# ASSESSMENT REPORT

# ON THE

# **SURE BET PROPERTY**

**ROCK SAMPLING** 

BC Geological Survey Assessment Report 31600

Crawford Peninsula, BC Slocan Mining Division

BCGS Map 082F066 and 067; N.T.S. Map 82 F/10E Latitude 49° 38' N, Longitude 116° 49' W

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Submitted: May 6<sup>th</sup>, 2010

# SUMMARY

The Sure Bet property is located immediately east of Kootenay Lake in southeastern British Columbia and comprises a total of 1,501 ha (3,907 acres), consisting of 13 Mineral Tenure Online (MTO) Tenures.

The property can be accessed by following highway 3A north from Creston, or west from Nelson, to the community of Crawford Bay. In the community of Crawford Bay, Peters Road extends due south to provides access to the Sure Bet property on the Crawford Peninsula.

Several clear cuts are present on the property, together with a number of old logging roads which provide good access to both the eastern and western portions of the property. Active logging can be expected by Wynndel Box and Lumber on the Crawford Peninsula..

The claims comprising the property were acquired to cover ground on which a large number of high grade massive sulphide boulders have been discovered and has been the focus of a number of exploration programs intended to identify an in situ location. An alternative possibility is that the boulders may have been glacially transported from the Bluebell Mine at Riondel, approximately 13 km NW of the Sure Bet property.

The 2010 program was intended to provide further information intended to assess the potential for the Sure Bet property to host one or more massive sulphide occurrences similar to the Bluebell Mine. To date, no documented in situ massive sulphide occurrence has been documented on the property, although the 1992 Assessment Report by Kokanee Explorations Ltd (Meeks 1992) described high grade base metals in a program of "... Trenching (which) yielded galena, honey coloured sphalerite, tetrahedrite, and barite on fresh surfaces. Assay grades of selected hand samples were as high as 2.80% lead, 5.65% zinc, and 10.16 oz/t silver".

The author, together with Paul Ransom, a geologist with experience in the Bluebell Mine and who supervised a number of exploration programs on the Sure Bet property on behalf of Cominco Ltd, were retained to:

- 1) visit the property to examine a number of massive sulphide boulder occurrences,
- 2) visit the locations of several of the drill collar locations,
- 3) examine a number of mineralized outcrops,
- 4) review the available geological information and program results, so as to
- 5) provide recommendations with regard to addressing the possible origin of the massive sulphide boulders documented on the property.

A total of 19 samples were taken from both the property and from waste material at the former Bluebell Mine and submitted for analysis at Acme Analytical Laboratories Ltd. in Vancouver, BC for Group 1EX ICP-MS analysis.

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# **INTRODUCTION**

The Sure Bet property is located immediately east of Kootenay Lake in southeastern British Columbia (Fig. 1 and 2) and comprises a total of 1,501 ha (3,907 acres), consisting of 13 Mineral Tenure Online (MTO) Tenures (Fig. 3). The property can be accessed by following highway 3A north from Creston, or west from Nelson, to the community of Crawford Bay. In the community of Crawford Bay, Peters Road extends due south to provides access to the Sure Bet property on the Crawford Peninsula.

Several clear cuts are present on the property, together with a number of old logging roads which provide good access to both the eastern and western portions of the property. Active logging can be expected by Wynndel Box and Lumber on the Crawford Peninsula..

The claims comprising the property were acquired to cover ground on which a large number of high grade massive sulphide boulders have been discovered and has been the focus of a number of exploration programs intended to identify one (or more) in situ locations. An alternative possibility is that the boulders may have been glacially transported from the Bluebell Mine at Riondel, approximately 13 km NW of the Sure Bet property.

The 2010 program was intended to provide further information intended to assess the potential for the Sure Bet property to host one or more massive sulphide occurrences similar to the Bluebell Mine. To date, no documented in situ massive sulphide occurrence has been documented on the property, although the 1992 Assessment Report by Kokanee Explorations Ltd (Meeks 1992) described high grade base metals in a program of "... Trenching (which) yielded galena, honey coloured sphalerite, tetrahedrite, and barite on fresh surfaces. Assay grades of selected hand samples were as high as 2.80% lead, 5.65% zinc, and 10.16 oz/t silver".

The author, together with Paul Ransom, a geologist with experience in the Bluebell Mine and who supervised a number of exploration programs on the Sure Bet property on behalf of Cominco Ltd, were retained to:

- 1) visit the property to examine a number of massive sulphide boulder occurrences,
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- 5) provide recommendations with regard to addressing the possible origin of the massive sulphide boulders documented on the property.

A total of 19 samples were taken from both the property and from waste material at the former Bluebell Mine and submitted for analysis at Acme Analytical Laboratories Ltd. in Vancouver, BC for Group 1EX ICP-MS analysis.

# **PROPERTY DESCRIPTION**

# Location

The Sure Bet property is located in the western Purcell Mountains (latitude  $49^{\circ}$  38' N, longitude  $116^{\circ}$  49' W), approximately 7 km south of the community of Crawford Bay, B.C. on N.T.S. mapsheet 82 F/10E (BCGS Mapsheets 082F066 and 067) (Fig. 1 and 2). The property consists of a total of 18 Mineral Tenure Online (MTO) Mineral Tenures, located on either side of Crawford Bay on the east side of Kootenay Lake (Fig. 3).

# Access

The property can be accessed by following highway 3A north from Creston, or west from Nelson, to the community of Crawford Bay. In the community of Crawford Bay, there is a prominent 90° turn in the highway in which the highway changes orientation from east-west to north-south (or vice versa if traveling from Nelson). Peters Road extends due south from this prominent corner and provides access to the Sure Bet property.

Proceed along Peters Road for 2.0 km to the point where the paved Peters Road gives way to the graveled Pilot Point Forest Service Road. The radio frequency for use on the Pilot Point FSR is 153.38, which is utilized by Wynndel Box and Lumber of Wynndel, BC.

All roads are negotiable using a 2WD vehicle, although 4WD is recommended for better clearance.

# **Physiography and Climate**

The Sure Bet property is located on the Crawford Peninsula (Fig. 1 and 2), on the east side of Kootenay Lake. Relief in the area varies from 560 metres (1,840 feet) along Kootenay Lake to approximately 990 metres (3,250 feet) at the height of land on the Crawford Peninsula.

The claims (Figure 3) are located on the east side of Kootenay Lake and is on the windward side of the topographic divide between Kootenay Lake and the Rocky Mountain Trench to the east. As such, the area is subject to relatively heavier precipitation and more humid conditions.

The region is characterized by heavy snowfall during the winter months, however, the moderating effect of Kootenay Lake allows for a longer field season free of snow, with snow accumulations delayed in the early winter and snow melt occurring earlier in the spring. As a result, the property is available for vehicle based, geological exploration from mid-March to early November.

Vegetation in the area is predominantly coniferous, with deciduous trees preferentially located along creek bottoms and low lying, wetter areas. Undergrowth consists largely of small deciduous shrubs.

# **CLAIM STATUS**

The Sure Bet property consists of a total of 13 Mineral Tenure Online (MTO) Mineral Tenures (Figure 3), comprising a total of 1,501 ha (3,907 acres). Significant claim data are summarized below:

Tenure	Claim Name	Owner	Issue Date	Good To Date *	Status	Area (ha)
Number						
603770	SILVER HIGH	107050 (100%)	2009/may/01	2012/apr/20	GOOD	125.4815
603771	SILVER HIGH 1	107050 (100%)	2009/may/01	2012/apr/20	GOOD	20.9115
603772		107050 (100%)	2009/may/01	2012/apr/20	GOOD	20.9097
603733	LAKE	107050 (100%)	2009/may/01	2012/apr/20	GOOD	125.5197
603734		107050 (100%)	2009/may/01	2012/apr/20	GOOD	188.1358
603735		107050 (100%)	2009/may/01	2012/apr/20	GOOD	41.8165
603736	BAY2	107050 (100%)	2009/may/01	2012/apr/20	GOOD	20.9079
633784		107050 (100%)	2009/sep/14	2012/apr/20	GOOD	62.7665
717562	CRAW	107050 (100%)	2010/mar/07	2011/apr/20	GOOD	125.4391
717582	CRAW 2	107050 (100%)	2010/mar/07	2011/apr/20	GOOD	501.6044
717602	CRAW 3	107050 (100%)	2010/mar/07	2012/apr/20	GOOD	439.1442
717522	COPPER HORN	107050 (100%)	2010/mar/07	2012/apr/20	GOOD	330.0692
717702	BAY 2	107050 (100%)	2010/mar/08	2012/apr/20	GOOD	104.607
				-	Total	1,500.857

\* Subject to acceptance of Assessment Report

The mineral tenure information presented above has been derived from the Mineral Titles Online ("MTO") database using the MTO website and is believed to be current and correct.

# HISTORY

1973 - Cominco Ltd. - The first Assessment Report available for the property documents a soil sampling program comprised of 530 soil samples recovered from the Craw Mineral Claims (Szabo 1973). The samples were analyzed for copper, lead, zinc and silver using Atomic Absorption.

The survey was consisted of east-west survey lines located north and south of McGregor Lake, extending to the southwest, and identified a large surface soil anomaly defined by all metals except copper.

1973 - Cominco Ltd. - The work consisted of a 22 mile (35 km) horizontal loop Electromagnetic (EM) and 1/4 mile (0.4 km) gravity ground geophysical survey on the Craw Mineral Claims (Hayles 1973). A relatively coarse line and station spacing was utilized east and east-southeast of McGregor Lake while a tighter line and station spacing was used west, south and southeast of McGregor Lake.

The survey resulted in identification of a number of conductors, some of which were only detected on a single line.

- **1973 International Marble and Stone Company Ltd.** Two "horizontal holes" were drilled on the Cottage #1 and #2 Mineral Tenures located east of McGregor Lake and north of Crystal Lake to test industrial mineral potential of the carbonates correlated to the Badshot Formation. Very little information and no conclusions regarding the results of the program were provided.
- 1977 Cominco Ltd. Diamond drill program consisting of four holes, totaling 1002 feet (305.41 m), on the Craw Mineral Claims (Mawer 1977). The holes were drilled from two pads, with two holes from each pad, one located north of McGregor Lake and the other to the south of McGregor Lake. The holes were between 225 and 268 feet (68.58 and 81.69 m) in length.

The "Report" consists of maps and drill logs. No rationale or target is provided, nor any sample descriptions or results (if any taken). Local intervals are decsribed as having abundant graphite, disseminated pyrite and/or pyrrhotite, with some bearing a "little chalcopyrite". One interval in hole C77-3 (from 142.0 - 149.0 feet; 43.28 - 45.42 m) contained "thin quartz stringers with traces of dark brown sphalerite" and another between 200 and 201 feet (60.96 to 61.26 m) had "traces of red brown sphalerite".

Hole C77-4 is reported to contain traces of red brown sphalerite in a number of intervals between 113.0 and 185.5 feet (34.44 and 56.54 m).

- **1977 International Marble and Stone Company Ltd.** Very brief report documenting four drill holes, totaling 480 feet (146.30 m). Location map poor and drilling results (for carbonates in Badshot Formation) terse.
- **1980 Cominco Ltd.** Further geochemical sampling on the Craw Mineral Claims (Brabec 1980), comprised of 750 samples from two grids southwest and north of McGregor Lake, respectively. Samples were analyzed for Ag, Pb, Zn and Mn by Atomic Absorption.

"The results obtained suggest that the anomalous material including the sulphide boulders, originates from a local source, possibly within the western half of Grid 2. The shape of the anomaly may be a result of a combination of structural control and glacial transport both of which had been active in the same direction (roughly northwest - southeast) (Brabec 1980).

- **1982 International Marble and Stone Company Ltd.** A total of four drill holes, totaling 311.10 m, were drilled, apparently in a north-south oriented fence based on the poor location map provided (Rookes 1982). Based on the limited analyses included, the program was intended to test dolomite in the Badshot Formation.
- **1991 Bruce Doyle, prospector** Limited prospecting program on the Pup and Sure Mineral Tenures. A total of 20 rock samples were taken from float boulders and outcrop south of McGregor Lake in an attempt to tie massive sulphide float boulders to local bedrock (and mineralization) occurring on the property.

"The rock samples taken from the black siltstones, argillites and quartzite schists show very few geochemical similarities to those of the float boulders. The samples taken from the areas of recrystallized limestone match fairly closely geochemically to those of the samples from the float boulders" (Doyle 1992).

**1992 - Kokanee Explorations Ltd.** - Kokanee undertook a program to try to identify a source for the massive sulphide float boulders on the Crawford Peninsula on the Arc Property, consisting of the Arc, Sure Bet, Pup and Noah mineral tenures.

A total of 1,276 soil samples were recovered from 19 north-south survey lines spaced 200 m apart and having a station interval of 50 m, covering a large area extending from the east side of the Crawford Peninsula to west of the height of land and from Crystal Lake north to Fraser Lake (northwest of the village of Crawford Bay).

Samples were submitted for 30 element ICP analysis at Acme Analytical Laboratories Ltd. Analysis of geochemical results were interpreted to document four anomalies within an overall geochemical anomaly oriented NNW - SSE between 200 and 400 m wide and at least 5000 m long that "... appears to cross cut the geology ..." (Meeks 1992).

Kokanee also retained SJ Geophysics to complete Horizontal Loop Electromagnetics (HLEM), Very Low Frequency - EM (VLF-EM) (two lines) and magnetometer surveys over the Arc property. "The purpose of the survey was determine if the source of the boulders which contained magnetic pyrrhotite, galena and sphalerite or related structures could be located with geophysical methods" (Visser 1991).

A "large" number of EM anomalies were identified and considered worthy of subsequent follow-up.

**1992 - Kokanee Explorations Ltd.** - Kokanee followed up on the geochemical / geophysical program with a five hole diamond drill program. Holes A92-1 to A92-5 were drilled as "... an initial test of soil geochemical anomalies supported by geophysical (E.M. and Mag.) anomalies" (Pighin 1992).

The drill holes were all angle holes (-45°), ranging between 178.4 and 297.3 m, for a total of 1,094.9 m. The best mineralization was summarized for hole A92-5 as follows:

"Vugs' filled by talc, fluorite and red sphalerite occur in dolomitic marble from 146.9 to 178.4 metres. The 'vugs' are very widely scattered" (Pighin 1992).

**1992** - Kokanee Explorations Ltd. - Kokanee trenched an area of anomalous surface soil geochemistry and identified a "... mineralized unit (that) consists of brecciated and silicified marble. The brecciation may be a result of Karst activity as indicated by some of the textures in the drill cores. The mineralization is characterized by the presence of oxides of lead, zinc, and copper as well as barite at the surface. Trenching yielded galena, honey coloured sphalerite, tetrahedrite, and barite on fresh surfaces. Assay grades of selected hand samples were as high as 2.80% lead, 5.65% zinc, and 10.16 oz/t silver" (Meeks 1992).

Kokanee subsequently drilled an additional three diamond drill holes, A92-6 to 8, to test an interpreted breccia unit approximately equidistant between McGregor and Crystal Lakes. The holes documented an apparently oxidized, weathered mineralized zone with the best results returned from hole A92-8.

The interval intersected in hole A92-8 was described as follows:

"Bedrock was encountered at 3.7m. Marble was encountered from 3.7m to 8.1m, some weathering was present near a shear zone from 7.7m to 8.1m. The mineralized zone was encountered from 8.1m to 13.2m. The unit was limonitic and copper stained with patchy disseminations of pyrite and galena. The host is brecciated marble and pegmatite. The hole ended in dolomite at 32.3m. The overall results of the assays were better in this hole than in the other 2 holes but were still well below typical ore grades with a combined lead zinc copper assay of less than 0.2%" (Meeks 1992).

- **1995 Cominco Ltd.** Cominco Ltd. flew a Dighem V survey over the property and defined a large number of fairly strong EM anomalies (Klewchuk 2001).
- **1996 Cominco Ltd.** A total of 215 soil samples were recovered in an attempt "... to delineate distribution of various metals and indicator elements in the soils south of where previous sampling had been done" (Ransom 1996). The samples were taken from a grid extending approximately 3000 m west from the east shore of the Crawford Peninsula and immediately north of Crystal Lake. Samples were submitted for 27 element ICP analysis.
- **1997 Cominco Ltd.** Cominco undertook a combined "Beep-Mat" and soil geochemical survey on the Sure Bet property. The Beep-Mat survey was undertaken in order to locate as many massive sulphide boulders as possible in the near surface environment within the survey area. "The objective … was to locate indications of a Bluebell-type deposit through: detailed geological mapping of rock types, structures and sulphide occurrences; in-fill and extension of soil sampling in the vicinity of anomalous results reported in previous work; and to conduct shallow beep-mat electromagnetic surveying to locate sulphide boulders and conductive metasedimentary horizons" (Ransom 1997).

An additional 600 soil samples were taken and analyzed for Pb, Zn, Cu and Ag at the Cominco Exploration Laboratory in Vancouver..from a grid immediately west and southwest of Crystal Lake, as well as along the existing road network.

"In the Crawford Bay area numerous previously buried Zn-Pb-Cu sulphide boulders and a few outcrops with stringers and pods of pyrrhotite and chalcopyrite were discovered using the Beep Mat. In addition a few mud-covered boulders hidden in roadbeds were found; .... In several areas narrow pyrrhotite layers were traced between outcrops for several tens of metres" (Ransom 1997).

**1998 - Cominco Ltd.** - Cominco completed a limited exploration program that included geophysical surveying, geochemical sampling and diamond drilling on the Sure Bet property. A geophysical survey comprised of 4.5 km of Magnetometer and 0.5 km of EM was completed on a small grid in the vicinity of massive sulphide boulders coincident with an area geochemically anomalous for Cu, Pb and Zn. In addition, a petrographic study was made of 23 outcrop and core samples.

A total of 28 soil and 9 outcrop samples were collected from the area surrounding the drill area west of Crystal Lake. A small diamond drill program was subsequently completed to test coincident Magnetic and EM anomalies. A total of 403.2 m were drilled in two diamond drill holes, with a total of 45 samples taken from drill core. All samples were submitted for ICP or Atomic Absorption.

"The highest Zn value was 473700 ppm Zn ( $\pm$ 47%) from the 3 cm sphalerite vein at 84.2 m in S98- 1. High Cu values from S98-1 indicate a high background in the pyrrhotitic quartz rich schists" (Ransom 1998).

**1999 - Cream Minerals Ltd.** - Cream retained Peter E. Walcott and Associates Ltd to complete a small electromagnetic (EM) and limited gravity survey on two areas of the Crystal Lake property. Gravity readings were taken along a single line and limited due to ice conditions.

A small Horizontal Loop survey was undertaken on a previous Cominco grid so as to "... detail and better delineate the airborne electromagnetic conductor ... located on the east side of Crystal Lake ...

The conductor shows up as a typical dikelike response dipping steeply to the west and exhibiting moderate conductivity ...

Given the lack of geochemical encouragement - no anomalous soil results over the shallow conductor - the writer concludes that the causative source of the conductor is pyrite-pyrrhotite mineralization - low intensity airborne magnetic anomaly ... " (Walcott 1999).

**2001 - Klondike Gold Corp.** - Klondike completed an exploration program comprised of ground VLF-EM followed by diamond drilling totaling 303.35 m in three holes.

The VLF-EM survey was completed on a local grid (1.7 line km) and along roads (6.75 km) in an attempt ".... to establish the precise location of airborne EM anomalies and to provide local detail where diamond drilling was required ..." while diamond drilling was completed "... to test an inferred structural intersection and an area of indicated airborne EM anomaly complexity" (Klewchuk 2001).

A total of three drill holes were completed. "Drill hole SB 01-1 tested an inferred structural intersection near a small pond ... The hole ... encountered a narrow 40 cm fault breccia at 68.5 m which was unmineralized. This structure may trend parallel to the regional stratigraphy and it may correlate with a weak VLF-EM anomaly detected on the road traverse just south of the drill hole.

Drill holes SB 01-2 &3 were drilled in an area southeast of McGregor Lake ... to test airborne EM anomalies which were 'ground-proofed' using ground VLF-FM ... The airborne EM and ground VLF-EM conductors are caused by graphite and pyrrhotite-rich bands within the Index Formation. Minor base metal sulfides, including chalcopyrite. sphalerite and galena are associated with both zones" (Klewchuk 2001).

**2006 - High Ridge Resources Inc.** - High Ridge completed a surface UTEM3 ground geophysical survey comprised of surveys on two separate grids, Loop 1 and Loop 2, with a third loop, Loop 3, added to Loop 2. Details pertaining to the individual grids are sparse in the report available to the company.

Furthermore, no thematic data (contours, surface features, roads, etc) were plotted on the map which makes comparing results from the UTEM3 survey to other datasets difficult.

"The strong conductive responses observed to the west of Loop 1 and to the east of Loop 2 should be compared to other information such as geochemistry to further prioritize areas for drilling. It is likely that a folded package of rocks containing graphitic material, dipping moderately to the west is the source of the Loop 1 anomaly" (Krawinkel 2006".

2008 - High Ridge Resources Inc. - In a corporate News Release, High Ridge presents analytical results from a sampling program of float boulders and subcrop. High grade analytical results are presented for two subcrop samples. SB-243 returned 2.13% Zn, 2.51% Pb, while SB-242 returned 6.02% Zn, 1.38% Pb and 0.186% Cu.

"Geological mapping and prospecting by High Ridge has confirmed and located numerous massive-sulphide float boulders mineralized with pyrrhotite, sphalerite (zinc), galena (lead), and lesser chalcopyrite (copper). The main area of massive-sulphide boulders forms a pronounced, NNW-trending area 4 km long and 0.5 to 1 km wide which cuts across the stratigraphic trend at an acute angle. Other mineralized areas are aligned in the strike direction of the target Badshot Formation. The massive-sulphide boulder trends coincide with zinc-lead-silver anomalies previously outlined in soils. ...

Massive-sulphide boulders from Silver Bay differ in the Pb isotope ratios from the Bluebell deposit and are most likely derived in-situ. ..." (High Ridge 2008).

**2008 - High Ridge Resources Inc.** reportedly held control of the Sure Bet property through an Option Agreement on the property between 2005 and 2008. To facilitate their exploration program, the property owner, Bruce Doyle, provided all of the information pertaining to the property, both digital and hard copy. Apparently, High Ridge defaulted on the terms of their Option Agreement but have neither returned the property files to Bruce Doyle nor disclosed the details and results from their program between 2005 and 2008, other than the limited information summarized above.

# **GEOLOGICAL SETTING**

"The Bluebell ore bodies by contrast are more or less massive replacements of limestone controlled by cross-fractures. The limestone is 100 to 150 feet thick, strikes northward, and dips, on the average, 35° to the west. The limestone belongs to the Badshot Formation. Very similar deposits occur in stratigraphically higher limestones on the western side of Kootenay lake in the Ainsworth camp. The ore bodies are generally of higher grade, richer in silver, and more complex in mineralogy than those of the Salmo type. They have formed by replacement outward from a joint system that is subsequent to both Phase II deformation and to regional metamorphism" (Fyles 1970).

The stratigraphy and structure are, therefore, critical features to the location and nature of a mineral deposit. The following description of Regional Geology utilizes direct quotes from previous work completed in the area, with specific emphasis on refining the stratigraphy and identifying the structural elements.

# **Regional Geology**

"The boundary between the Kootenay Arc and the Purcell anticlinorium is a steep, locally mylonitic fault zone (the Kootenay Arc boundary fault) that juxtaposes a domain of complexly refolded, high-amplitude, west-verging ductile folds (Fyles, 1964) against a domain of upright, more open folds. ..." (Warren 1996).

Strata on the Sure Bet property (Figure 4) located east of the Kootenay Arc Boundary Fault, on the the northeast portion of the Sure Bet property, is underlain by south striking, steeply west dipping, Late Proterozoic age strata correlated to lower Windermere Supergroup on the western limb of the Purcell Anticlinorium. Correlations indicate strata in this area belong to a continuous succession comprising the Three Sisters Formation.

Strata on the majority of the Sure Bet property, located west of the Kootenay Arc Boundary Fault has been correlated to a Late Proterozoic (Hadrynian) to Lower Cambrian pericratonic succession comprising, from oldest to youngest, the Three Sisters Formation, the Hamill and Lardeau Groups. In general, this stratigraphic succession includes quartzites, quartz- to mica-rich schists, marbles, calc-silicates and amphibolites.

# Stratigraphy

The following has been taken from Höy (1980):

"The Windermere Supergroup includes the Toby Formation, a basal conglomeratic mudstone, and the Horsethief Creek Group, a thick accumulation of shale, quartzose and feldspathic sandstone, and quartz pebble conglomerate. A succession of

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Paleozoic quartzites, carbonates, and fine-grained clastic rocks overlies Windermere rocks. Well-

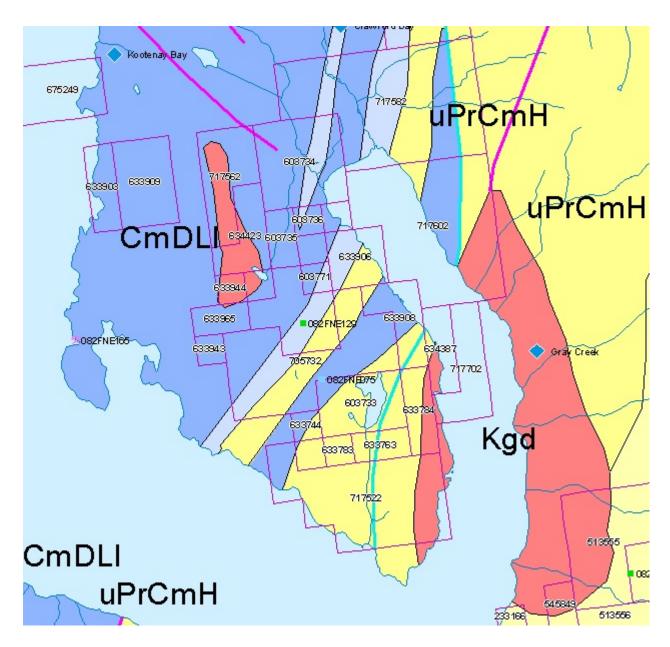


Figure 4 - Geological Map - uPrCmH - Upper Proterozoic to Lower Cambrian Hamill Group, CmDLI - Index Formation (Lardeau Group), light blue unit (unlabelled) - Lower Cambrian Badshot Formation, Kgd - Cretaceous Granodiorite (Crawford Bay Stock straddles Crawford Bay, McGregor Granitoid at centre left). Scale approximately 1:75,000 (Taken from BC Ministry of Energy, Mines and Petroleum Resources The MapPlace)

sorted Lower Cambrian quartzite of the Hamill Group overlies the Horsethief Creek Group and is in turn overlain by the Badshot Formation, a thin but widespread carbonate unit. The Badshot is the host of virtually all the replacement and stratiform lead-zinc deposits in the Kootenay Arc. The Badshot is overlain by the Lardeau Group, a succession of argillite, shale, calcareous shale, and minor quartzite of Early Cambrian and later age" Höy (1980).

The meta-sedimentary and meta-volcanic succession described above was subsequently intruded by the Crawford Bay Stock, correlated to the Cretaceous Bayonne Magmatic Suite. The Crawford Bay Stock is described as a biotite-bearing, medium- to coarse-grained quartz monzogranite.

## Structure

The structure of the Crawford Bay area is dominated by its position on the western flank of the Purcell Anticlinorium, a north plunging fold of regional significance, and the eastern margin of the Kootenay Arc, a pericratonic assemblage of strata with affinities to the North American continent but no North American basement. The Purcell Anticlinorium is allochthonous with respect to North American cratonic basement, having been transported northeastward in the hanging wall of the Purcell Thrust. This major structure has been complicated slightly by a number of regional and local faults, as indicated on the Kootenay Lake mapsheet of Reesor (1996). An early folding event has been proposed for early structures interpreted to have developed in the Late Proterozoic during the Goat River Orogeny.

"The Kootenay Arc has undergone intense polyphase deformation. In general, the earliest recognized structures are tight to isoclinal, north-trending recumbent folds

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More open but locally isoclinal, north-trending Phase 2 folds with upright to steeply westdipping axial surfaces are superposed on the Phase 1 folds. These folds dominate the structure of the Kootenay Arc and account for the pronounced north/south structural grain. ... The latest discernible deformation in the arc caused faulting and gentle folding of the earlier structures ...

In the Riondel area the oldest recognized structure is the Riondel nappe, a recumbent fold that closes west of the most western exposure in the area. Its root is inferred to lie beneath the West Bernard fault, a west-dipping reverse fault that separates an inverted panel of rocks in the west, the lower limb of the Riondel nappe, from a right-side-up panel in the east. Tight to isoclinal northerly trending folds with west-dipping axial surfaces and subhorizontal fold axes are superposed on the Riondel nappe. Small-scale southwesterly trending warps and folds are overprinted on the earlier folds and a number of southeast-trending transverse faults displace the north/south fold trends" (Höy 1980).

# Local Geology

Results of regional mapping by both the Geological Survey of Canada (GSC) and the BC Geological Survey Branch (BC GSB) are available for the Crawford Peninsula area. Höy (1980) provides geological mapping from the Fry Creek Batholith south to the northern tip of the Crawford Peninsula. Although the accompanying map does not cover the Crawford Peninsula, Höy (1980) describes the Stratigraphy, Structure and Metamorphism of the region in great detail and, therefore, the publication provides a valuable resource for the property.

The Crawford Peninsula was mapped by Reesor (1983) and compiled as part of the Kootenay Lake mapsheet (Reesor 1996). Geological information for BC has been compiled in digital form (Massey et al. 2005), with the geology of the Crawford Peninsula based upon the geology of Reesor (1996).

# Stratigraphy

The following has been modified from Reesor (1996, 1983).

# Lower Cambrian and Hadrynian (?)

# **Three Sisters Formation**

"(The) ... Three Sisters Formation (Hts<sub>1</sub> to Hts<sub>3</sub>), (consists) ... of grits, grey cross-bedded quartzite and quartzpebble conglomerate. Near the top of this formation there is a layer of polymict conglomerate (Hts<sub>2</sub>) composed of clasts of grit, quartzite, shale and greenstone ... The total thickness of all members of the Three Sisters Formation is approximately 1200 m".

# **Hamill Group**

In the northeast portion of the Sure Bet property, units of the Hamill Group have been described (Reesor 1996). The Hamill Group is a predominantly quartzitic unit, dominated by quartzite and has been sub-divided into 4 units, from oldest to youngest, as follows:

"Four main subdivisions of the Hamill Group, originally set-up by Höy (1980), have been retained here. The lowermost  $(Eh_1)$  has in turn been subdivided into two units. The lower unit  $(Eh_{1a})$  consists of a succession of quartzites, commonly gritty and feldspathic and in many places includes thin schistose partings up to 10 cm thick. Quartzite beds commonly contain up to 20% of blue quartz, white quartz and porcelain-white feldspar particles, averaging 3-5 mm but locally up to 1 cm in grain size. A 15- to 25-metre conglomerate bed occurs above the middle of this unit. It contains clasts mostly of quartz or quartzite up to 5 cm, rarely larger. With the disappearance of the grits and conglomeratic beds and the appearance of uniform thin- to thick-bedded grey, white, and pink quartzites, the lower unit  $(Eh_{1a})$  grades into the upper unit  $(Eh_{1b})$ . The quartzites in the upper unit are generally grey to white, rarely green or pink with, in some successions, thin partings of micaceous schist.

The quartzites are in places crossbedded and the succession, although repeated by faulting, appears to be a consistently west-facing panel. The lower unit  $(Eh_{1a})$  has an approximate mapped thickness of 700 to 800 m, and the upper an approximate thickness of 600 to 800 m.

The second unit  $(\pounds_2)$  of the Hamill Group lies abruptly above the quartzite succession and consists of schists, quartzitic schist, quartzite, and amphibole bearing schist (greenstone?). Carbonate-bearing strata are found in the lower part of this unit and a thin marble unit  $(\pounds_{2b})$  has been mapped over a considerable distance. Höy estimates a thickness of 2000 m for this unit.

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It is worth pointing out the similarity in lithology between the Three Sisters Formation (Hts<sub>1</sub> to Hts<sub>3</sub>), as mapped in the southwest Boswell map-area, and the lowermost Hamill ( $\pounds$ h<sub>1a</sub>) mapped in the Kaslo map-area. This similarity extends even to the occurrence of a marker horizon of conglomerate in both units, Hts<sub>2</sub> and  $\pounds$ h<sub>1c</sub>. In the southwest the Three Sisters has traditionally been mapped as Windermere, whereas farther north Höy (1980) mapped the similar lithological unit ( $\pounds$ h<sub>1a</sub>) in the vicinity of Mount Crawford as Hamill Group. Similarly, in Lardeau map-area to the north of Fry Creek Batholith, this same basal unit was mapped as Hamill Group ... The Three Sisters and the basal unit of the Hamill Group decrease in thickness from about 1800 m in the Boswell map-area to about 800 m in the Kaslo area and to less than 500 m north of Fry Creek Batholith. It is probable that Hts<sub>1-3</sub> and  $\pounds$ h<sub>1a</sub> are correlatives and that as a sedimentological unit they belong with the Hamill Group. The sharp break in lithology with the Windermere below is marked by phylllite and/or schist all along the belt from the International Boundary to a point well within Lardeau map-area ... to the north" (Reesor 1983).

## Lower Cambrian

## **Mohican Formation**

The following has been taken from Höy (1980):

"The Mohican Formation, a gradational unit between the Hamill Group and the Badshot marble, consists predominantly of medium-grained, brown-weathering muscovite schist. Grey dolomite marble layers up to 6 metres thick and, less commonly, micaceous white quartzite layers are interbedded with the schists. A layer of pure or dolomitic white marble several tens of metres in thickness commonly marks the base of the formation.

The formation is well exposed on Crawford Creek on the east limb of the Preacher Creek antiform, but its thickness here is much greater than elsewhere. It consists of alternating thin layers (average thickness less than 2 centimetres) of rusty weathering muscovite schist and impure marble and calcareous schist. Thin quartzitic layers are common within the schists and a few biotite amphibolite layers occur near the top of the section. At least five

white calcite-tremolite marble layers occur within the section but not all of these represent distinct stratigraphic horizons. The most westerly of the white marbles is an infold of the overlying Badshot Formation. Detailed mapping has delineated several very attenuated isoclinal folds that thicken the Mohican Formation by repeating parts of the section. Similarly the anomalous thickness of Mohican Formation on Tam O'Shanter and Loki Ridges (on the west limb of the Bluebell Mountain synform) is due to structural repetitions ...

#### **Badshot Formation**

The Badshot marble is the most distinctive marker unit within the map area. It consists of nearly pure, white calcite or dolomite marble and weathers a light grey colour. Accessory minerals include tremolite, phlogopite, and graphite. The Badshot averages 15 to 30 metres in thickness although deformation has locally attenuated it on the limbs of folds (just south of Bluebell Mountain) or considerably thickened it in fold cores (to a maximum of several hundred metres south of Crawford Creek).

Badshot exposed in the Mount Loki area just east of the West Bernard fault is generally more dolomitic and finer grained than elsewhere. It is less pure (quartz, tremolite, and phlogopite are more abundant) and weathers to a light brown colour".

The following has been taken from Reesor (1983):

## **Cambrian to Devonian**

## Lardeau Group (Index Formation)

"The Lardeau Group (Index Formation, PI) in the south-west corner of Crawford Bay maparea consists of highly metamorphosed and deformed schist, gneiss, and marble ... These rocks are correlated with the Lardeau as mapped by Höy (1980) rather than with the less metamorphosed assemblage of Lardeau rocks mapped to the west of Kootenay Lake ..." (Reesor 1983).

## The following has been taken from (Höy 1993):

"Rocks assigned to the Lardeau Group include in excess of 1 000 metres of hornblende gneiss, calc-silicate gneiss, muscovite-biotite schist, and biotite-quartz-feldspar gneiss. The group has been divided into four distinct and mappable units. The youngest of these (L4) is exposed only on the west slope of Bluebell Mountain where the complete Lardeau section outcrops. Unit L3 outcrops on both limbs of the Crawford antiform. Only the lowermost schists (L1) and hornblende gneisses (L2) are exposed in cores of folds to the east. Contacts between these subdivisions of the Lardeau Group are generally quite sharp except near hinges of major folds where isoclinal mesoscopic folding of the units results in apparently 'gradational' contacts.

# Unit L1

A fine to medium-grained muscovite schist or biotite gneiss immediately overlies the Badshot marble. The unit varies from north to south as follows: in the Mount Loki area it is a medium- to coarse-grained pelitic schist containing garnet and staurolite porphyroblasts; at Tam O'Shanter Creek, it is more calcareous with a 2-metre layer of rusty weathering siliceous marble near the centre; and east of Bluebell Mountain (in the Preacher Creek antiform), it is a micaceous schist containing quartzite layers.

#### Unit L2

Dark grey to black hornblende gneiss and amphibolite comprise unit L2. They crop out along the Kootenay Lake shoreline north and south of Riondel. Unit L2 also contains diopside-rich calc-silicate layers, thin rusty weathering calcite marble layers, and, less commonly, hornblende-biotite gneiss and micaceous quartzite layers. A fairly pure, white calcite marble, several tens of metres thick, occurs near the centre of unit L2 and resembles the Badshot marble. East of Riondel this marble layer is highly attenuated and is cut by a number of sphalerite-galena-pyrite veins.

A fine layering, defined by laminations a few millimetres thick of variable hornblende or calc-silicate mineral content, is ubiquitous in the amphibolite and hornblende gneiss. The layering is believed to reflect compositional variations in the original sedimentary rock; the calc-silicate layers were more calcareous sediments and the biotite gneiss and schist, more pelitic.

#### Unit L3

... Unit L2 is overlain by quartzite containing interlayers of biotite schist (L3i), then thinly laminated amphibolite (L3ii) and thin rusty weathering siliceous marble layers (L3iii). The marble grades upward into well-layered calc-silicate gneiss (L3iv) that contains local schist, biotite gneiss, and rusty weathering siliceous marble interbeds.

The basal quartzite (L3i) is exposed on the ridge west of Preacher Creek. It is light grey, quite pure, containing only thin muscovite partings. Exposures in Tam O'Shanter and Loki Creeks are less pure and are interlayered with some schist and biotite-muscovite gneiss. The quartzite was not observed in the west limb of the Crawford antiform, but a fine-grained sugary textured feldspathic quartzite in the same stratigraphic position may be a westerly, more feldspathic facies of the quartzite. The amphibolite (L3ii) is massive and fine grained. It lies stratigraphically above the quartzite on the east limb of the Crawford antiform.

The calc-silicate gneisses (L3iv) are light grey/green in colour. A pronounced layering, varying in scale from thin laminations to layers at least 8 metres thick, is parallel to the dominant mineral foliation. The layering consists of variations in mineral assemblages and proportions and is believed to reflect variations in bulk composition of the original sedimentary beds. Sections of muscovite-rich schist and biotite gneiss and layers of rusty siliceous marble are common within unit L3iv.

The contact of unit L3 with the stratigraphically overlying biotite gneiss of unit L4 has been mapped where the last calc-silicate layer appears in the gneiss. Part of the area mapped as L3iv in the hinge zone of the Crawford antiform contains some tight infolds of unit L4. As this stratigraphic horizon is followed southward, the interfingering of units L3iv and L4 decreases until on Crawford Peninsula the contact is sufficiently sharp to measure offsets of several tens of metres in late southeast-trending faults.

# Unit L4

Unit L4 is the youngest stratified rock sequence exposed in the area. It is a rusty weathering paragneiss which forms the core of the Crawford antiform. It is generally medium grained and consists mainly of microcline, plagioclase, biotite, muscovite, and hornblende. Amphibolite bodies form large widely spaced boudins within the less competent gneiss.

...The Badshot forms a distinctive, persistent limestone-marble unit throughout the Kootenay Arc. It separates the more quartzitic units of the Hamill Group from the overlying Lardeau Group."

# Mesozoic

# **Cretaceous Intrusions**

Cretaceous intrusives of broadly "granitic" composition are present in a belt extending from the westernmost Rocky Mountains to Kootenay Lake, from the International Boundary northward to the Baldy Batholith. Intrusions range from small dykes and sills to larger intrusive complexes such as the Mt. Skelly Batholith and are collectively referred to as the Bayonne Magmatic Belt (or Suite) (Logan 2002).

The Bayonne Granitic Suite is a composite batholith comprised of a number of smaller Jurassic to Cretaceous age granitoid stocks and plutons which extends from near the International Boundary across Kootenay Lake. On the east side of the Kootenay Lake, the Bayonne Granitic Suite locally includes the Mt. Skelly Pluton, a biotite (hornblende) monzongranite with megacrysts of potassium feldspar (Reesor 1996). The Cretaceous intrusions in the area consist of the Shoreline Stock and the Crawford Bay Stock (Reesor 1996).

## **Shoreline Stock (Shoreline Intrusions)**

"The Shoreline stock is exposed along the Kootenay Lake shoreline north of Loki Creek ... It is a semiconcordant, westward-dipping quartz monzonite intrusion which is elongated approximately parallel to the trend of the Phase 2 fold structures. Its contact zone, which is more than 300 metres wide, consists of mixed pegmatite and aplite sills, foliated and layered quartz monzonite, and country rock. Toward the core of the intrusion the amount of included country rock gradually decreases, and the granitic sills become more common

finally giving way to a layered (due to variations in grain size) and foliated quartz monzonite. The most westerly exposed part of the stock is massive, medium-grained, equigranular biotite-quartz monzonite ...

Reesor (1996) describes the Shoreline Intrusions as "Biotite-muscovite granite and pegmatite, foliated in some localities; pattern indicates many inclusions of country rocks" and Logan (2002) describes the Shoreline Stock as having a "medium grained, equigranular core, (and a) margin (consisting of) interdigitated pegmatite, aplite, foliated granite and country rock".

#### **Quartz Feldspar Sills and Dykes**

... Granite pegmatite sills are widespread on the western slope of Bluebell Mountain. They are composed dominantly of quartz, white potassic feldspar, albite, and muscovite with minor biotite and rare garnets. Many of these pegmatite bodies were isoclinally folded along with the metasedimentary rocks; others were emplaced during the latter stages of the Phase 2 folding and have only been partially folded ... while some of the pegmatites were emplaced after the Phase 2 deformation. No pegmatite bodies have been discovered cutting Phase 3 structures.

The larger of the pegmatite bodies are generally coarser grained and more massive. A large concordant pegmatite body exposed on the ridge north of Crawford Bay has a pronounced foliation and near its contact includes xenolithic blocks of calc-silicate gneiss with layering approximately parallel to the regional layering. The pegmatite body becomes more massive and coarser grained away from its contact." (Höy 1993).

# **Crawford Bay Stock**

Reesor (1996) briefly describes the Crawford Bay Stock as a "biotite monzogranite, medium- to coarse-grained, with trace muscovite" and Logan (2002) describes it as a "medium- to coarse-grained granite, equigranular, porphyritic". (See also description under "Property Geology").

## Structure

The following has been taken from (Höy 1993):

"The structure of the Riondel area can be interpreted in terms of three phases of deformation on the basis of interference and crosscutting relationships and, more tenuously, on the form of individual structures and their relationships to individual mineral species ... The most conspicuous structures are a set of very tight to isoclinal folds with subhorizontal axes and steeply west-dipping axial surfaces (Phase 2). These folds are imposed on a stratigraphic succession which is overturned and represents the underlimb of the large westward-closing, Phase 1 Riondel nappe. The latest discernible deformation (Phase 3) caused faulting and gentle folding of the earlier structures. The Sherraden Creek fold is the only Phase 3 fold large enough to be shown on the map ...

#### **Mesoscopic Fabric Elements**

The main fabric elements in the area are a compositional layering which appears to represent bedding  $(S_0)$  that has been accentuated by metamorphic differentiation, a penetrative mineral foliation  $(S_2)$  that is parallel to the axial surfaces of isoclinal Phase 2 folds and is subparallel to the compositional layering except in the hinge zones of Phase 2 folds, and a mineral lineation  $(L_2)$  that is parallel to the hinge lines of Phase 2 folds and to the intersection of  $S_0$  and  $S_2$ .

#### **Bedding and Compositional Layering** (S<sub>0</sub>)

Bedding in Hamill and Mohican rocks consists of interlayering of quartzites, schists, marbles, and calc-silicate rocks. Lithological layering, which appears to be bedding accentuated by metamorphic differentiation, is readily discernible in the calc-silicate gneiss unit (L3iv) of the Lardeau Group. In this unit, thin calc-silicate layers less than a centimetre to several centimetres in thickness commonly separate amphibolite and marble layers. In a similar manner, amphibolite may separate calc-silicate layers from schist layers.

Compositional layering in the Riondel area shows a strong preferred orientation striking approximately north and dipping west at 35 degrees ... essentially parallel with that for the  $S_2$  foliation ...

#### Foliation (S<sub>2</sub>)

Most rocks in the area have a well-developed penetrative foliation,  $S_2$ , which is due to a preferred orientation of platy minerals and augen-like lenticular segregations of quartz, microcline, or plagioclase. In rocks in which these augens are abundant, they may be joined to form thin (less than 0.5 centimetre thick) monominerallic (most commonly of quartz) discontinuous layers. Alignment of phlogopites and some of the actinolites defines  $S_2$  in calcareous rocks. In schists,  $S_2$  is due to the alignment of micas and chlorites. Quartz grains in quartzites in areas of lower metamorphic grade are elongate parallel to  $S_2$  in higher grade areas, only the rare micaceous partings define  $S_2$ .

 $S_2$  is parallel to the axial planes of many tight to isoclinal Phase 2 minor folds. It parallels the compositional layering in the limbs of these folds and cuts the layering at a shallow angle in the hinge zones ...

 $S_2$  generally dips to the west throughout the area, although in the eastern domains it becomes more variable and locally may steepen through the vertical to east dipping. The general curvature of the Kootenay Arc in the Riondel area is reflected by a change in trend of  $S_2$ from north/northeast south of Riondel (domains 1 and 2) to northerly east of Riondel (domains 3 and 4) and north/northwesterly further north (domain 5) ...

#### Lineations (L<sub>2</sub>)

A penetrative mineral lineation  $(L_2)$  is defined by a preferred orientation of elongate amphibole grains, actinolite needles, elongate augen in calc-silicate racks, elongate clusters of micaceous minerals in various rock types, and rodding in quartzites... It is most conspicuous in the well-foliated rocks. It generally plunges at low angles to the north ... parallel with the hinge lines of Phase 2 folds ... South of the Riondel area, deformed cobbles in conglomerates of the Horsethief Creek Group have their long axes aligned with the mineral lineation and fold hinges ... suggesting that this is the direction of maximum finite elongation ...

#### **Minor Folds**

Tight to isoclinal Phase 2 minor folds are fairly common ... Their morphology and orientation are similar to those of megascopic Phase 2 folds and their vergence, where determined, most commonly indicate that they are congruent with the megascopic folds. Most are rootless, consisting of an appressed hinge zone with very extended and separated limbs, and with the compositional layering entirely transposed into the foliation plane, even in the hinge zone.

#### **Phase 2 Folds**

Large Phase 2 folds dominate the structure of the area. The folds are characteristically to the east with axial surfaces dipping moderately to steeply to the west and hinge lines generally plunging at low angles to the north or south. Individual Phase 2 folds can be traced readily from Crawford Bay in the south to the northern part of the area where they are truncated by the Fry Creek batholith. West of the West Bernard fault, Phase 2 folds are developed in an inverted panel of rocks and have been named, from west to east, the Crawford antiform, the Bluebell Mountain synform. and the Preacher Creek antiform ... East of the West Bernard fault, Phase 2 folds have developed in a right-side-up sequence of rocks. These include the Bernard Creek anticline, the Loki West anticline, the Loki syncline, and the Loki East anticline.

#### **Crawford Antiform**

The youngest rocks within the map-area, unit L4, are exposed in the core of a fold on the west slope of Bluebell Mountain. Hamill Group rocks are exposed in its west limb on Riondel Peninsula and in its east limb in the Bluebell Mountain area. North of Loki Creek, only the east limb is exposed; the Shoreline stock occupies its core.

The hinge zone of the Crawford antiform consists of a set of very tight folds in the layering over a width of several hundred metres. The layering has been entirely transposed into the plane of axial plane foliation, and the recognition of individual fold hinges in the hinge zone is difficult. The contact between units L3 and L4 is marked by an interval of extensive interlayering of both units with the proportion of unit L4 gradually increasing toward the core. The contact on the map ... is placed at the last recognizable outcrop of unit L3 toward

the core. Similarly, the extensive interlayering of marbles and calc-silicates north of Tam O'Shanter Creek results from extensive infolding of units L3iii and L3iv in the hinge zone of the tightly appressed Crawford antiform.

... South of Riondel ... it has an interlimb angle of about 25 degrees and its axial plane strikes just east of north (approximately 005 degrees) and dips west at 30 to 40 degrees. ... On Crawford Peninsula, the antiform plunges southwesterly and lineations, though very scattered, generally trend southwesterly ...

Phase 2 minor folds usually consist only of a single hinge zone with sheared out limbs and therefore their vergence cannot generally be determined and used to indicate the closure of the Crawford antiform. The evidence that indicates that the fold is actually an antiformal structure and hence must have developed in an inverted sequence of rocks (as the youngest rocks are exposed in its core) is summarized below:

- (1) The fold closes northward and mineralineations which parallel axes of Phase 2 folds generally plunge north.
- (2) The adjacent fold immediately to the east is a synformal structure (the Bluebell Mountain synform).

#### **Bluebell Mountain Synform**

The Bluebell Mountain synform is continuous the entire length of the map-area (approximately 30 kilometres). Hamill rocks are exposed in its core over most of its length and younger Badshot and Index rocks in its limbs. On the southeast-facing cliff north of Crawford Creek, Badshot marble in its core closes southward in the opposite direction of plunge of mineral lineations and axes of Phase 2 minor folds, indicating that the fold is a synform. Furthermore, minor folds in Badshot marble on its limbs ... have the correct sense of vergence for minor folds on the limbs of a synform.

The fold generally plunges to the north at angles less than 20 degrees. However, there is a culmination in the crest line just north of Crawford Bay and at the northwest head of the bay two Badshot horizons have been mapped ... indicating that the synform opens southward and hence must plunge south. Both limbs dip west over its entire length ...

#### **Preacher Creek Antiform**

The Preacher Creek antiform is a tight, overturned, eastward-closing antiform, plunging north or south at low angles ... Lower Lardeau rocks (units L1 and L2) are exposed in its core and Upper Hamill in its limbs indicating that the fold is an antiformal syncline.

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## **Eastern Faults**

Two west-dipping faults that parallel the regional foliation in Hamill rocks east of the Preacher Creek antiform appear to be closely related to the Phase 2 folding. The most westerly of these, the West Bernard fault, separates the right-side-up panel of rocks on the east from the inverted section to the west. The East Bernard fault separates the Bernard Creek and Loki West anticlines and appears to have developed during the Phase 2 folding in the place of a syncline. It is a reverse fault with a minimum dip separation of at least 1 kilornetre. ...

## West Bernard Fault

The West Bernard fault has been traced from the Loki stock to just south of Bluebell Mountain. Further south the exact position of the fault is unknown, although it probably merges with the East Bernard fault and lies just east of the antiformal fold in which an overturned succession of Badshot limestone is exposed near Crawford Creek. ...

The West Bernard fault separates the inverted structural panel in the west from the rightsideup panel in the east, and is thus inferred to cut across both limbs of the Riondel nappe, separating the limbs and hinge of the nappe from its root. ...

Although conclusive evidence bearing on the direction of displacement on the West Bernard fault is lacking, reverse displacement is favoured. ...

## **East Bernard Fault**

The East Bernard fault dips west, subparallel with the regional foliation. It has been traced from the Fry Creek batholith to south of Bluebell Mountain where it may merge with the West Bernard fault. The lower and middle units of the Hamill Group (H2 and H3) occur in the hangingwall and the middle and upper Hamill units (H3 and H4) occur along the footwall. ...

## Phase 3 Folds

The youngest folding discernible in the area is a small-scale gentle to open folding of the limbs of the earlier folds. Phase 3 minor folds are particularly common in the western part of the area in the amphibolites and amphibole gneisses (unit L2) south of Riondel Peninsula ... and in the Hamill quartzites .... Axial planes of Phase 3 minor folds are steep, and the axes plunge southwesterly at shallow angles. The folds are symmetrical to nonsymmetrical with most commonly a sinistral shear sense. The only Phase 3 fold large enough to be plotted ... is the Sherraden Creek fold, developed in the west limb of the Crawford antiform.

Minor structures associated with Phase 3 folds include: widely spaced joints that parallel the axial planes; occasional crenulation cleavage on the limbs of some of the minor folds; and rare linear structures parallel with fold axes. ...

#### Metamorphism

The regional metamorphic grade in the Kootenay Arc ranges from lower greenschist to upper amphibolite facies. An elongate belt of higher grade metamorphism approximately parallels the regional trend of the arc ... The highest grade occurs in a belt centred on Kootenay Lake and extending north toward Duncan Lake. The Riondel area is essentially in the centre of this metamorphic culmination .... Within the Riondel area, the metamorphic grade ranges from upper greenschist facies in the east to upper amphibolite facies in the west. Metamorphic isograds trend northward approximately parallel to the dominant structural trends, but cut across them locally as well as regionally.

lsograds mapped in the Riondel area are traces of surfaces across which the observed mineral assemblages are related by means of a specific metamorphic reaction ... "Höy (1980).

The following has been taken from Moynihan and Pattison (2008):

"The Gallagher fault marks the western boundary of the Barrovian metamorphic high along the central part of Kootenay Lake ...

Rocks from low structural levels, in the centre of the metamorphic high, apparently reached peak metamorphic conditions in the mid-Cretaceous and did not cool below  $350^{\circ}$ C (the closure temperature of muscovite) until the early Tertiary, when they were exhumed by D<sub>3</sub> extensional deformation. They record considerable D<sub>2</sub> strain, and experienced further ductile deformation during exhumation. Lower grade rocks at high structural levels were metamorphosed and cooled earlier, under went mild D<sub>2</sub> deformation and did not experience D<sub>3</sub>. The area west of the Gallagher fault was deformed and metamorphosed in the mid-Jurassic and cooled through the biotite closure temperature (~250°C) by the early Cretaceous. It has remained at high crustal levels since then, behaving as a relatively unmodified 'lid', while rocks at lower levels were metamorphosed and intensely deformed.

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The metamorphic high in the central Kootenay Arc results from differential exhumation during early Tertiary extensional deformation. Deformation involved discrete faulting and ductile footwall strain. North of the bend in Kootenay Lake, the amphibolite-facies belt is fault-bounded on its west side; south of the bend it is fault-bounded on the east side. The bend in the lake marks the area where extensional strain was transferred from the Purcell Trench fault to the Gallagher-Schroeder fault system. Normal faulting was accompanied by west-side-down shearing and extension of S<sub>2</sub> in the footwall north of the bend, whereas S<sub>2</sub> was simultaneously buckled around the tip zone of the Purcell Trench fault. Normal faulting and related shearing has juxtaposed rocks with different structural and P-T-t histories".

# **Property Geology**

# Stratigraphy

The following has been modified slightly from Insley (1982):

## Crawford Marble

The most important lithology and marker unit in the region is the Badshot-Reeves Formation, a 30-50m thick marble, which is host to the Bluebell orebody ... This marble consists of calcite, dolomite and tremolite with minor amounts of phlogopite, biotite, chlorite and graphite. It is most closely resembled by the Crawford Marble ... The Badshot straigraphically overlies the Mohican Formation ... of thinly interbedded, rusty weathering, medium grained muscovite schist with thin dolomite marble, micaceous white quartzite, and amphibolite schist.

These two lithologies correspond to the Crawford Marble and Crawford Schists, the two distinct units being found together ... They are found as marble with synformal folds of schist ... This infers stratigraphic inversion, as found in the Riondel area (Höy 1980) and Bluebell Mine sequence ...

Without the association of a Mohican-type lithology, the presence of Badshot marble can only be inferred. Other marbles in the area with very similar mineralogy and texture ..., are differentiated only on account of the associated lithologies ...

## Lardeau Sequence

The base of unit 3 ... is marked by a chlorite, garnet schist with white quartzite, and marks the base of the Index Formation of the underlying Lardeau Group. This lithology probably varies along strike due to lateral facies changes.

Differentiation of litholgies within the Lardeau sequence L3 Member into L3 (i) (ii) (iii) Beds is in places tenuous and can alternatively be represented by an undifferentiated unit L3 (iv) due to the repetition of similar lithologies throughout this member.

## Unit 1 ...

## PILOT BAY GNEISSES - McGREGOR MARBLE - McGREGOR SCHISTS

This sequence contains a number of distinct lithologies also characteristic to the regional stratigraphic succession.

The Pilot Bay Gneisses contain the dominant grey-green calc-silicate gneisses with amphibolite of the Lower Index L3 (iv) Member, and represent the youngest mapped lithology.

#### DYNAMIC EXPLORATION LTD

Much of this sequence is omitted by emplacement of the McGregor Stock. However units L3 (ii) and (iii) appear to be absent. The top of the Pilot Bay Gneisses consists of white quartzite with biotite which passes into a distinct dark grey-black hornblende gneiss and amphibolite, minor calc-silicate and a thin buff siliceous dolomitic layer. These correspond to the L2 Member.

The McGregor Marble is overlain by graphitic-pyritic schists ... similar to those described in the Lower Index Formation (Lardeau Group), lying below the Badshot Limestone at Bluebell Mine ... This infers that this marble is not the Badshot Formation (both successions representing an inverted sequence). Also the McGregor Schists is overlying the Badshot would be thinly interbedded with marbles, quartzite and amphibolite characteristic of the Mohican Formation - they are not.

This unit has for these reasons been correlated with the Lower Index Formation, i.e. the Pilot Bay Gneiss with the L3 Member, Beds (iv) and (I) and the McGregor Schists and the McGregor Marble with the L2 Member ...

### Unit 2 ...

The "Adolf Beds" (consist of) ... Muscovite garnet schist (which) overlies amphibolite schists. (Locally), these beds consist of graphitic-pyritic schists, similar to those found at the top of Unit 1.

Therefore, it has been inferred that this unit contains Member L1 overlain by the top part of L2. Höy (1976, 1980) also mapped this unit as L1 at Bluebell Mountain (12km north) where it is found as a muscovite, garnet, staurolite schist ...

#### Unit 3

This unit consists of the Burden Beds - Crawford Marble - Crawford Schists. These are a conformable sequence of very distinct rocks that can be easily correlated with the regional stratigraphy ...

The top of the sequence contains the Crawford Schists of rusty coloured, thinly interbedded calc-schists, marble, amphibolite schist and pink quartzite. This thinly interbedded succession of varying lithologies with sharp contacts has an estimated thickness of 50m in the mapped area. Both thickness and thin interbedded nature of markedly contrasting lithologies are similar to, and correlate with, the Mohican Formation.

These beds are found as synformal folds within a pure calcite-dolomite marble. Although indicated ... as being 100m thick this is due to thickening in the hinge region of a major synformal structure. In the limbs of these folds, this lithology is only about 20m thick (15-30m Höy). This bed correlated with the Badshot Marble i.e. the Badshot Formation.

The underlying rocks by inference are the Lower Index Formation L1 member. It contains chloritic schists and quartzite bands, also found in the L1 Member in the regional succession

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For these reasons Unit 3 represents the inverted Regional Stratigraphic sequence from Mohican Formation to Badshot Formation and Lower Index Formation L1 Member ...

#### Unit 4 ...

This succession comprises of the Cape Horn Formation - Amphibolite-Pegmatite Band - Crystal Marble ...

The base of the unit consists of a thick sequence of impure marble and schist, chloritic schist with amphibolite, pyritic schists, and minor cal-silicate. The proportion of marble in this unit is quite considerable. They are typically buff weathering, medium grained and slightly siliceous in character.

The association of these lithologies is similar to the Lower Lardeau Formation L3 (iii) Member.

This is overlain by a medium to coarse grained, foliated to massive, amphibolite with pegmatite. No similar description is given to nay other lithology elsewhere in the region.

However the foliated amphibolite may be similar to the amphibolite L3 (ii) Member, (although thickness is not a good guide for correlation, this also compares to that of the L3 (ii) - described by Höy (1980) i.e. 60m).

If the sequence is conformable gneiss and calc-silicate should overlie this amphibolite. However a pure coarse white holocrystalline dolomite, calcite marble is found and shows affinities to the Badshot Formation. This marble varies in mineralogy from a coarse holocrystalline dolomite-calcite marble, to a tremolitic fibrous marble. Its similarity to the Badshot Formation can only be inferred due to the absence of any overlying Mohican rocks. However thick sequences of pure marbles in the region have been described as being the Badshot Formation (...Höy, 1980). For the reasons above this sequence consists of Lower Index Formation rocks of the L3 (iii) Member and probably the L3 (ii) Member. The overlying marble more closely resembles the Badshot than any other marble lithology and has been correlated as this.

However this would infer some kind of stratigraphic break between beds L2 and Badshot, for which there was no recognizable evidence. Alternatively the Amphibolite-Pegmatite unit may be comparable with the L1 unit, on the grounds based on a lateral facies variation.

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### **Intrusive Rocks**

### **Mcgregor Granitoid**

The McGregor Granitoid is medium to coarse grained, consisting of about 65% plagioclase with alkali feldspar, 20% quartz, and up to 15% biotite ... (granodiorite composition). It has a pale brown colour in fresh sections and weathers to pale grey. Texture also varies from 'gigantic' unfoliated to equi-granular and strongly foliated. There was very little jointing found within this intrusion.

Within Pilot Bay ..., the granitoid has a strong foliation and homogeneous equigranular texture. In places the foliation is conformable with the compositional banding of the enclosing Lardeau Group (L3(iii)), although the intrusion cross-cuts the prominent NE-SW fabric. It is intruded by a later phase of similar granular textured rock with a darker grey colour, and the contact between the two phases is sharp and irregular. ... Towards ... the centre of the intrusion, the granitoid becomes less granular in texture and the foliation is less prominent. Here the rock is coarse grained, intermediate in colour and has a granodiorite composition and texture.

The edge of the intrusion, where mapped, ... is irregular and in Pilot Bay ... associated with large veins of granular textured, strongly foliated, granodiorite which intrudes and cross cut the gneissosity of the Lardeau Group (L3(iii)). At outcrop level the contact with the country rock, where visible, is usually sharp with no chilled margin and little or no contact metamorphism. ...

No pegmatite veins were found intruding the McGregor intrusive although some relatively thin veins intrude and cross-cut the gneissic fabric of the country rock. Gneissic country rocks were also intruded by cross-cutting sugary textured medium grained white crystalline aplite dykes ...

#### **Crawford Bay Stock**

(The Crawford Bay Stock consists of) ... a coarse grained alkali rock with pale grey offwhite colour weathering to a dull grey. In hand specimen, the rock consists of about 10% quartz, 55% plagioclase, 20% alkali feldsdpar and about 5% biotite, (consistent with a) ... a quartz monzonite ... Alkali feldspars make up the phenocryst content and are found mainly as large euhedral crystals, up to 25mm, with square sections showing Carlsbad twinning. Plagioclase feldspars are sub-hedral in form and up to 1cm in length.

In places the quartz monzonite has a weak foliation marked by the parallel orientation of small biotite flakes ... These may be shear zones, which occasionally cross-cut veins as conformable close penetrative fractures ...

Towards the contact with the enclosing metasediments the quartz monzonite ... becomes finer grained, and the foliation becomes more distinct. The contact is sharp and steeply inclined away from the intrusion. There is a thermal aureole of limited extent i.e. less than

10m in the north.

The quartz monzonite is intruded by numerous 8 - 40cm thick pegmatite veins that dip steeply  $60^{\circ}$  -  $70^{\circ}$  towards the south ... There are also rare aplite veins but these appear to have random orientation. Pegmatite and aplite contacts with the quartz monzonite are sharp and planar.

Jointing is present but in the quartz monzonite it is not particularly dominant ...

#### **Pegmatites**

Three types of pegmatite are found. They occur:

- (i) Within the Crawford Bay Stock, 8 40cm thick, with constant orientation ...
- (ii) Within the Lardeau Group L3 (iv) as:
  - (a) Compositional banding parallel, generally 5cm thick and foliated ...
  - (b) Cross-cutting compositional banding and banding parallel pegmatite, up to 40cm thick ...
- (iii) As bands up to 40 cm thick within the amphibolite/pegmatite unit (previously discussed)..

## (i) Within the Crawford Bay Stock

These pegmatites are rich in quartz with white plagioclase feldspar and contain very little muscovite ... They are very coarse grained, and crystals show no form. Contacts are sharp with quartz monzonite, with some signs of chilling at margins.

They have a strong orientation of about 135/60-70 SW. They may contain a conformable weak foliation where this is present within the quartz monzonite. Most pegmatite veins are about 10cm thick although some reach 40cm.

#### (ii) Within Lardeau Group L3(iv)

Both of these pegmatite types consist of quartz and plagioclase feldspar with little or no mica. Pegmatites parallel to compositional banding have a coarse grained texture with the white plagioclase having an augen-like relationship within a 'strung-out' matrix of quartz and plagioclase ... These intrusions have sharp, straight contacts, are generally less than 10cm in thickness, and only locally cross-cut compositional banding ...

Cross-cutting pegmatites are coarser grained, have irregular sharp contacts and although generally greater than 10 cm, have a varying thickness ...

Other pegmatites are found intruding country rocks. These may be relatively undeformed and cross-cut folds ... or found as tight folds associated with the prominent NE-SW fabric ... and have a folded foliation

#### Structure

The dominant structure of this area consists of NE - SW trending arcuate bands of metasediments ..., with a bedding parallel schistosity. Tight to isoclinal folds are developed with steeply NW dipping axial surfaces and gentle plunge. These fold an earlier foliation.

Stratigraphic sequences are repeated by bedding parallel syn-metamorphic faults i.e. tectonic slides. These are parallel to the dominant fabric, and thin mylonites are sometimes found along these contacts.

The dominant NE - SW outcrop pattern is truncated by a foliated granodiorite intrusion in the northwest (McGregor Granitoid) and by a largely unfoliated quartz monzonite intrusion (Crawford Bay Stock) in the southeast.

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#### **Major Structure**

#### **Outcrop Pattern**

The dominant structural fabric trends NE - SW ..., and is marked by lithological bands with a bedding parallel foliation, except around fold hinges where it is cross-cutting ... This dominant fabric dips steeply at  $60^{\circ}$  towards NW in the east and decreases to  $24^{\circ}$  towards NW in the west ...

In the Pilot Bay area ... calc-silicate gneisses consist of distinct gneissic layers of green hornblende with biotite, and white layers of calc-silicate minerals ... Also the Lardeau Group L2 contains coloured bands and thin phlogopite layers parallel to bedding. Both of these lithologies and their bedding parallel fabric have been folded in association with the locally tight-isoclinal folds.

#### Faults

These occur parallel to lithological boundaries, although locally truncate lithologies, result in stratigraphic repetition. Due to their occurrence parallel to the dominant fabric, their position is inferred from breaks in stratigraphic succession and truncation of lithologies along strike ... Otherwise, at outcrop level, they are difficult to detect except where thin mylonite bands are developed.

At Cape Horn ..., thin mylonite layers are associated with two relatively small faults occurring along a lithological boundary and parallel to a strong, steep NW dipping, penetrative schistosity within yellow-red pyritic schists and grey-green chloritic schists of

the Lardeau Group L3(iii). Displacement was approximately 3m with the down throw to the SE. The fault planes were marked by a 1cm thin platy quartz mylonite layer. ...

#### **Mesoscopic Folds and Fabrics**

The dominant NE-SW fabric is associated with a strong penetrative, generally bedding parallel, schistosity which is axial planar to tight-isoclinal folds ..., which have a steeply dipping axial surface (70° towards NW) and a gentle plunge ... These folds fold an earlier fabric ... The axial surface of these folds decreases towards the NW ..., where the folds deform compositional banding in the gneisses.

These folds are also associated with a well spaced crenulation cleavage-schistosity i.e. crenulation of an earlier foliation. At Cape Horn, the relative positions of major antiformal axes are inferred from 'S' and 'Z' parasitic folds of coarse grained amphibolite which include axial planar large chevron-like crenulations ...

These folds are also marked by strong crenulation lineations which, together with their corresponding fold axes, plunge both to the NE and SW while some are horizontal ...

In the south, ... around Cape Horn, two large antiformal units include repetition of lithologies by a combination of tight-isoclinal folding ... and tectonic slides ... These units also include rusty marbles containing quartz schists which have been deformed into intrafolial folds within the marble matrix ...

In the Lardeau Group L3(iii) antiformal unit, probable graded bedding appears to be inverted, permitting one to infer an overturned sequence. This sequence is folded by the tight-isoclinal westerly dipping folds that give the prominent NE-SW fabric. ...

The McGregor Granitoid truncates the NE-SW trending lithological boundaries. However, the margins of the intrusion are strongly foliated which has resulted in an equigranular texture .... This foliation is largely conformable with that in the adjacent gneisses i.e. a compositional banding, parallel foliation.

The contact between strongly foliated equigranular granodiorite, and layered Lardeau Group L3(iv) is ... a strongly sheared zone 2.5cm wide ... This contains white feldspar augen (up to 10mm in size), within a feldspar quartz matrix. This zone is parallel to the foliation in the granodiorite and generally to the compositional layering in the gneisses.

The Crawford Bay Stock truncates the NE-SW lithological boundaries as well as the strong parallel penetrative schistosity. It is foliated at its margins only, which is roughly parallel with the contact ..., so that the foliation dips outwards, and not parallel to, or conformable with, the dominant NE-SW fabric.

Internally, the granite is fairly homogeneous in texture and unfoliated. However, shear zones may be represented by the localized alignment of biotite flakes together with conformably trending fractures which have developed in, and cross-cut, pegmatite veins ...

#### Metamorphism

... The regional increase in metamorphic grade is from east to west across the Riondel area to the north (...Höy, 1980). This is based on the presence of  $Al_2SiO_5$  polymorph minerals and calc-silicate assemblages. However no  $Al_2SiO_5$  polymorph minerals were identified in the Crawford Peninsula.

These regional metamorphic assemblages ... are overprinted locally by chlorite and biotite contact metamorphic minerals associated with the Crawford Stock.

In comparison to the above, no recognizable thermal aureole was found associated with the McGregor intrusion ..., although some assimilation of country rock has occurred as well as the preservation of amphibolite schist xenoliths within the granodiorite ... The remainder of this granitoid body has a syntectonic relationship ... with the development of an  $S_2$  foliation within the margins of the intrusion. ...

The main thermal metamorphic event occurred pre- or syn-tectonic with respect to  $F_2$  deformation, as shown by  $F_2$  deformation crenulation of the preferred mineral alignment of acicular tremolite.

 $F_3$  deformation may be responsible for retrograde minerals present in the assemblage ... A contact thermal metamorphic event postdates all deformational events. ..." (Insley 1982).

#### 2010 PROGRAM

The author visited the property on March 23<sup>rd</sup> and 24<sup>th</sup>, accompanied by **Bruce Doyle**, property owner and prospector, who has been associated with the property since 1990, and **Paul Ransom**, a geologist who has supervised several exploration programs on the property as a representative of Cominco Ltd. In addition, Mr. Ransom worked as a geologist at the Bluebell Mine, located at Riondel 13 km to the north of the Sure Bet property, and was retained so as to provide the benefit of his expertise and knowledge of the Regional, Local and Property Geology, as well as his working knowledge of the Bluebell Mine (which comprises the proposed model for exploration of the Sure Bet property).

On March 23<sup>rd</sup>, several old Cominco drill sites and outcrops were visited in the immediate vicinity of Crystal Lake so as to ascertain the nature and style of mineralization characterizing the Sure Bet property. In addition, several massive sulphide boulders were re-located and sampled (Figure 5).

On March 24<sup>th</sup>, waste material from the former Bluebell Mine was sampled for comparative purposes, with galena-dominant, sphalerite-dominant, galena-rich and sphalerite-rich massive sulphide float samples taken. In addition, the site of 1992 Kokanee drill holes A92-6 to 8, drilled to test a "breccia" unit, described as containing "... galena, honey coloured sphalerite, tetrahedrite, and barite on fresh surfaces. Assay grades of selected hand samples were as high as 2.80% lead, 5.65% zinc, and 10.16 oz/t silver" (Meeks 1992). Finally, the surface projection of a UTEM3 geophysical anomaly was evaluated as a possible drill target for future evaluation.

The author took a total of 13 rock samples which represent selected samples from obvious mineralized areas and float, specifically massive sulphide boulders. In addition, six samples were taken from high grade massive sulphides from the waste dumps at the Bluebell Mine at Riondel, approximately 13 km north of the Sure Bet property. These samples were taken as an initial attempt at addressing the issue of the massive sulphide boulders documented on the Sure Bet property being glacially transported from the Bluebell Mine area.

Samples were prepared by standard laboratory crushing and pulverization by Acme Analytical Laboratories Ltd. All samples were prepared using Acme's R200-250 method, followed by 41 element Group 1EX (Inductively Coupled Plasma) - Mass Spectrometer analysis.

Sample locations and descriptions are included in Appendix B. Notes from the property visit are included in Appendix D.

#### RESULTS

The massive sulphide samples, both those from the Sure Bet property as well as those form the former Bluebell Mine site, returned high grade values for Ag, Cu, Pb and Zn, with values for Pb and Zn typically exceeding the upper level of detection. As the high grade nature of these samples is well known and has been previously documented, they were not re-submitted for precise determination of  $Ag \pm Pb \pm Zn$  content. The analyses of interest are for other metals and elements accompanying mineralization.

With the exception of two outcrops spatially associated with the "breccia" occurrence, and the "breccia" occurrence itself, only weakly to moderately anomalous Cu, Pb and/or Zn values were documented. A sample (R10-SB-14) taken from a small pit remaining from the trench on the "breccia" returned very highly anomalous Ag (179.5 ppm), Cu (2835 ppm), Pb (>10000 ppm) and Zn (>10000 ppm). Sample R10-SB-15, taken approximately 60 m to the south, along a resistant band of outcrop generally on strike with the "breccia" similarly returned anomalous Pb (3328 ppm) and Zn (1956 ppm). A third sample, R10-SB-16, taken approximately 90 m west and 180 m south returned 2093 ppm Pb and 6203 ppm Zn.

In addition, Bruce Doyle had stated that an outcrop on the east side of Crystal Lake had returned 0.64% W and 600 ppb Au and 400 ppm Bi, but could not locate the corresponding analytical certificate. The outcrop is spatially associated with an approximately 20 m wide by >600 m coincident ground and airborne EM anomaly extending to the north-northeast from Crystal Lake. A sample from this location, R10-SB-5 returned 483.7 ppm Cu, 299 ppm Zn and 97.3 ppm Bi. Sample R10-SB-6, taken approximately 70 m to the north, similar to the previous outcrop and along the trend of the geophysical anomaly. returned 536.5 ppm Cu, 136.2 ppm Pb, 218 ppm Zn, 1955 Bi and >200 ppm W.

#### DISCUSSION

#### **Compilation - High Ridge Data**

High Ridge Resources Inc. ("High Ridge") held an option on the Sure Bet property from 2006 to 2008, at which point they apparently defaulted on the terms of their option agreement (Bruce Doyle, pers. comm., 2010). It is the author's understanding that Bruce Doyle, property owner, had provided original copies of most of his data for the Sure Bet property but has not, as of this writing, had any of his data returned by High Ridge. Neither has High Ridge furnished the results of their exploration program between 2006 and 2008, with the exception of the UTEM3 ground geophysical survey completed by SJ Geophysics Ltd. and a News Release dated December 3, 2008.

As a result, the digital data compilation (soils, geophysics, massive sulphide boulder location, etc.) completed by High Ridge is currently unavailable to Bruce Doyle and, therefore, figures 6 through 8 have been taken from the 2005 High Ridge report (Szybinski 2005). Furthermore, it is currently impossible to verify certain claims made by High Ridge in their 2008 News Releases on the Sure Bet property, specifically:

- 1) the location of two relatively high grade sub-crops samples reported, as follows: "SB-243 returned 2.13% Zn, 2.51% Pb, while SB-242 returned 6.02% Zn, 1.38% Pb and 0.186% Cu" and
- 2) the claim that "Massive-sulphide boulders from Silver Bay differ in the Pb isotope ratios from the Bluebell deposit and are most likely derived in-situ. …" (High Ridge 2008).

Therefore, available data for the Sure Bet property (analytical results for rocks and soils, drill hole information (collar location and orientation, depth, results) and geological information (stratigraphic units, bedding / foliation measurements, mineralized occurrences and sample locations) need to be compiled into a concise and readily accessible database for future use.

#### Mineralization

#### **Massive Sulphides**

Massive sulphides occur in a number of documented localities throughout the Kootenay Arc and appear to be restricted to a specific stratigraphic interval, as described below:

"Stratabound lead-zinc deposits in the Kootenay Arc are essentially restricted to a "platformal" carbonate unit of Lower Cambrian age. The deposits consist generally of lenticular masses of pyrite, sphalerite and galena in dolomite or chert zones within highly deformed limestones ... The larger deposits generally range in size from 6 to 10 million tonnes and contain 1-2% Pb, 3-4% Zn and trace silver" (Höy and Muraro 1981).

The key feature of interest with regard to the Sure Bet property is the presence of a large number of massive sulphide boulders, apparently preferentially distributed on the east side of the Crawford Peninsula, east of the height of land. In general terms, the mineralization characterizing the massive sulphide boulders is very similar to the massive sulphide mineralization comprising the ore at the former Bluebell Mine at Riondel, approximately 13 km to the north.

#### **Bluebell Mine**

The style of mineralization at the Bluebell Mine has been well documented in the literature and will not be reiterated here (Fyles 1970). By way of summary, the following has been taken from Höy (1973):

"Production from the Bluebell property commenced in 1895 and continued intermittently until 1927 under various owners. Initially, the ore was smelted at Pilot Bay, located on the shore of Kootenay Lake 3.5 kilometres south of Kootenay Bay. Total production during this period amounted to 542,000 tons averaging 6.5 per cent lead, 8.2 per cent zinc, and 2.8 ounces silver per ton (79 grams per tonne). Cominco Ltd. acquired the property in 1942 and from 1952 to closure of the mine in 1971, mined an additional 4.771 million tons averaging 5.1 per cent lead, 6.3 per cent zinc, and 1.7 ounces silver per ton (48 grams per tonne).

There has only been limited exploration and development of the lead-zinc-silver properties in the Riondel area ... In 1927, the Berengaria Mining Company explored in the vicinity of a large mineralized boulder discovered near the mouth of Sherradin Creek. The source of the boulder was not located. It contained in excess of 350 tons of ore grading approximately 20 per cent combined lead-zinc and 3.6 ounces silver per ton (93 grams per tonne)".

#### Massive Sulphide Boulders

The mineralization of primary interest with regard to the Sure Bet property is comprised predominantly of galena (Pb) and sphalerite (Zn), as exemplified by the abundant massive sulphide boulders identified to date on the property (Figure 6), however, only one small area on the Sure Bet property has returned relatively high grade base metal values, specifically, the area containing the "breccia" occurrence. Despite having relatively high grade values, the limited mineralization evident at surface, as well as that described in the 1992 Assessment Report on behalf of Kokanee Exploration (Meeks 1992), is markedly lower than that of the massive sulphide boulders nor is the mineralization "massive" in character. The presence of a relatively large number of massive sulphide boulders with no corresponding in situ location on the Sure Bet property represents the most significant issue to be addressed in any future exploration program on the property.

#### **Glacial Transport**

The most important issue with respect to the Sure Bet property is to resolve the origin of the large number of massive sulphide boulders documented on the property (Figure 6). At least 57 "massive sulphide" localities are plotted from the High Ridge database, most having grades in excess of 20% combined Pb + Zn. A Cominco Ltd. Map covering the region between the Bluebell Mine and the southern tip of the Crawford Peninsula documents 6 base metal-bearing boulders between the Bluebell Mine and Kootenay Landing, with an additional 3 on the western side of the Crawford Peninsula. With the exception of the Berengia boulder, near the mouth of Sherraden Creek (Production - 487 tons grading 9% Pb, 9% Zn and 3.6 oz/t Ag, the highest grade returned from these 9 boulders was 1.22% Pb, 0.04% Zn and 3.18 oz/t Ag. (Note: Paul Ransom proposed that the Berengia Boulder" "May be in place in the Kirby limestone").

The massive sulphide boulders documented to date on the Sure Bet property are all located east of the height of land north, east and south of McGregor Lake and at elevations between 2200 (670 m) and 3200 feet (975 m). The Bluebell Mine is located approximately 13 km north of the Sure Bet property on the Crawford Peninsula at an elevation of approximately 1900 feet (579 m). Therefore, in order for the massive boulders to have been derived from the Bluebell Mine and transported to their current location, a glacier (essentially a high viscosity fluid) would be required to drive the boulders between 90 and 300 m uphill, over a local topographic high.

Furthermore, the current direction of water flow in Kootenay Lake is north, then west out the West Arm toward Nelson. During glaciation, if ice movement were southerly (with the change in direction resulting form isostatic rebound). Given the steep topography east of the Bluebell Mine, characterizing the western slopes of Bluebell Mtn., it would seem logical that iceflow would have been due south to at least Crawford Creek. At Crawford Creek, it would seem likely that a smaller alpine glacier flowing out of Crawford Creek would similarly restrict the main valley glacier to having an iceflow direction due south. If this conjecture is accurate, then one would expect any massive sulphide boulders derived from the Bluebell mine to have been deposited on the west side of the Crawford Peninsula below an elevation of approximately 700 m.

A small tributary glacier flowing out of Crawford Creek might be a possible source of massive sulphide boulders. As such, the massive sulphides on the Sure Bet property may represent a medial moraine between the Crawford Creek and Kootenay Lake glaciers. If so, then the source of the massive sulphide boulders would have to be along the west side of the Crawford Creek valley and/or higher elevations along the western slopes of Bluebell Mtn.

A review of known MINFILE occurrences along Crawford Creek and/or the western slopes of Bluebell Mtnbroadly consistent with these criteria are the:

• **Hotshot** (082FNE086), described as comprised of "A number of veins striking northwest and dipping to the north cut schists of the Middle Cambrian to Middle Devonian Index Formation, Lardeau Group.

The veins contain galena, sphalerite, pyrite and ruby silver (pyrargyrite). The largest vein is 1 metre wide and 10 metres long. It has been explored by and an adit", and

• Les-Ann (Les, Ann, Norm, Dixie) (082FNE046) described as "Galena, sphalerite, and pyrite mineralization (which) occurs in a number of narrow veins that both parallel and crosscut crystalline limestone of the Lower Cambrian Badshot Formation".

Despite the documented presence of base metals, neither is considered a likely candidate the massive sulphide boulders due to the limited size of each MINFILE occurrence. However, it is possible that the majority of the mineralized occurrence(s) was removed through glacial erosion, leaving the rather limited mineral potential seemingly present today.

In summary, glacial transport of the massive sulphide boulders, while possible, does not seem likely at this point, given the current information available.

#### In Situ Mineralization

Another possibility is that the massive sulphide boulders represent in situ weathering of massive sulphide occurrences that have since been removed by erosion or buried by a veneer of glacial detritus. This has been the premise for the exploration programs completed on the property to date.

A considerable amount of soil geochemical data has been collected as a result of the previous programs on the Sure Bet property (Ransom 1998, 1997, 1996, Meeks 1992, Brabec 1980, Szabo 1973), comprised of approximately 3,399 separate analyses, with 1,908 analyses using Atomic Absorption (AA) and 1,491 using Inductively Coupled Plasma - Mass Spectrometry (ICP-MS).

Figures 7 and 8 are plots of compiled zinc (Zn) and lead (Pb) data documented to date from the property. Both sets of data appear to document a prominent geochemical trend oriented slightly west of north, while the structural trend, as defined by the stratigraphic units, is east of north. Therefore, the geochemical trend is at an acute angle to the host stratigraphy, interpreted to suggest:

- 1) The soil geochemistry is unrelated or only weakly controlled by the host stratigraphy,
- 2) The soil geochemistry has been modified by glacial activity and/or
- 3) the soil geochemistry is structurally controlled by "cross" structures analogous to the former Bluebell Mine.

#### **Unrelated to Host Stratigraphy**

Obviously, this possibility has great significance with regard to future exploration programs. Previous programs have implicitly suggested that the soil data confirm and support the presence of the massive sulphide boulders and, therefore, confirm the base metal potential of the Sure Bet property.

Again, as discussed above with reference to "Glacial Transport" the highest soil values are located along, and immediately east of, the height of land on the Crawford Peninsula. As a matter of speculation, one would expect glacially transported soil (till) geochemical anomalies to "wrap" around topographic highs, resulting in anomalous values at lower elevations, and probably of higher grade along the western margin of Crawford Peninsula if derived from the Riondel (Bluebell Mine) area.

Alternatively, if anomalous soils (till) were derived from Crawford Creek, one would expect the anomalous values to be localized at lower elevations around Crawford Bay and, in the case of the Sure Bet property, along the eastern margin of the Crawford Peninsula as a medial moraine between a "Crawford Creek" glacier and a "Kootenay Lake" glacier.

Finally, if a "Crawford Creek" glacier were able to "bulldoze" anomalous soils (till) to higher elevations on the Crawford Peninsula, that might explain the anomalous values documented (as comprising an end moraine, however, one would further expect the anomalies to be more arcuate (concave toward Crawford Creek), rather than linear and have a relatively sharp western 'edge" (i.e. maximum extent of glacial advance) and a more diffuse eastern "edge" and glacial tills were reworked by fluvial activity of Crawford Creek and later development of soils from exposed , unmineralized to weakly mineralized in situ outcrop.

#### Modified by Glacial Activity

If one or more glaciers (i.e. "Kootenay Lake" and/or "Crawford Creek" glaciers acted to re-work and locally transport soils (till), then one might expect an up-ice termination to the soil geochemical anomalies as mineralized material was stripped from a bedrock source and transported down ice.

The plots of compiled soil data for the Sure Bet property (Figs. 7 and 8) may be interpreted to support such a possibility, however, such an interpretation is complicated by the boundary between geochemical results obtained using two separate and distinct methods, specifically, AA and ICP-MS.

If the soil geochemical data are taken at face value, then a possible up-ice source may be indicated in the McGregor Lake area, with a long down-ice "tail" documented to the south-southeast.

#### Mineralization controlled by Cross-Structures

Mineralization at the former Bluebell Mine was controlled / hosted by cross-structures, allowing metalliferous fluids to pass upward through the host stratigraphy and "pool" at the base of an impermeable layer. As a result, the mineralization was localized along structures at a high angle to the host stratigraphy, was localized along fractures and fracture zones resulting in three zones comprising the deposit and cross-cut both lithological contacts and composite  $S_1$  surfaces.

On the Sure Bet property, Bruce Doyle (property owner) stated that the "breccia occurrence" trenched and drilled by Kokanee in 1992 (Meeks 1992) was discovered as a result of following up on soil anomalies. As such, the discovery was an extremely fortuitous coincidence or can be interpreted to suggest that the anomalous soils correspond to underlying bedrock mineralization to some degree. This interpretation is potentially supported by increasing tenor to anomalous copper-in-soil values (not plotted) with increasing proximity to the Crawford Bay Stock. In addition, the presence of spotty, but anomalous molybdenum (Mo), tin (Sn) and/or tungsten (W) values on the property, particularly in proximity to the Crawford Bay Stock further supports an interpretation for locally derived soils.

Finally, Figures 7 and 8 document a total of seven "sulphide outcrop" localities within and adjacent to the "Sure Bet" property. One may correspond to the "breccia occurrence" and another may correspond to the locality sampled on the east side of Crystal Lake for this report (Sample R10-SB-5), leaving five potentially new sulphide outcrops identified by High Ridge. It may be very significant that these localities are briefly described as "sulphide occurrences" and not massive sulphide occurrences.

#### **Pb Isotope Results**

A number of lines of reasoning have been utilized in an attempt to identify the most likely point of origin for the massive sulphide boulders on the Crawford Peninsula. One of these lines of reasoning is with regard to Pb Isotope data for the region. Various workers (Beaudoin et al. 1992, Brown and Logan 1989, Reynolds and Sinclair 1971) have utilized Pb Isotope data in an attempt to define (an) origin(s) for base metal mineralization in the Slocan - Ainsworth camp.

Lead isotope values for the region have been compiled from the above sources, together with data compiled by P. Ransom (pers.comm. 2010) and are included in Appendix C. The data have been plotted as Figures 9 and 10, with data defining the Bluebell trend plotted using "Ransom Data", "Bluebell (2)" and "Bluebell Group" populations.

The data represented in Figures 9 and 10, collectively, document a number of populations, each of which has been discussed by the respective authors (Beaudoin et al. 1992, Brown and Logan 1989, Reynolds and Sinclair 1971). Essentially, the data have been interpreted to indicate that the Bluebell deposit has characteristics consistent with other base metal occurrences within the Ainsworth Group,

which are separate and distinct from the Sandon and Kokanee Groups.

In detail, there may be some preliminary evidence that the massive sulphide and knebelite boulders documented on the Sure Bet property are distinct from massive sulphides of the Bluebell deposit. Furthermore, the graphs of the compiled data (Figures 11 and 12) may indicate that the Bluebell deposit is distinct from the Ainsworth Group. Both graphs define a broad band of data at a steep angle to both axes and which appear to define a consistent trend. The data of the Ainsworth Group and Sure Bet property lie at a shallow angle to 207/204 axis. This trend is best evidenced on the 207/204 vs. 206/204 Graph (Figure 10).

Further work would be needed to develop supporting evidence for this interpretation.

#### **Intrusion-related Mineralization**

Recent work on the Mount Skelly Pluton, proposed herein as a possible model for the Sure Bet property (McGregor Granitoid and/or Crawford Bay Stock), has distinguished a three phase intrusive complex that consists of fine- to coarse-grained granites correlated to the Cretaceous Bayonne Magmatic Suite. Near contacts with sedimentary strata, the granite appears to be both finer grained and perhaps more mafic, having a darker colour. In addition, there are more xenoliths of (an) earlier phase(s) of intrusive material and rounded sedimentary inclusions. Phenocrysts of alkali feldspar are present, ranging in size from less than a centimetre to approximately 2 centimetres in diameter, within a matrix of plagioclase feldspar, quartz and biotite  $\pm$  hornblende. The granite has local iron-stained veins with variable amounts of iron sulphide, predominantly as pyrite. The veins appear to occupy apparent discontinuous brittle shear zones which trend essentially north-south ( $\pm 20^{\circ}$ ). The Mount Skelly Pluton (Complex) comprises the exploration model for intrusion-related potential for the Sure Bet property.

The potential for intrusion-related and/or other magmatic related mineralization continues to be suggested by:

- 1) the general association of molybdenum with Cretaceous intrusions of the Bayonne Magmatic Suite, specifically, the Crawford Bay Stock;
- possible association of a weakly (to moderately) anomalous "intrusion-related gold" suite of metals including arsenic, antimony, bismuth, tungsten and/or tin;
- spatial association between silver-bearing to silver-rich base metal veins (i.e. Bluebell Mine, Kirby and several other base metal MINFILE showings in the area) and documented intrusions (i.e. Crawford Bay Stock, McGregor Granitoid and the Shoreline Intrusion); and
- 4) the documented presence of a number of felsic intrusions in the general area (i.e. Crawford Bay Stock, McGregor Granitoid, "Pegmatites", Fry Creek Batholith, Shoreline Intrusion etc).

#### **Intrusion-related Gold (IRG)**

In addition, recent work on mineralization associated with Cretaceous felsic intrusions has resulted in development of the Intrusion-Related Gold (IRG) Model. Examples include numerous examples in Alaska (i.e. Fort Knox, Pogo) and continue southeastward through the Tintina Gold Belt. Several occurrences in B.C. have been examined in a preliminary manner in order to evaluate Intrusion-Related Gold potential, including the Baldy Batholith and the Mt. Skelley Pluton. With reference to this model, elevated As, Bi, Sb, W are considered as "pathfinder" elements for potential IRG deposits. In this context, locally moderately to highly anomalous Bi ( $\leq$ 344 ppm) and W ( $\leq$ 7100 ppm), associated with high grade arsenic (1.02%) and gold (14.4 g/t, or 0.42 oz/t) documented in mineralized veins within the Mt. Skelly Pluton are of potential interest. Furthermore, the Sanca Stock and Mount Skelly Pluton are of Cretaceous age with a prominent magnetic halo, both features characteristic of many occurrences along the Tintina Gold Belt. Several locations, including many of the documented MINFILE occurrences, may be compatible with an IRG-type model, particularly those associated with the northwestern lobe (Sanca Stock) of the exposed granitic phases.

#### **Industrial Minerals**

#### Dolomite

"The Crawford Creek Dolomite (MINFILE 082FNE113) underground mine ... is located in the Kootenay Lake area, 600 m south of Crawford Creek, and is operated by Imasco Minerals Ltd. The orebody is hosted by a band of limestone and dolomite of the Lower Cambrian Badshot Formation, which extends north-northeast from the head of Crawford Bay for at least 12 km. The bed outcrops along the east flank of the Preacher Creek antiform: a tight, overturned, eastward-closing fold cored by overlying gneiss, schist and amphibolite of the Lower Cambrian and younger Lardeau Group. Underlying quartzite and schist of the Hadrynian - Lower Cambrian Hamill Group outcrops along the flanks of the fold.

The deposit consists of white medium-grained dolomite containing scattered crystals of metamorphic minerals, especially tremolite. The dolomite develops a brown staining on weathered surfaces. Numerous randomly oriented fractures occur with spacings of 10–15 cm. A sample of chips collected from the quarry contained 30.26% CaO, 20.17% MgO, 2.14% insoluble materials, 0.77%  $R_2O_3$ , 0.92%  $Fe_2O_3$ , 0.021% MnO, 0.012%  $P_2O_5$ , 0.01% S and 46.37% LOI (BC Ministry of Mines and Petroleum Resources, 1965).

Imasco initially quarried dolomite on the south side of Crawford Creek, 600 m north of the current mine site, during 1962 and 1963. Quarrying began at the current site in 1964, and underground mining began in 1969. Between 1962 and 1988, 734 500 tonnes of dolomite were mined. The dolomite is trucked to the company's plant in Sirdar, where it is crushed

#### **Sure Bet Property** -51-

and screened for a variety of products: agricultural soil conditioner, a component in stucco and roofing materials, and white ornamental aggregate rock" (Simandl et al. 2006).

#### CONCLUSIONS

The most significant issue to be resolved with respect to the Sure Bet property is the probable location of the abundant massive sulphide boulders documented on the property. At least 57 separate massive sulphide boulders were compiled by High Ridge Resources in their database. In addition, the data represented by the compiled soil geochemical results document a prominent north-northwest - south-southeast oriented trend which appears to be broadest and best developed by McGregor Lake, where Kokanee Exploration discovered a base metal sulphide occurrence. Subsequent "… Trenching yielded galena, honey coloured sphalerite, tetrahedrite, and barite on fresh surfaces. Assay grades of selected hand samples were as high as 2.80% lead, 5.65% zinc, and 10.16 oz/t silver" (Meeks 1992).

To date, this represents the most significant base metal mineralization documented in situ on the property. The "breccia occurrence" is not "massive" in nature and is of significantly lower grade than that documented for the massive sulphide boulders. As such, the mineralization exposed at surface in a small pit (the trench was back-filled) does not represent a possible source for the massive sulphide boulders.

Preliminary Pb isotope data from massive sulphide and knebelite boulders on the Sure Bet property appear to correspond to the Ainsworth Group and may be distinct from the Bluebell Group, however, this "trend" is defined by only four analyses and more work should be undertaken to better develop and document this trend before any definitive interpretations can be made.

Any future work on the property needs to address the predominant issue of the source of the massive sulphide boulders. More specifically, an in situ source of massive sulphides needs to be identified. The most promising targets are geophysical EM anomalies, however, given the documented presence of both pyrrhotite and graphite in the host stratigraphy the cause of these geophysical (both airborne and ground) anomalies remains uncertain. Drill testing is required in order to gain confidence with regard to the probable cause of these anomalies.

The only significant occurrence of in situ base metal mineralization remains the "breccia occurrence" identified by Kokanee Exploration, however, the three holes drilled to test it (Meeks 1992) may have drilled below the keel of and/or parallel to the fold hinge hosting the mineralization. As such, the author believes the "breccia occurrence" needs further drilling to properly evaluate it.

#### RECOMMENDATIONS

- 1. In the absence of the compilation of information provided to High Ridge Resources Inc. by property owner Bruce Doyle, as well as the details and results of the High Ridge Resources Inc. exploration program between 2005 2008, a compilation of the results of previous programs is strongly recommended;
- 2) Continued attempts should be made to recover the property files of Bruce Doyle, believed to be currently held by High Ridge Resources Inc., as well as the details and results of their 2005 2008 exploration program;
- 3) Existing soil geochemical data is available for much of the central and northern portion of the Crawford Peninsula, however, the southernmost tip of the peninsula is lacking soil coverage. Surface soil geochemical data should be extended through a soil sampling program by extending existing lines farther south to the southern coastline. All soils shoul dbe analyzed using multi-element ICP-MS analytical methods;
- 4) Anomalous copper and, to a lesser extent, molybdenum, tin and tungsten have been documented in surface soil and outcrop samples in the southern and, in particular, southeastern portions of the Crawford Peninsula. These are interpreted to be related to the Cretaceous Crawford Bay Stock. Coincident airborne and ground EM geophysical anomalies on the east side of Crystal Lake should be evaluated further, ideally by sub-surface drill testing.
- 5) Prospecting and limited geological mapping should be undertaken on the tenures on Crawford Peninsula in an attempt to locate the high grade subcrop localities described in High Ridge Resources Inc.'s 2008 News Release. Furthermore, attempts should be made to locate the "sulphide occurrences" plotted on High Ridge Resources's maps. Confirmation of the location of reported in situ high grade, massive sulphide mineralization is critical to the program;
- 6) Further sampling of massive sulphide boulders should be undertaken, as well as mineralized occurrences on the Sure Bet property and submitted for Pb Isotope analysis. The results may help to specifically address the issue of the location of the massive sulphide boulders. If future results confirm the Ainsworth Group association, as distinct from the Bluebell Group, then one may have better confidence in eliminating the Bluebell Mine as a source for the boulders.

#### **RECOMMENDED EXPLORATION PROGRAM**

#### **Sure Bet Property**

Phase I - Compilation			
Data compilation - Geologist		\$	15,000
- GIS Technic	zian	\$	6,000
Phase II - Soil Program - May - June			
South end Crawford Peninsul	a		
Soil Crew - 20 days		\$	15,000
- approx. 800 soi	ls - Analysis	\$	20,000
Field Supplies		\$	1,000
Meals / Accommodation	IS	\$	3,000
Phase III - Diamond Drilling - June -	July		
Airborne Anomaly			
2 Set-ups, with holes at	$-45^{\circ}$ and $-65^{\circ}$		
UTEM3 Anomaly			
2 Set-ups, with holes at	$-45^{\circ}$ and $-65^{\circ}$		
Breccia Occurrence			
1 Set-up, with holes at	$45^{\circ}$ and $-65^{\circ}$		
Airborne / Horizontal Loop A			
2 Set-ups, with holes at	•		
Total - 14 holes at 150 n		\$	178,500
Drill Crew - Meals / Accommodations	- 30 days drilling / Set-up	\$	5,000
Supervision (geologist and 1 helper) - M		\$	60,000
Vehicle expenses (Fuel / Mileage / Mis		\$	10,000
Reclamation	,	\$	2,000
Supplies, freight, sample shipments, co	mmunications	\$	5,000
Compilation report		\$	5,000
1 ···· · I · ·	Subtotal		325,500
	10% Contingency	\$	32,500
	Total	<u>\$</u>	358,000

#### REFERENCES

- Ayer, J.A. 1981. Geological, Geochemical and Drilling Report, Moly Claims, Gray Creek, BC. Assessment Report 10,307 for Dekalb Mining Corporation, filed December 141981, 59 p.
- Beaudoin, G., Roddick, J.C. and Sangster, D.F. 1992. Eocene age for Ag Pb Zn Au vein and replacement deposits of the Kokanee Range, southeastern British Columbia, Canadian Journal of Earth Sciences, vol. 29, pp. 3 14.
- -----, Sangster, D.F. and Godwin, C.I. 1992b. Isotopic evidence for complex Pb sources of the Ag Pb Zn Au veins of the Kokanee Range, southeastern British Columbia, Canadian Journal of Earth Sciences, vol. 29, pp. 418 431.
- Brabec, D. 1980. Assessment Work Geochemical Survey on the Craw Property, Slocan Mining District, B.C., Assessment Report 8,006 for Cominco Ltd, dated March 24, 1980.
- Brown, D.A. and Logan, J.M. 1989. Geology and Mineral Evaluation of Kokanee Glacier Provincial Park, southeastern British Columbia (082F/11, 14), British Columbia Ministry of Energy, Mines and Petroleum Resources Paper 1989-5, 51 p + maps.
- Buckley, R.A. 1980. Geochemical Report, Grey Creek, Assessment Report 16,150 for Dekalb Mining Corporation, filed March 1980, 40 p.
- Doyle, B.A. 1991. Sure Bet & Pup Claims, Prospecting and Rock Sampling, Slocan Mining Division, Assessment Report 21,793, dated October 25, 1991.

Eagle Plains Resources Ltd. 2005a. Press Release dated May 9, 2005, 4 pg.

-----. 2005b. Press Release dated October 25, 2005, 4 pg.

- Fyles, J.T. 1970. Geological Setting of the Lead-Zinc Deposits in the Kootenay lake and Salmo Areas of British Columbia, in Lead-Zinc Deposits in the Kootenay Arc, Northeastern Washington and Adjacent British Columbia, edited by Weissenborn, A.E., Society of Economic Geologists, 1970 Northwest Field Conference Guidebook, pp. 41 - 54.
- Hart, C.J.R. 2007. Reduced intrusion-related gold systems, in Mineral deposits of Canada: A Synthesis of Major Deposit Types, District Metallogeny, the Evolution of Geological Provinces, and Exploration Methods, edited by Goodfellow, W.D., Geological Association of Canada, Mineral Deposits Division, Special Publication No. 5, p. 95-112.
- Hayles, J.G. 1973. Ground Geophysical Surveys on the Craw Group, Slocan M.D., B.C., Assessment Report 4,814 for Cominco Ltd, dated December 19, 1973.

High Ridge Resources Inc. 2008. News Release dated December 3, 2008.

- Höy, Trygve. 1993. Geology of the Purcell Supergroup in the Fernie West-Half Map Area, Southeastern British Columbia, Ministry of Energy, Mines and Petroleum Resources, Bulletin 84, 157 p.
- -----. 1983. Geology of the Riondel Area, Central Kootenay Arc, Southeastern British Columbia, Ministry of Energy, Mines and Petroleum Resources, Bulletin 73, 89 p.
- ------ and Muraro, E.W. 1981. Structural and stratigraphic setting of Kootenay Arc deposits, in Field Guides to Geology and Mineral Deposits, Calgary '81 Annual Meeting, edited by R.I. Thompson and D.G. Cook, Geological Association of Canada, Mineralogical Association of Canada and Canadian Geophysical Union, pp. 51 - 58.
- International Marble and Stone Company Ltd. 1977. Untitled Assessment Report, Assessment Report 6,249.

# 2, Assessment Report 4,923.

- Jury, R.G. 1967. Geochemical Soil Survey, Assessment Report 1,176 for Kootenay Moly Mines Ltd, filed October 4 1967, 9 p.
- Klewchuk, P. 2001. Assessment Report on Diamond Drilling & VLF-EM Geophysics, Sure Bet Property, Assessment Report 26,687 for Klondike Gold Corp., dated October 17, 2001.
- Krawinkel, R. 2006. Geophysical Report for a Surface UTEM3 Survey at Silver Bay, Nelson Mining Division, British Columbia, Canada, internal report for High Ridge Resources Inc., dated November, 2006.
- Lloyd, J. 1987. A Geophysical Report on a Time Domain Induced Polarization Survey on the Ford Property, Gray Creek Area, Assessment Report 16,150 for Amarado Resources Ltd, filed May 1987, 19 p.
- Logan, J.M. 2002. Intrusion-related Mineral Occurrences of the Cretaceous Bayonne Magmatic Belt, Southeastern British Columbia (NTS 82 E, F, G, J, K, L, M and N), Geoscience Map 2002-1, 1:500,000 scale.
- ------ and Mann, R.K. 2000. Geology and Mineralization of the Mount Skelly Pluton, Kootenay Lake, Southeastern British Columbia (82F/7E), British Columbia Ministry of Energy and Mines Open File 2000-8, 1:50,000 scale map.

- Massey, N.W.D., MacIntyre, D.G., Desjardins P.J. and Cooney. R.T. B.C. 2005. Digital Geology Map of British Columbia: Tile NM11 - Southeast BC, Ministry of Energy and Mines, Geofile 2005-4.
- Mawer, A.B. 1977. Diamond Drilling, Craw Group, Slocan M.D., B.C., Assessment Report 6,247 for Cominco Ltd, dated April 1977.
- Meeks, D. 1992. Report on Diamond Drill Holes A92-6, 7 & 8, Arc Property, Sure Bet 3 Claim, Slocan Mining Division, Crawford Peninsula Area, Assessment Report 22,578 for Kokanee Explorations Ltd., dated October, 1992.
- -----. 1991. Report on a soil geochemistry program, Arc, Noah, Sure Bet and Pup Claims, Slocan Mining Division, Assessment Report 22,216 for Kokanee Explorations Ltd., dated March, 1992.
- Pighin, D.L. 1992. Report on a Diamond Drill Program, (A92-1 to A92-5), Arc and Sure Bet Claims, Slocan mining Division, Crawford Area, Assessment Report 22,219 for Kokanee Explorations Ltd., dated March, 1992.
- Pope, A. 1990. The Geology and Mineral Deposits of the Toby-Horsethief Creek Map Area, Northern Purcell Mountains, Southeast British Columbia (82K), Ministry of Energy, Mines and Petroleum Resources, Open File 1990-26, 54 p.+
- Ransom, P.W. 1998. Assessment Report 1998 Diamond Drilling, Ground Magnetics and EM, Sure Bet Property, Assessment Report 25,750 for Cominco Ltd, dated November 29, 1998.
- -----.1997. Assessment Report 1997 Geology, Beep-Mat EM Surveying and Soil Geochemical Survey on the Sure Bet Property, Assessment Report 25,316 for Cominco Ltd, dated December 17, 1997.
- -----. 1996. Assessment Report Soil Geochemical Survey on the Sure Bet Property, Assessment Report 24,351 for Cominco Ltd., dated February 25, 1996.
- Reesor, J. E. 1996. Geology, Kootenay Lake, British Columbia. Geological Survey of Canada, Map 1864A, scale 1: 100 000
- Reynolds, P.H. and Sinclair, A.J. 1971. Rock and Ore-Lead Isotopes from the Nelson Batholith and the Kootenay Arc, British Columbia, Canada, Economic Geology, vol. 66, pp. 259 266.
- Rice, H.M.A. 1941. Nelson Map-Area, East Half, British Columbia. Geological Survey of Canada Bulletin 228, 83p.

- Rookes, W. R. 1982. Drilling Assessment Report Crystal Lake Exploration Project, Mineral Claim Roy 1 & 2, Slocan Mining Division, Assessment Report 10,247 for International Marble and Stone Company Ltd, dated September, 1982.
- Simandl, G.J. and Paradis, S. 2006. Dolomite in British Columbia: Geology, Current Producers and Possible Development Opportunities along the West Coast
- -----. Simandl, Robinson, N.D. and Paradis, S., Ministry of Energy, Mines and Petroleum Resources Geological Fieldwork 2005, Paper 2006-1, pp. 197 208.
- Szabo, N.L. 1973. Geochemical survey on the Craw Mineral Claims, Crawford Bay Area, Slocan Mining District, British Columbia, Assessment Report 4,132 for Cominco Ltd, dated January 31, 1973.
- Szybinski, A.Z. 2005. Report on the Geology and Mineral Potential of the Silver Bay Property, Crawford Peninsula, Slocan Mining Division, B.C., internal report for High Ridge Resources Inc, dated April, 2005.
- Walcott, P. 1999. A Geophysical Report on Electromagnetics and Gravity Surveying, Crawford Bay Area, BC, internal report for Cream Minerals Ltd, dated October 1999.
- Walker, R.T. 2008. Assessment Report for the McFarlane / Lydy property Soils, IP Survey and Diamond Drilling, Assessment Report 30,727, dated January 16, 2009.
- Warren, M.J. 1996. Geology of the West-Central Purcell Mountains, British Columbia (NTS 82K/2, 7 & parts of 8, 10), Ministry of Energy, Mines and Petroleum Resources Open File 1996-16, 1:75 000, 3 sheets.
- Wright, R.L. 1980. Geological Mapping and Soil Geochemical Survey on the Grey Mineral Claims, Crawford Bay Area, Assessment Report 8,239 for Cominco Ltd, filed August 5 1980, 15 p.

**Sure Bet Property** 

#### APPENDIX A

### STATEMENT OF QUALIFICATIONS

#### I, Rick Walker, M.Sc., P.Geo. do hereby certify that:

- 1. I am President of Dynamic Exploration Ltd., with offices at 2601 42<sup>nd</sup> Ave South, Cranbrook, BC, V1C 7H3;
- 2. I am a graduate of the University of Calgary of Calgary, Alberta, having obtained a Bachelors of Science in 1986;
- 3. I obtained a Masters of Geology at the University of Calgary of Calgary, Alberta in 1989;
- 4. I am registered as a Professional Geoscientist (P. Geo.) in the Province of British Columbia with the Association of Professional Engineers and Geoscientists of the Province of British Columbia. and I am entitled to use the Seal which has been affixed to this report.;
- 5. I have worked as a geologist for a total of 23 years since my graduation from university.
- 6. I am author of all sections of this technical report entitled "Assessment Report, Sure Bet Property, Crawford Peninsula, B.C., dated May 6, 2010;
- 7. I visited the Sure Bet property on March 23<sup>rd</sup> and 24<sup>th</sup>, 2010, accompanied by Bruce Doyle, Prospector and owner of the Sure Bet property and Paul Ransom, Professional Geologist.

### DATED AT CRANBROOK B.C. THIS 6<sup>TH</sup> DAY OF MAY, 2010.

Richard (Rick) T. Walker, M.Sc., P.Geo.

**Sure Bet Property** 

#### APPENDIX B

#### ANALYTICAL RESULTS

#### **FIELD NOTES**

#### March 23, 2010

approximately 2.0 km.								
Pilot Point FSR - 153.38 (Wynndel Box and Lumber)								
512843, 5498263								
512649, 5497238								
base of outcrop, probably off heavily iron- 512679, 5497116								
Impure marble, speck of chalcopyrite in iated fragmented appearance to marble 512661, 5497076								
<ul> <li>Sample R10 - SB - 03 - Massive sulphide boulders - variable pyrrhotite, galena and sphalerite A - boulder to left (Photos 3040 - 3041), approximately 1 m in diameter</li> <li>B - Boulder to right in photos, 30 cm surface exposure with 1 m along x 2 m kill zone across road surface (photo 3042 - 3043). Coarse galena.</li> <li>Samples taken on road to east, below road to 1998 Cominco drill holes 512508, 5497274</li> </ul>								
rs and road to 1998 Cominco drill holes 512483, 5497206								
512476, 5497320								
Vuggy, strongly iron-stained with Mn 512442, 5497393								
copyrite 512444, 5497465								
512418, 5497497, 893 m elevation								
512509, 5497552								
512448, 5497717								

#### **Sure Bet Property**

Photos 3048 - 3049 - Some tags off but stacked in order. Generally good condition, some boxes breaking apart, rotten.

Massive sulphide boulder - 10 cm across with galena and pyrrhotite 512689, 5497174

Sample RW10 - SB - 04 - Small sand / gravel pit at south end of Crystal Lake. Two small<br/>massive sulphide boulders at edge of pit. Approx. 30 cm in length. One has thick ≤2 cm<br/>Mn(?) rind.Sample RW10 - SB - 04 - Small<br/>south end of Crystal Lake. Two small<br/>south end of Crystal Lake. Tw

Possibly a contact phae of the Crawford Bay Stock(?). Dusting of fine, dark grey mineral. Possible fine-grained magnetite - locally strongly magnetic.

Pegmatitic intrusion into meta-sediments 513142, 5497374, 8.0 m accuracy

Sample R10 - SB - 05 - Coincident ground (Cream Minerals) and airborne anomaly (Cominco) + Bruce's 0.64% W, 600 ppb Au, 400 ppm Bi sample. Anomaly approx. 20 m wide x 600 m long. Sample from iron-stained bedrock approx. 15 cm thick 513173, 5497364

Sample R10 - SB - 06 - Small outcrop, possibly large float (?), very similar to Sample 05.Pyrrhotite, minor chalcopyrite. $1.5 \text{ m x } 0.5 \text{ m x} \ge 15 \text{ cm}$ 513209, 5497443

Sample R10 - SB - 07 - "Large" massive sulphide boulders in old logging landing. Bruce says there are several large, table sized slabs of silicified limestone buried in the road bed. W, Bi, anomalous Au. Dug out the sides around two, rotten sulphide boulders with fresher pyrrhotite and minor chalcopyrite in fresher peices as thin blebs to highly irregular (interstitial?) masses. Different and distinct from other massive sulphide boulders 513415, 5498371

#### March 24, 2010

Sampling - Bluebell Mine massive sulphide waste material at Riondel

Sample R10 - SB - 08 - Pyrrhotitic sample alongside road

Sample R10 - SB - 09 - Pyrrhotite with minor chalcopyrite

Sample R10 - SB - 10 - Pyrrhotite and galena

Sample R10 - SB - 11 - Pyrrhotite and sphalerite (fine- to coarse-grained)

Sample R10 - SB - 12 - Pyyrhotite, galena and chalcopyrite

Sample R10 - SB - 13 - Pyyrhotite and galena

Roadcut in corner of road to property. Float has thin (<0.1 mm) fracture coatings of pyrrhotite. Outcrop has trace sphalerite crystals (≤1.5 mm diameter). Thin feeders? 512409, 5499457, 8.2 m accuracy

"Breccia occurrence" trenched and drilled by Kokanee Exploration in 1992. Drilled 3 holes. Sample R10 - SB - 14 - Silicified limestone breccia with malachite staining, minor galena and sphalerite. Original trench in filled and back filled. Honey sphalerite and barite strongly weathered. Chalcopyrite to malachite and subordinate azurite. Galena and Sphalerite to variable weathered vugs. Dug down into small surface trench to get some galena and sphalerite.

511999, 5498747, 7.5 m accuracy

Sample R10 - SB - 15 - Approximately 60 m to south (toward clear cut) is a silicified to cherty limestone with approx. 0.75% galena with minor light coloured (light brown) sphalerite. Galena (max. 0.75%, average 0.5%), cubic, up to 1 cm diameter. Fallen survey pole with station flag (in place?) 650N, 2200 E 512009, 5498688, 6.3 m accuracy

Sample R10 - SB - 16 - Farther west along road. Another small outcrop / sub-crop on south side of road with minor light coloured sphalerite along fractures 511904, 5498563, 8.1 m acc.

Outcrop with diverging to weakly radiating bladed crystals, possibly white tremolite 511792, 5498567, 9.5 m accuracy

In situ (?) Sulphide-bearing interval N35E, discontinuously exposed on south side of road and into roadcut over 2.5 m,  $\leq 0.75$  wide 512082, 5499526, 5.6 m accuracy

Sample R10 - SB - 17 - Graphitic schist outcrop on west side of road by Station L9900N, 1950 E 512037, 5499596, 9.2 m accuracy

**Sure Bet Property** 

#### APPENDIX C

### STATEMENT OF EXPENDITURES

The following expenses were incurred on behalf of Bruce Doyle on the Sure Bet property between March 1 and April 20, 2010.

#### PERSONNEL

R. Walker, P.Geol - 2 days @ \$650 / day P. Ransom, P.Geol - 2 days @ \$650 / day Bruce Doyle, Property Owner	\$ \$ <b>\$</b>	1,300.00 1,300.00 <b>2,600.00</b>
EQUIPMENT RENTAL	Ŷ	_,
4WD Truck - mileage - 484 km @ \$0.80 / km	\$	387.20
FIELD SUPPLIES (Flagging, sample bags, etc.)		
6 man-days @ \$20 / day	\$	120.00
REPRODUCTION		
Photocopying - Articles, Papers - Black and White - 806 pages	\$	80.60
- Colour - 18 pages	\$	18.00
Plotting - 34 x 44 Field Map	\$ <u>\$</u> \$	51.94
- 28 x 28 Field Map	<u>\$</u>	27.22
	\$	177.76
DISBURSEMENTS		
Accommodations	\$	211.13
Analyses - 19 rock samples	\$	560.88
Fuel	\$	79.00
Meals	\$	76.10
Shipping	<u>\$</u> \$	30.92
	\$	958.03
<b>REPORT/REPRODUCTION</b>		
R. T. Walker, P.Geo.: 3.0 days report writing at \$650/day	\$	1,950.00
2.0 days analysis / drafting at \$350 / day	\$	1,300.00
Sub-Total	\$	3,250.00
Total	<u>\$</u>	7,492.99

**Sure Bet Property** 

### APPENDIX D

#### **PROGRAM RELATED DOCUMENTS**

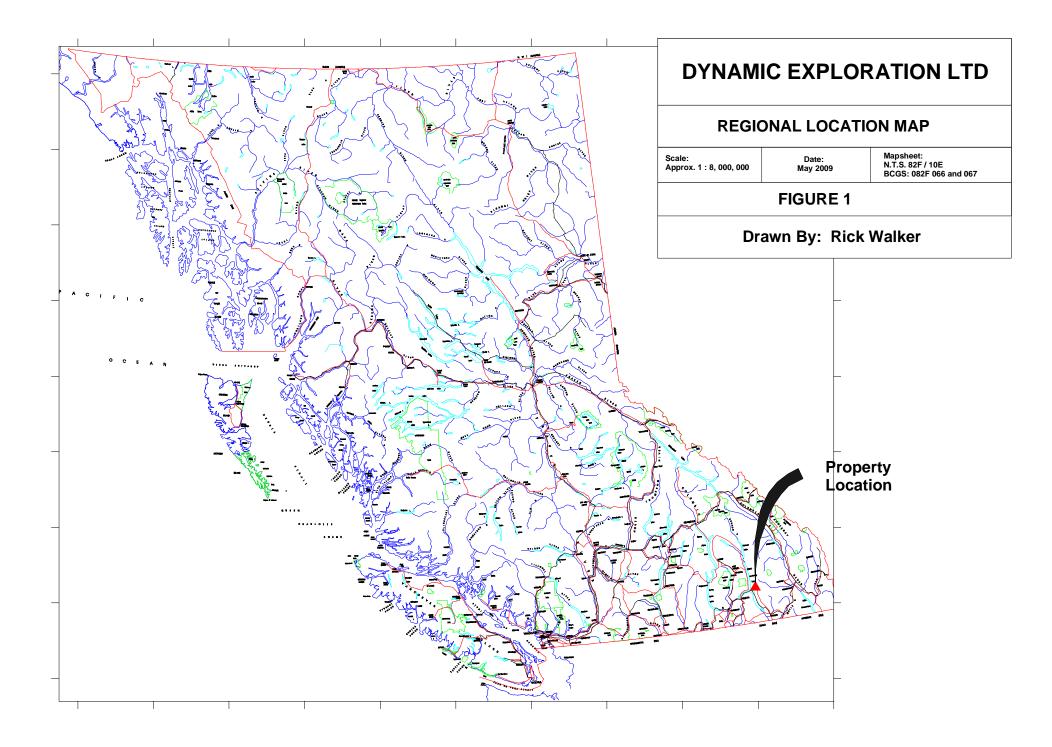
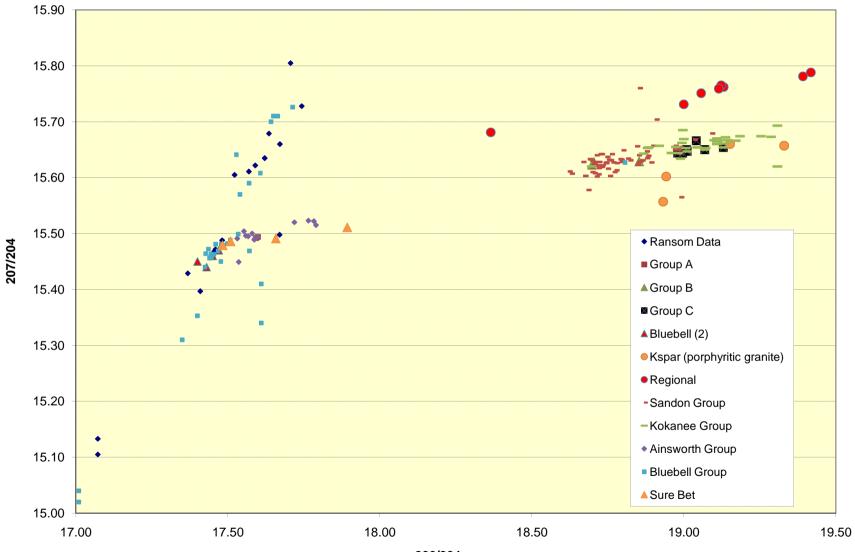
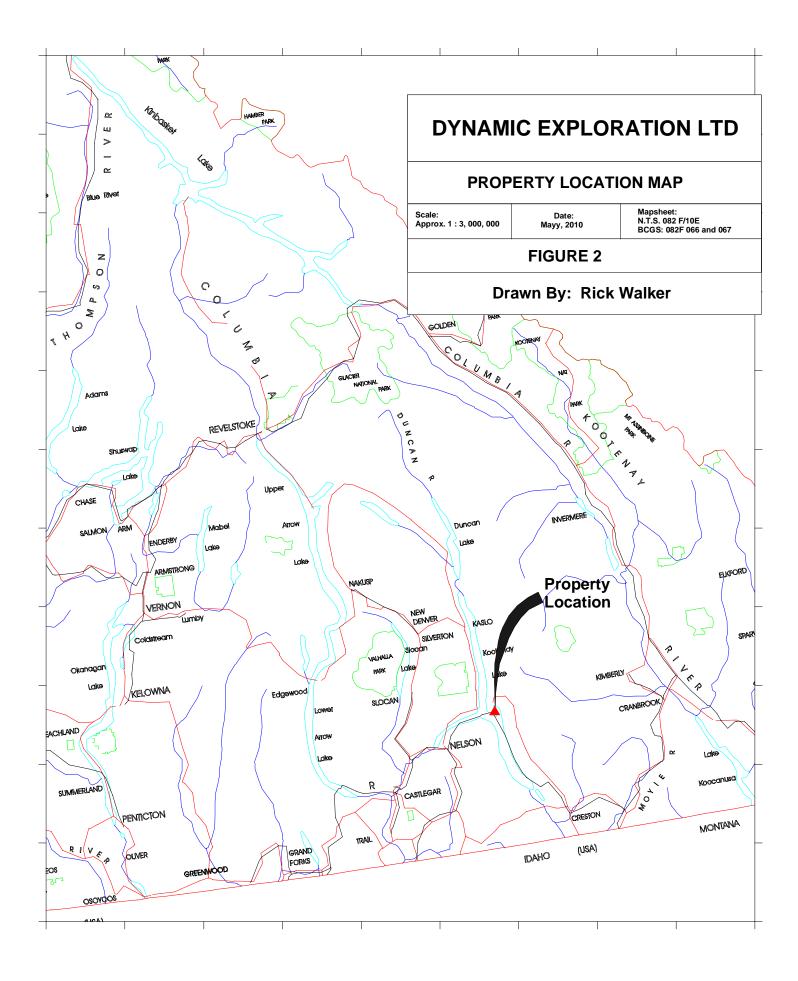
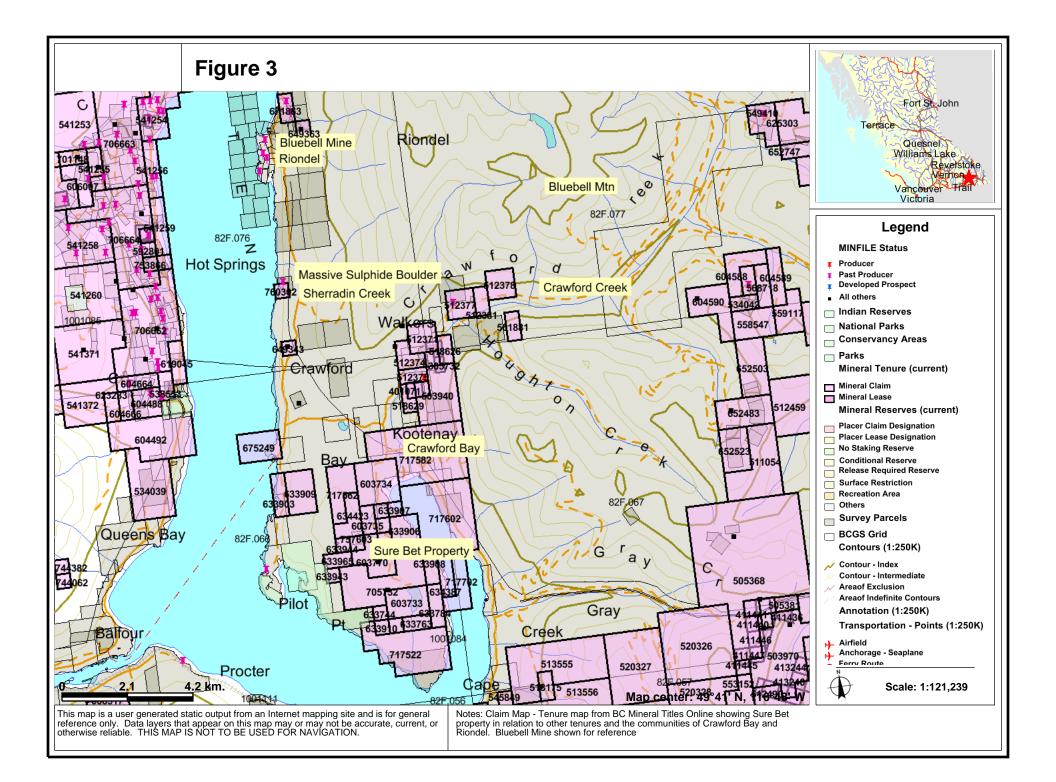


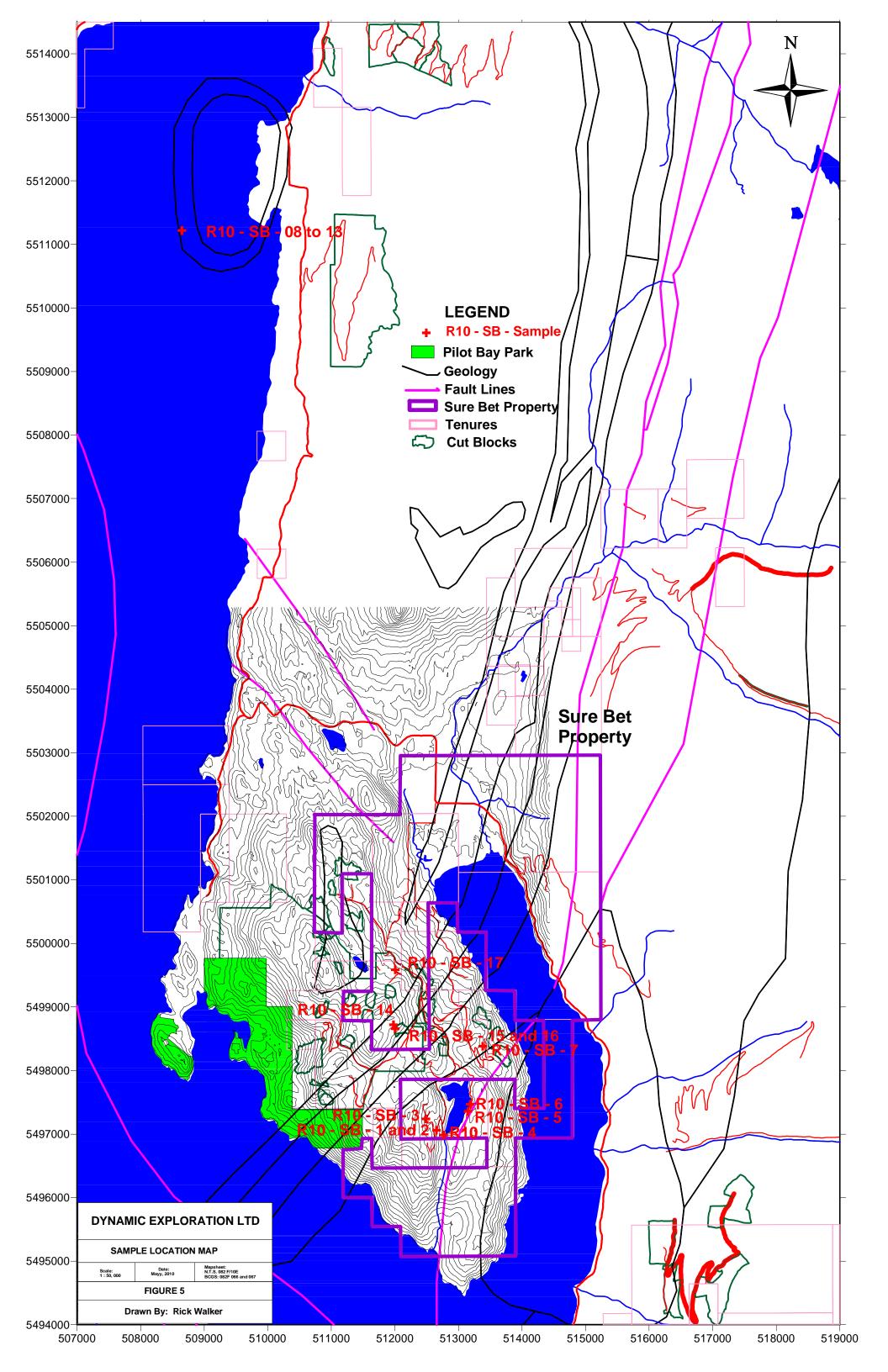
Figure 10: Lead Isotope Data 207/204 vs. 206/204 Graph

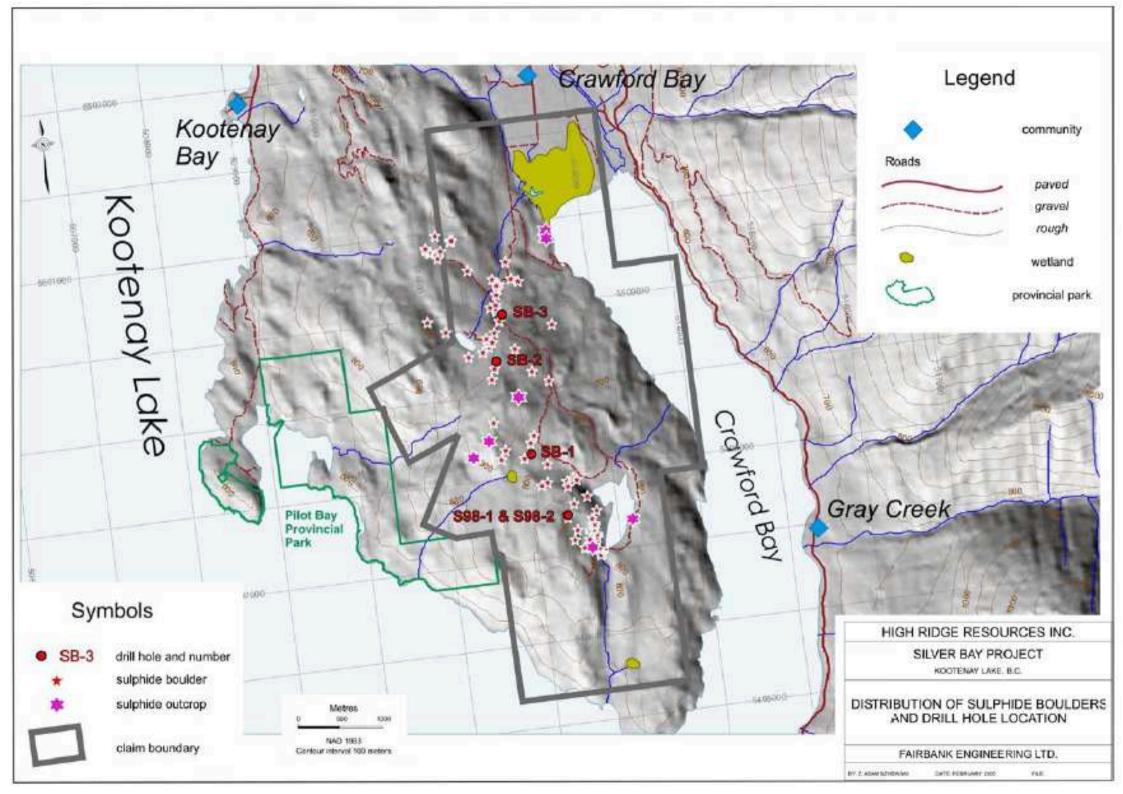


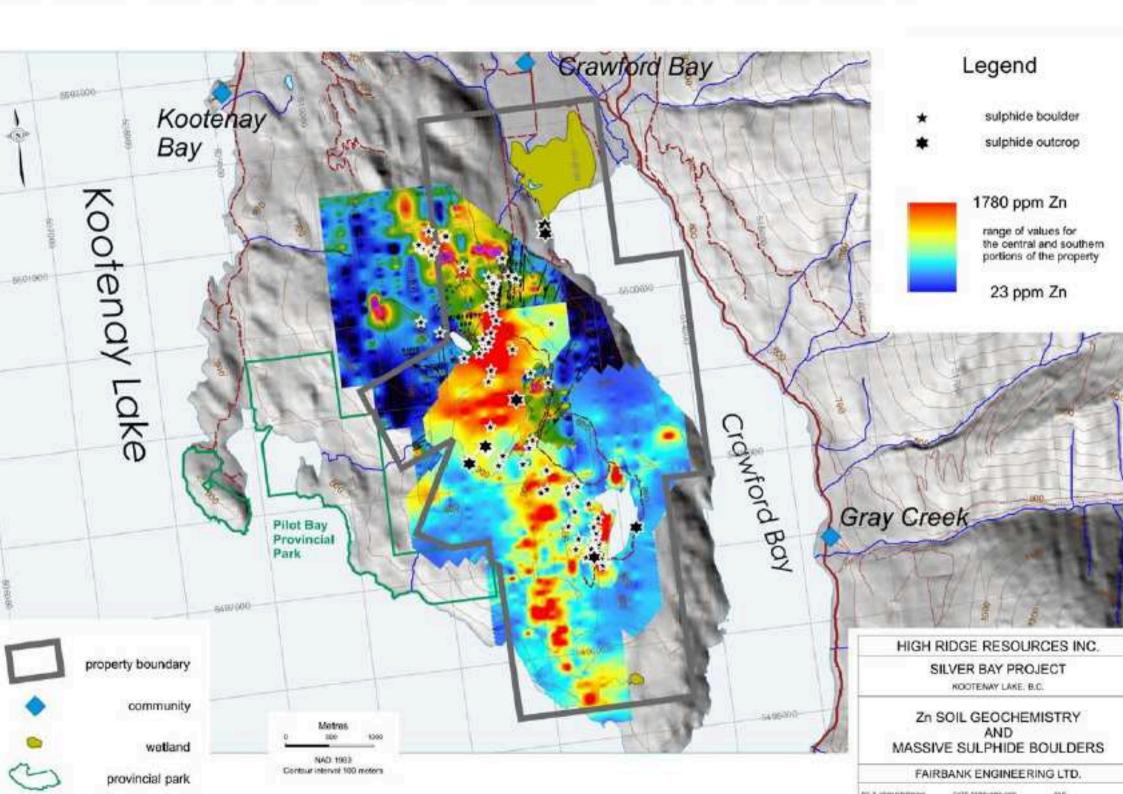
206/204











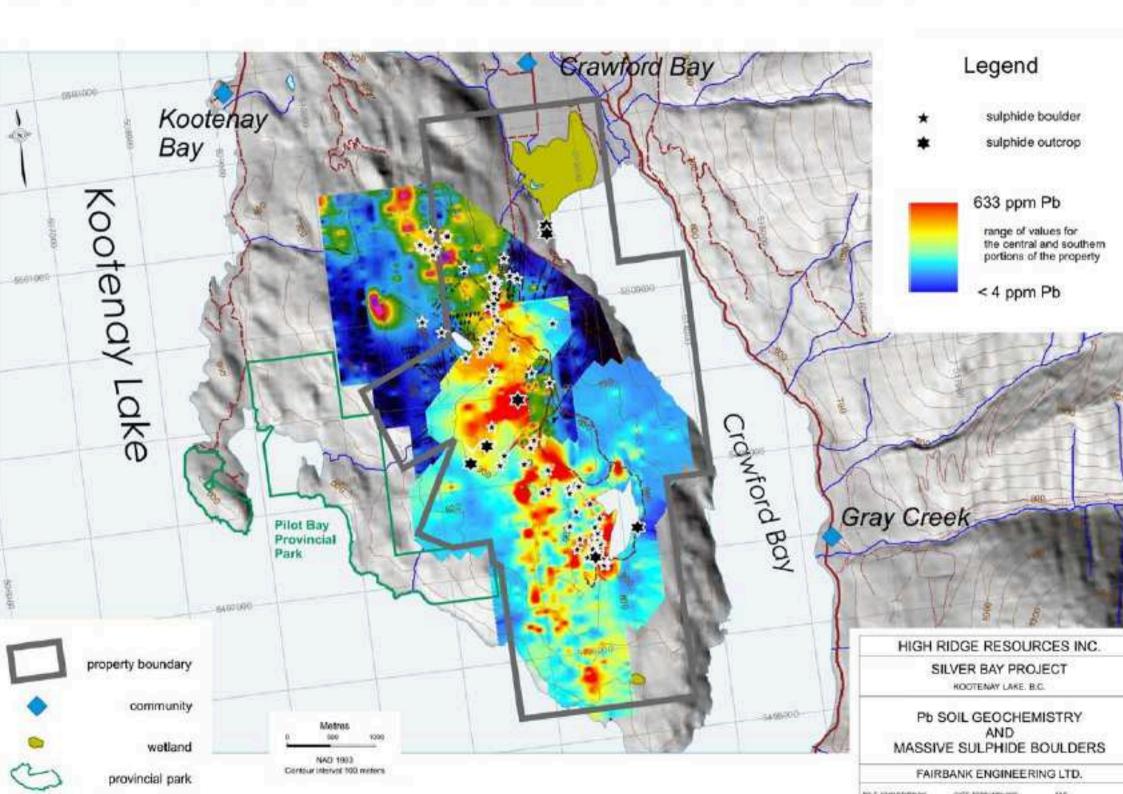
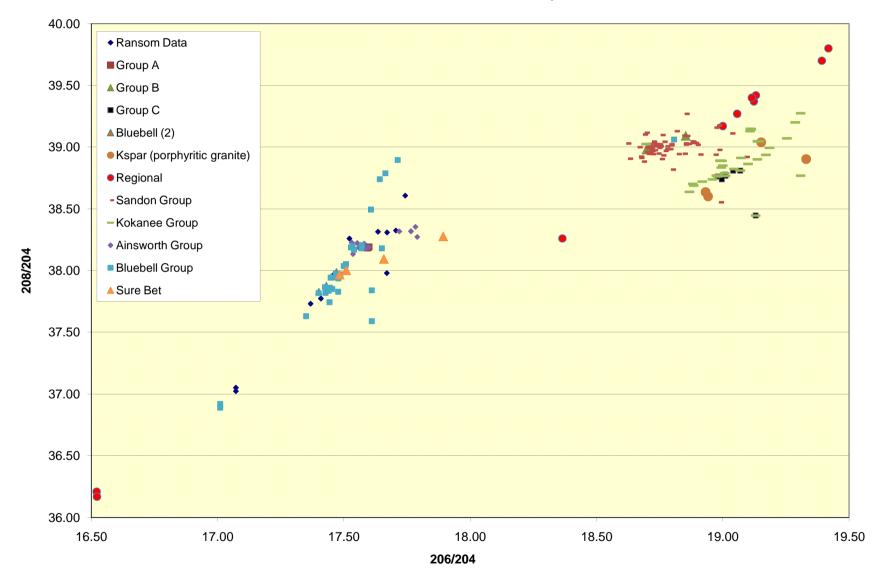


Figure 9: Lead Isotope Data 208/204 vs 206/204 Graph



#### Lead Isotope Data

-	Denesit						
Zone	Deposit Name	Year	206/204	207/204	208/204	207/206	208/206 Reference
R93-17a	Sure Bet	1993	17.509	15.486	38.002		Cominco Ltd
R94:15529	Sure Bet	1994	17.658	15.491	38.094		Cominco Ltd
R94:15530		1994	17.483	15.479	37.967		Cominco Ltd
R93 10381	Sure Bet	1993	17.893	15.511	38.277		Cominco Ltd
1 KC	Bluebell	1962	17.621	15.635	38.481	0.88730	2.18380 P. Ransom, pers. Comm.
2 KC	Bluebell	1962	17.590	15.622	38.419	0.88810	2.18410 P. Ransom, pers. Comm.
3 C	Bluebell	1962	17.569	15.611	38.387	0.88860	2.18500 P. Ransom, pers. Comm.
4 C	Bluebell	1962	17.522	15.605	38.260	0.89060	2.18350 P. Ransom, pers. Comm.
5 B	Bluebell	1973	17.481	15.488	37.961	0.88599	2.17156 P. Ransom, pers. Comm.
6 KC 7 KC	Bluebell	1964	17.743	15.728	38.608 37.051	0.88643	2.17596 P. Ransom, pers. Comm. 2.17028 P. Ransom, pers. Comm.
8 KC	Bluebell Bluebell	1960 1960	17.072 17.072	15.105 15.133	37.031	0.88478 0.88642	2.16864 P. Ransom, pers. Comm.
9 KC	Bluebell	1960	17.409	15.397	37.774	0.88443	2.16980 P. Ransom, pers. Comm.
10 KC	Bluebell	1960	17.671	15.660	38.309	0.88620	2.16790 P. Ransom, pers. Comm.
11 KC	Bluebell	1960	17.670	15.498	37.980	0.87708	2.14941 P. Ransom, pers. Comm.
12 KC	Bluebell	1960	17.368	15.429	37.732	0.89836	2.17250 P. Ransom, pers. Comm.
13 KC 14 KC	Bluebell	1960	17.706	15.805	38.325	0.89263	2.16452 P. Ransom, pers. Comm.
14 KC 15 B?	Bluebell Bluebell	1960 1985	17.635 17.455	15.679 15.468	38.315 37.954	0.88908 0.88616	2.17267 P. Ransom, pers. Comm. 2.17439 P. Ransom, pers. Comm.
16 B?	Bluebell	1985	17.459	15.472	37.965	0.88619	2.17452 P. Ransom, pers. Comm.
17							
18							
19 Group A			4		00.10	0.0000-	
24	Molly Gibson	1989	17.599	15.494	38.191	0.88035	2.17002 BCGSB Paper 1989 - 5
25 26	Molly Gibson	1989	17.593	15.492	38.184	0.88053	2.17045 BCGSB Paper 1989 - 5
27 Group B							
34	Comstock	1989	18.704	15.628	38.998	0.83556	2.08499 BCGSB Paper 1989 - 5
35	Comstock	1989	18.698	15.623	38.980	0.83554	2.08463 BCGSB Paper 1989 - 5
36	Arlington	1989	18.853	15.629	39.091	0.82901	2.07346 BCGSB Paper 1989 - 5
37							
38 Group C 42	Oro Fino	1989	19.130	15.654	38.446	0.81834	2.00971 BCGSB Paper 1989 - 5
45	Para	1989	19.011	15.647	38.768	0.82306	2.03928 BCGSB Paper 1989 - 5
46	Para	1989	19.009	15.650	38.779	0.82330	2.04001 BCGSB Paper 1989 - 5
48	Alpine	1989	18.980	15.644	38.762	0.82422	2.04219 BCGSB Paper 1989 - 5
50	Jumbo / Mary	1989	19.069	15.650	38.810	0.82071	2.03520 BCGSB Paper 1989 - 5
51	East of LH	1989	19.041	15.666	38.809	0.82275	2.03816 BCGSB Paper 1989 - 5
52 53	Granite / Sunrise	1989	18.996	15.644	38.739	0.82513	2.04331 BCGSB Paper 1989 - 5
54 R14	K-spar from porphyritic granite	1971	19.330	15.657	38.903		Reynolds and Sinclair - Econ. Geol.
55 R3	K-spar from porphyritic granite	1971	18.942	15.602	38.601		Reynolds and Sinclair - Econ. Geol.
56 R10	K-spar from porphyritic granite	1971	19.152	15.660	39.039		Reynolds and Sinclair - Econ. Geol.
57 R9	K-spar from porphyritic granite	1971	18.932	15.557	38.636		Reynolds and Sinclair - Econ. Geol.
58	Blue Star Mine	1971	17.405	15.488	37.756		Reynolds and Sinclair - Econ. Geol.
59 60	Lakeshore Victor	1971 1971	17.558 18.670	15.496 15.603	38.194 38.923		Reynolds and Sinclair - Econ. Geol. Reynolds and Sinclair - Econ. Geol.
61	Scranton	1971	18.867	15.643	38.648		Reynolds and Sinclair - Econ. Geol.
	Bluebell	1971	17.470	15.470	37.990		Reynolds and Sinclair - Econ. Geol.
63 228	Bluebell	1971	17.450	15.460	37.950		Reynolds and Sinclair - Econ. Geol.
	Bluebell	1971	17.400	15.450	37.830		Reynolds and Sinclair - Econ. Geol.
	Bluebell	1971	17.430	15.440	37.880		Reynolds and Sinclair - Econ. Geol.
66 67	Mollie Mac	1971	18.365	15.681	38.260		Reynolds and Sinclair - Econ. Geol.
68	Jersey Mine	1971	19.131	15.762	39.420		Reynolds and Sinclair - Econ. Geol.
69	Jersey Mine	1971	19.123	15.765	39.370		Reynolds and Sinclair - Econ. Geol.
70	HB Mine	1971	19.115	15.759	39.400		Reynolds and Sinclair - Econ. Geol.
71	Jackpot	1971	19.000	15.731	39.170		Reynolds and Sinclair - Econ. Geol.
72 73	Reeves Macdonald	1971	19.057	15.751	39.270		Reynolds and Sinclair - Econ. Geol.
73 74	Sal A Zone Duncan Lake	1971 1971	19.392 19.418	15.781 15.788	39.700 39.800		Reynolds and Sinclair - Econ. Geol. Reynolds and Sinclair - Econ. Geol.
75	Sullivan	1971	16.521	15.505	36.209		Reynolds and Sinclair - Econ. Geol.
76	Sullivan	1971	16.522	15.500	36.168		Reynolds and Sinclair - Econ. Geol.
77							-
78 Sandon G							
79	Utica	1992	18.786	15.633	38.984		Beaudoin et al, 1992 - CJES
80 81		1992 1992	18.986	15.565	38.553		Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
81 82	Alamo	1992	18.752 18.685	15.603 15.633	38.904 39.102		Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
83	Hewitt	1992	18.681	15.578	38.883		Beaudoin et al, 1992 - CJES
84		1992	18.694	15.610	38.997		Beaudoin et al, 1992 - CJES
85		1992	18.702	15.608	39.020		Beaudoin et al, 1992 - CJES

		Deposit								
	Zone	Name	Year		206/204	207/204	208/204	207/206	208/206	Reference
86		Ottawa	19	92	18.841	15.656	39.093			Beaudoin et al, 1992 - CJES
87			19		18.874	15.635	39.046			Beaudoin et al, 1992 - CJES
88 89		Arlington	19 19		18.888	15.627	39.033 39.020			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
90		Arlington	19		18.847 18.853	15.640 15.629	39.020			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
91		Lucky Jim	19		18.774	15.626	39.006			Beaudoin et al, 1992 - CJES
92		Whitewater	19		18.796	15.649	38.818			Beaudoin et al, 1992 - CJES
93		Bosun	19		18.737	15.626	39.013			Beaudoin et al, 1992 - CJES
94		California	19		18.619	15.611	39.029			Beaudoin et al, 1992 - CJES
95 96		Cork-Province Coronation	19 19		18.790 18.965	15.628 15.650	39.015 38.939			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
97		Enterprise	19		18.717	15.628	38.944			Beaudoin et al, 1992 - CJES
98			19		18.755	15.631	39.098			Beaudoin et al, 1992 - CJES
99		Fisher Maiden	19	92	18.739	15.627	38.948			Beaudoin et al, 1992 - CJES
100		Index	19		18.758	15.642	38.933			Beaudoin et al, 1992 - CJES
101		Ivanhoe	19		18.743	15.637	38.995			Beaudoin et al, 1992 - CJES
102 103		Kalispell Little Tim	19 19		18.701 18.811	15.625 15.634	38.945 39.129			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
103			19		18.847	15.628	39.031			Beaudoin et al, 1992 - CJES
105			19		19.088	15.679	38.921			Beaudoin et al, 1992 - CJES
106			19	92	18.980	15.643	38.978			Beaudoin et al, 1992 - CJES
107			19		18.843	15.623	38.946			Beaudoin et al, 1992 - CJES
108		Noble Five	19		18.894	15.657	39.019			Beaudoin et al, 1992 - CJES
109 110		Payne	19 19		18.745 18.740	15.616 15.626	39.022 39.024			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
111		Reco	19		18.850	15.760	39.270			Beaudoin et al, 1992 - CJES
112		Ruth-Hope	19		18.699	15.624	38.992			Beaudoin et al, 1992 - CJES
113		Standard	19	92	18.664	15.628	39.000			Beaudoin et al, 1992 - CJES
114		Victor	19		18.715	15.617	38.969			Beaudoin et al, 1992 - CJES
115			19		18.670	15.603	38.923			Beaudoin et al, 1992 - CJES
116 117			19 19		18.671 18.763	15.603 15.627	38.913 39.044			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
118			19		18.905	15.704	38.940			Beaudoin et al, 1992 - CJES
119		Silver Leaf	19		18.626	15.607	38.906			Beaudoin et al, 1992 - CJES
120		Vulture	19	92	18.704	15.621	39.006			Beaudoin et al, 1992 - CJES
121		Silversmith	19		18.721	15.642	39.045			Beaudoin et al, 1992 - CJES
122		Van Roi	19		18.708	15.640	39.027			Beaudoin et al, 1992 - CJES
123 124		Silvana	19 19		18.713 18.767	15.622 15.610	38.985 38.970			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
125			19		18.773	15.613	38.983			Beaudoin et al, 1992 - CJES
126			19		18.725	15.619	39.006			Beaudoin et al, 1992 - CJES
127			19		18.708	15.602	38.964			Beaudoin et al, 1992 - CJES
128			19		18.714	15.606	38.974			Beaudoin et al, 1992 - CJES
129		Devenu	19		18.728	15.622	39.026			Beaudoin et al, 1992 - CJES
130 131		Revenu BNA	19 19		18.968 18.873	15.657 15.647	39.158 39.033			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
132		Baltimore	19		18.981	15.655	39.177			Beaudoin et al, 1992 - CJES
133			19		18.978	15.650	39.172			Beaudoin et al, 1992 - CJES
134		Marmion	19		18.859	15.631	39.026			Beaudoin et al, 1992 - CJES
135		Silver Cup	19		19.031	15.668	39.111			Beaudoin et al, 1992 - CJES
136 137		Comstock	19 19		18.693 18.704	15.618 15.628	38.961 38.998			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
138		Northern Belle	19		18.748	15.632	39.006			Beaudoin et al, 1992 - CJES
139		Carnation	19		18.790	15.632	39.024			Beaudoin et al, 1992 - CJES
140		White Hope	19	92	18.878	15.639	39.042			Beaudoin et al, 1992 - CJES
141		Flint	19		18.725	15.642	38.975			Beaudoin et al, 1992 - CJES
142		Noonday	19		18.692	15.631	39.117			Beaudoin et al, 1992 - CJES
143 144		Monitor	19	92	18.819	15.631	38.944			Beaudoin et al, 1992 - CJES
	Kokanee G	roup								
146		Olsen	19	92	19.110	15.670	39.144			Beaudoin et al, 1992 - CJES
147			19	92	19.108	15.660	39.130			Beaudoin et al, 1992 - CJES
148			19		19.109	15.665	39.137			Beaudoin et al, 1992 - CJES
149			19		19.109	15.669	39.149			Beaudoin et al, 1992 - CJES
150 151			19 19		19.113 19.287	15.666 15.673	39.146 39.201			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
152			19		19.207	15.693	39.201			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
153		McAllister	19		19.072	15.653	38.913			Beaudoin et al, 1992 - CJES
154		Rambler	19		19.254	15.674	39.071			Beaudoin et al, 1992 - CJES
155		Scranton	19		18.989	15.634	38.890			Beaudoin et al, 1992 - CJES
156			19		19.308	15.620	38.769			Beaudoin et al, 1992 - CJES
157			19		18.868	15.643	38.638			Beaudoin et al, 1992 - CJES
158 159			19 19		18.997 18.885	15.685 15.654	38.889 38.689			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
160			19		19.000	15.669	38.851			Beaudoin et al, 1992 - CJES

	Zone	Deposit Name	Year	206/204	207/204	208/204	207/206	208/206	Reference
161	Zone	Indiffe	1992	18.994	15.662	38.835	201/200	200/200	Beaudoin et al, 1992 - CJES
162		Molly Hughes	1992	18.919	15.657	38.721			Beaudoin et al, 1992 - CJES
163		Chapleau	1992	19.137	15.672	38.901			Beaudoin et al, 1992 - CJES
164		Alpine	1992	19.171	15.666	38.937			Beaudoin et al, 1992 - CJES
165		Pontiac	1992	18.974	15.655	38.770			Beaudoin et al, 1992 - CJES
166		Sunrise	1992	18.881	15.653	38.702			Beaudoin et al, 1992 - CJES
167			1992	18.959	15.644	38.739			Beaudoin et al, 1992 - CJES
168		Oro Fino	1992	19.144	15.667	39.047			Beaudoin et al, 1992 - CJES
169			1992	19.137	15.661	39.047			Beaudoin et al, 1992 - CJES
170			1992	19.130	15.654	38.446			Beaudoin et al, 1992 - CJES
171		Para	1992	19.007	15.653	38.789			Beaudoin et al, 1992 - CJES
172			1992	19.011	15.647	38.768			Beaudoin et al, 1992 - CJES
173		Silver Ranch	1992	19.044	15.654	38.822			Beaudoin et al, 1992 - CJES
174		AI	1992	18.980	15.644	38.762			Beaudoin et al, 1992 - CJES
175		King Solomon	1992	19.185	15.674	38.995			Beaudoin et al, 1992 - CJES
176		Jumbo	1992	19.069	15.650	38.810			Beaudoin et al, 1992 - CJES
177 178		Llowitten	1992 1992	18.697	15.620	39.025			Beaudoin et al, 1992 - CJES
179		Hamilton	1992	19.100	15.667	38.863			Beaudoin et al, 1992 - CJES
	Nineworth (	Group							
181	Ainsworth (	Highland	1992	17.531	15.491	38.227			Beaudoin et al, 1992 - CJES
182		Silver Hoard	1992	17.531	15.515	38.272			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
183		Number One	1992	17.765	15.515	38.318			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
184		Highlander	1992	17.553	15.523	38.222			Beaudoin et al, 1992 - CJES
185		Lakeshore	1992	17.536	15.449	38.133			Beaudoin et al, 1992 - CJES
186		Lateonore	1992	17.559	15.496	38.184			Beaudoin et al, 1992 - CJES
187		Montezuma	1992	17.580	15.500	38.218			Beaudoin et al, 1992 - CJES
188		Nicolet	1992	17.567	15.495	38.179			Beaudoin et al, 1992 - CJES
189		Smuggler	1992	17.590	15.492	38.187			Beaudoin et al, 1992 - CJES
190		Slocan Chief	1992	17.783	15.522	38.354			Beaudoin et al, 1992 - CJES
191		Blackburn	1992	17.719	15.520	38.317			Beaudoin et al, 1992 - CJES
192		Molly Gibson	1992	17.587	15.489	38.177			Beaudoin et al, 1992 - CJES
193			1992	17.599	15.494	38.191			Beaudoin et al, 1992 - CJES
194									
195 E	Bluebell Gr	oup							
196		Florence	1992	18.807	15.627	39.062			Beaudoin et al, 1992 - CJES
197			1992	17.460	15.481	37.944			Beaudoin et al, 1992 - CJES
198			1992	17.454	15.463	37.851			Beaudoin et al, 1992 - CJES
199			1992	17.571	15.469	38.206			Beaudoin et al, 1992 - CJES
200		Bluebell	1992	17.478	15.481	37.936			Beaudoin et al, 1992 - CJES
201			1992	17.506	15.482	38.037			Beaudoin et al, 1992 - CJES
202			1992	17.508	15.488	38.052			Beaudoin et al, 1992 - CJES
203			1992	17.443	15.458	37.744			Beaudoin et al, 1992 - CJES
204			1992	17.444	15.463	37.862			Beaudoin et al, 1992 - CJES
205			1992	17.436	15.472	37.849			Beaudoin et al, 1992 - CJES
206 207			1992 1992	17.427 17.440	15.464 15.456	37.819 37.837			Beaudoin et al, 1992 - CJES
207 208		Kootenay Chief Zone	1992	17.440	15.456	38.036			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
208		Notionay Oniel 2016	1992	17.499	15.462	37.975			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
209			1992	17.400	15.469	37.829			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES
211			1992	17.010	15.020	36.920			Beaudoin et al, 1992 - CJES
212			1992	17.010	15.020	36.890			Beaudoin et al, 1992 - CJES
213			1992	17.350	15.310	37.630			Beaudoin et al, 1992 - CJES
214			1992	17.610	15.410	37.840			Beaudoin et al, 1992 - CJES
215			1992	17.610	15.340	37.590			Beaudoin et al, 1992 - CJES
216			1992	17.650	15.710	38.180			Beaudoin et al, 1992 - CJES
217			1992	17.540	15.570	38.170			Beaudoin et al, 1992 - CJES
218			1992	17.570	15.590	38.180			Beaudoin et al, 1992 - CJES
219			1992	17.713	15.726	38.896			Beaudoin et al, 1992 - CJES
220			1992	17.642	15.700	38.740			Beaudoin et al, 1992 - CJES
221		Comfort Zone	1992	17.447	15.458	37.943			Beaudoin et al, 1992 - CJES
222			1992	17.425	15.440	37.866			Beaudoin et al, 1992 - CJES
223			1992	17.400	15.353	37.818			Beaudoin et al, 1992 - CJES
224			1992	17.607	15.608	38.494			Beaudoin et al, 1992 - CJES
225			1992	17.664	15.710	38.788			Beaudoin et al, 1992 - CJES
225				47 504	15 400	20 100			Decudein et al. 1000 CIEC
226		Triumph	1992	17.534	15.499	38.198			Beaudoin et al, 1992 - CJES
225 226 227 228		Triumph Amazon	1992 1992 1992	17.534 17.486 17.528	15.499 15.479 15.641	37.969 38.188			Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES Beaudoin et al, 1992 - CJES

# AcmeLabs

CERTIFICATE OF ANALYSIS

Acme Analytical Laboratories (Vancouver) Ltd.

Client:

Submitted By:

Receiving Lab:

Received:

Page:

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

**Code Description** 

Number of

Samples

19

19

19

**ADDITIONAL COMMENTS** 

Report Date:

#### West Fourth Capital Inc.

Brian Canfield

April 05, 2010

April 23, 2010

1 of 2

Crush, split and pulverize 250 g rock to 200 mesh

Extra Wash with Glass between each sample

4 Acid digestion ICP-MS analysis

Canada-Vancouver

P.O. Box 10026 Pacific Centre South, 25th Floor, 700 W. Georgia St. Vancouver BC V7Y 1B3 Canada

1020 Cordova St. East Vancouver BC V6A 4A3 Canada Phone (604) 253-3158 Fax (604) 253-1716

#### www.acmelab.com

Method

R200-250

Code

XWSH

1EX

#### **CLIENT JOB INFORMATION**

Project:	Sure Bet
Shipment ID:	
P.O. Number	
Number of Samples:	19

#### SAMPLE DISPOSAL

DISP-PLP	Dispose of Pulp After 90 days
DISP-RJT	Dispose of Reject After 90 days

Acme does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

Invoice To:

West Fourth Capital Inc. P.O. Box 10026 Pacific Centre South, 25th Floor, 700 W. Georgia St. Vancouver BC V7Y 1B3 Canada

CC:

CLARENCE LEONG GENERAL MANAGER

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Acme assumes the liabilities for actual cost of analysis only.

"\*" asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.

## VAN10001315.1

Test

0.25

Wgt (g)

Report

Status

Completed

Lab

VAN

VAN

VAN

# AcmeLabs

CERTIFICATE OF ANALYSIS

Client:

Page:

#### West Fourth Capital Inc.

P.O. Box 10026 Pacific Centre South, 25th Floor, 700 W. Georgia St. Vancouver BC V7Y 1B3 Canada

Part 1

Acme Analytical Laboratories (Vancouver) Ltd.

Project:	Sure Bet
Report Date:	April 23, 2

oril 23, 2010

2 of 2

1020 Cordova St. East Vancouver BC V6A 4A3 Canada Phone (604) 253-3158 Fax (604) 253-1716

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# VAN10001315.1

	Method	WGHT	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX
	Analyte	Wgt	Мо	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	v	Ca
	Unit	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	0.1	0.1	0.1	1	0.1	0.1	0.2	1	0.01	1	0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01
R10-SB-01	Rock	0.41	1.7	1152	16.5	38	0.8	71.3	167.4	745	21.66	<1	3.1	<0.1	9.4	124	0.1	<0.1	6.1	53	3.29
R10-SB-02	Rock	0.36	8.4	237.0	24.1	43	0.6	29.5	186.6	1167	15.38	10	4.0	<0.1	8.6	315	<0.1	0.4	4.3	57	6.29
R10-SB-03A	Rock	0.79	0.8	1709	>10000	>10000	47.7	3.1	12.9	1427	27.28	259	0.4	<0.1	0.4	4	1076	14.0	60.7	10	0.14
R10-SB-03B	Rock	0.79	1.0	4909	>10000	>10000	186.3	3.2	6.7	829	22.56	29	0.6	<0.1	0.2	2	243.6	82.2	80.5	14	0.05
R10-SB-04A	Rock	0.16	6.0	62.5	>10000	>10000	12.5	2.8	0.4	>10000	33.34	418	3.8	<0.1	0.5	136	124.8	9.3	0.4	33	0.43
R10-SB-04B	Rock	0.68	2.6	83.4	958.6	>10000	6.9	0.9	0.5	>10000	29.51	369	1.7	0.1	0.2	38	209.9	6.7	0.2	6	0.64
R10-SB-05	Rock	0.77	2.4	483.7	49.0	299	0.5	74.8	50.8	1092	9.87	<1	6.4	<0.1	15.0	234	1.3	<0.1	97.3	74	2.75
R10-SB-06	Rock	0.43	5.2	536.5	136.2	218	1.9	71.0	56.3	969	20.84	<1	6.0	0.1	9.3	168	1.3	0.2	1955	53	2.60
R10-SB-07	Rock	0.51	1.2	641.2	353.9	241	14.1	13.2	204.4	98	34.46	<1	1.7	<0.1	1.6	3	2.0	0.7	334.5	13	0.04
R10-SB-08	Rock	0.19	1.3	1477	7327	>10000	106.4	3.8	31.3	1007	55.18	1	0.7	<0.1	0.2	<1	85.0	0.9	233.4	8	0.04
R10-SB-09	Rock	1.23	0.2	4382	>10000	>10000	86.5	0.9	33.4	1035	43.15	322	0.2	<0.1	0.4	<1	644.8	42.8	7.1	13	0.05
R10-SB-10	Rock	0.68	1.4	1469	>10000	>10000	147.3	1.8	36.7	692	45.13	997	2.5	<0.1	0.7	<1	55.5	42.5	236.6	10	0.07
R10-SB-11	Rock	0.71	0.4	1489	3185	>10000	11.9	2.3	61.7	3701	25.18	1059	4.5	<0.1	2.0	3	757.6	18.1	5.6	19	0.45
R10-SB-12	Rock	1.07	1.0	4377	>10000	>10000	140.3	3.4	10.5	5839	42.27	58	2.4	<0.1	0.3	4	79.3	64.4	0.6	9	0.80
R10-SB-13	Rock	0.50	0.4	839.4	>10000	189	>200	4.6	44.6	1639	26.04	3	0.8	<0.1	0.1	8	20.8	74.8	220.1	4	2.06
R10-SB-14	Rock	0.36	1.6	2835	>10000	>10000	179.5	8.2	7.9	282	1.46	94	2.7	<0.1	0.6	548	688.9	917.0	1.5	42	1.15
R10-SB-15	Rock	0.49	0.2	17.5	3328	1956	1.7	3.5	1.1	423	1.05	5	0.3	<0.1	<0.1	161	17.1	4.2	0.4	3	9.57
R10-SB-16	Rock	0.45	<0.1	28.1	2093	6203	3.5	3.1	0.8	263	0.57	4	0.1	<0.1	<0.1	160	49.1	9.2	0.1	2	18.43
R10-SB-17	Rock	0.50	5.1	95.0	135.8	176	0.3	22.5	2.1	171	2.68	<1	5.5	<0.1	8.0	135	0.9	0.2	0.3	495	1.70

# AcmeLabs

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#### West Fourth Capital Inc.

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VAN10001315.1

1020 Cordova St. East Vancouver BC V6A 4A3 Canada Phone (604) 253-3158 Fax (604) 253-1716

cme Analytical Laboratories	(Vancouver) Ltd
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Project:	Sure Bet
Report Date:	April 23, 2

ril 23, 2010

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Part 2

# CERTIFICATE OF ANALYSIS

	Method	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX
	Analyte	P	La	Cr	Mg	Ва	Ti	AI	Na	к	w	Zr	Ce	Sn	Y	Nb	Та	Be	Sc	Li	s
	Uni	%	ppm	ppm	%	ppm	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.001	0.1	1	0.01	1	0.001	0.01	0.001	0.01	0.1	0.1	1	0.1	0.1	0.1	0.1	1	1	0.1	0.1
R10-SB-01	Rock	0.044	36.7	31	1.45	26	0.238	5.04	0.440	2.50	7.4	3.5	77	2.5	15.6	8.7	0.6	1	9	16.3	>10
R10-SB-02	Rock	0.055	27.1	32	2.41	19	0.271	5.56	0.213	1.81	4.9	7.1	55	2.4	20.6	12.9	0.7	2	10	5.7	6.5
R10-SB-03A	Rock	0.008	1.8	4	0.06	15	0.009	0.24	0.017	0.03	0.7	0.8	2	203.0	2.0	0.5	<0.1	<1	<1	5.6	>10
R10-SB-03B	Rock	0.007	1.2	3	0.08	9	0.007	0.31	0.009	0.01	0.8	0.7	<1	206.0	0.8	1.0	<0.1	<1	<1	5.1	>10
R10-SB-04A	Rock	0.018	3.5	4	0.19	198	0.012	0.11	0.016	0.11	1.5	0.5	7	19.2	2.9	0.8	<0.1	<1	16	0.8	1.3
R10-SB-04B	Rock	0.008	1.8	1	0.60	36	0.003	0.03	0.005	0.03	0.6	0.3	4	34.9	2.4	0.3	<0.1	<1	12	0.5	2.2
R10-SB-05	Rock	0.046	45.0	40	1.28	45	0.339	6.19	1.722	1.09	13.1	1.3	91	4.4	33.2	15.7	0.9	3	12	56.7	7.2
R10-SB-06	Rock	0.035	28.9	31	0.92	12	0.210	5.12	1.288	0.84	>200	1.4	59	5.4	41.8	15.8	0.1	90	10	46.3	>10
R10-SB-07	Rock	0.016	3.7	7	0.16	13	0.010	0.70	0.011	0.22	17.7	1.3	8	0.4	1.9	0.6	<0.1	<1	1	8.8	>10
R10-SB-08	Rock	0.006	0.1	3	0.06	3	0.002	0.21	0.002	0.01	11.2	0.1	<1	50.5	0.3	0.4	<0.1	<1	<1	4.7	>10
R10-SB-09	Rock	0.002	0.1	2	0.05	3	0.004	0.08	0.003	<0.01	1.7	<0.1	<1	111.7	0.1	0.7	<0.1	<1	<1	5.3	>10
R10-SB-10	Rock	0.027	<0.1	2	0.02	8	0.001	0.12	0.003	<0.01	1.5	<0.1	<1	173.4	0.1	0.5	<0.1	<1	<1	5.3	>10
R10-SB-11	Rock	0.072	0.5	10	0.16	5	0.013	0.78	0.004	0.02	3.7	0.4	1	50.6	0.5	0.8	<0.1	<1	<1	48.3	>10
R10-SB-12	Rock	0.008	0.4	3	0.06	6	0.002	0.04	0.002	<0.01	1.4	0.5	<1	174.6	0.8	0.3	<0.1	<1	<1	1.2	>10
R10-SB-13	Rock	0.007	1.5	<1	0.03	4	<0.001	<0.01	0.002	<0.01	0.6	0.1	2	158.3	1.3	0.2	<0.1	<1	<1	1.5	>10
R10-SB-14	Rock	0.063	2.4	13	0.54	98	0.102	2.10	0.009	0.76	3.8	1.5	13	3.1	5.9	3.8	<0.1	<1	5	23.1	0.7
R10-SB-15	Rock	0.020	0.7	9	5.18	509	0.003	0.18	0.004	0.05	0.5	0.5	2	2.6	2.6	0.9	<0.1	<1	<1	12.9	0.2
R10-SB-16	Rock	0.027	0.9	2	11.17	556	0.002	0.07	0.005	0.02	0.4	0.3	2	0.5	1.6	0.4	<0.1	<1	<1	5.3	0.2
R10-SB-17	Rock	0.214	26.0	122	0.76	754	0.191	4.35	0.194	2.92	1.9	5.2	42	1.3	25.9	11.0	0.6	1	6	28.6	<0.1



Client:

Project:

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Report Date:

Sure Bet

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April 23, 2010

West Fourth Capital Inc. P.O. Box 10026 Pacific Centre South, 25th Floor, 700 W. Georgia St. Vancouver BC V7Y 1B3 Canada

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#### Part 3 VAN10001315.1

www

## CERTIFICATE OF ANALYSIS

		Method	1EX	1EX
		Analyte	Rb	Hf
		Unit	ppm	ppm
		MDL	0.1	0.1
R10-SB-01	Rock		136.1	0.2
R10-SB-02	Rock		91.7	0.3
R10-SB-03A	Rock		2.8	<0.1
R10-SB-03B	Rock		1.2	<0.1
R10-SB-04A	Rock		2.4	<0.1
R10-SB-04B	Rock		0.6	<0.1
R10-SB-05	Rock		146.2	0.1
R10-SB-06	Rock		128.1	<0.1
R10-SB-07	Rock		10.1	<0.1
R10-SB-08	Rock		1.8	<0.1
R10-SB-09	Rock		0.6	<0.1
R10-SB-10	Rock		1.0	<0.1
R10-SB-11	Rock		1.5	<0.1
R10-SB-12	Rock		1.2	<0.1
R10-SB-13	Rock		0.3	<0.1
R10-SB-14	Rock		58.9	<0.1
R10-SB-15	Rock		4.9	<0.1
R10-SB-16	Rock		2.1	<0.1
R10-SB-17	Rock		94.5	0.2



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Acme Analytical L	aboratories	(Vancouver)	Ltd.

Project:	Sure Bet
Report Date:	April 23, 2

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Part 1

												. Jei				-					
QUALITY CONTROL REPORT VAN10001315.1																					
	Method	WGHT	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX	1EX
	Analyte	Wgt	Мо	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	U	Au	Th	Sr	Cd	Sb	Bi	v	Ca
	Unit	kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
	MDL	0.01	0.1	0.1	0.1	1	0.1	0.1	0.2	1	0.01	1	0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01
Pulp Duplicates																					
R10-SB-03B	Rock	0.79	1.0	4909	>10000	>10000	186.3	3.2	6.7	829	22.56	29	0.6	<0.1	0.2	2	243.6	82.2	80.5	14	0.05
REP R10-SB-03B	QC		0.9	4854	>10000	>10000	183.0	3.5	6.3	802	22.47	28	0.4	<0.1	0.3	2	240.6	65.1	83.4	14	0.06
R10-SB-10	Rock	0.68	1.4	1469	>10000	>10000	147.3	1.8	36.7	692	45.13	997	2.5	<0.1	0.7	<1	55.5	42.5	236.6	10	0.07
REP R10-SB-10	QC		0.8	1509	>10000	>10000	151.8	0.9	37.5	701	45.57	725	3.1	<0.1	0.6	<1	56.7	45.1	253.9	8	0.07
Reference Materials																					
STD OREAS24P	Standard		1.3	51.1	4.8	120	<0.1	147.1	45.7	1169	7.51	<1	0.7	<0.1	2.7	409	0.1	<0.1	0.1	168	5.77
STD OREAS24P	Standard		1.4	45.8	4.3	110	<0.1	139.7	43.0	1096	7.26	1	0.6	<0.1	2.8	376	<0.1	0.2	<0.1	153	5.56
STD OREAS45P	Standard		2.0	763.6	26.7	161	0.5	412.7	127.9	1418	19.75	12	2.2	<0.1	10.4	38	0.2	0.8	0.3	289	0.29
STD OREAS45P	Standard		2.0	746.0	26.6	146	0.5	399.1	125.2	1369	19.89	13	2.3	<0.1	10.6	36	0.1	0.9	0.3	275	0.32
STD OREAS24P Expected			1.5	52	2.9	119	0.06	141	44	1100	7.53	1.2	0.75		2.85	403	0.15	0.09		158	5.83
STD OREAS45P Expected			2.1	749	22	141	0.32	385	120	1338	19.22	12	2.2	0.055	9.8	32.6	0.2	0.82	0.21	267	0.3
BLK	Blank		<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.2	<1	<0.01	<1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.01
BLK	Blank		<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.2	<1	<0.01	<1	<0.1	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<1	<0.01
Prep Wash																					
G1	Prep Blank	<0.01	0.2	4.1	27.4	53	<0.1	3.0	4.9	748	2.27	<1	3.0	<0.1	9.3	765	<0.1	<0.1	0.4	51	2.41
G1	Prep Blank	<0.01	0.4	17.3	20.8	50	<0.1	61.0	84.2	747	2.43	<1	3.5	<0.1	9.6	717	<0.1	<0.1	0.3	53	2.40



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Acme Analytical Laboratories (Vancouver) Ltd.

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Project:	Sure Bet
Report Date:	April 23, 20

2010

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Part 2

QUALITY CONTROL REPORT VAN10001315.1																					
	Method Analyte	1EX P	1EX La	1EX Cr	1EX Mg	1EX Ba	1EX Ti	1EX Al	1EX Na	1EX K	1EX W	1EX Zr	1EX Ce	1EX Sn	1EX Y	1EX Nb	1EX Ta	1EX Be	1EX Sc	1EX Li	1EX S
	Unit MDL	% 0.001	ppm 0.1	ppm 1	% 0.01	ppm 1	% 0.001	% 0.01	% 0.001	% 0.01	ррт 0.1	ppm 0.1	ppm 1	ppm 0.1	ppm 0.1	ppm 0.1	ppm 0.1	ppm 1	ppm 1	ppm 0.1	% 0.1
Pulp Duplicates	mb L		••••	•		•					••••	••••		•	••••	•	••••	•	•	••••	
R10-SB-03B	Rock	0.007	1.2	3	0.08	9	0.007	0.31	0.009	0.01	0.8	0.7	<1	206.0	0.8	1.0	<0.1	<1	<1	5.1	>10
REP R10-SB-03B	QC	0.008	1.3	2	0.08	10	0.007	0.31	0.008	0.01	0.8	0.6	<1	190.3	0.8	0.9	<0.1	<1	<1	6.2	>10
R10-SB-10	Rock	0.027	<0.1	2	0.02	8	0.001	0.12	0.003	<0.01	1.5	<0.1	<1	173.4	0.1	0.5	<0.1	<1	<1	5.3	>10
REP R10-SB-10	QC	0.026	<0.1	2	0.02	7	0.001	0.09	0.007	<0.01	1.7	0.2	<1	178.5	0.1	0.6	<0.1	<1	<1	5.6	>10
Reference Materials																					
STD OREAS24P	Standard	0.140	18.4	191	4.07	288	1.087	8.16	2.431	0.68	0.5	144.9	36	1.7	22.5	20.8	1.0	1	20	8.4	<0.1
STD OREAS24P	Standard	0.128	16.6	182	3.87	274	1.028	7.92	2.246	0.67	0.5	139.0	35	1.4	19.0	19.3	1.0	1	20	9.0	<0.1
STD OREAS45P	Standard	0.048	27.1	1149	0.20	316	1.097	7.38	0.071	0.36	1.2	166.5	53	2.2	14.0	22.8	1.3	<1	71	17.8	<0.1
STD OREAS45P	Standard	0.046	25.9	1110	0.22	319	1.074	7.17	0.083	0.39	1.3	175.7	53	2.8	14.3	21.7	1.4	<1	69	15.9	<0.1
STD OREAS24P Expected		0.136	17.4	196	4.13	285	1.1	7.66	2.34	0.7	0.5	141	37.6	1.6	21.3	21	1.04		20	8.7	
STD OREAS45P Expected		0.047	24.8	1089	0.1962	296	1.037	6.82	0.081	0.35	1.1	154	48.9	2.5	13	21.6	1.2		67	14.7	0.03
BLK	Blank	<0.001	<0.1	<1	<0.01	<1	<0.001	<0.01	<0.001	<0.01	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1	<0.1
BLK	Blank	<0.001	<0.1	<1	<0.01	<1	<0.001	<0.01	<0.001	<0.01	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<1	<1	<0.1	<0.1
Prep Wash																					
G1	Prep Blank	0.080	28.6	9	0.61	1061	0.248	7.65	2.874	3.14	0.2	10.6	56	1.5	16.2	29.4	1.5	3	5	39.5	<0.1
G1	Prep Blank	0.084	26.9	8	0.62	984	0.249	7.42	2.825	2.95	0.2	11.1	53	1.4	14.3	30.8	1.4	2	5	39.3	<0.1



Acme Analytical Laboratories (Vancouver) Ltd.

Client:	West Fourth Capital Inc.								
	P.O. Box 10026								
	Pacific Centre South, 25th Floor, 700 W. Georgia St.								
	Vancouver BC V7Y 1B3 Canada								
Project:	Sure Bet								
Report Date:	April 23, 2010								

Part 3

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Page:

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### VAN10001315.1

# QUALITY CONTROL REPORT

	Method	1EX	1EX
	Analyte	Rb	Hf
	Unit	ppm	ppm
	MDL	0.1	0.1
Pulp Duplicates			
R10-SB-03B	Rock	1.2	<0.1
REP R10-SB-03B	QC	0.8	<0.1
R10-SB-10	Rock	1.0	<0.1
REP R10-SB-10	QC	1.3	<0.1
Reference Materials			
STD OREAS24P	Standard	22.2	3.4
STD OREAS24P	Standard	20.6	3.7
STD OREAS45P	Standard	25.3	4.6
STD OREAS45P	Standard	25.8	4.8
STD OREAS24P Expected		22.4	3.6
STD OREAS45P Expected		24.6	4.12
BLK	Blank	<0.1	<0.1
BLK	Blank	<0.1	<0.1
Prep Wash			
G1	Prep Blank	138.9	0.6
G1	Prep Blank	129.7	0.5