APPENDIX 7-B
2008 TO 2011 METEOROLOGY BASELINE REPORT

Seabridge Gold Inc.

KSM PROJECT
2008 to 2011 Meteorology Baseline Report

SEABRIDGE GOLD

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KSM PROJECT
2008 TO 2011 METEOROLOGY BASELINE REPORT

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SEABRIDGE GOLD

Seabridge Gold Inc.

Prepared by:

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Executive Summary

This report presents meteorological data collected from January 2008 to December 2011 for the Kerr-Sulphurets-Mitchell (KSM) Project. Five automated meteorological stations, (Eskay Creek Mine, Mitchell Deposit, Sulphurets Creek, Teigen Creek and Unuk-Teigen stations), were operated in this area during this period. Each station monitors three or more of the following parameters: air temperature, precipitation, barometric pressure, solar radiation, snow depth, wind speed and direction, evaporation and visibility. In addition to the parameters recorded at the automated meteorological stations, a series of tipping bucket rain gauges and manual snow course surveys were performed to collect supplemental data. Two evaporation pans were installed near the Teigen Creek and Sulphurets Creek meteorological stations in 2011.

The mean monthly, average daily maximum and average daily minimum air temperatures across the Project area ranged from 14 to -12°C, 20 to -10°C and 9 to -14°C, respectively. The extreme maximum temperature of 30.2°C occurred on July 30, 2009 at Sulphurets Creek station while the extreme minimum temperature of -27.2°C occurred on January 1, 2009 at Teigen Creek station.

The annual precipitation from Eskay Creek Mine, Sulphurets Creek and Teigen Creek meteorological stations were compared to climate normals and ClimateBC estimates. ClimateBC is a software tool developed by Centre for Forest Conservation Genetics at UBC to generate climate normal data for genecology and climate change studies in western Canada (ClimateBC 2012). The data showed that the precipitation in this area is strongly dominated by proximity to the Pacific Ocean to the west of the Project area. On average, annual precipitation was 1,914 mm at Eskay Creek Mine station, 1,243 mm at Sulphurets Creek station and 742 mm at Teigen Creek station.

Barometric pressure was monitored at Sulphurets Creek and Teigen Creek meteorological stations. For Sulphrets Creek station, barometric pressure ranged from 97.0 to 104.0 kPa from 2008 to 2011, while for Teigen Creek meteorological station it ranged from 96.6 to 103.2 kPa. The Stewart Airport station, operated by Environment Canada, ranged from 97.3 to 104.4 kPa during this period.

Solar radiation is the total frequency spectrum of electromagnetic energy emanating from the sun. Solar radiation was monitored at Sulphurets Creek and Teigen Creek meteorological stations. At Sulphurets Creek station, the maximum daily average solar radiation of 386 W/m^2 occurred in June 2010, while at Teigen Creek station, the maximum daily average solar radiation of 426 W/m^2 occurred in June 2008. On average, solar radiation at Teigen Creek is higher than at Sulphurets Creek due to the higher elevation at Teigen Creek.

Snow was observed using three different methods — snow depth sensor, snow pillow sensor and manual snow survey. Snow depth ultrasonic sensors and snow surveys both measure snow depth, while snow pillow sensors measure snow-water-equivalent. Generally, snow accumulation started in October when temperatures are consistently below 0°C and snow depth started to decrease around late April and early May when temperatures increased to approximately 0°C. The highest annual snow depth at Teigen Creek ranged from 1.84 m in 2008 to 2.09 m in 2009 and highest annual snow depth at Eskay Creek was 2.48 m in 2011 which is the only complete year of data. Historically, from climate normal data, the highest snow depth recorded at Bob Quinn AGS station was 1.06 m in 1987 and the maximum depth at Stewart Airport station was 2.40 m in 1989. From the snow pillow sensor at Sulphurets Creek, the highest snow-water-equivalent was 0.93 m in 2009.

Wind speeds and directions were monitored at Mitchell Creek, Teigen Creek and Unuk-Teigen meteorological stations. The wind speeds at Mitchell Creek and Teigen Creek were generally moderate to mild, with wind speeds between 1 and 3 m/s being the most frequent (more than 50% of the time). The wind speed at Unuk-Teigen was moderate, with wind speeds between 1 and 3 m/s around 30% of the time, and wind speeds exceeding 5 m/s around 36% of the time.

Evaporation rates were monitored at Teigen and Sulphurets stations. The average annual evaporation rates observed at these two locations ranged from 1.3 mm/day to 3.1 mm/day. Visibility was monitored at Mitchell Deposit station. Horizontal visibility was greater than 16 km 87% of the time. Generally, visibility was reduced during early morning in March and November.

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2008 TO 2011 METEOROLOGY BASELINE REPORT

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Glossary and Abbreviations

Terminology used in this document is defined where it is first used. The following list will assist readers who may choose to review only portions of the document.

BC	British Columbia
ClimateBC	A software program designed to generate climate normal data for genecology and climate change studies in western Canada. The program was developed by the Centre for Forest Conservation Genetics at the University of British Columbia.
EC-MSC	Environment Canada – Meteorological Service of Canada
kPa	Kilo Pascal; 1kPa = 1,000 Pa
KSM	Kerr-Sulphurets-Mitchell
masl	Metres above sea level
mB	millibars
MOE	Ministry of the Environment
MOF	Ministry of Forests
MOT	Ministry of Transportation and Infrastructure
MSC	Meteorological Service of Canada
NRC	National Resource Council
Orographic	A moving surface air mass is forced upwards in the atmosphere when it encounters a topographical feature such as a mountain; this phenomenon is known as orographic lift. As the air mass gains altitude it expands and cools. This cooler air cannot hold the moisture as well as warm air can, which effectively raises the relative humidity to 100%, creating clouds and frequent precipitation.
PRISM	Parameter-elevation Regressions on Independent Slopes Model
SWE	Snow-water-equivalent. The amount of rain equivalent to the water in the snow pack.
TMF	Tailing Management Facility
TBRG	Tipping bucket rain gauge
UBC	University of British Columbia
US EPA	United States Environmental Protection Agency

1. Introduction

1.1 PROJECT PROPONENT

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

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KSM Project Location

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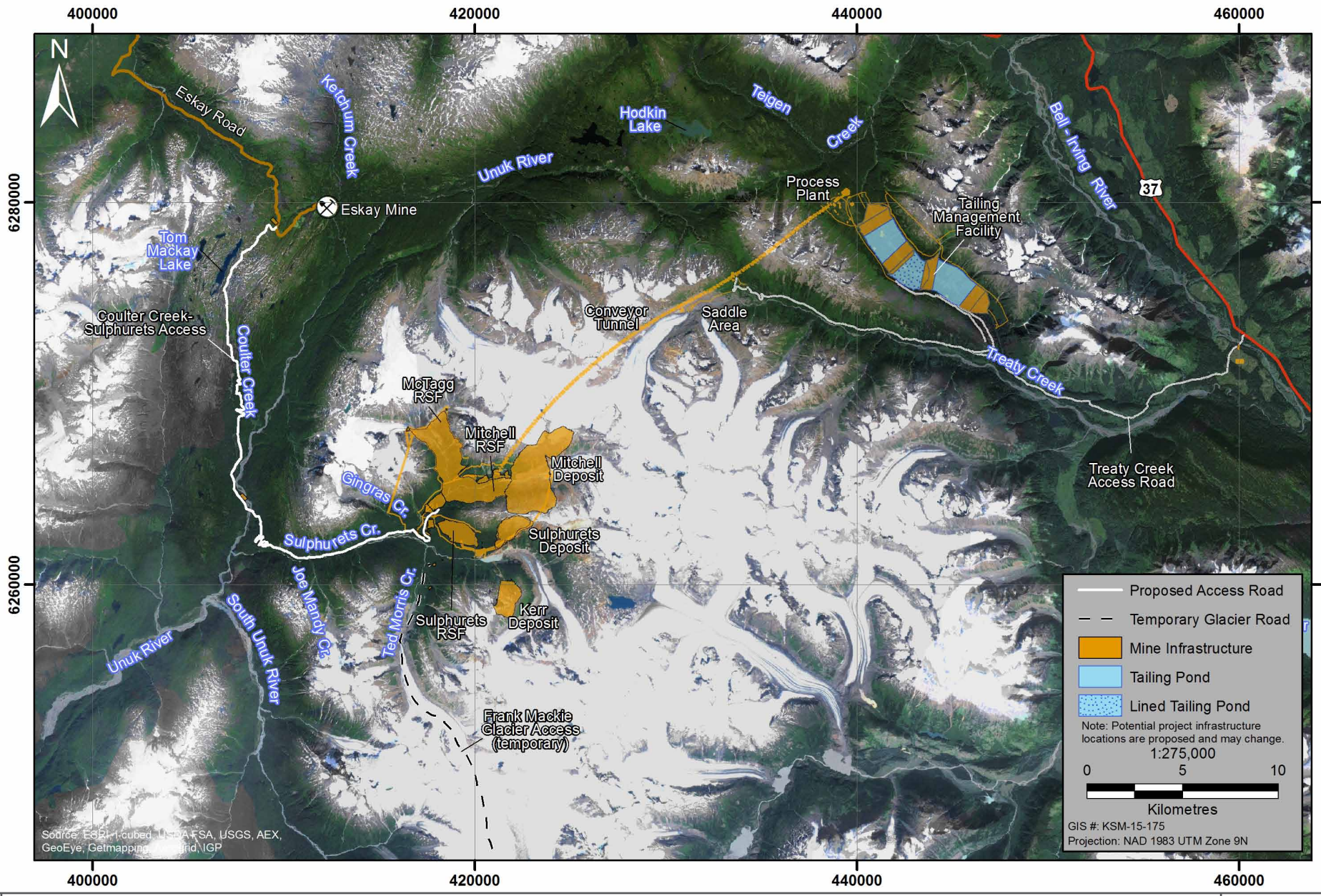

Figure 1.3-1

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KSM Project Layout

Figure 1.3-1

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1.4 OBJECTIVES

The objective of the meteorology baseline program is to characterize the atmospheric conditions within The Project area. On site meteorological data are required for a variety of purposes. Wind speed and direction data are required to select sites for permanent camp and mineral processing facilities in order to accommodate predominant wind patterns and mitigate the effects of fugitive dust. Wind and air temperature data are required for air dispersion modelling that will be conducted during the environmental assessment to determine the Project's potential air quality effects. Solar radiation and precipitation data are required for design of any water reservoir(s) and water balance calculations. Precipitation data will also be important for documenting the meteorological conditions that are associated with potential avalanche conditions and for assistance with project design. Evaporation data are used in the design and the operation of reservoir and drainage systems. Snow survey and precipitation gradient data is used to support potential future engineering design and environmental assessments.

Meteorology baseline reports have been provided previously for data collected since 2007. Each report covers approximately one year of data. This meteorology baseline report summarizes all annual meteorology data available from January 2008 to December 2011.

2. Methods

Meteorological data were collected at the KSM Project site using a variety of automated and manual methods. Parameters other than those measured during snow surveys were collected from automated stations to provide more continuous data sets and standardized collection methods.

2.1 STUDY AREA

The meteorology baseline study area encompasses the deposits in the proposed Mining Area in the drainage basin of the Sulphurets Creek, as well as the proposed process plant and TMF area which are located in upper Teigen and Treaty Creeks (Figure 2.1-1). Additional areas with meteorological monitoring equipment are at the former Eskay Mine area, as well as within the Unuk River and Treaty Creek valleys.

2.2 AUTOMATED METEOROLOGY STATIONS

Since 2007, a total of five automated meteorological stations have been installed and operated as part of the meteorology baseline monitoring program. The descriptions and locations of these stations are summarized below and shown in Figure 2.1-1.

2.2.1 Sulphurets Creek

An automated meteorological station was installed on a scaffold frame located on the ridge northwest of Sulphurets Lake in the Sulphurets Creek valley near the proposed open pits in September 2007 (Plate 2.2-1). It has the capability to record wind speed and direction, air temperature and relative humidity, solar radiation, rain or snow-water-equivalent (SWE) precipitation (depending on the season) and has a snow pillow for measuring the SWE of the snowpack. It has been recording data since September 30, 2007.

Plate 2.2-1. Sulphurets Meteorological Station (April 2011).

The meteorological station, powered by a solar panel and deep cycle battery, is mounted on a scaffold frame and has a pole extending from the top of the 6 m scaffolding allowing the wind speed and direction to be measured at 10 m. Although this is the standard height for wind monitoring, the Sulphurets meteorological station is surrounded by trees that may bias the wind data. However, this sheltered location is ideal for collection of precipitation data. It has temperature, relative humidity and barometric pressure sensors similar in design to the sensors on the Teigen Creek station. The precipitation gauge collects precipitation in a bucket fitted with a pressure sensor located at the bottom. The sensor allows depth of liquid in the bucket, which changes as precipitation falls into it, to be measured. Propylene glycol is added to the bucket to melt the snow which is collected so that the snow water equivalent can be measured. A snow pillow is a large sac filled with glycol, and buried under the soil. When snow falls on the soil surface it generates pressure within the sac. This pressure is recorded by a sensor and converted to millimetres of snow water equivalent. The instruments at the Sulphurets Creek station are connected to a Datataker DT80 datalogger.

During 2009, several sensors at the Sulphurets meteorology station experienced malfunctions due to failure of electronic components. These issues were resolved and as of September 20, 2009, all sensors were functioning properly. Data gaps at the Sulphurets station were supplemented with comparable data from the Mitchell valley meteorology station.

2.2.2 Teigen Creek

An automated meteorological station was installed in the Teigen Creek valley near the proposed plant site on March 4, 2008. Very deep snow at the time of installation required the use of an innovative tripod as an interim arrangement rather than a conventional 10 m tower for mounting the recording instruments (Plate 2.2-2). Due to the snow conditions and the design of the tripod, installation of a precipitation gauge and a snow depth sensor at that time was not possible. Temperature, relative humidity, wind speed and direction, solar radiation and barometric pressure sensors were mounted on the temporary tripod structure.

A permanent 10 m tower was installed in early July 2008. The 10 m tower was installed approximately 760 m southeast of the temporary tripod. The various sensors previously on the temporary tripod were remounted on the 10 m steel tower anchored with bed-rock anchors and guy wires (Plate 2.2-3). The wind sensor was mounted at the top of the tower at a height of 10 m. This configuration is consistent with the Environment Canada - Meteorological Services of Canada (EC-MSC) standard sensor height for data to be used for air dispersion modelling (MSC 2004).

The temperature and relative humidity sensors were combined into one unit. The tipping bucket rain gauge (TBRG) was added to the permanent meteorological station in early July 2008, and monitors rainfall in millimetres (mm). Just before winter began each year, the TBRG was converted (using a Campbell Scientific CS705 adapter kit) to enable it to monitor snow-water-equivalent (SWE) precipitation. A solution of propylene glycol melts snow and the corresponding solution volume is recorded with the TBRG mechanism. The precipitation gauge is surrounded by an alter wind screen to improve the catch efficiency. The propylene glycol solution requires changing every 3 to 4 months. An ultrasonic snow depth sensor was mounted on the side of the 10 m tower in early July 2008. Solar radiation is monitored at the station with a pyranometer.

The sensors for the Teigen Creek station were connected to a Campbell Scientific CR1000 datalogger which recorded the operation of the sensors on the station. The datalogger's program dictates how often the sensors will be monitored (every five seconds) and generates and stores hourly averages, and daily averages, minimums and maximums where applicable. The station is powered with a sealed rechargeable battery that is powered by a 50 watt solar panel. An external deep cycle marine 105 Amp-hour battery is used to supplement the solar power during winter. The station is grounded to prevent lightning damage.

400000 420000 440000 460000

6280000

6260000

Eskay Road
Katchum Creek
Hodkin Lake
Teigen
Creek
Bell-Irving River
37
Unuk River
Unuk 3
Teigen Plant Site Met Station
Unuk 4
KSM-SC06
KSM-SC02
KSM-SC05
KSM-SC09
Eskay Mine
Eskay Mine Met Station
Teigen 2
Tom Mackay Lake
Teigen Evaporation Pan
Unuk 2
Unuk 1
Teigen 1
KSM-SC07
Unuk-Teigan
Teigen 4
Teigen 3
KSM-SC10
Tailings Management Facility
PPAD
Coulter Creek-Sulphurets Access
Coulter Creek
Treaty Creek Access Road
Treaty Creek
KSM-SC03a
McTagg Cr.
Mitchell Met Station
Mitchell 3
Mitchell 4
Gingras Cr.
Mitchell 2
KSM-SC04
Mitchell 1
Sulphurets Evaporation Pan
Sulphurets Cr.
Sulphurets Met Station
KSM-SC01
Joe Mandy Cr.
Ted Morris Cr.
KSM-SC08
Unuk River
South Unuk River
Frank Mackie Glacier Access (temporary)

Tipping Bucket Rain Gauge (TBRG) station
Meteorological Station
Evaporation Pan
Snow Course Site
Proposed Access Road
Temporary Glacier Road
Mine Infrastructure

1:175,000

0 5 10

Kilometres

Note: Potential project infrastructure locations are proposed and may change.
GIS #: KSM-12-051
Date: April 16, 2012
Projection: NAD 1983 UTM Zone 9N

Figure 2.1-1

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Baseline Monitoring Stations for Meteorology, Snow, Precipitation and Evaporation

Plate 2.2-2. Teigen Creek temporary tripod meteorological station (March 2008).

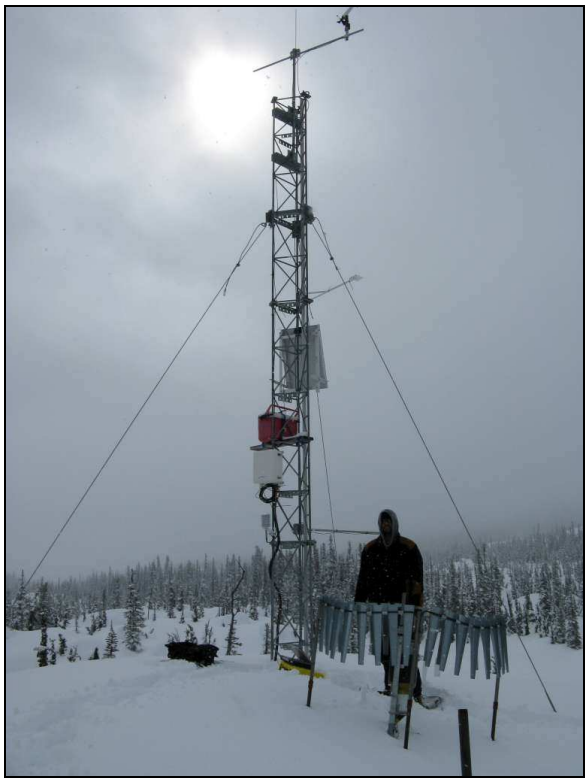

Plate 2.2-3. Teigen Creek permanent 10 m tower meteorological station (March 2011).

2.2.3 Unuk-Teigen

In response to a proposed alternative plant site located in a saddle between the middle fork of Teigen Creek and Unuk River, a meteorological station was installed near this location on September 18, 2008 (Plate 2.2-4). This station is essentially identical in design to the tower station installed at Teigen Creek in July 2008. Unuk-Teigen station uses a CR850XT datalogger which is of a similar design to the CR1000 datalogger, except that it measures fewer parameters. This was a practical choice since solar radiation, precipitation and barometric pressure measurements are expected to be similar to those at Teigen Creek.

2.2.4 Mitchell Deposit

To supplement and upgrade the wind data being collected at the Sulphurets Creek station, a wind-only station was installed in the area of the proposed Mitchell pit on September 17, 2008 (Plate 2.2-5). The siting of this wind-only station complies with standards established by EC MSC (MSC 2004). On October 8, 2009 a horizontal visibility sensor (Sentry Model SVS1-E-2-P manufactured by EnviroTech Sensors Inc.) was added to the Mitchell station to support mine planning. Visibility data is available for 2009 and 2010, but not available for 2011, as the wiring connecting the visibility sensor to the datalogger was damaged. Field personnel were unable to repair the sensor because damage caused by excessive wind loading on the solar panels on the tower made the tower structurally unsound to climb. The tower was replaced on October 4, 2011. At this time the visibility sensor was removed for repair and recalibration by the manufacturer.

Plate 2.2-4. Unuk-Teigen meteorological station (June 2011).

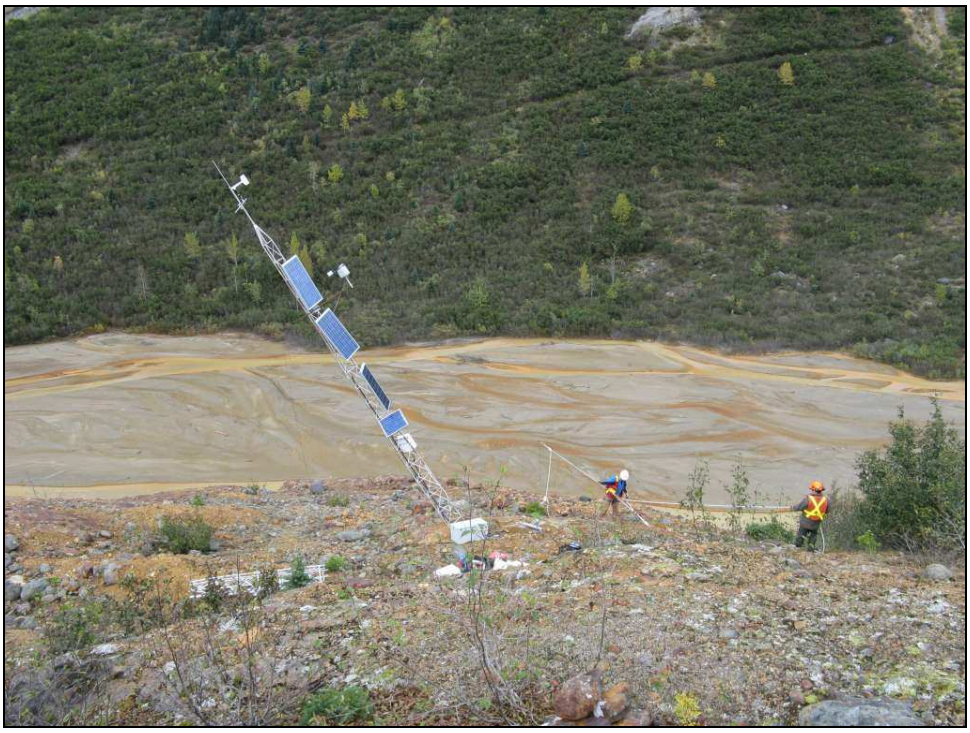

Plate 2.2-5. The lowering of the damaged Mitchell Deposit Meteorological Station (October 2011).

2.2.5 Eskay Creek Mine

A meteorological station was installed and commenced data collection on September 20, 2010, approximately 1 km east of the Unuk River Eskay Creek meteorological station which was operated by EC-MSC from 1989 to 2010. The station consists of a 3 m tripod, with attached temperature, relative humidity and snow depth sensors. A separate pedestal with a GEONOR precipitation gauge was installed as well (Plate 2.2-6). The station uses a Campbell Scientific CR850 datalogger. It is in open ground at the eastern end of the Eskay Creek mine site in a large cleared area (Plate 2.2-7). A climate station operated by Environment Canada (EC) was located in the area of the Eskay Creek mine station, but it was decommissioned in January, 2007.

Plate 2.2-6. Eskay Creek mine meteorological station (September 2011).

Plate 2.2-7. Aerial view of Eskay Creek mine meteorological station (September 2010).

2.2.6 Station Maintenance and Siting

With the exception of the wind sensor at Sulphurets, all meteorological stations and their sensors are installed in areas that are free of obstructions that could bias the data being collected. Placement of the stations and their sensors follow standards established by EC-MSC (MSC 2004). Site visits to these meteorological stations have taken place every two to three months to collect data and conduct routine maintenance when site conditions allow. Table 2.2-1 summarizes the sensors at the five automated meteorological stations.

All data downloaded from these stations were screened in accordance to the guidelines defined by EC-MSC in *MSC Guidelines for Co-operative Climatological Autostations* (EC 2004) and United States Environment Protection Agency's *Meteorological Monitoring Guidance for Regulatory Modeling Applications* (US EPA 2000). Hourly data were flagged using several screening criteria for each parameter. Past experience and professional judgement were used when deciding whether or not to exclude any data. The daily and monthly means and totals were calculated using the processed hourly data rather than the raw daily output from the datalogger.

2.3 REGIONAL STATIONS

Table 2.3-1 lists the regional stations operated in the general KSM region. Figure 2.3-1 shows the location of the regional meteorological stations with respect to the KSM Project. These regional stations provide data for comparison to that collected by the five KSM Project meteorological stations. (The BC Ministry of Forests (MOF) and Ministry of Transportation and Infrastructure (MOT) have weather stations in the region, however the data is only collected on a seasonal basis for forest fire forecasting and to schedule road maintenance. In addition, the MOF and MOT quality assurance – quality control program for their weather stations is not comparable to the EC-MSC programs. Since the MOF and MOT stations are not maintained year round, the data is not suitable for comparison with the KSM Project on-site data).

Where possible, data from close by regional EC-MSC meteorological stations were compared with data collected at KSM meteorological stations. Climate normals are arithmetic averages of climate elements over a prescribed 30-year interval. At the completion of each decade, EC updates its climate normals. The most updated climate normals currently offered by EC are based on Canadian climate stations with at least 15 years of data between 1971 and 2000. Climate normals for Bob Quinn AGS meteorological station began collection in 1977 and stopped in 1994. Stewart Airport meteorological station began collecting climate data in 1974. Climate normals presented from Stewart airport are based on available climate data from 1974 to 2000. Unuk River Eskay Creek meteorological station is the closest regional station to the Project area; however, it was installed in 1989 and does not have 15 years of data from 1971 to 2000. The monthly data from Unuk River Eskay Creek meteorological station from 1989 to 2007 were downloaded and summarized by Rescan in the climate normal format.

2.4 PRECIPITATION GRADIENT MONITORING

The KSM project lies within a topographically complex geographical setting where precipitation is strongly influenced by elevation. Within similar mountainous terrain it is common to observe a gradient of increased precipitation with increased elevation due to the orographic nature of storms in the region. Precipitation data collected at a single elevation may not be representative of average conditions for watersheds that span large elevation ranges. Therefore, it is desirable to observe precipitation at a range of elevations to facilitate characterization of the local precipitation gradient.

Table 2.2-1. List of KSM Meteorological Stations and Parameters

Station Name	Date Established	UTM Coordinates[a]		Elevation (masl)	Temperature and Relative Humidity	Wind Speed and Direction	Snow Depth[b]	Snow-water-Equivalent[c]	Precipitation[d]	Solar Radiation	Visibility	Barometric Pressure
		Easting (m)	Northing (m)									
Eskay Creek Mine	20-Sep-10	412,450	6,279,825	770	▫	-	▫	-	▫	-	-	-
Mitchell Deposit	17-Sep-08	421,615	6,265,311	830	▫	▫	-	-	-	-	▫	-
Sulphurets Creek	30-Sep-07	419,656	6,261,999	880	▫	▫	-	▫	▫	▫	-	▫
Teigen Creek	4-Mar-08	439,012	6,279,647	1,085	▫	▫	▫	-	▫	▫	-	▫
Unuk-Teigen	18-Sep-08	432,260	6,277,120	1,279	▫	▫	▫	-	-	-	-	-

Notes:
masl = metres above sea level
dash (-) this type of sensor was not installed at this particular station
[a] *UTM coordinates are in reference to NAD83 and Zone 9*
[b] *via Ultrasonic Gauge*
[c] *via Snow Pillow*
[d] *via Tipping Bucket Rain Gauge, Standpipe All Season Precipitation Gauge or GEONOR Precipitation Gauge*

Table 2.3-1. Summary of Regional Stations in the KSM Region

Station	Climate ID	UTM Coordinates[a]		Station Location (with respect to KSM)	Elevation (masl)
		Easting (m)	Northing (m)		
Unuk River Eskay Creek	1078L3D	411,338	6,279,640	19.4 km north	887
Bob Quinn AGS	1200R0J	424,000	6,314,383	58.7 km north	610
Stewart Airport	1067742	438,547	6,204,972	66.7 km south	7
Ningunsaw Pass	4B10	441,930	6,291,816	30 km northeast	647

Notes:
masl = metres above sea level
[a] *UTM coordinates are in reference to NAD83 and Zone 9*

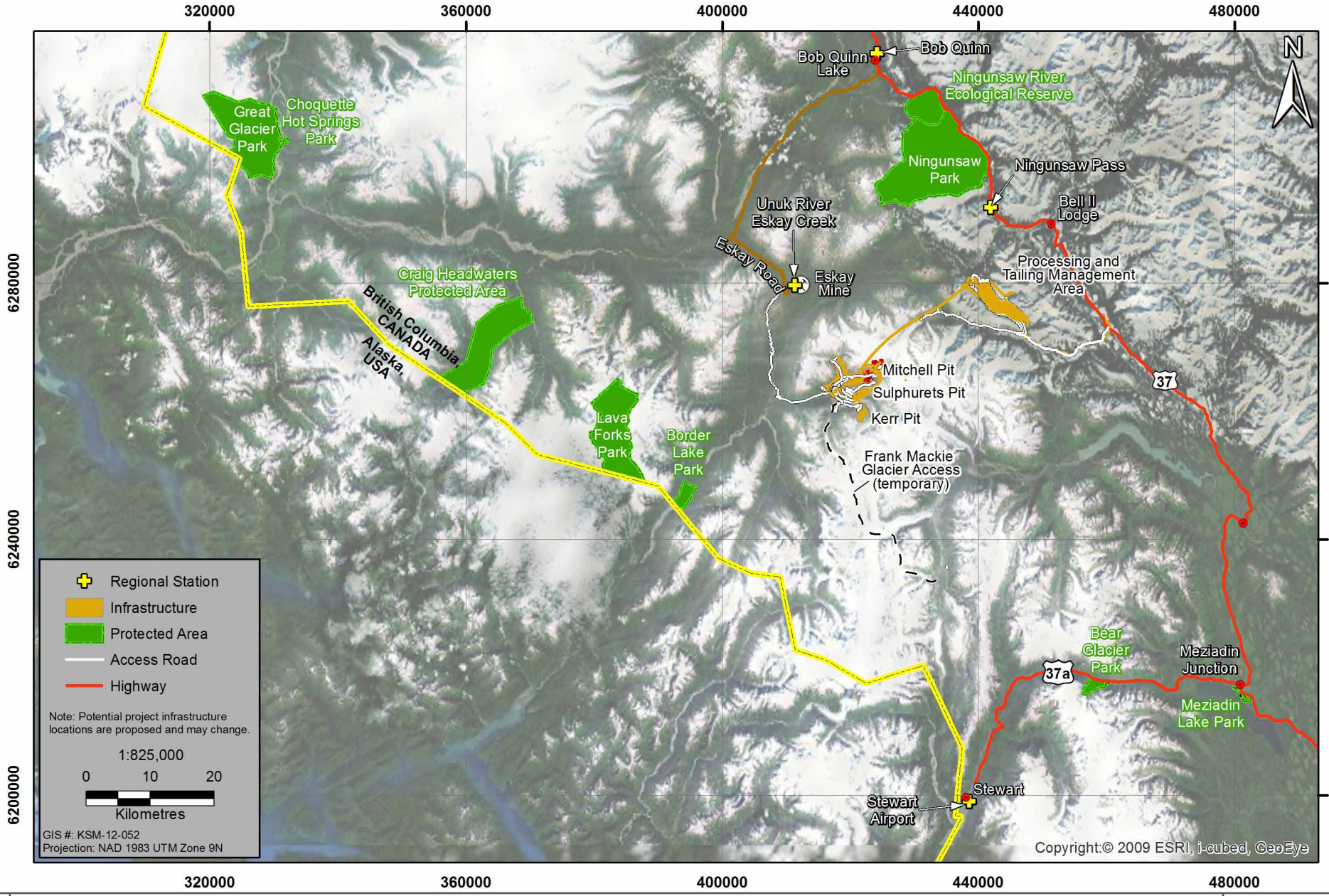

Figure 2.3-1

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KSM Regional Stations

Figure 2.3-1

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A series of stand-alone tipping bucket rain gauges (TBRG) from RainWise Inc. were first installed during the snow free months starting in August 2008 at different elevations to document the precipitation gradient (Plate 2.4-1). This program of precipitation monitoring has continued through to 2011. The rain gauges were used in the drainages that correspond with the proposed KSM site infrastructure that will require surface water and runoff management planning and design (e.g., proposed open pits in the Sulphurets Creek and Mitchell Creek areas, tailings management facility and proposed plant sites). In each of the three areas assessed, four gauges were installed in pairs, one pair at a higher elevation ridge location and a second pair at a lower elevation valley bottom location (Table 2.4-1). The locations of the gauges are shown on Figure 2.1-1. Data from the rain gauges were downloaded during the snow-free months.

Plate 2.4-1. Mitchell 1 tipping bucket rain gauge (July 2011).

Table 2.4-1. Coordinates and Elevations of Rainwise Tipping Bucket Stations

Station	UTM Coordinates		Elevation (masl)
	Easting (m)	Northing (m)	
Teigen 1	443,479	6,278,489	1,567
Teigen 2	442,738	6,278,770	1,327
Teigen 3	438,611	6,278,128	1,388
Teigen 4	437,912	6,278,029	1,607
Unuk 1	434,369	6,278,564	1,745
Unuk 2	433,095	6,278,585	1,201
Unuk 3	431,007	6,281,333	1,687
Unuk 4	430,279	6,280,306	1,148
Mitchell 1	421,461	6,263,821	1,557
Mitchell 2	422,065	6,264,791	1,172
Mitchell 3	422,412	6,266,630	1,459
Mitchell 4	422,509	6,265,983	1,186

Note: UTM coordinates are referenced to NAD83 and Zone 9.

The amount of precipitation collected in a precipitation gauge may be affected by winds despite the gauge being surrounded by an Alter wind screen that optimizes catch efficiency. Studies have shown that the relative catch efficiencies for an Alter-shielded Geonor gauge range between 36% and 95% and this efficiency decreases exponentially with increased wind speed (Devin and Mekis 2008; Smith 2007). Similar effects have been observed for TBRGs. Turbulent air flowing over the gauge orifice deflects precipitation, preventing it from entering the collector and therefore under-estimating the true precipitation. This under-estimation is exacerbated for solid precipitation (i.e., snow) due to the typical slower fall speeds and can thus be more affected by wind turbulence around the gauge. It should be noted that the precipitation data presented in this report have not been adjusted for potential undercatch and thus actual precipitation could be higher than measured.

These RainWise rain gauges augment the precipitation data already being collected by the automated meteorological stations at Sulphurets Creek and Teigen Creek. The precipitation gradient was calculated using the following equation adapted from the University of British Columbia (UBC) Watershed Model User's Manual (UBC 2005):

$$Precip(2) = Precip(1)(1+Gradient)^{((Elev(2)-Elev(1))/100)}$$

Alternatively, this equation can be arranged as:

$$Gradient = [(Precip(2)/Precip(1))^{(1/((Elev(2)-Elev(1))/100))}] - 1$$

Where Precip(1) = precipitation at the lowest gauge (mm); Precip(2) = precipitation at the highest gauge (mm); Elev(1) = elevation at the lowest gauge (m); Elev(2) = elevation at the highest gauge (m); and Gradient = percentage increase in precipitation per 100 m increase in elevation.

2.5 EVAPORATION

Two Class A Evaporation Pan gauges were installed during the snow free months of 2010 and 2011. One in the Sulphurets valley above the camp and close to the Sulphurets meteorology station; the other is near the Teigen meteorology station (Table 2.5-1).

Table 2.5-1. Coordinates and Elevations of Class A Evaporation Pans

Station	UTM Coordinates		Elevation (masl)
	Easting (m)	Northing (m)	
Sulphurets	421,795	6,262,760	1,357
Teigen	439,697	6,279,074	1,086

Note: UTM coordinates are in reference to NAD83 and Zone 9.

The Sulphurets evaporation station is located on the north side of the Sulphurets valley, on a broad open slope near some old drill pads. The Teigen station is located on a small rocky outcrop approximately 900 m southeast of the Teigen meteorology station. Each station consists of a NovaLynx model 255-200 evaporation pan, and a model 255-100 evaporation gauge. Both stations are protected with an electric bear fence and are connected to Hoboware dataloggers to record evaporation data (Plate 2.5-1). Copper sulphate was added to the water in each pan to prevent algal growth. The sensor is only operated during the summer when temperatures are above freezing. The precipitation data were adjusted to the elevation of the evaporation pans before performing the evaporation calculation.

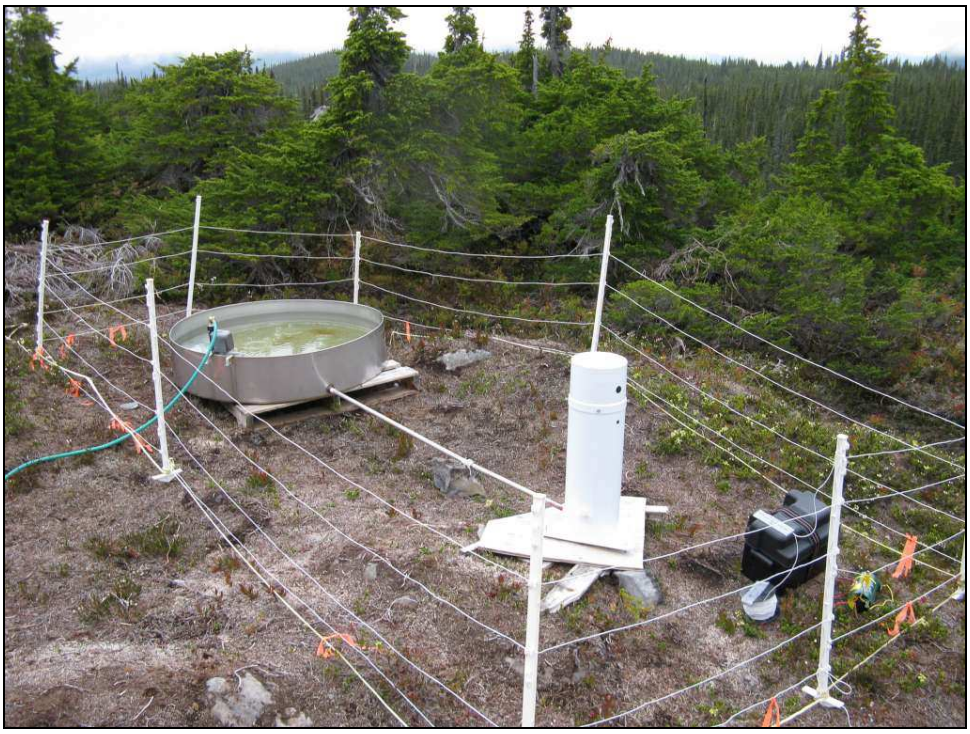


Plate 2.5-1. Teigen Evaporation Pan (July 2011).

2.6 MANUAL SNOW SURVEYS

The snow course program was started in 2008 and three snow course locations (KSM-SC01, KSM-SC02 and KSM-SC03) were sampled during 2008 and 2009. In 2010 and 2011, seven more locations were added. KSM-SC03 was replaced with KSM-SC03a in 2011 due to KSM-SC03 regularly providing poor sampling conditions. Three locations (KSM-SC01, KSM-SC04 and KSM-SC08) are located near the current Sulphurets meteorological station, one south of the proposed tailing management facility in the middle reaches of Treaty Creek (KSM-SC03a) and the remaining six near the Teigen Creek meteorological station (Table 2.6-1). Data collected from these snow courses include snow depth and snow-water-equivalent (SWE), based on several samples from each station.

The snow courses completed in the KSM Project area are consistent with the recommendations and procedures found in the British Columbia Ministry of Environment Procedure Manual for Snow Surveys (Volume 6 Section 9), December 1981. The snow courses were approximately 300 m long and situated in small meadows protected from the wind. Snow depth is measured by pushing an aluminium tube from a Standard Federal Snow Sampling Kit (BC MOE 1981) down through the snowpack to the ground surface and extracting a core. The snow sampler tube with the snow core is weighed with a spring scale and the weight of the empty tube is subtracted to determine the SWE. The SWE is determined from an average of 10 discrete samples for KSM-SC01, KSM-SC02 and KSM-SC03a, and 5 samples for the remaining seven snow course surveys. Plates 2.6-1 and 2.6-2 show a typical manual snow survey in progress.

The data collected from these snow courses can be used to assist with the prediction of runoff volumes for the design of diversion ditches and site wide water balances. The snow surveys were conducted at the beginning of the month from January to May. The snow course data were compared with regional data collected by the BC MOE at Ningunsaw Pass (Station # 4B10P) located 36 km to the northeast of the Project.

Table 2.6-1. Coordinates and Elevations of the Snow Course Stations

Location	Station #	UTM Coordinates		Elevation (masl)
		Easting (m)	Northing (m)	
Sulphurets Creek Watershed	KSM-SC01[a]	419,650	6,262,000	880
	KSM-SC04	418,862	6,262,560	893
	KSM-SC08	418,736	6,259,830	1,304
Teigen Creek Watershed	KSM-SC09	441,368	6,278,428	874
	KSM-SC07	444,423	6,275,737	882
	KSM-SC06	439,394	6,281,525	901
	KSM-SC02[a]	439,761	6,279,739	1,080
	KSM-SC05	438,096	6,279,787	1,130
	KSM-SC10	440,914	6,276,628	1,218
Treaty Creek Watershed	KSM-SC03[a]	446,487	6,271,533	630
	KSM-SC03A[a]	445,578	6,271,515	636

Notes:
UTM coordinates are in reference to NAD83 and Zone 9.
[a] These Stations are 10 point surveys, the remaining stations are 5 point surveys.

Plate 2.6-1. A snow core being collected using a Standard Federal Snow Sampling Kit. This is the equipment that is recommended in the BC MOE Snow Survey Sampling Guide (BC MOE 1981) and was used at KSM.

Plate 2.6-2. A snow core being weighed using a calibrated spring scale to determine SWE.

Snow-water-equivalent (SWE) is defined as the depth of water (in mm) in the snowpack on a horizontal surface area if that snowpack is completely melted. SWE is related to snow depth and density by:

$$SWE\ (mm) = depth\ (m) \times density\ (kg/m^3)$$

The conversion of SWE (mm) from a mass of snow per unit area to depth of water is based on the fact that 1 mm of water spread over an area of 1 m^2 weighs 1 kg. The most commonly used approach for determining SWE is the gravimetric method, which involves taking a vertical core through the snowpack and weighing or melting the core to obtain SWE (NRC 2005).

3. Results

The KSM Project straddles the humid environment of the Coast Mountain Range and the colder and drier interior climate. The property is located in the Iskut-Stikine area about 20 km southeast of Eskay Creek mine, 65 km northwest of Stewart in north-western British Columbia. The climate of the region is variable and daily weather patterns in the Iskut region are unpredictable. Prolonged clear sunny days can prevail during the summers. Snowfalls and strong winds can be expected from early-October until mid-April with temperatures varying widely between 0°C and -40°C. Snow pack typically ranges from one to two metres, but high winds redistribute snow and can create snowdrifts up to 10 m in depth.

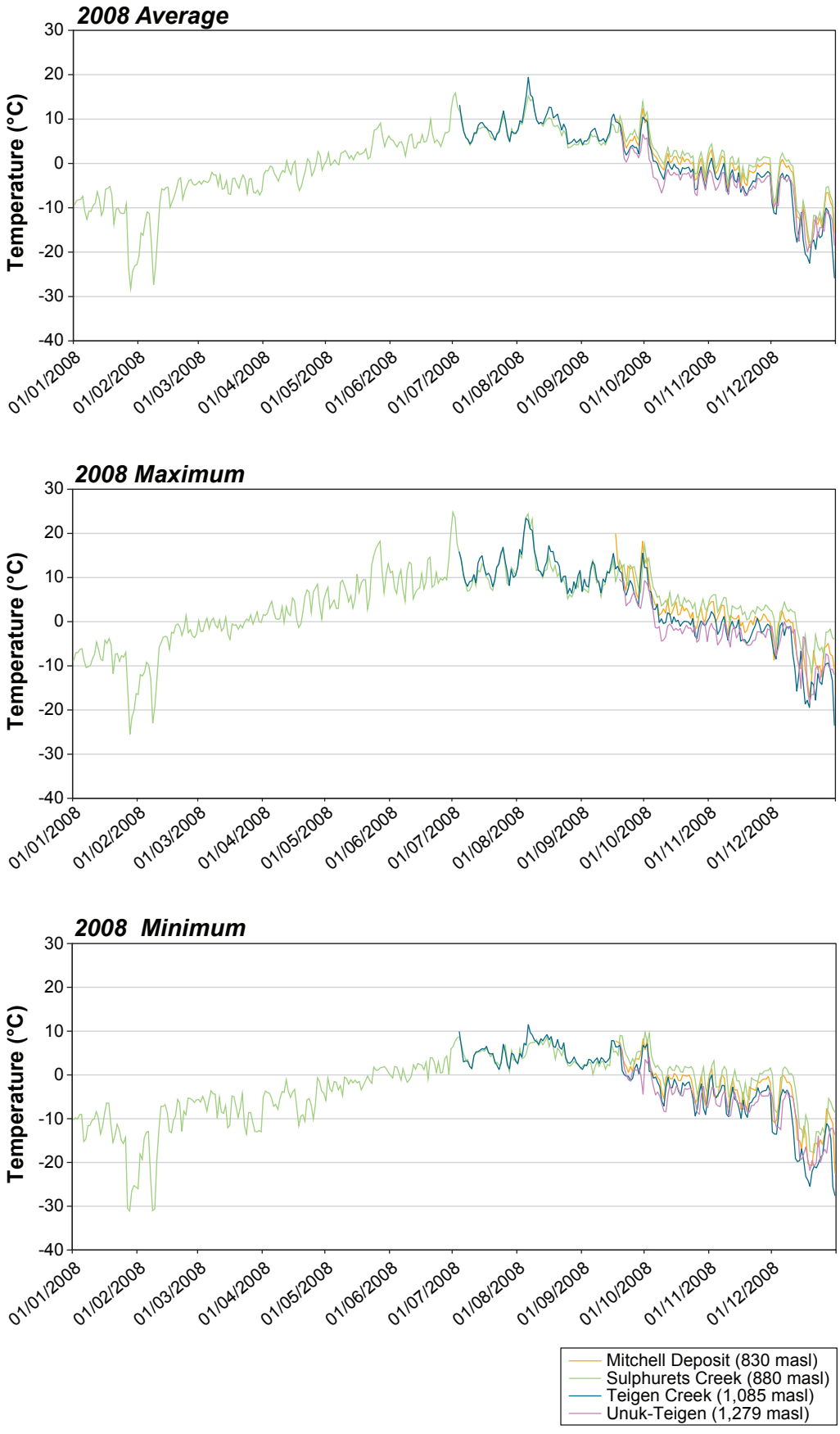
3.1 AIR TEMPERATURE

Figures 3.1-1 to 3.1-4 summarize the daily average, daily maximum and daily minimum air temperatures at the stations in the KSM Project area from 2008 to 2011. A full year of data is not available for the Mitchell deposit for 2011 at this point in time as teams were unable to access the site due to avalanche safety protocol. Additionally, the Unuk-Teigen meteorological station was damaged by an avalanche on October 30, 2011, causing the temperature sensor to malfunction, and a full year of data is not available.

Tables 3.1-1 to 3.1-3 summarize the mean monthly air temperatures at the KSM meteorological stations for the period of January 2008 to December 2011. All site-specific stations in the KSM Project area follow the same trend from 2008 to 2011. In 2011, Teigen Creek meteorological station generally had lower maximum daily temperatures and higher minimum daily temperatures than the other meteorological stations. The highest daily maximum air temperatures between 2008 and 2011 were 25.3, 27.5, 30.2, 29.6 and 26.8°C at Eskay Creek Mine, Mitchell Deposit, Sulphuret Creek, Teigen Creek and Unuk-Teigen stations, respectively; the lowest daily minimum air temperatures between 2008 and 2011 were -22.1, -25.7, -31.1, -27.5 and -26.9°C at Eskay Creek Mine, Mitchell Deposit, Sulphuret Creek, Teigen Creek and Unuk-Teigen stations, respectively.

Table 3.1-1 summarizes monthly mean temperatures from 2008 to 2011 from all stations including regional stations. Sulphurets was the only station with a complete data set for 2008, and the mean monthly air temperature ranged from -11.7 to 8.5ºC. The 2009 monitoring season had a full complement of data for all four stations active at that time. The mean monthly air temperature ranged from -7.7 to 14.1ºC, -9.9 to 13.6ºC, -11.3 to 13.8ºC and -9.6 to 12.0ºC for Mitchell deposit, Sulphurets Creek, Teigen Creek and Unuk-Teigen stations, respectively. The 2010 monitoring season had mean monthly air temperatures ranging from -6.3 to 11.7ºC, -7.5 to 10.9ºC, -9.1 to 10.9ºC and -8.4 to 9.8ºC for Mitchell deposit, Sulphurets Creek, Teigen Creek and Unuk-Teigen stations, respectively. For the year 2011, mean monthly air temperatures ranged from -8.2 to 10.3ºC, -9.1 to 8.9 ºC and -11.0 to 8.7ºC for Eskay Creek, Sulphurets Creek and Teigen meteorological stations.

Table 3.1-2 summarizes the mean monthly maximum air temperatures at the KSM meteorological stations for the period of January 2008 to December 2011. Sulphurets meteorological station was the only station with a full complement of data for 2008, and the mean monthly maximum air temperature ranged from -9.5 to 12.6ºC. The 2009 monitoring season had a full complement of data for all four stations active at that time. The mean monthly air temperature ranged from –4.4 to 18.9ºC, -6.8 to 20.0ºC, -8.6 to 19.2ºC and -6.4 to 15.5ºC for Mitchell deposit, Sulphurets Creek, Teigen Creek and Unuk-Teigen stations respectively. The 2010 monitoring season had mean maximum monthly air temperatures ranging from –3.7 to 16.7ºC, -4.8 to 16.8ºC, -6.8 to 15.9ºC and –6.5 to 14.3ºC for Mitchell deposit, Sulphurets Creek, Teigen Creek and Unuk-Teigen stations respectively. For the year 2011, mean monthly maximum air temperatures ranged from –5.2 to 13.9ºC, -8.3 to 13 ºC and -7.9 to 12.6ºC for Eskay Creek, Sulphurets Creek and Teigen met stations.

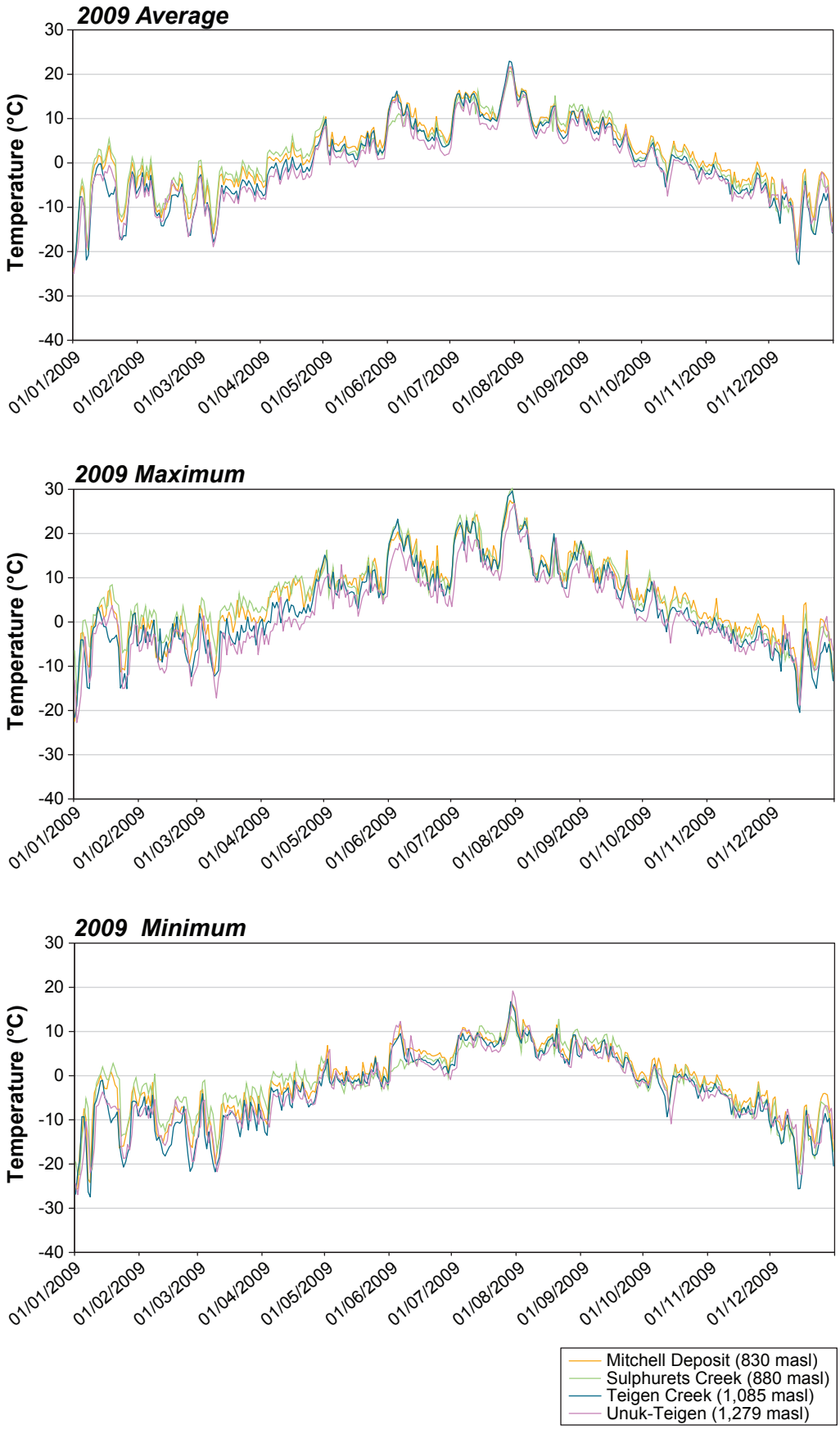


SEABRIDGE GOLD
KSM PROJECT

KSM Daily Mean, Maximum and Minimum Air Temperatures, 2008

Figure 3.1-1

Rescan™ Engineers & Scientists

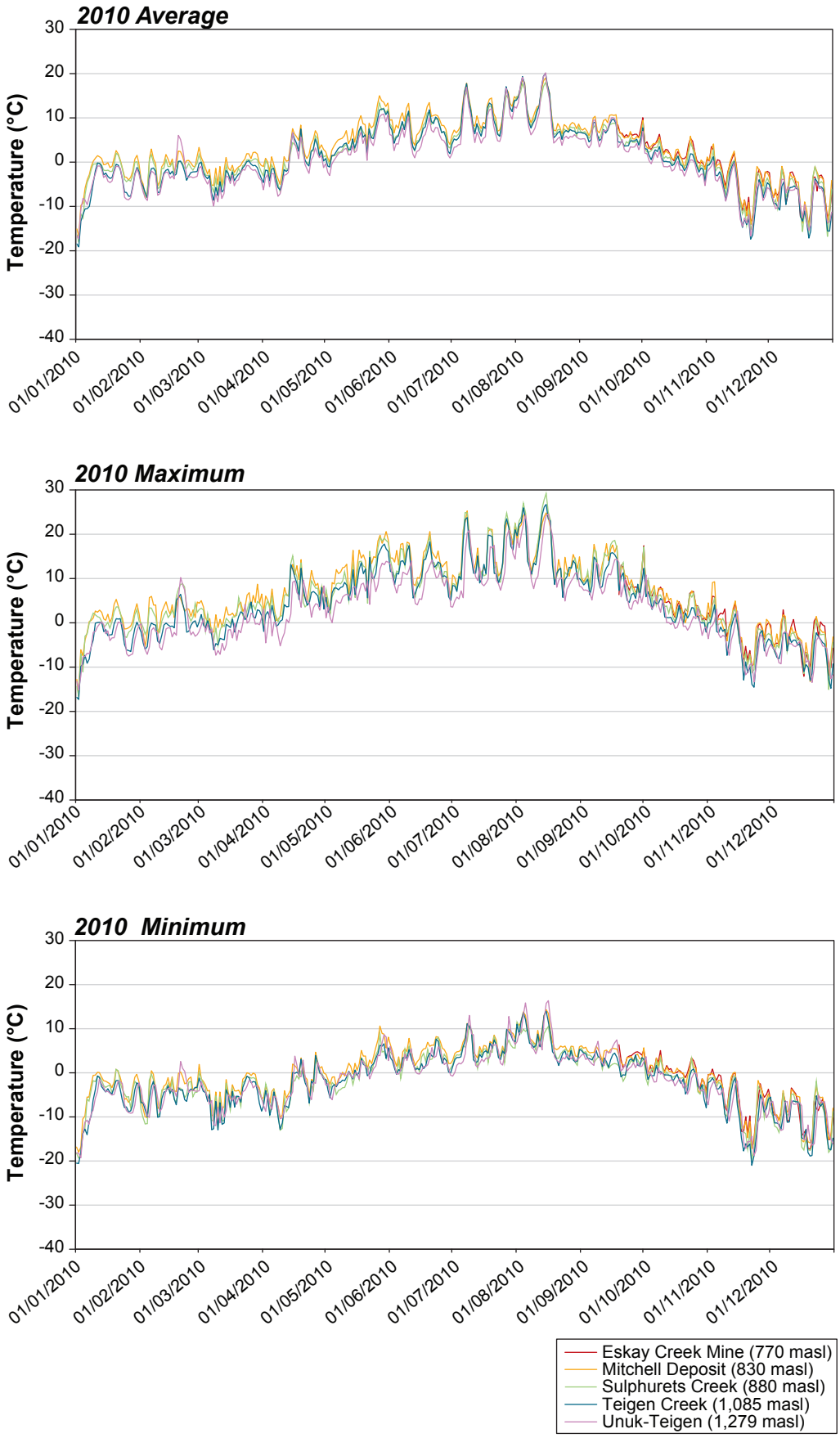


SEABRIDGE GOLD
KSM PROJECT

KSM Daily Mean, Maximum and Minimum Air Temperatures, 2009

Figure 3.1-2

Rescan™ Engineers & Scientists



SEABRIDGE GOLD
KSM PROJECT

KSM Daily Mean, Maximum and Minimum Air Temperatures, 2010

Figure 3.1-3

Rescan™ Engineers & Scientists

Table 3.1-1. KSM Mean Monthly Air Temperature (°C), 2008 – 2011

	2008				2009				2010					2011					EC		
	Mitchell Deposit (830 masl)	Sulphurets Creek (880 masl)	Teigen Creek (1,085 masl)	Unuk-Teigen (1,279 masl)	Mitchell Deposit (830 masl)	Sulphurets Creek (880 masl)	Teigen Creek (1,085 masl)	Unuk-Teigen (1,279 masl)	Eskay Creek Mine (770 masl)	Mitchell Deposit (830 masl)	Sulphurets Creek (880 masl)	Teigen Creek (1,085 masl)	Unuk-Teigen (1,279 masl)	Eskay Creek Mine1 (770 masl)	Mitchell Deposit (830 masl)	Sulphurets Creek (880 masl)	Teigen Creek (1,085 masl)	Unuk-Teigen (1,279 masl)	Stewart Airport (1974-2000 Climate Normal) (7 masl)	Bob Quinn AGS (1977-1994 Climate Normal) (610 masl)	Unuk River Eskay Creek (1989-2007)[d] (770 masl)
Jan	-	-11.7	-	-	-6.2	-4.9[a]	-9.4	-9.1	-	-2.4	-3.4	-5.6	-5.5	-6.3	-6.0	-7.4	-8.9	-9.0	-3.7	-8.5	-8.3
Feb	-	-9.8	-	-	-6.9	-5.6[a]	-9.2	-8.9	-	-0.9	-1.9	-3.1	-2.9	-8.2	-7.7	-9.1	-11.0	-11.2	-1.3	-6.4	-5.9
Mar	-	-4.6	-	-	-4.9	-3.6[a]	-7.6	-8.5	-	-0.8	-2.1	-3	-4	-3.2	-3.3	-4.4	-5.6	-6.6	1.9	-0.3	-4.1
Apr	-	-1.6	-2.6	-	1.3	2.6[a]	-0.8	-2.3	-	2.1	0.5	0.3	-0.9	0.4	0.2	-1.0	-1.8	-3.3	5.9	3.9	0.5
May	-	3.0	4.3	-	5.2	3.6	3.7	2.3	-	7.3	5.4	5.3	4	6.3	6.1	4.1	4.7	3.2	10.5	8.2	4.1
Jun	-	5.5	5.4	-	9.9	7.8	8.6	6.9	-	8.9	7.4	7	5.3	9.0	9.1	7.9	7.5	5.7	13.7	11.9	8.1
Jul	-	7.9	7.6	-	14.1	13.6	13.8	12.0	-	11	9.9	9.9	8.4	10.3	9.9	8.9	8.7	7.1	15.1	14.1	10.4
Aug	-	8.5	9.7	-	11.2	11.1[a]	10.4	9.1	-	11.7	10.9	10.9	9.8	9.1	8.8	7.8	7.5	6.3	14.3	13.4	10.4
Sep	-	6.5[a]	5.8	3.3	7.4	7.9[a]	6.3	5.2	-	7.6	6.3	6	5.4	7.3	6.9	6.0	5.5	4.4	11.1	9.3	5.8
Oct	0.0	2.3[a]	-0.3	-2.6	2.2	1.1	0.0	-0.9	2.6	2.4	1.4	0.6	-0.5	2.2	-	0.9	0.1	-1.0[b]	6.3	3.9	0.7
Nov	-1.1	0.2[a]	-3.2	-4.4	-2.2	-3.5	-4.6	-5.4	-3.5	-3.6	-4.9	-6.4	-6.8	-4.7	-	-5.9	-7.1	-[b]	0.6	-3.7	-4.9
Dec	-9.0	-7.7[a]	-12.9	-11.4	-7.7	-9.9	-11.3	-9.6	-6.9	-6.3	-7.5	-9.1	-8.4	-4.4	-	-5.8	-7.0	-[b]	-2.7	-8.8	-6.7
Average[c]	**-**	**-0.1**	**-**	**-**	**2.0**	**1.7**	**0.0**	**-0.8**	**-**	**3.1**	**1.8**	**1.1**	**2.2**	**1.5**	**-**	**0.2**	**-0.6**	**-**	**6.0**	**3.1**	**0.8**
Maximum[c]	**-**	**8.5**	**-**	**-**	**14.1**	**13.6**	**13.8**	**12.0**	**-**	**11.7**	**10.9**	**10.9**	**9.8**	**10.3**	**9.9**	**8.9**	**8.7**	**7.1**	**15.1**	**14.1**	**10.4**
Minimum[c]	**-**	**-11.7**	**-**	**-**	**-7.7**	**-9.9**	**-11.3**	**-9.6**	**-**	**-6.3**	**-7.5**	**-9.1**	**-8.4**	**-8.2**	**-**	**-9.1**	**-11.0**	**-**	**-3.7**	**-8.8**	**-8.3**

Notes: dash (-) indicates data not available or full month record not complete

[a] *Based on adjustment of Mitchell data since Sulphurets Temp/RH probe malfunctioned.*

[b] *Avalanche hit the station on October 30, and missing 1.5 days of data for October. Data for November and December are missing due to sensor malfunction.*

[c] *Average, maximum, and minimum average mean daily temperatures were for months with complete record (October to December 2008, and October to December 2010).*

[d] *Unuk River Eskay Creek 1989 – 2007 data were summarized in-house because climate normal is not available.*

Table 3.1-2. KSM Average Daily Maximum Air Temperature (°C), 2008 – 2011

	2008				2009				2010					2011					EC		
	Mitchell Deposit (830 masl)	Sulphurets Creek (880 masl)	Teigen Creek (1,085 masl)	Unuk-Teigen (1,279 masl)	Mitchell Deposit (830 masl)	Sulphurets Creek (880 masl)	Teigen Creek (1,085 masl)	Unuk-Teigen (1,279 masl)	Eskay Creek Mine (770 masl)	Mitchell Deposit (830 masl)	Sulphurets Creek (880 masl)	Teigen Creek (1,085 masl)	Unuk-Teigen (1,279 masl)	Eskay Creek Mine1 (770 masl)	Mitchell Deposit (830 masl)	Sulphurets Creek (880 masl)	Teigen Creek (1,085 masl)	Unuk-Teigen (1,279 masl)	Stewart Airport (1974-2000 Climate Normal) (7 masl)	Bob Quinn AGS (1977-1994 Climate Normal) (610 masl)	Unuk River Eskay Creek (1989-2007)[d] (770 masl)
Jan	-	-9.5	-	-	-3.2	-0.3[a]	-6.0	-6.1	-	-0.7	-1.4	-4.1	-4.3	-4.3	-3.9	-5.3	-6.6	-6.6	-1.1	-5.2	-5.4
Feb	-	-6.6	-	-	-3.9	-0.8[a]	-5.0	-6.4	-	2.2	2.4	-0.6	-1.1	-5.2	-4.9	-5.1	-7.9	-8.2	1.9	-2.1	-2.6
Mar	-	-0.5	-	-	-0.4	2.0[a]	-3.8	-5.8	-	2.8	1.4	-0.2	-1.8	0.9	1.6	0.4	-1.8	-4.7	5.7	4.7	-0.5
Apr	-	3.1	2.9	-	6.6	7.8[a]	3.6	0.7	-	7.2	6.1	4.9	2.6	5.1	5.6	3.8	2.8	1.2	10.7	9.9	4.6
May	-	8.4	9.6	-	10.2	9.4	8.4	6.7	-	12.5	11.2	10.2	7.2	11.6	11.8	10.1	9.4	6.7	15.5	14.8	8.6
Jun	-	10.0	10.8	-	14.8	14.1	13.5	10.5	-	14.5	12.3	11.7	9.5	12.9	13.5	12.5	11.8	9.2	18.6	18.5	13.2
Jul	-	11.9	11.6	-	18.9	20.0	19.2	15.5	-	15.5	15.5	14.8	12.1	13.9	14.0	13.0	12.6	10.5	19.8	20.4	14.9
Aug	-	12.6	13.5	5.8	15.8	15.0[a]	14.4	12.9	-	16.7	16.8	15.9	14.3	12.4	12.6	12.0	11.2	9.2	18.9	19.7	14.9
Sep	-	10.2[a]	9.6	-0.7	11.1	10.8[a]	9.2	8.1	-	12.1	11.6	9.8	8.2	9.7	10.1	9.3	8.0	6.6	14.7	14.4	9.1

(continued)

Table 3.1-2. KSM Average Daily Maximum Air Temperature (°C), 2008 – 2011 (completed)

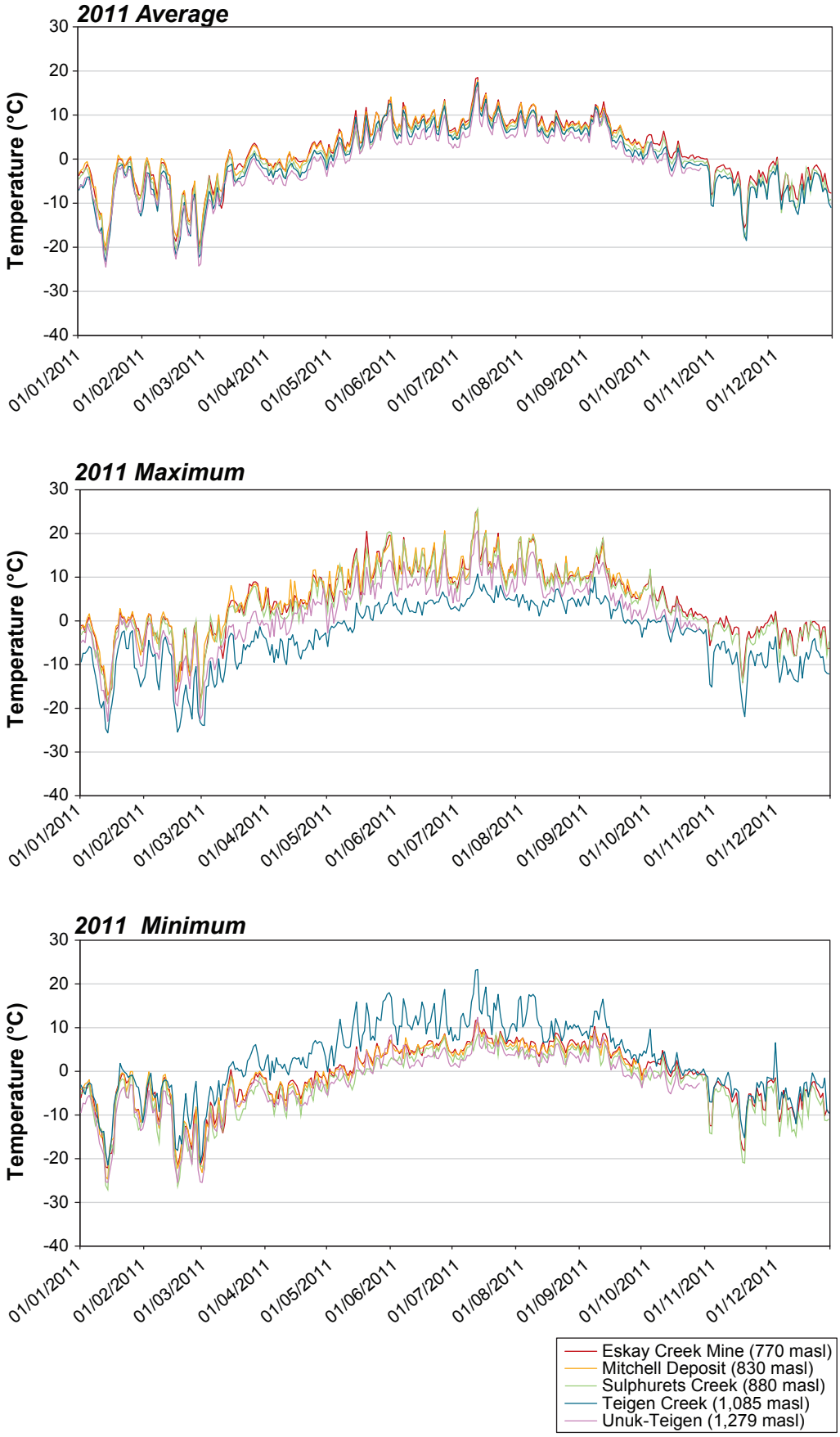
	2008				2009				2010					2011					EC		
	Mitchell Deposit	Sulphurets Creek	Teigen Creek	Unuk-Teigen	Mitchell Deposit	Sulphurets Creek	Teigen Creek	Unuk-Teigen	Eskay Creek Mine	Mitchell Deposit	Sulphurets Creek	Teigen Creek	Unuk-Teigen	Eskay Creek Mine1	Mitchell Deposit	Sulphurets Creek	Teigen Creek	Unuk-Teigen	Stewart Airport (1974-2000 Climate Normal)	Bob Quinn AGS (1977-1994 Climate Normal)	Unuk River Eskay Creek (1989-2007)[d]
	(830 masl)	(880 masl)	(1,085 masl)	(1,279 masl)	(830 masl)	(880 masl)	(1,085 masl)	(1,279 masl)	(770 masl)	(830 masl)	(880 masl)	(1,085 masl)	(1,279 masl)	(770 masl)	(830 masl)	(880 masl)	(1,085 masl)	(1,279 masl)	(7 masl)	(610 masl)	(770 masl)
Oct	3.9	5.6[a]	1.8	-3.0	5.0	4.1	2.3	1.0	5	5.4	4.2	2.7	1.7	4.2	-	3.4	2.0	0.5[b]	8.9	7.4	3.3
Nov	0.9	3.2[a]	-1.4	-7.9	-0.3	-1.8	-3.1	-3.9	-1.2	-1.1	-2.3	-4.2	-4.7	-2.5	-	-3.5	-4.9	-[b]	2.7	-0.9	-2.4
Dec	-6.1	-2.6[a]	-10.2	-6.4	-4.4	-6.8	-8.6	-6.4	-3.9	-3.7	-4.8	-6.8	-6.5	-2.5	-	-8.3	-4.3	-[b]	-0.5	-5.8	-4.0
Average[c]	**-**	**3.8**	**-**	**-**	**5.9**	**6.1**	**3.7**	**2.2**	**-**	**6.9**	**6.1**	**4.5**	**3.1**	**4.7**	**-**	**3.5**	**2.7**	**-**	**9.7**	**8.0**	**4.5**
Maximum[c]	**-**	**12.6**	**-**	**-**	**18.9**	**20.0**	**19.2**	**15.5**	**-**	**16.7**	**16.8**	**15.9**	**14.3**	**13.9**	**14.0**	**13.0**	**12.6**	**10.5**	**19.8**	**20.4**	**14.9**
Minimum[c]	**-**	**-9.5**	**-**	**-**	**-4.4**	**-6.8**	**-8.6**	**-6.4**	**-3.91**	**-3.7**	**-4.8**	**-6.8**	**-6.5**	**-5.2**	**-**	**-8.3**	**-7.9**	**-**	**-1.1**	**-5.8**	**-5.4**

Notes: dash (-) indicates data not available or full month record not complete
[a]Based on adjustment of Mitchell data since Sulphurets Temp/RH probe malfunctioned.
[b] Avalanche hit the station on October 30, and missing 1.5 days of data for October. Data for November and December are missing due to sensor malfunction.
[c]Average, maximum, and minimum average mean daily temperatures were for months with complete record (October to December, 2008 and October to December, 2010).
[d]Unuk River Eskay Creek 1989 – 2007 data were summarized in-house because climate normal is not available.

Table 3.1-3. KSM Average Daily Minimum Air Temperature (°C), 2008 – 2011

	2008				2009				2010					2011					EC		
	Mitchell Deposit	Sulphurets Creek	Teigen Creek	Unuk-Teigen	Mitchell Deposit	Sulphurets Creek	Teigen Creek	Unuk-Teigen	Eskay Creek Mine	Mitchell Deposit	Sulphurets Creek	Teigen Creek	Unuk-Teigen	Eskay Creek Mine1	Mitchell Deposit	Sulphurets Creek	Teigen Creek	Unuk-Teigen	Stewart Airport (1974-2000 Climate Normal)	Bob Quinn AGS (1977-1994 Climate Normal)	Unuk River Eskay Creek (1989-2007)[d]
	(830 masl)	(880 masl)	(1,085 masl)	(1,279 masl)	(830 masl)	(880 masl)	(1,085 masl)	(1,279 masl)	(770 masl)	(830 masl)	(880 masl)	(1,085 masl)	(1,279 masl)	(770 masl)	(830 masl)	(880 masl)	(1,085 masl)	(1,279 masl)	(7 masl)	(610 masl)	(770 masl)
Jan	-	-14.0	-	-	-9.5	-7.1	-12.3	-12.7	-	-4.8	-5.4	-7.2	-7.3	-8.4	-8.2	-9.7	-11.3	-11.0	-6.2	-11.7	-11.0
Feb	-	-12.7	-	-	-9.4	-7.0	-12.7	-11.0	-	-3.5	-5	-5.3	-4.4	-10.9	-10.6	-12.6	-13.9	-13.6	-4.5	-10.7	-9.2
Mar	-	-8.2	-	-	-8.8	-6.4	-11.4	-11.1	-	-3.6	-4.9	-5.8	-5.7	-6.7	-6.9	-8.9	-9.1	-8.5	-1.9	-5.3	-7.7
Apr	-	-5.6	-8.6	-	-3.2	-1.2	-4.9	-5.2	-	-2.6	-4.1	-4	-3.9	-3.4	-3.8	-5.2	-5.6	-5.8	1.1	-2.2	-3.7
May	-	-1.2	-0.7	-	1.0	-1.2	-0.5	-0.6	-	2.1	0.3	0.5	0.4	2.1	1.8	-0.4	0.7	0.5	5.3	1.5	-0.2
Jun	-	1.4	0.1	-	5.6	3.0	4.1	4.1	-	5	3.2	2.6	2.4	5.6	5.5	4.1	3.8	3.1	8.8	5.3	3.2
Jul	-	4.6	4.3	-	9.0	8.3	8.6	8.2	-	6.3	5.1	5.6	4.7	7.1	6.6	5.5	5.6	4.7	10.3	7.8	5.9
Aug	-	5.2	6.3	-	8.2	7.7	6.8	6.7	-	8.2	6.5	6.9	7	6.4	5.6	4.3	4.4	3.8	9.7	7.1	6.0
Sep	-	3.9	2.8	1.0	4.8	5.4	3.9	3.5	-	4.4	2.4	2.8	3.1	5.0	4.4	3.2	3.1	2.4	7.3	4.2	2.7
Oct	-0.7	1.2	-2.4	-3.9	0.1	-1.2	-1.8	-2.2	0.6	0.6	-0.8	-1.3	-1.6	0.5	-	-1.0	-1.5	-2.3[b]	3.8	0.4	-1.9
Nov	-3.1	-1.1	-5.1	-6.0	-4.0	-5.4	-6.2	-6.5	-5.6	-5.9	-7.2	-8.6	-8.7	-7.0	-	-8.5	-9.4	-[b]	-1.6	-6.4	-7.4
Dec	-10.5	-8.1	-15.6	-13.4	-10.4	-12.8	-14.3	-11.9	-9.7	-8.9	-10.5	-11.3	-10.2	-6.4	-	-3.4	-9.3	-[b]	-4.9	-11.8	-9.4
Average[c]	**-**	**-2.9**	**-**	**-**	**-1.4**	**-1.5**	**-3.4**	**-3.2**	**-**	**-0.2**	**-1.7**	**-2.1**	**-2**	**-1.3**	**-**	**-2.7**	**-3.5**	**-**	**2.3**	**-1.8**	**-2.7**
Maximum[c]	**-**	**5.2**	**-**	**-**	**9.0**	**8.3**	**8.6**	**8.2**	**-**	**8.2**	**6.5**	**6.9**	**7**	**7.1**	**6.6**	**5.5**	**5.6**	**4.7**	**10.3**	**7.8**	**6.0**
Minimum[c]	**-**	**-14.0**	**-**	**-**	**-10.4**	**-12.8**	**-14.3**	**-12.7**	**-**	**-8.9**	**-10.5**	**-11.3**	**-10.2**	**-10.9**	**-**	**-12.6**	**-13.9**	**-**	**-6.2**	**-11.8**	**-11.0**

Notes: dash (-) indicates data not available or full month record not complete
[a]Based on adjustment of Mitchell data since Sulphurets Temp/RH probe malfunctioned.
[b] Avalanche hit the station on October 30, and missing 1.5 days of data for October. Data for November and December are missing due to sensor malfunction.
[c]Average, maximum, and minimum average mean daily temperatures were for months with complete record (October to December, 2008 and October to December, 2010).
[d]Unuk River Eskay Creek 1989 – 2007 data were summarized in-house because climate normal is not available.



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KSM Daily Mean, Maximum and Minimum Air Temperatures, 2011

Figure 3.1-4

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Table 3.1-3 summarizes the mean monthly minimum air temperatures at the KSM meteorological stations for the period of January 2008 to December 2011. Sulphurets meteorological station was the only station with a full complement of data for 2008, and the mean monthly maximum air temperature ranged from -14.0 to 5.2ºC. The 2009 monitoring season had a full complement of data for all four stations active at that time. The mean monthly air temperature ranged from –10.4 to 9.0ºC, -12.8 to 8.3ºC, -14.3 to 8.6ºC and -12.7 to 8.2ºC for Mitchell deposit, Sulphurets Creek, Teigen Creek and Unuk-Teigen stations respectively. The 2010 monitoring season had mean monthly air temperatures ranging from –8.9 to 8.2ºC, -10.5 to 6.5ºC, -11.3 to 6.9ºC and –10.2 to 7.0ºC for Mitchell deposit, Sulphurets Creek, Teigen Creek and Unuk-Teigen stations respectively. For the year 2011, mean monthly maximum air temperatures ranged from –10.9 to 7.1ºC, -12.6 to 5.5 ºC and -13.9 to 5.6ºC for Eskay Creek, Sulphurets Creek and Teigen meteorological stations.

Generally, temperatures at Teigen Creek meteorological station is the lowest while temperatures at Eskay Creek Mine and Mitchell Deposit are typically the highest. The summer months of July and August tend to be the warmest while December and January are the coldest months.

Figure 3.1-5 summarizes all of the available monthly data from KSM Project area from 2008 to 2011 and monthly data from nearby regional stations. Generally, temperatures were the highest at Stewart Airport and Bob Quinn AGS meteorological stations and lowest at the Unuk-Teigen meteorological station. This trend was expected since the Stewart Airport and Bob Quinn AGS stations are at a lower elevation, and the Unuk-Teigen station is at the highest elevation out of all the stations included in Figure 3.1-5.

Tables 3.1-4 through 3.1-6 summarize the extreme maximum and minimum hourly temperatures recorded at each station from 2009 to 2011. In 2008, only Sulphuret Creek meteorological station operated for the full year. The extreme maximum temperature of 24.8°C occurred on July 1, 2008 at 5 pm while the minimum temperature of -31.1°C occurred on January 28, 2008 at 10 am. For comparison, the extreme maximum temperature at Unuk River Eskay Creek regional climate station was 30°C and occurred in August 1990. The extreme minimum temperature at Unuk River Eskay Creek station was -30°C and has occurred in December and January on several occasions in the historical record.

Table 3.1-4. KSM Extreme Maximum and Minimum Instantaneous Air Temperatures, 2009

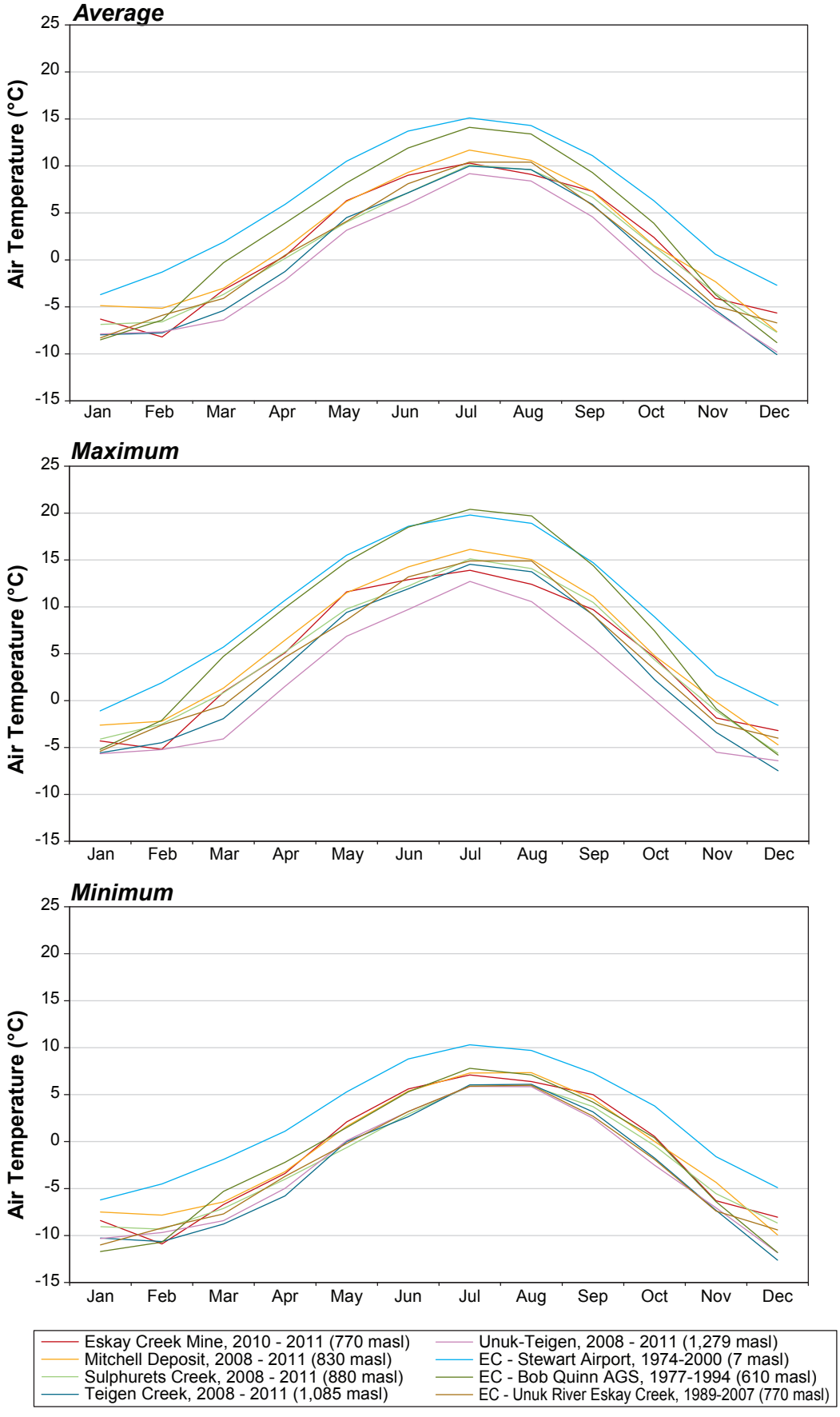
Station	Elevation (masl)	Extreme Maximum Temperature (°C)	Date/Time	Extreme Minimum Temperature (°C)	Date/Time
Mitchell Deposit	830	27.5	7/29 16:29	-25.4	1/1 0:00
Sulphurets Creek[a]	880	30.2	7/30 18:00	-22.1	12/14 20:00
Teigen Creek	1,085	29.0	7/30 17:00	-27.2	1/1 19:00
Unuk-Teigen	1,279	26.8	7/30 16:41	-26.9	1/1 8:33

Notes: [a] Instantaneous extreme temperatures were not recorded at Sulphurets Creek station. Extreme hourly temperatures were shown above.

Table 3.1-5. KSM Extreme Maximum and Minimum Instantaneous Air Temperatures, 2010

Station	Elevation (masl)	Extreme Maximum Temperature (°C)	Date/Time	Extreme Minimum Temperature (°C)	Date/Time
Mitchell Deposit	830	25.2	7/8 17:21	-17.9	1/2 13:53
Sulphurets Creek[a]	880	29.1	8/15 17:00	-19.5	11/22 21:00
Teigen	1,085	26.7	8/15 15:03	-20.9	11/22 20:07
Unuk-Teigen	1,279	24.5	8/15 14:39	-19.2	1/2 2:48

Notes: [a] Instantaneous extreme temperatures were not recorded at Sulphurets Creek station. Extreme hourly temperatures were shown above.



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KSM and Regional Mean Monthly, Average Daily Maximum and Average Daily Minimum Air Temperature

Figure 3.1-5

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Table 3.1-6. KSM Extreme Maximum and Minimum Instantaneous Air Temperatures, 2011

Station	Elevation (masl)	Extreme Maximum Temperature (°C)	Date/Time	Extreme Minimum Temperature (°C)	Date/Time
Eskay Creek Mine	770	25.3	7/13 15:23	-22.1	1/14 1:08
Mitchell Deposit[a]	830	25.3	7/13 17:11	-24.6	1/14 1:28
Sulphurets Creek[b]	880	25.6	7/13 17:00	-27.1	1/14 1:00
Teigen Creek	1,085	23.3	7/13 13:59	-25.6	1/14 2:18
Unuk-Teigen	1,279	20.6	7/13 12:39	-25.4	3/1 0:19

Notes:
[a] Due to the last day of data collection in 2011 October, November and December air temperature data is not available for this report.
[b] Instantaneous extreme temperatures were not recorded at Sulphurets Creek station. Extreme hourly temperatures were shown above.

3.2 PRECIPITATION

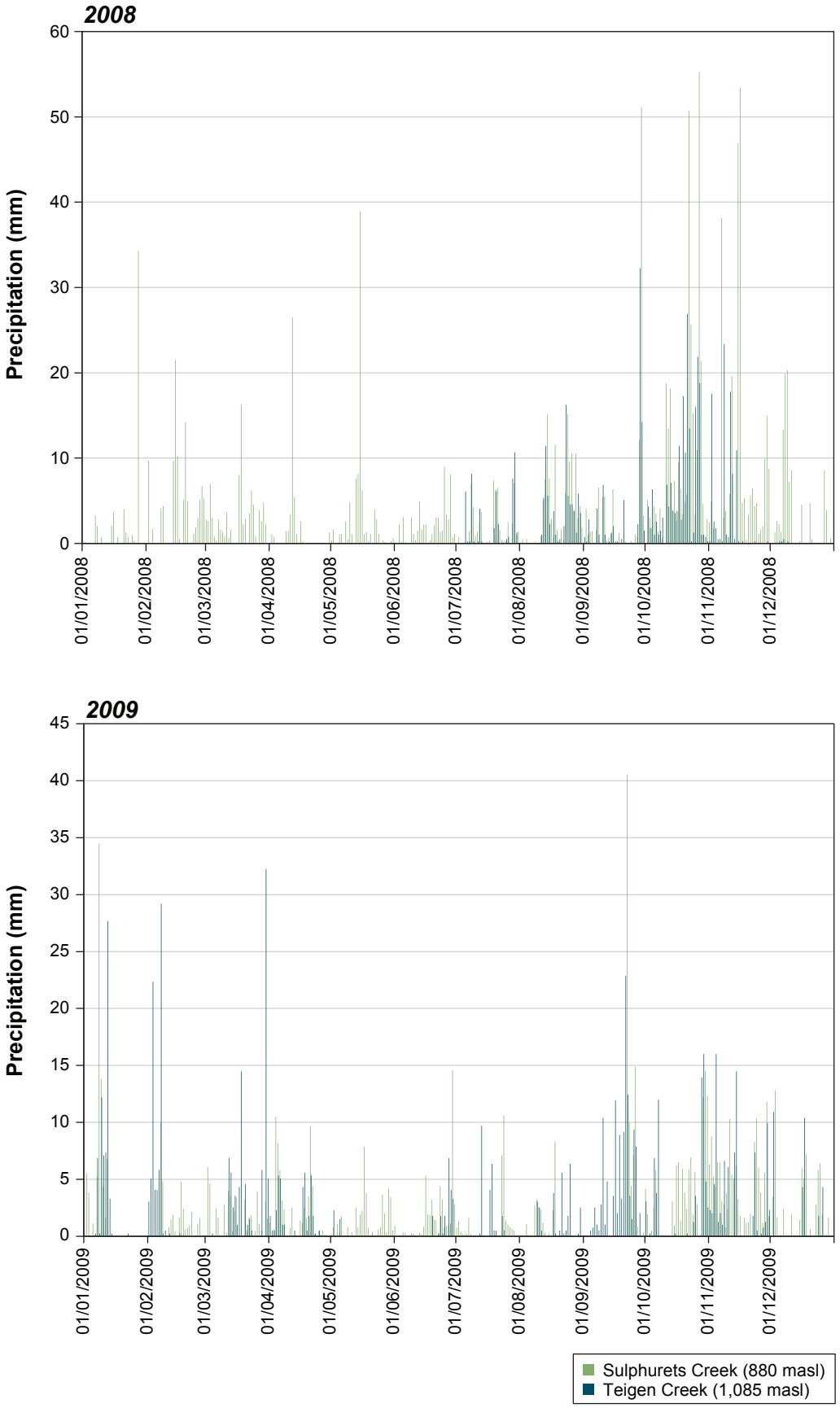
Precipitation spatial variation is mainly due to three factors: elevation, proximity to source of moisture, and the effect of rain shadows. Generally, precipitation increases with elevation and decreases with distance from large sources of moisture. If there is a large obstacle blocking the moist air masses from travelling, the air masses are forced upward. Due to this orographic lifting, water vapour condenses and precipitates, leaving the downwind side of the ranges drier.

The Project area lies in a transition zone between the very wet coastal region and the drier interior of BC. The regional hydroclimate of north-western BC is dominated by weather systems generated by the Pacific Ocean, and is also influenced by orographic effects caused by the local mountainous topography and glaciers. This results in interactions between incoming weather systems and local topography that produce a degree of spatial variability in snowfall and rainfall.

Orographics effects result when Pacific air streams confront the west facing slopes of the Coast Mountains and the moisture-laden air is forced up the slopes. As the air cools and rises, it is less capable of holding moisture and releases it as rain or snowfall. The mountains also slow down cyclonic storms which can lead to prolonged and sometimes heavy rainfalls.

Over the mountain summit, the air descends and warms which disperses the cloud and rain through evaporation. The result is a dramatic reduction of precipitation in the rain-shadow. Within BC, the series of mountain ranges that parallel the coast produce a decrease in precipitation with increasing distance from the ocean as storms pass over the successive ranges.

Figures 3.2-1 and 3.2-2 show the daily precipitation at Sulphurets Creek, Teigen Creek and Eskay Creek Mine meteorological stations from 2008 to 2011. There was only one year of complete precipitation data from Eskay Creek (2011) and the maximum daily total precipitation of 99 mm occurred on September 6, 2011. The maximum daily total precipitation for each year at Sulphurets Creek was 55 mm (October 27, 2008), 41 mm (September 22, 2009), 61 mm (September 3, 2010) and 84 mm (September 6, 2011). The maximum daily total precipitation from 2009 to 2011 at Teigen Creek was 32 mm (March 30, 2009), 44 mm (September 2, 2010) and 41 mm (September 6, 2011). It can be seen from Figures 3.2-1 and 3.2-2 that heavy precipitation typically occurs between September and November.



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KSM Daily Total Precipitation, 2008 and 2009

Figure 3.2-1

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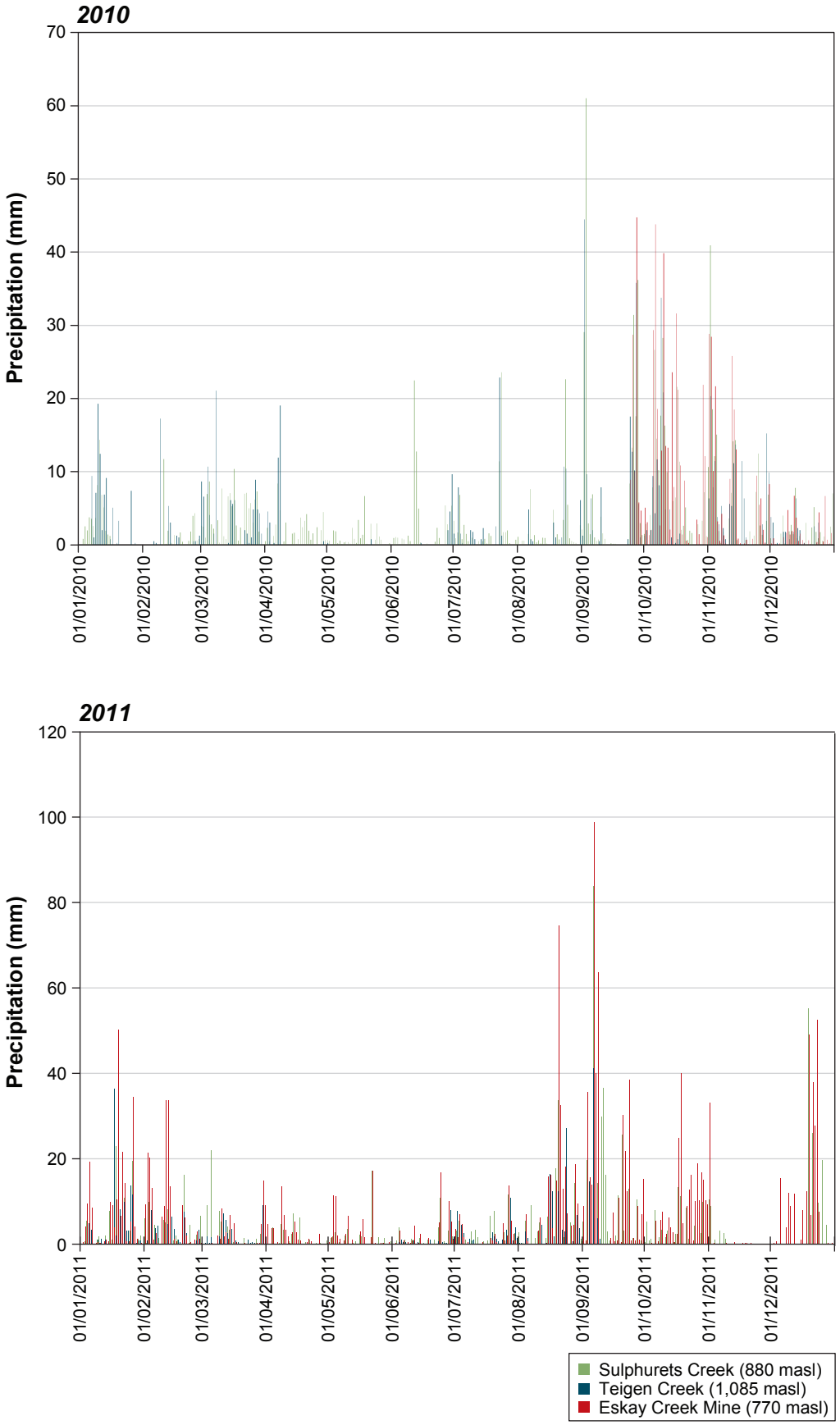

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KSM Daily Total Precipitation, 2010 and 2011

Figure 3.2-2

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Table 3.2-1 summarizes the total monthly precipitation for the KSM meteorological stations from 2008 to 2011. For the Eskay Creek Mine meteorological station, the monthly total precipitation varied from 52 mm (June) to 437 mm (September) in 2011. For Sulphurets Creek meteorological station, the monthly total precipitation varied from 42 mm (April) to 307 mm (October) in 2008, 26 mm (December) to 243 mm (January) in 2009, 36 mm (April) to 237 mm (October) in 2010 and 45 mm (June) to 275 mm (September) in 2011. For Teigen Creek meteorological station, the monthly total precipitation varied from 20 mm (June) to 123 mm (September) in 2009 and 1 mm (May) to 156 mm (September) in 2010. During September 2011, the TBRG at Teigen Creek malfunctioned and was not able to collect data.

ClimateBC is a software program, developed by the Centre for Forest Conservation Genetics at UBC, to generate climate normal data for genecology and climate change studies in western Canada (ClimateBC 2012). ClimateBC extracts and downscales the PRISM (Parameter-elevation Regressions on Independent Slopes Model) climate mapping system, for the reference period of 1961 to 1990 and calculates seasonal and annual climate variables for specific locations based on latitude, longitude and elevation. The estimates presented in this report are for the period of 1971 to 2000, shown in Table 3.2-2, to match the most updated climate normal data from EC. ClimateBC used PRISM data for the period of 1961 to 1990 with a methodology to generate scale-free climate data through the combination of interpolation (Wang et al. 2005) and elevation adjustments (Hamann and Wang 2005). Since the most current Environment Canada climate normals are from 1971 to 2000 and the regional stations referred to here were installed after 1974, the data and stations ClimateBC used as the basis for interpolation and elevation adjustment would have been from different locations or time periods than the regional stations and their data.

The annual total precipitation at Eskay Creek Mine in 2011 was 1,914 mm, which is approximately 34% more than the ClimateBC's estimate of 1,260 mm. The annual total precipitation at Sulphurets Creek was 1,273 mm in 2008, 1,196 mm in 2009, 1,184 mm in 2010 and 1,319 mm in 2011. These values were lower than the ClimateBC's estimate of 1,653 mm. The annual total precipitation at Teigen Creek was 689 mm in 2009 and 794 mm in 2010. These values were also lower than the ClimateBC's estimate of 1,083 mm.

Climate normals from regional EC stations showed that approximately 70% of precipitation occurs between September and February. Data from Eskay Creek Mine, Sulphurets Creek and Teigen Creek meteorological stations also showed the same trend.

Figure 3.2-3 shows the cumulative average monthly total precipitation for Project stations, ClimateBC estimates of the Project station locations and close by EC regional stations. Precipitation, unlike some other meteorological parameters, can change significantly from one year to another. The trend can only be defined after several years of data have been collected. Generally, climate normal data which is collected over a period of 30 years, provides the most representative precipitation data.

For Sulphurets Creek and Teigen Creek meteorological stations, which are the stations with more than three complete years of data, the data collected and the ClimateBC estimates were fairly similar and showed the same seasonal trend. Generally, the monthly total precipitation differences between the collected data and the estimates from ClimateBC were less than 50 mm. There was only one complete year of data from Eskay Creek Mine meteorological station and the difference between collected data and the ClimateBC estimate, which was derived from Climate Normal is significant.

From the three factors affecting precipitation described earlier, the dominant factor in the KSM area is the proximity to the ocean to the west of the Project Area. For the three KSM stations where precipitation was recorded, the annual precipitation amount from the highest to the lowest is: Eskay Creek (770 masl), Sulphurets Creek (880 masl) and Teigen Creek (1,085 masl). The elevation does not seem to play a crucial role in the precipitation amount. This also explains why Stewart Airport had an annual precipitation of 1,843 mm (Climate Normal 1974-2000) at an elevation of 7 masl.

Table 3.2-1. KSM Monthly Total Precipitation (mm), 2008 – 2011

	2008		2009		2010			2011		
	Sulphurets Creek	Teigen Creek	Sulphurets Creek	Teigen Creek	Eskay Creek Mine	Sulphurets Creek	Teigen Creek	Eskay Creek Mine	Sulphurets Creek	Teigen Creek
	(880 masl)	(1,085 masl)	(880 masl)	(1,085 masl)	(770 masl)	(880 masl)	(1,085 masl)	(770 masl)	(880 masl)	(1,085 masl)
Jan	59[a]	-	243[b]	66	-	57[e]	84	218	177	108[j]
Feb	88	-	85[b]	75	-	21[d]	31	189	140	64
Mar	54	-	107[b]	89	-	121	100	59	49	53
Apr	42	-	58[a]	61[b]	-	61	39	56	51	-[l]
May	83	-	39[a]	4[k]	-	36	1[k]	69	60	-[l]
Jun	53	-	82[f]	20	-	70	16	52	45	32[g]
Jul	60	51[c]	45[f]	24[g]	-	69	46	55	96	56[g]
Aug	116	79	71[f]	28	-	61	38	251	225	140[g]
Sep	109	75	201[f]	123	103[e]	149	156	437	275[i]	106[g]
Oct	307[a]	196	127[f]	73[g]	334	237	107	237	138	-[l]
Nov	114[b]	87	119	92	200	175	144	36[h]	52	-[l]
Dec	158[b]	63[b]	26	34	41	55	32	256	115	-[l]
Annual Total	**1,273**	**551**	**1,196**	**689**	**678**	**1,112**	**794**	**1,914**	**1,422**	**559**

Notes: Dash(-) indicates data not available

[a] *based on the standing pipe precipitation gauge data.*

[b] *based on SWE data.*

[c] *missing up to 5 days of data.*

[d] *missing up to 10 days of data.*

[e] *missing up to 15 days of data.*

[f] *June 16 to October 8, 2009 were based on the two lowest Rainwise TBRG in the Mitchell valley to replace negative and questionable data from the standing pipe precipitation gauge.*

[g] *based on Rainwise TBRGs data with elevation adjustment.*

[h] *incomplete data due to suspected frozen precipitation gauge.*

[l] *incomplete data due to leaking precipitation gauge.*

[j] *precipitation gauge under snow.*

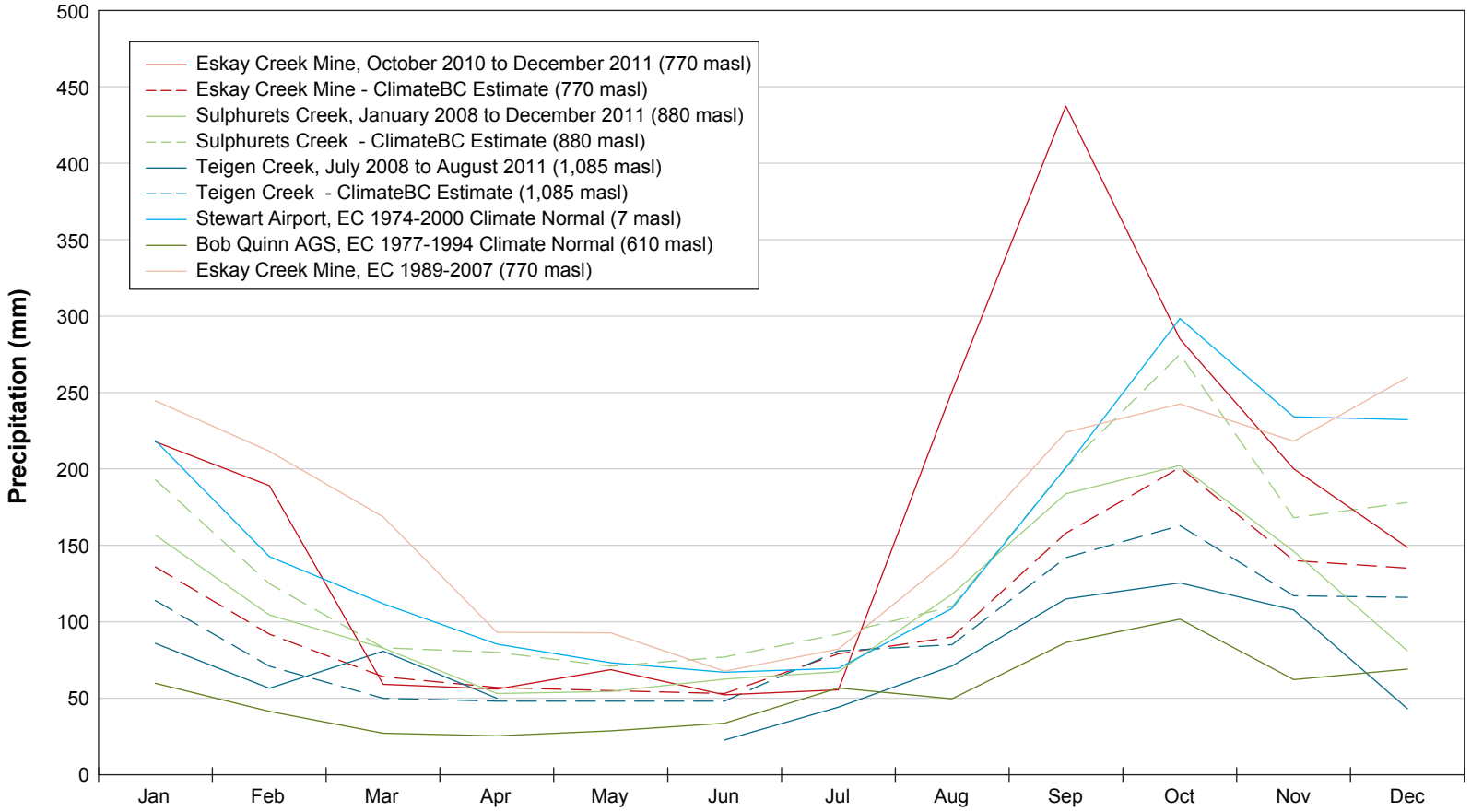
[k] *incomplete data due to malfunction of precipitation gauge.*

[l] *potentially damaged precipitation gauge due to snow pack.*

Table 3.2-2. Monthly Total Precipitation (mm) from ClimateBC Estimates and Regional Climate Normals

	ClimateBC Estimates[a]			Regional MSC Stations		
	Eskay Creek Mine	Sulphurets Creek	Teigen Creek	Stewart Airport (1974 – 2000) Climate Normal	Bob Quinn AGS (1977 – 1994) Climate Normal	Eskay Creek Mine (1989 – 2007)
	(770 masl)	(880 masl)	(1,085 masl)	(7 masl)	(610 masl)	(770 masl)
Jan	136	193	114	219	60	245
Feb	92	125	71	143	41	212
Mar	64	83	50	112	27	169
Apr	57	80	48	85	25	93
May	55	71	48	73	29	93
Jun	53	77	48	67	34	68
Jul	79	92	81	70	57	82
Aug	90	110	85	109	50	142
Sep	158	201	142	201	86	224
Oct	201	275	163	298	102	243
Nov	140	168	117	234	62	218
Dec	135	178	116	232	69	260
Annual Total	**1,260**	**1,653**	**1,083**	**1,843**	**642**	**2,047**

Notes:
[a] *period predicted is climate normal from 1971 to 2000.*



Note: A break in the Teigen Creek results in May indicate there is no reliable May result from 2008 to 2011.

Figure 3.2-3

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KSM Monthly Total Precipitation, ClimateBC Estimates and Regional Climate Normals

Figure 3.2-3

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Within the study area, the precipitation gradient varies spatially depending on the local topography (e.g., presence of orographic effects), and will vary over time depending on the tracks of individual storm events and annual weather patterns. Precipitation is typically expected to increase with elevation and be higher in the headwaters of a watershed. However, this is not always the case; a study by Loukas and Quick (1994) showed that in coastal BC (Seymour and Capilano watersheds), long-term precipitation distribution does not increase linearly with elevation but at a certain elevation, precipitation levels off or even decreases. In the Capilano and Seymour watersheds, mean annual precipitation increases steadily from the bottom of the watershed to about the mid-elevation point. From there, the increase in precipitation becomes smaller and either steadies (Capilano watershed) or decreases (Seymour watershed).

A precipitation gradient was calculated using the following equation adapted from the UBC Watershed Model User's Manual (UBC 2005):

$$Precip(2) = Precip(1)(1+Gradient)^{((Elev(2)-Elev(1))/100)}$$

Alternatively, this equation can be arranged as:

$$Gradient = [(Precip(2)/Precip(1))^{(1/((Elev(2)-Elev(1))/100))}] - 1$$

Where Precip(1) = precipitation at the lowest gauge (mm); Precip(2) = precipitation at the highest gauge (mm); Elev(1) = elevation at the lowest gauge (m); Elev(2) = elevation at the highest gauge (m); and Gradient = percentage increase in precipitation per 100 m increase in elevation.

Summer precipitation gradients were calculated using a series of tipping bucket rain gauges (TBRGs) for areas near the Unuk-Teigen, Mitchell Deposit and Teigen Creek meteorological stations. Figure 2.1-1 shows the locations of the TBRGs that were used to monitor the precipitation gradient.

Table 3.2-3 summarizes the precipitation gradient results at Mitchell, Teigen and Unuk-Teigen from 2009 to 2011. The precipitation gradient was calculated using average elevation and rainfall from the lowest two rain gauges and the two highest rain gauges. During some periods, the TBRGs recorded incomplete data sets due to animal disturbances. In the Mitchell valleys, precipitation gradients were calculated to be -5% (2009), 6% (2010) and -1% (2011). The meteorology in the Mitchell valleys is complex due to the presence of the Mitchell glacier and the interaction with moist weather systems that come from the coast up the Unuk and Sulphurets Creek Valleys. In the Teigen valleys, the precipitation gradients were calculated to be 5% (2009), 2% (2010) and 6% (2011); in the Unuk-Teigen valleys, the precipitation gradients were 6% (2009), -1% (2010) and 1% (2011).

Table 3.2-3. Precipitation Gradient for Mitchell, Teigen and Unuk-Teigen Valleys

			Lowest Rain Gauges		Highest Rain Gauges		Precipitation Gradient (change per 100 m elevation gain)
Valley	Year	Length of Data Set	Average Elevation (masl)	Average Rainfall (mm)	Average Elevation (masl)	Average Rainfall (mm)	
Mitchell	2009	87	1,179	398	1,508	337	-5%
	2010	65	1,178	147	1,459	172	6%
	2011	26	1,172	208	1,459	201	-1%
Teigen	2009	87	1,267	256	1,587	326	5%
	2010	60	1,267	84	1,587	87	2%
	2011	62	1,388	346	1,607	393	6%

(continued)

Table 3.2-3. Precipitation Gradient for Mitchell, Teigen and Unuk-Teigen Valleys (completed)

Valley	Year	Length of Data Set	Lowest Rain Gauges		Highest Rain Gauges		Precipitation Gradient (change per 100 m elevation gain)
			Average Elevation (masl)	Average Rainfall (mm)	Average Elevation (masl)	Average Rainfall (mm)	
Unuk-Teigen	2009	87	1,175	200	1,716	271	6%
	2010	38	1,175	86	1,716	80	-1%
	2011	38	1,148	231	1,687	251	1%

3.3 BAROMETRIC PRESSURE

Barometric or atmospheric pressure is the force per unit area exerted onto a surface by the weight of air above that surface. As elevation increases, there is less overlying atmospheric mass above the area, and therefore the pressure decreases with increase in elevation. Since barometric pressure is elevation dependant, it is typically corrected to pressure at sea level before any comparison can be made. The standard atmospheric pressure is 101.325 kPa at sea level. The hourly barometric pressure measured at the KSM stations were adjusted to sea level before presented in this report. Barometric pressure data are primarily used in weather analyses. Other climatological applications include trajectory and storm track studies, health studies, and verification and evaluation of climatic models.

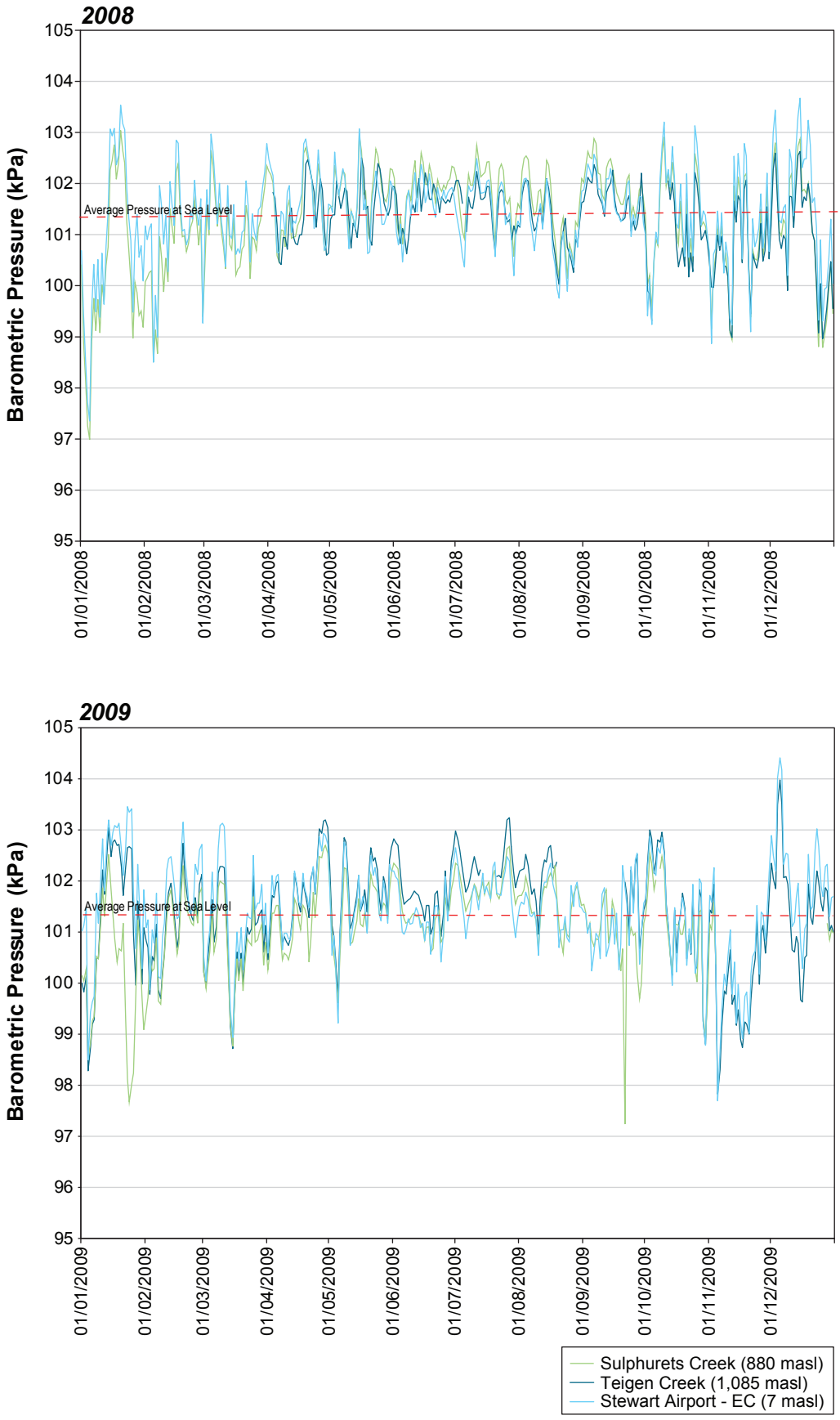
Figures 3.3-1 and 3.3-2 summarize the hourly barometric pressure readings recorded at Sulphurets Creek and Teigen Creek stations from 2008 to 2011. A close by regional station, Stewart Airport, is also presented in these figures for comparison. For Sulphurets Creek meteorological station, barometric pressure ranged from 97.0 to 103.0 kPa in 2008, 97.8 to 104.0 kPa in 2009, 97.8 to 103.5 kPa in 2010 and 98.7 to 102.7 kPa in 2011. For Teigen creek meteorological station, barometric pressure ranged from 99.0 to 102.6 kPa in 2008, 97.3 to 102.7 kPa in 2009, 98.4 to 102.6 kPa in 2010 and 98.3 to 103.2 kPa in 2011. The Stewart Airport station, operated by EC, ranged from 97.3 to 104.4 kPa during the period of 2008 to 2011 (Table 3.3-1).

Table 3.3-1. KSM and Regional Minimum and Maximum Daily Barometric Pressure (kPa)

	2008		2009		2010		2011	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Sulphurets Creek	97.0	103.0	97.8	104.0	97.8	103.5	98.7	102.7
Teigen Creek	99.0	102.6	97.3	102.7	98.4[a]	102.6a	98.3[b]	103.2[b]
Stewart Airport	97.3	103.7	97.7	104.4	97.7	103.7	98.4	104.1

Notes:
[a] Data from November 16 to December 31, 2010 were removed due to sensor error.
[b] Data from January 8 to January 17, March 14 to March 18 and October 12 to December 31, 2011 were removed due to sensor error.

Barometric pressure at Teigen Creek meteorological station dropped lower than 98 kPa twice when the other two stations remained above the standard sea level pressure of 101.325 kPa in 2009. In 2010 and 2011, excluding invalid data removed, barometric pressure recorded at Teigen Creek station remained low and departed from the values recorded from other stations in the winter.



Daily Average Barometric Pressure, 2008 and 2009 for Sulphurets, Teigen and Stewart

Figure 3.3-1

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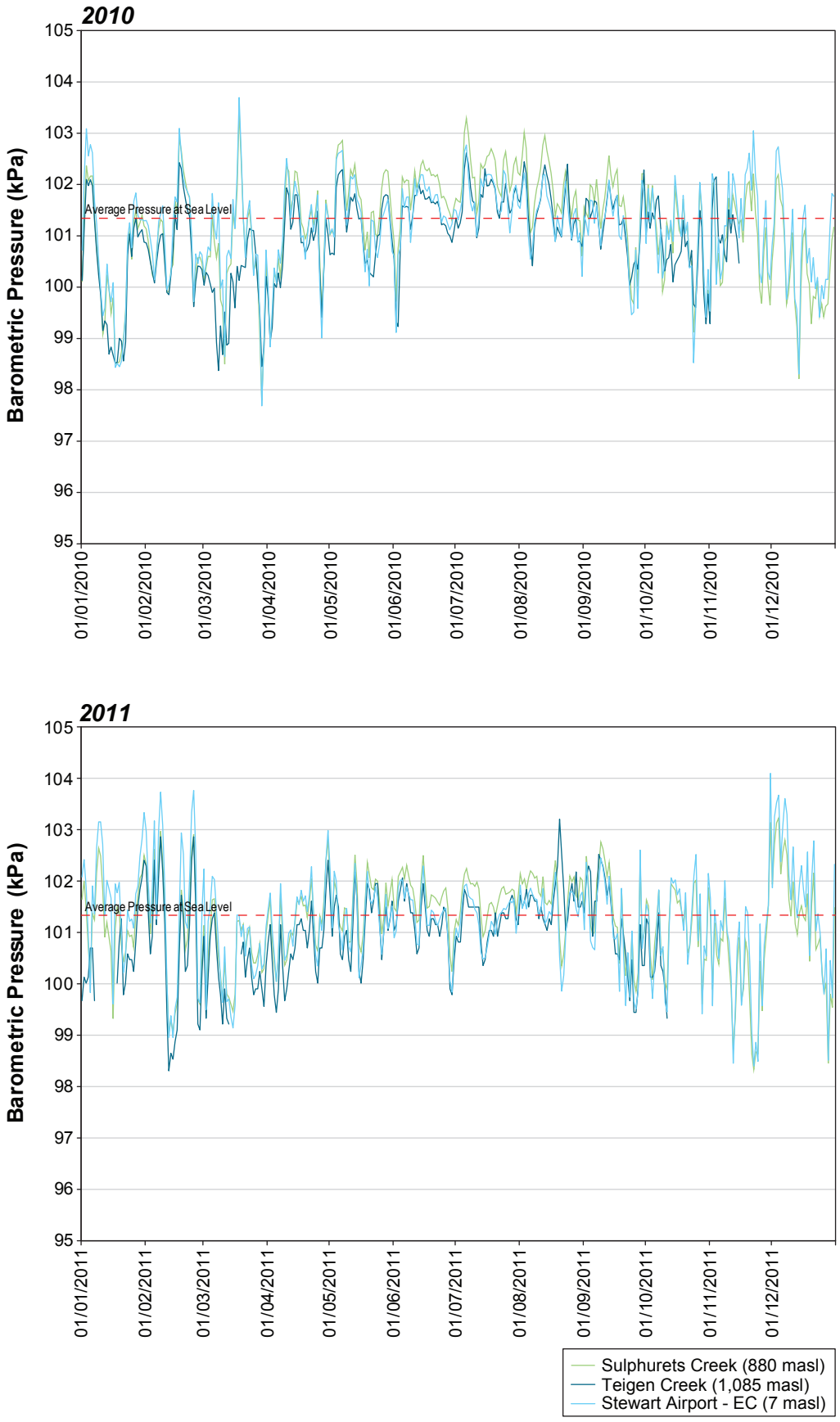

Figure 3.3-2

Daily Average Barometric Pressure, 2010 and 2011 for Sulphurets, Teigen and Stewart

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3.4 SOLAR RADIATION

Solar radiation is the total frequency spectrum of electromagnetic energy from the sun. Solar energy accounts for 99% of the Earth's energy. Electromagnetic radiation originating from Earth and its atmosphere is defined as terrestrial radiation, while the solar radiation incident on top of the terrestrial atmosphere is called extraterrestrial solar radiation. A portion of the extraterrestrial solar radiation from the sun (mostly short-wave radiation with spectral range of 0.29 to 3 microns) penetrates through the atmosphere to the Earth's surface, while part of it is scattered, absorbed or reflected in the atmosphere by gas, aerosel particles, cloud droplets and cloud crystals.

Figures 3.4-1 and 3.4-2 show the daily average solar radiation at the Sulphurets Creek and Teigen Creek stations for 2008 to 2011. Table 3.4-1 summarizes the maximum and minimum daily solar radiation recorded at Sulphurets Creek and Teigen Creek meteorological stations from 2008 to 2011. The solar radiation sensor at Sulphurets malfunctioned between May and August in 2009. The lowest solar radiation values were recorded during the winter months when the sun is at its lowest angle and there is a higher frequency of low cloud cover which scatters and absorbs the solar radiation. The minimum daily average solar radiation occurred in the winter between November and February and the maximum daily average solar radiation mostly occurred in June.

Table 3.4-1. KSM Maximum and Minimum Daily Solar Radiation

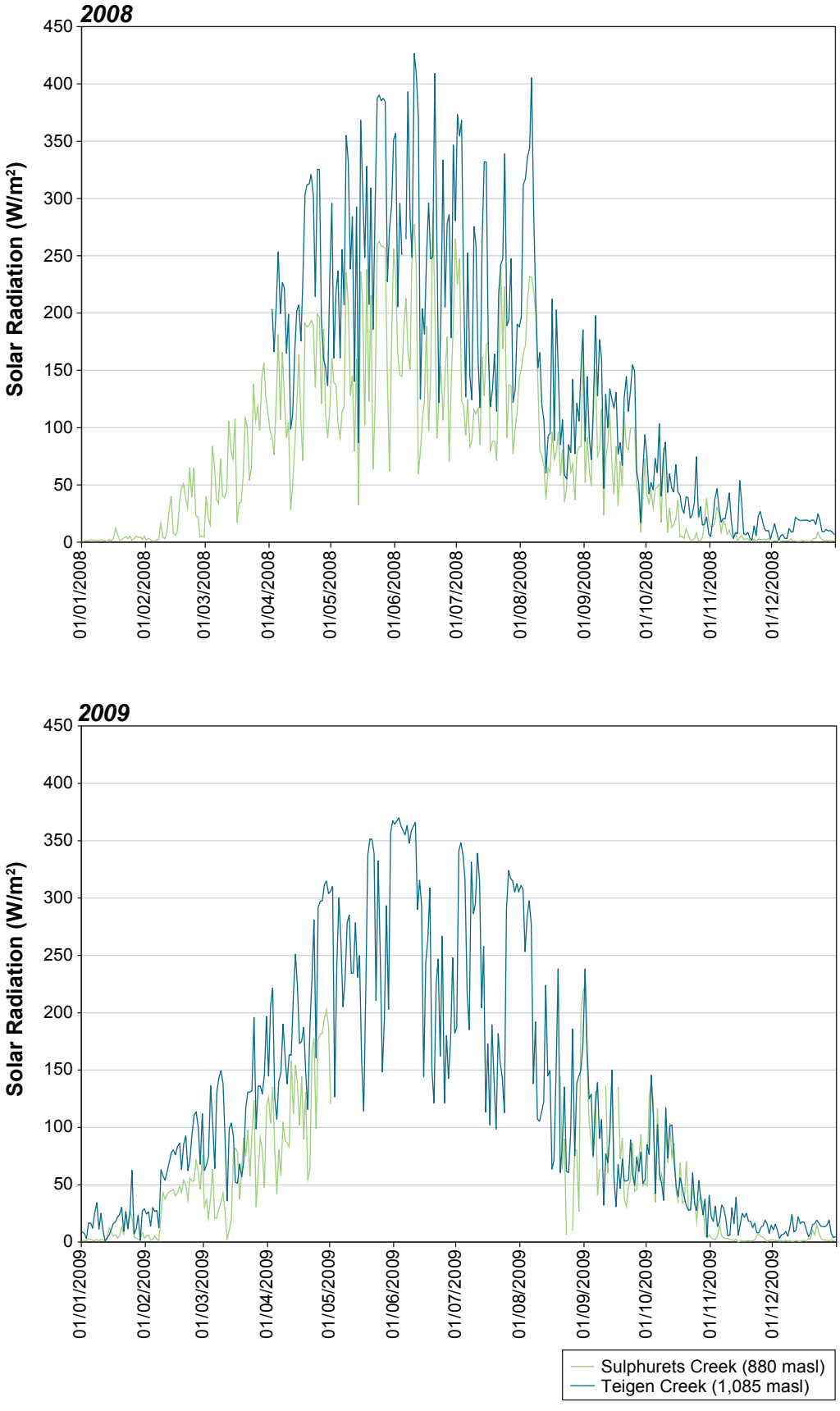
Station	Year	Maximum Daily Average Solar Radiation (W/m^2)	Date	Minimum Daily Average Solar Radiation (W/m^2)	Date
Sulphurets Creek	2008	288	6/19	0.4	11/30 and 12/4
	2009	224[a]	9/1	0.3[a]	11/14
	2010	386	6/18	0.1	2/14
	2011	354	6/1	0.9	1/22 and 1/25
Teigen Creek	2008	426[b]	6/10	1.7[b]	12/4
	2009	370	6/3	1.2	1/12
	2010	372	6/6	0.8	12/24
	2011	374	6/8	0.9	1/4

Notes:
[a] *sensor malfunctioned between May 2 and August 18, 2009.*
[b] *Teigen station was installed on April 2, 2008.*

3.5 SNOW

Snow was monitored using several methods in this Project. Figures 3.5-1 and 3.5-2 present the daily average snow depth versus daily average air temperature at the Teigen Creek meteorological station from 2008 to 2011. It can be seen that the snow depth started to decrease when temperature increased to approximately 0°C around late April and early May. Snow accumulation started in October when temperature is consistently below 0°C. The annual highest snow accumulation was 1.84 m (November 20, 2008), 2.09 m (March 21, 2009), 1.80 m (March 7, 2010) and 1.93 m (March 14, 2011). Note that the sensor at Teigen Creek station did not start to record data until April in 2008.

Figure 3.5-3 presents the daily average snow depth versus daily average air temperature at the Eskay Creek station in 2010 and 2011. The snow pattern at Eskay Creek station was the same as that at Teigen Creek station. In 2011, the highest snow accumulation was 2.48 m on December 25. Historically, the extreme snow depth recorded at Bob Quinn AGS station was 1.06 m on March 6, 1987 and at Stewart Airport station was 2.40 m on January 25, 1989.



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KSM Daily Average Solar Radiation, 2008 and 2009

Figure 3.4-1

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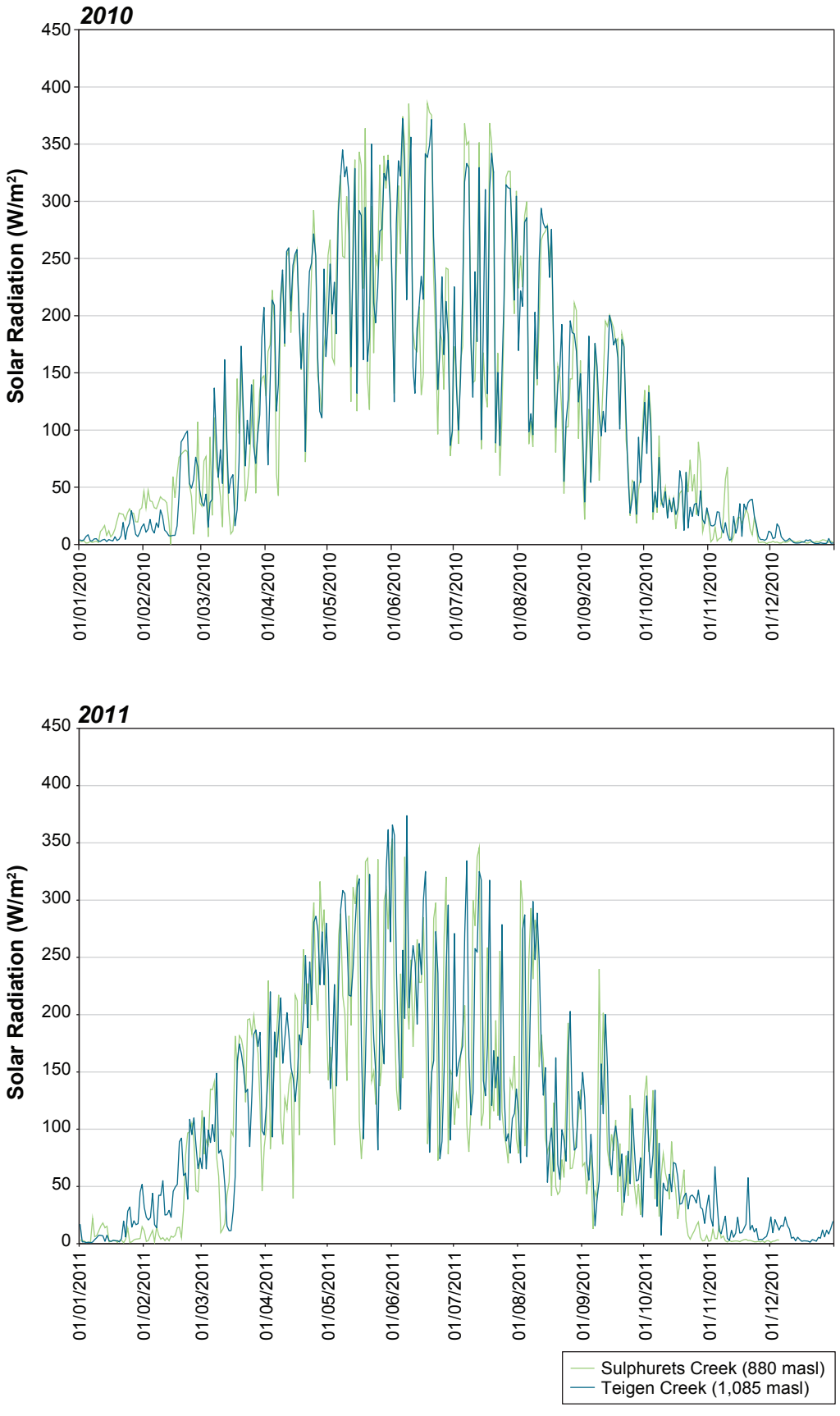

SEABRIDGE GOLD
KSM PROJECT

KSM Daily Average Solar Radiation, 2010 and 2011

Figure 3.4-2

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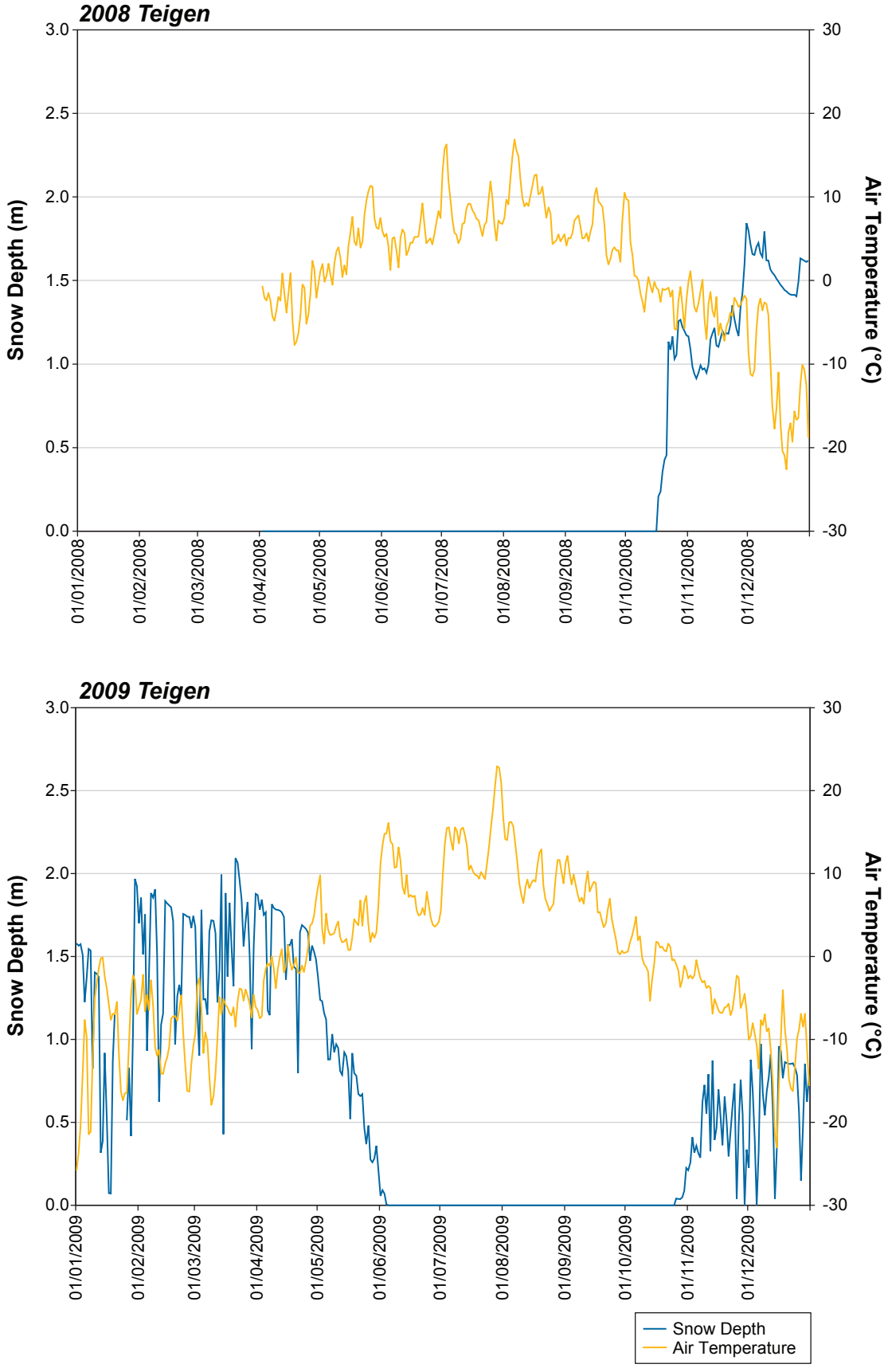

SEABRIDGE GOLD
KSM PROJECT

Teigen Creek Daily Average Snow Depth versus Daily Average Air Temperature, 2008 and 2009

Figure 3.5-1

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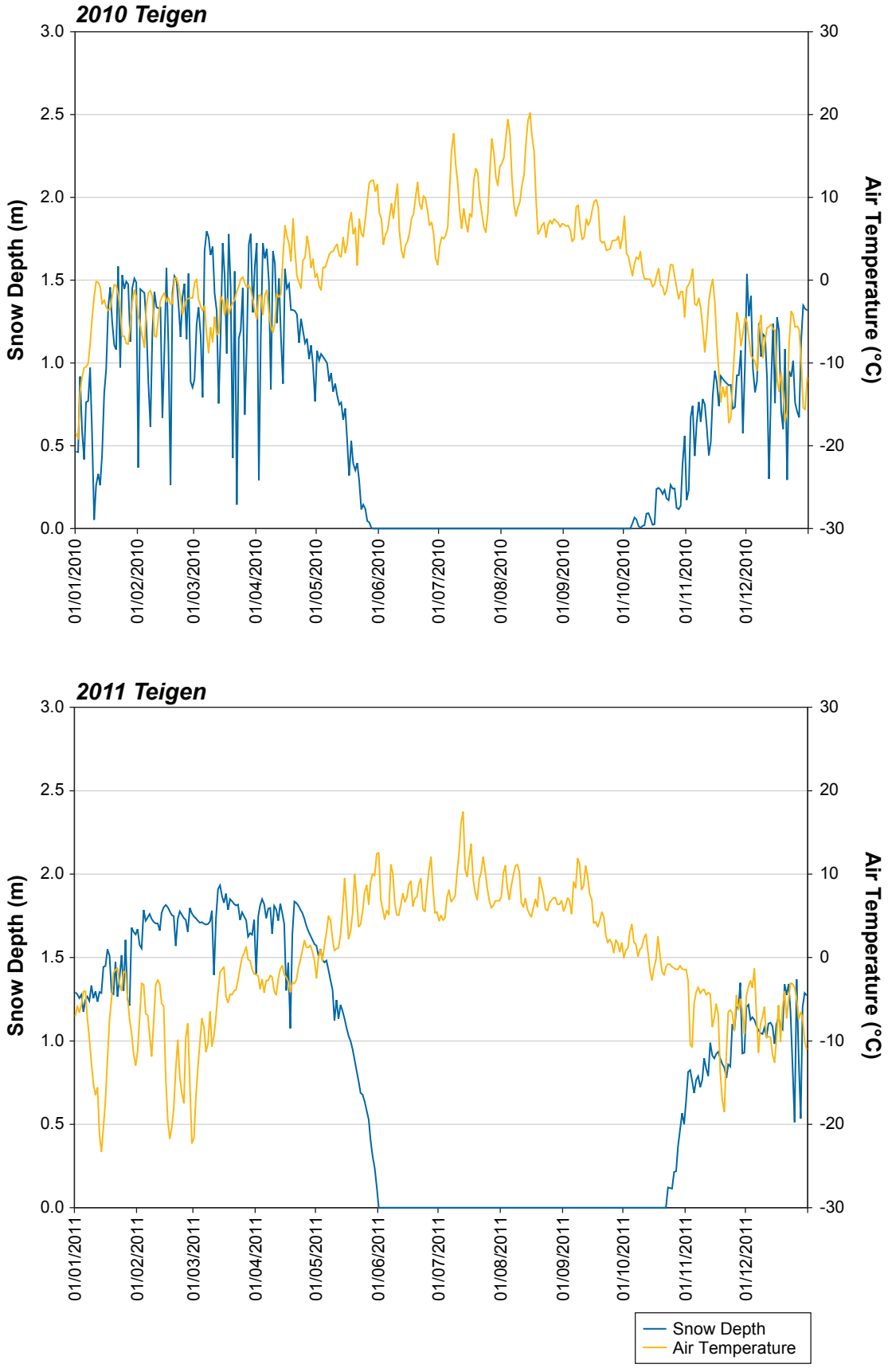

SEABRIDGE GOLD
KSM PROJECT

Teigen Creek Daily Average Snow Depth versus Daily Average Air Temperature, 2010 and 2011

Figure 3.5-2

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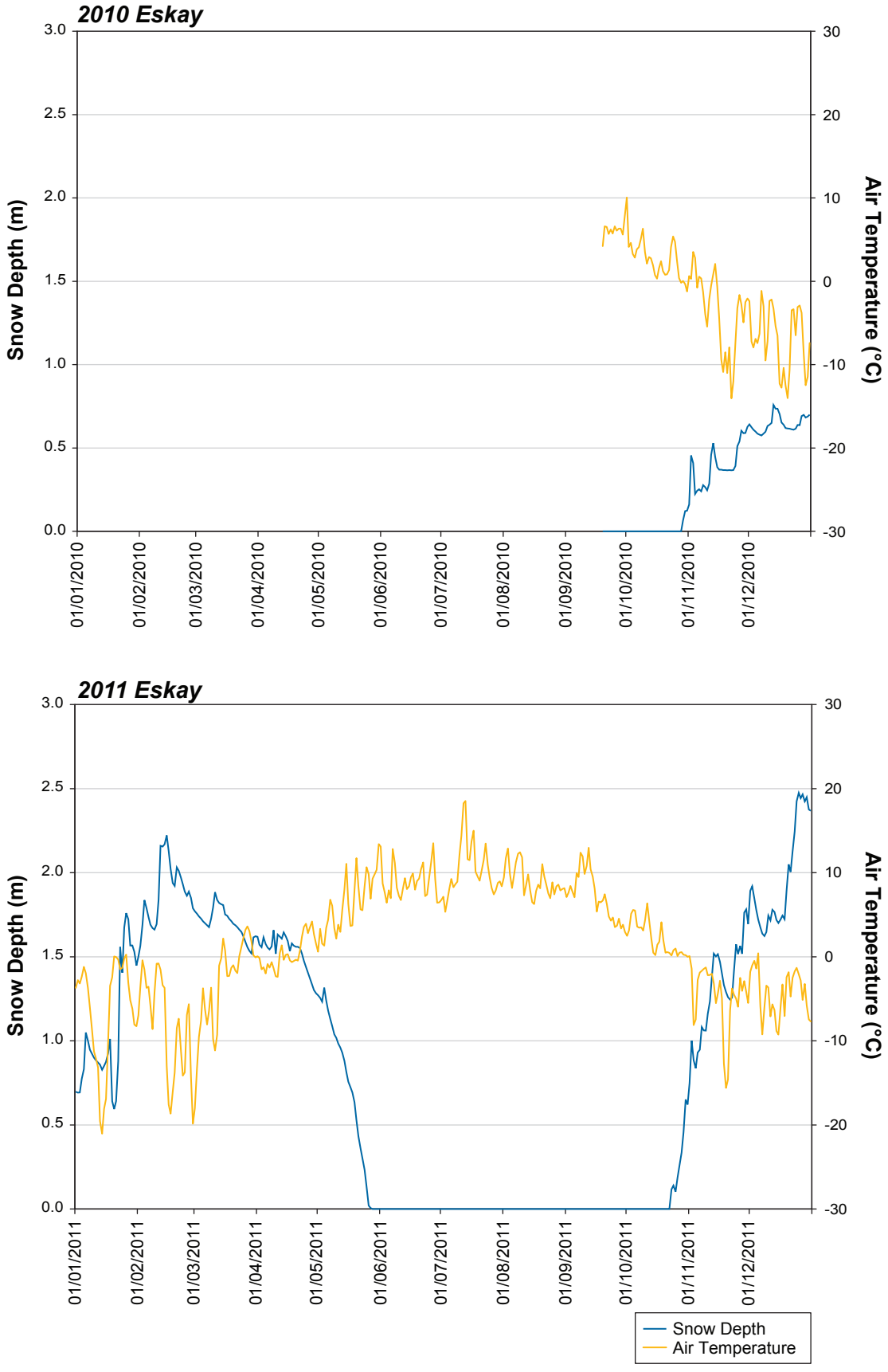

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Eskay Creek Daily Average Snow Depth versus Daily Average Air Temperature, 2010 and 2011

Figure 3.5-3

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The Sulphurets Creek meteorological station includes a snow pillow which measures SWE. Figures 3.5-4 and 3.5-5 summarize the daily average SWE at Sulphurets Creek station versus daily average temperature for the period of 2008 to 2011. The snow pack began to build between mid-October and early November, peaked in mid-April, and completely melted around May or June. The highest annual SWE were 0.52 m (2008), 0.93 m (2009), 0.34 m (2010) and 0.46 m (2011). According to the Environment Canada Climate Trends and Variation Bulletin (EC 2009), the Northern BC Mountains and Yukon region experienced its wettest winter on record in 2008/2009, 59% above normal, beating out 2004/2005 (52%) for the top spot on the ten wettest winters table. This confirmed the significantly higher snow pack recorded at the Sulphurets Creek station in 2009.

Manual snow surveys were performed at the Sulphurets Creek, Teigen Creek and Treaty Creek Watersheds (Tables 3.5-1 to 3.5-4). The snow depths and snow densities were measured by manual snow surveys and SWEs were calculated. Snow density is a measure of the compactness of the snow pack. The snow densities at the three KSM snow courses gradually increased over the winter due to progressive snow accumulation and consolidation of the snow pack and rain on snow events. New "dry" snowfall typically has a density of 100 kg/m^3 (10%), but this increases rapidly once snow is on the ground; mid-winter snow pack typically has a mean density in the 200 to 300 kg/m^3 (20 to 30%) range.

Snow surveys are also performed at several locations by BC MOE. Snow survey results from Ningunsaw Pass (ID#4B10), which is approximately 36 km to the northeast of KSM, are also presented in Table 3.5-5 (BC MOF 2012). In 2008, the SWE in the Project area increased from February to April and decreased from April to May; however, the SWE increased from April to May for Ningunsaw Pass. In 2009, SWE increased from January to April for all locations (Figure 3.5-6). From April to May, SWE increased at Teigen Creek Watershed while it decreased at all other locations. In 2010, SWE increased from January to April with some fluctuations in between and decreased from April to May at all locations. In 2011, SWE increased from January to March, decreased slightly from March to April and increased slightly from April to May at most locations. It is shown in Figure 3.5-7 that SWE tends to increase with elevation.

3.6 WIND SPEED AND DIRECTION

Strong winds generally occur in all seasons at high elevations, with a northeast through southeast circulation in the winters and south through west flow in the summers. Winds at low elevations are funnelled through valleys with a light to moderate down-valley flow of Arctic air in the winters and a light up-valley flow of warm Pacific air in the summers. For this Project, summer is assumed to be from May to October when temperatures are typically above 0°C, and winter is assumed to be from November to April when temperatures are typically below 0°C.

A windrose is the joint frequency distribution of wind direction and wind speed in a polar histogram. The orientation of each bar indicates the direction from which the wind is blowing, with direction shown for 16 compass points, while the length of each bar indicates the frequency of occurrence. Figure 3.6-1 presents the annual windroses for 2009, 2010 and 2011 at Mitchell Creek meteorological station. The dominant wind at Mitchell Creek is from the east-southeast which occurred approximately 30%, 25% and 26% of the time in 2009, 2010 and 2011, respectively. The highest wind speeds were 15.9 m/s in 2009, 17.4 m/s in 2010 and 15.6 m/s in 2011. The high speed winds blew from the east direction.

Figure 3.6-2 shows the seasonal wind distribution at Mitchell Creek station from 2008 to 2011. The most frequent wind speed was between 1 and 3 m/s which occurred 52.6% of the time and calms (wind speed less than 1 m/s) occurred about 26.8% of the time from September 2008 to December 2011. There is no significant seasonal trend observed at Mitchell Creek with the wind distribution for annual, summer and winter periods being similar. Wind at Mitchell Creek was mild with wind speeds exceeding 5 m/s about 8% of the time.

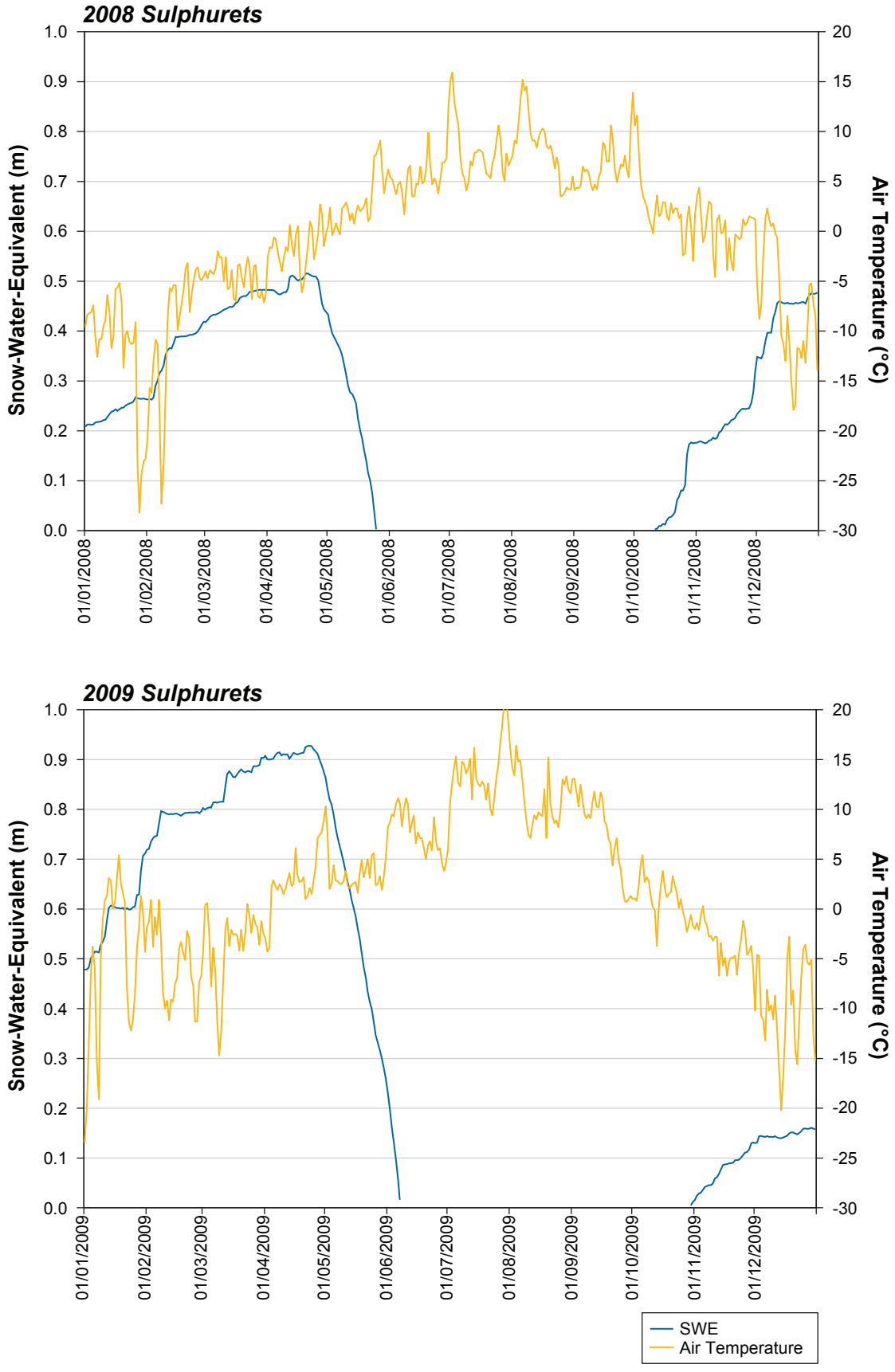

Figure 3.5-4

Sulphurets Creek Daily Snow Pillow versus Daily Average Air Temperature, 2008 and 2009

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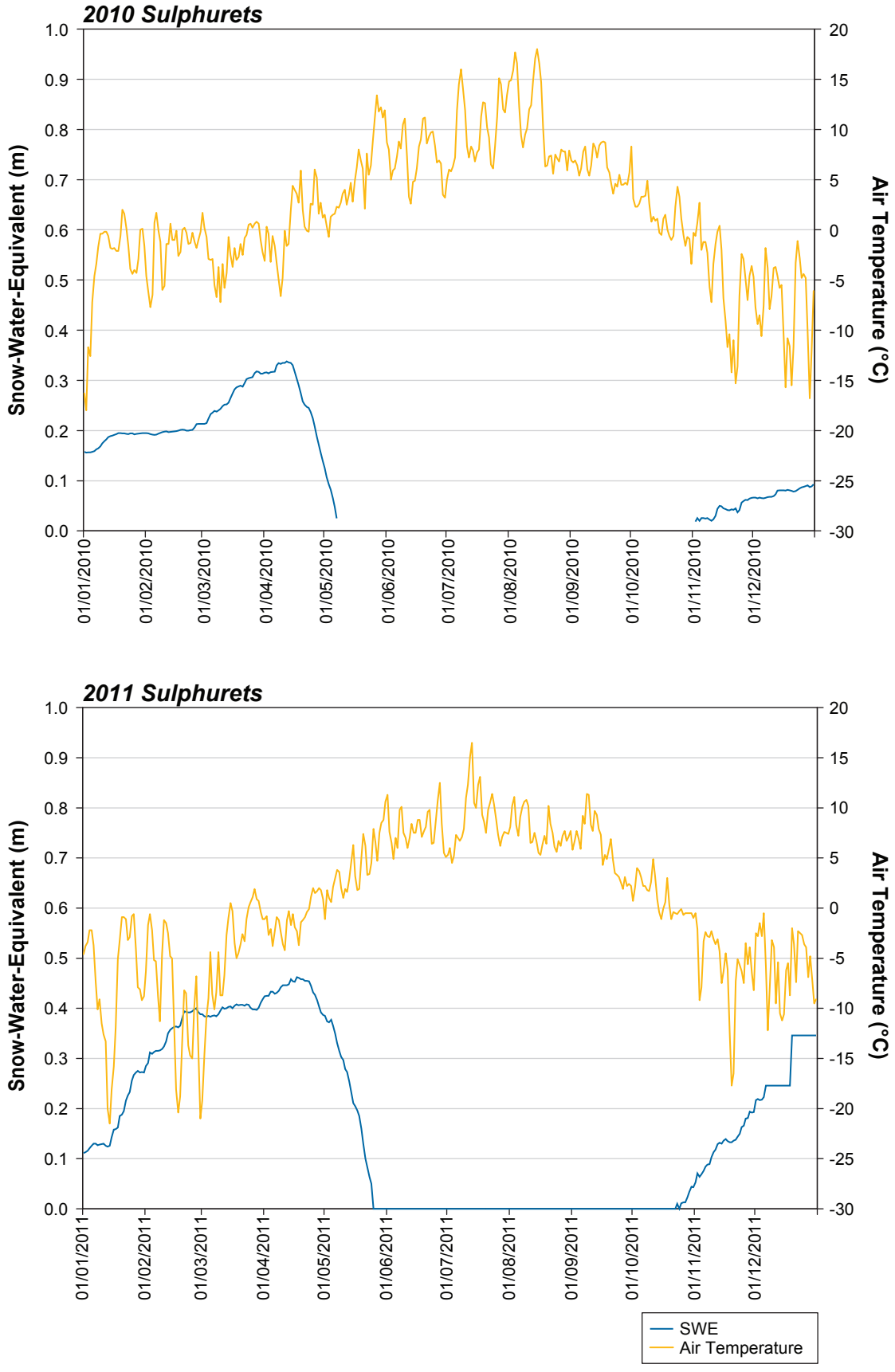

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Sulphurets Creek Daily Snow Pillow versus Daily Average Air Temperature, 2010 and 2011

Figure 3.5-5

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Table 3.5-1. KSM Snow Course, 2008

Location	Station #	Elevation (masl)	Snow Depth (cm)				SWE (mm)				Snow Density (%)			
			Feb	Mar	Apr	May	Feb	Mar	Apr	May	Feb	Mar	Apr	May
Sulphurets Creek Watershed	KSM-SC01	880	-	-	192[a]	128	-	-	710[a]	345	-	-	37[a]	40
Teigen Creek Watershed	KSM-SC02	1,080	217	237[a]	229[a]	202	620	790[a]	900[a]	890	29	33[a]	39[a]	44
Treaty Creek Watershed	KSM-SC03	630	-	204[a]	191[a]	142[a]	-	600[a]	700[a]	660[a]	-	29[a]	37[a]	47[b]

Notes: (-) dash indicates data not available. [a] One or more samples were omitted due to < 80% core recovery.

Table 3.5-2. KSM Snow Course, 2009

Location	Station #	Elevation (masl)	Snow Depth (cm)					SWE (mm)					Snow Density (%)				
			Jan	Feb	Mar	Apr	May	Jan	Feb	Mar	Apr	May	Jan	Feb	Mar	Apr	May
Sulphurets Creek Watershed	KSM-SC01	880	177	227	243[a]	242	186	457	533	601[a]	661	653	26	23	25[a]	27	35
Teigen Creek Watershed	KSM-SC02	1,080	229	263	-	266	233	669	709	-	839	895	29	27	-	31	38
Treaty Creek Watershed	KSM-SC03	630	225	253	-	283	212	541	563	-	747	713	24	22	-	26	34

Notes: (-) dash indicates data not available. [a] One or more samples were omitted due to < 80% core recovery.

Table 3.5-3. KSM Snow Course, 2010

Location	Station #	Elevation (masl)	Snow Depth (cm)					SWE (mm)					Snow Density (%)				
			Jan	Feb	Mar	Apr	May	Jan	Feb	Mar	Apr	May	Jan	Feb	Mar	Apr	May
Sulphurets Creek Watershed	KSM-SC01	880	76	79	83	102	84	209	261	183	294	187	28	33	22	29	22
	KSM-SC04	893	-	77	86	108	86	-	223	296	320	296	-	29	34	30	34
	KSM-SC08	1,304	-	155	168	211	168	-	480	526	626	502	22	27	25	31	23
Teigen Creek Watershed	KSM-SC07	882	-	138	154	162	153	-	360	383	517	389	-	26	25	32	25
	KSM-SC06	901	-	137	171	175	171	-	374	356	561	356	-	27	21	32	21
	KSM-SC02	1,080	168	165	202	219	202	367	443	502	686	502	22	27	25	31	25
	KSM-SC05	1,130	-	169	212	254	212	-	495	489	764	489	-	29	23	30	23
Treaty Creek Watershed	KSM-SC03	630	152	128	128	144	130	250	314	348	387	339	16	25	27	26	26

Notes: (-) dash indicates data not available

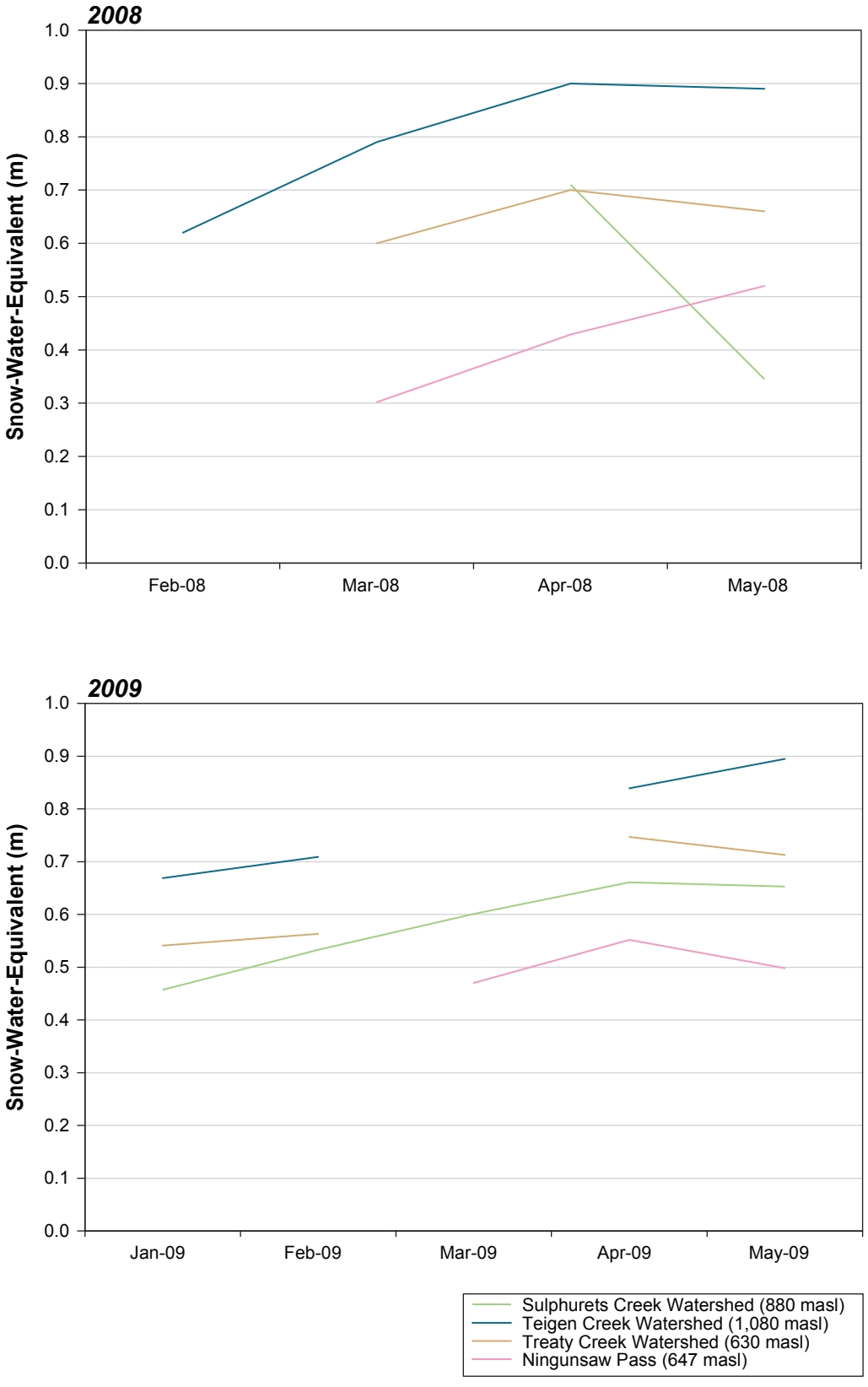
Table 3.5-4. KSM Snow Course, 2011

Location	Station #	Elevation (masl)	Snow Depth (cm)					SWE (mm)					Snow Density (%)				
			Jan	Feb	Mar	Apr	May	Jan	Feb	Mar	Apr	May	Jan	Feb	Mar	Apr	May
Sulphurets Creek Watershed	KSM-SC01[a]	880	70	126	149	133	115	168	294	507	411	478	24	24	34	32	42
	KSM-SC04	893	69	127	153	140	120	170	290	514	452	516	26	23	34	33	43
	KSM-SC08	1,304	157	-	231	-	-	540	-	884	-	-	35	-	38	-	-
Teigen Creek Watershed	KSM-SC09	874	130	154	161	161	145	356	389	430	533	562	28	25	27	33	40
	KSM-SC07	882	128	161	170	164	171	350	440	570	554	666	28	27	34	34	40
	KSM-SC06	901	137	159	175	181	164	360	419	618	559	655	27	26	36	31	40
	KSM-SC02[a]	1,080	146	191	207	225	198	454	614	762	734	829	31	32	37	33	42
	KSM-SC05	1,130	170	218	243	264	229	548	676	902	874	946	33	31	37	33	41
	KSM-SC10	1,218	180	214	224	234	242	610	671	910	909	996	34	31	41	39	42
Treaty Creek Watershed	KSM-SC03A[a]	636	-	149	182	168	138	-	418	609	589	573	-	28	34	35	43

Notes: (-) dash indicates data not available
[a] 10-point survey

Table 3.5-5. Regional Snow Course at Ningunsaw Pass (647 masl, ID#4B10), 2008 – 2011 and Normals

Year	Snow Depth (cm)					SWE (mm)					Snow Density (%)				
	Jan	Feb	Mar	Apr	May	Jan	Feb	Mar	Apr	May	Jan	Feb	Mar	Apr	May
2008	-	104	131	141	98	-	302	429	520	457	-	29	33	37	47
2009	-	-	177	199	144	-	-	470	552	498	-	-	27	28	35
2010	-	-	72	85	0	-	-	224	266	0	-	-	31	31	0
2011	-	104	120	109	70	-	282	248	248	294	-	27	29	23	42
Normal (1974 – 2000)	-	115	129	120	56	-	319	408	438	246	-	28	32	37	44



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KSM and Ningunsaw Pass (ID#4B10) Snow-Water-Equivalent (SWE), 2008 and 2009

Figure 3.5-6

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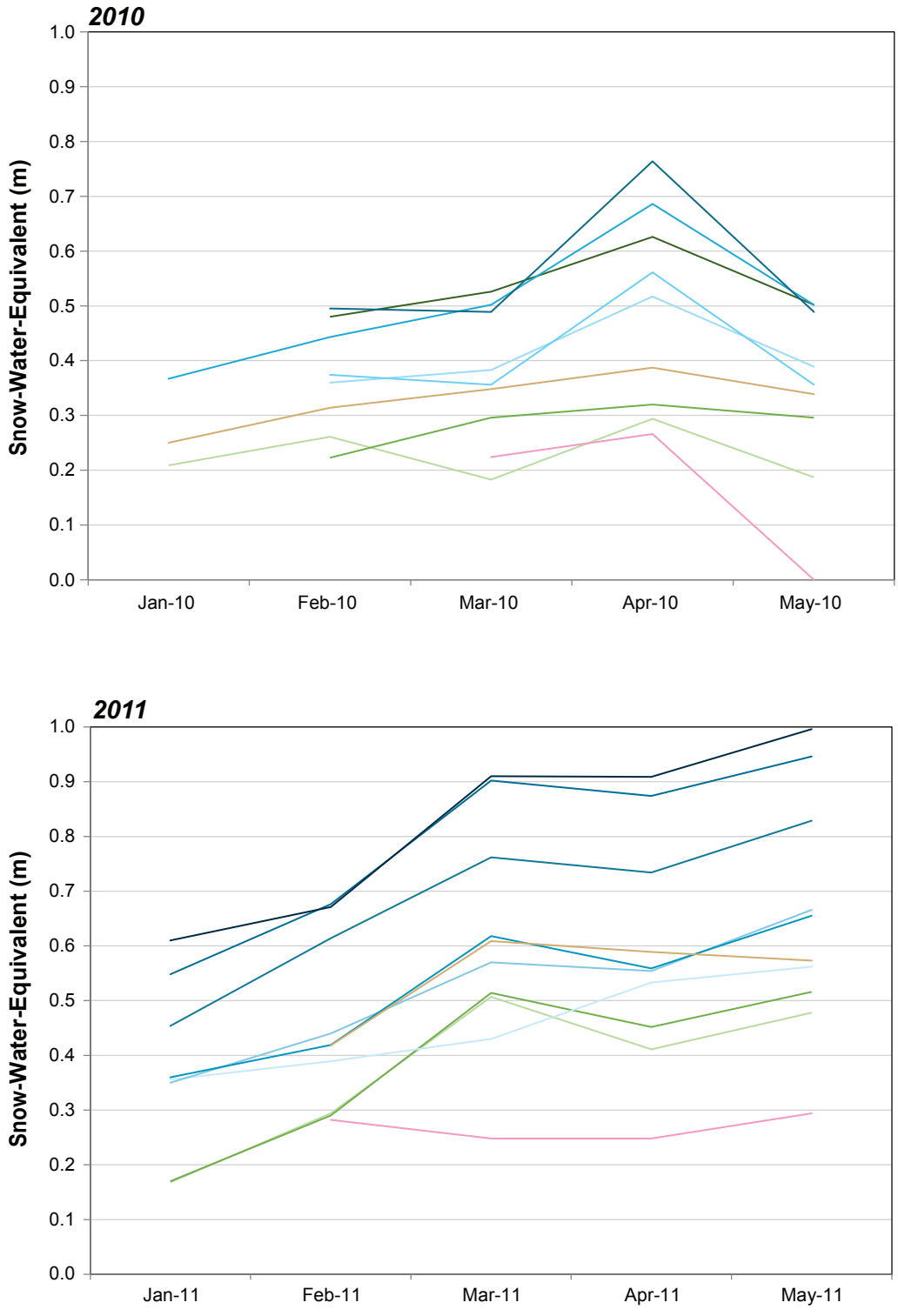

SEABRIDGE GOLD
KSM PROJECT

KSM and Ningunsaw Pass (ID#4B10) Snow-Water-Equivalent (SWE), 2010 and 2011

Figure 3.5-7

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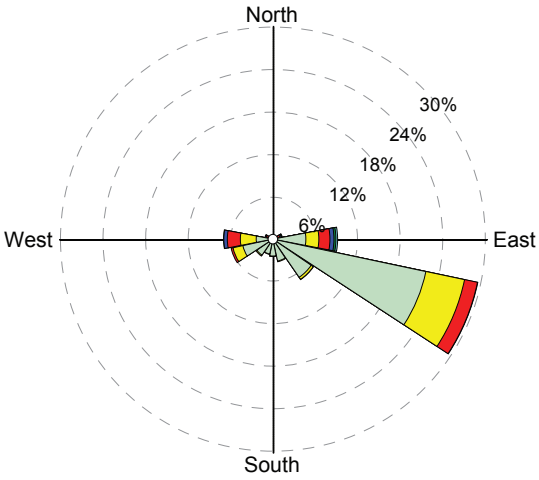
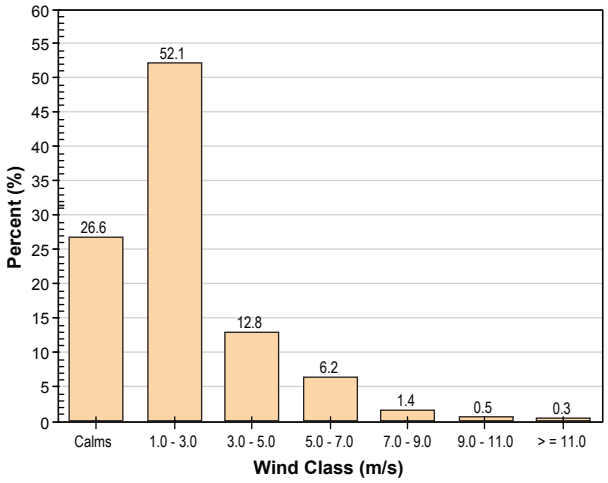
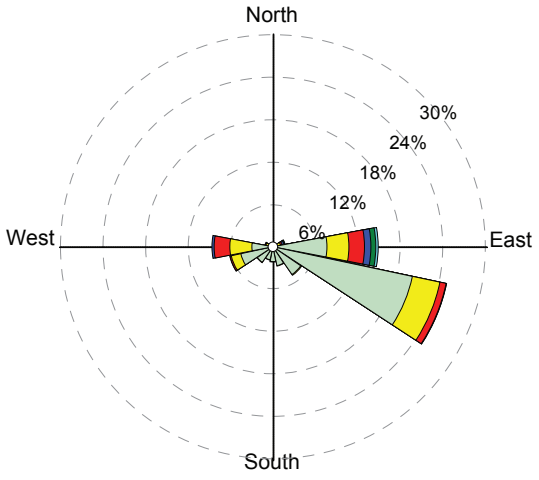
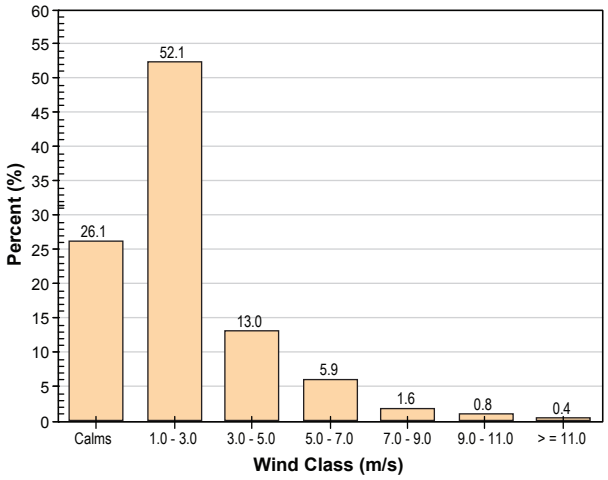
2009



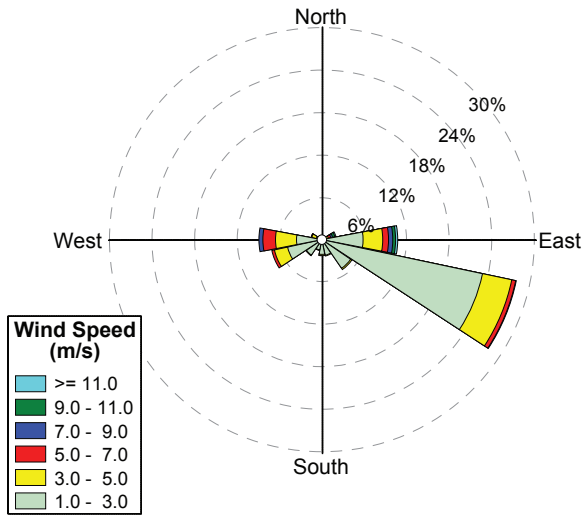


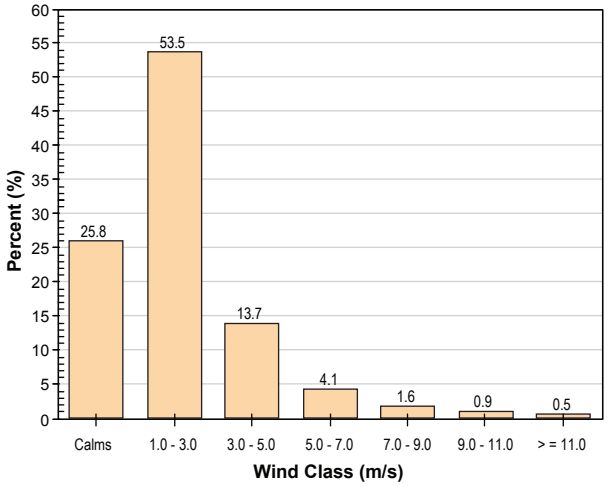
2010





2011





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Mitchell Creek Annual Windrose, 2009, 2010 and 2011

Figure 3.6-1

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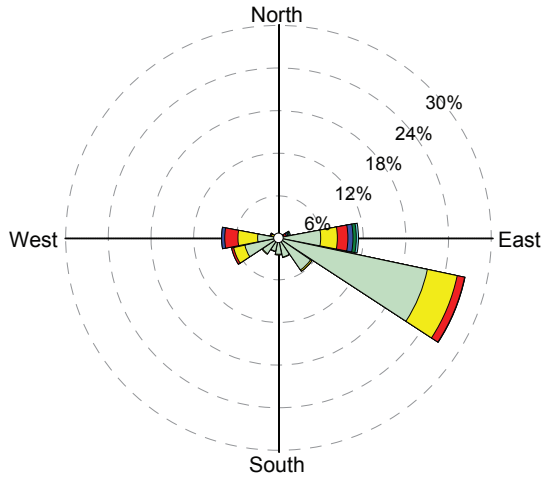
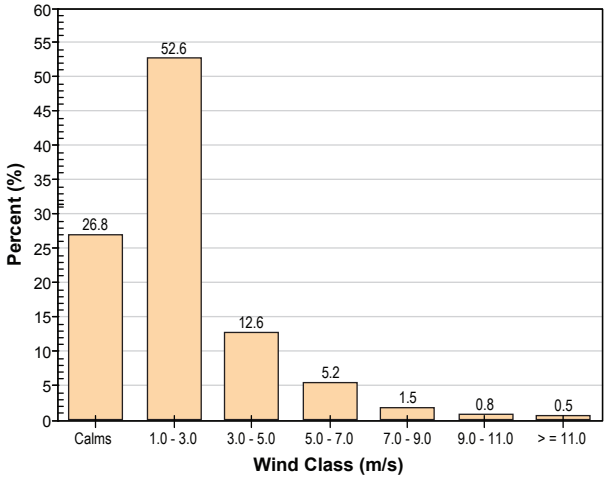
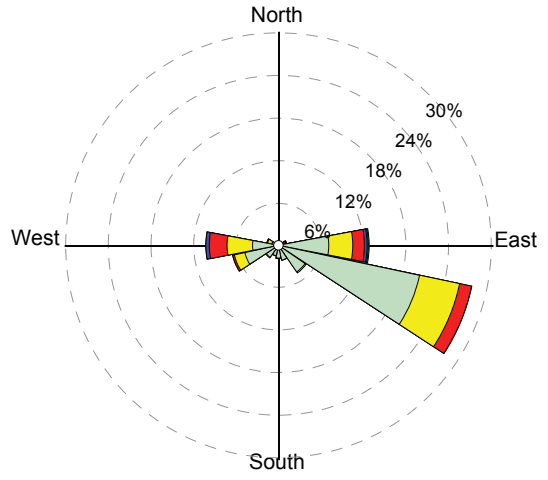
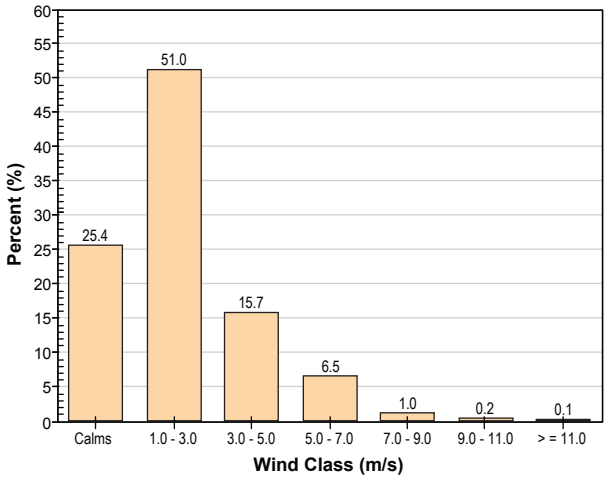
Annual



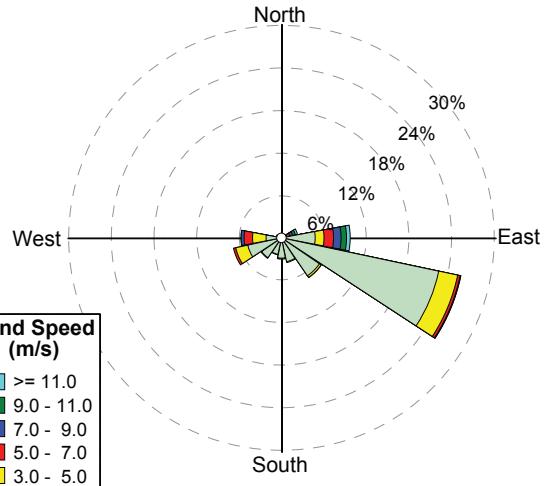


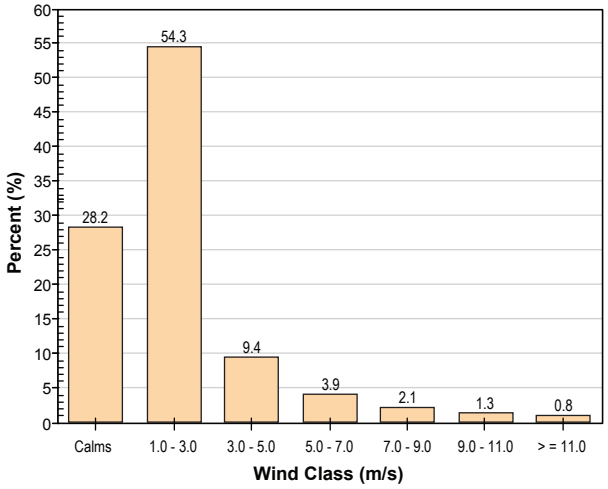
Summer





Winter





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Mitchell Creek Seasonal Windrose, September 2008 to December 2011

Figure 3.6-2

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Figure 3.6-3 presents the 2009, 2010 and 2011 annual windroses for the Teigen Creek meteorological station. The dominant wind at Teigen Creek was from the southeast direction which occurred approximately 18%, 19% and 21% of the time in 2009, 2010 and 2011, respectively. The highest wind speeds were 10.8 m/s from southwest in 2009, 10.4 m/s from east in 2010 and 11.5 m/s from southwest in 2011. Figure 3.6-4 shows the seasonal wind distribution of wind at Teigen Creek station. It shows that the wind blew from the southeast direction most frequently in both summer and winter. Other than the southeast quadrant, wind blew frequently from the north in the summer and from west in the winter. Winds from Teigen were slow with wind speeds above 5 m/s 5.4% of the time in the winter and less than 5% in the summer.

Figure 3.6-5 presents the annual windroses for 2009, 2010 and 2011 for the Unuk-Teigen meteorological station. The dominant winds at Unuk-Teigen were from south-southeast and southeast directions. Winds blew from the southeast quadrant about 60% of the time in 2009 and about 47% of the time in 2010 and 2011. For all three years, the most frequent wind speeds were between 1 and 3 m/s and the frequency gradually decreased as the wind speed increased. The wind speeds exceeded 5 m/s 30.7% of the time with 15.2% calms in 2009, exceeded 5 m/s 32.7% of the time with 14.2% calms in 2010, and exceeded 5 m/s 31.3% of the time with 15.3% calms in 2011. The highest wind speeds were 14.5 m/s from south-southeast in 2009, 13.8 m/s from southeast in 2010 and 18.8 m/s from south-southeast in 2011.

Figure 3.6-6 shows the seasonal wind distribution at Unuk-Teigen station. The wind dominantly blew from the southeast quadrant in both summer and winter. In the summer, winds seldom blew from the northeast quadrant while in the winter, winds seldom blew from the west-northwest to east-southeast semicircle.

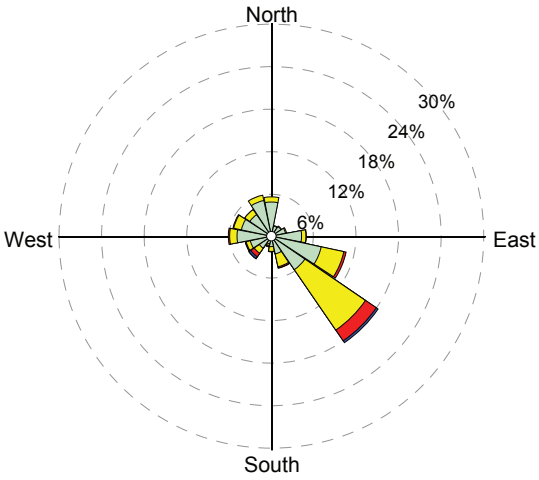
3.7 EVAPORATION

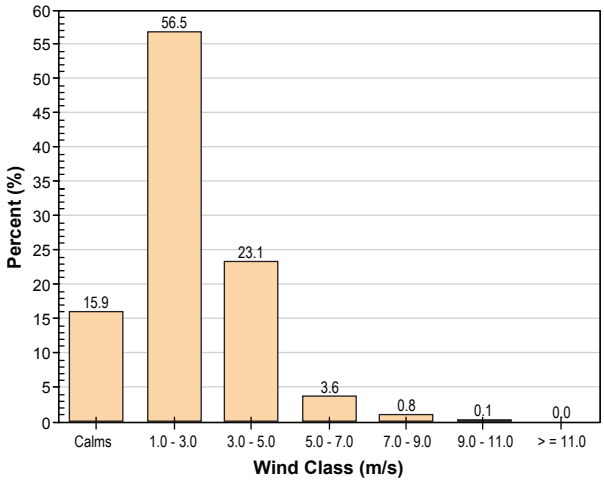
Evaporation is the net loss of water from a natural surface to the atmosphere. In Canada, evaporation data are obtained from measurements using Class A evaporation pans (or equivalent), as recommended by EC MSC (2004). A standard correction is applied to pan evaporation data to derive “lake evaporation” values. Lake evaporation is the evaporative loss under identical conditions from small open waterbodies having negligible heat storage.

Evaporation level was monitored during the snow free months of 2010 and 2011 at the Teigen and Sulphurets areas. Evaporation rates were calculated using the difference in the water level in the evaporation pans, corrected with daily precipitation and using a pan coefficient of 0.7 (EC 1999) on measured pan evaporation. In August and September in 2011, heavy rain fall was experienced in the Project area. Rain in both evaporation pans overflown; evaporation data for September were deemed invalid and removed from the data set.

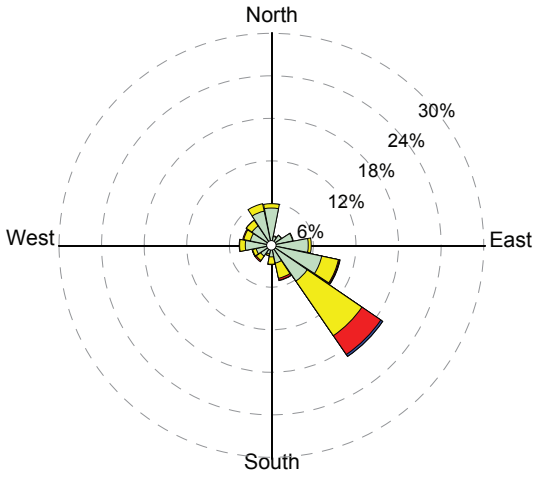
Teigen evaporation results are provided in Table 3.7-1 (June to August 2010) and Table 3.7-2 (July to September 2011). The heavy rain fall events were not recorded at the Teigen TBRG but were captured by the RainWise TBRGs. Data from the elevation closest to that at the Teigen TBRG were used where possible (July 10 to September 9, 2011). Average daily lake evaporation is approximately 1.3 mm in 2010 and 2.1 mm in 2011. Total estimated lake evaporation from June to August was 121 mm in 2010 and total estimated lake evaporation from July to September was 129 mm in 2011.

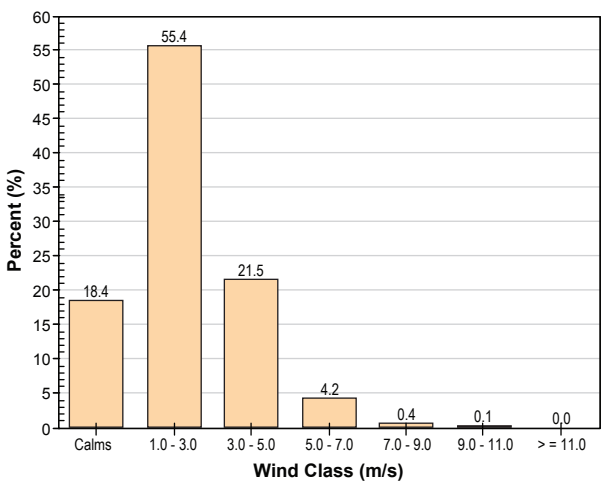
2009



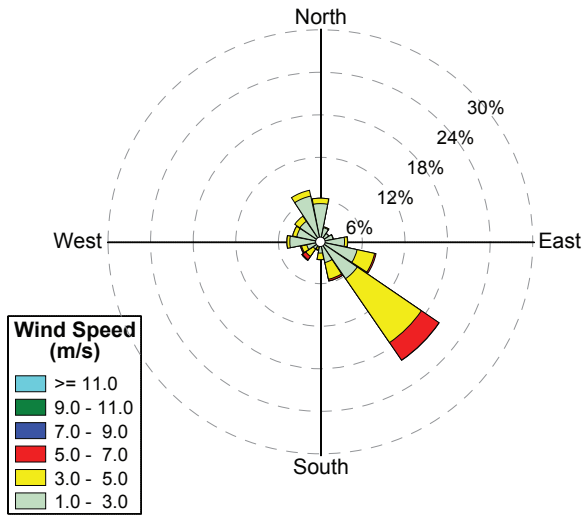


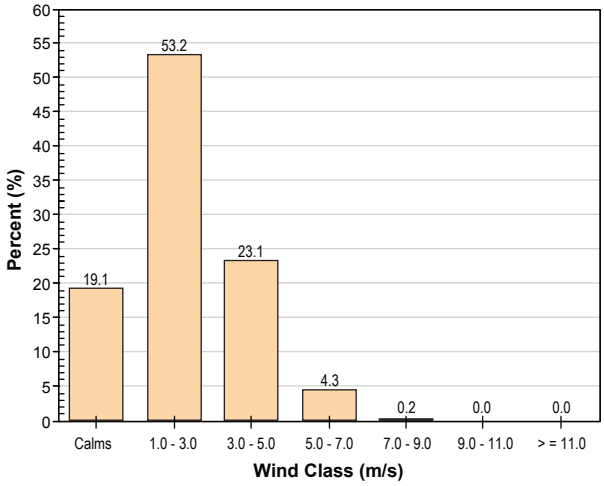
2010





2011





Teigen Creek Annual Windrose, 2009, 2010 and 2011

Figure 3.6-3

SEABRIDGE GOLD
KSM PROJECT

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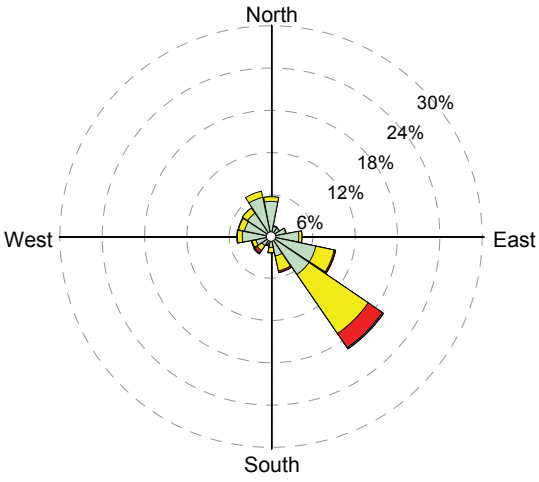
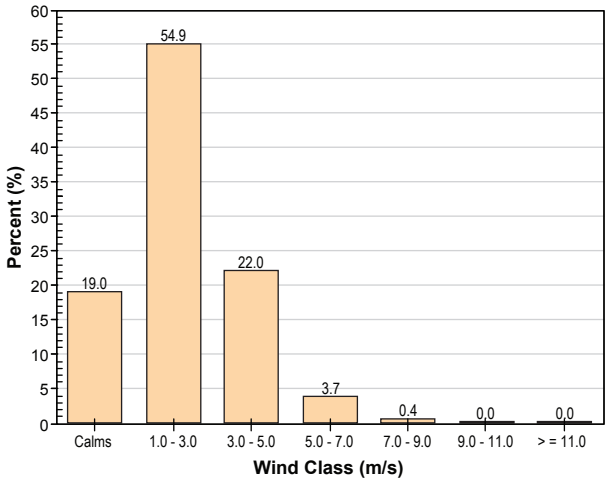
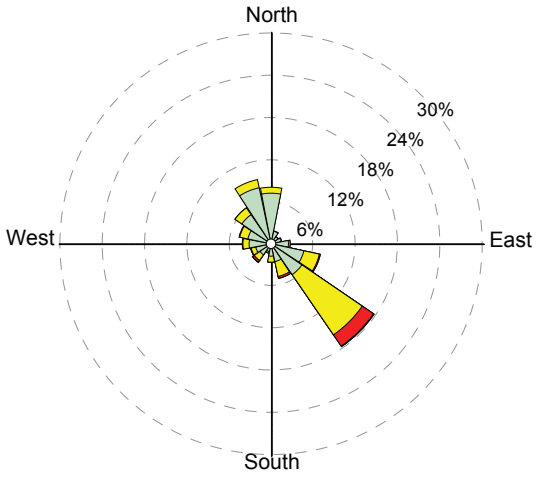
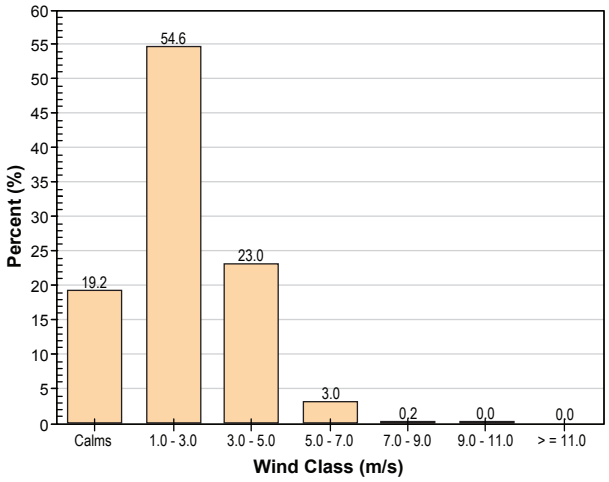
Annual



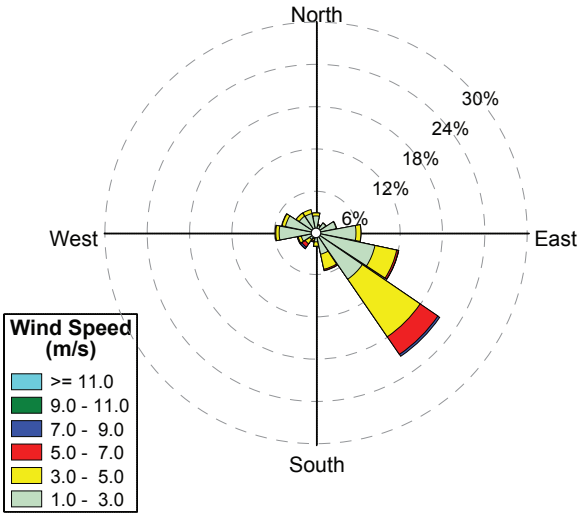


Summer





Winter



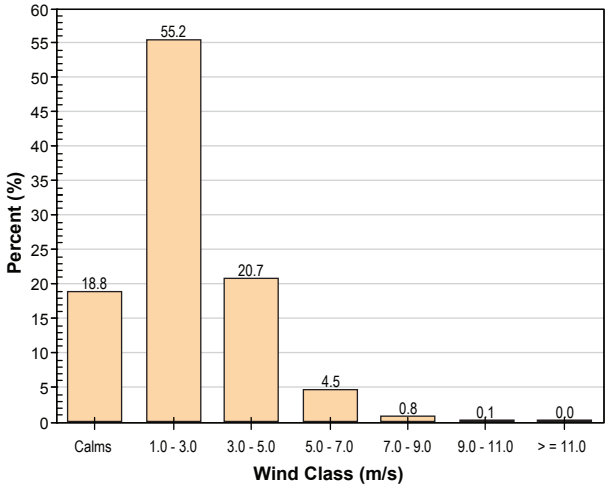


Figure 3.6-4

Teigen Creek Seasonal Windrose, April 2008 to December 2011

SEABRIDGE GOLD
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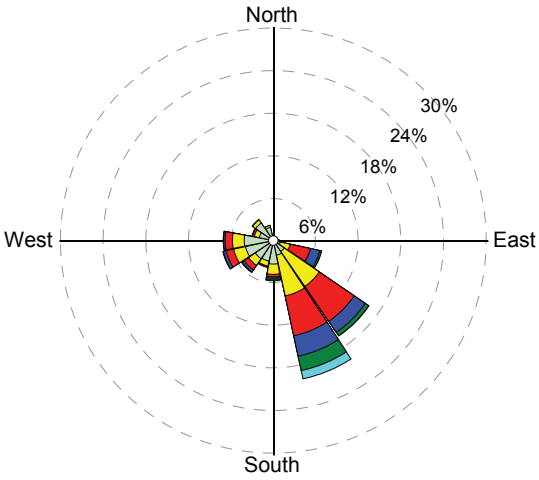
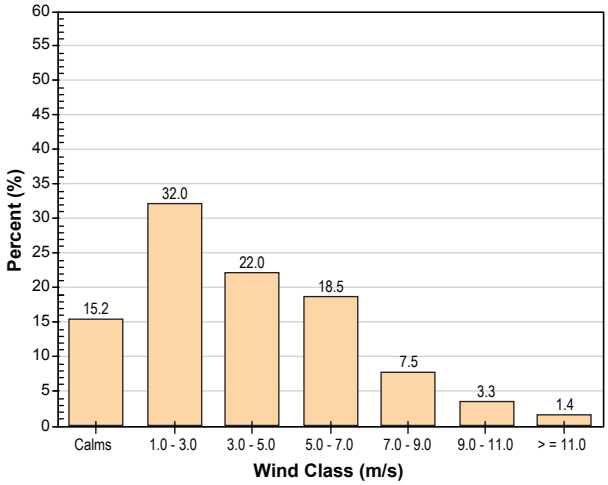
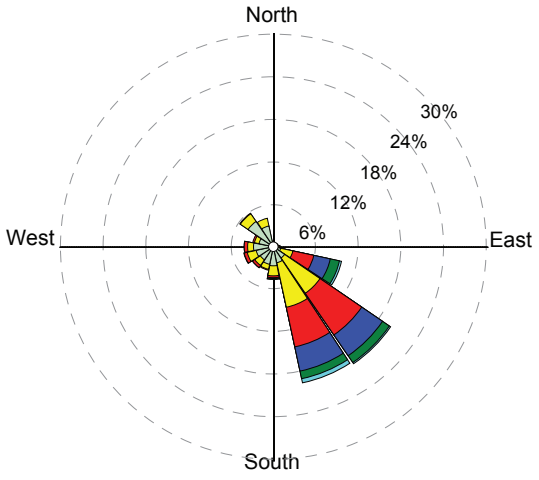
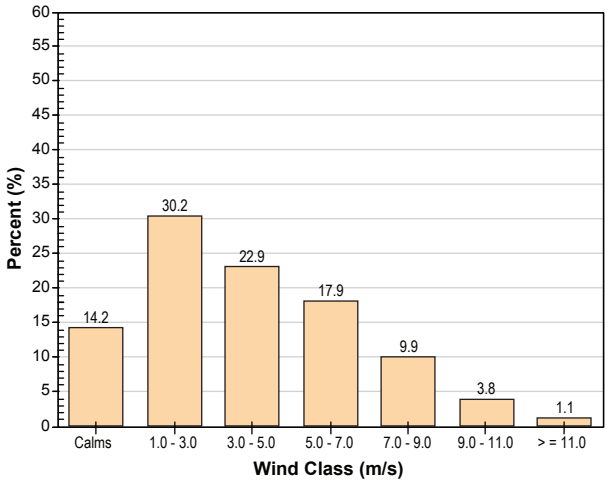
2009



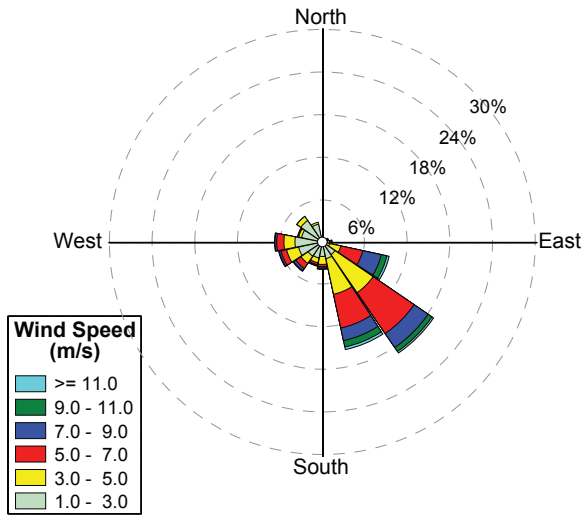


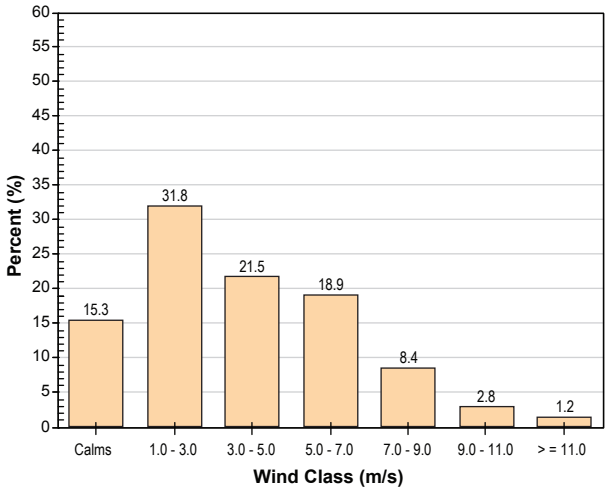
2010





2011





SEABRIDGE GOLD
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Unuk-Teigen Annual Windrose, 2009, 2010 and 2011

Figure 3.6-5

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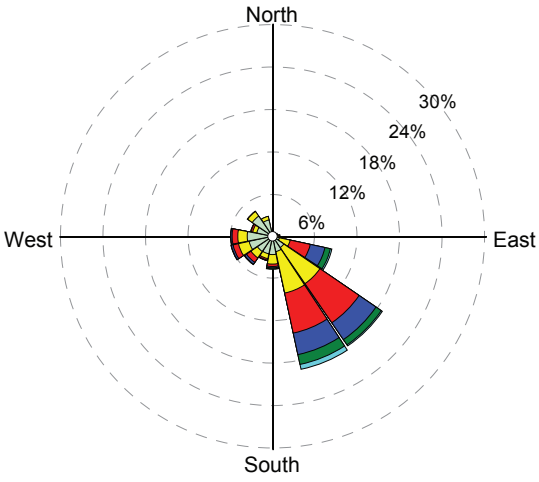
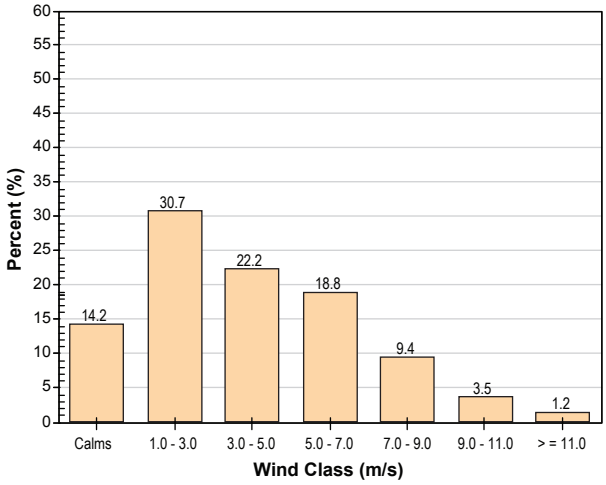
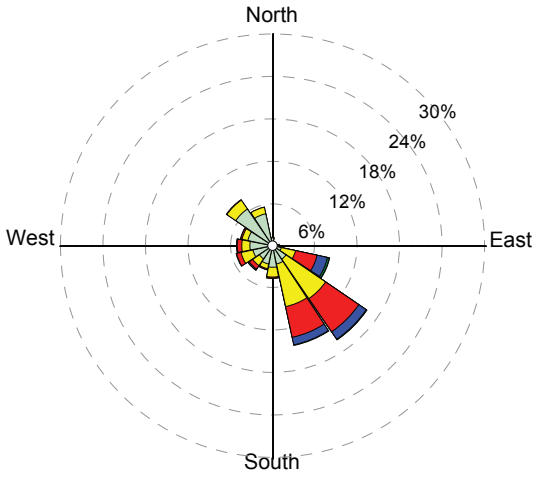
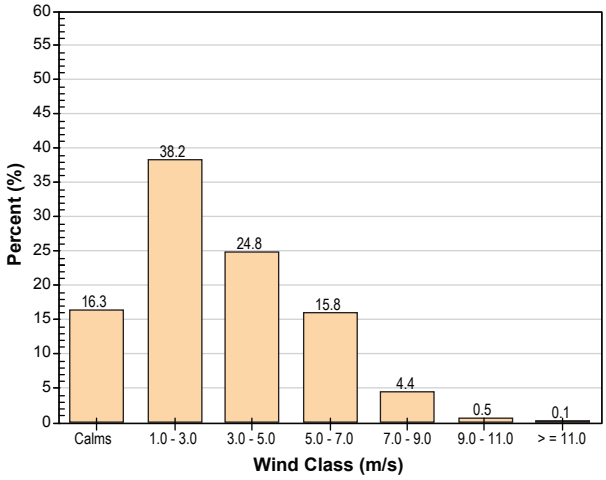
Annual



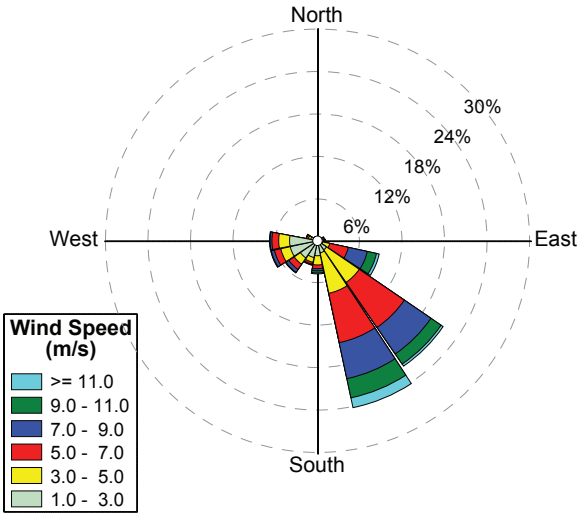


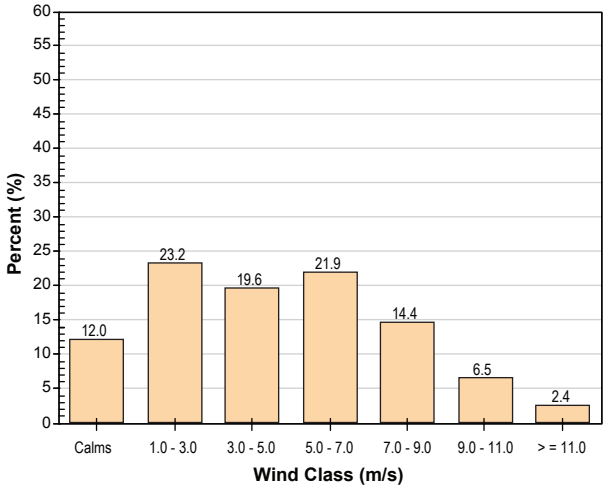
Summer





Winter





SEABRIDGE GOLD
KSM PROJECT

Unuk-Teigen Seasonal Windrose, September 2008 to December 2011

Figure 3.6-6

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Table 3.7-1. Teigen Evaporation, June to August 2010

Date	Days with Valid Data	Total Measured Lake Evaporation (mm)	Average Daily Lake Evaporation (mm)	Total Estimated Lake Evaporation (mm)
Jun-10	11	16	1.5	44
Jul-10	23	35	1.5	48
Aug-10	22	21	0.9	29
Sum	56	72	-	121
Average	**-**	**-**	**1.3**	**-**

Table 3.7-2. Teigen Evaporation, June to August 2011

Date	Days with Valid Data	Total Measured Lake Evaporation (mm)	Average Daily Lake Evaporation (mm)	Total Estimated Lake Evaporation (mm)
Jul-11a	21	35	1.7	52
Aug-11a	20	50	2.5	77
Sum	41	85	-	129
Average	**-**	**-**	**2.1**	**-**

Notes:
[a] Precipitation data used for July and August is from TBRG #3. Teigen meteorological station precipitation data is not representative of precipitation during those months.

The Sulphurets evaporation pan was situated at a much higher elevation than the rain gauge and therefore adjustment to the precipitation data used in the evaporation rate calculation was required. Since the precipitation gradient was not measured at Sulphurets, the value from Mitchell valley was used to adjust the rain data collected, to the elevation of the evaporation pan. Sulphurets evaporation results are presented in Table 3.7-3 (July to September 2010) and Table 3.7-4 (July and August 2011). Average daily lake evaporation is approximately 3.1 mm in both 2010 and 2011. Total estimated lake evaporation from July to August was 189 mm in 2010 and total estimated lake evaporation in July and August was 193 mm in 2012.

Table 3.7-3. Sulphurets Evaporation, July to September 2010

Date	Days with Valid Data	Total Measured Lake Evaporation (mm)	Average Daily Lake Evaporation (mm)	Total Estimated Lake Evaporation (mm)
Jul-10	8	58	5.8	179
Aug-10	31	54	1.7	54
Sep-10	5	8	1.7	54
Sum	**47**	**123**	**-**	**189**
Average	**-**	**-**	**3.1**	**-**

Table 3.7-4. Sulphurets Evaporation, July and August 2011

Date	Days with Valid Data	Total Measured Lake Evaporation (mm)	Average Daily Lake Evaporation (mm)	Total Estimated Lake Evaporation (mm)
Jul-11	21	36	1.7	53
Aug-11	19	86	4.5	140
Sum	**40**	**122**	**-**	**193**
Average	**-**	**-**	**3.1**	**-**

3.8 VISIBILITY

Horizontal visibility (also known as meteorological optical range) is the greatest distance that a large dark object can be seen and recognized against a light sky background; however, the definition of horizontal visibility can be complicated due to complex psychological and physical nature of the measurements. As reported by the World Meteorological Organization (WMO), any visual estimate of visibility is subjective. Our ability to "see" a long distance is altered by obstructions in the atmosphere such as rain, snow, fog, mist, drizzle, salt, pollen, smoke and dust. As light propagates through the atmosphere, it is attenuated by absorption and scattering from these obstruction to vision.

The Sentry visibility sensor at Mitchell, installed in October 2009, is based on the principle of forward scattering. The forward scatter of infrared light is measured between a transmitter and a receiver. The received signal strength is inversely proportional to the visibility and the resulting signal is converted to visibility. The sensors use "look down" geometry to reduce window contamination and clogging from blowing snow. The sensor's windows also use anti-dew heaters and thermostatically controlled external hood heaters for protection in cold and wet weather conditions. The range of the visibility sensor is 30 m to 16 km.

Figure 3.8-1 shows the average hourly horizontal visibility from October 2009 to November 2010 and Figure 3.8-2 presents the frequency distribution. The most frequent horizontal visibility was higher than 16 km which occurred 87% of the time. The second frequent visibility was between 15 and 16 km (1.8%) followed by less than 1 km (1.5%).

Figure 3.8-3 summarizes the horizontal visibility distribution at different hours of a day and different months of a year. There was no December horizontal visibility data available and therefore it was not included in the analysis. Generally, the visibility was the highest around noon in the summer months; visibility was low around early morning (4 to 6 am) in March and November. The low visibility in March was suspected to be due to the decrease in precipitation from October to March, with March being one of the months with the lowest precipitation. Without precipitation, dust from wind erosion occurs and may reduce visibility. In October, snow begins to fall and obstructs visibility.

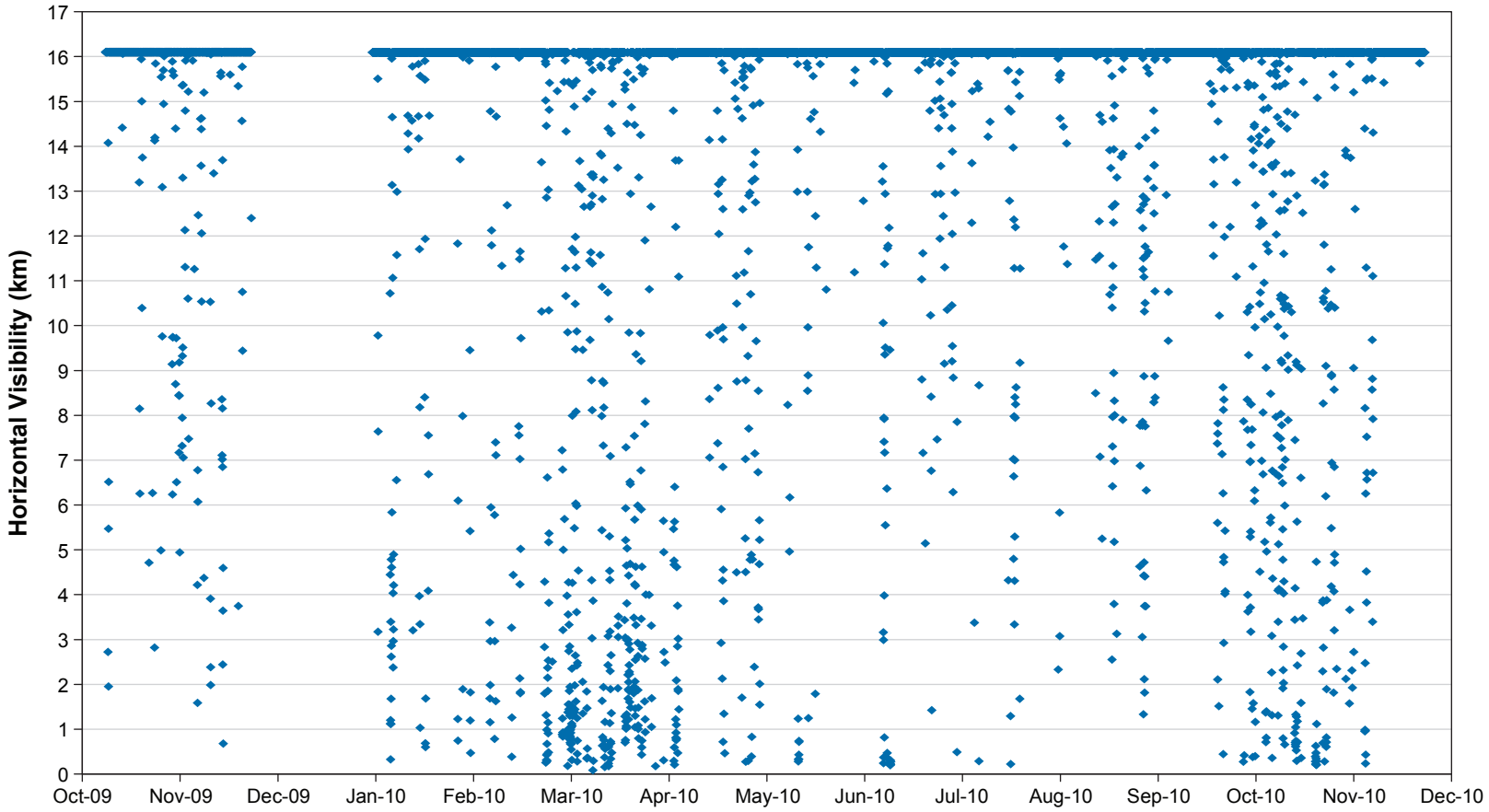

Figure 3.8-1

SEABRIDGE GOLD
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Mitchell Deposit Average Hourly Horizontal Visibility, October 2009 to November 2010

Figure 3.8-1

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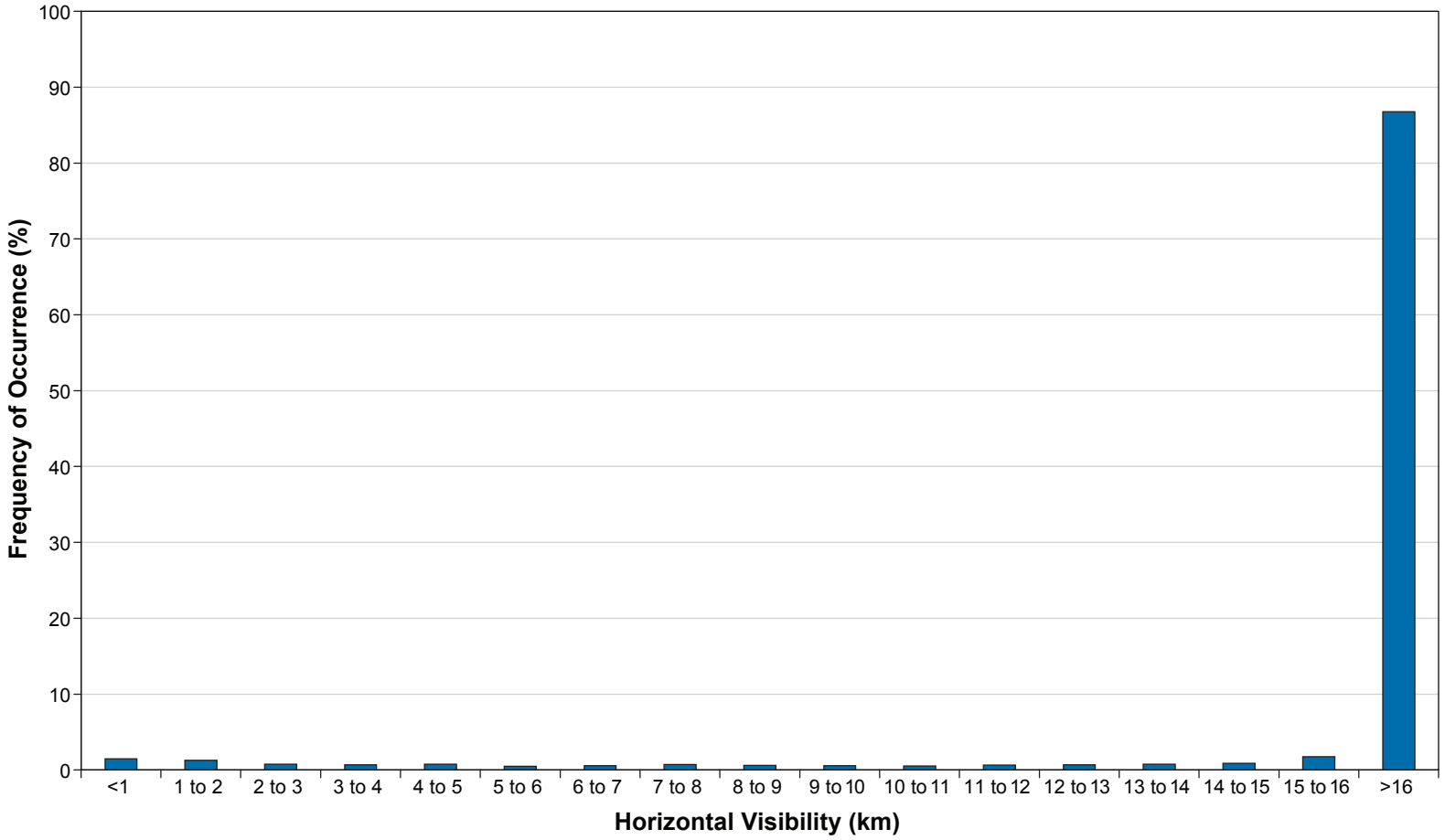

Figure 3.8-2

SEABRIDGE GOLD
KSM PROJECT

Mitchell Deposit Horizontal Visibility Frequency Distribution, October 2009 to November 2010

Figure 3.8-2

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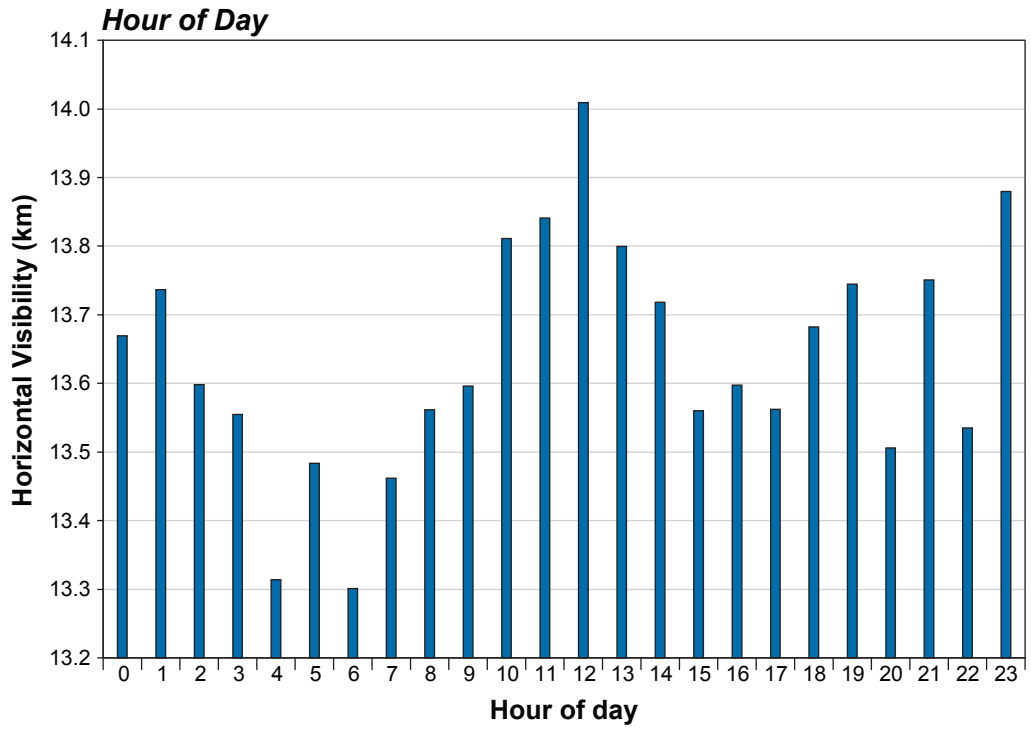

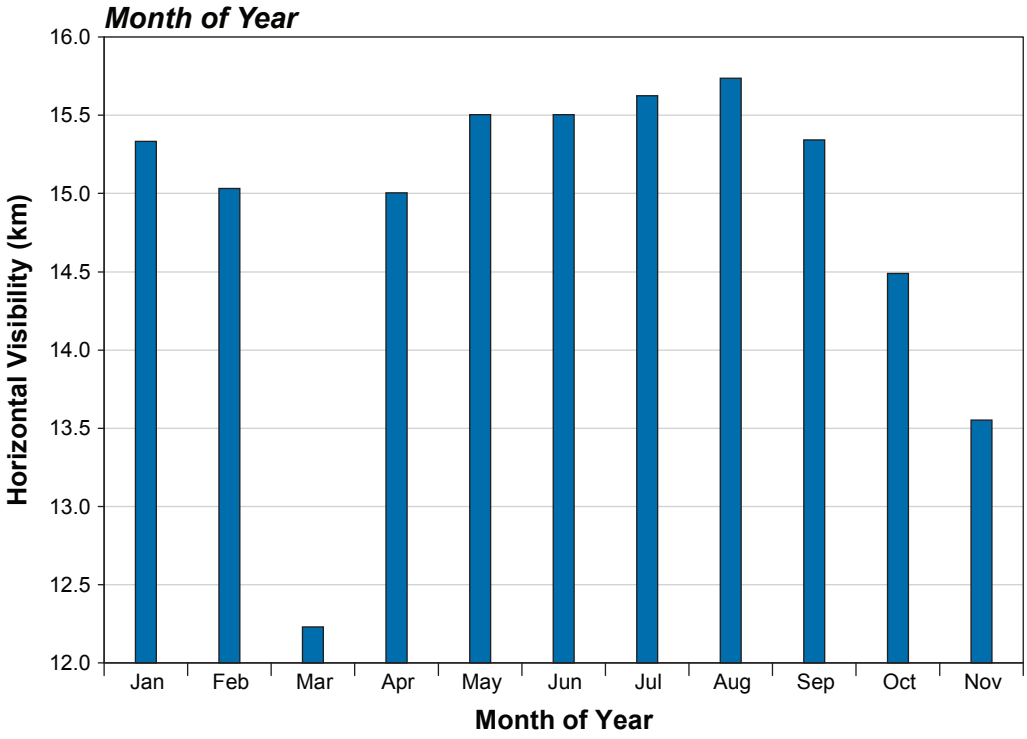

SEABRIDGE GOLD
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Mitchell Deposit Horizontal Visibility Distribution at Hour of Day and Month of Year, October 2009 to November 2010

Figure 3.8-3

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Appendix 1
KSM Snow Course Results

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British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC02		2009	January	6
Snow Course Name:	Teigen Creek		Year	Month	Day
Observer's Name:	Erin Boyle, Ryan Boyle				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	for 7-10	Scale No.:	Rescan's 12.5 ft
		No:	for 1-6		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	236	236	202	165	99	66	28.0
2	235	235	191	164	99	65	27.6
3	227	227	191	163	99	64	27.9
4	264	229	191	168	99	69	30.0
5	216	229	185	160	99	61	26.7
6	224	224	185	165	99	66	29.5
7	221	221	206	213	147	66	29.9
8	229	227	216	221	147	74	32.4
9	226	225	218	216	147	69	30.4
10	244	234	218	218	147	71	30.4
Total		2287				669	
Average		229				67	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC03		2009	January	7
Snow Course Name:	Treaty Creek		Year	Month	Day
Observer's Name:	Erin Boyle, Ryan Boyle				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	x	Scale No.:	metric scale from alternate snow sample kit
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	236	236	194	218	160	58	24.6
2	197	197	170	208	160	48	24.4
3	225	225	191	218	160	58	25.8
4	213	212	163	212	160	52	24.5
5	224	221	179	215	160	55	24.9
6	241	239	198	220	160	60	25.1
7	241	241	180	214	160	54	22.4
8	226	222	160	212	160	52	23.4
9	236	231	163	214	160	54	23.4
10	225	221	166	210	160	50	22.6
Total		2245				541	
Average		225				54	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC01		2009	January	8
Snow Course Name:	Sulphurets Creek Met Station		Year	Month	Day
Observer's Name:	Erin Boyle, Ryan Boyle				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	X	Scale No.:	Rescan's 12.5 ft
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	189	187	130	193	147	46	24.5
2	203	201	164	193	147	46	22.8
3	196	187	163	198	147	51	27.2
4	183	182	145	191	147	43	23.8
5	180	178	165	201	147	53	30.0
6	173	170	145	193	147	46	26.9
7	168	165	142	188	147	41	24.6
8	160	156	147	188	147	41	26.0
9	171	170	109	191	147	43	25.5
10	188	185	100	188	147	41	21.9
Total		1238				320	
Average		177				46	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC03		2009	February	1
Snow Course Name:	Treaty Creek		Year	Month	Day
Observer's Name:	Odelia Dennis, Dennis Quock				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	0
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	254	252	229	3.53	2.8	55	22
2	251	251	202	3.52	2.8	54	21
3	263	262	208	3.54	2.8	55	21
4	265	262	210	3.55	2.8	56	21
5	239	238	213	3.53	2.8	55	23
6	259	257	193	3.57	2.8	58	22
7	257	255	201	3.63	2.8	62	24
8	250	248	180	3.5	2.8	52	21
9	256	256	215	3.66	2.8	64	25
10	248	246	188	3.5	2.8	52	21
Total		2527				562.79	
Average		253				56.28	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC02		2009	February	1
Snow Course Name:	Teigen Creek		Year	Month	Day
Observer's Name:	Odelia Dennis, Dennis Quock				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	270	270	263	3.79	2.8	74.0	27
2	285	285	273	3.81	2.8	75.5	26
3	259	259	249	3.77	2.8	72.5	28
4	271	271	261	3.74	2.8	70.3	26
5	240	240	235	3.65	2.8	63.5	26
6	254	254	246	3.69	2.8	66.5	26
7	255	255	247	3.74	2.8	70.3	28
8	262	262	246	3.74	2.8	70.3	27
9	263	263	255	3.76	2.8	71.8	27
10	269	269	256	3.8	2.8	74.7	28
Total		2628				709.28	
Average		263				70.93	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC01		2009	February	2
Snow Course Name:	Sulphurets Creek Met Station		Year	Month	Day
Observer's Name:	Odelia Dennis, Dennis Day				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	232	232	168	3.54	2.8	55	24
2	234	232	168	3.6	2.8	60	26
3	236	234	158	3.47	2.8	50	21
4	230	228	160	3.51	2.8	53	23
5	235	233	200	3.59	2.8	59	25
6	206	206	166	3.52	2.8	54	26
7	220	217	190	3.52	2.8	54	25
8	227	224	162	3.46	2.8	49	22
9	212	211	150	3.39	2.8	44	21
10	258	257	167	3.53	2.8	55	21
Total		2274				532.90	
Average		227				53.29	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC02		2009	February	23
Snow Course Name:	Teigen Creek		Year	Month	Day
Observer's Name:	Michael Leung, Ken Johnson				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	X	Scale No.:	12.5INCH
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	257	257	51	130	107	23	9
2	236	235	64	130	107	23	10
3	236	236	61	135	107	28	12
4	226	226	42	124	102	23	10
5	277	277	56	130	102	28	10
6	236	210	34	122	109	13	6
7	236	235	43	124	107	18	8
8	248	248	46	127	104	23	9
9	237	237	43	127	104	23	10
10	234	234	46	124	104	20	9
Total		2394				221	
Average		239				22	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC03		2009	February	23
Snow Course Name:	Treaty Creek		Year	Month	Day
Observer's Name:	Michael Leung, Ken Johnson				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	X	Scale No.:	12.5INCH
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	279	278	46	135	114	20	7
2	259	259	43	135	114	20	8
3	244	244	43	132	112	20	8
4	263	262	50	135	109	25	10
5	273	273	70	135	109	25	9
6	250	250	47	132	109	23	9
7	246	246	50	132	107	25	10
8	251	251	36	124	107	18	7
9	259	259	44	130	107	23	9
10	243	243	55	135	107	28	12
Total		2565				229	
Average		257				23	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC03		2009	February	23
Snow Course Name:	Treaty Creek		Year	Month	Day
Observer's Name:	Michael Leung, Ken Johnson				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	X	Scale No.:	12.5INCH
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	237	237	42	124	102	23	10
2A	229	229	144	165	102	64	28
2B	269	257	188	180	102	79	31
3	250	250	69	140	102	38	15
4	245	244	43	127	104	23	9
5	291	290	48	130	104	25	9
6	268	268	116	155	102	53	20
7	221	221	150	165	102	64	29
8	241	241	65	137	102	36	15
Total		728				180	
Average		243				60	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC02		2009	Mar	28
Snow Course Name:	Teigen Creek		Year	Month	Day
Observer's Name:	Odelia Dennis, Dennis Quock				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	278	278	265	353	265	88	31.7
2	286	286	273	354	265	89	31.1
3	270	270	260	350	265	85	31.6
4	286	286	279	358	263	95	33.2
5	253	253	245	340	263	77	30.4
6	262	262	259	346	263	83	31.7
7	272	272	269	349	263	86	31.6
8	271	271	268	348	263	85	31.4
9	275	275	272	350	263	87	31.5
10	245	245	239	338	263	75	30.5
Total		1864				587	
Average		266				84	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC01		2009	Mar	29
Snow Course Name:	Sulphurets Creek Met Station		Year	Month	Day
Observer's Name:	Odelia Dennis, Dennis Day				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	258	254	230	280	212	67	26.5
2	262	260	233	280	212	67	25.9
3	255	254	239	284	212	72	28.2
4	245	245	236	279	212	67	27.2
5	240	240	226	280	212	68	28.3
6	231	230	220	276	212	64	27.6
7	228	228	215	277	212	65	28.5
8	240	240	231	280	212	67	28.0
9	260	258	241	285	212	72	28.1
10	210	210	194	265	212	52	24.9
Total		2419				661	
Average		242				66	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC03		2009	March	30
Snow Course Name:	Treaty Creek		Year	Month	Day
Observer's Name:	Odelia Dennis, Dennis Quock				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	0
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	280	278	249	287	210	77	27.7
2	283	281	243	285	210	75	26.6
3	289	288	248	288	210	78	27.0
4	296	292	253	287	210	77	26.4
5	288	287	235	284	210	74	25.8
6	286	283	230	278	210	68	24.0
7	287	283	257	284	210	74	26.1
8	279	276	246	284	210	74	26.8
9	293	293	234	284	210	74	25.3
10	273	273	244	287	210	77	28.2
Total		2834				747	
Average		283				75	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 0868-004-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC03		2009	April	28
Snow Course Name:	Treaty Creek Snow Course		Year	Month	Day
Observer's Name:	Kirsten MacKenzie, Dennis Day				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (kg)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	202	199	156	286.25	209.27	77	39
2	213	208	122	275.04	209.27	66	32
3	220	218	166	280.28	209.27	71	33
4	219	214	188	287.75	209.27	78	37
5	219	218	110	271.31	209.27	62	28
6	223	220	141	272.05	209.27	63	29
7	218	217	167	272.8	209.27	64	29
8	214	211	150	275.79	209.27	67	32
9	241	241	157	287.75	209.27	78	33
10	206	205	112	272.8	209.27	64	31
Total		1059				357	
Average		212				71	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 0868-004-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC02		2009	April	29
Snow Course Name:	Teigan Creek Met Stn		Year	Month	Day
Observer's Name:	Kirsten MacKenzie, Dennis Day				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (kg)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	241	241	239	292.98	207.03	86	36
2	242	242	242	300.45	207.03	93	39
3	229	229	229	295.22	207.03	88	39
4	242	242	235	305.69	207.03	99	41
5	211	211	209	287.75	207.03	81	38
6	224	224	220	296.72	207.03	90	40
7	229	229	228	294.48	207.03	87	38
8	227	227	185	292.23	207.03	85	38
9	238	238	222	298.21	207.03	91	38
10	245	245	242	301.2	207.03	94	38
Total		2328				895	
Average		233				89	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 0868-004-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC01		2009	April	29
Snow Course Name:	Treaty Creek Snow Course		Year	Month	Day
Observer's Name:	Kirsten MacKenzie, Dennis Day				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	210	207	135	268.81	207.03	62	30
2*	213	213	181	279.53	207.03	73	34
3	195	192	163	274.3	207.03	67	35
4*	210	213	129	266.82	207.03	60	28
5*	186	186	142	275.79	210.02	66	35
6*	179	179	142	272.05	210.02	62	35
7*	177	177	148	273.55	210.02	64	36
8*	194	194	134	269.81	210.02	60	31
9	207	204	181	277.29	210.02	67	33
10*	151	151	134	266.81	210.02	57	38
Total		1116				389.39	
Average		186				65.27	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC01		2010	January	9
Snow Course Name:	Sulphurets Creek		Year	Month	Day
Observer's Name:	Brandon Marion, Keith Nole				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	74	72	70	2.34	2.02	23.9	33
2	74	73	69	2.28	2.02	19.4	27
3	87	84	71	2.32	2.02	22.4	27
4	74	73	68	2.29	2.02	20.2	28
5	80	75	70	2.32	2.02	22.4	30
6	83	81	65	2.27	2.02	18.7	23
7	80	77	69	2.29	2.02	20.2	26
8	80	75	73	2.3	2.02	20.9	28
9	83	73	58	2.29	2.02	20.2	28
10	78	75	53	2.19	2.02	12.7	17
Total		683				188.34	
Average		76				20.93	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC02		2010	January	11
Snow Course Name:	Teigen Creek		Year	Month	Day
Observer's Name:	Brandon Marion, Keith Nole				
Number of Tubes Used:	3 and later 2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	173	170	162	3.24	2.72	38.9	23
2	181	180	173	3.22	2.72	37.4	21
3	174	173	150	3.21	2.72	36.6	21
4	166	165	154	3.22	2.72	37.4	23
5	170	170	155	2.54	2.07	35.1	21
6	163	163	130	2.56	2.07	36.6	22
7	160	157	130	2.55	2.07	35.9	23
8	170	169	148	2.57	2.07	37.4	22
9	165	164	155	2.56	2.07	36.6	22
10	165	164	152	2.54	2.07	35.1	21
Total		1675				367	
Average		168				37	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC03		2010	January	10
Snow Course Name:	Treaty Creek		Year	Month	Day
Observer's Name:	Brandon Marion, Keith Nole				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	152	151	122	2.36	2.03	24.7	16
2	155	154	120	2.4	2.03	27.7	18
3	155	152	118	2.33	2.03	22.4	15
4	153	151	113	2.37	2.03	25.4	17
Total		608				100.15	
Average		152				25.04	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC01		2010	February	10
Snow Course Name:	Sulphurets Creek		Year	Month	Day
Observer's Name:	Tyler Abel, Brandon Marion				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	80	77	68	2.29	1.95	25.4	33
2	84	81	75	2.32	1.95	27.7	34
3	77	74	71	2.31	1.95	26.9	36
4	82	80	67	2.28	1.95	24.7	31
5	81	80	71	2.34	1.95	29.1	36
6	86	85	70	2.33	1.95	28.4	33
7	83	80	75	2.29	1.95	25.4	32
8	86	86	70	2.31	1.95	26.9	31
9	90	84	77	2.29	1.95	25.4	30
10	75	59	59	2.23	1.95	20.9	35
Total		786				260.8	333
Average		79				26.1	33

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC02		2010	February	9
Snow Course Name:	Teigen Creek		Year	Month	Day
Observer's Name:	Tyler Abel, Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	166	165	160	3.41	2.8	45.6	28
2	167	167	161	3.42	2.8	46.3	28
3	167	165	158	3.4	2.8	44.8	27
4	169	168	150	3.42	2.8	46.3	28
5	156	155	151	3.37	2.8	42.6	27
6	175	170	153	3.39	2.8	44.1	26
7	160	154	155	3.41	2.8	45.6	30
8	164	164	156	3.39	2.8	44.1	27
9	170	165	140	3.31	2.8	38.1	23
10	176	174	154	3.41	2.8	45.6	26
Total		1647				443.2	269
Average		165				44.3	27

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC03		2010	February	8
Snow Course Name:	Treaty Creek		Year	Month	Day
Observer's Name:	Tyler Abel, Brandon Marion				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	130	126	121	2.44	2.01	32.1	26
2	120	119	108	2.42	2.01	30.6	26
3	138	134	122	2.39	2.01	28.4	21
4	142	140	115	2.44	2.01	32.1	23
5	125	124	110	2.43	2.01	31.4	25
6	134	131	107	2.38	2.01	27.7	21
7	141	134	116	2.45	2.01	32.9	25
8	135	131	118	2.46	2.01	33.6	26
9	119	113	110	2.43	2.01	31.4	28
10	125	123	114	2.46	2.01	33.6	27
Total		1275				313.9	247
Average		128				31.4	25

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC04		2010	February	10
Snow Course Name:	Sulphurets (2)		Year	Month	Day
Observer's Name:	Tyler Abel, Brandon Marion				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	86	78	77	2.32	2.01	23.2	30
2	80	73	68	2.28	2.01	20.2	28
3	85	81	70	2.31	2.01	22.4	28
4	81	77	76	2.32	2.01	23.2	30
5	78	77	67	2.31	2.01	22.4	29
Total		386				111.4	144
Average		77				22.3	29

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC05		2010	February	10
Snow Course Name:	Teigen (2)		Year	Month	Day
Observer's Name:	Tyler Abel,, Brandon Marion				
Number of Tubes Used:	2, then 3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	170	169	156	2.69	2.04	48.6	29
2	184	183	166	3.45	2.75	52.3	29
3	165	164	160	3.39	2.75	47.8	29
4	169	160	160	3.41	2.75	49.3	31
5	195	170	170	3.41	2.75	49.3	29
Total		846				247.4	146
Average		169				49.5	29

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC06		2010	February	10
Snow Course Name:	Teigen (3)		Year	Month	Day
Observer's Name:	Tyler Abel,, Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	140	136	131	3.26	2.75	38.1	28
2	137	130	130	3.26	2.75	38.1	29
3	140	140	129	3.21	2.75	34.4	25
4	141	139	128	3.26	2.75	38.1	27
5	144	139	131	3.26	2.75	38.1	27
Total		684				186.9	137
Average		137				37.4	27

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC07		2010	February	11
Snow Course Name:	Teigen (4)		Year	Month	Day
Observer's Name:	Tyler Abel,, Brandon Marion				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	140	139	129	2.5	2.02	35.9	26
2	144	141	136	2.51	2.02	36.6	26
3	145	141	129	2.51	2.02	36.6	26
4	140	135	136	2.5	2.02	35.9	27
5	138	135	125	2.49	2.02	35.1	26
Total		691				180.1	130
Average		138				36.0	26

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC08		2010	February	11
Snow Course Name:	Sulphurets Alpine		Year	Month	Day
Observer's Name:	Tyler Abel,, Brandon Marion				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	155	151	139	2.6	2.02	43.3	29
2	136	135	126	2.55	2.02	39.6	29
3	152	150	150	2.63	2.02	45.6	30
4	190	187	180	2.83	2.02	60.5	32
5	156	153	152	2.7	2.02	50.8	33
Total		776				240	154
Average		155				48	31

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 0868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC01		2010	March	2
Snow Course Name:	Sulphurets Creek		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine Graydon				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	86	79	66	2.29	2.04	18.7	23.7
2	87	84	74	2.3	2.04	19.4	23.1
3	85	82	68	2.28	2.04	17.9	21.9
4	85	84	62	2.34	2.04	22.4	26.7
5	88	87	71	2.28	2.04	17.9	20.6
6	85	84	73	2.32	2.04	20.9	24.9
7	85	81	66	2.24	2.04	14.9	18.5
8	88	87	75	2.32	2.04	20.9	24.1
9	93	89	77	2.31	2.04	20.2	22.7
10	80	78	65	2.22	2.04	13.5	17.2
Total		751				164.4	196.6
Average		83				18.3	21.8

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 0868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC02		2010	March	1
Snow Course Name:	Teigen Creek		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	202	200	174	3.47	2.81	49.3	24.7
2	203	203	172	3.50	2.81	51.6	25.4
3	192	191	167	3.46	2.81	48.6	25.4
4	197	196	170	3.45	2.81	47.8	24.4
5	205	205	167	3.44	2.81	47.1	23.0
6	203	200	170	3.48	2.81	50.1	25.0
7	206	203	174	3.49	2.81	50.8	25.0
8	202	202	171	3.50	2.81	51.6	25.5
9	208	207	169	3.50	2.81	51.6	24.9
10	212	211	175	3.52	2.81	53.1	25.1
Total		2018				501.5	248.5
Average		202				50.2	24.9

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC03		2010	March	1
Snow Course Name:	Treaty Creek		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	135	133	100	2.49	2.02	35.1	26.4
2	135	131	117	2.52	2.02	37.4	28.5
3	133	132	119	2.5	2.02	35.9	27.2
4	130	130	118	2.48	2.02	34.4	26.4
5	130	128	108	2.57	2.02	41.1	32.1
6	131	126	106	2.44	2.02	31.4	24.9
7	147	142	115	2.37	2.02	26.2	18.4
8	127	123	110	2.49	2.02	35.1	28.6
9	135	129	115	2.48	2.02	34.4	26.7
10	130	128	107	2.4	2.02	28.4	22.2
Total		1027				278.0	216.6
Average		128				34.8	27.1

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no.0868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC04		2010	March	2
Snow Course Name:	Sulphurets Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine Graydon				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	85	84	74	2.46	2.03	32.1	38.3
2	82	81	65	2.42	2.03	29.1	36.0
3	98	97	77	2.45	2.03	31.4	32.4
4	87	85	78	2.42	2.03	29.1	34.3
5	87	85	68	2.38	2.03	26.2	30.8
Total		432				148.0	171.7
Average		86				29.6	34.3

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC05		2010	March	2
Snow Course Name:	Teigen Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	220	215	181	3.54	2.83	53.1	25
2	255	225	200	3.59	2.83	56.8	25
3	203	203	168	3.47	2.83	47.8	24
4	213	212	175	3.35	2.83	38.9	18
5	205	205	170	3.47	2.83	47.8	23
Total		1060				244.4	115.2
Average		212				48.9	23.0

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC06		2010	March	1
Snow Course Name:	Teigen Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	175	174	146	3.33	2.83	37.37	21.48
2	170	169	142	3.3	2.83	35.13	20.79
3	168	166	137	3.29	2.83	34.38	20.71
4	175	169	140	3.27	2.83	32.89	19.46
5	177	175	141	3.34	2.83	38.12	21.78
Total		853				177.88	104.21
Average		171				35.58	20.84

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 0868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC07		2010	March	1
Snow Course Name:	Teigen Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	153	151	130	2.54	2.03	38.1	25.2
2	155	153	135	2.55	2.03	38.9	25.4
3	156	155	120	2.51	2.03	35.9	23.1
4	155	153	135	2.57	2.03	40.4	26.4
5	158	156	136	2.54	2.03	38.1	24.4
Total		768				191.3	124.6
Average		154				38.3	24.9

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 0868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC08		2010	March	2
Snow Course Name:	Sulphurets Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	159	157	144	3.47	2.82	48.6	30.9
2	181	178	168	3.59	2.82	57.5	32.3
3	142	140	134	3.34	2.82	38.9	27.8
4	203	201	187	3.74	2.82	68.8	34.2
5	166	165	147	3.48	2.82	49.3	29.9
Total		841				263.1	155.1
Average		168				52.6	31.0

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC01		2010	March	31
Snow Course Name:	Sulphurets Creek		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine Graydon				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	108	102	98	2.43	2.02	30.6	30
2	105	103	94	2.48	2.02	34.4	33
3	103	98	95	2.39	2.02	27.7	28
4	101	100	95	2.41	2.02	29.1	29
5	103	102	93	2.39	2.02	27.7	27
6	107	106	101	2.46	2.02	32.9	31
7	104	102	97	2.4	2.02	28.4	28
8	106	102	89	2.34	2.02	23.9	23
9	107	106	94	2.39	2.02	27.7	26
10	101	99	95	2.45	2.02	32.1	32
Total		1020				294.48	
Average		102				29.45	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC02		2010	March	30
Snow Course Name:	Treaty Creek		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine Graydon				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	214	213	212	3.67	2.71	71.8	34
2	224	222	215	3.71	2.71	74.7	34
3	210	209	200	3.59	2.71	65.8	31
4	227	225	205	3.58	2.71	65.0	29
5	228	225	210	3.65	2.71	70.3	31
6	221	220	202	3.61	2.71	67.3	31
7	216	212	206	3.57	2.71	64.3	30
8	231	226	204	3.69	2.71	73.2	32
9	218	215	197	3.58	2.71	65.0	30
10	224	221	220	3.63	2.71	68.8	31
Total		2188				686.11	
Average		219				68.61	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC03		2010	March	30
Snow Course Name:	Treaty Creek		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine Graydon				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	146	144	127	2.57	2.05	38.9	27
2	149	146	118	2.52	2.05	35.1	24
3	145	143	120	2.58	2.05	39.6	28
4	153	145	121	2.54	2.05	36.6	25
5	148	145	139	2.62	2.05	42.6	29
6	145	142	126	2.54	2.05	36.6	26
7	150	147	127	2.58	2.05	39.6	27
8	138	133	127	2.58	2.05	39.6	30
9	146	143	117	2.53	2.05	35.9	25
10	156	151	125	2.5	2.05	33.6	22
Total		1439				378.18	
Average		144				37.82	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC04		2010	March	31
Snow Course Name:	Sulphurets Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine Graydon				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	113	111	107	2.47	2.01	34.4	31
2	110	105	98	2.43	2.01	31.4	30
3	115	111	100	2.45	2.01	32.9	30
4	110	107	98	2.4	2.01	29.1	27
5	109	106	96	2.44	2.01	32.1	30
Total		540				159.94	148.06
Average		108				31.99	29.61

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC05		2010	March	30
Snow Course Name:	Teigan Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine Graydon				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	259	258	253	3.77	2.74	77.0	30
2	252	251	230	3.76	2.74	76.2	30
3	252	251	228	3.76	2.74	76.2	30
4	259	256	249	3.8	2.74	79.2	31
5	254	252	230	3.72	2.74	73.2	29
Total		1268				381.92	150.60
Average		254				76.38	30.12

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC06		2010	March	30
Snow Course Name:	Teigan Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine Graydon				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	179	176	174	2.81	2.02	59.0	34
2	180	176	169	2.74	2.02	53.8	31
3	175	174	162	2.78	2.02	56.8	33
4	180	179	161	2.75	2.02	54.6	30
5	172	170	156	2.77	2.02	56.1	33
Total		875				280.28	160.22
Average		175				56.06	32.04

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC07		2010	March	31
Snow Course Name:	Teigen Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine Graydon				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	160	159	135	2.71	2.02	51.6	32
2	164	163	155	2.72	2.02	52.3	32
3	164	161	159	2.75	2.02	54.6	34
4	168	166	154	2.7	2.02	50.8	31
5	163	162	151	2.68	2.02	49.3	30
Total		811				258.60	159.49
Average		162				51.72	31.90

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC08		2010	March	31
Snow Course Name:	Sulphurets Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine Graydon				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	214	213	210	3.58	2.75	62.0	29
2	206	205	194	3.6	2.75	63.5	31
3	208	205	200	3.56	2.75	60.5	30
4	234	231	223	3.73	2.75	73.2	32
5	202	201	178	3.47	2.75	53.8	27
6							#DIV/0!
7							#DIV/0!
8							#DIV/0!
9							#DIV/0!
10							#DIV/0!
Total		1055				313.16	
Average		211				62.63	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC01		2010	May	2
Snow Course Name:	Sulphurets Creek		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine Graydon				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	86	79	66	2.29	2.04	18.7	24
2	87	84	74	2.3	2.04	19.4	23
3	85	82	68	2.28	2.04	17.9	22
4	85	84	62	2.34	2.04	22.4	27
5	88	87	71	2.28	2.04	17.9	21
6	85	84	73	2.32	2.04	20.9	25
7	85	81	66	2.24	2.04	14.9	18
8	88	87	75	2.32	2.04	20.9	24
9	93	89	77	2.31	2.04	20.2	23
10	80	78	65	2.22	2.04	13.5	17
Total		835				186.85	223
Average		84				18.69	22

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC02		2010	May	3
Snow Course Name:	Teigen Creek		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	202	200	174	3.47	2.81	49.3	25
2	203	203	172	3.5	2.81	51.6	25
3	192	191	167	3.46	2.81	48.6	25
4	197	196	170	3.45	2.81	47.8	24
5	205	205	167	3.44	2.81	47.1	23
6	203	200	170	3.48	2.81	50.1	25
7	206	203	174	3.49	2.81	50.8	25
8	202	202	171	3.5	2.81	51.6	26
9	208	207	169	3.5	2.81	51.6	25
10	212	211	175	3.52	2.81	53.1	25
Total		2018				501.51	249
Average		202				50.15	25

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC03		2010	May	1
Snow Course Name:	Treaty Creek		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	135	133	100	2.49	2.02	35.1	26
2	135	131	117	2.52	2.02	37.4	29
3	133	132	119	2.5	2.02	35.9	27
4	130	130	118	2.48	2.02	34.4	26
5	130	128	108	2.57	2.02	41.1	32
6	131	126	106	2.44	2.02	31.4	25
7	147	142	115	2.37	2.02	26.2	18
8	127	123	110	2.49	2.02	35.1	29
9	135	129	115	2.48	2.02	34.4	27
10	130	128	107	2.4	2.02	28.4	22
Total		1302				339.32	261
Average		130				33.93	26

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 0868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC04		2010	May	2
Snow Course Name:	Sulphurets Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine Graydon				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	85	84	74	2.46	2.03	32	38
2	82	81	65	2.42	2.03	29	36
3	98	97	77	2.45	2.03	31	32
4	87	85	78	2.42	2.03	29	34
5	87	85	68	2.38	2.03	26	31
Total		432				148	172
Average		86				30	34

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 0868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC05		2010	May	2
Snow Course Name:	Teigen Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	220	215	181	3.54	2.83	53	25
2	255	225	200	3.59	2.83	57	25
3	203	203	168	3.47	2.83	48	24
4	213	212	175	3.35	2.83	39	18
5	205	205	170	3.47	2.83	48	23
Total		1060				244	115
Average		212				49	23

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 0868-009-02) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC06		2010	May	1
Snow Course Name:	Teigen Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	175	174	146	3.3	2.8	37	21
2	170	169	142	3.3	2.8	35	21
3	168	166	137	3.3	2.8	34	21
4	175	169	140	3.3	2.8	33	19
5	177	175	141	3.3	2.8	38	22
Total		853				178	104
Average		171				36	21

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC07		2010	May	1
Snow Course Name:	Teigen Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	153	151	130	2.54	2.03	38	25
2	155	153	135	2.55	2.03	39	25
3	156	155	120	2.51	2.03	36	23
4	155	153	135	2.57	2.03	40	26
5	158	156	136	2.54	2.03	38	24
Total		613				155	101
Average		153				39	25

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

Kerr-Sulphurets-Mitchell Environmental Baseline Study (Project no. 893-2) for Seabridge Gold

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM-SC08		2010	March	2
Snow Course Name:	Sulphurets Valley		Year	Month	Day
Observer's Name:	Brandon Marion, Maxine				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	X	Scale No.:	Rickly digital scale
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (kg)	Weight Tube Only Before Sampling (kg)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	159	157	144	3.47	2.82	48.6	31
2	181	178	168	3.59	2.82	57.5	32
3	142	140	134	3.34	2.82	38.9	28
4	203	201	187	3.74	2.82	68.8	34
5	166	165	147	3.48	2.82	49.3	30
Total		841				263.08	155
Average		168				52.62	31

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC01	11	1	7
Snow Course Name:	Sulphurets Creek	Year	Month	Day
Observer's Name:	Ryan Boyle, Maxine Graydon			
Number of Tubes Used:	2	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	65	63	57	2.19	2.02	17	27
2	70	70	64	2.21	2.02	19	27
3	69	67	60	2.17	2.02	15	22
4	65	65	58	2.18	2.02	16	25
5	72	72	60	2.19	2.02	17	24
6	67	67	59	2.17	2.02	15	22
7	66	66	58	2.17	2.02	15	23
8	79	77	69	2.21	2.02	19	25
9	70	70	61	2.20	2.02	18	26
10	73	73	59	2.19	2.02	17	23
Total		690				168	
Average		69				17	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC02	11	1	5
Snow Course Name:	Teigan Cr 10 pt	Year	Month	Day
Observer's Name:	Ryan Boyle / Maxine Graydon			
Number of Tubes Used:	3	Driving Wrench Used: Yes: x / No:	Scale No.:	2500

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	155	151	138	3.18	2.73	45	30
2	149	148	140	3.19	2.73	46	31
3	142	141	131	3.17	2.73	44	31
4	131	130	115	3.13	2.73	40	31
5	140	139	132	3.17	2.73	44	32
6	135	134	116	3.12	2.73	39	29
7	153	152	145	3.22	2.73	49	32
8	152	150	134	3.19	2.73	46	31
9	150	148	142	3.25	2.73	52	35
10	154	152	144	3.22	2.73	49	32
Total		1445				454	
Average		145				45	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC03	11	1	6
Snow Course Name:	Treaty Creek	Year	Month	Day
Observer's Name:	Ryan Boyle, Maxine Graydon			
Number of Tubes Used:	2	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	115	113	100	2.30	2.02	28	25
2	118	117	80	2.27	2.02	25	21
3	110	110	75	2.24	2.02	22	20
4	116	114	90	2.26	2.02	24	21
5	120	117	88	2.32	2.02	30	26
Total		571				129	
Average		114				26	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC04	11	1	7
Snow Course Name:		Year	Month	Day
Observer's Name:	Ryan Boyle, Maxine Graydon			
Number of Tubes Used:	2	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	66	66	54	2.19	2.02	17	26
2	61	61	54	2.18	2.02	16	26
3	70	68	61	2.20	2.02	18	26
4	70	70	60	2.20	2.02	18	26
5	76	74	63	2.20	2.02	18	24
Total		339				87	
Average		68				17	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC05	11	1	5
Snow Course Name:		Year	Month	Day
Observer's Name:	Ryan Boyle, Maxine Graydon			
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	164	162	140	3.26	2.72	54	33
2	175	171	165	3.31	2.72	59	35
3	171	169	158	3.28	2.72	56	33
4	169	166	142	3.23	2.72	51	31
5	173	166	140	3.26	2.72	54	33
Total		834				274	
Average		167				55	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC06	11	1	6
Snow Course Name:		Year	Month	Day
Observer's Name:	Ryan Boyle, Maxine Graydon			
Number of Tubes Used:	2	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	137	135	107	2.38	2.02	36	27
2	135	132	114	2.38	2.02	36	27
3	145	138	118	2.39	2.02	37	27
4	135	134	118	2.40	2.02	38	28
5	131	129	121	2.36	2.02	34	26
Total		533				145	
Average		133				36	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC07	11	1	6
Snow Course Name:		Year	Month	Day
Observer's Name:	Ryan Boyle, Maxine Graydon			
Number of Tubes Used:	2	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	119	117	111	2.36	2.02	34	29
2	125	124	117	2.37	2.02	35	28
3	131	128	112	2.37	2.02	35	27
4	133	129	113	2.36	2.02	34	26
5	132	130	114	2.38	2.02	36	28
Total		628				174	
Average		126				35	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC08	11	1	7
Snow Course Name:		Year	Month	Day
Observer's Name:	Ryan Boyle, Maxine Graydon			
Number of Tubes Used:	2	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	157	150	134	2.56	2.02	54	36
2	146	143	139	2.54	2.02	52	36
3	154	150	147	2.53	2.02	51	34
4	163	161	152	2.65	2.02	63	39
5	165	161	144	2.52	2.02	50	31
Total		765				270	
Average		153				54	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC09	11	1	6
Snow Course Name:		Year	Month	Day
Observer's Name:	Ryan Boyle, Maxine Graydon			
Number of Tubes Used:	2	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	130	128	120	2.39	2.02	37	29
2	135	134	116	2.37	2.02	35	26
3	133	131	121	2.38	2.02	36	27
4	127	125	110	2.38	2.02	36	29
5	125	121	114	2.36	2.02	34	28
Total		639				178	
Average		128				36	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC10	11	1	7
Snow Course Name:		Year	Month	Day
Observer's Name:	Ryan Boyle, Maxine Graydon			
Number of Tubes Used:	2	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	187	187	173	2.66	2.02	64	34
2	170	170	160	2.61	2.02	59	35
3	189	184	184	2.65	2.02	63	34
4	180	180	165	2.62	2.02	60	33
5	170	170	161	2.61	2.02	59	35
Total		891				305	
Average		178				61	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. 0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC01		2011	1	31
Snow Course Name:	KSM SC01		Year	Month	Day
Observer's Name:	Wade Brunham and Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	12.5
		No:			

Station Number	Snow Depth (in)		Core Length (in)	Weight of Tube and Core (in)	Weight Tube Only Before Sampling (in)	Snow-Water Equivalent (in)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	48	48	40	55	43	12	25
2	50	49	41	55	43	12	24
3	49.5	49	42.5	56	43	13	27
4	48	47	39	53	43	10	21
5	51	50	42	54	43	11	22
6	52	51.5	42.5	54	43	11	21
7	50	48.5	41	55	43	12	25
8	50	49.5	42.5	55	43	12	24
9	52	51.9	41.5	55	43	12	23
10	49	49	39.5	54	43	11	22
Total		442				104	
Average		49				12	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. 0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC02		2011	1	30
Snow Course Name:	KSM SC02		Year	Month	Day
Observer's Name:	Wade Brunham and Brandon Marion				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	x	Scale No.:	12.5
		No:			

Station Number	Snow Depth (in)		Core Length (in)	Weight of Tube and Core (in)	Weight Tube Only Before Sampling (in)	Snow-Water Equivalent (in)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	78.5	78.5	68.5	85	57	28	36
2	82	86	66	81	57	24	28
3	74	74	58	81	57	24	32
4	78.5	76.5	69	83	57	26	34
5	71	66	68	80	57	23	35
6	73	73	57	79	57	22	30
7	68	68	58	78	57	21	31
8	72	72	56	79	57	22	31
9	71	71	54.5	78	57	21	30
10	73.5	73.5	61	80	57	23	31
Total		449				145	
Average		75				24	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no.0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC03		2011	1	31
Snow Course Name:	KSM SC03		Year	Month	Day
Observer's Name:	Wade Brunham and Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	12.5
		No:			

Station Number	Snow Depth (in)		Core Length (in)	Weight of Tube and Core (in)	Weight Tube Only Before Sampling (in)	Snow-Water Equivalent (in)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	35	35	26	54	43	11	31
2	55	55	44	56	43	13	24
3	47	47	36	53	43	10	21
4	40	40	30	53	43	10	25
5	53	51.5	37	55	43	12	23
6	52	52	41	56	43	13	25
7	54.5	54	37	56	43	13	24
8	58	56	48	57	43	14	25
9	59.5	57	43	56	43	13	23
10	54	54	47	58	43	15	28
Total		502				124	
Average		50				12	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC03A		2011	1	31
Snow Course Name:	KSM SC03A		Year	Month	Day
Observer's Name:	Wade Brunham and Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	12.5
		No:			

Station Number	Snow Depth (in)		Core Length (in)	Weight of Tube and Core (in)	Weight Tube Only Before Sampling (in)	Snow-Water Equivalent (in)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	63	63	56	61	43	18	29
2	58	58	50	61	43	18	31
3	62	62	57	61	43	18	29
4	61	61	49	59	43	16	26
5	58	57	48	60	43	17	30
6	63	63	48	59	43	16	25
7	55	55	47.5	58	43	15	27
8	59	59	49	60	43	17	29
9	54.5	54	44	57	43	14	26
10	59	59	49	58	43	15	25
Total		536				149	
Average		60				17	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. 0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC04		2011	1	31
Snow Course Name:	KSM SC04		Year	Month	Day
Observer's Name:	Wade Brunham and Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	12.5
		No:			

Station Number	Snow Depth (in)		Core Length (in)	Weight of Tube and Core (in)	Weight Tube Only Before Sampling (in)	Snow-Water Equivalent (in)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	50	50	42	54	43	11	22
2	50	50	40	56	43	13	26
3	50	50	37	55	43	12	24
4	49.5	49.5	39	53	43	10	20
5	50	50	36	54	43	11	22
Total		250				57	
Average		50				11	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. 0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC05		2011	1	30
Snow Course Name:	KSM SC05		Year	Month	Day
Observer's Name:	Wade Brunham and Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	12.5
		No:			

Station Number	Snow Depth (in)		Core Length (in)	Weight of Tube and Core (in)	Weight Tube Only Before Sampling (in)	Snow-Water Equivalent (in)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	84.5	84.5	81	70	43	27	32
2	88	87	79	69	43	26	30
3	88.5	88.5	82	70	43	27	31
4	82	82	78	69	43	26	32
5	86.5	86	83.5	70	43	27	31
Total		428				133	
Average		86				27	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no.0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC06		2011	1	30
Snow Course Name:	KSM SC06		Year	Month	Day
Observer's Name:	Wade Brunham and Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	12.5
		No:			

Station Number	Snow Depth (in)		Core Length (in)	Weight of Tube and Core (in)	Weight Tube Only Before Sampling (in)	Snow-Water Equivalent (in)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	68.5	62.5	53.5	58	43	15	24
2	62	62	57	60	43	17	27
3	61	61	56	59	43	16	26
4	64	64	57	59	43	16	25
5	64	64	59	60	43	17	27
Total		251				66	
Average		63				17	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no. 0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC07		2011	1	30
Snow Course Name:	KSM SC07		Year	Month	Day
Observer's Name:	Wade Brunham and Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	12.5
		No:			

Station Number	Snow Depth (in)		Core Length (in)	Weight of Tube and Core (in)	Weight Tube Only Before Sampling (in)	Snow-Water Equivalent (in)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	69.5	65	53.5	58	43	15	23
2	57.5	57	44	57	43	14	25
3	61	61	55.5	59	43	16	26
4	64.5	64.5	54.5	60	43	17	26
5	65	65	55	62	43	19	29
Total		313				81	
Average		63				16	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no.0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC09		2011	1	30
Snow Course Name:	KSM SC09		Year	Month	Day
Observer's Name:	Wade Brunham and Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	12.5
		No:			

Station Number	Snow Depth (in)		Core Length (in)	Weight of Tube and Core (in)	Weight Tube Only Before Sampling (in)	Snow-Water Equivalent (in)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	64.5	61.5	50	60	43	17	28
2	61	60	47	59	43	16	27
3	62	62	56	59	43	16	26
4	58.5	58.5	51.5	57	43	14	24
5	61	61	57	59	43	16	26
Total		303				79	
Average		61				16	

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British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

_____ Project Environmental Baseline Study (Project no.0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC10		2011	1	30
Snow Course Name:	KSM SC10		Year	Month	Day
Observer's Name:	Wade Brunham and Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	12.5
		No:			

Station Number	Snow Depth (in)		Core Length (in)	Weight of Tube and Core (in)	Weight Tube Only Before Sampling (in)	Snow-Water Equivalent (in)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	79.5	79.5	70	68	43	25	31
2	80.5	80.5	77	68	43	25	31
3	90.5	90	88	70	43	27	30
4	85	85	83	70	43	27	32
5	85	85	84	71	43	28	33
Total		420				132	
Average		84				26	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Atmospherics Baseline Project 868-011-04

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC01	11	3	3
Snow Course Name:	Sulphurets Creek	Year	Month	Day
Observer's Name:	Erin Boyle, Brandon Marion			
Number of Tubes Used:	2	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	141	141	132	2.56	2.02	54	38
2	147	147	141	2.54	2.02	52	35
3	145	145	139	2.59	2.02	57	39
4	138	138	127	2.49	2.02	47	34
5	145	142	133	2.51	2.02	49	35
6	152	151	138	2.51	2.02	49	32
7	148	148	134	2.49	2.02	47	32
8	161	157	146	2.50	2.02	48	31
9	156	156	146	2.54	2.02	52	33
10	157	155	143	2.54	2.02	52	34
Total		1480				507	
Average		148				51	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Atmospherics Baseline Project 868-011-04

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC02		11	3	3
Snow Course Name:	Teigan Creek		Year	Month	Day
Observer's Name:	Erin Boyle, Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	2500
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	212	210	206	3.52	2.75	77	37
2	208	207	200	3.55	2.75	80	39
3	206	206	194	3.53	2.75	78	38
4	206	205	195	3.48	2.75	73	36
5	187	187	184	3.41	2.75	66	35
6	195	195	185	3.44	2.75	69	35
7	215	214	205	3.49	2.75	74	35
8	208	208	192	3.58	2.75	83	40
9	210	209	207	3.58	2.75	83	40
10	220	217	207	3.54	2.75	79	36
Total		2058				762	
Average		206				76	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Atmospherics Baseline Project 868-011-04

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC03a		11	3	3
Snow Course Name:	Treaty Creek		Year	Month	Day
Observer's Name:	Erin Boyle, Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	2500
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	182	182	167	3.40	2.75	65	36
2	205	204	176	3.43	2.75	68	33
3	190	184	189	3.40	2.75	65	35
4	185	184	175	3.38	2.75	63	34
5	181	179	157	3.33	2.75	58	32
6	180	179	176	3.43	2.75	68	38
7	164	162	154	3.24	2.75	49	30
8	179	178	160	3.33	2.75	58	33
9	165	164	150	3.29	2.75	54	33
10	188	187	179	3.36	2.75	61	33
Total		1803				609	
Average		180				61	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Atmospherics Baseline Project 868-011-04

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC04		11	3	3
Snow Course Name:	SC04		Year	Month	Day
Observer's Name:	Erin Boyle, Brandon Marion				
Number of Tubes Used:	2	Driving Wrench Used: Yes:	x	Scale No.:	2500
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	146	146	142	2.53	2.02	51	35
2	140	140	132	2.46	2.02	44	31
3	145	145	140	2.52	2.02	50	34
4	170	166	154	2.61	2.02	59	36
5	164	162	132	2.55	2.02	53	33
Total		759				257	
Average		152				51	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Atmospherics Baseline Project 868-011-04

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC05		11	3	4
Snow Course Name:	SC05		Year	Month	Day
Observer's Name:	Erin Boyle, Brandon Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	2500
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	230	229	205	3.71	2.75	96	42
2	238	238	230	3.67	2.75	92	39
3	256	254	236	3.67	2.75	92	36
4	250	249	237	3.66	2.75	91	37
5	241	240	207	3.55	2.75	80	33
Total		1210				451	
Average		242				90	

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KSM Atmospherics Baseline Project 868-011-04

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC06	11	3	3
Snow Course Name:	SC06	Year	Month	Day
Observer's Name:	Erin Boyle, Brandon Marion			
Number of Tubes Used:	2	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	173	172	161	3.41	2.75	66	38
2	177	177	167	3.38	2.75	63	36
3	179	179	159	3.37	2.75	62	35
4	169	168	155	3.33	2.75	58	35
5	176	175	164	3.35	2.75	60	34
Total		871				309	
Average		174				62	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Atmospherics Baseline Project 868-011-04

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC07	11	3	4
Snow Course Name:	SC07	Year	Month	Day
Observer's Name:	Erin Boyle, Brandon Marion			
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	167	167	149	3.24	2.75	49	29
2	174	170	156	3.35	2.75	60	35
3	179	173	162	3.36	2.75	61	35
4	172	171	163	3.35	2.75	60	35
5	157	154	152	3.30	2.75	55	36
Total		835				285	
Average		167				57	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Atmospherics Baseline Project 868-011-04

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC08	11	3	5
Snow Course Name:	SC08	Year	Month	Day
Observer's Name:	Erin Boyle, Brandon Marion			
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	192	191	187	3.47	2.74	73	38
2	207	206	198	3.58	2.74	84	41
3	206	206	199	3.50	2.74	76	37
4	280	280	255	3.85	2.74	111	40
5	270	269	245	3.72	2.74	98	36
Total		1152				442	
Average		230				88	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Atmospherics Baseline Project 868-011-04

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC09	11	3	4
Snow Course Name:	SC09	Year	Month	Day
Observer's Name:	Erin Boyle, Brandon Marion			
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	168	161	163	3.22	2.75	47	29
2	158	158	145	3.17	2.75	42	27
3	165	163	157	3.18	2.75	43	26
4	161	159	155	3.19	2.75	44	28
5	154	154	133	3.14	2.75	39	25
Total		795				215	
Average		159				43	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Atmospherics Baseline Project 868-011-04

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC10	11	3	4
Snow Course Name:	SC10	Year	Month	Day
Observer's Name:	Erin Boyle, Brandon Marion			
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.: 2500
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	220	219	214	3.79	2.75	104	47
2	213	212	208	3.60	2.75	85	40
3	234	232	230	3.63	2.75	88	38
4	233	233	229	3.69	2.75	94	40
5	220	220	213	3.59	2.75	84	38
Total		1116				455	
Average		223				91	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM - SC01		2011	3	29
Snow Course Name:	KSM - SC01		Year	Month	Day
Observer's Name:	C Doughty, B Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	0
		No:	0		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	142	137	126	61	44	43	31
2	144	138	128	62	44	46	33
3	132	127	110	59	44	38	30
4	124	124	109	60	44	41	33
5	126	126	108	59	44	38	30
6	130	127	118	61	44	43	34
7	126	123	114	59	44	38	31
8	133	131	114	60	44	41	31
9	137	135	112	61	44	43	32
10	132	132	126	60	44	41	31
Total		1300				411	316
Average		130				41	32

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM - SC02		2011	3	30
Snow Course Name:	KSM - SC02		Year	Month	Day
Observer's Name:	C Doughty, B Marion				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	x	Scale No.:	0
		No:	0		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	220	218	202	89	60	74	34
2	220	218	204	90	60	76	35
3	221	221	193	88	60	71	32
4	224	221	203	89	60	74	33
5	220	218	199	88	60	71	33
6	222	220	185	85	60	64	29
7	230	227	203	89	60	74	32
8	227	226	206	90	60	76	34
9	230	230	210	91	60	79	34
10	234	229	216	90	60	76	33
Total		2229				734	329
Average		223				73	33

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM - SC03a	2011	3	29
Snow Course Name:	KSM - SC03a	Year	Month	Day
Observer's Name:	C Doughty, B Marion			
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.: 0
		No:	0	

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	164	164	149	66	43	58	36
2	141	141	132	62	43	48	34
3	188	183	173	70	43	69	38
4	175	173	161	66	43	58	34
5	165	165	142	65	43	56	34
6	179	177	163	69	43	66	37
7	157	157	147	64	43	53	34
8	160	160	146	67	43	61	38
9	170	165	161	65	43	56	34
10	183	178	170	68	43	64	36
Total		1662				589	354
Average		166				59	35

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM - SC04		2011	3	29
Snow Course Name:	KSM - SC04		Year	Month	Day
Observer's Name:	C Doughty, B Marion				
Number of Tubes Used:	2 / 3	Driving Wrench Used: Yes:	x	Scale No.:	0
		No:	0		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	137	135	110	44	25	48	36
2	131	130	119	42	25	43	33
3	137	135	112	42	25	43	32
4	157	155	132	63	44	48	31
5	136	135	117	61	44	43	32
Total		688				226	164
Average		138				45	33

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM - SC05		2011	3	30
Snow Course Name:	KSM - SC05		Year	Month	Day
Observer's Name:	C Doughty, B Marion				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	x	Scale No.:	0
		No:	0		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	264	258	225	92	60	81	32
2	264	263	225	93	60	84	32
3	269	267	239	95	60	89	33
4	263	263	229	96	60	91	35
5	259	257	215	96	60	91	36
Total		1307				437	167
Average		261				87	33

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM - SC06		2011	3	30
Snow Course Name:	KSM - SC06		Year	Month	Day
Observer's Name:	C Doughty, B Marion				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	x	Scale No.:	0
		No:	0		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	178	175	161	82	60	56	32
2	182	179	152	82	60	56	31
3	188	185	164	83	60	58	32
4	177	175	164	82	60	56	32
5	179	178	144	81	60	53	30
Total		893				279	156
Average		179				56	31

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM - SC07		2011	3	29
Snow Course Name:	KSM - SC07		Year	Month	Day
Observer's Name:	C Doughty, B Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	0
		No:	0		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	164	164	147	65	43	56	34
2	160	160	150	64	43	53	33
3	164	164	140	65	43	56	34
4	171	171	159	66	43	58	34
5	163	157	156	64	43	53	34
Total		817				277	169
Average		163				55	34

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM - SC09		2011	3	29
Snow Course Name:	KSM - SC09		Year	Month	Day
Observer's Name:	C Doughty, B Marion				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	0
		No:	0		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	156	156	137	63	43	51	33
2	157	157	156	65	43	56	35
3	159	159	132	62	43	48	30
4	166	166	156	65	43	56	34
5	165	163	151	65	43	56	34
Total		801				267	166
Average		160				53	33

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no. _____)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	KSM - SC10		2011	3	29
Snow Course Name:	KSM - SC10		Year	Month	Day
Observer's Name:	C Doughty, B Marion				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	x	Scale No.:	0
		No:	0		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	229	229	212	95	60	89	39
2	224	224	208	94	60	86	39
3	249	244	232	99	60	99	41
4	235	232	216	96	60	91	39
5	232	232	203	95	60	89	38
Total		1161				455	
Average		232				91	

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no. 0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC 01		2011	5	5
Snow Course Name:	KSM SC 01		Year	Month	Day
Observer's Name:	C. Doughty, J. Wiliams				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	127	126	112	156	104	52	41
2	127	123	114	154	104	50	41
3	105	101	90	145	104	41	41
4	107	106	91	149	104	45	42
5	106	105	85	150	104	46	44
6	116	113	101	156	104	52	46
7	110	109	89	152	104	48	44
8	115	115	97	151	104	47	41
9	128	127	96	162	104	58	46
10	126	121	98	153	104	49	40
Total		1146				488	426
Average		115				49	43

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no.0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC02		2011	5	3
Snow Course Name:	KSM SC02		Year	Month	Day
Observer's Name:	C. Doughty, J. Williams				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	196	195	183	190	106	84	43
2	209	205	189	191	106	85	41
3	195	193	161	185	106	79	41
4	193	190	175	184	106	78	41
5	198	195	186	182	106	76	39
6	187	186	174	185	106	79	42
7	206	205	186	194	106	88	43
8	199	199	164	192	106	86	43
9	200	199	180	192	106	86	43
10	196	196	186	194	106	88	45
Total		1963				829	422
Average		196				83	42

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

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SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC03a		2011	5	3
Snow Course Name:	KSM - SC03a		Year	Month	Day
Observer's Name:	C. Doughty, J. Williams				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	yes	Scale No.:	
		No:	-		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
10	160	155	135	173	106	67	43
9	138	137	120	159	106	53	39
8	135	135	124	160	106	54	40
7	136	132	128	157	106	51	39
6	132	127	125	164	106	58	46
5	138	135	120	159	106	53	39
4	102	98	90	152	106	46	47
3	164	158	156	174	106	68	43
2	143	141	136	170	106	64	45
1	128	128	120	165	106	59	46
Total		1346				573	427
Average		135				57	43

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no.0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC 04		2011	5	5
Snow Course Name:	KSM SC 04		Year	Month	Day
Observer's Name:	C. Doughty, J. Williams				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	113	112	100	150	104	46	41
2	112	112	90	150	104	46	41
3	113	113	103	155	104	51	45
4	130	130	117	161	104	57	44
5	130	129	106	162	104	58	45
Total		596				258	216
Average		119				52	43

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

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SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC05		2011	5	3
Snow Course Name:	KSM SC05		Year	Month	Day
Observer's Name:	C. Doughty, J. Williams				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	x	Scale No.:	
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	210	210	194	242	157	85	40
2	231	231	216	256	157	99	43
3	234	234	219	254	157	97	41
4	244	242	207	256	157	99	41
5	224	224	202	250	157	93	42
Total		1141				473	207
Average		228				95	41

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no. 0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC06		2011	5	3
Snow Course Name:	KSM SC06		Year	Month	Day
Observer's Name:	C. Doughty, J. Williams				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	162	161	143	171	104	67	42
2	158	155	132	167	104	63	41
3	155	154	128	168	104	64	42
4	160	160	125	168	104	64	40
5	182	182	147	172	104	68	37
Total		812				262	
Average		162				66	

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SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC07		2011	5	3
Snow Course Name:	KSM SC07		Year	Month	Day
Observer's Name:	C. Doughty, J. Williams				
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:	
		No:	-		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	177	169	150	170	106	64	38
2	182	176	155	185	106	79	45
3	162	159	136	166	106	60	38
4	160	158	138	168	106	62	39
5	172	170	156	174	106	68	40
Total		832				333	200
Average		166				67	40

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no.0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC09	2011	5	3
Snow Course Name:	KSM SC09	Year	Month	Day
Observer's Name:	C Doughty, J Williams			
Number of Tubes Used:	3	Driving Wrench Used: Yes:	x	Scale No.:
		No:		

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
5	151	146	127	160	106	54	37
4	151	150	131	163	106	57	38
3	137	133	125	160	106	54	41
2	137	136	110	166	106	60	44
1	151	141	121	162	106	56	40
Total		706				281	199
Average		141				56	40

British Columbia Ministry of Water, Land and Air Protection- Environmental Protection Division- Flood Hazard/River Forecast Centre

KSM Project Environmental Baseline Study (Project no. 0868-011-04)

SNOW SURVEY FIELD DATA SHEET

Snow Course No.	SC10		2011	5	3
Snow Course Name:	KSM - SC10		Year	Month	Day
Observer's Name:	C. Doughty, J. Williams				
Number of Tubes Used:	4	Driving Wrench Used: Yes:	x	Scale No.:	
		No:			

Station Number	Snow Depth (cm)		Core Length (cm)	Weight of Tube and Core (cm)	Weight Tube Only Before Sampling (cm)	Snow-Water Equivalent (cm)	Density (%)
	With Dirt Plug	Without Dirt Plug					
1	221	221	209	287	190	97	44
2	247	238	226	287	190	97	41
3	263	250	241	300	190	110	44
4	249	249	200	285	190	95	38
5	232	232	210	289	190	99	43
Total		1190				498	209
Average		238				100	42