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**1992 GEOLOGICAL  
AND GEOCHEMICAL REPORT  
ON THE  
RAM 1-2 CLAIMS**

Located on the Nechako Plateau  
Omineca Mining Division  
NTS 93F/2W  
53° 06' North Latitude  
124° 52' West Longitude

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**22,539**

-prepared for-  
SLEEPING GOLD LTD.

-prepared by-  
David A. Caulfield, P.Geo.

September, 1992

# 1992 GEOLOGICAL AND GEOCHEMICAL REPORT ON THE RAM 1-2 CLAIMS

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## 1.0 INTRODUCTION

The Ram property is located on the Nechako Plateau, approximately 120 kilometres southwest of Vanderhoof in central British Columbia. It is underlain by Hazelton Group volcanics and sediments which have been cut by Tertiary felsic volcanics. Prism Resources, Placer Developments and BP Minerals carried out geological mapping and soil sampling over the property from 1980 to 1984, identifying several zinc-arsenic-copper-lead soil anomalies. Insufficient mineralization was discovered to account for the soil geochemistry and the ground was restaked as the Ram 1-2 claims in 1991.

Geological mapping and prospecting were carried out over the Ram property during June of 1992. Equity Engineering Ltd. conducted this exploration program for Sleeping Gold Ltd. and has been retained to report on the fieldwork.

## 2.0 LIST OF CLAIMS

The Ram property comprises two contiguous claims totalling 40 claim units, located in the Omineca Mining Division (Figure 2). Records of the British Columbia Ministry of Energy, Mines and Petroleum Resources indicate that the Ram 1-2 claims are owned by Bruno Kasper. Separate documents indicate that they are held under option by Sleeping Gold Ltd.. Claim data for the Ram property is summarized in Table 2.0.1.

**TABLE 2.0.1**  
**CLAIM DATA**

<u>Claim Name</u>	<u>Mineral Tenure No.</u>	<u>No. of Units</u>	<u>Record Date</u>	<u>Expiry Year</u>
Ram 1	301433	20	June 29, 1991	1994*
Ram 2	301434	20	June 29, 1991	1994*
		40		

\* Subject to approval of assessment work covered by this report.

The position of the legal corner posts for the Ram 1-2 claims has been verified by the author.

## 3.0 LOCATION, ACCESS AND GEOGRAPHY

The Ram property is situated on the Nechako Plateau of central British Columbia, approximately 120 kilometres southwest of Vanderhoof and 160 kilometres west of Quesnel (Figure 1). The claims are located within the Omineca Mining Division, centered at 53° 06' north latitude and 124° 52' west longitude.

The property is not currently accessible by road. The nearest

logging road passes within 500 metres of the eastern claim boundary, connecting to the Westar mill at Engen on Highway 16. Logging is scheduled to commence on the Ram claims in 1993, with a cut block immediately north of Good News Lake. Helicopters are available for charter in Quesnel and Vanderhoof. Access for the 1992 exploration program was by ATV and foot from a camp based at Kuyakuz Lake, approximately 20 kilometres to the east.

The claims cover Tsacha Mountain, extending southerly over a series of rolling hills, all of which form part of the Fawnie Range within the Nechako Plateau. Upland surfaces are generally well drained with few lakes or marshes. Lower creek valleys are broad and swampy. Topography on the property is moderate, with elevations ranging from 1,360 metres at Good News Lake to 1,730 metres at the summit of Tsacha Mountain. Outcrop exposure is fairly good at higher elevations, but becomes increasingly masked by glacial till towards the valley bottoms. Overall, the property would average less than 5% outcrop.

The property is largely covered by spruce and lodgepole pine with a light undergrowth of huckleberry and alder. Alpine vegetation predominates above tree-line at 1,650 metres. The Ram property is subject to a continental climatic regime, with warm summers and cold winters. Snowfall is moderate with an accumulation of one to two metres during the winter.

#### 4.0 REGIONAL AND PROPERTY MINING HISTORY

##### 4.1 Previous Work

The area around the Ram property received little exploration until the late 1960's, when Rio Tinto Canadian Exploration Ltd. carried out stream and lake sediment sampling surveys throughout the Nechako Plateau, searching primarily for copper-molybdenum porphyry deposits (Hoffman, 1976). Follow-up work on one of their anomalies by Rio Canex (1969-71) and Granges Exploration Ltd./Cominco Ltd. (1976-present) led to the discovery in 1979 of the Capoose silver-lead-zinc deposit approximately twenty-seven kilometres northwest of the Ram property. Reserves at Capoose have been estimated at 20 million tonnes grading 48 g/tonne silver and 0.5 g/tonne gold (Schroeter and Panteleyev, 1986).

Following the recognition of a major silver resource at Capoose, claims were staked over several other geochemical anomalies underlain by similar lithologies in the Fawnie Range. Prism Resources Ltd. staked the southwestern slope of Tsascha Mountain in 1980 as the Mstsacha claim and took 130 reconnaissance soil, silt and rock samples, identifying a broad Cu-Pb-Zn geochemical anomaly southwest of Good News Lake, with maximum values of 113 ppm Cu, 102 ppm Pb and 450 ppm Zn (Harivel and Livingston, 1981). The following year, Prism reassayed 124 samples

for gold and arsenic (14 silt samples, 89 soil samples and 21 rock samples). Of these, 32 samples were also analysed for copper, zinc, lead and silver. These returned low gold values, but up to 530 ppm zinc and 950 ppm arsenic. Prism also reported a "manganiferous jasperoid unit" associated with rhyolitic pyroclastics (Livingston and Harivel, 1982).

In 1982, Placer Developments Ltd. optioned the Mstsacha claim and took a further 195 soil and silt samples. These showed a 400-600 metre wide band of low order copper-zinc-lead-arsenic soil anomalies trending southwesterly from Tsacha Mountain. Minor pyrite and rare chalcopyrite were also noted as disseminations and stringers in silicified rhyodacite and andesite (Kimura, 1982).

In 1984, BP Minerals staked the Jon 3-5 claims immediately north and east of the Mstsacha claim and took 78 rock and soil samples. Three of their rock samples exceeded 0.15% zinc (Smith, 1984). The Mstsacha and the Jon 3-5 claims lapsed and the Ram 1-2 claims were staked in June 1991 over the Jon 4 and 5 claims and the eastern parts of the Jon 3 and Mstsacha claims.

#### 4.2 1992 Exploration Program

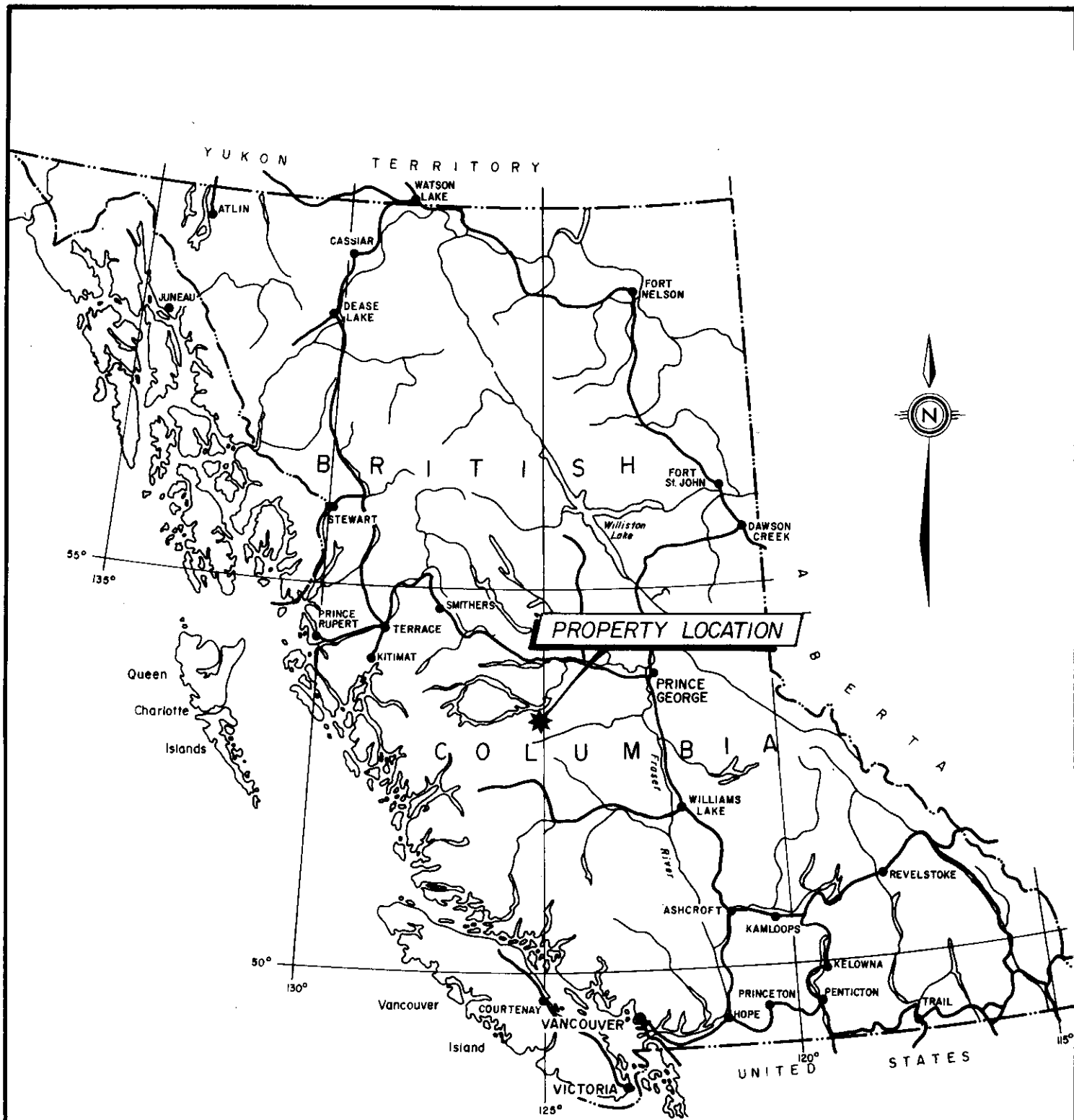
During June of 1992, Sleeping Gold Ltd. carried out a preliminary exploration program on the Ram property, consisting of geological mapping and prospecting. This program was designed to locate sources for previously reported soil geochemical anomalies and evaluate the property's potential for epithermal and volcanogenic massive sulphide mineralization. Unfortunately, no evidence of previous sampling could be found.

Reconnaissance geological mapping was carried out at a scale of 1:10,000. A total of 24 rock samples were taken and are described in Appendix C. Analytical certificates are attached in Appendix D. In the field, rock sample locations were marked by metal tag and a combination of orange and blue flagging.

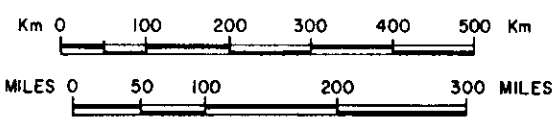
#### 5.0 REGIONAL GEOLOGY

Geological mapping in the area surrounding the Ram property is quite preliminary in nature (Figure 3). H. W. Tipper mapped the Nechako River map sheet from 1949 to 1952 at a scale of 1:253,440 (Tipper, 1963). The ages and regional correlations of several of his units were reassigned by Tipper et al (1974) in their 1:1,000,000 compilation. The Geological Surveys of British Columbia and Canada are planning to re-map portions of this region at a scale of 1:50,000 in 1992 and succeeding years.

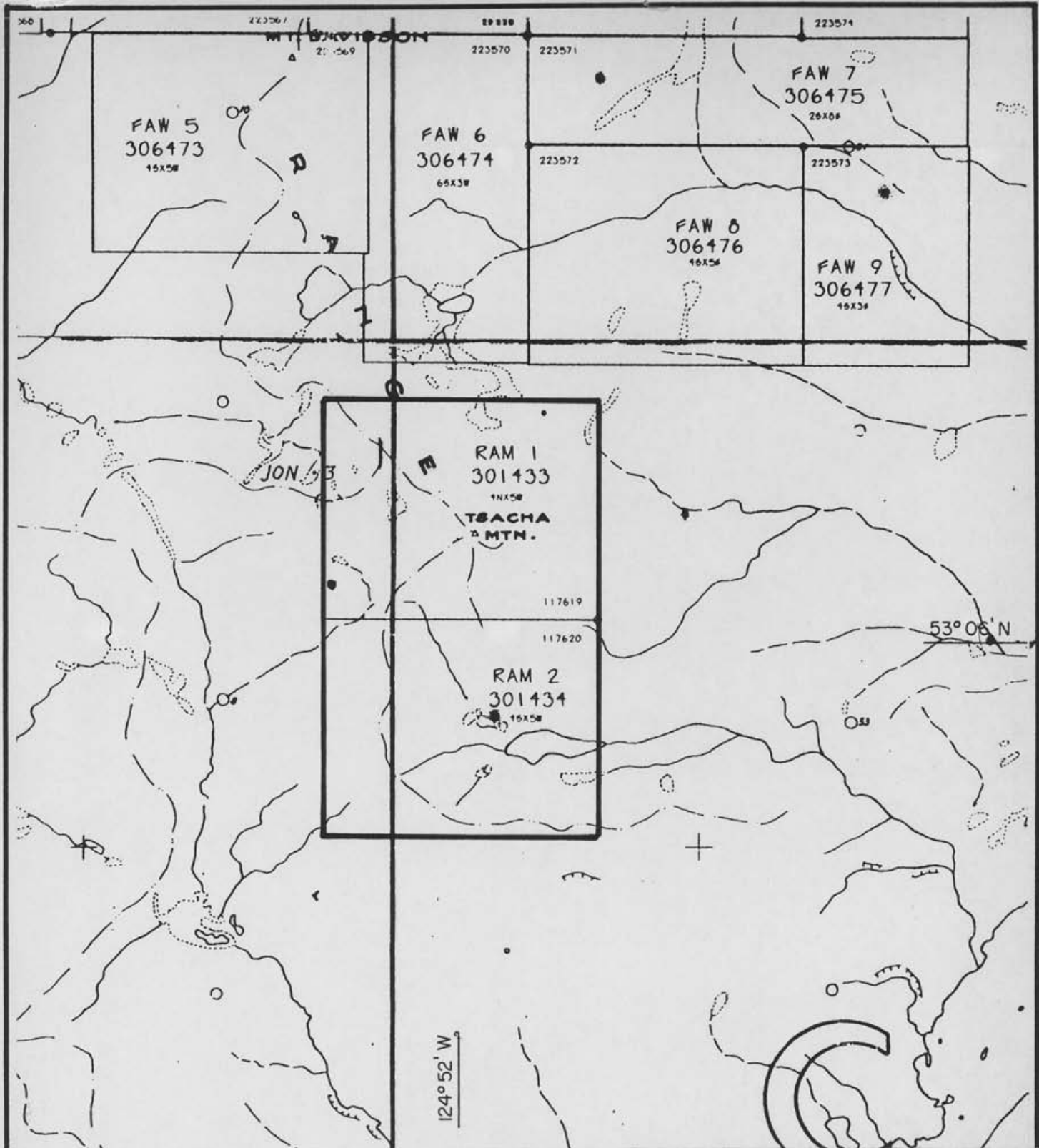
The oldest rocks identified in the area were assigned to the Upper Triassic and Lower Jurassic Takla Group by Tipper (1963). These rocks consist largely of basalt and andesite with lesser



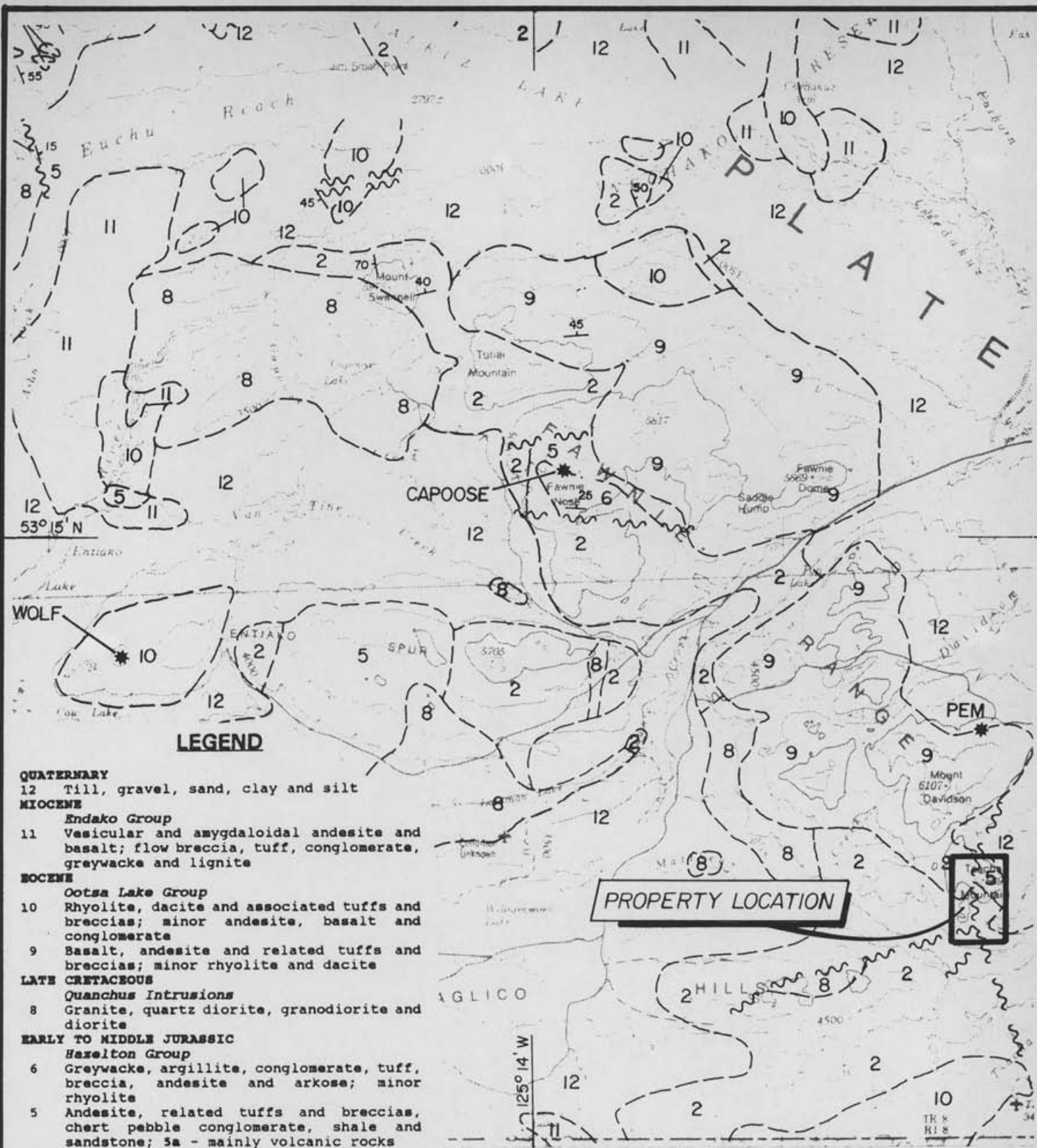
**PROPERTY LOCATION**



<b>SLEEPING GOLD LTD.</b>		
<b>RAM 1 &amp; 2 CLAIMS LOCATION MAP</b>		
BRITISH COLUMBIA		
EQUITY ENGINEERING LTD.		
DRAWN:	MINING DIV. OMINECA	FIGURE
N.T.S.: 93F/2W	SCALE: AS SHOWN	1
DATE: AUG., 1992	REVISED:	



<b>SLEEPING GOLD LTD.</b>		
<b>RAM 1 &amp; 2 CLAIMS CLAIM MAP</b>		
BRITISH COLUMBIA		
EQUITY ENGINEERING LTD.		
DRAWN:	MINING DIV.: OMINECA	FIGURE
N.T.S.: 93F/2W	SCALE: 1:50000	2
DATE: AUG., 1992	REVISED:	



**LEGEND**

- QUATERNARY**  
 12 Till, gravel, sand, clay and silt
- MIOCENE**  
**Endako Group**  
 11 Vesicular and amygdaloidal andesite and basalt; flow breccia, tuff, conglomerate, graywacke and lignite
- BOCENE**  
**Ootsa Lake Group**  
 10 Rhyolite, dacite and associated tuffs and breccias; minor andesite, basalt and conglomerate  
 9 Basalt, andesite and related tuffs and breccias; minor rhyolite and dacite
- LATE CRETACEOUS**  
**Quanchus Intrusions**  
 8 Granite, quartz diorite, granodiorite and diorite
- EARLY TO MIDDLE JURASSIC**  
**Hazelton Group**  
 6 Graywacke, argillite, conglomerate, tuff, breccia, andesite and arkose; minor rhyolite  
 5 Andesite, related tuffs and breccias, chert pebble conglomerate, shale and sandstone; 5a - mainly volcanic rocks  
 2 Andesitic and basaltic flows, tuffs and breccias; interbedded argillite and minor limestone

**SYMBOLS**

- \* Mineral deposit or prospect
- 40/ Bedding with dip
- ~ Fault (inferred)

Adapted from Tipper, 1963



**PROPERTY LOCATION**

**SLEEPING GOLD LTD.**  
**RAM 1 & 2 CLAIMS**  
**REGIONAL GEOLOGY**  
**MAP**  
 BRITISH COLUMBIA

EQUITY ENGINEERING LTD.

DRAWN:	MINING DIV.: OMINECA	FIGURE
N.T.S.: 93F/2W	SCALE: 1:250 000	3
DATE: AUGUST, 1992	REVISED:	



interflow sediments (Unit 2). Based on fossil evidence, radiometric dating and nomenclature revision, portions of the previously mapped Takla Group rocks in the vicinity of the Ram property were re-assigned to the Lower Jurassic section of the Hazelton Group (Tipper et al., 1974).

Tipper's (1963) Units 5 and 6 comprise andesites, chert pebble conglomerate, marine clastic sediments and minor rhyolite which he assigned to the Middle and Upper Jurassic Hazelton Group. Tipper (pers. comm., 1991) feels that re-mapping may show the chert pebble conglomerates to be Cretaceous in age. Fossil evidence (Tipper, 1963) shows the Unit 6 sediments to be Bajocian (early Middle Jurassic). The Hazelton Group rocks (Units 2, 5 and 6) are broadly folded about a northwesterly-trending axis, forming a northwesterly-trending belt at least eighty kilometres long, centred on the Fawnie Range.

The Quanchus Intrusions, Late Cretaceous to Paleocene batholiths of granitic to granodioritic composition (Unit 8), cut Hazelton Group rocks west of the Ram property. These batholiths are generally coarse-grained, equigranular and light coloured. Potassium-argon dating indicates an age of  $64.3 \pm 2.4$  Ma for the Capoose Batholith (Andrew, 1988).

Flat-lying to moderately dipping, subaerial volcanics of the Ootsa Lake Group unconformably overlie older Mesozoic rocks, including the Cretaceous batholiths. Potassium-argon dating of Ootsa Lake rocks at the Wolf prospect gave an age of  $48 \pm 2$  million years (mid-Eocene). Tipper (1963) divided the Ootsa Lake into two broad lithological units composed predominantly of andesites (Unit 9) and rhyolites (Unit 10). Each unit also contains minor clastic sediments, such as basal conglomerate, tuffaceous shales and sandstones.

Miocene plateau basalts and andesites of the Endako Group (Unit 11) unconformably overlie all other units.

Low grade regional metamorphism and weak deformation are pervasive on the Nechako Plateau. Contact metamorphism is pronounced around intrusives. Tipper (1959) observed that the overall lack of structural features may, in part, be attributed to the abundance of often structureless volcanics in the area. The Hazelton volcanics appear more strongly deformed in comparison to other rock types, with dips of up to  $70^\circ$ . The Ootsa Lake Group volcanics were deposited in a period of extensional tectonism. Another period of deformation during the Oligocene produced broad open folds in the Ootsa Lake Group volcanics and sediments. The relatively undeformed Endako Group consists of generally flat-lying to gently easterly-dipping plateau lavas (Tipper, 1963).

Several styles and ages of mineralization have been documented in the vicinity of the Ram property (Figure 3), despite a relative

lack of exploration attention. The Capoose silver deposit, located twenty-seven kilometres northwest of the Ram claim group, is hosted by Lower to Middle Jurassic Hazelton Group mafic flows, rhyolite tuff, argillite and lithic wacke intruded by Late Cretaceous quartz-garnet rhyolite sills related to the Capoose Batholith. Mineralization consists of pyrite, sphalerite, galena, chalcopyrite and arsenopyrite in disseminations, fracture-fillings and replacing garnets, and is thought to be Late Cretaceous in age (Andrew, 1988). The Capoose deposit contains 20 million tonnes grading 48 g/tonne silver and 0.5 g/tonne gold (Schroeter and Panteleyev, 1986). The Capoose Batholith itself has been extensively explored for porphyry-style copper-molybdenum mineralization, with the best prospects lying a few kilometres to the northwest of the Capoose silver deposit.

The Wolf epithermal gold-silver deposit, located 40 kilometres west of the Ram property, is hosted by Eocene Ootsa Lake rhyolitic flows, tuffs and subvolcanic intrusives. Repeated low-sulphide silicification, brecciation and stockwork veining have been accompanied by up to 8.49 g/tonne gold and 42.2 g/tonne silver across 7.5 metres in trenching (Cann, 1984). It has been suggested that the Wolf deposit may have been related to maar (Andrew et al, 1986), collapse caldera (Andrew, 1988) or hot-spring (Andrew, 1988) paleo-environments.

The PEM property, located six kilometres north of the Ram property, is underlain by andesitic, dacitic and rhyolitic tuffs, presumably of the Ootsa Lake Group. These have been brecciated and altered over an area of several hundred metres, with introduction of 2-7% pyrite and lesser sphalerite. Zbitnoff (1988) reports drill intersections up to 6.3 metres grading 14.3 g/tonne gold, 27 g/tonne silver and 1.25% zinc. It appears that the PEM mineralization may also be epithermal in nature, but probably emplaced at greater depths (hence the higher sulphide and base metal contents) than the Wolf deposit.

The Fawn property, which lies 20 kilometres west of the Ram claims, hosts high-sulphide epithermal mineralization associated with felsic Eocene dykes cutting Hazelton Group andesites. Alteration and mineralization are limited to a series of recessive, easterly-trending, VLF-EM conductors with widths exceeding 20 metres and strike lengths which have been defined for up to 2,200 metres. Separate subcrop samples from the Fawn have returned assays up to 12.9 g/tonne gold and 637 g/tonne silver (Awmack, 1991).

## 6.0 PROPERTY GEOLOGY AND MINERALIZATION

### 6.1 Geology

The Ram property is largely underlain by a sequence of Lower to Middle Jurassic Hazelton Group andesitic volcanics with minor epiclastic sediments. These have been intruded by later felsic dykes thought to be feeders to the Tertiary Ootsa Lake rhyolites (Figure 4). Although no definitely stratified felsic rocks were observed previous workers (Livingstone and Harivel, 1982; Kimura, 1982; Smith, 1984) indicate the presence of felsic tuffs, breccias and flows.

Most of the property is underlain by mafic lapilli tuff and lesser breccia (Unit 1A). This unit is light brown weathering with irregular blocky fracturing. On fresh surfaces, the tuff/breccia is comprised of dark green grit-textured debris with areas of large subangular to subrounded, fragments. The tuffs contain <1% disseminated pyrite and are altered by chlorite and epidote. The breccia unit is similar with regards to composition, colour and texture of the matrix, but contains purple, silicious, feldspar porphyritic fragments. These units have been assigned to the Lower to Middle Jurassic Hazelton Group on the basis of these felsic fragments.

Outcrops of mafic flows (Unit 1B) were found on the southern flank of Tsacha Mountain, on the knob south of Good News Lake and in the saddle west of the lake. The light brown weathering flows contain euhedral feldspar phenocrysts within a purplish dark green aphanitic matrix. This unit is strongly magnetic and very siliceous. The flows encountered south of the lake are well laminated and contain 0.5 to 1.0 centimetre spherulites cored by magnetite. Minor folding was noted within the flows. The purplish colour of this unit may be indicative of hematite and subaerial deposition.

Hazelton Group epiclastics (Unit 2) were mapped on Tsacha Mountain peak. These are light grey weathering, interbedded argillite and siltstone. The beds strike northwesterly and have moderate easterly dips. The sediments are black on freshly broken surfaces and contain 2-3% finely disseminated pyrite.

Quartz eye rhyolite (Unit 3) is exposed 200 metres south of Tsacha Mountain and in a dry creek 500 metres west of Good News Lake. The rhyolite exposed in the former crosscuts stratigraphy whereas no contact relationships were observed in the latter. The rhyolite is a chalky white colour containing up to 20%, 2-3 millimetre anhedral quartz grains and subordinate euhedral feldspar phenocrysts up to 5 millimetres in length. On Figure 4, the rhyolite has been tentatively listed as Eocene but until conclusive age dates and stratigraphical relationships are determined the rhyolite unit(s) could be assigned to either the Hazelton or Ootsa

Lake Groups or both.

## 6.2 Mineralization

The mafic lapilli tuffs and interbedded sediments host sphalerite-bearing mineralization on Tsacha Mountain. Where exposed, the mineralization is poddy and often is in close proximity to rhyolite outcrops suggesting an epigenetic origin. Up to 25% pyrrhotite (463797) and strong chlorite-silica alteration accompanies the zinc mineralization. Arsenopyrite was identified in one sample (509414). A high of 3.30% zinc was obtained for sample 463795. In this sample, the nature of the mineralization is not known although the mineralization appears to be crudely layered. Unfortunately, the outcrop exposure is too limited and of too poor quality to determine the significance of this occurrence.

A second area of significant mineralization was discovered in the southeast corner of the property. Over an area of 200x300 metres, potassium feldspar, chlorite, epidote and garnet alteration occur with variable amounts of specular hematite, magnetite, pyrite and chalcopyrite. Local breccia and veins of skarnified-looking material contain massive to semi-massive pyrite and magnetite. The rock samples returned weakly anomalous gold, silver, copper and zinc values. The mineral assemblage resembles that of alkalic porphyries elsewhere in the Intermontane Belt.

## 7.0 DISCUSSION AND CONCLUSIONS

The Ram property is underlain by Hazelton Group volcanic flow and fragmental rocks which are in turn overlain by interbedded argillite and siltstone. Where these units have been cut by rhyolite dykes, irregular mineralized lenses of sphalerite and pyrrhotite occur. Previous workers have noted stratified felsic rocks, although none were observed during the current program.

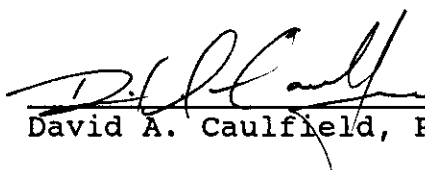
If the presence of rhyolite tuffs and breccias can be confirmed, the volcanogenic massive sulphide potential of the property will need to be examined. A similar Early Jurassic mafic-felsic volcanic sequence overlain by marine sediments is present at other properties in the Fawnie Range where mineralization related to volcanogenic massive sulphides is suspected. The three generations of overlapping soil geochemical surveys have identified a broad geochemical trend of anomalous zinc, copper, lead, arsenic and silver values on the property. This soil geochemical signature is similar to the other noted Fawnie Range properties. In any event, the source of these soil anomalies has not been adequately explained.

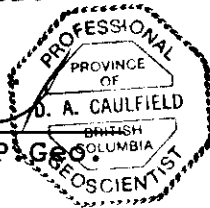
The potential for alkalic copper-gold porphyry type mineralization represents a new target type for the Nechako

Plateau. In the southeast corner of the property, the presence of garnet, potassium feldspar, magnetite, chlorite and epidote as alteration minerals is typical of an alkalic porphyry environment. An alternative explanation is that these alteration products, in particular garnet, are indicative of "Capoose-type" mineralization, related to Quanchus Intrusions. These Late Cretaceous to Paleocene batholiths of granitic to granodioritic composition have been mapped cutting Hazelton Group rocks west of the Ram property. Sample results of mineralized float and outcrop returned only weakly anomalous metal values but the widespread nature of the alteration requires further investigation. Of note, the highest gold soil sample results (up to 420 ppb) came from the Placer survey stations located downslope from this area.

Finally, logging is scheduled to commence on the Ram claims in 1993, with a cut block immediately north of Good News Lake. This improved access will make future exploration cost-effective.

Respectfully submitted,  
EQUITY ENGINEERING LTD.

  
David A. Caulfield, P. Geoscientist



Vancouver, British Columbia  
September, 1992

**APPENDIX A**

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**APPENDIX B**

**STATEMENT OF EXPENDITURES**

**STATEMENT OF EXPENDITURES  
RAM 1-2 CLAIMS  
June 15 to 19, 1992**

**PROFESSIONAL FEES AND WAGES:**

David A. Caulfield, P. Geo.		
4 days @ \$375/day	\$ 1,500.00	
Tom Bell, Prospector		
5 days @ \$250/day	<u>1,250.00</u>	\$ 2,750.00

**EQUIPMENT RENTAL:**

4x4 F250 Truck		
5 days @ \$80/day	\$ 400.00	
Fly Camp		
7 mandays @ \$25/day	175.00	
Handheld Radios		
2 days @ \$5/day	<u>10.00</u>	585.00

JOINT MOBILIZATION COSTS: (Pro-rated between three clients in the Fawnie Range Area)		1,335.46
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**CHEMICAL ANALYSES:**

Rock Geochemical Analyses		
24 @ \$15.90 each	\$ 381.60	
Assay		
1 @ 6.25	<u>6.25</u>	387.85

**EXPENSES:**

Materials and Supplies	\$ 83.72	
Maps and Publications	62.76	
Printing and Reproductions	78.43	
Camp Food	139.54	
Automotive Fuel	16.58	
Automotive Expenses	30.77	
Telephone Distance Charges	11.81	
Freight	42.96	
Expediting	<u>114.85</u>	581.42

**MANAGEMENT FEES:**

15% on expenses		145.39
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REPORT (estimated)		<u>2,000.00</u>
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SUBTOTAL:		\$ 7,785.12
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**GST:**

7% on subtotal		<u>544.95</u>
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TOTAL:		\$ 8,330.07 =====
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## APPENDIX C

### ROCK SAMPLE DESCRIPTIONS

#### MINERALS AND ALTERATION TYPES

AS	arsenopyrite	BA	barite	BI	biotite
CA	calcite	CB	Fe-carbonate	CC	chalcocite
CL	chlorite	CP	chalcopyrite	CY	clay
DI	diopside	EP	epidote	GA	garnet
GE	goethite	GL	galena	HE	hematite
HS	specularite	JA	jarosite	MC	malachite
MG	magnetite	MN	Mn-oxides	MS	sericite
PO	pyrrhotite	PY	pyrite	QZ	quartz
SI	silica	SP	sphalerite	TT	tetrahedrite

#### ALTERATION INTENSITIES

s	strong	m	medium	w	weak
tr	trace				

Property : Ram

NTS : 93F/2W

Date : 09/22/92

Sample No.	Location :	5883 920 N	Type :	Grab	Alteration :	sCL, sEP	Au	Ag	As	Cu	Pb	Zn	
		374 555 E		Strike Length Exp. :	2.0 m	Sulphides :	3-5%PY	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	
463791	Elevation:	1480 m		Sample Width :	4.0 m	Oxides :	GE	10.	<0.2	2.	13.	4.	52.
	Orientation:	/		True Width :	? m	Host :	Dark green andesite						

Comments : Pyrite occurs as disseminations and stringers in epidote altered andesite. Outcrop exposed on small rise.

Sample No.	Location :	5883 795 N	Type :	Grab	Alteration :	sSI	Au	Ag	As	Cu	Pb	Zn	
		374 315 E		Strike Length Exp. :	0.5 m	Sulphides :	5%PY	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	
463792	Elevation:	1490 m		Sample Width :	30 cm	Oxides :	GE, JA, Pb oxides? Scorod	25.	0.2	16.	27.	22.	12.
	Orientation:	/		True Width :	? m	Host :	Silicified andesite? Rhyolite?						

Comments : Limited exposure on saddle in area of anomalous Placer soil geochem. Yellow weathering product - Pb? As?

Sample No.	Location :	5884 110 N	Type :	Select	Alteration :	sCL, mSI	Au	Ag	As	Cu	Pb	Zn	
		374 350 E		Strike Length Exp. :	3.0 m	Sulphides :	10%PY	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	
463793	Elevation:	1530 m		Sample Width :	20 cm	Oxides :	GE, JA	20.	0.8	94.	429.	10.	26.
	Orientation:	110 / ?		True Width :	20 cm	Host :	Andesitic lapilli tuff						

Comments : Best mineralization (PY) concentrated in 10cm band. Zone is exposed at edge of a tight draw. Full width of mineralization is not exposed.

Sample No.	Location :	5885 645 N	Type :	Grab	Alteration :	sSI	Au	Ag	As	Cu	Pb	Zn	
		375 340 E		Strike Length Exp. :	2 x 3 m	Sulphides :	<1%CP, 7-10%PO, trSP	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	
463794	Elevation:	1720 m		Sample Width :	2.0 m	Oxides :	GE	195.	<0.2	420.	152.	6.	5610.
	Orientation:	/		True Width :	2.0 m	Host :	Altered rhyolite						

Comments : 2 x 3m pod of rusty pyrrhotite rich rock in rhyolite unit; may be altered fragment within rhyolite.

Sample No.	Location :	5885 865 N	Type :	Select	Alteration :	sCL, ?MS, mSI	Au	Ag	As	Cu	Pb	Zn	
		375 255 E		Strike Length Exp. :	2.0 m	Sulphides :	10-15%PO, 3-5%SP	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	
463795	Elevation:	1720 m		Sample Width :	15 cm	Oxides :	GE	65.	1.0	12.	160.	22.	>10000
	Orientation:	135 / 20 NE		True Width :	15 cm	Host :	Altered sediments						

Comments : Zone exposed in stunted trees south of pond at a bearing of 015o from peak. Total altered zone at least 1.0 metres wide, although sample is from core of zone.

Sample No.	Location :	5885 742 N	Type :	Grab	Alteration :	sCL, mCY, sSI	Au	Ag	As	Cu	Pb	Zn	
		375 330 E		Strike Length Exp. :	1.0 m	Sulphides :	trCP, 5%PO, 1%SP	(ppb)	(ppm)	(ppm)	(ppm)	(ppm)	
463796	Elevation:	1720 m		Sample Width :	1.0 m	Oxides :	GE	45.	1.2	18.	253.	20.	2330.
	Orientation:	? /		True Width :	? m	Host :	Altered sediments						

Comments : Gossanous outcrop barely exposed under moss on cut line (320o line) which cuts just east of main peak. Cut off to south.

Property : Ram

NTS : 93F/2W

Date : 09/22/92

Sample No. Location : 5885 600 N Type : Grab Alteration : sCL, sSI Au Ag As Cu Pb Zn  
 375 340 E Strike Length Exp. : 5.0 m Sulphides : trCP, 25-30%PO (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463797 Elevation: 1680 m Sample Width : 5.0 m Oxides : GE, JA 145. 0.8 214. 303. 4. 8950.  
 Orientation: 020 / 60 SE True Width : 1.5-2 m Host : Altered andesitic lapilli tuff

Comments : Pyrrhotite rich zone lies along dip slope of hill adjacent to quartz eye rhyolite unit. Extremely hard and smooth faced  
 - difficult to sample. Cut off by rhyolite to south?

Sample No. Location : 5883 250 N Type : Float Alteration : sEP Au Ag As Cu Pb Zn  
 375 880 E Strike Length Exp. : m Sulphides : 60%MG, 1%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463798 Elevation: 1465 m Sample Width : m Oxides : HE, JA, MC 110. 1.8 46. 74. 12. 212.  
 Orientation: / True Width : m Host : Laminated volcanic

Comments : Talus material. Sample of heavy magnetite veined material.

Sample No. Location : 5883 250 N Type : Float Alteration : sEP, sGA Au Ag As Cu Pb Zn  
 375 880 E Strike Length Exp. : m Sulphides : <1%CP, 25%MG, 2%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 463799 Elevation: 1465 m Sample Width : m Oxides : GE, trMC 100. 13.4 168. 2180 18. 1460.  
 Orientation: / True Width : m Host : Feldspar porphyry - syenite

Comments : Sample of strong epidote/garnet (brown) alteration in talus slope. Material looks typical of skarn.

Sample No. Location : 5883 740 N Type : Grab Alteration : CY, wQZ Au Ag As Cu Pb Zn  
 374 870 E Strike Length Exp. : m Sulphides : 1-2%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 509406 Elevation: 4650 ft Sample Width : 1 m Oxides : mGE, mJA, mMN 30. 1.2 4. 41. 16. 96.  
 Orientation: / True Width : m Host : Rhyolite

Comments : Taken on north west side of small dry gully.

Sample No. Location : 5883 920 N Type : Float Alteration : m-sCL Au Ag As Cu Pb Zn  
 374 435 E Strike Length Exp. : m Sulphides : <1%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 509407 Elevation: 4925 ft Sample Width : m Oxides : mGE, wJA, mMN 20. 0.2 8. 30. 2. 86.  
 Orientation: / True Width : m Host : Andesite breccia

Comments : South facing slope. Two float boulders below outcrop in saddle. Felted green mineral (chlorite or actinolite).

Sample No. Location : 5883 885 N Type : Grab Alteration : s?CY, SMS, boxwork Au Ag As Cu Pb Zn  
 374 400 E Strike Length Exp. : 1 m Sulphides : 5-10%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 509408 Elevation: 4950 ft Sample Width : 15 cm Oxides : sGE, sJA 15. <0.2 30. 156. 18. 222.  
 Orientation: 050 / 15 NW True Width : 15 cm Host : Rhyolite

Comments : Shear zone is 15cm wide by 1m long. Sample taken along shear for 1m. Extensive boxwork; most pyrite is weathered out.

Property : Ram

NTS : 93F/2W

Date : 09/22/92

Sample No. Location : 5884 415 N Type : Grab Alteration : sCL, wCY, mEP Au Ag As Cu Pb Zn  
 374 410 E Strike Length Exp. : m Sulphides : 15-20%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 509409 Elevation: 5100 ft Sample Width : 60 cm Oxides : sGE, sJA 15. 0.4 <2 253. 52. 96.  
 Orientation: 005 / 60 W True Width : 60 cm Host : Andesite breccia  
 Comments : North side of small bowl. Grab from outcrop. 15-20m radius area of this material. Crackle zone.

Sample No. Location : 5884 415 N Type : Grab Alteration : CL, CY, EP Au Ag As Cu Pb Zn  
 374 410 E Strike Length Exp. : m Sulphides : 5-7%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 509410 Elevation: 5100 ft Sample Width : 20 cm Oxides : sGE, mJA, wMN 20. 1.2 4. 101. 118. 58.  
 Orientation: 005 / 60 W True Width : 5 m Host : Andesite breccia  
 Comments : Crackle zone. 5m above 509409. Outcrop extends for 15-20m.

Sample No. Location : 5885 170 N Type : Grab Alteration : wCL, sCY, mMS Au Ag As Cu Pb Zn  
 374 630 E Strike Length Exp. : 2 m Sulphides : 2-3%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 509411 Elevation: 4900 ft Sample Width : 1 m Oxides : mGE, mJA 15. 0.2 <2 150. 8. 70.  
 Orientation: / True Width : 1 m Host : Andesite  
 Comments : Taken over 1m radius from shattered outcrop under tree roots. Strong alteration over 2m radius. East side of small creek. Boxwork.

Sample No. Location : 5884 870 N Type : Float Alteration : mCL, mMS Au Ag As Cu Pb Zn  
 375 350 E Strike Length Exp. : m Sulphides : <1%PY (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 509412 Elevation: 5150 ft Sample Width : m Oxides : mGE 20. <0.2 10. 75. 4. 34.  
 Orientation: / True Width : m Host : Rhyolite  
 Comments : Located at tip of south facing nose.

Sample No. Location : 5885 540 N Type : Float Alteration : CL Au Ag As Cu Pb Zn  
 375 165 E Strike Length Exp. : m Sulphides : 20-30%PO, 1-2%SP (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 509413 Elevation: 5500 ft Sample Width : m Oxides : mGE, mJA 25. <0.2 454. 152. 4. 8850.  
 Orientation: / True Width : m Host : Andesite  
 Comments : In talus below gossanous outcrop.

Sample No. Location : 5885 685 N Type : Float Alteration : CL Au Ag As Cu Pb Zn  
 375 050 E Strike Length Exp. : m Sulphides : <1%AS, trCP, 10-15%PO (ppb) (ppm) (ppm) (ppm) (ppm) (ppm)  
 509414 Elevation: 5500 ft Sample Width : m Oxides : mGE, mJA 20. 0.2 408. 110. 4. 160.  
 Orientation: / True Width : m Host : Tuff  
 Comments : Two rocks in talus on west side of gossanous knob.



**APPENDIX D**

**CERTIFICATES OF ANALYSIS**





# Chemex Labs Ltd.

Analytical Chemists \* Geochemists \* Registered Assayers  
212 Brooksbank Ave., North Vancouver  
British Columbia, Canada V7J 2C1  
PHONE: 604-984-0221

EQUITY ENGINEERING LTD.

207 - 675 W. HASTINGS ST.  
VANCOUVER, BC  
V6B 1N2

A9216416

Comments:

CERTIFICATE

A9216416

EQUITY ENGINEERING LTD.

Project: SGL92-01  
P.O. #:

Samples submitted to our lab in Vancouver, BC.  
This report was printed on 29-JUN-92.

## SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	25	Geochem ring to approx 150 mesh
274	25	0-15 lb crush and split
229	25	ICP - AQ Digestion charge

## ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	25	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
2118	25	Ag ppm: 32 element, soil & rock	ICP-AES	0.2	200
2120	25	As ppm: 32 element, soil & rock	ICP-AES	2	10000
2123	25	Bi ppm: 32 element, soil & rock	ICP-AES	2	10000
2128	25	Cu ppm: 32 element, soil & rock	ICP-AES	1	10000
2131	25	Hg ppm: 32 element, soil & rock	ICP-AES	1	10000
2136	25	Mo ppm: 32 element, soil & rock	ICP-AES	1	10000
2140	25	Pb ppm: 32 element, soil & rock	ICP-AES	2	10000
2141	25	Sb ppm: 32 element, soil & rock	ICP-AES	2	10000
2149	25	Zn ppm: 32 element, soil & rock	ICP-AES	2	10000



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Analytical Chemists \* Geochemists \* Registered Assayers  
 212 Brooksbank Ave., North Vancouver  
 British Columbia, Canada V7J 2C1  
 PHONE: 604-984-0221

To: EQUITY ENGINEERING LTD.  
 207 - 675 W. HASTINGS ST.  
 VANCOUVER, BC  
 V6B 1N2

Project : SGL92-01  
 Comments:

Page Number : 1  
 Total Pages : 1  
 Certificate Date: 29-JUN-92  
 Invoice No. : 19216416  
 P.O. Number :  
 Account : EIA

## CERTIFICATE OF ANALYSIS A9216416

SAMPLE	PREP CODE		Au ppb FA+AA	Ag ppm	As ppm	Bi ppm	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Zn ppm
463791	205	274	10	< 0.2	2	4	13	< 1	2	4	< 2	52
463792	205	274	25	0.2	16	10	27	< 1	4	22	< 2	12
463793	205	274	20	0.8	94	36	429	< 1	7	10	4	26
463794	205	274	195	< 0.2	420	4	152	< 1	1	6	< 2	5610
463795	205	274	65	1.0	12	14	160	1	6	22	< 2	>10000
463796	205	274	45	1.2	18	12	253	2	1	20	< 2	2330
463797	205	274	145	0.8	214	34	303	< 1	< 1	4	< 2	8950
463798	205	274	110	1.8	46	22	74	< 1	5	12	16	212
463799	205	274	100	13.4	168	44	2180	< 1	1	18	8	1460
509406	205	274	30	1.2	4	12	41	< 1	3	16	< 2	96
509407	205	274	20	0.2	8	< 2	30	1	< 1	2	< 2	86
509408	205	274	15	< 0.2	30	4	156	< 1	3	18	6	222
509409	205	274	15	0.4	< 2	4	253	< 1	1	52	6	96
509410	205	274	20	1.2	4	10	101	< 1	1	118	4	58
509411	205	274	15	0.2	< 2	40	150	< 1	1	8	2	70
509412	205	274	20	< 0.2	10	14	75	< 1	< 1	4	2	34
509413	205	274	25	< 0.2	454	2	152	3	< 1	4	< 2	8850
509414	205	274	20	0.2	408	< 2	110	1	1	4	4	160
509415	205	274	10	< 0.2	44	< 2	125	1	< 1	10	< 2	4740
509416	205	274	10	< 0.2	8	< 2	6	< 1	< 1	8	< 2	90
509417	205	274	30	1.4	4	2	926	2	1	< 2	< 2	188
509418	205	274	130	1.6	10	< 2	162	< 1	1	14	< 2	168
509419	205	274	125	6.4	88	4	573	< 1	3	24	6	138
509420	205	274	130	3.2	54	102	120	< 1	< 1	12	20	138

CERTIFICATION:

*Yhai J Ma*



# Chemex Labs Ltd.

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British Columbia, Canada V7J 2C1  
PHONE: 604-984-0221

EQUITY ENGINEERING LTD.

207 - 675 W. HASTINGS ST.  
VANCOUVER, BC  
V6B 1N2

A9216831

Comments:

**CERTIFICATE**

**A9216831**

EQUITY ENGINEERING LTD.

Project: SGL92-01  
P.O. #:

Samples submitted to our lab in Vancouver, BC.  
This report was printed on 7-JUL-92.

## SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
244	1	Pulp; prev. prepared at Chemex

## ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
316	1	Zn %: Reverse Aqua-Regia digest	AAS	0.01	100.0



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EQUITY ENGINEERING LTD.

207 - 675 W. HASTINGS ST.  
VANCOUVER, BC  
V6B 1N2

Project : SGL92-01  
Comments:

Page No : 1  
Total Pages : 1  
Certificate Date: 07-JUL-92  
Invoice No. : I9216831  
P.O. Number :  
Account : EIA

## CERTIFICATE OF ANALYSIS

A9216831

SAMPLE	PREP CODE		Zn %									
463795	244	--	3.30									

CERTIFICATION:

*Alhista*

**APPENDIX E**

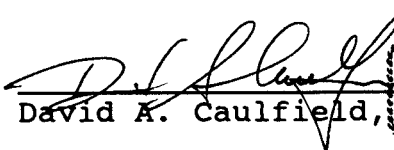
**GEOLOGIST'S CERTIFICATE**

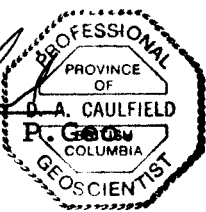
**GEOLOGIST'S CERTIFICATE**

I, DAVID A. CAULFIELD, of 3142 Gambier Street, Coquitlam, in the Province of British Columbia, DO HEREBY CERTIFY:

1. THAT I am a Consulting Geologist with offices at Suite 207, 675 West Hastings Street, Vancouver, British Columbia.
2. THAT I am a graduate of the University of British Columbia with a Bachelor of Science degree in Geology.
3. THAT I am a Professional Geoscientist registered in good standing with the Association of Professional Engineers and Geoscientists of the Province of British Columbia.
4. THAT this report is based on fieldwork carried out under my direction in June 1992, government publications and assessment reports filed with the Province of British Columbia. I have examined the property in the field.

DATED at Vancouver, British Columbia, this 24<sup>th</sup> day of September, 1992.

  
David A. Caulfield, P. Geoscientist



The seal is an octagonal stamp with a dashed border. The text inside the seal reads: 'PROFESSIONAL' at the top, 'PROVINCE OF' in the middle, 'D. A. CAULFIELD' in the center, 'P. Geoscientist' below the name, and 'COLUMBIA' and 'GEOSCIENTIST' at the bottom.

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

22,539

1992 ROCK GEOCHEMICAL ANALYSES

Sample	Au (ppb)	Ag (ppm)	As (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
463791	10	<0.2	2	13	4	52
463792	25	0.2	16	27	22	12
463793	20	0.8	94	429	10	26
463794	195	<0.2	420	152	6	5610
463795	65	1.0	12	160	22	3.30%
463796	45	1.2	18	253	20	2330
463797	145	0.8	214	303	4	8950
463798	110	1.8	46	74	12	212
463799	100	13.4	168	2180	18	1460
509406	30	1.2	4	41	16	96
509407	20	0.2	8	30	2	86
509408	15	<0.2	30	156	18	222
509409	15	0.4	<2	253	52	96
509410	20	1.2	4	101	118	58
509411	15	0.2	<2	150	8	70
509412	20	<0.2	10	75	4	34
509413	25	<0.2	454	152	4	8850
509414	20	0.2	408	110	4	160
509415	10	<0.2	44	125	10	4740
509416	10	<0.2	8	6	8	90
509417	30	1.4	4	926	<2	188
509418	130	1.6	10	162	14	168
509419	125	6.4	88	573	24	138
509420	130	3.2	54	120	12	138

LEGEND

LITHOLOGIES

MIOCENE

- Endako Group
- 4 Diabase dykes

EOCENE

- Ootsa Lake Group ?
- 3 Rhyolite dykes

EARLY TO MIDDLE JURASSIC

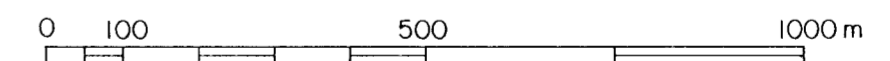
- Hazelton Group
- 2 Epiclastics - argillite, siltstone, pebble conglomerate
- 1 Volcanics
  - 1A Mafic volcanoclastics - tuff, breccia
  - 1B Flows

ALTERATION AND MINERALIZATION

AS Arsenopyrite	CL Chlorite	CY Clay
EP Epidote	GA Garnet	GE Goethite
HS Specular Hematite	MG Magnetite	MS Sericite
PO Pyrrhotite	PY Pyrite	QZ Quartz
SI Silica	SP Sphalerite	

SYMBOLS

- Rock outcrop
- Geological boundary (defined, inferred)
- Fault (inferred)
- Bedding with dip
- Rock sample (float, outcrop)
- Fossil location
- Legal corner post (located)



SLEEPING GOLD LTD.

RAM 1 & 2 CLAIMS  
COMPILATION MAP

BRITISH COLUMBIA

EQUITY ENGINEERING LTD.

DRAWN: /J.J.E.	MINING DIV.: OMINECA	FIGURE 4
N.T.S.: 93F/2W	SCALE: 1:10 000	
DATE: AUG., 1992	REVISED:	

