004582

ZUMAR 2 (082LSW111) **By R.M. Barker**

(Fig. No.)

LOCATION: Lat. 50° 01' Long. 119° 38' (82L/4E)

VERNON MINING DIVISION. Approximately 17km NW of Kelowna.

CLAIMS: ZUMAR 2-4, ZUMAR GOLD.

ACCESS: From Kelowna via the paved Westside Road (along the west shore of Okanagan Lake) for 10km, then by gravel logging roads for a further 20km.

OWNER: BLUESTAR HOLDINGS.

OPERATOR: GOYETTE INVESTMENTS LTD.

COMMODITIES: Gold, Silver.

INTRODUCTION

The known mineralisation at the Zumar property is associated with a mesothermal-style vein, similar in character to a number of others found in Mesozoic or older volcanics along the west side of Okanagan Lake, north from Kelowna. The Zumar was first pegged in 1979, and thus rates as one of the most recent discoveries in the area; most of the mineralised quartz veins known in this area were discovered before 1930.

EXPLORATION HISTORY

The earliest recorded discovery of metallic mineralisation in the immediate Zumar area was about 8km to the east at the Blue Hawk property, where gold and silver occur with base metals in shear-hosted quartz veins. During the late 1960s and 1970s, considerable exploration effort was expended on porphyry molybdenum and intrusive-hosted disseminated copper prospects near Whiterocks Mountain, about 8km west of the Zumar property. However, no other significant precious metal-hosting quartz vein occurrences were found until 1979 when the Zumar 2 claim, centered on the Zumar vein outcrop, was staked by Zumar Resources Inc.

1980 - Bulldozer trenching and stripping of the vein indicated an outcrop length of 230m. Open-cut mining methods were used to obtain bulk samples of the vein material for metallurgical testing. Two shipments, totalling 55.24t of hand-picked ore, were delivered to the Trail smelter for processing. A further bulk sample was submitted to Kamloops Research and Assay Laboratory Ltd for flotation testing.

1982 - A diamond drilling program, comprising 152.4m of BQ drilling in four holes, was undertaken in the open-cut area. These holes tested the vein to approximately 30m depth.

1986 - Skyworld Resources and Development Ltd acquired the Zumar property and conducted magnetometer and soil geochemical surveys over a large part of the property. Subsequent more-detailed geochemical surveys were carried out in two areas to further define copper-silver anomalies revealed by the earlier survey. Some trenching and geological mapping were also carried out at this stage. In December 1986, a small diamond drilling program (one hole, 95.1m) was conducted in the open-cut area to test the vein to 60m depth.

1987 to 1989 - Skyworld Resources and Whitewater Resources Ltd. conducted geophysical (VLF-EM and magnetometer) and soil geochemical surveys over some previously untested parts of the property (Wood, 1989). Results of this work were not available at the time of writing.

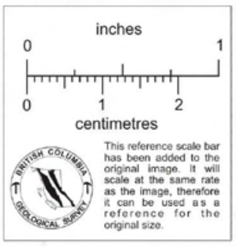
CURRENT WORK

Since the acquisition of the property by Bluestar Holdings in 1990, soil geochemical surveys and geological mapping have been carried out over parts of the property not previously examined in detail. The results of this work were not available at the time of writing.

REGIONAL GEOLOGY

The property, located northwest of Kelowna, on the west side of Okanagan Lake, lies close to the eastern margin of the Quesnellia terrane. The terrane boundary in this area is the west-dipping Okanagan Valley Fault, a major, low angle, crustal shear. Sense of movement on the fault is normal. The fault has been interpreted as an Eocene "detachment" fault (Tempelman-Kluit and Parkinson, 1986).

The Zumar property lies near the northern margin of a large west-northwest trending inlier of sediments and volcanics which cut the northern part of the Pennask Batholith (Fig. 1).The rocks in this area of the inlier are assigned by Wheeler and McFeely (1987) to the Devonian to Triassic Harper Ranch Group, and Okulitch (1979) mapped them as a predominantly sedimentary



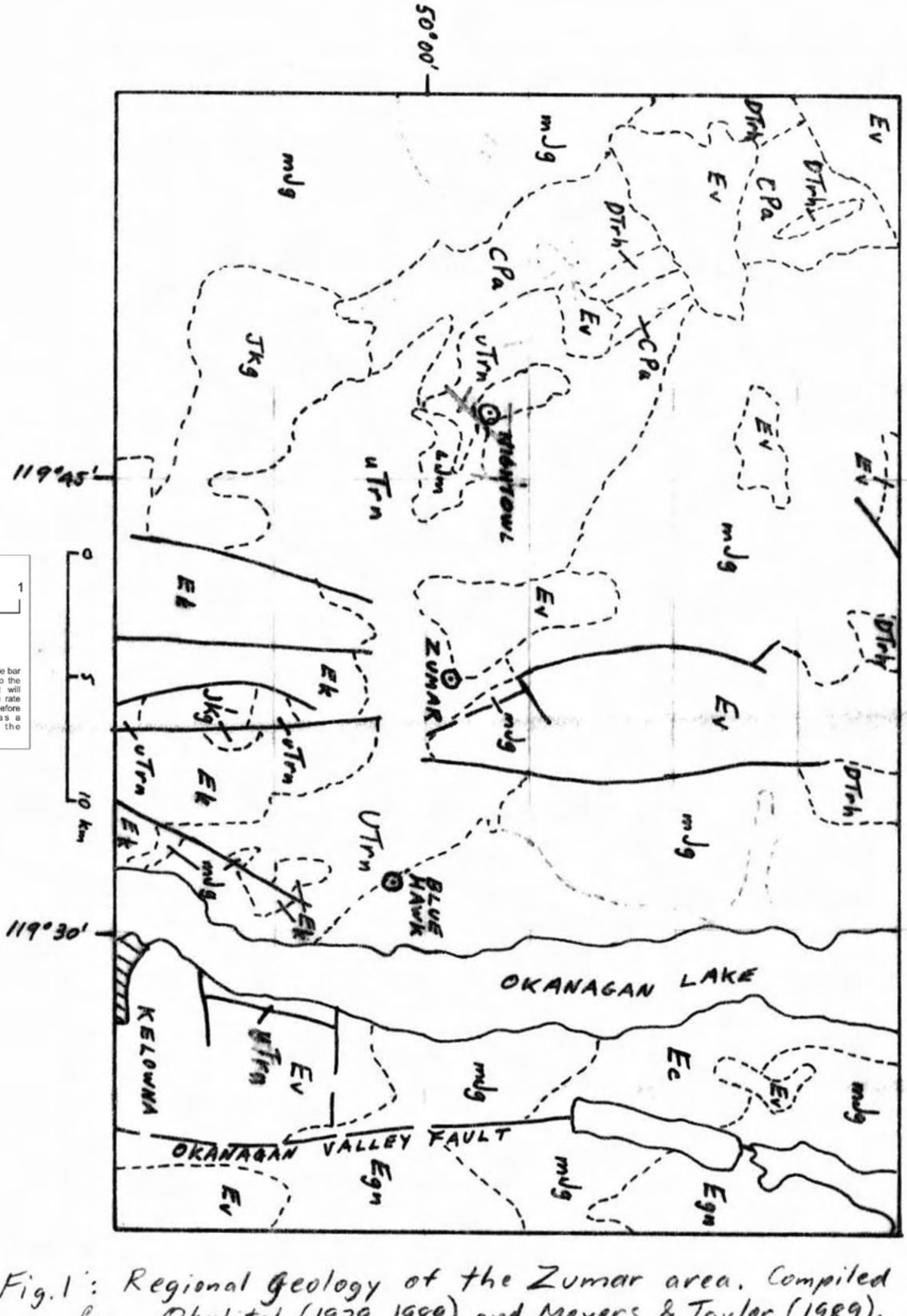


Fig. 1: Regional Geology of the Zumar area. Compiled from Okulitch (1979, 1989), and Meyers & Taylor (1989).

Legend

EOCENE

Ev	Undifferentiated volcanic rocks; may include Kamloops Group.
Egn	"OKANAGAN GNEISS" (orthogneiss grading to mylonite)
Ec	CORYELL SYENITE and equivalent (syenite and quartz monzonite)

CRETACEOUS AND/OR JURASSIC

JKg	OKANAGAN BATHOLITH (Biotite granodiorite and granite)

JURASSIC

lJm	Syenite, pyroxenite and quartz monzonite
mJg	NELSON PLUTONIC ROCKS (granodiorite, quartz diorites and granite)

TRIASSIC

uTrn	NICOLA GROUP (volcanic and sedimentary rocks)

DEVONIAN TO TRIASSIC

DTrh	HARPER RANCH GROUP (Volcaniclastic sedimentary rocks, minor volcanics, limestone)

CARBONIFEROUS OR OLDER

CPa	ANARCHIST GROUP (metavolcanics and sediments)

- - - - Geological boundary

——— Fault

sequence which he deemed to be part of the Thompson Assemblage (locally equivalent to the Harper Ranch Group).

However Tempelman-Kluit (1989), in mapping the Penticton sheet area to the south of the property, included the rocks as part of the Nicola Group, and Meyers and Taylor (1989) extrapolated this interpretation a short distance northward, encompassing the area of the Zumar property. The predominance of basic volcanics at the site tends to support correlation with the volcanic rocks of the Nicola Group. Some previous workers on the Zumar property considered the rocks to be part of the Tertiary volcanics (?Kamloops Group) which have been mapped nearby. However, the apparent intrusion by granodiorite ?dykes supports a pre-Jurassic age for these rocks.

Mid-Jurassic plutonic rocks of the Pennask Batholith are in intrusive contact with the Harper Ranch / Nicola Group inlier about 1.5km east and 2.5km north of the property (Church, 1980). Middle and late Jurassic intrusives crop out 7 to 10km to the south and west.

Dykes, ranging in composition from andesitic to felsic and in probable age from Jurassic to Eocene, cut the rocks at the property.

Equivalents of the Eocene Kamloops Group, comprising volcanics and minor sediments, unconformably overlie all older units in the area. An outlier of the sediments was mapped about 800m east of the open cut. Extensive remnants and fault-bounded blocks of the Eocene unit extend north and west from the property and also occur within 1.5km to the east (Fig. 1)(Church, 1980).

PROPERTY GEOLOGY

The Zumar property is centered on the open-cut excavation of a 0.3 to 0.4m wide vein of sparsely mineralised, white, bull quartz. The vein strikes approximately 100° and dips at 75 to 80° to the south; it is essentially massive, with sparse small vughs and minor zones of breccia and shattering. Vein contacts are generally sharp. Some small splays up to 50mm wide occur, and a parallel vein, about 250mm wide, is exposed near the western end of the open cut (Fig. 2). The vein has a known strike length of 230m (of which some 80m at its western end is exposed in the cut), and has been intersected by drilling at depths up to 65m.

The vein is hosted by a sequence of basaltic to andesitic flow rocks, some displaying amygdaloidal flow tops (Wilmot, 1987). The host rocks are strongly fractured in the vicinity of the vein, and heavy hematite coating of fractures is a prominent feature of the site.

At least three dykes occur in close proximity to the Zumar showing:

Granodiorite, probably in the form of a dyke, was mapped in a trench about 60m north of the open cut (Wilmot, 1987). Similar

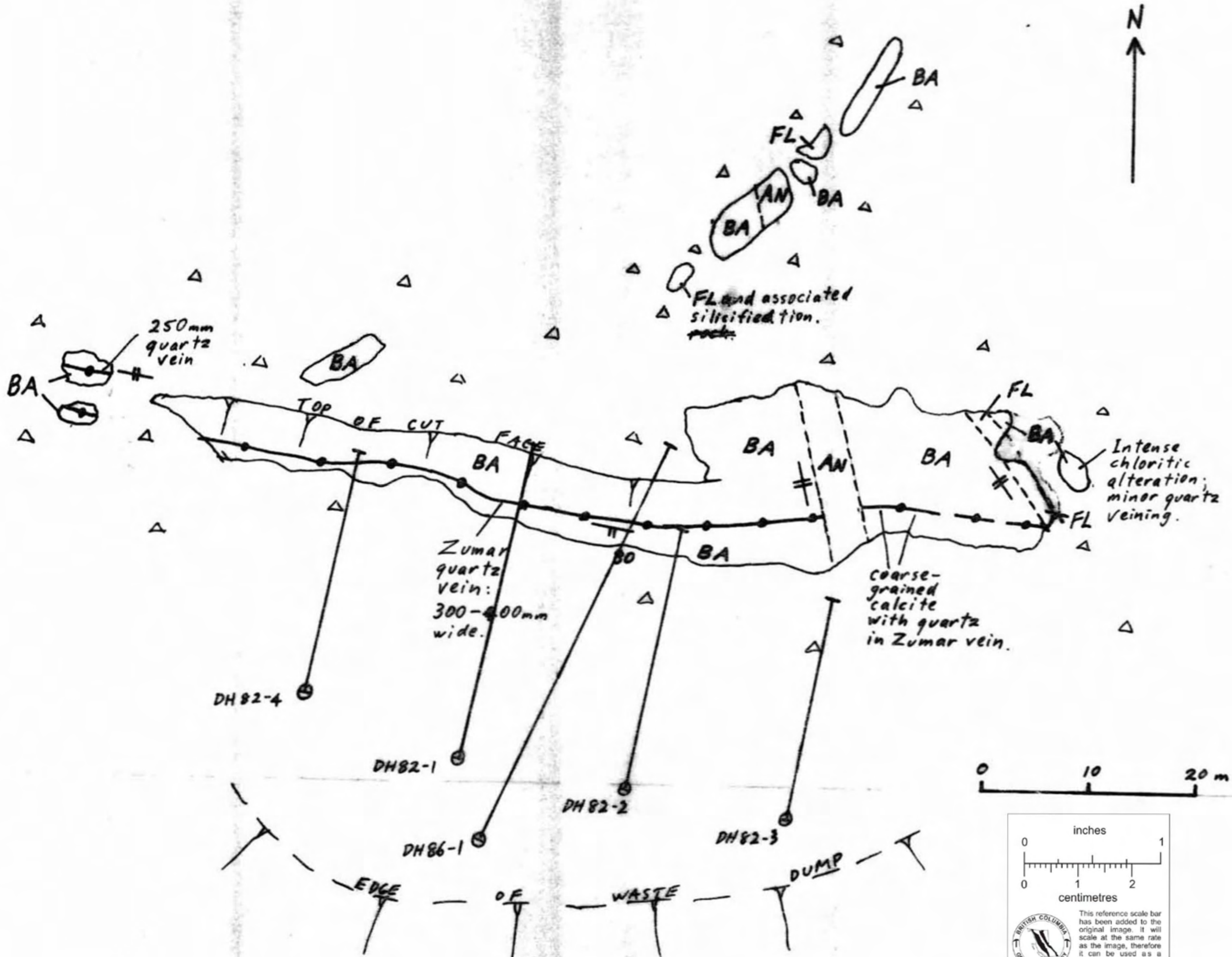
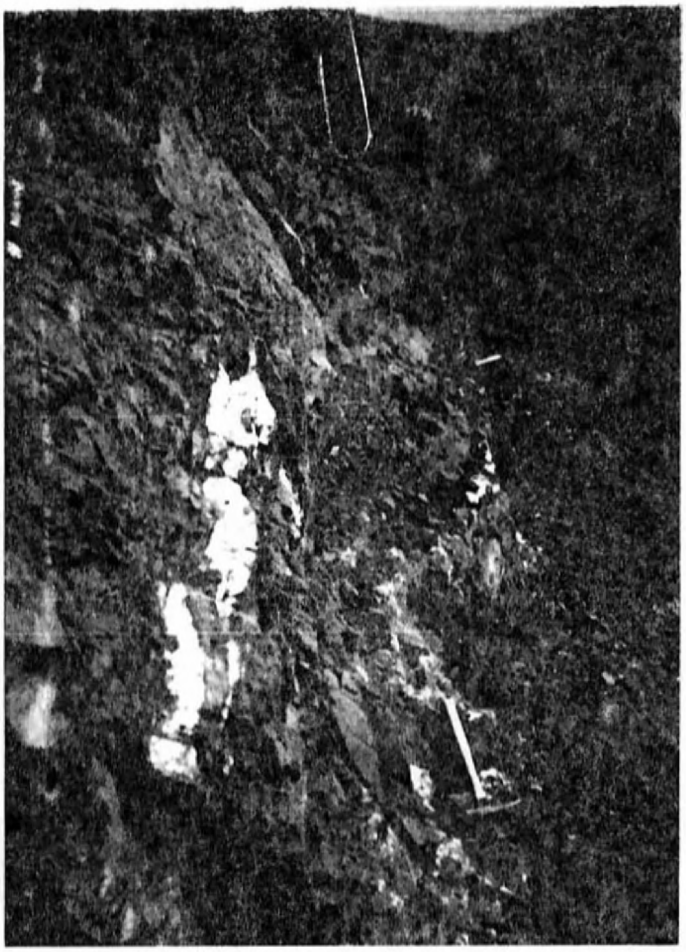


Figure 2. : Plan of Zumar showing; (drillholes from Wilmot (1987); locations approximate)

Legend

BA	Basalt
AN	Andesite (dyke)
FE	Felsite dyke
	Quartz vein
80	Strike and dip of vein or dyke
	Overburden
	Geological boundary
	Outcrop boundary
DH82-2	Drillhole and number



~~Fig.~~

Plate. 1. Zumar vein and open cut. Hammer rests on main vein; vein in left foreground is a 50–75mm wide splay. View towards the east.

Plate. 2. Zumar vein, showing sharp contact with wall rock.

(Rick. the colour in these prints is poor compared to the original slides (too green). However, its doubtful if the contrast can be improved!)

rock is exposed in a road cut 120m further to the northwest. It is presumed to be associated with the nearby Jurassic pluton.

A fine-grained felsite dyke, 1.5 to 2.0m wide, is exposed on the northern side of the vein near the eastern extremity of the open cut (Fig. 2). The dyke dips steeply and trends about 325°. A similar dyke and associated intense alteration was encountered at depth in one drillhole (DH86-1) on the southern side of the vein (Wilmot, 1987). This dyke is probably also Jurassic in age.

A 3.5m wide andesite dyke cuts the vein near the eastern end of the open cut (Fig. 2). It also dips steeply, and trends about 345°. The andesite is brown, highly weathered, and fine-grained, with biotite phenocrysts to 3mm and elongate calcite amygdules up to 20mm in length. This dyke is similar in lithology to part of the Tertiary Kitley Lake Formation which has been mapped in the Penticton sheet area to the south.

Only minor faulting is evident in the vicinity of the Zumar vein even though major north-trending normal faults are prevalent in the region; these normal faults control the distribution of the Eocene volcanics. Slight offset of the vein is apparent at the andesite dyke, and fault gouge was logged adjacent to the footwall of the vein in one drillhole.

MINERALISATION AND ALTERATION

Gold and silver occur in association with pyrite and chalcopyrite in the Zumar quartz vein. Up to 2 or 3 percent pyrite, some of which is coarse-grained, and lesser chalcopyrite are irregularly distributed in the vein. Minor galena and sphalerite have been noted in concentrates. Smelter returns from two shipments of hand-picked vein material, totalling 55.24t, gave an average yield of 4.73g/t gold and 42.17g/t silver.

Systematic channel sampling of the vein over a length of 59.5m gave the following assay results (14 samples assayed):

	Gold (g/t)	Silver (g/t)
Maximum value	34.63	192.34
Minimum value	0.14	1.03
Mean	6.38	42.17
Median	2.81	20.23

Assays of drillhole samples lie within the same range.

Disseminated pyrite is widely distributed in the host volcanics, but assays have yielded only trace values in gold and trace to 0.68g/t silver. Pyrite is also evident in the felsite dyke(s) as disseminations and micro-fracture fillings. Assay of a drillhole sample of this material gave values of trace gold and 0.68g/t silver; assay results for two surface samples averaged 0.06g/t gold and 0.95g/t silver.

Sericitic alteration has pervaded the wall rocks close to the vein. Intense chloritic alteration is evident at the east end of the open cut, close to (and possibly related to) the felsite dyke. Carbonate flooding is evidenced by zones of calcite-veining of the host rocks and calcite intergrowths on the margins of the quartz vein. In outcrop, this alteration is most obvious adjacent to the andesite dyke where large calcite crystals are intergrown with quartz, together with minor siderite and epidote. Pyrite was observed as inclusions and veinlets in some large calcite crystals. "Granitic" alteration has been noted at depth in association with a felsite dyke (Wilmot, 1987).

EXPLORATION POTENTIAL

The Zumar vein is a mesothermal-style quartz vein hosting minor sulphide mineralization and carrying significant previous metal values. The vein is open along strike to both the east and west, as well as at depth (below 60m). Scope exists for locating swells and higher-grade ore zones in the vein at major structure intersections and changes in lithology, and the existence of parallel or *en echelon* veins cannot be ruled out.

The presence of minor granodiorite intrusives in the area suggest that a major intrusive contact may lie at relatively shallow depth beneath the property. The Zumar vein, where it cuts (or is cut by) the intrusion, provides an interesting exploration target. (Models for this type of mineral occurrence may be provided by the old Blue Hawk Mine located 8km east-southeast of Zumar, and the Kalamalka Mine east of Vernon.)

The possibility remains that the Zumar vein and its host rocks are of Tertiary age, related to Eocene extensional tectonics in the region, and the vein may represent a lower level feeder to an epithermal system. Hence, the presence of Tertiary epithermal mineralisation in the area cannot be ruled out.

Soil geochemistry and magnetometer surveys on the property have not proven successful in defining further exploration targets. Drift cover over much of the property hampers exploration.

ACKNOWLEDGEMENTS

I wish to thank Richard Meyers and Todd Hubner of the Kamloops District Office of the Ministry of Energy, Mines and Petroleum Resources for their generous advice and assistance. The reviewing and editing work done by Richard Meyers is particularly appreciated. The valuable information provided by John Murray, Consultant, is also acknowledged. This project was funded by the British Columbia Geoscience Research Grant Program.

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