	N/A	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	<0.050	0.13	N/A	0.15	0.086
Total Nitrogen	mg/L	<0.050	0.13	N/A	0.16	0.12
Ortho Phosphate as P	mg/L	<0.0010	<0.0010	N/A	0.0022	<0.0010
Total Phosphate as P	mg/L	0.0532	0.0558	4.8	1.39	0.011
Sulphate (SO <sub>4</sub> )	mg/L	28.3	28.5	0.7	26.3	16.7
<b>Cyanides</b>						
Cyanide, Weak Acid Dissociable	mg/L			N/A		N/A
Cyanide, Total	mg/L	<0.0010	<0.0010	N/A	<0.0010	0.0027
Thiocyanate	mg/L			N/A		N/A
<b>Carbon</b>						
Total Organic Carbon	mg/L	<0.50	<0.50	N/A	3.36	2.11
<b>Total Metals</b>						
Aluminum (Al)	mg/L	1.63	1.8	9.9	32.4	0.337
Antimony (Sb)	mg/L	0.00113	0.00119	5.2	0.00505	<0.00010
Arsenic (As)	mg/L	0.00827	0.00919	10.5	0.0573	0.00019
Barium (Ba)	mg/L	0.0516	0.056	8.2	0.58	0.0131
Beryllium (Be)	mg/L	<0.00010	<0.00010	N/A	0.00109	<0.00010
Boron (B)	mg/L	<0.010	<0.010	N/A	0.015	<0.010
Cadmium (Cd)	mg/L	0.000358	0.000372	3.8	0.003	<0.000010
Calcium (Ca)	mg/L	17.1	17.2	0.6	48.2	13
Chromium (Cr)	mg/L	0.00139	0.00176	N/A	0.0556	0.00132
Cobalt (Co)	mg/L	0.00137	0.00149	8.4	0.028	0.00024
Copper (Cu)	mg/L	0.0573	0.0605	5.4	0.0874	0.00093
Iron (Fe)	mg/L	1.35	1.79	<b>28.0</b>	61.7	0.366
Lead (Pb)	mg/L	0.00502	0.00553	9.7	0.0413	0.000081
Lithium (Li)	mg/L	0.00094	0.00107	N/A	0.044	0.00075
Magnesium (Mg)	mg/L	1.39	1.54	10.2	20.3	2.95
Manganese (Mn)	mg/L	0.0843	0.0929	9.7	1.83	0.011
Mercury (Hg)	mg/L	<0.000010	<0.000010	N/A	0.000174	<0.000050
Molybdenum (Mo)	mg/L	0.000966	0.00105	8.3	0.00692	0.000206
Nickel (Ni)	mg/L	0.0011	0.00123	N/A	0.0871	0.0016

*Notes:*

- indicates parameter was not analyzed.

"<" - value is below the detection limit.

RPD = Relative Percent Difference relative to mean (in %).

N/A = Not applicable. RPD was not calculated if one or more values were less than five times the detection limit.

DL = analytical detection limit.

**Bold** values have a RPD equal to or greater than 20%.

Grey shaded values have a RPD equal to or greater than 50%.

Appendix 4.1-4d. Relative Percent Difference (RPD) Results for Stream Water Quality Duplicate Samples, KSM Project, 2011

Site Name	IC1	IC1	TRC1B	TRC1B			
Date	8/1/2011	8/1/2011	9/4/2011	9/4/2011			
ALS Sample ID	L1041095-9	L1041095-2	L1054465-14	L1054465-13			
Parameter	Aug-11	Aug-11	RPD (%)	Sep-11	Sep-11	RPD (%)	
<b>Total Metals (cont'd)</b>							
Potassium (K)	mg/L	0.739	0.817	10.0	4.85	0.225	<b>182.3</b>
Selenium (Se)	mg/L	0.00053	0.0003	<b>55.4</b>	0.00291	0.00021	<b>173.1</b>
Silicon (Si)	mg/L	3.37	4.09	<b>19.3</b>	48.1	2.15	<b>182.9</b>
Silver (Ag)	mg/L	0.000054	0.000058	N/A	0.000711	<0.000010	N/A
Sodium (Na)	mg/L	<2.0	<2.0	N/A	2.7	<2.0	N/A
Strontium (Sr)	mg/L	0.106	0.11	<b>3.7</b>	0.285	0.0918	<b>102.5</b>
Thallium (Tl)	mg/L	0.000038	0.000044	N/A	0.000734	<0.000010	N/A
Tin (Sn)	mg/L	<0.00010	<0.00010	N/A	0.00016	<0.00010	N/A
Titanium (Ti)	mg/L	0.031	0.043	<b>32.4</b>	1.33	0.01	N/A
Uranium (U)	mg/L	0.000163	0.000179	9.4	0.000797	0.000011	N/A
Vanadium (V)	mg/L	0.0049	0.0058	<b>16.8</b>	0.0933	<0.0010	N/A
Zinc (Zn)	mg/L	0.0366	0.039	6.3	0.321	<0.0030	N/A
<b>Dissolved Metals</b>							
Aluminum (Al)	mg/L	0.0778	0.0701	<b>10.4</b>	0.118	0.0209	<b>139.8</b>
Antimony (Sb)	mg/L	0.00084	0.00081	3.6	0.00073	<0.00010	N/A
Arsenic (As)	mg/L	0.00161	0.00143	<b>11.8</b>	0.00058	<0.00010	N/A
Barium (Ba)	mg/L	0.0261	0.0258	1.2	0.0339	0.00977	<b>110.5</b>
Beryllium (Be)	mg/L	<0.00010	<0.00010	N/A	<0.00010	<0.00010	N/A
Boron (B)	mg/L	<0.010	<0.010	N/A	<0.010	<0.010	N/A
Cadmium (Cd)	mg/L	0.000239	0.000248	<b>3.7</b>	0.000016	<0.000010	N/A
Calcium (Ca)	mg/L	16.3	16	1.9	23	12.8	<b>57.0</b>
Chromium (Cr)	mg/L	0.00016	<0.00010	N/A	0.00023	0.00022	N/A
Cobalt (Co)	mg/L	0.00052	0.00054	<b>3.8</b>	<0.00010	<0.00010	N/A
Copper (Cu)	mg/L	0.0011	0.00123	N/A	<0.00050	<0.00050	N/A
Iron (Fe)	mg/L	<0.030	<0.030	N/A	0.05	<0.030	N/A
Lead (Pb)	mg/L	<0.000050	<0.000050	N/A	<0.000050	<0.000050	N/A
Lithium (Li)	mg/L	<0.00050	0.0005	N/A	0.00098	<0.00050	N/A
Magnesium (Mg)	mg/L	0.971	0.958	1.3	2.68	2.83	<b>5.4</b>
Manganese (Mn)	mg/L	0.0419	0.0431	<b>2.8</b>	0.00103	0.00131	<b>23.9</b>
Mercury (Hg)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A
Molybdenum (Mo)	mg/L	0.000941	0.00093	<b>1.2</b>	0.00237	0.000205	<b>168.2</b>
Nickel (Ni)	mg/L	<0.00050	<0.00050	N/A	<0.00050	0.00059	N/A
Potassium (K)	mg/L	0.319	0.324	<b>1.6</b>	0.367	0.162	<b>77.5</b>
Selenium (Se)	mg/L	0.00027	0.00029	<b>7.1</b>	0.00064	0.00023	N/A
Silicon (Si)	mg/L	1.37	1.42	<b>3.6</b>	1.04	1.71	<b>48.7</b>
Silver (Ag)	mg/L	<0.000010	<0.000010	N/A	<0.000010	<0.000010	N/A
Sodium (Na)	mg/L	<2.0	<2.0	N/A	<2.0	<2.0	N/A
Strontium (Sr)	mg/L	0.103	0.1	<b>3.0</b>	0.151	0.0966	<b>43.9</b>
Thallium (Tl)	mg/L	0.000011	0.00001	N/A	0.000011	<0.000010	N/A
Tin (Sn)	mg/L	<0.00010	<0.00010	N/A	0.00011	<0.00010	N/A
Titanium (Ti)	mg/L	<0.010	<0.010	N/A	<0.010	<0.010	N/A
Uranium (U)	mg/L	0.000048	0.000046	N/A	0.000072	<0.000010	N/A
Vanadium (V)	mg/L	<0.0010	<0.0010	N/A	<0.0010	<0.0010	N/A
Zinc (Zn)	mg/L	0.007	0.0084	N/A	<0.0030	<0.0030	N/A

Notes:

- indicates parameter was not analyzed.

"<" - value is below the detection limit.

RPD = Relative Percent Difference relative t mean (in %).

N/A = Not applicable. RPD was not calculated if one or more values were less than five times the detection limit.

DL = analytical detection limit.

**Bold** values have a RPD equal to or greater than 20%.

Grey shaded values have a RPD equal to or greater than 50%.

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## Appendix 4.2-1

### Lake Water Quality Equipment Blank, KSM Project, 2009

## Appendix 4.2-1. Lake Water Quality Equipment Blank, KSM Project, 2009

Parameter	Units	Date
Physical Parameter		14-Aug-09
<b>Physical Parameter</b>		
Colour, True	color unit	<5.0
Conductivity	µS/cm	7.2
Hardness (as CaCO <sub>3</sub> )	mg/L	<0.50
pH	pH unit	5.11
Total Dissolved Solids	mg/L	<10
Total Suspended Solids	mg/L	<3.0
Turbidity	NTU	<0.10
<b>Anions and Nutrients</b>		
Acidity (as CaCO <sub>3</sub> )	mg/L	3.8
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	mg/L	<2.0
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	mg/L	<2.0
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	mg/L	<2.0
Alkalinity, Total (as CaCO <sub>3</sub> )	mg/L	<2.0
Ammonia as N	mg/L	0.0099
Bromide (Br)	mg/L	<0.050
Chloride (Cl)	mg/L	1.34
Fluoride (F)	mg/L	<0.020
Nitrate (as N)	mg/L	<0.0050
Nitrite (as N)	mg/L	<0.0010
Ortho Phosphate as P	mg/L	<0.0010
Total Phosphate as P	mg/L	<0.0020
Sulphate (SO <sub>4</sub> )	mg/L	<0.50
Cyanides	mg/L	
Cyanide, Total		<0.0010
<b>Carbon</b>		
Total Organic Carbon	mg/L	<0.50
<b>Total Metals</b>		
Aluminum (Al)	mg/L	0.287
Antimony (Sb)	mg/L	<0.00010
Arsenic (As)	mg/L	<0.00010
Barium (Ba)	mg/L	0.000232
Beryllium (Be)	mg/L	<0.00050
Bismuth (Bi)	mg/L	<0.00050
Boron (B)	mg/L	<0.010
Cadmium (Cd)	mg/L	<0.000010
Calcium (Ca)	mg/L	0.122
Chromium (Cr)	mg/L	<0.00050
Cobalt (Co)	mg/L	<0.00010
Copper (Cu)	mg/L	<0.00010
Iron (Fe)	mg/L	<0.030
Lead (Pb)	mg/L	0.00239
Lithium (Li)	mg/L	<0.0050
Magnesium (Mg)	mg/L	0.0254
Manganese (Mn)	mg/L	0.00247
Mercury (Hg)	mg/L	<0.000010
Molybdenum (Mo)	mg/L	<0.000050
Nickel (Ni)	mg/L	<0.00050
Phosphorus (P)	mg/L	<0.30
Potassium (K)	mg/L	<0.050
Selenium (Se)	mg/L	<0.00010
Silicon (Si)	mg/L	<0.050
Silver (Ag)	mg/L	<0.000010
Sodium (Na)	mg/L	<2.0
Strontium (Sr)	mg/L	0.0003
Thallium (Tl)	mg/L	<0.010
Tin (Sn)	mg/L	<0.00010
Titanium (Ti)	mg/L	<0.00010
Uranium (U)	mg/L	<0.000010
Vanadium (V)	mg/L	<0.0010
Zinc (Zn)	mg/L	0.0029

Notes:

"<" - value is below the detection limit

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## **Appendix 4.2-2**

**Relative Percent Difference (RPD) Results for Lake Water  
Quality Duplicate Samples, KSM Project, 2009**

**Appendix 4.2-2. Relative Percent Difference (RPD) Results for Lake Water Quality  
Duplicate Samples, KSM Project, 2009**

RESULTS OF ANALYSIS				
Sample ID Date Sampled ALS Sample ID Matrix	5 x DL	KGL-Top		RPD
		19-Aug-09 L809309-1	19-Aug-09 L809309-3	
		Water	Water	
<b>Physical Tests</b>				
Colour, True	5	<b>2.5</b>	<b>2.5</b>	
Conductivity	2	118	117	0.85
Hardness (as CaCO <sub>3</sub> )	0.5	55.2	54.9	0.54
pH	0.1	8.02	7.50	6.70
Total Suspended Solids	3	11.0	12.0	8.70
Total Dissolved Solids	10	83	88	5.85
Turbidity	0.1	49.1	52.4	6.50
<b>Anions and Nutrients</b>				
Acidity (as CaCO <sub>3</sub> )	1	2.4	2.9	18.87
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	2	43.7	44.1	0.91
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	2	<b>1</b>	<b>1</b>	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	2	<b>1</b>	<b>1</b>	
Alkalinity, Total (as CaCO <sub>3</sub> )	2	43.7	44.1	0.91
Ammonia as N	0.005	<b>0.0025</b>	<b>0.0025</b>	
Bromide (Br)	0.05	<b>0.025</b>	<b>0.025</b>	
Chloride (Cl)	0.5	<b>0.25</b>	<b>0.25</b>	
Fluoride (F)	0.02	0.045	0.044	2.25
Nitrate (as N)	0.005	<b>0.0025</b>	<b>0.0025</b>	
Nitrite (as N)	0.001	<b>0.0005</b>	<b>0.0005</b>	
Total Kjeldahl Nitrogen	0.05	<b>0.025</b>	<b>0.025</b>	
Total Nitrogen	0.05	<b>0.025</b>	<b>0.025</b>	
Ortho Phosphate as P	0.001	<b>0.0005</b>	<b>0.0005</b>	
Total Phosphate as P	0.01	<b>0.005</b>	<b>0.005</b>	
Sulfate (SO <sub>4</sub> )	0.5	12.5	12.6	0.80
<b>Cyanides</b>				
Cyanide, Total	0.001	0.0012	<b>0.0005</b>	
<b>Organic / Inorganic Carbon</b>				
Total Organic Carbon	0.5	<b>0.25</b>	<b>0.25</b>	
<b>Total Metals</b>				
Aluminum (Al)	0.001	1.75	2.34	28.85
Antimony (Sb)	0.0001	0.00019	0.00022	14.63
Arsenic (As)	0.0001	0.00103	0.00129	22.41
Barium (Ba)	0.00005	0.0885	0.0976	9.78
Beryllium (Be)	0.0005	<b>0.00025</b>	<b>0.00025</b>	
Bismuth (Bi)	0.0005	<b>0.00025</b>	<b>0.00025</b>	
Boron (B)	0.01	<b>0.005</b>	<b>0.005</b>	

*Notes: All measurements are in mg/L unless otherwise noted*

**Bold** indicates values at half detection limits

*Highlighted values indicate RPD greater than 20%*

**Appendix 4.2-2. Relative Percent Difference (RPD) Results for Lake Water Quality  
Duplicate Samples, KSM Project, 2009**

RESULTS OF ANALYSIS				
Sample ID Date Sampled ALS Sample ID Matrix	5 x DL	KGL-Top		RPD
		19-Aug-09 L809309-1	19-Aug-09 L809309-3	
		Water	Water	
Cadmium (Cd)	0.00001	0.000033	0.000036	8.70
Calcium (Ca)	0.02	21.5	21.3	0.93
Chromium (Cr)	0.0005	0.00078	0.00089	13.17
Cobalt (Co)	0.0001	0.00059	0.00073	21.21
Copper (Cu)	0.0001	0.00163	0.00157	3.75
Iron (Fe)	0.03	1.37	1.82	28.21
Lead (Pb)	0.00005	0.000843	0.00110	26.45
Lithium (Li)	0.005	<b>0.0025</b>	<b>0.0025</b>	
Magnesium (Mg)	0.005	1.22	1.35	10.12
Manganese (Mn)	0.00005	0.0489	0.0526	7.29
Mercury (Hg)	0.00001	<b>0.000005</b>	<b>0.000005</b>	
Molybdenum (Mo)	0.00005	0.000519	0.000599	14.31
Nickel (Ni)	0.0005	0.00072	0.00067	7.19
Phosphorus (P)	0.3	<b>0.15</b>	<b>0.15</b>	
Potassium (K)	0.05	0.883	1.15	26.27
Selenium (Se)	0.0001	<b>0.00005</b>	0.00026	135.48
Silicon (Si)	0.05	3.58	4.40	20.55
Silver (Ag)	0.00001	0.000018	0.000026	36.36
Sodium (Na)	2	<b>1</b>	<b>1</b>	
Strontium (Sr)	0.0001	0.0802	0.0821	2.34
Thallium (Tl)	0.0001	<b>0.00005</b>	<b>0.00005</b>	
Tin (Sn)	0.0001	<b>0.00005</b>	<b>0.00005</b>	
Titanium (Ti)	0.01	0.036	0.045	22.22
Uranium (U)	0.00001	0.000092	0.000103	11.28
Vanadium (V)	0.001	0.0038	0.0053	32.97
Zinc (Zn)	0.001	0.0056	0.0074	27.69
<b>Dissolved Metals</b>				
Aluminum (Al)	0.001	0.0300	0.0134	76.50
Antimony (Sb)	0.0001	<b>0.00005</b>	<b>0.00005</b>	
Arsenic (As)	0.0001	0.00021	0.00020	4.88
Barium (Ba)	0.00005	0.0518	0.0518	0.00
Beryllium (Be)	0.0005	<b>0.00025</b>	<b>0.00025</b>	
Bismuth (Bi)	0.0005	<b>0.00025</b>	<b>0.00025</b>	
Boron (B)	0.01	<b>0.005</b>	<b>0.005</b>	
Cadmium (Cd)	0.00001	<b>0.000005</b>	<b>0.000005</b>	
Calcium (Ca)	0.02	20.8	20.7	0.48

*Notes: All measurements are in mg/L unless otherwise noted*

*Bold indicates values at half detection limits*

*Highlighted values indicate RPD greater than 20%*

**Appendix 4.2-2. Relative Percent Difference (RPD) Results for Lake Water Quality  
Duplicate Samples, KSM Project, 2009**

RESULTS OF ANALYSIS				
Sample ID	5 x DL	KGL-Top		RPD
		Water	Water	
Chromium (Cr)	0.0005	<b>0.00025</b>	<b>0.00025</b>	
Cobalt (Co)	0.0001	<b>0.00005</b>	<b>0.00005</b>	
Copper (Cu)	0.0002	<b>0.0001</b>	<b>0.0001</b>	
Iron (Fe)	0.03	<b>0.015</b>	<b>0.015</b>	
Lead (Pb)	0.00005	<b>0.000025</b>	<b>0.000025</b>	
Lithium (Li)	0.005	<b>0.0025</b>	<b>0.0025</b>	
Magnesium (Mg)	0.005	0.780	0.771	1.16
Manganese (Mn)	0.00005	0.00643	0.00622	3.32
Mercury (Hg)	0.00001	<b>0.000005</b>	<b>0.000005</b>	
Molybdenum (Mo)	0.00005	0.000570	0.000573	0.52
Nickel (Ni)	0.0005	<b>0.00025</b>	<b>0.00025</b>	
Phosphorus (P)	0.3	<b>0.15</b>	<b>0.15</b>	
Potassium (K)	0.05	0.231	0.223	3.52
Selenium (Se)	0.0001	0.00022	0.00021	4.65
Silicon (Si)	0.05	0.742	0.716	3.57
Silver (Ag)	0.00001	<b>0.000005</b>	<b>0.000005</b>	
Sodium (Na)	2	<b>1</b>	<b>1</b>	
Strontium (Sr)	0.0001	0.0798	0.0801	0.38
Thallium (Tl)	0.0001	<b>0.00005</b>	<b>0.00005</b>	
Tin (Sn)	0.0001	<b>0.00005</b>	<b>0.00005</b>	
Titanium (Ti)	0.01	<b>0.005</b>	<b>0.005</b>	
Uranium (U)	0.00001	0.000060	0.000059	1.68
Vanadium (V)	0.001	<b>0.0005</b>	<b>0.0005</b>	
Zinc (Zn)	0.001	<b>0.0005</b>	<b>0.0005</b>	
Number of RPDs over 20				13

*Notes: All measurements are in mg/L unless otherwise noted*

*Bold indicates values at half detection limits*

*Highlighted values indicate RPD greater than 20%*