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Geological and Geochemical Report

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Frasergold Property

Caribou Mining Division, British Columbia N.T.S. 93A/7E

- for

Keron Holdings Ltd., 837 E. Cordova St., Vancouver, B. C.

by:

Gary D. Belik, M.Sc. G. Belik and Associates Ltd., #206, 310 Nicola Street, Kamloops, B. C.

November 16, 1981

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SUMMARY

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1. A

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During parts of June, Culy The work carried out to date on the Frasergold Property has confirmed the presence of significant gold mineralization within a series of strongly deformed, black phyllites of Upper Triassic age. The mineralization appears to be restricted to a discrete stratigraphic horizon within an iron/carbonate - rich facies of phyllite. Gold occurs both within phyllite (up to 1.13 grams/tonne) and within synmetamorphic quartz sweats (up to 16.0 grams/tonne).

the auriferous horizon is unknown but from the extent and continuity of anomalous, gold, in soils is, inferred to be at least 3.0 km.

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and 1981 programs, and on the inferred potential for a stratabound, bulk-tonnage, low-grade, gold deposit, a two - phase diamond drill program, estimated to cost \$240,000.00 is recommended.

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The objectives of the list

INTRODUCTION Test for additional

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2.

During parts of June, July and August, 1981, a combined geochemical and geological program was carried out on the Kay 9 - 11, Mac, Mac 2 - 11 and Alpha 1 mineral claims situated along the MacKay River Valley in the Cariboo Mining Division, British Columbia. Work was supervised by Kerr, Dawson and Associates, #206 - 310 Nicola St., Kamloops, B. C.

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The 1981 program was an extension of a similar program carried out in 1980 on the Kay 1 - 9 mineral claims. The 1980 program defined an area of highly anomalous gold in soil extending northwest from Frasergold Creek to the western boundary of the Kay 9 claim, a distance of about 2 km. This anomaly, which was open to the northwest, was found to be between 100 meters and 250 meters wide with relatively sharp well-defined boundaries. Interestingly the anomaly was also found to parallel the regional strike of a dark grey to black, . fine - grained, phyllite sequence which underlies the anomaly and most of the claim area. This lead to speculation that a distinct horizon within the phyllite sequence may be gold-bearing.

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· · Mariae Data

Based on the encouraging results of the 1980 program and on the inferred potential for a stratiform bulk-tonnage, low-grade gold deposit Keron Holdings Ltd. acquired by staking, an additional 14 claims (140 units) along the projected strike extension of the favourable phyllite unit to the northwest.

The objectives of the 1981 program were:

1).

Geologically map the claim area.

2).

1991

Determine the extent of the area of highly anomalous gold in soils which was partly delineated on the Kay 1 - 9mineral claims in 1980. Test for additional geochemical anomalies along the projected strike extension of the favourable phyllite unit to the northwest.

3.

4). Determine the source of the gold and it's possible economic significance.

1204

- 5). Define the parameters which control the gold mineralization.
- 6). Determine the extent and continuity of the gold mineralization.
 - LOCATION AND ACCESSIBILITY

Q.

The Frasergold Property is located along the MacKay River Valley in the Cariboo Mining Division (N.T.S. 93A/7E). The center of the claim group is situated about 110 km east northeast of Williams Lake at geographic co-ordinates 52°19' North Latitude and 120°37' West Longitude. The western part of the claim group is traversed by a network of logging roads and skid trails which are accessible via good gravel road from

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CLAIMS

The property is comprised of 23 contiguous claims totalling

160 units and 8 two-post claims as detailed below:

			the second s	和校门带
Mining Division	Claim Name	Units	Record Number	Date Recorded
		aki y		
Cariboo	Kay-1	2-post	1182	Sept. 4/79
TT AND	Kay 2	00	1183	Sept. 4/79
115	Kay 3	00	1184	Sept. 4/79.
	Kay 4		1185	Sept. 4/79
1	Kay 5	. 11	1186	Sept. 4/79
	Kay 6	N . 1	1187	Sept. 4/79
	Kay 7	1	1188	Sept. 4/79
TH	Kay 8		1189	Sept. 4/79
n a start i	Kay 9	20	1810	Aug. 11/80
	Kay 10	6	1961	Sept. 25/80
and the second second	Kay 11	2	1962	Sept. 25/80
20/15291	Mac	9	1286	_Oct. 19/79
The second	Mac /2	20	2078	Oct. 22/80
89	Mac 3	6	3074	Dec./80
09	Mac 4	2	3075	Dec./80
1. C.	Mac 5	. 4	3076	Dec./80
	Mach6.	. 9	3077	Dec./80
	Mac 7	8	3078	Dec./80
·Zet	Mac 8	16	3079	Dec./80,
i Zhan	Mac 9	20	3080	Dec./80
	Mac 10	20	3081	Dec./80
D	Mac 11	9	3082	Dec./80
n - section	Alpha 1	9	847	Sept. 11/78
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The registered owner of the Mac 3 to Mac 11 claims is Keron Holdings Ltd., 837 E. Cordova St., Vancouver, B. C. The remainder of the claims are held by Keron through an option agreement with Cliff Gunn of #43 - 15875 20th Avenue, Surrey, B. C.



DI THERE REPUTE PHYSIOGRAPHY AND VEGETATION

The Frasergold Property lies along the MacKay River, a northwesterly flowing tributary of the Horsefly River. Elevation of the surveyed area ranges from 1200 meters to 1850 meters. Relief is moderate to steep with local precipitous bluffs at higher elevations.

A STATISTICS - - -

Valley consist primarily of good commercial stands of spruce, balsam, fir and cedar with thick luxuriant underbrush. Forest cover is lighter above 1600 meters a.s.l. and above 1800 meters a.s.l. alpine type vegetation prevails. Most of the western two-thirds of the property has been, logged. carried out in

EXPLORATION HISTORY

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Apart from a small placer gold operation on Frasergold Creek in 1902, there is no record of any mining or appreciable exploration work having been carried out within the claim area.

Lacked and stations par in

In September, 1978, Cliff Gunn, a long time prospector to the Cariboo Region staked the Alpha 1 claim on the north side of the MacKay River area to cover an area containing numerous large quartz boulders. Follow-up prospecting and geochemical sampling failed to locate any significant mineralization although a few anomalous gold * values in soils were obtained.

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wards Total a faith and the att

In 1979 Mr. Gunn continued prospecting in the MacKay River region and was eventually attracted to Frasergold Creek by the occurence of placer gold reported in the Annual Minister of Mines Report for 1902. Silt samples from Frasergold Creek were found to contain anomalous gold and anomalous to highly anomalous gold values were obtained from soils at several sites adjacent to the creek. based on these results the Kay 1 to Kay 8, 2-post claims were staked in August, 1979.

8.

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Mr. Gunn brought the Kay claims to the attention of J. M. Dawson of Kerr, Kawson and Associates Ltd., Kamloops, B. C. in the Fall of 1979. Mr. Dawson, acting as agent for Keron Holdings Ltd., Vancouver, B. C. optioned the property and supervised a preliminary geological and geochemical exploration program in 1980.

Based on the success of the 1980 program, the property was ' expanded to it's present size in the Fall and Winter of 1980 and an expanded geological and geochemical program, which is the subject of this report, was carried out in June, July and August of 1981.

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ng the same grid and a topograph GRID PREPARATION

The Fractional class a prior portin order to carry out the geochemical and geological surveys, a grid was constructed consisting of an 11.0 km. base-line and approximately 97 km of cross-lines. Grid lines were blazed and ribboned and stations put in at 50 meter intervals.

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The most GENERAL GEOLOGICAL SETTING

The Frasergold Property is situated along the eastern margin of the Quesnel Belt in the Quesnel Lake Map-Area. This belt is underlain, for the most part, by a sequence of volcanic and sedimentary rocks of Upper Triassic to Lower Jurassic age which were deposited in an island arc-type environment. The most widespread lithologies are Upper Triassic, alkaline, augite porphyry basalt and andesite and spatially related, coeval plutons which host alkaline-type, porphyry copper/gold deposits.

South of Prince George the Upper Triassic volcanics grade easterly into black, fine-grained phyllites which overlie Upper Paleozoic rocks of the Slide Mt. Group.

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For the most part, Quesnel Belt rocks are only weakly deformed. The eastern phyllite facies, however, generally is strongly foliated and tightly folded - a result of uplift of the Omineca Crystalline Belt in Lower Jurassic time.

cronied Lake Syncline and are the column of

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Cologar-augen and ss. PROPERTY GEOLOGY

facius of metamorphism. The constant

The Frasergold Property was examined by G. D. Belik during June 18 - 22, July 28 - 30 and August 8 - 11, 1981. An area, measuring approximately 25 km², was mapped at a scale of 1:10,000 (Figure 220-3) using the survey grid and a topographic base map for control.

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The Frasergold claims are situated along the north limb of a major northwest-trending, overturned syncline (here informally designated the Grooked Lake Syncline). The axis of this syncline projects along the southern boundary of the claim group, parallel to the MacKay River and McKusy Creek/Grooked Lake Valleys (Figure 220-3A). Figure 220-3B shows a structural interpretation across the syncline.

The most widespread unit on the property, and which is exposed along it's entire length, is a thick section (+1800 meters) of Upper Trfassic, dark grey to black, lustrous phyllite. The phyllite displays a steeply-dipping, penetrative crenulation foliation which is axial planar to small-scale, gently plunging, isoclinal folds. The unit, characteristically, contains abundant (2% - 30%), translucent-to milky-white, limonite-stained quartz lenses, pods and irregular veins.

Along the north edge of the property, the phyllite conformably overlies a 100 meter - thick section of andesitic to basaltic metavolcanics.

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This unit, which has been mapped as part of the Slide Mt. Group by R. B. Campbell (1978), can be traced around the entire perimeter of the Crooked Lake Syncline and serves as a useful marker horizon. On the Frasergold Property the Slide Mt. Group has been strongly deformed and subjected to a Middle to Upper Greenschist Facies of metamorphism.

The Proterozoic Snowshoe Formation forms the base of the Crooked Lake Syncline and are the oldest rocks exposed on the property. Where exposed; this unit consists of sharp-banded paragneiss, leucocratic feldspar-augen gneiss, schist and sub-mylonite in the Upper Greenschist facies of metamorphism. The contact between the Slide Mt. Group and the Snowshoe Formation is sharp and represents a major structural discontinuity.

- mark down

Overlying the phyllite is a 200 meter to 500 meter thick transitional zone consisting of interbedded phyllite and greenschist. This unit is in turn overlain by greenstone, augite-porphyry breccia and tuff. These units occupy the core of the Crooked Lake Syncline and, according to G.S.C. Open File Map 574 (Campbell, 1978), extend along the southern edge of the claim area. The transitional facies was mapped in the southern part of the Mac 3 and Kay 10 claims, however, the overlying volcanic member was not encountered within the area mapped and presumably is further to the south than indicated.

A thick coarse-grained mafic sill has been traced along the southern edge of the map - area over a strike length exceeding 9 km in the approximate position of the transitional phyllite/greenschist unit mapped by R. B. Campbell. This unit contains discontinuous dykes and irregular masses of fine-grained, leuco-monzonite, syenite and diorite which host porphyry-style copper mineralization (eg. Eureka Pk. property). The unit is at least 500 meters thick and has a highly sheared, concordant northern contact. The southern contact was not mapped but is presumed to be overlain by the upper-volcanic member. The mafic sill is undoubtedly predeformational and probably is coeval with the overlying augite-porphyry, alkaline basalts.

a Connerse and these

1.





Several types of mineralization occur on the Frasergold Property, the most significant of which is gold \pm silver in the black phyllite unit. Gold appears to be restricted to a distinct horizon and occurs as fine, possibly colloidal disseminations within the phyllite and within symmetamorphic quartz sweats. Samples of quartz ran as high as +6.0 grams gold per tonne and phyllite as high as 1.12 grams gold per tonne. Because of the general scarcity of outcrop the extent of the auriferous horizon is unknown but from the extent and continuity of anomalous gold in soils appears to be at least 3.0 km.

Anomalous gold in rocks and in soils in the main anomaly area appear to correlate with a unique facies of phyllite. The unit has a characteristic knotted appearance. Knots, which are less than 8 mm in size and comprise 5% to 40% of the unit, consist of limoniticbrown to hematitic-red, fine-grained carbonate, possibly ankerite or siderite. Originally, this lithology appears to have been a finegrained black clastic with thin laminations of iron-rich carbonate. The carbonate, being more resistant, was boudinaged during deformation yielding the characteristic knotted texture.

sedimentary and metavolcanic rock.

paylitice/greenschize seconder.

in mation PROTEROZOIC (?) SNOWSHOE FORMATION

The Snowshoe Formation underlies the northeast corner of the Mac'7, Mac'8 and Alpha 1 mineral claims. Within this area the formation includes a light-coloured, sharp-banded gneiss unit, biotite-muscovite schist, and feldspar-augen gneiss. The schist and feldspar-augen gneiss, which occur along the southern margin of the formation, have a distinct cataclastic texture and could be classed as submylonites.

The sharp-banded gneiss unit was derived from silty quartzfeldspathic arenites. Bands are from a few centimeters to several meters wide and reflect compositional layering within the original sedimentary package.

14.

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Any Live / Gree UPPER PALEOZOIC SLIDE MT. GROUP

The basal phyllite/gin

About a 100 meter thick sequence of dark green andesitic isombers which inclusion immediately south of the Snowshoe is a lower, track of the property. This unit, which has been correlated with the Antler Formation of the Slide Mt. Group by R. B. Campbell (1978), has been traced southeasterly from Quesnel 2. A minute member River to the Bonaparte Lake Map - Area, a distance of over 100 km.

14.

On the Frasergold property the Antler Formation consists of a fairly monotonous sequence of foliated greenstone and chloritic schist. The greenstone has been considerably recrystallized and locally black phylice, schister fairly coarse, metamorphic biotite.

TRIASSIC ROCKS

Within the map - area a thick section of Triassic metaibe lewer performance exposed. A thick, basal, phyllite/greenschist sequence, which appears to conformably overlie the Antler Formation, grades upward into alkaline, augite-porphyry flows, tuffs and breccia. This latter volcanic succession is not exposed within the area mapped but occurs in close proximity to the south within the core of the Crooked Lake Syncline.

The black phylitis

The second secon

The quist2 set

A thick coarse-grained mafic sill occurs along the south edge of the property and is inferred to be coeval with the overlying volcanics

Basal Phyllite/Greenschist Sequence:

The basal phyllite/greenschist sequence can be divided into three members which include: 128

1. A lower, transitional zone comprised of greenschist, black phyllite and quartz-sericite schist.

and locally contains for i 2. A middle member characterized by dark grey to black generally lustrous phyllite with minor intercalated lenses of inses and limestone.he

southerly folded. Several or

3. An upper, transitional member comprised of interbanded deformation black, phyllite, greenschist and quartz-sericite-chlorite

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Shall Michin the area sa ted which include: dark grey Laminates phyllity, realizeLower Member

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leareous phyllice, pyritic phyli

The lower member consists of interbedded dark grey to black phyllite, greenschist and quartz-sericite schist and forms a transitional zone, 50 meters to 250 meters wide, between the greenstone and greenschist of the Antler Formation and the thick black phyllite sequence of the middle member.

The black phyllite in the lower member is virtually identical to phyllites in the middle member as are the greenschists of the lower member, and the Antler Formation. The quartz-sericite schist, however, is unique to this unit.

The quartz sericite schist is buff to pale green in color, fine-grained and generally very siliceous. Fine-grained pyrite is a common component and locally is present in amounts up to 30%.

The quartz-sericite schist probably is of volcanic origin and represents the metamorphic equivalent of fine-grained felsic tuffs.

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and the set of the second set of the second set of

in ad the carbonate land. Middle Member

The middle member is characterized by dark grey to black lustrous phyllite with minor intercalated lenses of limestone. The phyllite contains abundant (27% - 35%) lenses, pods and irregular veins of translucent to milky-white quartz. The quartz generally is limonitic and locally contains pyrite in amounts up to 6%. The lenses and pods are a few cms. to 10 meters thick (average about 8 cm) and the veins generally are less than 10 cm. thick. All of the quartz pods and lenses and most of the veins are conformable and many are isoclinally folded. Several generations of quartz are apparent; most appear to have developed as "sweats" prior to and during the main period of deformation and regional metamorphism.

Within the area mapped, several varieties of phyllite were noted which include: dark grey to black phyllite, siliceous phyllite, laminated phyllite, resistant, light to medium-grey arenaceous phyllite, calcareous phyllite, pyritic phyllite and a knotted, iron/carbonaterich phyllite. However, except for the knotted, iron/carbonate - rich variety, a division of the middle member into various mapable subunits was not possible because of a general scarcity of outcrop, their lenticular nature and small size.

The knotted phyllite underlies the main area of anomalous gold in soils. Between lines 54 S.E. and 67 S.E. the southern limit of this unit occurs about 300 meters to 600 meters south of the base line. The unit has not been delineated north of the baseline, is open to the southeast and appears to pinch out to the northwest around line 40 S.E.

The knotted phyllite is characterized by abundant

(5% to 40%), soft, limonitic, fine-grained carbonate - rich knots, 2 mm to 8 mm in size. The knots are actually boudinage structures and are the result of the segmentation of competent, iron/carbonate - rich laminations during tectonism.

16.

The origin of the carbonate laminations is uncertain but they probably are primary chemical precipitates and may be associated with basic, arc-type volcanism.

17.

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The maffe still unit 1:

Locally, acome variation

dizati An upper member comprised of interbanded black phyllite, greenschist and quartz-sericite-chlorite schist was mapped south of the grid area between L50 S.E. and L55 S.E. This member, which is regionally extensive, forms a transition zone between the middle member phyllite sequence and an overlying, predominantly metavolcanic sequence.

Mafic Still Unit royad along the factors to 250 back

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A mafic sill unit occurs along the south edge of the map - area. The sill is at least 500 meters thick and has been traced over a strike length exceeding 9.0 km. The sill, which is conformable to the regional strike of the phyllites, is highly sheared along it's southern contact. The northern limits of the sill have not been defined.

Texturally and compositionally the sill unit is diverse and consists of a variety of very coarse-grained, quartz-poor, plagioclase (calcic) - to pyroxene-rich types. The unit is generally altered and weakly to moderately sheared.

The sill is of probably Upper Triassic age and is inferred to be coeval with the overlying basic, alkaline volcanic sequence.

Late Differentiate, Alkaline Granitic Rocks

427231-

and of the map-units,

The mafic sill unit locally contains blocks, discontinuous dykes and small irregular stock-like masses of fine-grained leucomonzonite, diorite and syenite. Pyrite is present in amounts up to 10%. Locally, some varieties host porphyry-style, low grade, copper mineralization.

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Sheared Marginal Phase

The southern margin of the mafic sill is highly sheared over a width of 15 meters to 250 meters. Original textures have been completely destroyed along the immediate area of the contact. Here the unit has the appearance of a fine-grained greenschist. Away from the contact the degree of shearing gradually diminishes and the unit passes into rocks of distinct intrusive character.

... I dips steeply to the northeas

Discontinuous zones, 1 meter to 5 meters wide, of brown weathering, fine to medium-crystalline carbonate are developed along the contact between the phyllites and the sheared marginal phase of the mafic sill unit. The carbonate, which contains accessory pyrite, arsenopyrite and the chrome-bearing mica fuchsite, is premetamorphic and probably represents an altered, marginal phase of the mafic sill unit.

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TERTIARY VALLEY BASALT

A small isolated remnant of Tertiary valley basalt is preserved in the MacKay River Valley on the Mac 9 claim. This basalt, which is fine-grained and a medium grey color, forms a small rounded knob about 25 meters high and 500 meters long. The basalt preserves a remnant of The MacKay River Paleovallay and may be underlain by Tertiary channel gravels.

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METAMORPHISM

All of the map-units, except the Tertiary valley basalt have been regionally metamorphosed. The degree of metamorphism in the map-area increases from Lower Greenschist in the south to Upper Greenschist in the north (ie. increase in metamorphic grade toward the base of the Crooked Lake Syncline). The biotite isograde is situated north of the MacKay River and approximates the contact between the lower and middle members of the basal, Triassic phyllite sequence.

Gold, Aller and the Francispi STRUCTURE

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Small-scale structures are abundant within the area mapped and include several generations of folds, foliations and lineations. Pre-Triassic units are strongly deformed and display a penetrative crenulation foliation which transposes bedding and an earlier foliation parallel to bedding. The crenulation foliation strikes northwest and dips steeply to the northeast, north of the MacKay River and steeply to the southwest, south of the MacKay River. A late-stage, steeplydipping foliation locally is evident.

Numerous, small-scale, isoclinal folds, with axial planes parallel to the crenulation foliation, are developed within the Triassic phyllites and sharp-banded gneiss member of the Snowshoe Formation. These folds plunge very gently to the southeast. Late-stage, steeplyplunging, large - amplitude folds were also noted.

The penetrative crenulation foliation and small-scale isoclinal folds are associated with the development of a large, southeasttrending fold structure which in this report is informally designated the Crooked Lake Syncline. This syncline developed during a major period of deformation associated with the uplift of the Omineca Crystalline Belt.

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19.

This uplift was caused by compression from the southwest and was associcated with the collision and subsequent obduction of an oceanic plate onto the North America Plate in Lower Jurassic time. Within the region of the map - area the Slide Mt. Group forms the base of the obducted plate.

20.

MINERALIZATION

Gold, silver and base metals occur in a variety of geological environments on the Frasergold Property which include:

1. gold within Upper Triassic black phyllites.

2. gold and silver within synmetamorphic quartz sweats.

3. disseminated copper mineralization within the sheared marginal phase of the mafic sill unit.

porphyry-style, copper mineralization within late differentiate, alkaline granitic rocks.

5. copper within late-stage quartz veins.

Gold Within Upper Triassic Black Phyllites

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Economically, the most interesting mineralization occurs within the middle black phyllite member of the basal Triassic sequence. More specifically, highly anomalous gold values (up to 1130 ppb) were obtained from samples of phyllite on the Kay 9 and Kay 10 claims between lines 54 S.E. and 62 S.E. These samples occur within an extensive area of anomalous gold in soils.

The salient features of the gold mineralization and istuast teliar) a associated soil anomalies are: The nature of

> and depto 1. Mineralized phyllites contain no visible sulphide and 初於伊姆 are indistinguishable from unmineralized phyllite

a constante processe within the same general area. Vein-quartz material was

> also sampled within the same area but care was taken A walcump.

not to include vein-quartz in phyllite samples. antade pate grounds get a the

rich Carbonate, the backet 2. Anomalous phyllite samples occur within the main area Int, ACCARYDA VOICANS of anomalous gold in soils on the property.

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3. The main soil anomaly has a continuous strike length of 3.0 km. and a width of up to 300 meters. Outcrop Scrable . is scarce within the anomaly area, especially north-

west and southeast of the area of mineralized outcrops. _Seell, _ stora-

nalerant **ro**milky-white analts a

4. The main soil anomaly is conformable to the general and appear to have the strike of the phyllites.

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5. The mineralized phyllite and main soil anomaly are hosted by the knotted, iron/carbonate - rich facies Name ° (15 - \$3mg kes

of phyllite. and silver.

> 6. The knotted phyllite facies appears to lense-out in the same general area where the main soil anomaly cuts off to the northwest.

The above features suggest that the gold mineralization is restricted to a distinct stratigraphic horizon. The continuity and extent of the anomalous soil suggest that the auriferous zone has a strike length of more than 3.0 km. The continuity or extent of the mineralization, however, are unknown. Gold could occur in one or more beds or possibly within a series of en-echelon lenses.

Gold is known to occur within both phyllite and quartz sweats (discussed below) along the projected strike of the auriferous horizon. The nature of this mineralization is unknown. However, the uniformity and duplicability of gold values in soil (confirmed by a subsequent deep soil profiling program) suggest that the gold is very fine-grained, possibly even colloidal.

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A volcanogenic, syngenetic origin for the gold mineralization is favoured. As envisaged gold was chemically precipitated along with an iron-rich carbonate, in a back-arc setting, peripheral to basic, alkaline, arc-type volcanic centers. Gold was subsequently partly remobilized into guartz sweats during regional metamorphism.

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Synmetamorphic Quartz Sweats

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Small, conformable, lenses, pods and irregular veins of translucent to milky-white quartz are ubiquitous in the middle phyllite member and appear to have developed as "sweats" during regional metamorphism. Most are limonitic and many contain traces to minor amounts of pyrite. A few contain up to 5% pyrite.

Numerous samples of synmetamorphic quartz were analysed for gold and silver. With one exception, all of the anomalous values were obtained along the projected strike of the auriferous horizon over a strike length of about 1.7 km. Apart from the elevated gold values, there is no discernable difference between mineralized and unmineralized quartz.

From the high values obtained (up to +6000 ppb) it is apparent that gold is preferentially enriched in quartz sweats within the auriferous horizon.

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the Kay #1 to #9 claims;

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Disseminated Copper Mineralization Within the Sheared Marginal Phase of the Mafic Sill Unit

23.

On line 44 S.E. from about 8 S.W. to 10 S.W., finely disseminated chalcopyrite and pyrite occur within the sheared marginal phase of the mafic sill unit. Two samples of angular float mineralized with chalcopyrite and a pyrite outcrop with no apparent copper mineralization returned values of 1975 ppm and 795 ppm copper and 375 ppm copper respectively. The dimensions of the mineralized zone are unknown. The zone probably is tabular-shaped and conformable with the general shear direction developed within the host unit. The width of the zone could exceed 50 meters.

Install 2050 said factor Porphyry-Style Copper Mineralization

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porphyry-style copper mineralization on the Eureka Pk. Prospect. This property, which adjoins the Mac 2, 6 and 9 claims, is currently under option to Union Miniere.

Similar, granitic rocks occur within the mafic sill unit along the south edge of the property but contain only minor copper mineralization.

Near the south end of the grid, approximately 200 meters west of line 35, N.W., a small area containing abundant angular float of a fine-grained, dark, pyritic intrusive was noted. A composite sample of this float geochemically assayed 1255 ppm copper.

Late-Stage Quartz Veins

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- Martin Palanti

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Several pyritic quartz veins and abundant pyritic quartz float were noted along the north edge of the map - area. Quartz veins cross-cut the main crenulation foliation.

Most of the quartz contains minor amounts of chalcopyrite. Some varieties contain up to 2% chalcopyrite. Several samples of highly pyritic quartz with significant chalcopyrite were assayed for gold and silver with negative results.

SOIL GEOCHEMISTRY

In total 2050 soil samples were taken during the 1981 program. All samples were analysed for gold, silver, copper, lead, zinc and arsenic by Acme Analytical Laboratories Ltd., located at 852 E. Hastings St., Vancouver, B. C.

SAMPLING METHOD

Samples were obtained by digging holes with a maddock to a depth of 10 cm to 20 cm. The "B" horizon was sampled or in some cases the "B-C" horizon depending on soil development at each sample location. The samples were placed in waterproof kraft envelopes and the grid station was marked on the envelopes with indelible felt pens. Soil samples were taken at 50-meter intervals along all the grid lines.

LABORATORY DETERMINATION METHOD

All samples were first dried and then seived to obtain a -80 mesh fraction. The determination procedure was as follows:

Digestion:

Determination:

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- 0.5 gm sample is digested - Atomic Absorption Copper in hot aqua regia. Lead Zinc iactor (.) Silver

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10.0 gm sample is heated - Atomic Absorption Gold overnight to 600° C and then digested hot with aqua regia.

0.5 gm sample is digested Arsenic Colorimetric in nitric/perchloric acids.

TOG pour againity (0.34%) were the

All, results are reported from Acme Labs in parts per million.

PRESENTATION OF RESULTS

Results of the soil analyses are shown in plan maps 220-6 to 220-11 at a scale of 1:10,000. Results are given in parts per million for silver, lead, zinc, copper and arsenic and in parts per billion for gold. Gold values greater than 94 ppb (light stippling) and 220 ppb (dark stippling) have been outlined in drawing 220-6. Silver values greater than 1.8 ppm and 3.6 ppm, copper values greater than 123 ppm and 246 ppm, lead values greater than 18 ppm and 30 ppm, zinc values greater than 144 ppm and 264 ppm and arsenic values greater than 61 ppm and 150 ppm have been likewise outlined in drawings 220-7 to 220-11 respectively.

tion is con DISCUSSION OF RESULTS

A statistical analyses of all elements analysed was carried out with the following results:

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blah as iGDGO ppb sold Au Cu Pb Ag Zn As Based on the contracter 2489 2492 2031 2050 2045 2043 Population · Mean (,) the confirmation of his 30.77ppb 0.85ppm 60ppm 11.8ppm 84ppm -15.2ppm Standard Deviation (s) 63.11 0.94 62 6.4 60 44.7 and hortzon. The

Background $\binom{1}{x}^{1}$ 231 $\angle 0.9$ 60 < 84 <12 <15 Probably Anomalous (1S-2S) 94-157 1.8-27 123-194 18-24 144-204 61-105 Definitely Anomalous (25-35) 158-220 2.8-3.6 185-246 25-30 205-264 106-150 Highly Anomalous (3S) 7220 > 3.6 7 264 7246 730 7 150 tiliensk and the set i

Values of greater than 600 ppb gold (0.76% of population), 6.0 ppm silver (0.64%), 600 ppm copper (0.92%), 500 ppm zinc (0.05%) and 200 ppm arsenic (0.34%) were cut from the above calculations to avoid erroneous geochemical categories.

Gold

1,

Gold values show a background of less than 31 ppb with anomalous values ranging from 94 ppb to 7250 ppb. A frequency distribution plot of the data (Fig. 220-4) shows that gold values are strongly negatively skewed. 85% of the population are 50 ppb or less and 71.5% 20 ppb or less.

Anomalous gold appears to be associated with two geological environments. The bulk of the anomalous gold values occur on the Kay 9, Kay 10 and Mac claims within an area underlain by the black, knottedphyllite unit. The main anomaly is conformable to the general strike of the phyllites and extends from Frasergold Creek to line 44 S.E., a distance of about 3.0 km. This anomaly is up to 300 meters wide with peak values of up to 1365 ppb gold. Samples of phyllite taken near the center of the anomaly returned values as high as 1130 ppb gold and samples of quartz ran as high as +6000 ppb gold.

Based on the conformable nature of the main gold anomaly and on the confirmation of highly anomalous gold in phyllite within the anomaly area it is reasonable to assume that the gold is restricted to a distinct horizon. This auriferous horizon probably extends over the length of the main anomaly and possibly further; most of the area is heavily drift covered, especially immediately northwest of the main anomaly area to about line 2 N.W. and numerous isolated high gold values were obtained along the projected strike of the mineralized zone to the northwest and the southeast.

Anomalous gold in soils also occurs in the area underlain by the mafic sill unit and late-differentiate, alkaline, granitic rocks. Most of the anomalies are small and of relatively low magnitude. One exception occurs near the south end of Lines 25 S.E., 27 S.E and 29 S.E. Here gold values up to 7,250 ppb were obtained within an area underlain by a coarse-grained, mafic-rich phase of the sill unit. Nothing was noted which would account for the anomaly. However, the immediate area of the anomaly is covered by till and it is conceivable that this overburden could conceal one or more gold-bearing veins.

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Silver

9.

Silver values show a background of less than 0.9 ppm with anomalous values ranging from 1.8 ppm to greater than 35 ppm. As with gold, silver values show a strongly negatively skewed distribution (Fig. 220-5). 90.7% of the population are 2.0 ppm or less and 77.5% are 1.0 ppm or less.

Mineral test trouble of

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The anomalous silver values appear to be much more scattered than gold. The following observations were made:

 Anomalous silver values, for the most part appear to be restricted to the middle phyllite member.

- While in detail there is no correlation between gold and silver values the two appear to be spacially related.
- 3. Two general areas of anomalous silver values are evident. The largest area is centered around the main gold anomaly and has the appearance of a broad halo around the auriferous zone. The second area occurs along the projected strike extension of the auriferous horizon to the northwest, between line 35 N.W. and line 10 S.E. with a distinct cluster of anomalous values centered between line 22 N.W. and line 5 N.W. This area is also associated with anomalous lead and zinc.

There is no correlation between silver and arsenic values.

5. There is no correlation between silver and copper values except on line 44 S.E., stations 8 +00 S.W. and 8 +50 S.W. Here anomalous silver is associated with highly anomalous copper and lead. Mineralized float discovered in this area consists of """""pyrite and chalcopyrite disseminated within the highly sheared marginal phase of the mafic sill unit.

11

Copper values show a background of less than 60 ppm with anomalous values ranging from 123 ppm to 2496 ppm.

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Anomalous copper values correlate very well with areas underlain by the mafic sill unit and alkaline, granitic rocks. The following relationships are apparent:

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associated with the sheared marginal phase of the mafic sill unt. Locallized areas of disseminated copper mineralization (up to 0.2% copper) were noted at several localities within this contact zone and correlate well with the observed anomalous soil geochemistry.

> 2. A large area of highly anomalous copper was delineated along the south end of the grid between line 15 S.E. and line 22 S.E. This anomaly is related to the downslope migration of mineralized talus from the Eureka Pk. porphyry - copper prospect.

> 3. A few, small, copper anomalies occur scattered throughout the mainpart of the mafic sill unit. This unit has a high copper background and contains numerous small, low-grade copper showings.

Anonalous land also is

downslope of the mafic sill unit. These anomalies are attributed to the downslope migration of copper ions and in part to the occurence of mineralized erratics. Locally, numerous pyritic (± minor chalcopyrite) alkaline granitic and mafic sill erratics form a significant component of the till in this area.

inomalous values ranging from 144

A strong copper anomaly (up to 1714 ppm) occurs north of the base line on line 15 S.E. and line 17 S.E. Although this anomaly may have a local bedrock source it is more likely of hydromorphic origin... The area is heavily drift covered, locally swampy and occurs at a distinct break-in-slope. Moreover, the high-order anomalies occur in close proximity to the creek which drains the area of highly anomalous copper in soils associated with the Eureka Peak copper prospect.

Lead

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Backg Lead shows a very narrow distribution of values with a standard deviation of only 6.4 ppm. Background is very low (<12 ppm) with anomalous values ranging from 18 ppm to 214 ppm. Only one moderately high value (214 ppm) was obtained (south end of line 40 N.W.) and is associated with highly anomalous zinc and weakly anomalous arsenic and silver in an area underlain by black phyllite. All other values are less than 77 ppm.

Although lead values are not considered high, a plot of anomalous values shows an interesting pattern. There is a strong positive correlation between lead and silver. lead shows the same apparent zonal distribution around the main gold anomaly and is also associated with the area of anomalous silver along the projected strike extension of the gold-bearing zone to the northwest. Anomalous lead also is associated with the sheared mafic sill unit between line 50 S.E. and line 49 S.E.

33.

. 220-1. A brief description of

The largest number of and

anomalous values ranging from 144 ppm to 1150 ppm.

The distribution of anomalous zinc is very similar to lead. Zinc occurs peripheral to the main gold anomaly, is intimately associated with lead and silver along the projected extension of the gold bearing zone to the northwest and locally is present along the mafic sill/phyllite contact.

Arsenic onic (81 samples. Briefly

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Arsenic values generally are low throughout the survey area. Background is less than 15 ppm with anomalous values ranging from 60 ppm to 323 ppm.

Anomalous arsenic in soils is intimately associated with 3-1130 ppb the mafic sill/phyllite contact. Based on the results of rock sampling, the arsenic occurs within the brown-weathering altered carbonate zones developed along the contact and within phyllites in close proximity to the contact zone.

There is no correlation between anomalous arsenic and 37-900 ppm anomalous gold or silver. High arsenic locally correlates with anomalous lead, zinc and copper.

ROCK GEOCHEMISTRY

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In total, 141 rock samples were analysed for gold, silver, copper, zinc, arsenic and locally lead. Sample locations are plotted on map 220-3: A brief description of the samples and the values obtained are included in Appendix I.

obrithed from a quarte lease for the property and a few anomalies (up the property anomalies (up the pro

A statistical analysis of the data was not attempted because of the relatively small number of samples and the wide variety of material sampled.

The largest number of samples were taken from the black phyllite unit (81 samples). Briefly summarized the results for this unit are as follows:

	No.	Range	Estimated Background	Probably Anomalous	No. of Anomalous Samples
gold	81	5-1130 ppb	5 ppb	>25 ppb	16
silver	81	0.1-1.9 ppm	0.3 ppm	71.0 ppm	18
lead	47	4-27 ppm	15 ppm	730 ppm	0
zinc	81	37-906 ppm	80 ppm	7150 ppm	11
copper	81	1-152 ppm	40 ppm	≻ 70 ppm	• 15
arsenic	81	≻, 1-133 ppm	.10 ppm	>20 ppm	10

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Gold

Gold values range from 5 ppb to 5700 ppb. Most of the High modulemical corper values were obtained from quartz sweats or from black phyllite along the projected strike of the auriferous horizon. One high value (5700 ppb) with 3.98 oz per tonne silver and 4135 ppm lead was obtained from a quartz lense in phyllite in the northwest part of the property and a few anomalies (up to 300 ppb) were obtained from Anomalous coper is striked and property adjacent to the mafic sill unit.

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COMMENTS.

Silver

Arsenic values range from 0.1 ppm to 3.4 ppm (excluding the high silver assay associated with galena in quartz on line 35 N.W.). Nineteen values are greater than 1.0 ppm silver. Of these, 18 are from black phyllite or symmetamorphic quartz sweats within black phyllite. There is a positive correlation between high silver and elevated values for copper and zinc in black phyllite. There is no correlation between high silver and high gold in phyllite.

There is no correlation '-----

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Lead

The only high lead value was obtained from the quartz pod on line 35 N.W. This sample contained visible galena.

Zinc

Zinc values range from 2 ppm to 906 ppm. All of the anomalous values (ie. >150 ppm) were obtained from black phyllite and are associated with elevated copper and silver values.

per

High geochemical copper values were obtained from several amples of alkaline granitic intrusive and the sheared marginal phase f the mafic sill unit. All of these samples contained visible copper ineralization which occurs within restricted zones within these units.

Anomalous copper is associated with anomalous zinc and silver in the black phyllite unit.

Arsenic

Arsenic values range from 1 ppm to 558 ppm. A general background for most units is about 10 ppm.

High arsenic values in rock were obtained from altered carbonate zones peripheral to the mafic sill unit and from phyllites in close proximity to the mafic sill unit. Anomalous arsenic in rocks correlated very well with areas of anomalous arsenic in soils.

There is no correlation between arsenic, gold and silver.

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CONCLUSIONS AND RECOMMENDATIONS

The 1981 program has confirmed the potential for a lowgrade, bulk-tonnage gold/silver deposit on the Frasergold Property. Mineralization appears to consist of very fine-grained, possibly colloidal gold along a particular stratigraphic horizon within a sequence of Upper Triassic black phyllites. The auriferous horizon occurs within an iron/carbonate - rich facies of phyllite. Synmetamorphic quartz sweats are preferentially enriched within this horizon and yield gold values of up to +6.0 grammes per tonne.

Although the mineralization may be genetically related to a mafic sill unit a volcanogenic/syngenetic model is favoured whereby gold is chemically precipitated within iron/carbonate - rich muds peripheral to alkaline, basic, arc-type volcanic centers.

The work performed to date on the Frasergold property is inconclusive. The property is, however, of considerable merit and systematic diamond drilling is warranted to establish the continuity of the auriferous horizon and the degree to which it is mineralized.

The following two-phase program is recommended:

RECOMMENDED PROGRAM

Phase I

a). road construction

-approximately 4.0 km of road construction will be necessary to provide access for diamond drilling.

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b). diamond drilling

-12 holes totalling 1320 meters; as proposed below, these drill holes will cross-cut the main gold anomaly along four section lines. This will test a stratigraphic interval of about 300 meters over a strike length of 2.2 km. The specific location and depth of each proposed hole is as follows:

Section	Location	Depth	Direction
		, 김 씨가 아파 가 아파 가 아파 가 아파 가 아파 가 아파 가 가 가 가 가	
L47 S.E.	1+00 SW	110 meters	-50° NE
L47 S.E.	B.L.	110 "	-50° NE
L47 S.E.	1+00 NE	110 "	-50° NE
		ne Sile - Dia a	
L53 S.E.*	2+00 SW	110 "	-50° NE
L53 S.E.	1+00 SW	110 "	-50° NE
L53 S.E.	B.L.	110 "	-50° NE
L59 S.E.	2+50 SW	110 "	-50° NE
L59 S.E.	1+50 SW	110 "	-50° NE
L59 S.E.	0+50 SW	110 "	-50° NE
L69 S.E.	6+00 SW	110 **	-50° NE
L69 S.E.	5+00 SW	110 "	-50° NE
L69 S.E.	4+00 SW	110 "	-50° NE

* hypothetical line; not an actual grid line.

Phase II

-follow-up diamond drilling; an additional 1500 meters of diamond drilling should be budgeted for; this drilling would be contingent upon the results of Phase I drilling.

ESTIMATED COST OF RECOMMENDED PROGRAM

Phase I

- a). road construction \$20,000.00
 b). diamond drilling

 -1320 meters at \$65.00/meter
 85,800.00

 c). geochemical analyses
- -sample all drill core at 3 meter intervals 3,000.00
- d). supervision, core logging, report preparation 10,000.00
- e). contingency <u>6,200.00</u>

Total Phase I

\$ 125,000.00

Phase II

-1500 meters diamond drilling, all inclusive

115,000.00

Total Phase I & II

\$ 240,000.00

Respectfully Submitted,

Gary Belik, Geolo November 16, 1981