

Ministry of Energy, Mines & Petroleum Resources
Mining & Minerals Division
BC Geological Survey

**Assessment Report
Title Page and Summary**

TYPE OF REPORT [type of survey(s)]: Geological Geophysical

TOTAL COST: \$ 9,772.40

AUTHOR(S): Laurence Sookochoff, PEng

SIGNATURE(S): Laurence Sookochoff

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): _____

YEAR OF WORK: 2015

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 5552361 April 24, 2015

PROPERTY NAME: Bertha

CLAIM NAME(S) (on which the work was done): 926529

COMMODITIES SOUGHT: Copper Gold

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 092INE040 092INE042 092INE135

MINING DIVISION: Kamloops

NTS/BCGS: 0921.046 0921.056

LATITUDE: 50 ° 31 ' 14 " LONGITUDE: 120 ° 55 ' 49 " (at centre of work)

OWNER(S):

1) Christopher Delorme

2) Guy Delorme

MAILING ADDRESS:

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OPERATOR(S) [who paid for the work]:

1) Christopher Delorme

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PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

Upper Triassic to Lower Jurassic, Guichon Batholith, Highland Valley Phase, Gump Lake Phase, granodiorite, quartz diorite.

On Tenure 926529 major northerly, northwesterly, and westerly structures; three cross-structures. At the BX mineral showing a mineralized fault strikes northeasterly, rocks near the fault are bleached, chalcopyrite and bornite occur as fracture fillings.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 00711 01585 01166 02066 02069 05851

10783 29164 29173 34823 34975

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation	472 hectares	926529	\$ 6,000.00
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic	3	926529	3,772.40
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other			
TOTAL COST:			\$ 9,772.40

Print Form

GUY & CHRISTOPHER DELORME

(Owners & Operators)

GEOLOGICAL & GEOPHYSICAL ASSESSMENT REPORT

(Event 5552361)

on

Tenure 926529

of the seven claim

Bertha 926529 Claim Group

Kamloops Mining Divisions

BCGS Maps 092I.046/.056

work done from

April 8, 2015 to November 5 2015

Centre of Work

5,598,559N 646,724E

10 (NAD 83)

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Sookchoff Consultants Inc.

Submitted

November 22, 2015

**BC Geological Survey
Assessment Report
35711**

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SUMMARY

The seven claim Bertha 926529 Claim Group, covering an area of 2,526 hectares, is located in the Highland Valley of south central British Columbia within 12 kilometres of the world-class Highland Valley Copper mine; one of the largest copper mining and concentrating operations in the world.

The Highland Valley copper/molybdenum deposit lies within the Guichon Creek batholith, a large, composite intrusion with a surface area of about 1,000 square kilometers. A cluster of nine major porphyry copper deposits lie within a 15 square kilometer zone in the center of the batholith where a central, steeply plunging root or feeder zone is inferred.

The major deposits lie around the projection of the feeder zone to the surface which could have been created by the intersection of the regional northerly trending Lornex Fault and the westerly trending Highland Valley Fault (Figure 8). Subsequent movement of the faults created a network of fractures which hosted the minerals arising from the feeder zone. Fracture density was apparently the most important single factor in influencing ore grades of the Highland Valley mineral deposits.

The Bertha 926529 Claim Group is predominantly underlain by rocks of the Guichon Batholith with a predominance of granodioritic rocks of the Highland Valley Phase (LTrJGH) in the west and quartz dioritic rocks of the Border Phase (LTrJGBo) in the east. The quartz dioritic rocks are in a north-northwesterly trending regional fault contact with the Western Volcanic Facies of the upper Triassic Nicola Group (uTrNW) in the extreme east.

Available information on the Minfile mineral properties reported herein, indicate that fractures or shear zones were main mineral controlling factors. Of the three properties within the confines of the Bertha 926529 Claim Group, the BX property showing of porphyry type Cu +/- Mo +/- Au mineralization located within Tenure 926529, revealed the most significant mineral controlling structure in a 762 metre long, 122 metre wide, north trending altered shear zone.

In the structural analysis of Tenure 926529, three cross-structures were indicated between northerly, northwesterly, and westerly trending primary major structures. The BX showing location as per TM coordinates is shown adjacent to a north trending primary structure which may be the significant structure reported on the BX property. With cross-structure "A" approximately one kilometre north of the indicated BX location, the cross-structural location would be the most prospective area to explore for surficial geological indicators of a potential sub-surface mineral resource.

The results of the localized magnetometer survey support the primary exploration of area "A" which was indicated to be located within a mag LO zone transitional from a mag HI zone; the mag LO possibly indicating an alteration zone associated with a mineralized porphyry system,

Cross-structural locations "B" and "C" would be secondary exploration targets. The approximate UTM locations of the cross-structural locations are shown in Table II.

The nine Minfile descriptions copied herein from a BC Government supported Minfile directory, provide information as to the geological indicators for a productive mineral deposit or for surficial geological indicators of a potential underlying mineral resource.

Excluding other variable geological conditions, the structures are essential in the localization of potentially economic porphyry and/or quartz vein hosted mineralization within the Guichon Creek.

INTRODUCTION

Between April 2, 2015 and November 2015, a structural analysis and a localized magnetometer survey were completed on Tenure 580992 of the five claim Bertha 580992 claim group (Property). The purpose of the program was to delineate potential structures which may be integral in geological controls to potentially economic mineral zones that may occur on Tenure 580992 or other claims of the Bertha property and to determine the effectiveness of the magnetic results in locating a potential mineral resource.

Information for this report was obtained from sources as cited under Selected References.

*Figure 1. Location Map
(from MapPlace)*



PROPERTY LOCATION AND DESCRIPTION

Location

The Bertha 926529 Claim Group is located within BCGS Maps 092I.046/.056 of the Kamloops Mining Division, 214 kilometres northeast of Vancouver, 48 kilometres north of Merritt, 42 kilometres southwest of Kamloops, and within twelve kilometres east-northeast of the world-class producing Highland Valley Copper mine.

Description

The Property is comprised of seven contiguous claims covering an area of 2526.0252 hectares. Particulars are as follows:

Property Description and Location (cont'd)**Table I. Tenures of Bertha 926529 Claim Group**

Tenure Number	Type	Claim Name	Good Until	Area (ha)
528849	Mineral	DAB	20151208	492.954
580837	Mineral		20151208	492.9393
580838	Mineral		20151214	513.4005
585388	Mineral		20151208	513.0757
926529	Mineral	HIGHLAND VALLEY EAST	20221029	472.5509
930152	Mineral		20151208	20.5515
1019760	Mineral	BETHLEHEM EAST	20151208	20.5533

Total Area: 2526.0252 ha

*Upon the approval of Event 5552361.

ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**Access**

From Logan Lake, the Bertha 926529 claim group can be accessed by traveling two kilometres west from Logan Lake on Highway 97D to the junction with the Tunkwa Lake road which is taken for six kilometres northward to the southern boundary of Tenure 580838, the southeastern most claim of the Bertha 926529 claim group. Numerous secondary roads would provide access to most areas of the Property.

Climate

The local climate is typical of south central British Columbia. Annual temperatures range from 35°C to -40°C. Negative temperatures can be typically expected between late October and late March. Annual precipitation ranges around an average of 30 cm.

Local Resources & Infrastructure

Merritt, or Kamloops, historic mining centres could be a source of experienced and reliable exploration and mining personnel and a supply for most mining related equipment. Kamloops is serviced daily by commercial airline and is a hub for road and rail transportation. Vancouver, a port city on the southwest corner of, and the largest city in the Province of British Columbia is four hours distant by road and less than one hour by air from Kamloops. Logan Lake, where many of the Highland Valley Copper Mine employees reside, has many facilities to accommodate any preliminary exploration crew.

Physiography

The topography on Tenure 926529 is of gentle forested slopes with localized clear-cut logged areas. Elevations range from 1,348 m at the northeastern corner to 1,465 m centrally.

WATER & POWER

There would be an ample water supply from the many lakes, rivers, or streams within the confines of the Property for the requirements of any exploration program. A 500KV power line trends southeasterly through the northern portion of the Bertha 926529 Claim Group.

HISTORY: BERTHA 926529 CLAIM GROUP AREA

The history on some of the more significant mineral MINFILE reported occurrences, prospects, and past producers peripheral to the Bertha 926529 Claim Group is reported as follows. The distance to the Minfile locations is relative to Tenure 926529 of the Bertha 926529 Claim Group.

HIGHLAND VALLEY COPPER producer (Porphyry Cu+/-Mo+-Au)

MINFILE 092ISW012

Twelve kilometres west-southwest

Highland Valley Copper was created in mid-1986 by bringing together the Highland Valley mining operations of Lornex Mining Corporation Ltd. and Cominco Ltd. into a new single entity, structured as a partnership.

On the south side of the valley was the Lornex mine which started mining in 1972. In 1981, the Lornex concentrator had been expanded to become one of the largest in the industry.

On the north side was Bethlehem Copper (092ISE001) which started mining in 1963. In 1981, this operation was absorbed by Cominco who already owned the Valley orebody (092ISW012) located west of the Lornex pit on the south side of the valley. Mining of the original Bethlehem Copper pits ceased in 1982.

Production from the Lornex mine (092ISW045) was combined with the Valley operations in 1987.

The Highmont mill on the south side of the valley was acquired in 1988 when Highmont Mining Company joined the partnership. This mill had been closed down in 1984 when the Highmont deposit (092ISE013) became uneconomical.

Lornex Mining Corporation Ltd. was wound up at the end of 1988 with the result that Rio Algom Limited, Teck Corporation and Highmont Mining Company obtained direct participation in the cash flow from the partnership.

In 1995, with Explore B.C. Program support, Highland Valley Copper carried out 197 line kilometres of high-powered induced polarization surveys for very deep penetration, and drilled 1701 metres in 4 holes. This work was done on the Lornex SW Extension, Roscoe Lake and JA zones. No anomalies of merit were detected in Lornex SW Extension, and Roscoe Lake gave only limited encouragement. IP work on the JA zone detected an anomaly extending to the south, well beyond the limits of known mineralization, and another anomaly 2000 by 1500 metres in size at the east end of the grid. Both anomalies warrant drill testing (Explore B.C. Program 95/96 - M80).

At the end of 1996, mine plans called for another 200 metres in depth in the Valley pit to the 2008. In addition, the partnership may consider mining the remaining 120 million tonnes grading 0.33 per cent copper estimated to exist in the Lornex pit (Information Circular 1997-1, page 8).

Highland Valley Copper suspended mining on May 15, 1999; they resumed August 30, 1999.

In September 2005, Highland Valley announced that mine life would be extended by five years to 2013. Very late in the year, Teck Cominco also announced that it is considering building a modern hydrometallurgical refinery on site.

Most ore comes from the Valley pit, augmented by a small amount from the Lornex pit. Following a successful 300,000 tonne bulk sample test, the Highmont East pit, closed since the mid-1980s, was re-opened in the fall of 2005 to take advantage of higher molybdenum prices. In addition, exploration drilling was conducted nearby in the Highmont South area and results are being evaluated.

Figure 2. Claim Location
(Base Map from MapPlace & Google Earth)

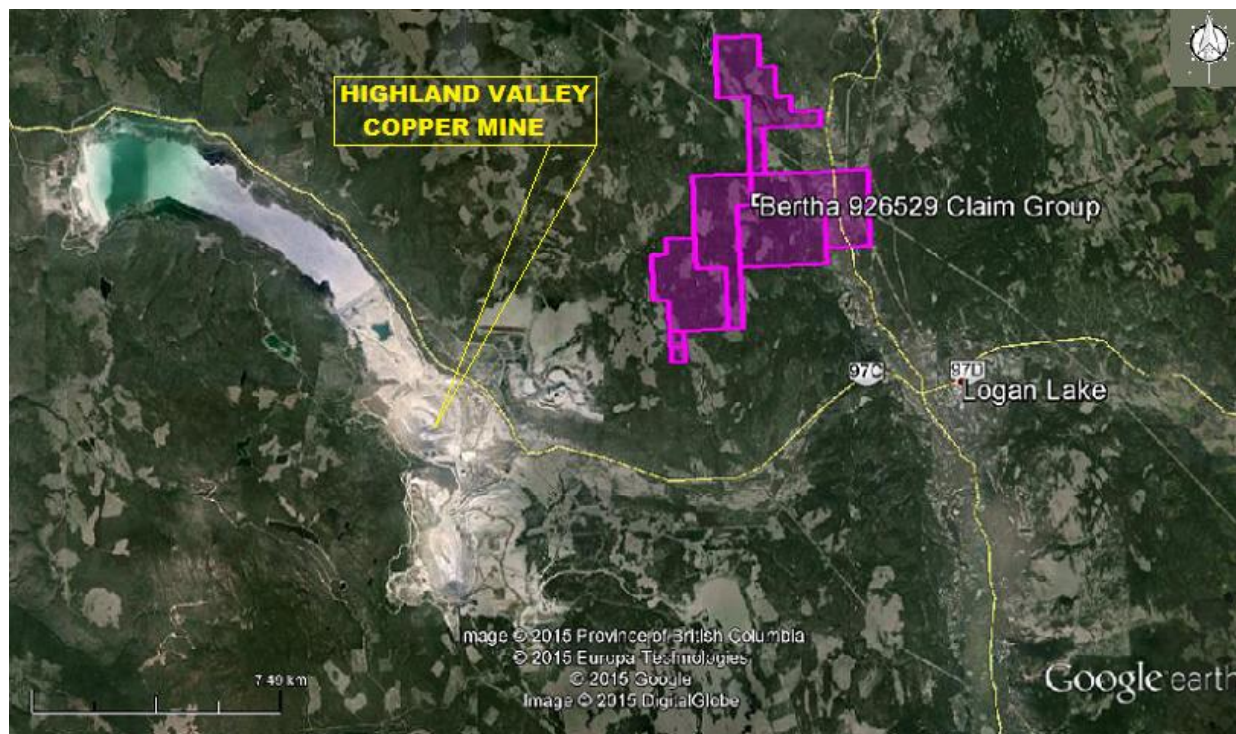
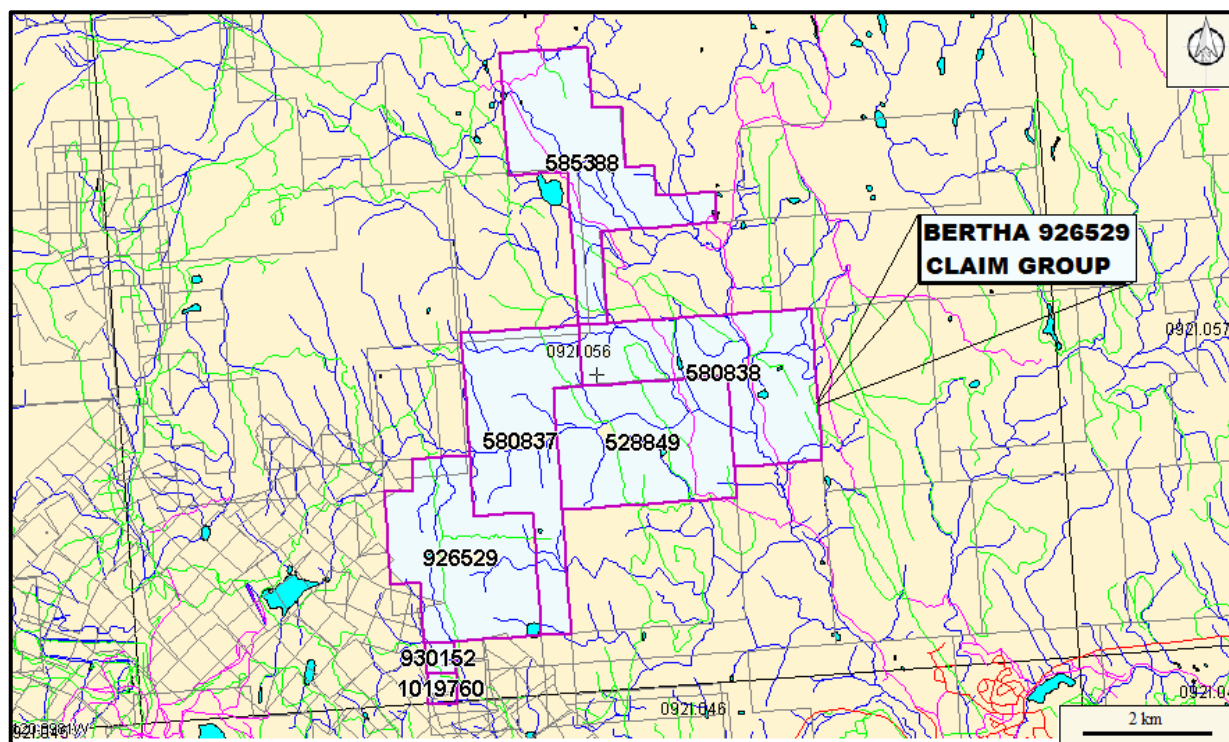


Figure 3. Claim Map
(Base map from MapPlace)



History: Bertha 926529 Claim Group Area (cont'd)**DANSEY** prospect (Porphyry Cu+/-Mo+-Au)

MINFILE 092INE034

100 metres south

Deerhorn Mines Ltd. held the Witches Brook group of 24 claims in the vicinity of the JB showing in 1956. Noranda Exploration Company Limited held the PG group of 99 claims along and mainly west of Guichon Creek to the north of Witches Brook in 1962. This property was partly a relocation of the claims held by Deerhorn Mines Ltd. Geological, geochemical and geophysical surveys were carried out during 1963. The CL group, apparently staked by C.W. Dansey in 1964, was located partially on ground formerly part of the PG group. North Pacific Mines Limited carried out a program of trenching, soil sampling, magnetometer and geological surveying on the property during 1964. In 1965, North Pacific Mines Ltd. carried out an induced polarization survey which outlined an anomaly about 914 metres long over a width of 244 metres. Other work consisted of trenching, road building and 8 diamond-drill holes totalling 1280 metres. In 1968, an airborne magnetometer survey (202 kilometres) was flown on behalf of North Pacific Mines Ltd. and Comet-Krain Mines Ltd. In 1969, Noranda Exploration Company Limited conducted a soil geochemical survey and induced polarization surveys over the Mike, Bill, Tom and JB claims. In 1974, North Pacific Mines Ltd. conducted percussion drilling in 5 holes totalling 384 metres on the Tom claims.

GETTY WEST prospect (Porphyry Cu+/-Mo+-Au)

MINFILE 092INW040

Eight kilometres west

The Transvaal (Getty West) occurrence is located on the northern slopes of South Forge Mountain, approximately 16.8 kilometres northwest of the community of Logan Lake.

The Transvaal property was originally staked in 1899 and owned by J. Hosking, W. Knight and G. Novak. The claims were explored in 1901 and 1902, and extensive work was done in 1906 and 1907 when the property was under bond to the Consolidated Mining and Smelting Company of Canada, Limited. Further work was done by G. Novak in 1929 to 1931. The workings consist of two shafts and an adit. Minister of Mines Annual Reports indicate that the main shaft was sunk for 61 metres. On the 30 metre level a drift was run to the west for 49 metres, and another to the east for 55 metres. A 12 metre crosscut was run from the east drift. On the 60 metre level a drift was run to the east for 23 metres. Approximately 274 metres northeast of the shaft a sinuous adit was run in for 106 metres. Lateral work in two main branch workings in the adit totalled approximately 86 metres. Numerous cuts and surface trenches are located between the adit and shaft and for 91 metres northward.

In 1955, Jackson Basin Mining Co. Ltd. (name changed to Jackson Mines Limited) rehabilitated the Transvaal shaft and conducted some cleanup in the 30 and 60 metre levels; a diamond drilling programme was also started.

In 1956, Trojan Consolidated Mines Ltd. (merged as one company from the voluntary liquidation of Trojan Exploration Limited, Jackson Mines Limited and Tri-Side Mining Corporation Limited) cleaned out the 30 and 60 metre levels of the Transvaal shaft and erected a new headframe; underground work was discontinued following some sampling and diamond drilling. In 1962, Highland Valley Mining Corporation Ltd. mapped and sampled the surface showings and the adit, and diamond-drilled nine surface holes totalling 436 metres.

History: Bertha 926529 Claim Group Area (cont'd)**Getty West prospect (cont'd)**

In 1968, Taseko Mines Limited, on behalf of K.D. Houghton, conducted surface diamond drilling of five holes totalling 457 metres, eight trenches totalling 914 metres, blasting of four pits and an induced polarization survey. More recently, Cominco Ltd. conducted an induced polarization survey over the showings in 1989.

In 1995 and 1996, Getty Copper Corp. conducted a large scale exploration program on the Getty property, which consists of Getty North, (MINFILE 092INE038; historically known as the Krain deposit), Getty South, (MINFILE 092INE043; historically known as the Trojan/South Seas deposit) and Getty West (historically known as the Transvaal deposit). As part of this program a soil and stream sediment survey covered the Transvaal showings, eight diamond drill holes, totalling 2330 metres, were completed and an induced polarization and ground magnetic survey was conducted. From 1996 to 1997, Getty Copper Corp. completed eleven diamond drill holes totalling 3374 metres in the Transvaal showing area.

In 2005, Getty Copper Corp. completed a program of geological mapping and an induced polarization survey, totalling 193.5 line-kilometres, on the area as a part of the Getty Copper property. In 2011, a ground magnetic survey, totalling 19.2 line-kilometres, and an induced polarization survey, totalling 23.2 line-kilometres, were completed on the area.

POD showing (Porphyry Cu +/- Mo +/- Au)

MINFILE 092INE117

100 metres west

In 1971-1973 surface geological mapping, line cutting, induced polarization (7.8 kilometres survey), and ground magnetometer (26.7 kilometres) survey was conducted by Dusty Mac Mines Ltd.

HISTORY: BERTHA 926529 CLAIM GROUP**DAB** showing (Porphyry Cu+/-Mo+-Au)

MINFILE 092INE040

Within Tenure 528849

In 1967, an aeromagnetic survey was conducted over some of the Dab claims on behalf of Alwin Mining Company Limited and in 1968-69 a soil geochemical survey (969 samples) was run over 28 kilometres of grid.

BX prospect (Porphyry Cu+/-Mo+-Au)

MINFILE 092INE042

Within Tenure 926529

Previous to 1958, the showing was trenched by B.X. Mining Company. In 1958, the Bob, Star, B.X. and Cow groups of claims were optioned by Noranda Exploration Company Limited and work consisted of a ground electromagnetic survey and geological mapping. Some bulldozer trenching was done on the showing on the B.X. claims and 8 kilometres of road was constructed; the options were dropped at the end of the summer. In 1965, an induced polarization survey (15 kilometres) was completed on the Cow claims on behalf of The Consolidated Mining and Smelting Company of Canada Limited.

History: Bertha 926529 Claim Group Area (cont'd)**BX prospect (cont'd)**

In 1969, work done on behalf of Laura Mines Limited on the WJ claims, which covered the BX showing, consisted of 93 kilometres of line cutting, 1567 soil samples, 93 kilometres of ground magnetometer survey, 43 kilometres of induced polarization survey, geological mapping, 4 trenches totalling 152 metres were bulldozed and 9 diamond-drill holes totalling 853 metres were put down.

WDR showing (Porphyry Cu +/- Mo +/- Au)

MINFILE 092INE135

Within Tenure 585388

In 1963, work by Valley Copper Mines included geological mapping, road building and bulldozer trenching at a number of localities scattered at intervals throughout a distance of nearly 6 kilometres in a north-northwesterly direction

GEOLOGY: REGIONAL

The Bertha 926529 Claim Group is located on the southern Intermontane Belt of British Columbia on the southern extent of the Quesnel Trench. The central geological features of this region are the Late Triassic island-arc volcanic rocks of the Nicola Group, and Late Triassic mudstone, siltstone and shale clastic sedimentary rocks located to the east, and intrusive granodioritic rocks of the Late Triassic to early Jurassic. The Nicola Group is a succession of Late Triassic island-arc volcanic rocks. The Nicola Group volcanic rocks form part of a 30km to 60km wide northwest-trending belt extending from southern B.C. into the southern Yukon. This belt is enclosed by older rocks and intruded by batholiths and smaller intrusive rocks. Major batholiths in the area of the Logan Copper Property include the Guichon Creek Batholith to the west, the Wild Horse Batholith to the east, and the Iron Mask Batholith to the north northeast.

The Guichon Creek batholith is a large, composite intrusion with a surface area of about 1,000 square kilometers. A cluster of nine major porphyry copper deposits lie within a 15 square kilometer zone in the center of the batholith. The Bertha 926529 Claim Group is situated partly on the eastern contact of the Guichon Creek Batholith and predominantly on the Nicola volcanics within 14 kilometres east of the Highland Valley Copper Mine.

The batholith is a semi-concordant composite intrusive that is elliptical and elongated slightly west of north. A central, steeply plunging root or feeder zone is inferred under Highland Valley, and the major deposits lie around the projection of the feeder zone to the surface.

The batholith has intruded and metamorphosed island-arc volcanic and associated sedimentary rocks of the Nicola Group, and a metamorphic halo up to 500 meters wide is developed adjacent to the contact. Rocks along the edge of the batholith are older and more mafic, and successive phases moving inward toward the core are younger and more felsic.

Although contacts can be sharp, they are generally gradational and chilled contacts are not common. Variations in the batholiths geochemistry indicate local areas of assimilated country rock in the border zone and roof pendants in the intrusion. Outcrop areas have inclusions of amphibolite and "granitized" metamorphic rocks and compositional variations.

Geology: Regional (cont'd)**Highland Valley Copper (cont'd)**

Two younger volcanic-dominated successions are important in the area. First, a northwest trending belt of Cretaceous continental volcanic and sedimentary rocks of the Spences Bridge Group unconformably overlie both the Nicola Group country rock and intrusive rocks along the southwest flank of the batholith. Distribution of the Spences Bridge Group rocks was locally controlled by reactivation of older faults that were important mineralization conduits in the batholith, such as the Lornex fault. Second, continental volcanic and sedimentary rocks of the Tertiary Kamloops Group cover extensive areas of the batholith and also overlie Triassic and Jurassic rocks from north of Highland Valley to the Thompson River.

GEOLOGY: BERTHA 926529 CLAIM GROUP AREA

The geology of some of the more significant mineral MINFILE reported occurrences, prospects, and past producers peripheral to the Bertha 926529 Claim Group is reported as follows. The distance to the Minfile locations is relative to Tenure 926529 of the Bertha 926529 Claim Group.

BETHLEHEM COPPER-SPUD LAKE showing (Porphyry Cu+/-Mo+-Au)

MINFILE 092ISE008

Three kilometres south

The property lies in the Lower Jurassic Guichon Creek batholith. The Spud Lake area is underlain primarily by medium-grained Guichon variety quartz diorite and granodiorite. This unit is cut by north trending dacite porphyry dykes up to 60 metres wide. To the west, at the Bethlehem mine (092ISE001), Guichon rocks have been intruded by Bethlehem phase granodiorite. Mineralization is controlled by intrusive contacts, north trending faults and closely spaced fractures.

Alteration is generally weak and consists of chlorite, epidote and sericite. Minor fault zones have sericite-kaolinite gouges. Quartz, calcite and zeolite (laumontite, heulandite) veining occurs sporadically. Oxidation consists of malachite and limonite.

HIGHLAND VALLEY COPPER producer (Porphyry Cu+/-Mo+-Au)

MINFILE 092ISW012

Twelve kilometres west-southwest

The Valley deposit lies within the Late Triassic to Early Jurassic Guichon Creek batholith and is hosted by Bethsaida phase porphyritic quartz monzonite and granodiorite. Feldspar porphyry and quartz feldspar porphyry dykes 0.6 to 35 metres wide dip steeply eastward in the western and central areas, and northward in the southern area of the deposit. These dykes are cut by mineralized fractures and quartz veinlets, and have been dated at 204 Ma +/- 4 Ma.

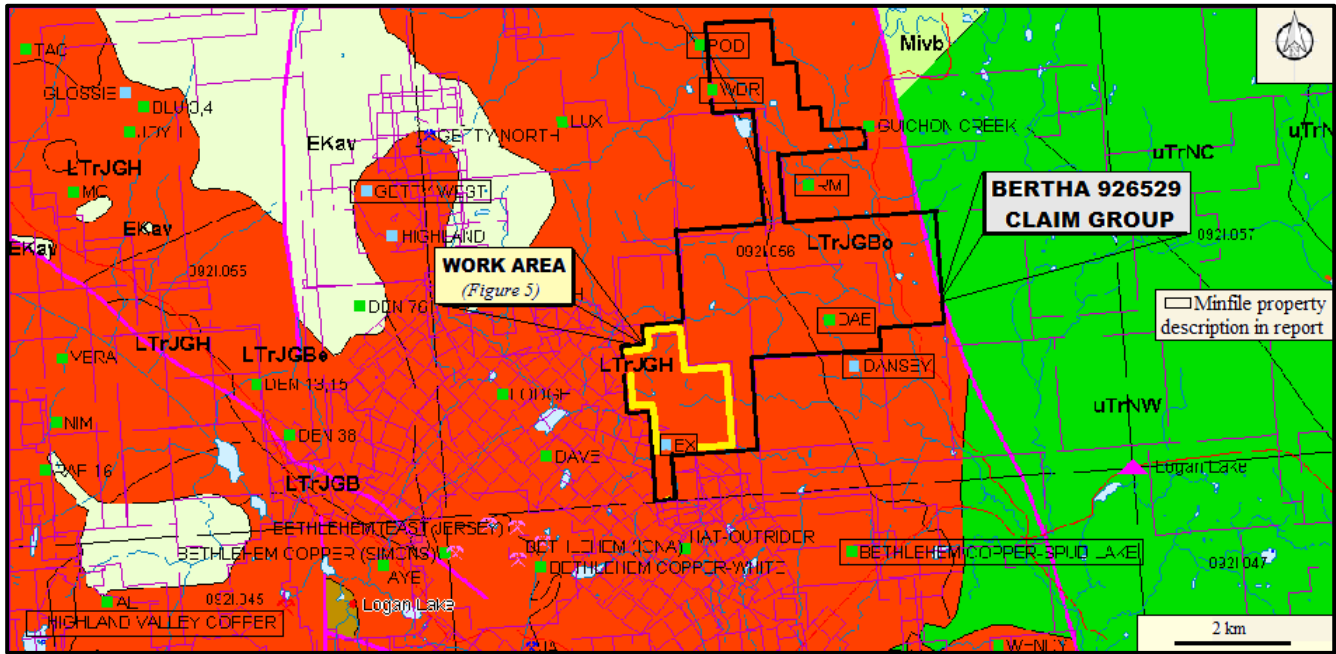
The Bethsaida granodiorite is also intruded by aplite dykes up to 30 centimetres wide, tan-coloured felsite dykes up to 4.5 metres wide, and three types of lamprophyre dykes (spessartite, hornblende vogesite, vogesite).

The most prominent structural features are the north trending, west dipping Lornex fault and the east trending Highland Valley fault. Faults and fractures in the deposit comprise four main sets. Quartz veinlets are subparallel to two of the earlier formed fault and fracture sets.

Silicic, potassic, phyllic, argillic and propylitic alteration are intimately associated. Stockworks of quartz veinlets 1 to 2 centimetres in width are common.

Geology: Bertha 926529 Claim Group Area (cont'd)

Figure 4. Geology, Claim, Index & Minfile
(Base Map from MapPlace)



GEOLOGY MAP LEGEND

- | | |
|---|---|
| <p>Mivb
Miocene-unnamed
Basaltic volcanic rocks</p> <p>EKav
Eocene-Kamloops Group
Undivided volcanic rocks</p> <p>EPrb
Eocene-Penticton Group
Andesitic volcanic rocks</p> <p>Upper Triassic-Nicola Group</p> <p>uTrNW
Western Volcanic Facies
undivided volcanic rocks</p> <p>uTrNc
Central Volcanic Facies
undivided volcanic rocks</p> | <p>uTrNE
Eastern Volcanic Facies
basaltic volcanic rocks</p> <p>uTrN
undivided volcanic rocks</p> <p>Late Triassic to Early Jurassic</p> <p>LTrJGB</p> <p>GUICHON CREEK BATHOLITH</p> <p>LTrJGBe – Bethlehem Phase
granodioritic intrusive rocks</p> <p>LTrJGB – Bethsaida Phase
quartz monzonitic intrusive rocks</p> <p>LTrJGH – Highland Valley Phase
granodioritic intrusive rocks</p> <p>LTrJGG – Gump Lake Phase
granodioritic intrusive rocks</p> <p>LTrJGBo – Border Phase
quartz dioritic intrusive rocks</p> |
|---|---|

Geology: Bertha 926529 Claim Group Area (cont'd)**Highland Valley Copper (cont'd)**

Vuggy veinlets have envelopes of medium-grained sericite and/or potassic feldspar, and contain minor amounts of sericite, plagioclase, potassium feldspar, calcite, hematite, bornite, chalcopyrite, molybdenite, digenite and covellite.

These veinlets are moderately abundant within the 0.3 per cent copper isopleth. An area of well-developed barren quartz veinlets, generally 0.5 to 1.3 millimetres wide, without alteration envelopes, occurs in the southeastern part of the deposit.

In the west-central part of the deposit, potassium feldspar is associated with vein sericite in some replacement zones, as veinlet envelopes along fractures, and disseminated in quartz veinlets. Hydrothermal biotite occurs in small amounts. Flaky sericite and quartz, both as replacement zones and as envelopes around quartz veinlets, constitute the most common type of alteration associated with copper mineralization.

Strong phyllic alteration coincides with the 0.5 per cent copper isopleth. Phyllic alteration is closely associated with pervasive argillization, which is strongest where fractures are most closely-spaced. Feldspars are altered to sericite, kaolinite, quartz and calcite. The phyllic-argillic zone grades outward to a peripheral zone of weak to moderate propylitization, characterized by clay, sericite, epidote, clinozoisite and calcite replacing plagioclase, and chlorite and epidote replacing biotite.

The age of hydrothermal alteration is approximately 191 Ma.

At the Valley deposit, gypsum is interpreted to be secondary and post-ore. It is commonly fibrous and white to orange but locally it forms large platy crystals or may be massive. Anhydrite, which is also present, provides indirect evidence for the secondary nature of the gypsum. It is apparently the same age as and associated with sericitic and potassic alteration. Quartz-gypsum veins and quartz-potash feldspar veins in which gypsum fills interstices provide more direct evidence for its secondary nature. Gypsum is believed to have formed at the expense of anhydrite which was deposited from the ore-forming fluids. Gypsum veins are common in the lower portion of the orebody (Open File 1991-15).

Sulphides occur chiefly as disseminations in quartz veinlets, and in phyllic (bornite) and potassic (chalcopyrite) alteration zones. Mineralization includes bornite and chalcopyrite, with minor digenite, covellite, pyrite, pyrrhotite, molybdenite, sphalerite and galena. The oxide zone averages 4.5 metres in thickness, and contains limonite, malachite, pyrolusite, digenite, native copper, and tenorite(?).

DANSEY prospect (Porphyry Cu+/-Mo+-Au)

MINFILE 092INE034

100 metres south

The Dansey property is located at the eastern edge of the Late Triassic-Middle Jurassic Guichon Creek batholith and overlies the contact between Hybrid phase and Guichon variety rocks. Three main rock types are evident and comprise diorite, quartz diorite and granodiorite. Fracturing and shearing are abundant in the diorite and quartz diorite but markedly less in the granodiorite.

Geology: Bertha 926529 Claim Group Area (cont'd)**GETTY WEST** prospect (Porphyry Cu+/-Mo+-Au)

MINFILE 092INW040

Eight kilometres west

The area is located within the Late Triassic-Early Jurassic Guichon Creek batholith and is underlain by Guichon variety (Highland Valley phase) quartz diorite, which has been intruded by Bethlehem phase quartz diorite porphyry dikes and stocks. Numerous intensely altered, well-mineralized granitic crush zones are exposed at the surface. West and northwest of this area these rocks have been intruded by what appears to be a Tertiary? biotite quartz latite plug and associated dikes.

RM showing (Porphyry Cu +/- Mo +/- Au)

MINFILE 09INE111

200 metres east

The RM property lies near the northwesterly trending contact between Upper Triassic Nicola Group volcanic rocks in the east from Late Triassic-Middle Jurassic Guichon Creek batholith intrusive rocks to the west.

POD showing (Porphyry Cu +/- Mo +/- Au)

MINFILE 092INE117

100 metres west

The Pod showing area straddles the transitional contact zone between quartz diorite of the Hybrid phase to the east from granodiorite of the Guichon variety to the west. Intrusive rocks belong to the Late Triassic-Middle Jurassic Guichon Creek batholith.

GEOLOGY: BERTHA 926529 CLAIM GROUP

As indicated by the BC government supported MapPlace geological maps, the Claim Group is predominantly underlain by rocks of the Guichon Batholith with a predominance of granodioritic rocks of the Highland Valley Phase (LTrJGH} in the west and quartz dioritic rocks of the Gump Lake Phase (LTrJGBo) in the east. The quartz dioritic rocks are in a north-northwesterly trending regional fault contact with the Western Volcanic Facies of the upper Triassic Nicola Group (uTrNW) in the extreme east.

Tenure 926529 is totally underlain by the Highland Valley Phase of the Guichon Batholith.

The geology of the mineral MINFILE reported occurrences, prospects, and past producers within the Bertha 926529 Claim Group is reported as follows.

DAB showing (Porphyry Cu+/-Mo+-Au)

MINFILE 092INE040

Within Tenure 528849

The Dab property lies close to the northwest trending contact between Upper Triassic Nicola Group volcanics to the east from intrusive rocks of the Late Triassic-Middle Jurassic Guichon Creek batholith to the west. In this area Guichon rocks appear to be quartz diorite of the Hybrid phase.

BX prospect (Porphyry Cu+/-Mo+-Au)

MINFILE 092INE042

Within Tenure 926529

Geology: Bertha 926529 Claim Group (cont'd)**BX prospect (cont'd)**

The BX showing area is underlain by quartz diorite (Guichon variety) of the Late Triassic-Middle Jurassic Guichon Creek batholith which in places are cut by finer dike rocks correlated with the Witches Brook phase of the batholith. A long, north trending, altered shear zone has been exposed by trenching on the original BX claims. The shear zone is at least 762 metres long and 122 metres wide. The altered rock is chlorite rich and the shear zone is surrounded by partially brecciated, sheared, weathered or decomposed quartz diorite.

WDR showing (Porphyry Cu +/- Mo +/- Au)

MINFILE 092INE135

Within Tenure 585388

The WDR property covers the northwesterly contact between Upper Triassic Nicola Group volcanics in the east from the Late Triassic-Middle Jurassic Guichon Creek batholith in the west. The contact is gradational showing a change from unaltered Nicola volcanics on the east through baked, hornfelsic Nicola into medium-grained diorite which becomes progressively lighter coloured and coarser grained to the west. The width of the transitional hybrid zone varies from 304 to 1219 metres.

MINERALIZATION: BERTHA 926529 CLAIM GROUP AREA

The mineralization on some of the more significant mineral MINFILE reported occurrences, prospects, and past producers peripheral to the Bertha 926529 Claim Group is reported as follows. The distance to the Minfile locations is relative to the Bertha 926529 Claim Group.

BETHLEHEM COPPER-SPUD LAKE showing (Porphyry Cu+/-Mo+-Au)

MINFILE 092ISE008

Three kilometres south

Mineralization is spotty and consists of disseminations and veinlets of chalcopyrite, bornite and pyrite. Specularite and magnetite are also present in small amounts.

HIGHLAND VALLEY COPPER producer (Porphyry Cu+/-Mo+-Au)

MINFILE 092ISW012

Twelve kilometres west-southwest

Highland Valley Copper operates two distinct mines, the Valley mine and the Lornex mine, and between the two has measured and indicated ore reserves of 761 million tonnes of 0.408 per cent copper and 0.0072 molybdenum.

The ore reserves of each mine are: Valley mine - 627 million tonnes at 0.418 per cent copper and 0.0056 per cent molybdenum; Lornex mine - 135 million tonnes at 0.364 per cent copper and 0.0144 per cent molybdenum.

DANSEY prospect (Porphyry Cu+/-Mo+-Au)

MINFILE 092INE034

100 metres south

Mineralization on the Dansey property is associated with diorite and quartz diorite. Most of the mineralization occurs along fractures but the majority of it is associated with a second group of fractures that strike from 040 to 080 degrees.

Mineralization: Bertha 580839 Claim Group Area (cont'd)**Dansey prospect (cont'd)**

The main minerals include chalcopyrite and pyrite, with minor amounts of molybdenite, specularite, chalcocite and bornite. Malachite, azurite and chrysocolla occur as secondary minerals. Areas of moderate copper-molybdenum mineralization (>0.1 per cent copper) occur near the contact between diorite and quartz diorite with weak zones of copper-molybdenum mineralization scattered throughout the diorite.

Trenching has exposed disseminations and blebs of chalcopyrite, pyrite, bornite, hematite, magnetite and molybdenite mineralization in and adjacent to several northeast faults and shear zones in quartz diorite.

The faults and shears mostly dip northwest at moderate to high angles. The shears are characterized by intensely chloritized and sericitized quartz diorite and vary from 1.5 to 9 metres wide. Near the shears are random fractured zones with pyrite and minor chalcopyrite on fracture planes.

GETTY WEST prospect (Porphyry Cu+/-Mo+-Au)

MINFILE 092INW040

Eight kilometres west

Veins occur in fractures and joint planes in the batholithic host rocks and a zone of fracturing has been traced in a north-south direction for 91 metres. Veins consist of black, sooty tourmaline, quartz and fractured wallrock mineralized with minor amounts of azurite, malachite, chrysocolla, chalcopyrite, chalcocite, hematite and magnetite. The veins range in width from 0.5 centimetre to 1 metre, but are generally less than 30 centimetres wide. The length of any one continuous section of a vein is not more than 6 metres.

From 1996 to 1997, Getty Copper Corp. completed eleven diamond drill holes totalling 3374 metres in the Transvaal showing area. The drill holes intersected significant oxide and sulphide copper mineralization, indicating that both types of mineralization are more widespread than previously indicated by surface and underground showings. One 42 metre intersection analysed 0.26 per cent copper and 0.02 per cent molybdenum (George Cross News Letter No.101, 1997).

RM showing (Porphyry Cu +/- Mo +/- Au)

MINFILE 09INE111

200 metres east

Disseminated copper mineralization (inferred to be chalcopyrite) occurs in altered quartz diorite of the Hybrid phase of the Guichon Creek batholith.

POD showing (Porphyry Cu +/- Mo +/- Au)

MINFILE 092INE117

100 metres west

A small prospect pit in quartz diorite exposes two parallel quartz veinlets, 2.5 to 5 centimetres wide, mineralized with chalcopyrite, tetrahedrite and chrysocolla. Weak disseminated pyrite is present locally.

MINERALIZATION: BERTHA 926529 CLAIM GROUP

The mineralization on the mineral MINFILE reported occurrences, prospects, and past producers within the Bertha 926529 Claim Group is reported as follows

DAB showing (Porphyry Cu+/-Mo+-Au)

MINFILE 092INE040

Within Tenure 528849

Very low grade copper mineralization (inferred to be disseminated chalcopyrite) occurs in mafic intrusive rocks (Nicola?). The mineralization was found by drilling but is not reported in assessment reports (W.J. McMillan, 1970).

BX showing (Porphyry Cu +/- Mo +/- Au)

MINFILE 092ISE042

Within Tenure 926529

Mineralization is not obviously related to the sericitic and limonitic alteration of the aplite and the granodiorite. Chalcopyrite occurs as disseminations in relatively fresh quartzose or biotite- rich zones in the granodiorite, as disseminations in biotite aplite, and in veins or pockets with quartz, alone or with pyrite, potassium feldspar or epidote.

Some veins parallel foliation, others dip gently. A chip sample across a 75 centimetre veined, rusty mineralized zone assayed 0.35 per cent copper with traces of gold and silver (Geology, Exploration and Mining in British Columbia 1974). Some molybdenite was reported when the showing was first discovered (1915).

WDR showing (Porphyry Cu +/- Mo +/- Au)

MINFILE 092INE135

Within Tenure 585388

A trench exposes a steep mineralized fault which strikes 050 degrees and is parallel to joints in the adjacent quartz diorite of the Hybrid phase of the Guichon Creek batholith. Chalcopyrite and lesser amounts of bornite are present as fracture fillings and are partly oxidized to malachite, which is accompanied by limonite, possibly representing former specularite. The rock near the fault is bleached, probably by kaolinization of plagioclase, and contains pink orthoclase veinlets and others of calcite

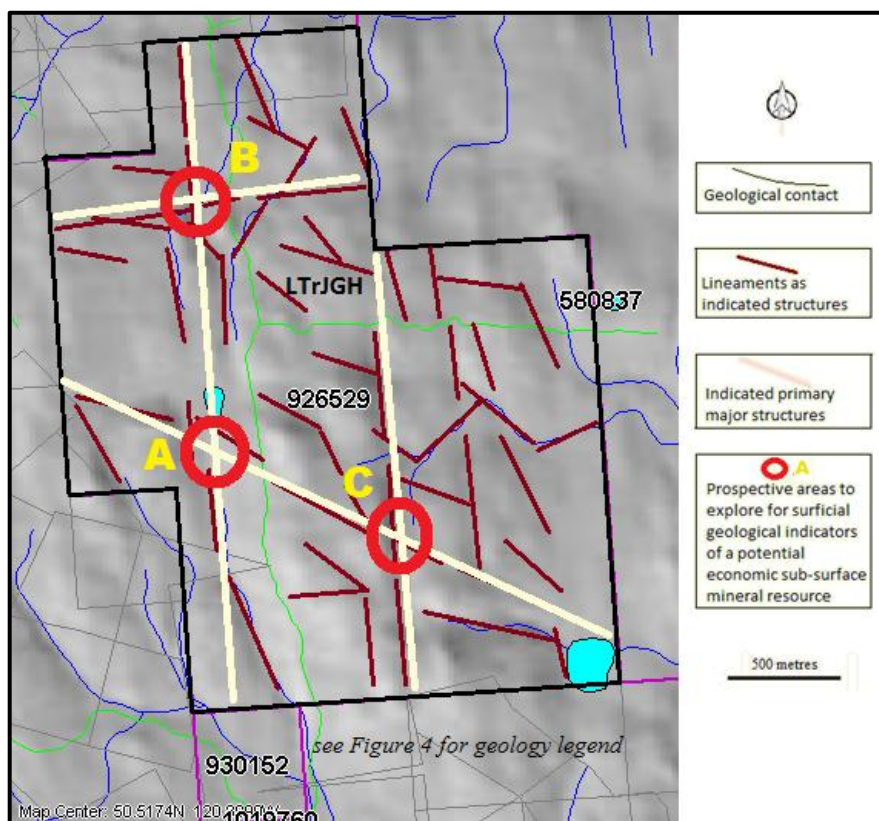
EXPLORATION PROGRAM**Structural Analysis**

The structural analysis was performed on a DEM image hillshade map of Tenure 926529 by viewing of the map and marking the lineaments as indicated structures thereon. A total of 52c lineaments were marked (*Figure 5*), compiled into a 10 degree class interval, and plotted as a rose diagram as indicated on *Figure 6*.

The centre of the work area is 5,598,559N 646,724E.

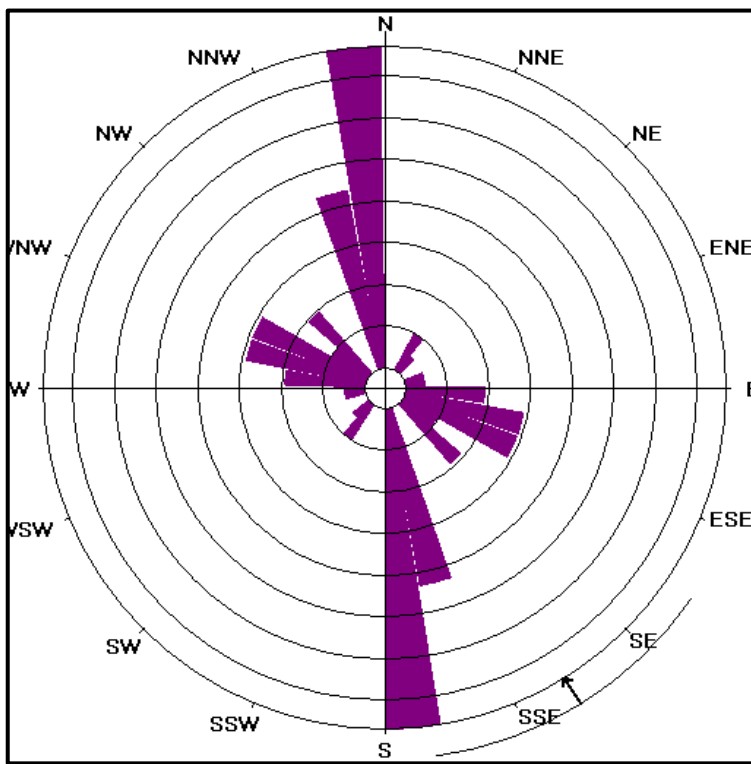
Structural Analysis (cont'd)

Figure 5. Indicated Lineaments on Tenure 926529



Structural Analysis (cont'd)

Figure 6. Rose Diagram from lineaments of Tenure 926529



STATISTICS
(for Figure 6)

Axial (non-polar) data

No. of Data = 52

Sector angle = 10°

Scale: tick interval = 4% [2.1 data]

Maximum = 30.8% [16 data]

Mean Resultant dir'n = 148-328

[Approx. 95% Confidence interval = ±23.7°]

(valid only for unimodal data)

Mean Resultant dir'n = 148.2 - 328.2

Circ.Median = not calculated

Circ.Mean Dev.about median = not calculated

(Not calculated if too many data, or data are axial (non-polar), and too coarsely grouped)

Circ. Variance = 0.21

Circular Std.Dev. = 39.82°

Circ. Dispersion = 2.19

Circ.Std Error = 0.2054

Circ.Skewness = 2.82

Circ.Kurtosis = -13.33

kappa = 0.82

(von Mises concentration param. estimate)

Resultant length = 19.79

Mean Resultant length = 0.3806

'Mean' Moments: Cbar = 0.1692; Sbar = -0.341

'Full' trig. sums: SumCos = 8.7964; Sbar = -17.7303

Mean resultant of doubled angles = 0.3644

Mean direction of doubled angles = 001

(Usage references: Mardia & Jupp,

'Directional Statistics', 1999, Wiley;

Fisher, 'Statistical Analysis of Circular Data', 1993, Cambridge University Press)

Note: The 95% confidence calculation uses

Fisher's (1993) 'large-sample method'

Structural Analysis (cont'd)

Figure 7. Cross structural locations on Tenure 926529
(Base Map: Google Earth)

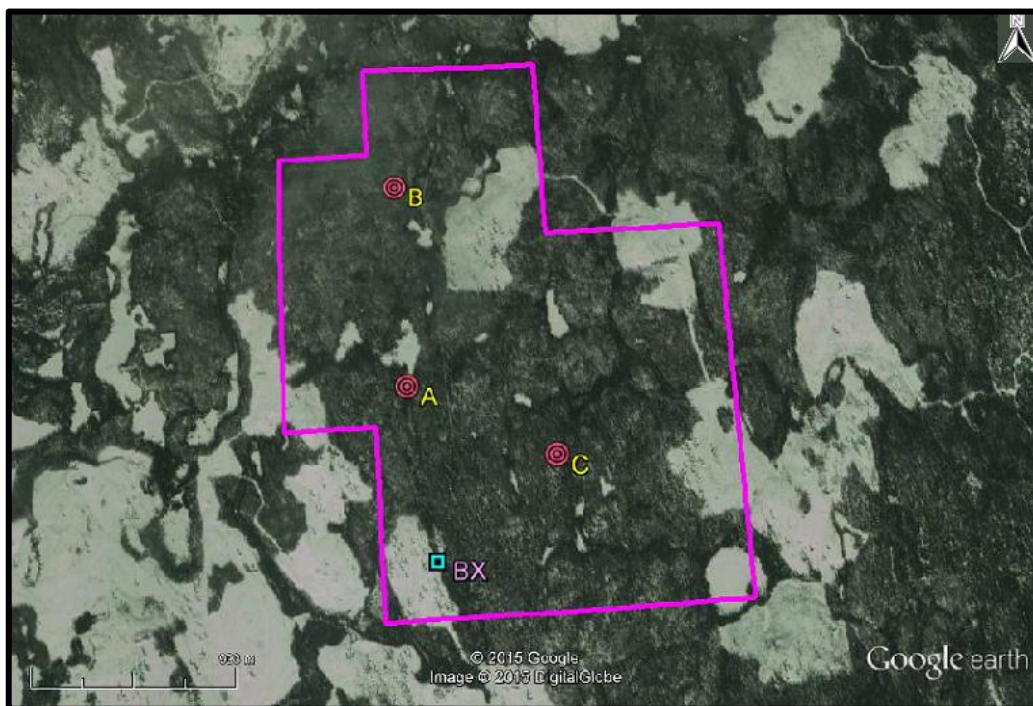


Table II. Approximate UTM locations of Figure 5 cross-structures
(UTM-NAD 83)

Location	UTM East	UTM North	Elevation
A	646,279	5,598,275	1,421
B	646,230	5,599,297	1,400
C	647,000	5,597,917	1,434
Minfile: BX	646,413	5,597,436	1,387

Magnetometer Survey

a) Instrumentation

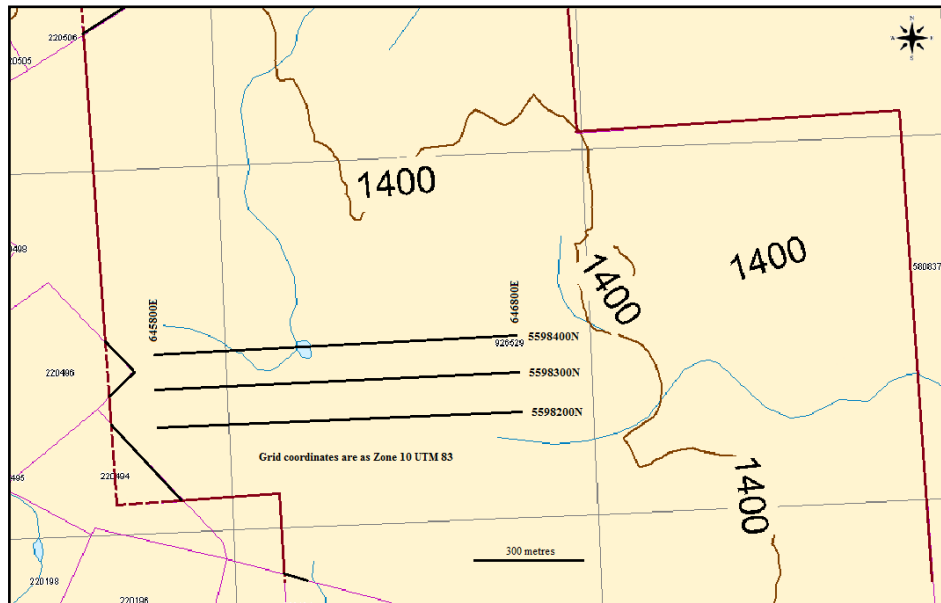
A Scintrex MF 2 Model magnetometer was used in the survey which was performed by Christopher Delorme, an experienced and knowledgeable operator who has completed magnetometer surveys for over 20 years.

b) Theory

Only two commonly occurring minerals are strongly magnetic, magnetite and pyrrhotite; magnetic surveys are therefore used to detect the presence of these minerals in varying concentrations. Magnetics is also useful as a reconnaissance tool for mapping geologic lithology and structure since different rock types have different background amounts of magnetite and/or pyrrhotite.

Magnetometer Survey (cont'd)

Figure 8. Magnetometer Grid Index Map
(Base from MapPlace)

**c) Survey Procedure**

From UTM location 5,598,200N 695,800E, a northerly base line was established with two more stations at 5,536,300N and 5,536,400N. From each of these main stations magnetometer readings were taken at 25 metre intervals westerly for one kilometer to 646,800E. Magnetometer values are total intensity and relative. Diurnal variation was corrected by taking repeated readings at a base point throughout the day.

The grid stations were located by a GPS instrument. Three line kilometres of magnetometer survey were completed. The field data is reported herein in Appendix I.

d) Data Reduction

The field results were initially input to an Excel spreadsheet whereupon a Surfer 31 program was utilized to create maps from the data results. The field results are herein included as Appendix I.

e) Results

Two localized anomalous magnetometer Low's ("mag LO's") are located within a general LO over the northern portion of the survey area and dominant in the east. A localized magnetometer high ("mag HI") is located within the western portion of the survey area and is within a general mag HI across the southern portion of the survey area which dominates in the west.

The approximate location of cross-structure "A", one of the three cross-structures delineated within Tenure 926526 by the structural analysis as reported on herein, is situated adjacent to one of the anomalous mag LO's and within the transition zone from the "background" mag Hi to the "background" mag LO.

Magnetometer Survey (cont'd)

Figure 9. Magnetometer Survey Data Map

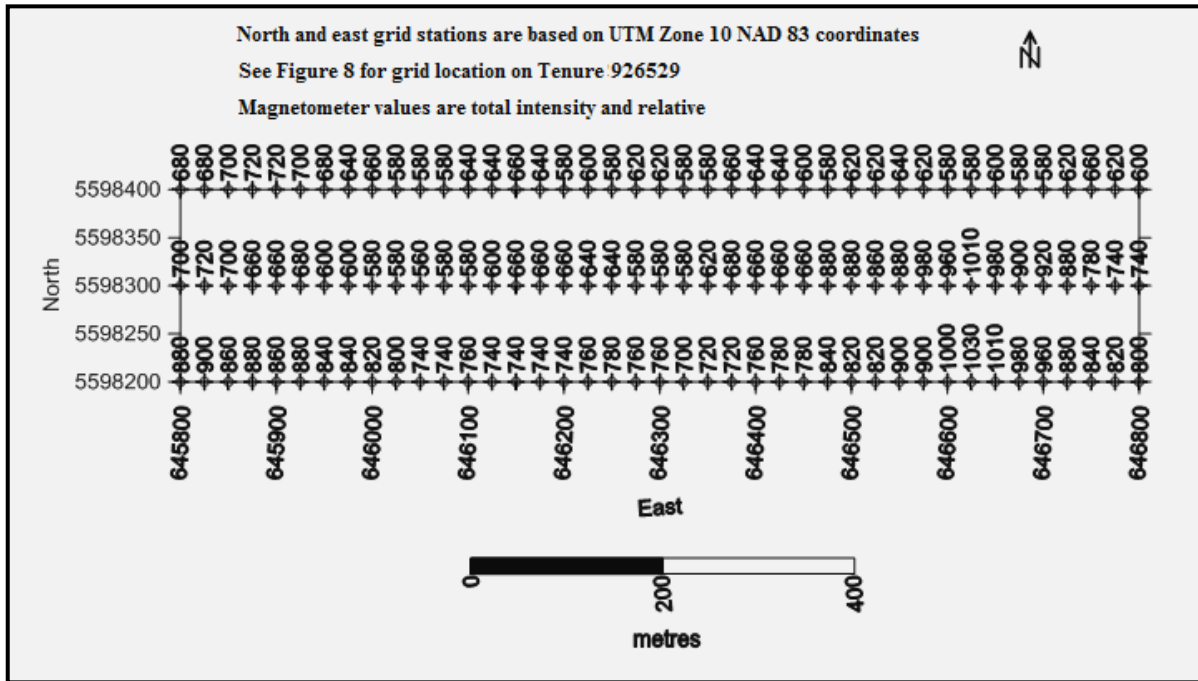


Figure 10. Magnetometer Survey Contour Map

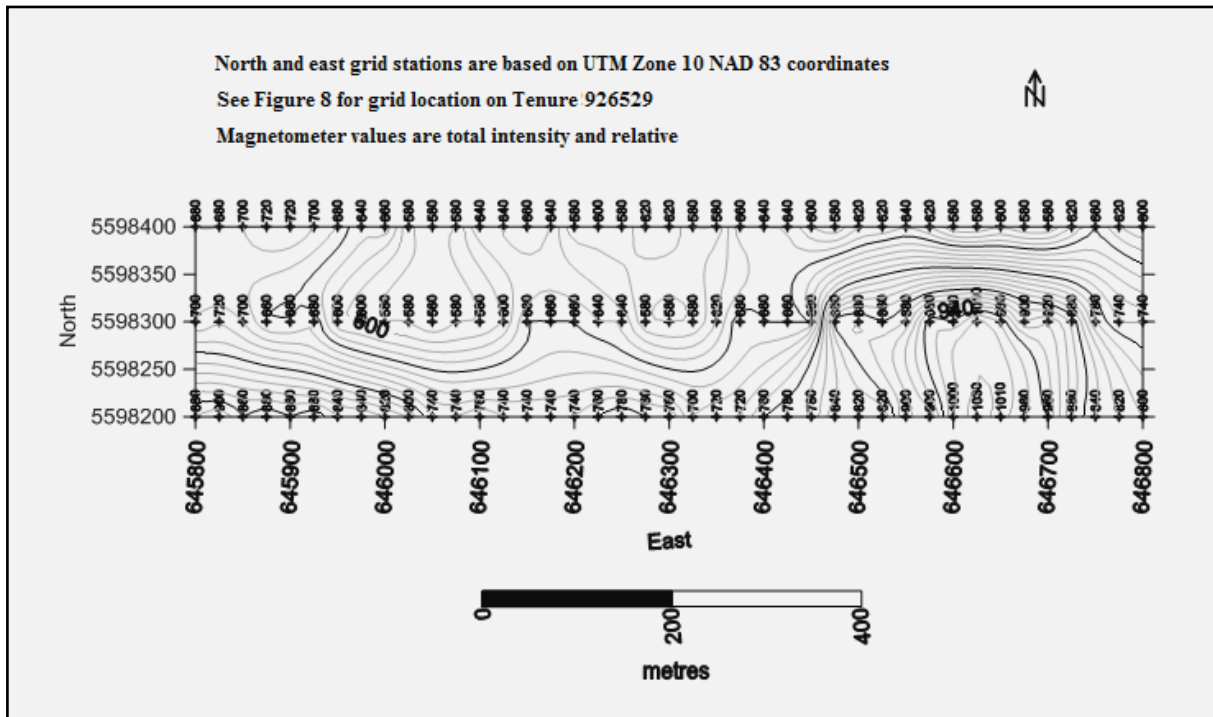
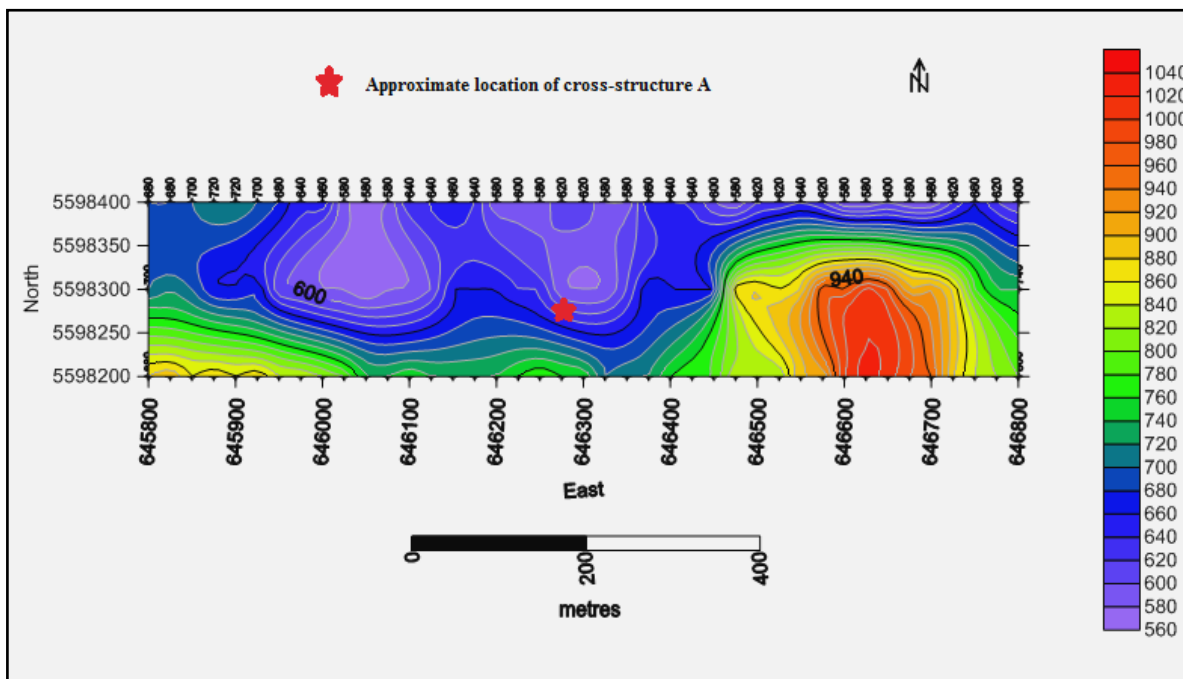


Figure 11. Magnetometer Survey Coloured Contour Map



INTERPRETATION and CONCLUSIONS

Three cross-structures between northerly, northwesterly, and westerly trending prime structures were indicated from the structural analysis of Tenure 926529. The cross-structures are located within the granodioritic rocks of the Highland Valley Phase of the Guichon Batholith.

The two primary fault directions may have been influenced by the same dynamic forces as in the development of the two major faults which are associated with the mineral controls of the Highland Valley Copper deposit (Valley). The location of the initial intersection of the two faults, the northerly trending Lornex Fault and the westerly trending Highland Valley Fault, was a major influence in the mineral controlling factor of the world class Highland Valley Copper and the Lornex deposits which were subsequently separated by five to six kilometres by the right lateral displacement by the Lornex Fault.

As fracture density was apparently the most important single factor in influencing ore grades of the Highland Valley mineral deposits, the most significant mineral deposit, the Highland Valley Copper deposit, located at the intersection of the Highland Valley and the Lornex Faults, might be attributed to the increased fracture density over a larger area and thus the significant mineral resource developed at the Highland Valley/Lornex mineral deposit.

As shown at the Highland Valley and the Lornex mineral deposits, the cross-structures presented a very favorable structural control setting to the porphyry mineral deposits in the creation of brecciated locations and open spaces or voids that would accommodate mineralized hydrothermal fluids. The recurring fault movement, additional brecciation, and subsequent filling of the open spaces by mineralized hydrothermal solutions would result in a porphyritic mineral deposit, the size primarily dependent on the degree and amount of breccia created and invariably the content and amount of mineral bearing hydrothermal fluid introduced.

Interpretation and Conclusions (cont'd)

Property	Minfile	Structure	Mineralization
Dansey	092INE034	Fractures at 040 to 080	In and adjacent to several northeast faults and shear zones 1.5 to nine metres wide in quartz diorite
Getty West	092INE040	N-S zone of fracturing	Veins generally less than 0.5 metres wide
BX	092INE042	North trending 762 long and 122 metre wide altered shear zone	Chip sample across a 75 centimetre veined, rusty mineralized zone assayed 0.35 per cent copper with traces of gold and silver
WDR	091INE135	Fault at 050	Mineralized fault and fracture fillings of chalcopyrite and bornite

And as the central portion of the cross-structure would be the most preferred location for the introduction and migration of hydrothermal fluids to surface, this location would be the most prospective location for search for surficial geological indicators that may be revealed as minerals and/or alteration products that would be subject to interpretation as to indicators of a potential economic sub-surface mineral resource.

Accordingly, the three structural intersections on Tenure 926529 should be explored for surficial geological indicators of a potential economic sub-surface mineral resource. The approximate UTM locations of the intersections are shown in Table II.

The eight Minfile descriptions copied herein from a BC Government supported Minfile directory, provide information as to the geological indicators for a productive mineral deposit or for surficial geological indicators of a potential underlying mineral resource.

The results of the magnetometer (mag) survey on Tenure 926529, shows a mag HI/mag LO transitional zone, which may indicate a progressive alteration zone within the Highland Valley granodiorites of the Guichon Batholith. The extent of the 900 metre variable mag LO zone, which is open to the north, could indicate the perimeter of a porphyritic mineral zone.

The area to determine the potential of an indicated porphyritic mineral resource would be in the area of cross-structure "A", which is within the mag LO area. As mentioned previously, a cross-structure would be the most preferred location for the introduction and migration of hydrothermal fluids to surface.

Should the geological findings of the cross-structure "A" be interpreted as positive to a potential mineral resource, a localized Induced Potential (IP) survey would be recommended.

Respectfully submitted
Sookochoff Consultants Inc.



Laurence Sookochoff, PEng

SELECTED REFERENCES

Aho, A.E. - Report on Geologic, Magnetometer, and Geochemical Surveys on the Raha Mineral Claims for Torwest Resources Ltd. October 22, 1958. AR 241.

Baird, J.G. - Report on Induced Polarization Survey on some Ezra Claims for New Indian Mines Ltd. July 28, 1969. AR 1,976.

Garrow, T. – 2010 Diamond Drilling Assessment Report on the Dansey Project for Highland North Inc. January 20, 2012. AR 32,980.

Holcombe, R. – 2009: GEORient, ver 9.4.4. Stereographic Projections and Rose Diagram Plots

MapPlace – Map Data downloads

Marshak, S., Mitra, G. – Basic Methods of Structural Geology. pp 258-259, 264*.Prentice-Hall Inc. 1988

McMillan, W.J. – Geology and Genesis of the Highland Valley Ore Deposits and the Guichon Creek Batholith. British Columbia Ministry of Mines and Petroleum Resources, Victoria, B.C. Geological Association of Canada Society of Economic Geologists. Joint Annual Meeting, 1977 Vancouver, B.C. Field Trip No.3: Guidebook. Guichon Creek Batholith and Mineral Deposits. April 27-29, 1977

MtOnline - MINFILE downloads.

092ISE002 – BETHLEHEM COPPER SPUD LAKE

092ISW012 – HIGHLAND VALLEY COPPER

092INE034 – DANSEY

092INE040 – DAB

092INE042 – BX

092INW043 – GETTY WEST

092INE111 – RM

092INE135 – WDR

Sookchoff, L., Zhonghua, P. – Dansey Project Technical Report for Logan Copper Inc. January 16, 2010.

Sookchoff, L. – Geological Assessment Report for Guy and Christopher Delorme on Tenure 585384 of the Bertha 585384 Claim Group. November 20, 2013. AR 35,003.

Sookchoff, L. – Geological Assessment Report on the DAB claim Tenure No.528849. June 27, 2007. AR 29,173.

Sookchoff, L. – Geological Assessment Report on the Dansey Claim Tenure No.528848. June 10, 2007. AR 29,164.

STATEMENT OF COSTS

Work on Tenure 926529 was done from April 8, 2015 to November 5, 2015 to the value as follows:

Structural Analysis

Laurence Sookochoff, P Eng. 3 days @ \$ 1,000.00/day ----- \$ 3,000.00

Magnetometer Survey

Christopher Delorme & Guy Delorme

November 4-5, 2015

Four man days @ \$300.00 per day ----- 1,200.00

Truck rental, kilometre charge, fuel, room & board,

mag rental ----- 1,282.40

\$ 5,482.40

Maps ----- 750.00

Report ----- 4,000.00

\$ 9,772.40

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CERTIFICATE

I, Laurence Sookochoff, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

That I am a Consulting Geologist and principal of Sookochoff Consultants Inc. with an address at 120 125A-1030 Denman Street, Vancouver, BC V6G 2M6.

I, Laurence Sookochoff, further certify that:

- 1) I am a graduate of the University of British Columbia (1966) and hold a B.Sc. degree in Geology.
- 2) I have been practicing my profession for the past forty-nine years.
- 3) I am registered and in good standing with the Association of Professional Engineers and Geoscientists of British Columbia.
- 4) The information for this report is based on information as itemized in the Selected Reference section of this report and from work the author has performed in the Bertha Property area.
- 5) I have no interest in the Bertha 926529 Claim Group as described herein.



Laurence Sookochoff, P. Eng.

Appendix I

Magnetometer Data

Event 5552361 Tenure926529

East	North	Mag	East	North	Mag	East	North	Mag
646800	5598200	800	646800	5598300	740	646800	5598400	600
646775	5598200	820	646775	5598300	740	646775	5598400	620
646750	5598200	840	646750	5598300	780	646750	5598400	660
646725	5598200	880	646725	5598300	880	646725	5598400	620
646700	5598200	960	646700	5598300	920	646700	5598400	580
646675	5598200	980	646675	5598300	900	646675	5598400	580
646650	5598200	1010	646650	5598300	980	646650	5598400	600
646625	5598200	1030	646625	5598300	1010	646625	5598400	580
646600	5598200	1000	646600	5598300	960	646600	5598400	580
646575	5598200	900	646575	5598300	980	646575	5598400	620
646550	5598200	900	646550	5598300	880	646550	5598400	640
646525	5598200	820	646525	5598300	860	646525	5598400	620
646500	5598200	820	646500	5598300	880	646500	5598400	620
646475	5598200	840	646475	5598300	880	646475	5598400	580
646450	5598200	780	646450	5598300	660	646450	5598400	600
646425	5598200	780	646425	5598300	660	646425	5598400	640
646400	5598200	760	646400	5598300	660	646400	5598400	640
646375	5598200	720	646375	5598300	680	646375	5598400	660
646350	5598200	720	646350	5598300	620	646350	5598400	580
646325	5598200	700	646325	5598300	580	646325	5598400	580
646300	5598200	760	646300	5598300	580	646300	5598400	620
646275	5598200	760	646275	5598300	580	646275	5598400	620
646250	5598200	780	646250	5598300	640	646250	5598400	580
646225	5598200	760	646225	5598300	640	646225	5598400	600
646200	5598200	740	646200	5598300	660	646200	5598400	580
646175	5598200	740	646175	5598300	660	646175	5598400	640
646150	5598200	740	646150	5598300	660	646150	5598400	660
646125	5598200	740	646125	5598300	600	646125	5598400	640
646100	5598200	760	646100	5598300	580	646100	5598400	640
646075	5598200	740	646075	5598300	580	646075	5598400	580
646050	5598200	740	646050	5598300	560	646050	5598400	580
646025	5598200	800	646025	5598300	580	646025	5598400	580
646000	5598200	820	646000	5598300	580	646000	5598400	660
645975	5598200	840	645975	5598300	600	645975	5598400	640
645950	5598200	840	645950	5598300	600	645950	5598400	680
645925	5598200	880	645925	5598300	680	645925	5598400	700
645900	5598200	860	645900	5598300	660	645900	5598400	720
645875	5598200	880	645875	5598300	660	645875	5598400	720
645850	5598200	860	645850	5598300	700	645850	5598400	700
645825	5598200	900	645825	5598300	720	645825	5598400	680
645800	5598200	880	645800	5598300	700	645800	5598400	680