

34071, 34403, 34569,

# Ministry of Energy, Mines & Petroleum Resources

**Assessment Report Title Page and Summary** 

Mining & Minerals Division BC Geological Survey

TYPE OF REPORT [type of survey(s)]: Geological	Geophysical		TOTAL COST: \$ 8,874.55
AUTHOR(S): Laurence Sookochoff, PEng			SIGNATURE(S): Laurence Sookochoff
NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):			YEAR OF WORK: 2016
STATEMENT OF WORK - CASH PAYMENTS EVENT N	UMBER(S)/DATE(S):	559	8951 April 13, 2016
PROPERTY NAME: Toni			
CLAIM NAME(S) (on which the work was done): 103	5450		
COMMODITIES SOUGHT: Copper Gold			
MINERAL INVENTORY MINFILE NUMBER(S), IF KNOW	/ <b>N</b> : 092HNE191,	092	HNE275
MINING DIVISION: Nicola			NTS/BCGS: 092H.088, 092H.098
LATITUDE: 49 ° 49 ' 05 " LO	ONGITUDE: 120	_ o	33 '04 " (at centre of work)
OWNER(S):  1) Victory Resources Corporation		2)	
MAILING ADDRESS:  132366 Cliffstone Court  Lake Country BC V4V 2R1			
OPERATOR(S) [who paid for the work]:  1) Victory Resources Corporation		2)	
MAILING ADDRESS: 132366 Cliffstone Court			
Lake Country BC V4V 2R1			
PROPERTY GEOLOGY KEYWORDS (lithology, age, str Pleistocene-Holocene, Alkalic Volcanics, Trias			ration, mineralization, size and attitude): stern Volcanic Facies, Basaltic Volcanics, Central Volcanic
Facies, Andesitic Volcanics, Jurassic, Granodi	orite, Kentucky-Al	lleyn	e Fault System, Cross-Structure, Chalcocite, Gold Flakes
REFERENCES TO PREVIOUS ASSESSMENT WORK A	ND ASSESSMENT R	EPOF	RT NUMBERS: 12351,17118, 24523, 25255, 27564, 33566,

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		1035450	\$ 6.000.00
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic		1035450	2,874.55
Electromagnetic			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for)			
Soil			
Rock			
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/t	rail		
	-		
Trench (metres)			
Underground dev. (metres)			
Other			
		TOTAL COST:	\$ 8,874.55

## VICTORY RESOURCES CORPORATION

(Owner & Operator)

#### GEOLOGICAL & GEOPHYSICAL

#### ASSESSMENT REPORT

(Event 5598951)

(Work done from April 2, 2016 to April 13, 2016)

Work done on

**Tenure 1035450** 

of the eight claim

Toni 1035450 Claim Group

of the

## **TONI PROPERTY**

**Nicola Mining Division** 

BCGS 092H.088/.098

Centre of Work

5,521,294N, 676,163E

Zone 10U (NAD 83)

Author & Consultant

Laurence Sookochoff, PEng Sookochoff Consultants Inc.

Report Submitted

**August 16 2016** 

BC Geological Survey Assessment Report 36257

## TABLE OF CONTENTS

Summary
Introduction
Property Description and Location
Accessibility, Climate, Local Resources, Infrastructure & Physiography
Water and Power
History: Property Area
092HNE047 – BRENDA
092HNE084 – PAYCINCI
092HNE086 – TOMCAT
092HNE088 – PORTLAND
092HNE096 – ELK
092HNE115 - KETCHAN LAKE NORTH
092HNE151 – THALIA
History: Property
092HNE180 – SHRIMPTON
CREEK PLACER
Geology: Regional
Geology: Property Area
092HNE047 – BRENDA
092HNE084 – PAYCINCI
092HNE086 – TOMCAT
092HNE088 – PORTLAND
092HNE096 – ELK
092HNE115 – KETCHAN LAKE NORTH
092HNE151 – THALIA
092HNE191 – DAISY
092HNE275 – BREW
Geology: Property
092HNE180 – SHRIMPTON
CREEK PLACER
092HNE249 - JOSEE
Mineralization: Property Area
092HNE047 – BRENDA
092HNE084 – PAYCINCI
092HNE086 – TOMCAT
092HNE088 – PORTLAND
092HNE096 – ELK
092HNE115 – KETCHAN LAKE NORTH
092HNE151 – THALIA
092HNE191 – DAISY
092HNE275 – BREW
Mineralization: Property
092HNE180 – SHRIMPTON
CREEK PLACER
092HNE249 - JOSEE
OPERALLY SOCIETY

### **TABLES**

Table I.	Tenures of the Toni 1035450 Claim Group	5.
Table II.	Approximate UTM Locations of Cross Structures	
	on Tenure 1035450	25.

Figure 9. Magnetometer Survey Data -----

Figure 10. Magnetometer Survey Data Contoured -----

Figure 11. Magnetometer Survey Data Colour Contoured -----

#### APPENDICES

Appendix I Magnetometer Data ----- 34.

27.

27.

28.

\_\_\_\_\_

#### **SUMMARY**

The eight claim, 6060 hectare Toni 1035450 claim group is located 202 kilometres east-northeast of Vancouver, 11 kilometres west of the past productive Elk/Siwash property, and three kilometres north of the Ketchan copper-gold porphyry prospect in south-central British Columbia.

At the Elk property Gold Mountain Mining Corporation, reports (2012 Corporate Presentation) past gold production at 51,500 ounces at 97 g/t (>3 opt) and an existing gold resource of 301,000 ounces gold in a measured and indicated category with 263,000 ounces of gold in an inferred category. Gold-silver mineralization on the Elk property is hosted primarily by pyritic quartz veins and stringers in altered pyritic granitic and, less frequently, volcanic rocks. The mineral controls along the major north trending Elk fault are obvious in the many mineral zones associated with to the cross-structural locations with east-northeasterly trending faults at the Elk mineral zones.

At the Ketchan copper-gold porphyry prospect Kaizen Discovery reports a 265.5 metre thick zone of copper-gold mineralization which included a 78 metre interval grading 0.50% copper and 0.15 grams per tonne gold. The porphyry system is hosted in diorite porphyry, and intrusive and hydrothermal breccia. The highest copper grades occur in the deepest part of the intersection, which from 248 to 262 metres returned 1.03% copper and 0.13 g/t gold. The best grades of copper and gold are generally associated with the margins of magnetic highs with associated moderate chargeability (Kaizen news release).

As indicated by the BC government supported MapPlace geological map, the Toni 1035450 claim group is predominantly underlain by the Eastern Volcanic Facies of the upper Triassic Nicola Group of basaltic volcanic rocks (*uTrNE*) with localized stocks and regional and en-echelon north-northwesterly trending faults of the Kentucky-Alleyne Fault System.

The one cross-structure delineated in the structural analysis of Tenure 1025447 should be the centre of maximum brecciation and depth intensive to provide the most favourable feeder zone to any convective hydrothermal fluids sourced from a potentially mineral laden reservoir. The geological/mineral signatures of these fluids should be etched in rocks at the surface or indicated in the covering soils.

From the results of the localized magnetometer survey a north-northwesterly trending magnetometer low, (mag LO) which is anomalous to the north and to the south, could reflect the regional fault or an enechelon hydrothermally altered structure which was delineated in the structural analysis. The delineated cross-structure which is approximately positioned within this mag LO, may support the structure/alteration relationship.

The western mag LO may reflect the northern portion of the left-lateral offset extension of the regional fault extending northwestward from Missezula lake (Figures 5 & 11) or the west-northwestward structure delineated from the structural analysis (Figure 5).

Two localized anomalous open-ended magnetometer high's (mag HI) are open to the east and open to the southwest.

The two localized anomalous open-ended magnetometer high's (mag HI) that are open to the east and open to the southwest may reflect near surface intrusives.

Thus, the cross-structure on Tenure 1035450 is the primary areas to explore for surficial geological indicators of a concealed potential economic mineral resource.

#### INTRODUCTION

During April 2016 a structural analysis and a localized magnetometer survey were completed on Tenure 1035450 of the eight claim Toni 1035450claim group (Property). The purpose of the program was to delineate potential structures and correlative magnetic responses which may be integral in indicating near surface indications and/or geological controls to a potential mineral resource.

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



Figure 1. Location Map

### PROPERTY DESCRIPTION AND LOCATION

### **Description**

The Property is comprised of eight claims covering an area of 6060.5866 hectares. Particulars are as follows:

Tenure Number	<u>Type</u>	Claim Name	Good Until	Area (ha)
<u>898135</u>	Mineral	TOM CAT 1	20161110	270.8666
<u>1011631</u>	Mineral	BREW	20161110	166.5188
<u>1015253</u>	Mineral	TONI1211	20161110	312.5199
1035447	Mineral	VICTORY	20161110	979.3378
<u>1035450</u>	Mineral	VICTORY 2	20161110	208.4735
1037242	Mineral	TONI 99	20161110	2061.5953
1037243	Mineral	TONI 1000	20161110	749.9469
<u>1038803</u>	Mineral		20161110	1311.3278

Table I: Tenures of Toni 1035450 Claim Group

<sup>\*</sup>Upon the approval of the assessment work filing: Event Number 5598951.

#### **Property Description and Location** (cont'd)

#### Location

The Property is located within BCGS Map 092H.088/.098 of the Nicola Mining Division, 202 kilometres east-northeast of Vancouver, 37 kilometres southeast of Merritt, 14 kilometres west of the ELK (Siwash) past productive deposit, and three kilometres north of the Ketchan copper-gold porphyry prospect in south-central British Columbia.

# ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE & PHYSIOGRAPHY

#### Access

Access to the Property is southward from Merritt via Highway 5A/97C for 26 kilometres to the Aspen Grove junction thence eastward from via Highway 97C or the Coquihalla connector Highway for 12 kilometres to the western boundary of Tenure 1038803, the northwestern claim of the Toni 1035450 Claim Group. Numerous secondary roads would provide access within the Claim Group.

### Climate

The region is situated within the dry belt of British Columbia with rainfall between 25 and 30 cm per year. Temperatures during the summer months could reach a high of 35° and average 25°C with the winter temperatures reaching a low of -10° and averaging 8°. On the Property snow cover on the ground could be from December to April and would not hamper a year-round exploration program.

#### **Local Resources and Infrastructure**

Merritt, and/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 three hours distant by road and less than one hour by air from Kamloops.

#### **Physiography**

Tenure 1035450 is heavily to lightly forest covered gently rolling hills Relief is 203 metres from an elevation of 1,012 metres at the lake in the mid south to 1,215 metres on a knoll in the northeast cornert.

#### WATER and POWER

Sufficient water for all phases of the exploration program should be available from the many lakes and creeks, which are located within the confines of the property. Water may be scarce during the summer months and any water required for exploratory purposes may have to be obtained from lakes on or near the Property and transported to the worksite. A high-voltage power line is within four kilometres west of the Property.

#### **HISTORY: PROPERTY AREA**

The history on some of the more significant mineral *MINFILE* reported occurrences, prospects, and past producers peripheral to the Property (Figure 4) is reported as follows:

**BRENDA** past producer (Porphyry Cu +/- Mo +/- Au) MINFILE 092HNE047 Thirty-five kilometres east

\_\_\_\_

Figure 2. Claims Location (Base Map from MapPlace)

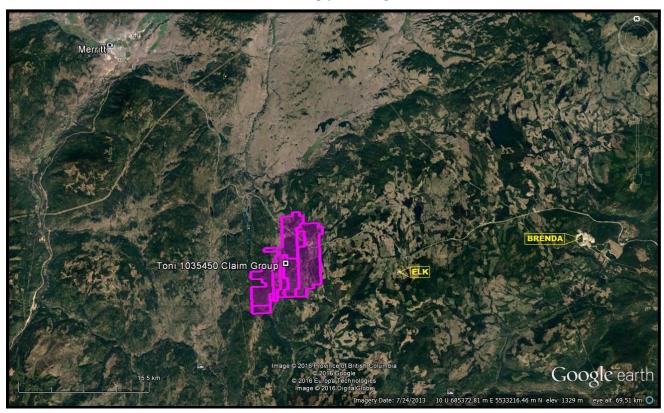
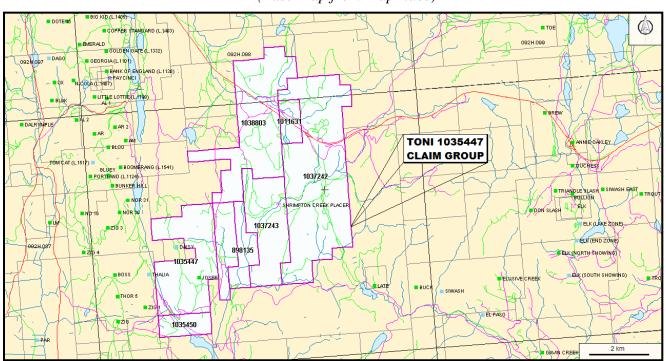


Figure 3. Claim Map (Base Map from MapPlace)



### History: Property Area (cont'd)

### **Brenda** past producer (cont'd)

The Brenda mine began production in early 1970 with measured geological (proven) reserves of 160,556,700 tonnes grading 0.183 per cent copper and 0.049 per cent molybdenum at a cutoff of 0.3 per cent copper equivalent [eCu = % Cu + (3.45 x % Mo)]. The mine officially closed June 8, 1990.

## **PAYCINCI** prospect (Volcanic redbed Cu)

MINFILE 092HNE084

Five kilometres west

The Cincinnatti deposit was first explored by the Bates brothers in the early 1900s. A number of trenches, and one adit 120 metres long, were excavated between 1899 and 1913. Payco Mines Ltd. and Alscope Consolidated Ltd. conducted geological and geophysical surveys, trenching and diamond and percussion drilling between 1963 and 1967. An additional 15 holes totalling 1000 metres were drilled by Gold River Mines and Enterprises Ltd. in 1973 and Sienna Developments Ltd. in 1979.

The deposit was most recently sampled by Pacific Copperfields Ltd. in 1992. In 1998, Christopher James Gold Corp. optioned the property. Reserves are estimated at 1.8 million tonnes grading 1 per cent copper (Tom Schroeter, 1998).

**TOMCAT** prospect (Volcanic redbed-Cu; Subvolcanic-Cu-Ag-Au (As-Sb); Porphyry Mo (Low F-type) MINFILE 092HNE086

Four kilometres west

The occurrence was initially prospected and trenched by W. Murray between 1906 and 1913. Pyramid Mining Company Ltd. drilled 13 holes totalling 1042 metres in 1965.

## **PORTLAND** showing (Volcanic redbed Cu)

MINFILE 092HNE088

Two kilometres west

Chalcocite, magnetite and hematite occur in a fracture zone in red and green laharic breccia of the Upper Triassic Nicola Group (Central belt, Bulletin 69).

ELK past producer (Intrusion-related Au pyrrhotite veins; Polymetallic veins Ag-Pb-Zn

+/-Au; Au-quartz veins)

MINFILE 092HNE096

Fourteen kilometres east

From 1992 and 1995 (inclusive), 16,570 tonnes of ore were mined and milled and 1,518,777 grams (48,830 ounces) of gold and 1,903,000 grams (61,183 ounces) of silver recovered.

In 1996, Fairfield shipped all remaining stockpiles, estimated to contain 2700 tonnes and grading greater than 12 grams per tonne (Information Circular 1997-1, page 21). A total of 994 metres of ramp access and three development levels exist underground.

Reverse circulation drilling, underground diamond drilling, reclamation, road construction, water sampling and aerial photography were also undertaken during this period.

Surface and underground diamond drill programs were carried out in the Siwash Mine area from 1994 to 1996 to define the resource. Exploration surface drilling was also carried out during the 1995 and 1996 field seasons to test trench targets between the Siwash mine site and the South Showing area 2.5 kilometres to the south. Limited prospecting and environmental monitoring was undertaken from 1997 to 1999.

•

History: Property Area (cont'd)

## **KETCHAN LAKE NORTH** prospect (Alkalic porphyry Cu-Au)

MINFILE 092HNE115

Three kilometres south

This prospect was first staked by Plateau Metals Ltd. in 1962, after copper mineralization was uncovered during a logging operation. The company completed a magnetometer survey and drilled three holes, totaling 145 metres, in 1962.

An additional seven holes, totaling 512 metres, were drilled in 1966 after the property was optioned to Adera Mining Ltd. Various geophysical and geological surveys and 768 metres of trenching were also completed in 1966. A channel sample of hard, well-fractured, silicified diorite, containing evenly disseminated fine crystals of chalcopyrite, yielded 1.36 per cent copper over 3.05 metres (National Mineral Inventory).

A section of gossan near the north end of the zone analysed 0.17 per cent copper and 8.23 grams per tonne silver over 29 metres (Assessment Report 977). Hole P3 was drilled in the vicinity and yielded 0.22 per cent copper over 39.6 metres (Assessment Report 977).

The deposit was restaked by Bethlehem Copper Corporation in 1973. The company drilled three percussion holes totaling 322 metres, two diamond drillholes totaling 227 metres and one rotary hole, 218 metres deep, in 1974 and 1975. Rotary drilling near the centre of the zone intersected

disseminated chalcopyrite to a depth of 218 metres (Assessment Report 5824).

Cominco Ltd. completed 1067.3 metres of percussion drilling in 15 holes in 1991. A second hole drilled 695 metres south-southeast of hole P3 assayed 0.379 per cent copper and 0.076 gram per tonne gold over 86.6 metres (Assessment Report 21746).

In 1992, Cominco Ltd. conducted an eight-hole percussion drill program totaling 640 metres. Highlights include drillhole M92-4, which returned 81.4 metres grading 0.2595 per cent copper and 0.124 grams per tonne gold (Assessment Report 22555).

In 2004, William Richard Bergey completed reconnaissance geological mapping on the Aspen Grove property.

In 2005, Copper Belt Resources Ltd. conducted geological mapping and a 10-hole diamond drill program totaling 1210.2 metres. Drillhole K05-07 intersected a 35.8 metre section that assayed 0.54 per cent copper and 0.19 grams per tonne gold (Assessment Report 28484).

In 2006 and 2007, Midland Resources Corp. completed 1416 metres of diamond drilling in seven holes. Highlights include drillhole K-06-11, which returned 36.75 metres grading 0.29 per cent copper and 0.17 grams per tonne gold (Assessment Report 29453).

In 2011, Moag Copper-Gold Resources Inc. completed a mobile metal ion geochemical sampling survey in areas throughout the Aspen Grove property.

In 2013, West Cirque Resources Ltd. acquired the Aspen Grove property, which consists of 37 mineral claims, totaling 5629 hectares, including the Ketchan Lake North prospect, and proceeded to complete an exploration program of geological mapping and rock sampling throughout the property. Twelve samples were taken from trenches and outcrops at the Ketchan Lake North prospect and assayed up to 1.07 per cent copper, 0.458 grams per tonne gold and 52.5 grams per tonne silver (Press Release, West Cirque Resources Ltd., June 11, 2013).

### History: Property Area (cont'd)

**THALIA** prospect (Alkalic porphyry Cu-Au; Volcanic redbed Cu)

MINFILE 092HNE151

Four kilometres west

This prospect was initially investigated by Noranda Exploration Company Ltd. with the completion of geological and magnetometer surveys and one drillhole in 1972 and 1973. Cominco Ltd. drilled six percussion holes totalling 277 metres in 1979 after conducting geological and induced polarization surveys in 1978. The deposit was more recently sampled and prospected by Vanco Explorations Ltd. in 1985 and Rayrock Yellowknife Resources Ltd. in 1990.

#### **HISTORY: PROPERTY**

## SHRIMPTON CREEK PLACER past producer (Surficial placers)

MINFILE 092HNE180

Within Tenure 1037243

The creek was worked by F. Keeling in 1939, between 6.4 and 8 kilometres above Missezula Lake.

#### **GEOLOGY: REGIONAL**

The Aspen Grove geological district is located within the regional Quesnel Trough, a 30 to 60, km wide belt of Lower Mesozoic volcanic and related strata enclosed between older rocks and much invaded by batholiths and lesser intrusions (Campbell and Tipper, 1970). The southern part is the well-known Nicola belt, continuing nearly 200 km to its termination at the U.S. border and containing the important copper deposits of the Highland Valley, Craigmont, Copper Mountain, Afton, Brenda, in addition to the historic Hedley gold camp.

The Nicola Group has been divided into western, central, and eastern belts on the basis of lithology and lithogeochemistry and by major fault systems. Variation from calc-alkaline to shoshinitic compositions from west to east has been interpreted to reflect eastward dipping subduction in the Nicola arc.

#### **GEOLOGY: PROPERTY AREA**

The mineralization on some of the more significant mineral MINFILE reported anomalies, showings, and past producers in the Toni 1035450 Claim Group area is reported as follows. The distance from the Toni 1035450 Claim Group is relative to Tenure 1035450, which is the subject of the structural analysis.

**BRENDA** past producer (Porphyry Cu +/- Mo +/- Au)

MINFILE 092HNE047

Thirty-five kilometres east

The Pennask Mountain area is mainly underlain by a roof pendant comprising westerly younging, Upper Triassic sedimentary and volcaniclastic rocks of the Nicola Group. These are intruded and enclosed to the north, east and south by plutonic rocks of the Early Jurassic Pennask batholith and Middle Jurassic Osprey Lake batholith. Both the Nicola rocks and the Pennask batholith are unconformably overlain by Tertiary sediments and volcanics of the Princeton Group.

The Brenda copper-molybdenum deposit is within the "Brenda stock", a composite quartz diorite/granodiorite body which forms part of the Pennask batholith. Several ages and compositions of pre and post-ore dikes cut the stock. The deposit is approximately 390 metres from the contact with Nicola Group rocks to the west.

Brenda past producer (cont'd)

Nicola Group tuffs, volcanic breccias and flows adjacent to the Brenda stock have been altered to "schistose hornfels". This hornfels, which is as wide as 450 metres, is characterized by the development of bands and aligned lenses of felted brown to black biotite. Schistosity generally strikes roughly parallel to the intrusive contact and dips west at 30 to 70 degrees. The schistose hornfels grades westerly into recognizable west-dipping volcanic rocks which in turn are overlain by greywacke, argillite and shales.

The Brenda stock is a composite, zoned quartz diorite to granodiorite body which can be divided into two units. Unit 1 is of quartz diorite composition and contains abundant mafic minerals (hornblende > biotite) and angular quartz grains, whereas unit 2 is porphyritic granodiorite and contains fewer mafic minerals (biotite > hornblende), well-defined biotite phenocrysts and subhedral quartz grains. The contact between units 1 and 2 is generally gradational, but locally sharp. At sharp contacts, unit 2 is chilled against unit 1.

Dikes of several ages and compositions cut the Brenda stock. At least four types, aplite-pegmatite, andesite, trachyte porphyry and basalt, have been identified in the Brenda orebody. Similar dikes, as well as felsite, dacite and quartz diorite have been mapped beyond the limits of economic mineralization. The aplite-pegmatite dikes are cut by all other dikes and by all mineralized fractures.

The andesite dikes have been altered and mineralized during ore formation. Two types of quartz diorite dikes are found and both are cut by quartz-sulphide veins. Dacite porphyry and felsite dikes are also cut by quartz-sulphide veins.

A trachyte porphyry dike up to 4.5 metres wide and 300 metres in strike length is exposed in the Brenda pit. A weakly mineralized vein was observed in the dike which suggested an intermineral age for the dike. Further evidence has clearly shown that the dikes cut all stages of mineralization, except some of the latest quartz veins (Canadian Institute of Mining and Metallurgy Special Volume 15). Several post-mineral hornblende lamprophyre dikes also occur within the Brenda orebody and are probably genetically related to the trachyte porphyry dikes.

Irregular, branching basalt dikes, probably related to Tertiary volcanism, have been intruded along pre-existing fault zones. They cut all phases of mineralization and alteration.

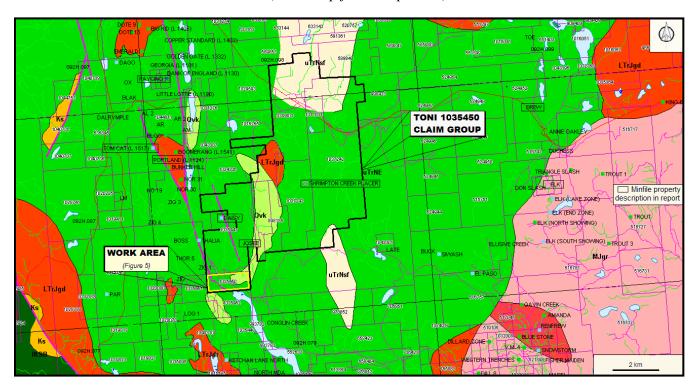
Initial potassium-argon dating of two samples from the Brenda mine area resulted in different ages for hornblende (176 Ma) and biotite (148 Ma). Interpretation of these results suggests that the Brenda stock crystallized about 176 million years ago. Biotite samples from the pit area have been dated at about 146 Ma, which probably represents the age of mineralization (Canadian Institute of Mining and Metallurgy Special Volume 15).

Faults in the Brenda pit are expressed as fracture zones in which the rock is intensely altered to clay minerals, sericite, epidote and chlorite. These fracture zones range in width from a few centimetres to 9 metres. Most strike 070 degrees and dip steeply south. Northwest-striking faults exhibit left-lateral movement. The faults transect all mineralization, except some calcite veins. Sulphides, especially molybdenite, have been smeared along fault planes. Shear zones are wider and more numerous in the north half of the pit, where they control bench limits.

\_\_\_\_\_\_

Figure 4. Property, Index, Geology, & Minfile

(Base map from MapPlace)



## **GEOLOGY MAP LEGEND**

Pleistocene to Holocene

Qvk

unnamed alkalic volcanic rocks

**Eocene** 

Egd

unnamed granodioritic intrusive

rocks

**Upper Triassic: Nicola Group** 

**Eastern Volcanic Facies** 

uTrNE

basaltic volcanic rocks

uTtNsf

mudstone, siltstone, shale, fine clastic sedimentary rocks

uTrNM1

lower amphibolite/kyanite grade metamorphic rocks

uTrJum

unnamed ultramafic rocks

**Central Volcanic Facies** 

uTrNC

andesitic volcanic rocks

**Late Triassic to Early Jurassic** 

LTrJgd

unnamed granodiorite intrusive

rocks

LTrJdr

dioritic to gabbroic intrusive

rocks

**PAYCINCI** prospect (Volcanic redbed Cu)

MINFILE 092HNE084

Five kilometres west

The deposit is located in the southern portion of an area of hilly upland situated in the centre of the Aspen Grove copper camp, known as the Fairweather Hills. The Fairweather Hills region is underlain by the Central volcanic facies of the Upper Triassic Nicola Group, comprising intermediate, feldspar and feldspar augite porphyritic pyroclastics and flows, and associated alkaline intrusions. The intrusions vary from diorite to monzonite in composition and are thought to be comagnatic with the Nicola Group, ranging in age from Late Triassic to Early Jurassic.

Locally, the area is underlain by red and green laharic breccias, augite andesite porphyry and minor sediments of the Nicola Group (Central belt, Bulletin 69). The units generally strike north-northwest and dip east. This sequence is broken up into a series of tilted fault blocks trending north.

Hypogene and supergene copper mineralization occurs in green laharic breccia, near the contact with red laharic breccia to the east. This mineralization consists primarily of disseminated and fracture controlled chalcocite and native copper, accompanied by lesser malachite and azurite, and minor chalcopyrite, bornite, cuprite and pyrite. Drilling indicates chalcopyrite becomes more abundant at depth at the expense of chalcocite. This mineralization is exposed along the crest and east flank of a small northerly trending ridge, over a north-south distance of 400 metres.

**TOMCAT** prospect (Volcanic redbed-Cu; Subvolcanic-Cu-Ag-Au (As-Sb); Porphyry Mo (Low F-type) MINFILE 092HNE086

Four kilometres west

This deposit is hosted in green laharic breccia or basaltic flow breccia near the contact with red laharic breccia of the Upper Triassic Nicola Group (Central belt, Bulletin 69). The unit strikes north-northwest and dips 60 degrees east. Massive basaltic flows outcrop to the northeast. Alteration of the breccia consists of some chloritization of olivine and pyroxene, and sericitization of feldspar.

## **PORTLAND** showing (Volcanic redbed Cu)

MINFILE 092HNE088

Two kilometres west

Chalcocite, magnetite and hematite occur in a fracture zone in red and green laharic breccia of the Upper Triassic Nicola Group (Central belt, Bulletin 69).

**ELK** past producer (Intrusion-related Au pyrrhotite veins; Polymetallic veins Ag-Pb-Zn

+/-Au: Au-quartz veins)

MINFILE 092HNE096

Fourteen kilometres east

The Elk property is underlain by Upper Triassic volcanics and sediments of the Nicola Group and by Middle Jurassic granites and granodiorites of the Osprey Lake batholith. The contact between these units trends northeasterly across the property. Early Tertiary feldspar porphyry stocks and dikes of the Otter intrusions occur throughout the property.

The western property area is underlain by steeply west-dipping andesitic to basaltic flows, agglomerates, tuffs and minor siltstone and limestone units of the Nicola Group. The eastern half of the property is underlain by granitic rocks of the Osprey Lake batholith. Early Tertiary feldspar porphyry and quartz feldspar porphyry stocks and dikes of the Otter intrusions cut both of the above.

## **KETCHAN LAKE NORTH** prospect (Alkalic porphyry Cu-Au)

MINFILE 092HNE115

Three kilometres south

Locally, the area is underlain by northwest-striking, moderately northeast-dipping andesitic flows, with lesser andesitic lapilli and crystal tuffs and minor lahar deposits of the Nicola Group (Central Belt, Bulletin 69). This sequence is intruded by a west-trending mass of fine to medium-grained diorite (microdiorite), roughly centred about Ketchan Lake, measuring 4000 by 2000 metres. The diorite commonly contains seams and irregular replacements of orthoclase. Epidote is widespread, and is frequently developed along northwest-striking, northeast-dipping fractures. Disseminations and veinlets of magnetite are also present in this stock.

This region southwest of Missezula Lake is underlain by the eastern volcanic facies of the Upper Triassic Nicola Group, comprising mafic to intermediate augite and hornblende porphyritic pyroclastics and flows, and associated alkaline intrusions. The intrusions vary from diorite to monzonite in composition and are thought to be comagnatic with the Nicola Group, ranging in age from Late Triassic to Early Jurassic. Much of the copper mineralization and associated alteration frequenting this portion of the Nicola belt can be attributed to the emplacement of such intrusions.

# **THALIA** prospect (Alkalic porphyry Cu-Au; Volcanic redbed Cu) MINFILE 092HNE151

Four kilometres west

This region north of Missezula Lake is underlain by the Eastern volcanic facies of the Upper Triassic Nicola Group, comprising mafic to intermediate, augite and hornblende porphyritic pyroclastics and flows, and associated alkaline intrusions. The intrusions vary from diorite to monzonite in composition and are thought to be comagnatic with the Nicola Group, ranging in age from Late Triassic to Early Jurassic. Much of the copper mineralization and associated alteration frequenting this portion of the Nicola belt can be attributed to the emplacement of such intrusions.

# **DAISY** prospect (Volcanic redbed-Cu; Subvolcanic-Cu-Ag-Au (As-Sb); Porphyry Mo (Low F-type) MINFILE 092HNE191

200 metres west

This region north of Missezula Lake is underlain by the Eastern volcanic facies of the Upper Triassic Nicola Group, comprising mafic to intermediate, augite and hornblende porphyritic pyroclastics and flows, and associated alkaline intrusions. The intrusions vary from diorite to monzonite in composition and are thought to be comagnatic with the Nicola Group, ranging in age from Late Triassic to Early Jurassic. Much of the copper mineralization and associated alteration frequenting this portion of the Nicola belt can be attributed to the emplacement of such intrusions.

A shear zone 20 to 30 metres wide, striking north-northwest and dipping steeply west, cuts massive green andesite and underlying coarse red volcanic breccia (lahar (?)) of the Nicola Group (Central belt, Bulletin 69).

**BREW** showing (Alkalic porphyry Cu-Au; Subvolcanic Cu-Ag-Au; As-Sb) MINFILE 092HNE275 Eight kilometres east

**Brew** showing (cont'd)

This occurrence is hosted in volcanics and minor sediments of the Upper Triassic Nicola Group, 2.6 kilometres northwest of the Middle Jurassic Osprey Lake batholith. The volcanics consist primarily of andesite and fine-grained diorite.

The contact between the two units is gradational, suggesting the diorite may be a subvolcanic equivalent of the andesite. Minor tuffs, lapilli tuffs, agglomerates, and feldspar porphyritic andesite are also present. The sediments consist of mudstone, siltstone, shale, and rare carbonate, intercalated with the pyroclastic units.

A major fault zone, the Brew fault, striking 140 degrees and dipping steeply southwest, is exposed along the Coquihalla Highway for 600 metres.

The zone is approximately 40 metres wide. It is somewhat gossanous and exhibits carbonate and clay alteration and sporadic silicification. Some quartz +/- calcite stringers and blebs are present but not common. Pyrite is ubiquitous along the entire fault. Sections of the zone are strongly mineralized with massive veins, narrow stringers and occasional disseminations of marcasite, pyrite and pyrrhotite. Samples of pyritic clay-altered sections have yielded up to 0.280 gram per tonne gold and 0.445 per cent arsenic (Assessment Report, 18041, page 8, samples 128665, 44719)

A sample from a zone of quartz stringers analysed 0.600 gram per tonne gold (sample 239716).

This fault is traversed by several significant fault/shear zones striking 100 to 120 degrees. One major crossfault, the Mugwump fault, is exposed west of the Brew fault, striking 100 degrees and dipping 60 degrees south.

#### **GEOLOGY: PROPERTY**

The Property is predominantly underlain by basaltic rocks of the Eastern Volcanic Facies of the Nicola Group (*uTrNE*) in the east which is in fault contact zone with the Central Volcanic Facies. The fault, the regional northerly striking Kentucky-Alleyne fault, trends through Tenure 1035450, the southwestern most claim of the Toni 1035450 claim group.

As indicated by the BC government supported MapPlace geological map, the basaltic rocks are overlain by the younger northerly trending band of Upper Triassic mudstone, siltstone, shale, and fine clastic sedimentary rocks (*UTrNsf*) in the north. A northerly trending band of Pleistocene to Holocene volcanics (Qvk) caps the basalts in the west; which cap a portion of an intrusive stock of late Triassic to early Jurassic granodiorite (uTrJgd).

## SHRIMPTON CREEK PLACER past producer (Surficial placers)

MINFILE 092HNE180

Within Tenure 1037243

Particles of flat, well-worn, flaky gold, 1.5 to 3 millimetres in diameter, were recovered from unsorted glacial material. Most of the gold was found near surface. Material lying on or near bedrock was found to be barren of gold.

**JOSEE** showing (Alkalic porphyry Cu-Au; Volcanic redbed Cu)

MINFILE 092HNE249

Within Tenure 1053447

Chalcocite occurs in a sequence of massive to crudely layered lahar deposits and volcanic conglomerate of the Upper Triassic Nicola Group (Eastern belt, Bulletin 69).

#### **MINERALIZATION: PROPERTY AREA**

The mineralization on some of the more significant mineral MINFILE reported anomalies, showings, and past producers in the Toni 1035450 Claim Group area is reported as follows. The distance from the Toni 1035450 Claim Group is relative to Tenure 1035450, which is the subject of the structural analysis.

**BRENDA** past producer (Porphyry Cu +/- Mo +/- Au)

MINFILE 092HNE047

Thirty-five kilometres east

The Brenda orebody is part of a belt of copper-molybdenum mineralization that extends north-northeast from the Nicola Group-Brenda stock contact. Mineralization of economic grade (0.3 per cent copper equivalent) is confined to a somewhat irregular zone approximately 720 metres long and 360 metres wide. Ore-grade mineralization extends more than 300 metres below the original surface. Lateral boundaries of ore-grade mineralization are gradational and appear to be nearly vertical.

Primary mineralization is confined almost entirely to veins, except in altered dike rocks and in local areas of intense hydrothermal alteration which may contain minor disseminations. The grade of the orebody is a function of fracture (vein) density and of the thickness and mineralogy of the filling material. The average total sulphide content within the orebody is 1 per cent or less. Chalcopyrite and molybdenite, the principal sulphides, generally are accompanied by minor, but variable, quantities of pyrite and magnetite. Bornite, specular hematite, sphalerite and galena are rare constituents of the ore. Johnson (1973), in a study of 17 samples from the deposit, reported minor pyrrhotite, mackinawite, carrollite, cubanite, ilmenite, rutile and native gold (?), as well as several secondary sulphides (Canadian Institute of Mining and Metallurgy Special Volume 15). Pyrite is most abundant in altered andesite dikes and in quartz-molybdenite veins.

The ratio of pyrite to chalcopyrite in the orebody is about 1:10, with the chalcopyrite content diminishing beyond the ore boundaries.

Because mineralization is confined almost entirely to veins in relatively fresh homogeneous rock, the veins are divided into separate stages, based on crosscutting relations and their mineralogy and alteration effects on the hostrock. The vein density within the orebody is not uniform.

Ranges are recorded from less than 9 per metre near the periphery of the orebody to 63 per metre and occasionally 90 per metre near the centre of the orebody. Some veins have very sharp contacts with wall rocks, but most contacts are irregular in detail where gangue and sulphide minerals replace the wallrock.

A vein may show features characteristic of fracture-filling in one part and of replacement in another. Mineralized solutions were introduced into fractures and, during development of the resultant veins, minor replacement of the wallrock ensued.

The chronological stages of mineralization are as follows: (1) biotite-chalcopyrite (oldest); (2) quartz-potassium feldspar- sulphide; (3) quartz-molybdenite-pyrite; (4) epidote-sulphide- magnetite; and (5) biotite, calcite and quartz. Stages 1 through 4 are all genetically related to a single mineralizing episode, which was responsible for the orebody. Stage 5 represents a later, probably unrelated, event(s) (Canadian Institute of Mining and Metallurgy Special Volume 15). Stage 2 veins form the bulk of the mineralization in the deposit, and are the most important source of ore.

Hydrothermal alteration at the Brenda deposit generally is confined to narrow envelopes bordering veins. These alteration envelopes commonly grade outward into unaltered or weakly propyliticaltered rock.

### **Brenda** past producer (cont'd)

Where veins are closely spaced, alteration envelopes on adjacent veins may coalesce to produce local areas of pervasive alteration. For the most part, hydrothermal alteration at the Brenda deposit is exceptionally weak for a porphyry copper system

Four types of alteration are recognized in the Brenda deposit, three of which are related to the mineralizing process. Two of these are potassic (potassium feldspar) and biotite, and the other is propylitic. Later argillic alteration has been superimposed on the system along post-mineral faults.

Potassium feldspar and biotite alteration generally are separated in space, but locally occur together. Both types of alteration accompanied sulphide deposition. Potassium feldspar replaces plagioclase adjacent to most stage 2 and, to a lesser extent, stage 3 veins. These irregular envelopes range in width from a centimetre or less up to a metre, with an average of about 2 centimetres. Potassium feldspar also occurs as a minor constituent of stage 1 veins.

Hydrothermal biotite replaces magmatic mafic minerals (hornblende, biotite) and, more rarely, plagioclase in hostrock adjacent to stage 2 and especially stage 3 veins. These envelopes of hydrothermal biotite range in width from less than 1 millimetre to several centimetres.

Weak to intense propylitic alteration, which is characterized by the development of chlorite and epidote, as well as less obvious microscopic sericite and carbonate, is sporadically distributed throughout the Brenda stock. Large areas within the orebody have not been propylitized and in these areas, veins with potassic alteration envelopes clearly cut across propylitized quartz diorite, indicating an early hydrothermal or even a pre-ore origin for the propylitization (Canadian Institute of Mining and Metallurgy Special Volume 15). A second period of propylitization accompanied the development of stage 4 veins and is reflected as envelopes of epidote and chlorite.

Locally intense argillic alteration is confined to post-mineral fault zones where the hostrock has been highly shattered. Kaolinite, sericite and epidote have almost completely replaced the host rocks Surface weathering, which is expressed predominantly by the development of limonite, extends as a highly irregular blanket over the mineralized zone for depths ranging from a few metres to greater than 30 metres. In this weathered area, limonite stains all fractures

Fault zones have been especially susceptible to surface weathering, and the argillic alteration of these zones may be primarily the result of groundwater action. Secondary minerals developed during weathering, all highly subordinate in quantity to limonite, include malachite, azurite, hematite, ferrimolybdite, powellite and cupriferous manganese oxides. Cuprite, covellite, chalcopyrite, native copper, tenorite and ilsemannite are rare constituents.

Copper-molybdenum mineralization in the Brenda deposit was developed during several sequential stages, all of which constitute one mineralizing episode.

Each stage occupies unique sets of fractures, which are filled with specific combinations of metallic and gangue minerals. Although the attitudes of veins in each stage are unique in detail, most stages include conjugate steeply dipping sets of northeast and northwest striking veins. If these veins occupy shear fractures, it is probable that they were formed by generally east-west compressive forces. Examination of the structure in the Nicola Group rocks to the west reveals that north-northwest and north trending fold axes also indicate an east-west compression.

It is suggested that intermittent east-west compressional forces intensely fractured the rocks of the Brenda stock during several stages of time and tapped a hydrothermal source, either a later phase of the Brenda stock or a separate intrusive system.

**Brenda** past producer (cont'd)

As each stage of fractures developed, hydrothermal fluids introduced vein material which healed the fractures. Renewed build-up of compressional forces again fractured the rocks, which were again healed. Repetition of this sequence can explain all stages of mineralization within the Brenda deposit. East-west compression continued after ore deposition ceased and produced prominent east-northeast and northwest striking shear zones (Canadian Institute of Mining and Metallurgy Special Volume 15).

## **PAYCINCI** prospect (Volcanic redbed Cu)

MINFILE 092HNE084

Five kilometres west

Hypogene and supergene copper mineralization occurs in green laharic breccia, near the contact with red laharic breccia to the east. This mineralization consists primarily of disseminated and fracture controlled chalcocite and native copper, accompanied by lesser malachite and azurite, and minor chalcopyrite, bornite, cuprite and pyrite. Drilling indicates chalcopyrite becomes more abundant at depth at the expense of chalcocite.

This mineralization is exposed along the crest and east flank of a small northerly trending ridge, over a north-south distance of 400 metres.

Drill indicated reserves are 54,000 tonnes grading 0.876 per cent copper (Assessment Report 7654, page 1). Precious metal values are generally low. Six rock samples analysed 1.1 to 2.4 per cent copper, 0.005 to 0.010 gram per tonne gold and 1.3 to 5.7 grams per tonne silver (Assessment Report 14108, Figure 5, samples 2051 to 2056.

# **TOMCAT** prospect (Volcanic redbed-Cu; Subvolcanic-Cu-Ag-Au (As-Sb); Porphyry Mo (Low F-type) MINFILE 092HNE086

Four kilometres west

The laharic breccia is erratically mineralized with chalcocite, magnetite, bornite, chalcopyrite, native copper and hematite, as disseminations and fracture coatings. Trenching and diamond drilling has intersected this mineralization over a width of 30 metres and a depth of at least 45 metres.

One drillhole analysed 0.32 per cent copper over 45.7 metres (Minister of Mines Annual Report 1965, page 157, hole 1). Two chip samples assayed 2.4 and 1.6 per cent copper over 2.1 and 3.0 metres respectively (Minister of Mines Annual Report 1913, page 223).

## **PORTLAND** showing (Volcanic redbed Cu)

MINFILE 092HNE088

Two kilometres west

Chalcocite, magnetite and hematite occur in a fracture zone in red and green laharic breccia of the Upper Triassic Nicola Group (Central belt, Bulletin 69).

**ELK** past Producer (Intrusion-related Au pyrrhotite veins; Polymetallic veins Ag-Pb-Zn

+/-Au: Au-quartz veins)

MINFILE 092HNE096

Fourteen kilometres east

Gold-silver mineralization on the Elk property is hosted primarily by pyritic quartz veins and stringers in altered pyritic granitic and, less frequently, volcanic rocks. Crosscutting relationships indicate that the veins are Tertiary in age; they may be related to Tertiary Otter intrusive events.

Elk past producer (cont'd)

To date, mineralization has been located in four areas on the Elk property: Siwash North, South Showing (092HNE261), North Showing (092HNE281) and Siwash Lake (092HNE041, 295).

The Siwash Lake zone is 800 metres south of the Siwash North deposit; the North Showing and South Showing areas are 2 and 3 kilometres south of Siwash North respectively.

In the Siwash North area, gold occurs in veins measuring 5-70 centimetres wide, hosted by a zone of strongly sericitic altered granite and, in the west, volcanic rocks. In general, the mineralized zone trends east-northeast with southerly dips from 20-80 degrees (from east to west), and appears to be related to minor shearing. Quartz veining occurs in a number of parallel to subparallel zones. Each zone consists of one or more veins within an elevation range of 5 to 10 metres that can be correlated as a group to adjacent drillholes. In the eastern parts of the area, up to six subparallel zones occur. Five of these zones are consistent enough to be labelled the A, B, C, D and E zones.

Mineralization in the west has been identified in one or locally two zones (the B and C zones). The main mineralized zone (B) is consistent, with only minor exceptions, across the entire drill grid. The Siwash North structure has been tested to 335 metres downdip and along a strike length of 925 metres. The zone remains open to depth and along strike.

At surface, supergene alteration has leached out most of the sulphides with some pyrite and chalcopyrite remaining. Mineralization occurs primarily as native gold, occasionally as spectacular aggregates of coarse flakes in frothy quartz (strong pyrite boxwork) or in fractures in the vein. Electrum was noted in one area as very coarse-grained flakes associated with strong manganese staining. Gold is rarely seen in boxworks in sericitic (phyllic) alteration.

In drill core, mineralization has not been affected by supergene processes. Metallic minerals in drill core include pyrite, chalcopyrite, sphalerite, galena, tetrahedrite, maldonite? pyrrhotite and native gold in order of decreasing abundance).

Gold is strongly associated with pyrite and with a blue-grey mineral. Photomicrographs show the gold commonly in contact with this mineral, which may be a gold-bismuth alloy (maldonite?) or a copper-bismuth- antimony sulphosalt.

Gangue mineralogy consists primarily of quartz and altered wallrock fragments. Ankerite is commonly present, with lesser amounts of calcite. Minor barite is also present. Fluorite was noted in one vein as very small (less than 1 millimetre) zoned purple cubes scattered in the quartz.

Stronger alteration generally accompanies higher grade gold mineralization. Seven main types of alteration were recognized in the granitic rocks throughout the property: propylitic, argillic, sericitic, potassium feldspar stable phyllic, phyllic, advanced argillic and silicic. Locally, potassic alteration, skarnification and silicification are evident, but are relatively minor and do not appear to be related to mineralization.

Propylitic alteration is generally light green with biotite and hornblende altered to chlorite, and plagioclase is saussuritized. In volcanics, the colour is generally olive green, and the rock is soft. Argillic alteration is exemplified by bleached rock, with plagioclase white and clay-altered; potassium feldspar is slightly altered. Volcanics are bleached to light green or grey. Sericitic alteration is typically pale green with a micaceous sheen, with plagioclase altered to sericite; trace disseminated pyrite may be present. This type of alteration is often associated with quartz veins and appears to be the lowest grade alteration associated with gold mineralization. It is not recognized in volcanics.

Potassium feldspar stable phyllic alteration is light pink, green or yellowish with potassium feldspar fresh and pink and blocky.

Elk past producer (cont'd)

Plagioclase and mafic minerals are altered to fine-grained quartz-sericite-pyrite. It often occurs with veins and is associated with gold mineralization; it is not recognized in volcanics.

Phyllic alteration is generally grey, fine-grained quartz-sericite-pyrite alteration usually associated with veins and often gradational to quartz and often auriferous. Advanced argillic alteration is exemplified by most or all of feldspar being destroyed, quartz is "free-floating". The alteration is often sheared and white in colour and is often associated with quartz veins. Volcanics are white or blue coloured. Silicic alteration is quartz veining or replacement that is hard with moderate conchoidal fracture. There is a strong symmetrical zoning of alteration around the quartz veins: vein-advanced argillic-phyllic-potassium feldspar stable phyllic-argillic-propylitic.

Measured geological reserves of the Siwash North deposit are 308,414 tonnes grading 22.17 grams per tonne gold and 24.68 grams per tonne silver using a cutoff grade of 10 grams per tonne gold. Reserves are based on results from 107 drillholes at 50-metre grid spacings along 804 metres of strike length to 304 metres downdip. All veining intercepts have been adjusted for true width and assays diluted to 2-metre mining widths (George Cross News Letter No. 223 (November), 1991).

The revised drill indicated reserve, based on more realistic open pit and underground mining widths of 0.39 to 0.79 metre with a 20.5 grams per tonne gold cutoff grade, is 122,458 tonnes averaging 54.5 grams per tonne gold (George Cross News Letter No. 65 (April 2), 1993).

From 1992 and 1995 (inclusive), 16,570 tonnes of ore were mined and milled and 1,518,777 grams (48,830 ounces) of gold and 1,903,000 grams (61,183 ounces) of silver recovered.

In 1996, Fairfield shipped all remaining stockpiles, estimated to contain 2700 tonnes and grading greater than 12 grams per tonne (Information Circular 1997-1, page 21). A total of 994 metres of ramp access and three development levels exist underground.

Reverse circulation drilling, underground diamond drilling, reclamation, road construction, water sampling and aerial photography were also undertaken during this period.

Surface and underground diamond drill programs were carried out in the Siwash Mine area from 1994 to 1996 to define the resource.

Exploration surface drilling was also carried out during the 1995 and 1996 field seasons to test trench targets between the Siwash mine site and the South Showing area 2.5 kilometres to the south. Limited prospecting and environmental monitoring was undertaken from 1997 to 1999.

In 1995, Fairfield Minerals with the support from the Explore B.C. Program carried out an extensive program including geochemistry, 13,972 metres of surface and underground diamond drilling in 315 holes and reserve calculations.

Surface drilling was done on fences 10-50 metres apart, underground drilling on fences 10 metres apart. Reserve calculations by the company and consultant Roscoe Postle gave the following results (Explore B.C. Program 95/96 - A38):

Probable (undiluted) 16,991 tonnes at 28,200 tonnes at 50.2 g/t gold 26.6 g/t gold

Possible (undiluted) 50,260 tonnes at 66,400 tonnes at 42.0 g/t gold 31.4 g/t gold

The 1996 exploration program consisted of 6873 metres of drilling in 91 holes. The Siwash zone has been traced along a 914 metre strike length and downdip to 245 metres.

Reserves estimated by the company at January 1, 1996 were 121,350 tonnes grading 25.4 grams per tonne gold and 35.3 grams per tonne silver.

Elk past producer (cont'd)

These include a diluted, probable open-pit resource of 11,340 tonnes grading 58.97 grams per tonne gold, an underground probable resource below the open pit of 20,225 tonnes grading 26.74 grams per tonne gold, and a further possible underground resource of 89,790 tonnes grading 23.66 grams per tonne gold (Information Circular 1997-1, page 21).

Surface diamond drilling totaling 1413.96 metres in 12 holes was completed on the Siwash Mining lease during 2000 testing the B, WD and Gold Creek West (GCW) zones.

A trenching program was carried out in 2001 in the Siwash East Area consisting of six trenches totaling 202 meters. Almaden Resources and Fairfield Minerals Ltd. merged into Almaden Minerals Ltd. in February, 2002.

In 2002, Almaden undertook a 26 hole surface diamond drill program for a total of 4995.67 metres testing the B, WD, GCW and Bullion Creek zones. During the 2003 field season a 6570 metre, 30 hole, diamond drill program was carried out by Almaden in the Siwash North area testing the WD zone. The WD vein system is located approximately 100 metres north of the Siwash B zone vein and has been tested over a strike length of 610m and down dip for 380m.

By the end of May 2004, a total of eight mineralized veins had been discovered on the property. Four vein systems had been drilled in the Siwash area: the B system with a strike length of 900 m has been tested down dip to 320 m; the WD zone with a strike length of 650 m has been tested to 370 m down dip; the GCW zone with a strike length of 300 m has been tested to 130 m down dip and the Bullion Creek (BC) zone which has been tested with two holes to a depth of 75 m.

A new 43-101 compliant resource was calculated using drill data for the Siwash B and WD veins, just two of eight known mesothermal vein structures on the property.

Global (bulk-tonnage and underground mineable) measured and indicated resources were reported to total 668,300 tonnes grading 9.66 grams per tonne gold (207,600 ounces) plus an additional 1,317,200 tonnes grading 4.91 grams per tonne gold (207,800 ounces) in the inferred category (News Release, Almaden Minerals Limited, May 28, 2004).

Included in the global figures is a higher grade, underground-mineable resource totaling 164,000 tonnes grading 33.69 g/t gold in the measured and indicated category, plus another 195 200 tonnes grading 16.38 g/t gold in the inferred category.

In 2004 a diamond drill program consisting of 10,265 meters of NQ drilling in 44 holes was completed. As reported by Almaden in 2001, a possible extension to the B and WD vein systems was found roughly two kilometres along strike to the east, on the other side of an area of overburden cover and no outcrop, as part of a trenching program. Grab samples of the vein material taken at surface returned averaged analyses of 31.6 grams per tonne gold and 104.4 grams per tonne silver (News Release, Almaden Minerals Limited, March 4, 2005. This discovery added about two kilometres of prospective, unexplored strike length to the high-grade vein system.

## **KETCHAN LAKE NORTH** prospect (Alkalic porphyry Cu-Au)

MINFILE 092HNE115

Three kilometres south

Trenching and drilling have intersected copper mineralization in a northwest-trending zone 1400 metres long and up to 600 metres wide, roughly paralleling the northeastern margin of the stock.

Mineralization is hosted in the diorite and consists of pyrite and chalcopyrite, usually as disseminations, but also as fracture fillings.

•

## Mineralization: Property Area (cont'd)

### **Ketchan Lake North** prospect (cont'd)

Rare bornite and chalcocite are also reported. Seams, patches and blebs of orthoclase, epidote and/or magnetite are sometimes associated with this mineralization. Some malachite is also present in surface exposures. Chlorite, sericite and traces of secondary biotite occur with the sulphides at depth.

# **THALIA** prospect (Alkalic porphyry Cu-Au; Volcanic redbed Cu) MINFILE 092HNE151

Four kilometres west

Erratic copper mineralization is hosted in fine-grained diorite/andesite porphyry and basalt of the Nicola Group (Central belt, Bulletin 69), in an elongate area trending north-northwest for 1050 metres. Mineralization consists primarily of chalcocite and malachite along fractures and associated with calcite stringers. Pyrite and chalcopyrite are also present. Strongest mineralization occurs in the most southerly exposures, where one trench sample analysed 0.38 per cent copper over 15 metres (Assessment Report 7724, Plate 1). An adjacent vertical percussion hole graded 0.14 per cent copper over 32.0 metres (Assessment Report 7724, hole TPH-79-5). Analyses of three grab samples taken 480 metres north-northeast averaged 0.23 per cent copper (Assessment Report 21406, Figure 4, site C). A sample of brecciated red basalt with chalcocite, 1000 metres north-northeast, assayed 10 grams per tonne silver and 2.6 per cent copper over 1 metre (Assessment Report 7724, Plate 1). Chalcocite forms scattered blebs and semi massive lenses at this northernmost exposure.

# **DAISY** prospect (Volcanic redbed-Cu; Subvolcanic-Cu-Ag-Au (As-Sb); Porphyry Mo (Low F-type) MINFILE 092HNE191

200 metres west

This region north of Missezula Lake is underlain by the Eastern volcanic facies of the Upper Triassic Nicola Group, comprising mafic to intermediate, augite and hornblende porphyritic pyroclastics and flows, and associated alkaline intrusions. The intrusions vary from diorite to monzonite in composition and are thought to be comagnatic with the Nicola Group, ranging in age from Late Triassic to Early Jurassic. Much of the copper mineralization and associated alteration frequenting this portion of the Nicola belt can be attributed to the emplacement of such intrusions.

A shear zone 20 to 30 metres wide, striking north-northwest and dipping steeply west, cuts massive green andesite and underlying coarse red volcanic breccia (lahar (?)) of the Nicola Group (Central belt, Bulletin 69). The volcanics strike 140 degrees and dip 35 degrees northeast. An elongate body of diorite occurs along a splay of the north-striking Kentucky-Alleyne fault system to the southeast.

# **BREW** showing (Alkalic porphyry Cu-Au; Subvolcanic Cu-Ag-Au; As-Sb) MINFILE 092HNE275

Eight kilometres east

The zone has been traced on surface for 400 metres and is 30 to 40 centimetres wide. It is comprised of strongly gossanous clay and fault gouge containing 1 to 2 per cent pyrite. Quartz and quartz-calcite stringers and quartz blebs occur sporadically throughout the zone. A sample of quartz vein material yielded 0.14 gram per tonne gold and 14.4 grams per tonne silver (Assessment Report, 18041, page 8, sample 239774).

#### **MINERALIZATION: PROPERTY**

### SHRIMPTON CREEK PLACER past producer (Surficial placers)

MINFILE 092HNE180

Within Tenure 1037243

Particles of flat, well-worn, flaky gold, 1.5 to 3 millimetres in diameter, were recovered from unsorted glacial material. Most of the gold was found near surface. Material lying on or near bedrock was found to be barren of gold.

**JOSEE** showing (Alkalic porphyry Cu-Au; Volcanic redbed Cu)

MINFILE 092HNE249

Within Tenure 1053447

Chalcocite occurs in a sequence of massive to crudely layered lahar deposits and volcanic conglomerate of the Upper Triassic Nicola Group (Eastern belt, Bulletin 69).

#### STRUCTURAL ANALYSIS

#### a) Purpose

The purpose of the structural analysis was to delineate any area of relative major fault intersections which location could be the centre of maximum brecciation and be depth intensive to provide the most favourable feeder zone to any convective hydrothermal fluids sourced from a potentially mineral laden reservoir. The fluid constituents and/or the indications thereof should be etched in the surface material; where by means of standard exploratory procedures, the source and location may be identified and a foundation on which to warrant any follow-up exploration.

These surficial indications such as prime minerals, indicator minerals, or alteration patterns, may be an expression of sub-surface mineralization that originated from a potentially developed mineral resource. Thus, a cross-structural location would be the prime area to initially prospect for the surficial indicators which may be revealed as pathfinder minerals, minerals and/or alteration products that would be subject to interpretation as economic mineral indicators.

#### b) Method

The Structural Analysis was performed on a MapPlace DEM image hillshade map of Tenure 1035450 by viewing of the map and marking the lineaments, or indicated structures, thereon. A total of 34 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 at 5,521,294N, 696,163E (10 NAD 83).

#### c) Results

One cross-structural locations, "A", was delineated from a major west-northwesterly trending structure intersected by a northwesterly trending structure.

## Structural Analysis (cont'd)

Figure 5. Indicated Structures from Lineaments on Tenure 1035450

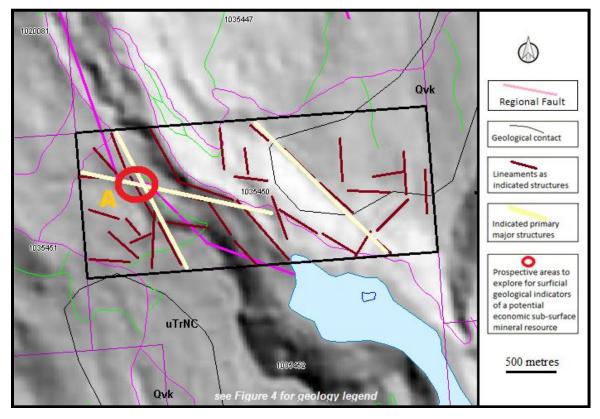
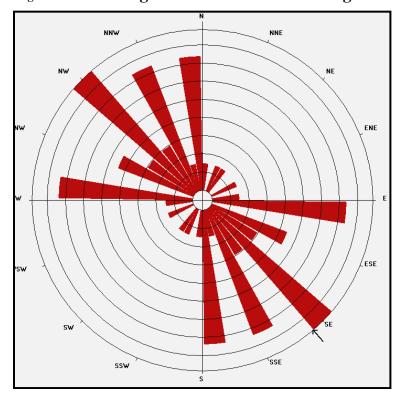


Figure 6. Rose Diagram from lineaments of Figure 5



#### Structural Analysis (cont'd)

## **STATISTICS**

(Figure 5)

Axial (non-polar) data

No. of Data = 34

Sector angle =  $10^{\circ}$ 

Scale: tick interval = 2% [0.7 data]

Maximum = 17.6% [6 data]

Mean Resultant dir'n = 139-319

[Approx. 95% Confidence interval =  $\pm 30.5^{\circ}$ ]

(valid only for unimodal data)

Mean Resultant dir'n = 139.5 - 319.5

Circ.Median = 136.0 - 316.0

Circ.Mean Dev.about median =  $27.9^{\circ}$ 

Circ. Variance = 0.18

Circular Std.Dev. =  $35.78^{\circ}$ 

Circ. Dispersion = 2.28

Circ.Std Error = 0.2588

Circ.Skewness = 0.48

Circ.Kurtosis = -13.87

kappa = 1.03

(von Mises concentration param. estimate)

Resultant length = 15.59

Mean Resultant length = 0.4585

'Mean' Moments: Cbar = 0.0712; Sbar = -0.4529

'Full' trig. sums: SumCos = 2.4192; Sbar = -15.4

Mean resultant of doubled angles = 0.0426

Mean direction of doubled angles = 127

(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'

Figure 7. Cross-structural locations on Google Earth

(Base map from MapPlace & Google Earth)

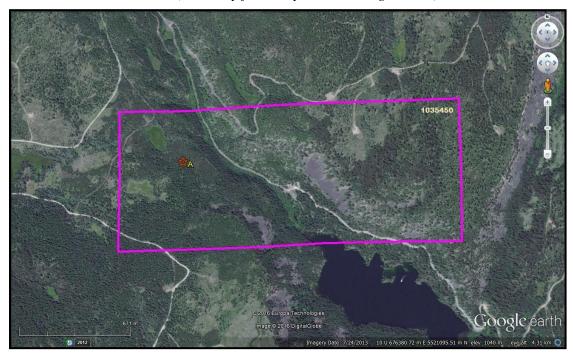


Table II. Approximate UTM locations of cross-structure on Tenure 1035450

Cross-structure UTM East		UTM North	Elevation (metres)		
Α	675,670	5,521,209	1,092		

## **Magnetometer Survey**

#### a) Instrumentation

A Scintrex MF 2 Model magnetometer was used for the magnetometer survey. Diurnal variations were corrected by taking repeated readings at a base point throughout the day. Magnetometer values are total intensity and relative.

#### 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 is a reconnaissance tool for mapping geologic lithology and structure since different rock types have different background amounts of magnetite and/or pyrrhotite.

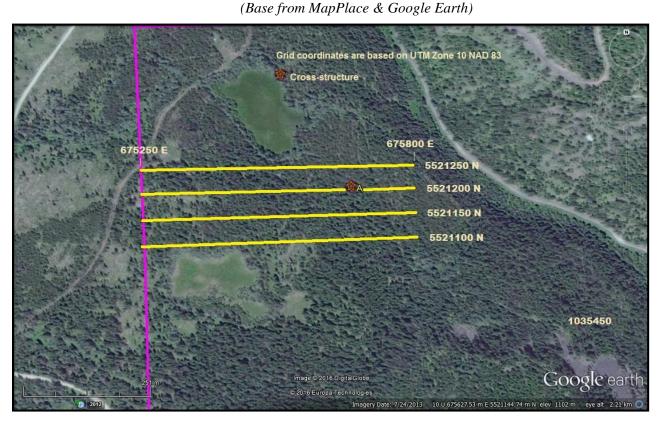
#### c) Survey Procedure

A 150 metre base line was established from 5521250N 675250E southward to 5511000N 675250E with base line stations at every 50 metres. From each of the four base line stations magnetometer readings were taken at 25 metre intervals easterly to 675800E along each of the four grid lines. The grid line stations were established with a GPS instrument. Line kilometres of magnetometer survey completed was 2.2. The field results are reported herein in Appendix I.

#### d) Data Reduction

The field results were initially input to an Exel spreadsheet whereupon a Surfer 31 program was utilized to create the maps exemplified herein as Figures 9, 10, & 11.

Figure 8. Magnetometer Survey Grid Map



#### Magnetometer Survey (cont'd)

Figure 9 . Magnetometer Survey Data

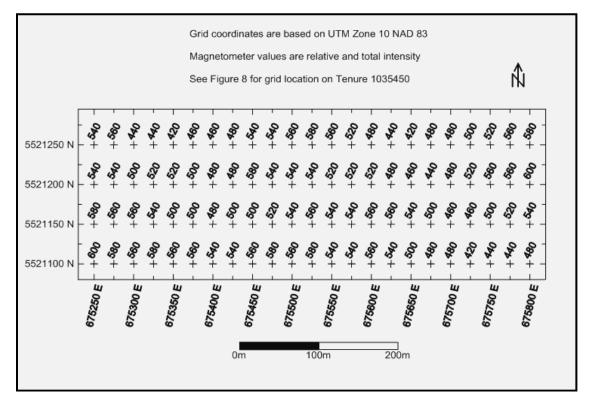
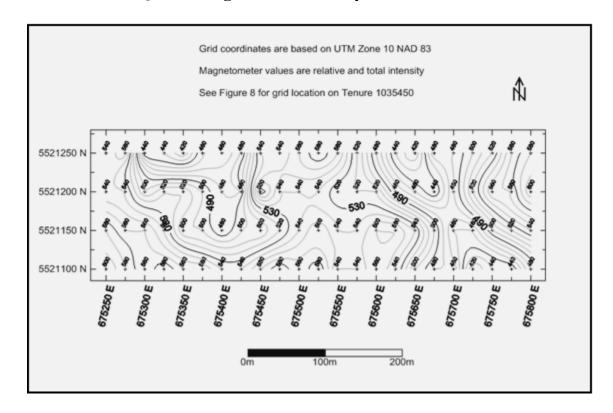


Figure 10. Magnetometer Survey Data Contoured



#### Magnetometer Survey (cont'd)

#### e) Results

The magnetometer survey, which was over Nicola volcanics, indicated one north-northwesterly trending magnetometer low (mag LO) which is anomalous to the north and to the south. A second anomalous low is a 50 metre, one line, open ended to the north within the western sector.

Two localized anomalous open-ended magnetometer high's (mag HI) are open to the east and open to the southwest.

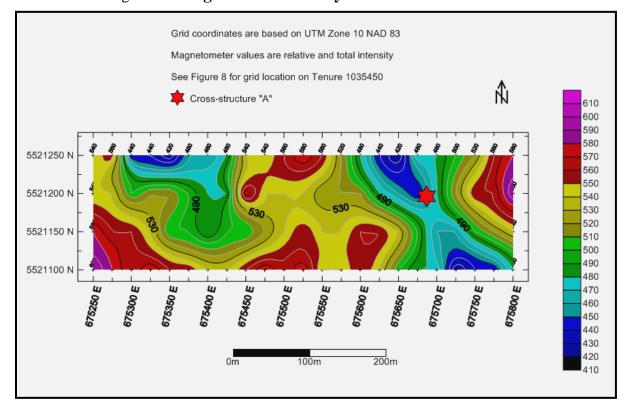


Figure 11. Magnetometer Survey Colour Contoured Data

#### **INTERPRETATION** and **CONCLUSIONS**

The one cross-structure delineated on Tenure 1035450 should be an area to explore for surficial geological indicators of a potential economic sub-surface mineral resource. These locations should be the centre of maximum brecciation and depth intensive to provide the most favourable feeder zone to any hydrothermal fluids sourced from a potentially mineral laden reservoir. The geological/mineral signatures of these fluids should be etched in rocks at the surface or indicated in the covering soils.

The creation of the cross-structures was from indicated a major west-northwesterly trending structure intersected by a northwesterly trending structure. These structures are common in the area mineral controls to mineral deposits that have been mined and are presently classed as past productive.

At the Brenda past producer (MINFILE 092HNE047) the mineralization decreases outwardly from the most intensely fractured/mineralized rock and the centre of the main mineral zone.

At the Elk past producer (MINFILE 092HNE096) the mineral controls along the major north trending Elk fault with east-northeasterly trending structures. The location of the cross-structures are obvious in the many mineral zones associated with the cross-structural locations.

#### Interpretation and Conclusions (cont'd)

At the Ketchan copper-gold porphyry prospect some three kilometres south of the structurally analyzed Tenure 1035450, Kaizen Discovery reported a 265.5 metre thick zone of copper-gold mineralization which included a 78 metre interval grading 0.50% copper and 0.15 grams per tonne gold.

At Ketchan, the mineral zone is hosted by a diorite porphyry and an intrusive hydrothermal breccia. The highest copper grades occur in the deepest part of the intersection, which from 248 to 262 metres returned 1.03% copper and 0.13 g/t gold. This interval also returned 126 ppm (parts per million) molybdenum. The best grades of copper and gold are generally associated with the margins of magnetic highs with associated moderate chargeability (Kaizen news release).

The Ketchan diorite porphyry stock is located within two kilometres west of the Kentucky-Alleyne Fault system. This regional fault system trends northward through the western sector of Tenure 1035450 northward to a bifurcation of the fault which encloses a dioritic intrusive.

On Tenure 1025450, the localized magnetometer survey, over an area of volcanic rocks with localized stocks, northerly trending fault, indicated that:

- the eastern mag LO may reflect the southern portion of the left-lateral offset extension of the regional fault extending northwestward from Missezula lake (Figures 5 & 11) or the northnorthwestward structure delineated from the structural analysis (Figure 5);
- the eastern mag LO may also reflect an en-echelon hydrothermally altered structure: the alteration possibly caused by solutions emanating from a potential mineral-laden source;
- as the cross-structure is located in the eastern mag LO area the structure/alteration relationship is supported;
- the western mag LO may reflect the northern portion of the left-lateral offset extension of the regional fault extending northwestward from Missezula lake (Figures 5 & 11) or the west-northwestward structure delineated from the structural analysis (Figure 5);
- the two localized anomalous open-ended magnetometer high's (mag HI) that are open to the east and open to the southwest may reflect near surface intrusives.

Thus, the cross-structure on Tenure 1035450 is the primary area to explore for surficial geological indicators of a concealed potential economic mineral resource.

Respectfully submitted Sookochoff Consultants Inc.



Laurence Sookochoff, PEng

#### SELECTED REFERENCES

Gold Mountain Resources Ltd. – Corporate Presentation January, 2012

Gold Mountain Resources Ltd. – News Release dated October 31, 2013.

Kaizen Discovery Inc. - News Releases dated July 20, 2015 and November 3, 2015.

MapPlace – Map Data downloads

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

**MtOnline** - MINFILE downloads.

092HNE047 - BRENDA

092HNE084 – PAYCINCI

092HNE086 - TOMCAT

092HNE088 – PORTLAND

092HNE096 - ELK

092HNE115 - KETCHAN LAKE NORTH

092HNE151 - THALIA

092HNE180 - SHRIMPTON CREEK PLACER

092HNE249 -- JOSEE

092HNE191 - DAISY

092HNE275 - BREW

**Pareta, K., Pareta, U.** – Geomorphological Interpretation Through Satellite Imagery & DEM Data. American Journal of Geophysics, Geochemistry and Geosystems. Vol 1, No. 2, pp19-36

**Sookochoff, L.** 2013: Geological Assessment Report on Tenure 589941 of the Toni 589941 Claim Group for Victory Resources Corporation. February 3, 2013. AR 33,566.

**Sookochoff, L.** - Geological Assessment Report on Tenure 833944 of the Toni 833944 Claim Group for Victory Resources Corporation. May 18, 2012. AR 34,071.

**Sookochoff, L.** – Structural Analysis on Tenure 589872 of the five Tenure 589872 Claim Group of the Toni Property for Victory Resources Corporation. November 3, 2013. AR 34,403

STATEMENT OF COSTS

The Structural Analysis of Tenure 1035450 was completed from April 2, 2016 to April 13, 2016 to the value as follows:

Structural Analysis Laurence Sookochoff, P Eng. 3 days @ \$ 1,000.00/day	\$ 3,000.00
Magnetometer Survey	
Rick Pearson & Ross Heyer	
April 12-13, 2016	
Four man days @ \$300.00 per day	1,200.00
Truck rental, kilometre charge, fuel, room & board,	
mag rental	1,424.55
	\$ 5,624.55
Maps	500.00
Report	<u>2,750.00</u>
	\$ 8,874.55

\_\_\_\_\_

#### 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 fifty 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 on the Toni Property since 2006.
- 5) I have no interest in the Property as described herein.
- 6) I am a director of Victory Resources Corporation.



Laurence Sookochoff, P. Eng.

Appendix I

**Magnetometer Data** 

				E 5598951 T 1035450							
East	North	Mag	East	North	Mag	East	North	Mag	East	North	Mag
675250	5521100	600	675250	5521150	580	675250	5521200	540	675250	5521250	540
675275	5521100	580	675275	5521150	560	675275	5521200	540	675275	5521250	560
675300	5521100	560	675300	5521150	560	675300	5521200	500	675300	5521250	440
675325	5521100	580	675325	5521150	540	675325	5521200	520	675325	5521250	440
675350	5521100	560	675350	5521150	500	675350	5521200	520	675350	5521250	420
675375	5521100	560	675375	5521150	500	675375	5521200	500	675375	5521250	460
675400	5521100	540	675400	5521150	480	675400	5521200	480	675400	5521250	460
675425	5521100	540	675425	5521150	500	675425	5521200	480	675425	5521250	480
675450	5521100	560	675450	5521150	500	675450	5521200	580	675450	5521250	540
675475	5521100	580	675475	5521150	520	675475	5521200	540	675475	5521250	540
675500	5521100	560	675500	5521150	540	675500	5521200	540	675500	5521250	560
675525	5521100	580	675525	5521150	560	675525	5521200	540	675525	5521250	580
675550	5521100	540	675550	5521150	540	675550	5521200	520	675550	5521250	560
675575	5521100	540	675575	5521150	540	675575	5521200	520	675575	5521250	520
675600	5521100	560	675600	5521150	560	675600	5521200	520	675600	5521250	480
675625	5521100	540	675625	5521150	560	675625	5521200	480	675625	5521250	440
675650	5521100	500	675650	5521150	540	675650	5521200	460	675650	5521250	420
675675	5521100	480	675675	5521150	500	675675	5521200	440	675675	5521250	480
675700	5521100	480	675700	5521150	460	675700	5521200	480	675700	5521250	480
675725	5521100	420	675725	5521150	460	675725	5521200	520	675725	5521250	500
675750	5521100	440	675750	5521150	500	675750	5521200	560	675750	5521250	520
675775	5521100	440	675775	5521150	520	675775	5521200	560	675775	5521250	560
675800	5521100	480	675800	5521150	540	675800	5521200	600	675800	5521250	580

<sup>\*</sup> Magnetometer values are total intensity and relative