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GEOLOGICAL REPORT AND WORK PROPOSAL

ON THE

VALENTINE MOUNTAIN PROPERTY

FOR

BEAU PRE EXPLORATIONS LTD.

N.T.S. 92B/12W

VICTORIA M.D.

Kerr Addison Corp

BY

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SUMMARY

Beau Pre Explorations Ltd.'s Valentine Mountain property which includes staked mineral claims comprising 121 units as well as 8 placer leases is located 42 kilometers west of Victoria, British Columbia. Access to the area is excellent and most of the area, including the mineralized vein systems, can be reached by logging roads.

Mineralization at Valentine Mountain consists of a large number of sub-parallel, fairly continuous, narrow quartz veins in which native gold has been recognized with pyrite and arsenopyrite. The mineralized veins have been sampled and shown to assay from 0.002 to 1.44 ounces gold per ton with minor silver. One newly exposed stockwork-like extension of one of the veins assayed 0.83 oz./ton Au and 0.07 oz./ton Ag across 2 meters. The known zone in which these gold-quartz veins occur extends over a length of about 3000 meters and a width of from 200 to 300 meters on the upper east slope of Valentine Mountain.

New geological studies have shown that the gold-quartz veins have been localized in a sequence of folded, relatively thinly intercalated high grade schists, metasandstones and amphibolites along a fracture system that trends 080°. This fracture direction corresponds approximately to the axial plane of a regional anticline and is coincident with the trend

of a number of related granitic intrusives, pegmatite dikes, and tourmaline-quartz veins of Tertiary age. The new evidence suggests the gold-quartz veins are the product of relatively high temperature prograde regional metamorphism and as such are comparable to gold-quartz vein deposits in metamorphic environments in many parts of the world.

A program to explore possible extensions of the gold-quartz vein zone by geological mapping and a detailed soil geochemistry survey coupled with trenching and diamond core drilling of portions of the known vein system is recommended.

The work program can be completed in about two months in the fall 0f 1982 or spring of 1983 and is expected to cost about $119,100.

Figure 1
LOCATION MAP

INTRODUCTION

The discovery of placer gold west of Victoria on the Leech River in 1864 led to a major rush in the area which lasted only a few years. Subsequently many of the streams flowing across the rock unit known as the "Leech River Schists" have been panned and shown to contain fine gold or "colours". These streams include at least two thirds of all the known gold placer deposits on Vancouver Island and crudely outline a unique geologic environment.

It was not until 1976 that significant native gold was found in place in narrow quartz veins within the Leech River on Valentine Mountain, about 42 kilometers west of Victoria. Subsequently a detailed stream silt survey accompanied by detailed prospecting during 1981 revealed a large number of gold bearing quartz veins localized within an area about 3000 meters long (E-W) and from 200 to 300 meters wide on the upper east slope of Valentine Mountain. Although there have been a variety of geological surveys and studies in the area it was obvious that the real geology of the Leech River rocks was far more complex than assumed, particularly in the Valentine Mountain area.

It was concluded that in order to continue effective exploration of the Beau Pre Explorations Ltd. gold-quartz vein prospect detailed geological mapping of the area was

required to place the mineralization in perspective to the geological environment and thereby develop a conceptual model. Ideally this mineralization model would be useful as a guide to direct exploration efforts to locating zones of economic importance on Valentine Mountain, and in the broader Leech River terrain.

The writer was directed by Mr. Robert Beaupre, President, Beau Pre Explorations Ltd., to map and study Valentine Mountain and to develop a geological model for the gold-quartz vein mineralization. This work was carried out on weekends and holidays during May, part of June and early July 1982. In addition to the local mapping the writer carried out several sorties beyond the claim area in order to put the detailed lithology, structure, and mineralization into a better understood regional framework.

The desired results of the work appear to have been satisfied. That is, a unified geological concept, a model, relating igneous activity, deformation, metamorphism and mineralization has been developed to guide further gold-quartz vein exploration. In addition some significant contributions have been made to the understanding of the Leech River block.

Figure 2 Scale: 6 Miles to 1 Inch

GEOGRAPHY AND ACCESS

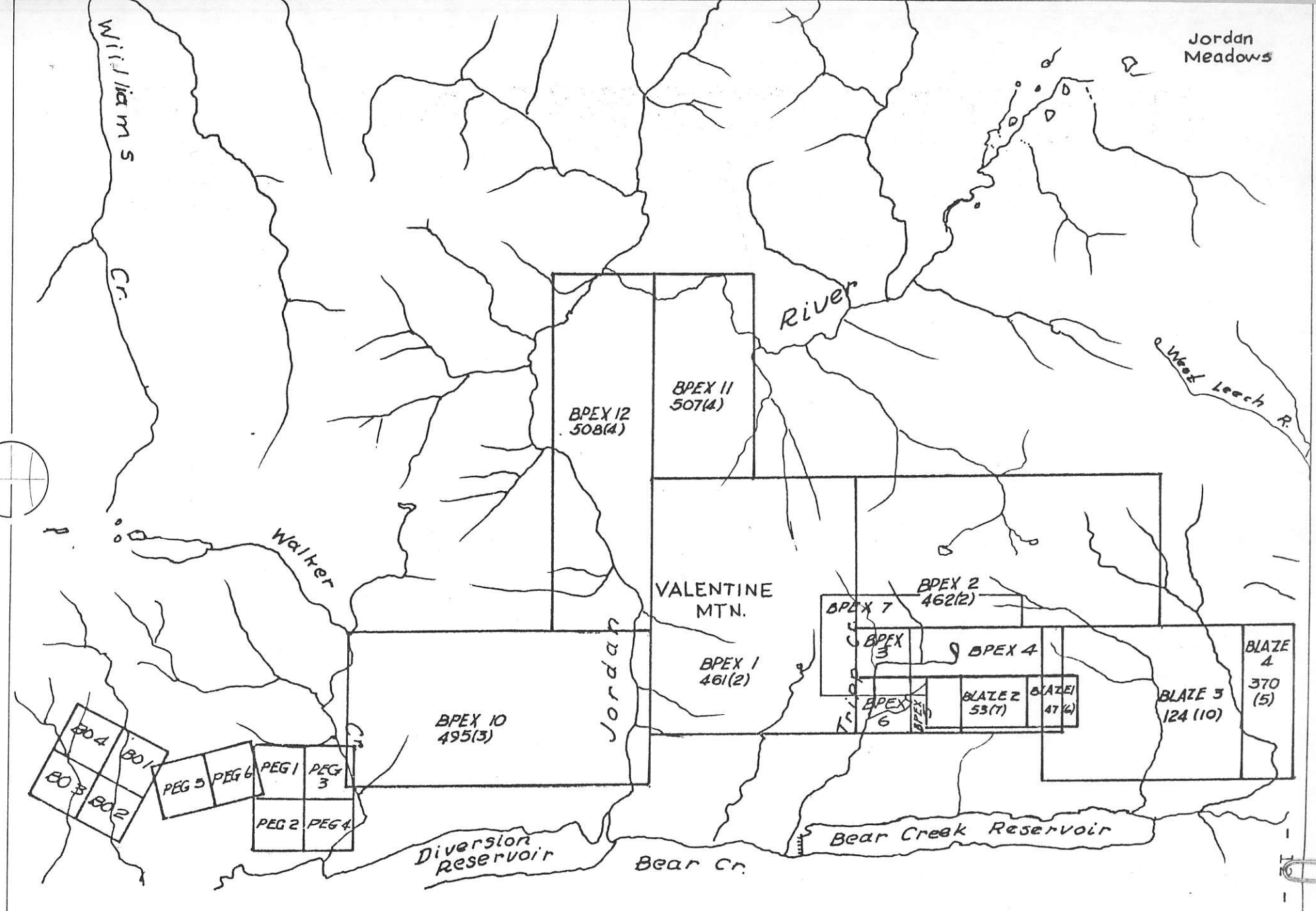


Figure 3 MINERAL CLAIM MAP

PROPERTY

The staked mineral claims currently owned by Beau Pre Explorations Ltd. in the Valentine Mountain area include the BLAZE 1 to 4, BPEX 1 to 7 and 10 to 12, PEG 1 to 6, and BO 1 to 4 (Figure 3).

Name	Units	Record No.	Expiry Date
BLAZE 1	1	47	June 21, 1985
BLAZE 2	2	53	July 12, 1985
BLAZE 3	12	124	October 3, 1985
BLAZE 4	3	370	May 26, 1985
BPEX 1	20	461	February 6, 1986
BPEX 2	18	462	February 6, 1986
BPEX 3	1	463	February 6, 1986
BPEX 4	3	492	March 6, 1986
BPEX 5	1	493	March 6, 1986
BPEX 6	1	494	March 6, 1986
BPEX 7	8	591	October 5, 1986
BPEX 10	18	496	March 6, 1985
BPEX 11	8	507	April 2, 1986
BPEX 12	14	508	April 2, 1986
PEG 1	1	77	February 23, 1985
PEG 2	1	90	May 24, 1985
PEG 3	1	91	May 24, 1985
PEG 4	1	92	May 24, 1985
PEG 5	1	144	March 20, 1985
PEG 6	1	145	March 20, 1985
BO 1	1	188	September 14, 1982
BO 2	1	189	September 18, 1982
BO 3	1	190	September 18, 1982
BO 4	1	191	September 18, 1982
BO 6	1	278	September 17, 1983
	121		

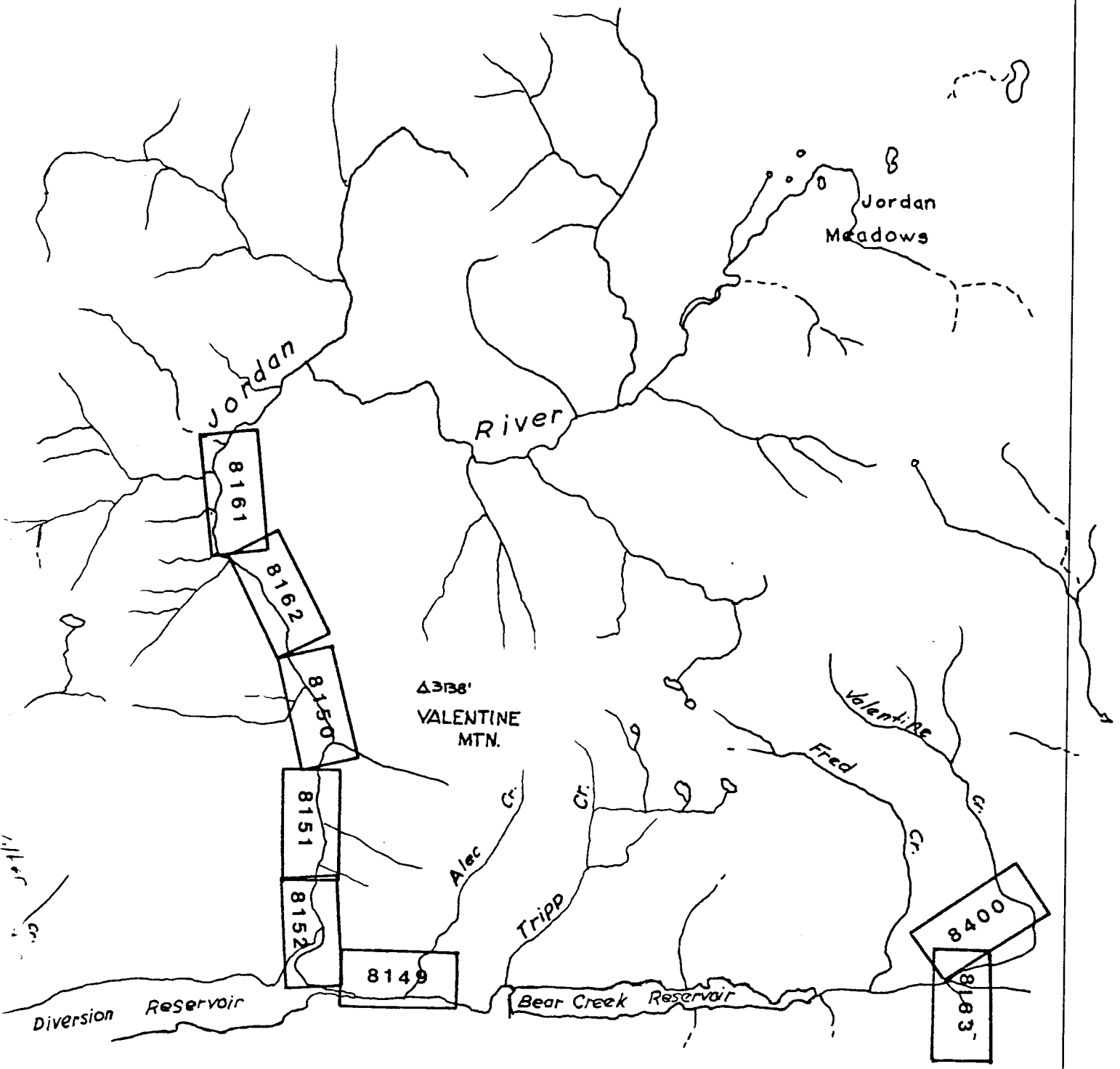


Figure 4 PLACER LEASE MAP

The BLAZE 1 to 4 and BPEX 1 to 7, 11 and 12 were grouped in January 1982.

Beau Pre Explorations Ltd. also owns eight placer claims on the Jordan River and Valentine Creek (Figure 4).

Lease No.		Lease Date
8150	Jordan River	December, 1981
8152	" "	" "
8161	" "	" "
8162	" "	" "
8149	" "	" "
8151	" "	" "
8163	Valentine Creek	" "
8400	" "	March, 1981

HISTORY

The Victoria area experienced a minor gold rush in 1864 after the announcement by Lieutenant Peter Leech that he had found gold on one of the forks of the Sooke River about 10 miles from the sea. A tent city and camp soon mushroomed in the wilderness to as many as 4,000 people located at the junction of the Leech and Sooke rivers about an hours drive from Victoria. Within one year an estimated $100,000 in placer gold was recovered with nuggets of from ½ to 1 ounce reported. By 1865 the rush had faded and current estimates place the total value of placer gold recovered from the field at from $100,000 to $200,000. Like many placer areas the

mystique of placer gold and the possibility of finding the source has attracted prospectors to the area.

In 1966 while logging on the upper east slope of Valentine Mountain, Fred Zorelli noted a metallic glint as a tractor kicked up a loose rock. He examined the float and recognized free gold. He later mentioned the find to Robert Beaupre and partner Alec Low who were prospecting the area. Their subsequent detailed prospecting led to the discovery in 1976 of the 'A' vein, a narrow quartz vein with visible bright yellow gold similar to the placer gold recovered from local creeks. Subsequent work was concentrated on the 'A' vein and included trenching, bulk sampling, and soil sampling.

Property examinations were made and reported on by T.E. Lisle, P.Eng. (Jan. 31, 1980; May 20, 1980) and by G.A. Noel , P.Eng. (Dec. 1, 1980). The detailed stream silt survey and prospecting on Valentine Mountain, recommended by G.A. Noel and Associates, was carried out in early 1981 by Beau Pre Explorations Ltd. and contractors under the direction of the writer. Three areas with anomalous coincident gold and arsenic were recognized (Grove, 1981). One area, on the open, accessible upper east slope including the 'A' vein, was chosen for detailed prospecting and sampling. As a result an east-west trending zone about 3000 meters long by 200-300 meters wide was found to contain

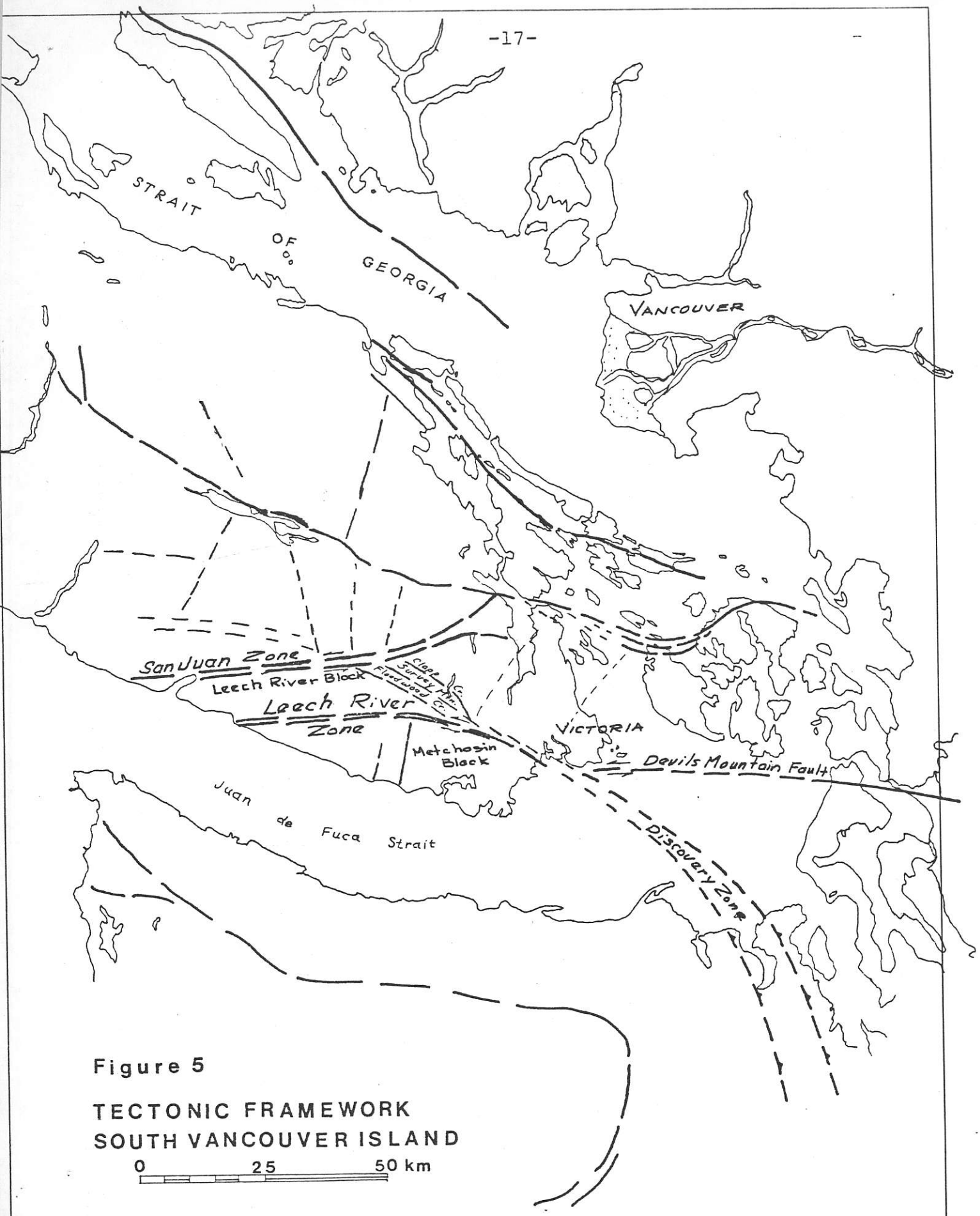


Figure 5

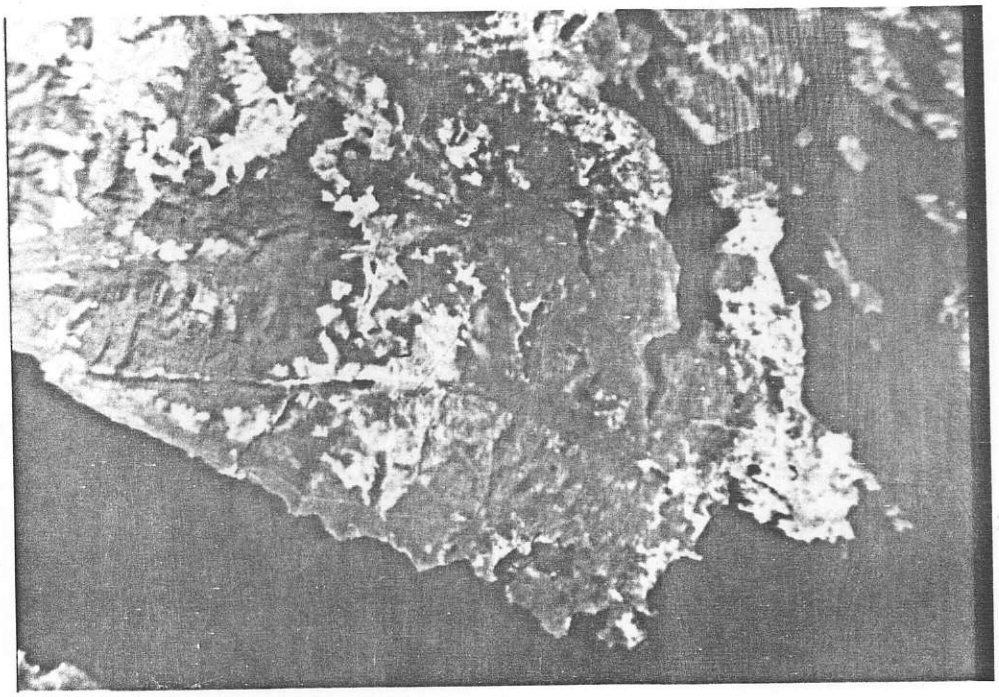
TECTONIC FRAMEWORK
SOUTH VANCOUVER ISLAND

a large number of narrow, gold bearing quartz veins. The fact that these veins occur within a fairly limited fracture system suggested the need for detailed knowledge regarding geological controls.

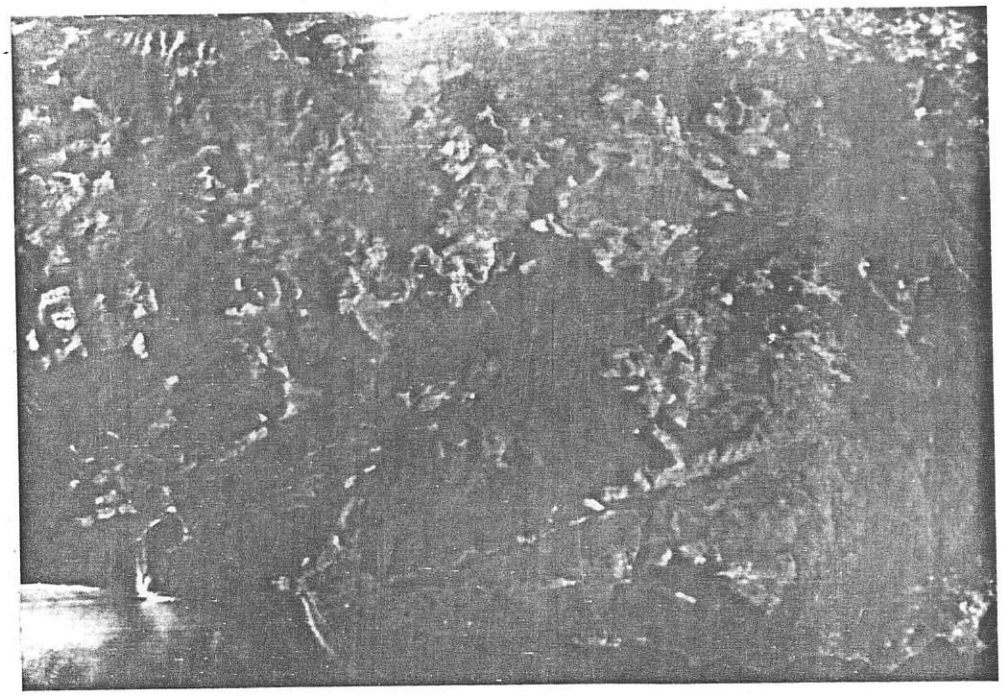
GEOLOGY

INTRODUCTION

The Leech River block which includes the Valentine Mountain area is a discrete geotectonic unit separated along the northerly edge by the San Juan fault zone from Lower Jurassic Bonanza volcanic rocks. The southerly edge of the Leech River block is separated from Eocene Metchosin Group volcanic rocks by the Leech River fault zone. Relationships along the easterly edge of the Leech River block with the Lower Paleozoic (?) Wark diorite and Colquitz gneiss are less certain but suggest a fault contact (Figure 5) named the Cragg Creek fault by Fairchild (1979). The area outlined by these strong shear zones is a narrow east-west trending crustal block extending from Port Renfrew on the west coast of Vancouver Island to Langford, near Victoria, on the east coast. The block has an overall length of about 75 kilometers and a width of about 7 to 12 kilometers in the west half, narrowing to less than 2 kilometers southeast of Survey Mountain.



SATELLITE PHOTO - SOUTHERN VANCOUVER ISLAND
VICTORIA AT RIGHT - SOOKE AT BOTTOM



SAN JUAN FAULT (SJ), LEECH RIVER FAULT (LR), CRAGG CREEK FAULT (CC), FLOODWOOD CREEK FAULT (FC), LEECH RIVER BLOCK (LRB)

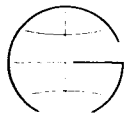
Although fault bound and easily accessible, the age of the Leech River country rocks has been of concern and consternation for many years (Dawson, 1876, p. 102; Clapp, 1912, p. 43; Muller, 1975, p. 24). The country rocks (so-called Leech River Schists) have suffered deformation, metamorphism, and intrusion and have not yet yielded discernable fossils. Various correlations to known units have been made on the basis of apparent similarities, but the lack of detailed geology makes these attempts as fraught with error as they would be in any Precambrian metamorphic terrain. The only rock age dates available indicate that deformation and metamorphism were probably complete by 40 my B.P. As Fairchild (op cit) has suggested the Leech River block may be allochthonous, and may have been introduced into the modern framework from the west or southwest.

Resolution of the many intriguing questions about the origin, age and development of the Leech River block will come about only by detailed geologic mapping and related studies. An important part of these studies will concern the gold-quartz veins, the pegmatites and other mineralization, and the generation of these deposits within the metallogenic evolution of Vancouver Island and the Western Canadian Cordillera.

of the major asymmetric anticline. Transposition, fragmentation and boudinage structures are definitely present in virtually all rock types and are also found in the several periods of veins which post date the metamorphism and folding. Remapping the plutons and volcanics (amphibolite) along Jordan River did not disclose sufficient structural evidence for folding of the one pluton and refolding of the amphibolite. From present evidence, admittedly local, it appears that the major east plunging anticline is a partial remnant of an en echelon series. The prominent and coincident orientation of the east-west trending major plutons, pegmatite dikes, quartz veins, major and minor folds, micro-folds, foliation, and lineation suggest a single, pulse-like orogeny which involved the entire Leech River block.

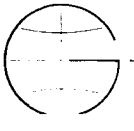
SUMMARY AND DISCUSSION

Detailed geologic studies by Beau Pre Explorations Ltd. in the Valentine Mountain area and by Fairchild in the Survey Mountain area have added considerably to the general understanding of the Leech River block and its late stage evolution. Rather than a simple monotonous assemblage of schists or slates it is now known that a variety of volcanic, arkosic and pelitic rocks of unknown age forming the eastern half of the block have been intruded, metamorphosed, folded and altered during a Tertiary event that also involved Vancouver Island and the Western Cordillera.



Workers in the area from Dawson to Fairchild have attempted to correlate the Leech River rocks with better known sequences on the mainland. The volcanic-sedimentary sequence now disclosed is certainly not unique, but the grade of metamorphism encountered is considerably greater than known elsewhere on Vancouver Island. This may represent only differential uplift and deep erosion, but the possibility of rafting expressed by Riddihough (1982) and others with regard to the Juan De Fuca Plate cannot be dismissed. Until the detailed geology of the Leech River block has been completed further conjecture is academic.

Economic interest in the Leech River block first spurred by placer gold led to the early reconnaissance work on Vancouver Island. The location of gold-quartz veins within unique structural lithologic environments on Valentine Mountain has led to further studies.



MINERALIZATION

PLACER GOLD

Since the discovery of gold in the Leech River by Peter Leech, gold has been found in most of the creeks crossing the south slope of San Juan Ridge from Sooke River on the east to Sombrio River on the west coast. Placer gold has also been reported from Floodwood and Clapp creeks on the north side of the Leech River block and from Jordan Meadows. In the Valentine Mountain and Survey Mountain area the source of most or all of this metal is assumed to be quartz veins in which free gold has been recognized.

Beau Pre Explorations Ltd. has recorded placer leases (Figure 4) on the Jordan River and Valentine Creek. On Valentine Creek panning has shown that most of the gold is concentrated at, and below, the break in stream gradient where the creek flows across phyllites and schists bordering the Leech River Shear Zone and empties into Bear Creek. The gold is typically bright fly-speck and slightly larger in size, platy to somewhat rounded and occurs in the stream material, banks and in the moss above normal water levels. Concentrates from Valentine Creek include garnet, magnetite, and zircon. Testing along the Jordan River has disclosed a more extensive accumulation area where bright fly-speck to well-rounded rice grain sized material has been recovered.

Again, the flakes and grains are uneven to well rounded, and have accumulated in the gravels, bank materials and in the mosses above normal stream level. Minerals typically recovered in the pan concentrates include very coarse magnetite, andalusite and garnet with tourmaline and occasional beryl and spinel. Panning at Walker Creek hasn't disclosed significant gold, but several chips of bright green beryl have been recovered in the concentrates which mainly comprise magnetite, very coarse garnet, tourmaline and apatite.

Most of the placer gold recovered from the streams draining Valentine Mountain has been well flattened indicating travel. But, some of the flakes are partly rolled or hackly and even attached to quartz suggesting relatively little transport and nearby sources. Prospecting on the high east slope of Valentine Mountain has disclosed a swarm of quartz veins with free bright gold and the local overburden has yielded fine hackly gold. Fred Creek which drains the area has numerous riffle-like features common to Valentine Creek and Jordan River but has not yet yielded significant placer gold.

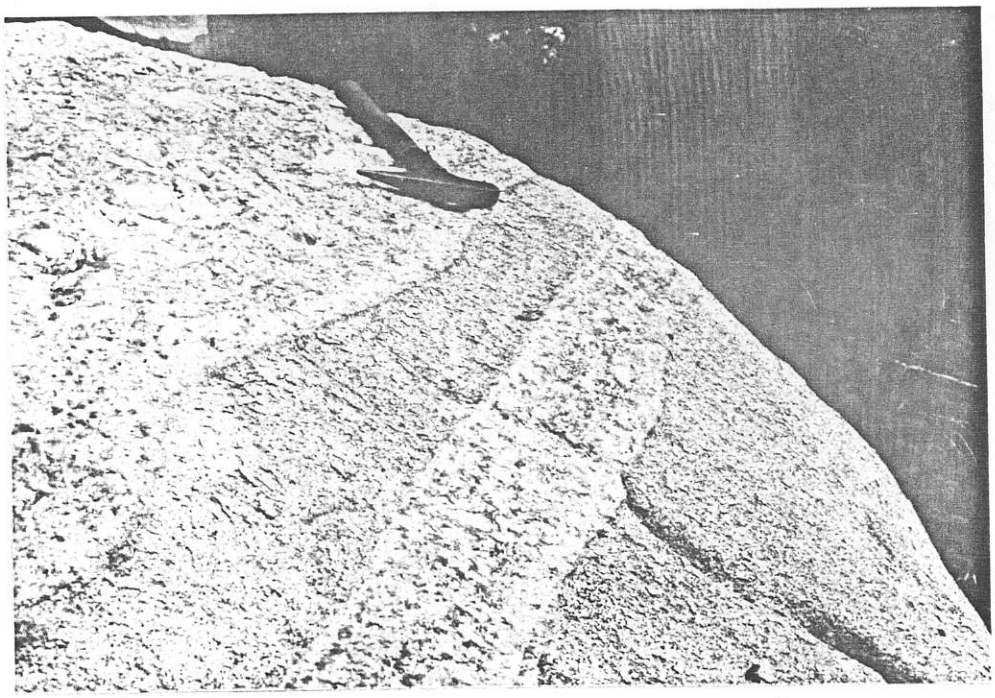
PEGMATITES

Pegmatites have been found mainly in the Walker Creek are where they occur as vein-like bodies up to a meter wide in the leucogranite, as veins up to three meters wide in

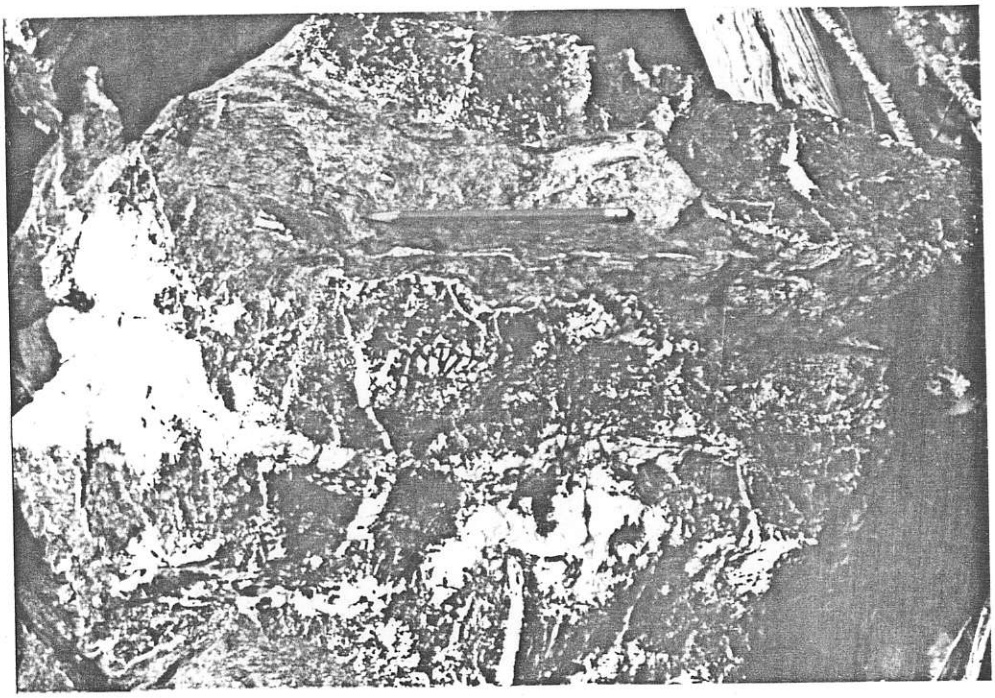
amphibolite and staurolite-andalusite s[redacted] and as large veins in the andalusite-garnet schist. [redacted]dual pegmatites in this area have been traced more than [redacted]meters and the known extent of the zone is at least 20[redacted]ers long by 500 meters wide. In granite the pegmat[redacted]re largely confined to fractures trending 080°. I[redacted]country rocks the pegmatites generally parallel the f[redacted]n and also trend about 080°. The pegmatites are r[redacted]ly simple with only crude zoning of the main constitue[redacted]he main minerals are quartz, microcline, muscovite and b[redacted]urmaline (var. dravite) with some garnet and chl[redacted] Grain size is typically about five centimeters but[redacted]nd tourmaline to ten centimeters is fairly common.

Accessory minerals so far iden[redacted]from the main pegmatite exposures along the Walker Cr[redacted]ds include ilmenite, fluorapatite, beryl and green[redacted]e. The Walker Creek area was first investigated by Be[redacted]personnel in 1977 when prospecting disclosed the pre[redacted]f small chips of emerald colored beryl in pan concent[redacted]which also contained fly-speck gold. This discove[redacted]to the examination of the local pegmatites and[redacted]entification of the above rare accessory minerals.

Pegmatites are themselves a ra[redacted]rrence on Vancouver Island with one possible occu[redacted]reported by Jeletsky (1950) near Kyuquot. Tourmali[redacted]been reported



PEGMATITE IN GRANITE - WALKER CREEK



TOURMALINE-QUARTZ VEIN - PEGMATITE ZONE - WALKER CREEK

so far from only two localities, both in potash feldspar rich quartz monzonite porphyry of Tertiary age; one, at Paradise Creek; and, the second at Sharp Point in northern Vancouver Island (Carson, 1968). Beryl and gahnite were previously unknown on Vancouver Island and are relatively rare minerals in the Western Canadian Cordillera. Beryl has been confirmed in macroscopic crystals in significant abundance only from pegmatites found as part of the Cambrian (or older) Horseranch Complex (Gabrielse, 1963). Tertiary pegmatite bodies and swarms form extensive units throughout southwestern British Columbia but are not known to contain beryl or gahnite. Of the several western States which have produced gem quality beryl, tourmaline and other minerals from pegmatites, California has been the leader. Occurrences of gahnite are rare in the western States and are more usually found in Precambrian environments and pegmatites in the east.

The presence of gahnite in the Walker Creek area suggests a Zn-rich environment such as described for certain parts of the sedimentary units involved in amphibolite grade metamorphism at Broken Hill, New South Wales. No banded iron formation has yet been found in the Leech River block, nor is any direct comparison of areas implicit as only a broad similarity of metamorphic grade, rock types and rare minerals can be suggested.

It is not possible to distinguish between pegmatites derived by differentiation from granitic melts, and those mobilized by metamorphism of surrounding or underlying rocks. Field evidence in the Walker Creek area shows that the pegmatites have filled extensive fractures generally trending about 080° in both the leucogranite plutons and the metamorphosed country rocks. Field evidence also shows the association of, and apparent localization of, apatite-tourmaline (dravite)-quartz veins that also trend about 080° in the country rocks, and the tourmalinization of the amphibolite and staurolite-andalusite schist within the pegmatite zone. Pegmatite and quartz-tourmaline veining of the granite and country rock appears to have succeeded metamorphism, intrusion, and fracturing as a late kinematic or post-kinematic regional event so far not recognized elsewhere on Vancouver Island.

GOLD-QUARTZ VEINS

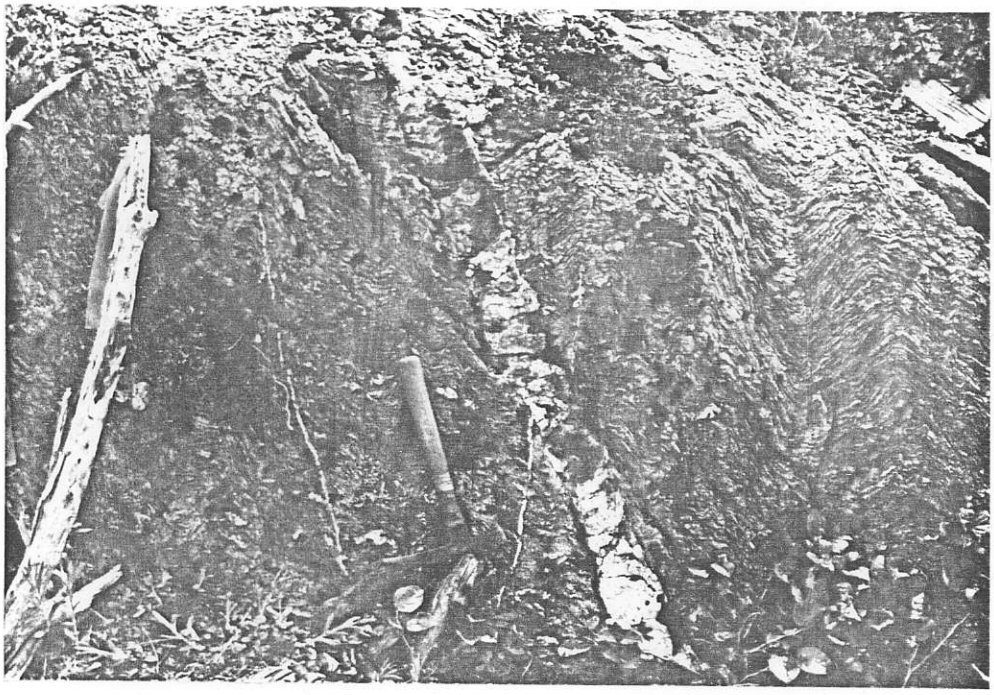
Quartz veins of various habit, aspect, color, and size abound in the eastern part of the Leech River block. These include the thin sugary grey phacoliths squeezed into parallel chevron-type folds with the rock mineral laminae, the narrow ptygmatic white quartz veins and veinlets ubiquitous to the schists and metasandstone boundaries, the contorted and boudinaged milky quartz veins and a variety of irregular glassy quartz veins marked by pink to red

hematitic streaks and patches. Many of these veins carry some pyrite, calcite and feldspar and on the whole appear to lack significant gold values.

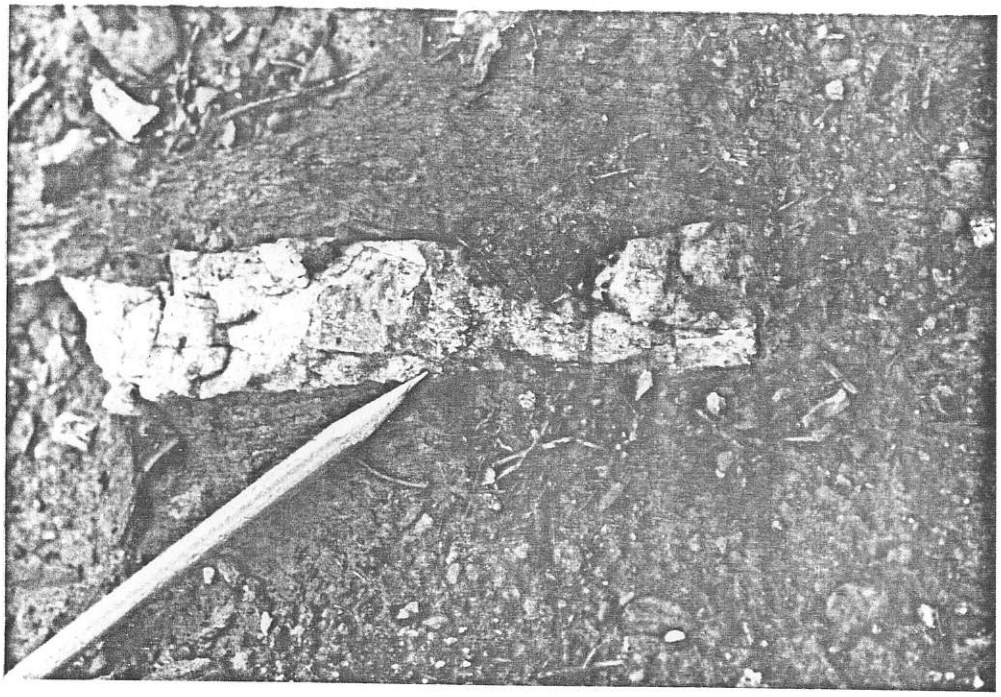
So far as is now known the main carriers of significant gold are the glassy to grey and dull white quartz veins now found in several locations. The main concentration is in an area on the upper east slope of Valentine Mountain. Here the veins are localized within an east-west trending zone extending from near the head of Fred Creek west about 3000 meters along the edge of the clearcut towards Tripp Creek. The width of this zone is from 200 to 300 meters, but the heavy timber, overburden and swamp north of the clearcut area has had only limited prospecting.

The quartz veins in this zone vary in width from about one centimeter to 10 centimeters and, as shown on Figure 10, where the overburden has been partially cleared the individual veins have been traced up to 70 meters before splitting into stockwork-like veinlets. The picture now emerging is that of a series of parallel and sub-parallel veins and veinlets forming a possible anastomosing system from Fred Creek towards Tripp Creek within the postulated gold-quartz zone.

The veins in this zone which have been sampled and are also seen to carry visible gold or have visible gold in



GOLD-QUARTZ VEIN IN ANDALUSITE SCHIST, FRED CREEK ZONE

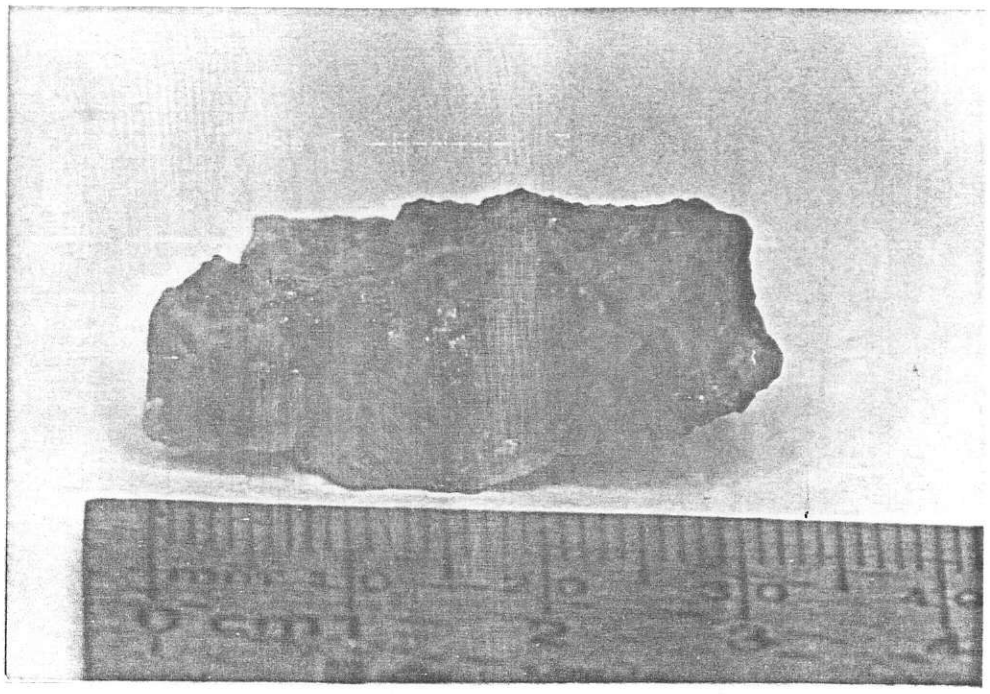


GOLD-QUARTZ VEIN IN METASANDSTONE, WEST OF FRED CREEK

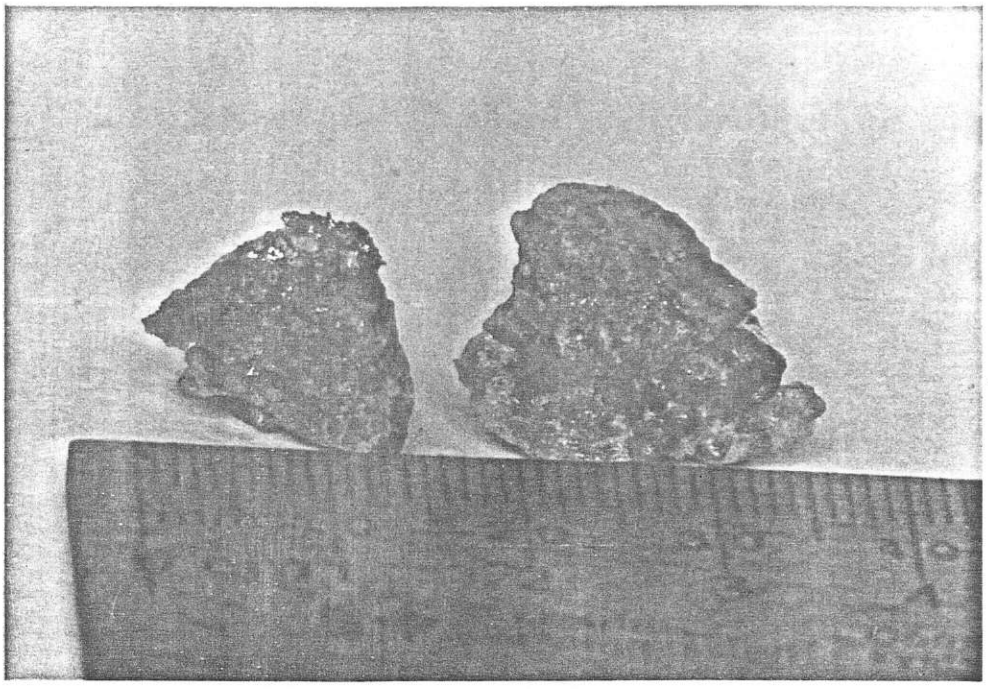
their walls appear to belong to a single structural set. The trend of these relatively straight veins varies from 065° to 085° and the dip from about 50° to vertical. The overall trend is about 080° with a steep northerly dip. The main joint or fracture sets in all rock types in this area are 000-020/50°W and 010-020°/80°-V . The veins cut across these dominant fractures and are therefore considered a late phenomenon.

The rock types in the vein zone include meta-sandstone, andalusite-garnet schist and amphibolite. The host rock in the upper western part of the zone (Figure 10) comprises a thin, contorted, biotite rich, well foliated metasandstone with minor schist parting that overlies a much thicker, undulating andalusite-garnet schist which in turn overlies a pyritic magnetite rich amphibolite. These members lie along a gently easterly plunging anticlinal fold that forms the ridge. Gold-quartz veins in the lower, east part of the zone, above Fred Creek, are hosted by a very coarse grained andalusite-garnet schist which is overlain by amphibolite and metasandstone.

These occurrences also show that the known auriferous quartz veins occur in a complexly intercalated sequence of relatively thinly layered metasandstone, andalusite-garnet schist and amphibolite over a vertical distance of at least 200 meters. That is, from Fred Creek at about 630 meters



FREE GOLD IN QUARTZ



FREE GOLD IN QUARTZ

to the ridge at 830 meters (Figure 9). It also appears that the quartz veining is much more abundant in the metasandstone and andalusite-garnet schist than in the intercalated amphibolites.

The mineralogy of the quartz veins is simple. Grey to glassy quartz with scattered pyrite and euhedral arsenopyrite and minor ilemenite are typical assemblages. Wall rock alteration appears to include pyrite and arsenopyrite and narrow bleached selvedges indicating silicification. The free gold in the veins is bright yellow, and occurs in the dense vein quartz, in fractures, in scattered vugs, along the walls of the veins and in narrow zones in the host rocks alongside the veins. Favorite sites appear to be in the glassy quartz where the veins pinch, kink, and cross narrow bands of sheared country rock. The size of the visible gold ranges from fine specks to irregular hackly masses more than one centimeter across. The grade of the various quartz veins sample so far has ranged from 0.002 ounces per ton to a high of 1.44 ounces Au per ton (Appendix 1). Preliminary sampling of vein 67-36 in 1981 gave 0.84 oz. Au per ton over a width of 5 centimeters along an exposed length of several meters. This vein structure was washed clean in July 1982 to expose its continuation to the east as an irregular stockwork in the metasandstone. The stockwork section sampled across a two meter (2m) width

(4 kg.) gave 0.83 oz. per ton Au and 0.07 oz. per ton silver (Appendix I).

Clearing of the stumps and heavy overburden followed by washing of the small area shown in Figure 10 has proved the continuity of the gold bearing quartz veins over at least 70 meters, and has shown that there are more veins in the area than previously seen in the limited outcrop. More importantly, it has been demonstrated that the narrow veins connect with stringer or stockwork-like zones (2 m) which give relatively high values (0.83 oz. Au/ton) over widths of up to two meters within part of the main area which as previously described has an overall length of up to 3000 meters and a width of from 250 to 300 meters.

DISCUSSION

Fracture controlled gold-quartz veins have been described from a number of places on Vancouver Island. These include the west coast (Bancroft, 1937), Faith Lake-Forbidden Plateau (McDougal, 1963; Carson, 1960), Zeballos (Stevenson, 1950), China Creek (Stevenson, 1945), Bedwell River (Sargent, 1941), and other occurrences reported in the Annual Reports of the Minister of Mines, British Columbia. The remarkable similarity of these deposits led Carson (1968) to group gold-quartz veins as a separate metallogenic sub-class, all of Tertiary age. These similarities include

persistence of the veins, a simple mineralogy (native gold, pyrite, arsenopyrite, galena, sphalerite), simple vein textures, fracture or fissure control, and a good to high ore tenor with Au>Ag. These gold-quartz veins have been localized in a large variety of host rocks but all appear to be related to a Tertiary mineralization episode. The Valentine Mountain gold-quartz veins appear to share most of the features common to Carson's sub-class of Tertiary mineral deposits. In considering the origin of the gold-quartz veins of Vancouver Island he suggested that the similar features noted point to a derivation from solutions originating outside their host rocks, and possibly at great depth.

A more recent study involving some of the gold-quartz veins of Vancouver Island utilizing lead isotope data (Andrew et al, 1982) has indicated an alternative origin. Although of limited scope the lead isotope data suggest that the gold-quartz veins belong to different groups identified by different lead compositions. This isotope grouping appears to have related the gold-quartz veins to similar host rock environments and spatially to Tertiary intrusions. The conclusion from this study suggested that the Tertiary plutons provided a heat source that circulated hydrothermal solutions through the local country rocks, extracted radiogenic

lead and gold from the volcanic terrain and precipitated the gold in quartz veins. Although Carson (1968) and Andrew et al (1982) disagree regarding the origin of the gold-quartz veins, both related the gold to Tertiary quartz diorite intrusives. The Valentine Mountain pegmatites, tourmaline-quartz veins, and gold-quartz veins occur in a multilayered complex including amphibolite (basalt), metasandstone (arkose), and schist (argillite) and are spatially related to leucogranite plutons.

Gold deposits in the Precambrian of North America, South Africa and other parts of the world are commercially very important and have received an enormous amount of attention as compared to the gold-quartz deposits of British Columbia. These extensive studies in metamorphic terrains have generally pointed to a spatial relationship of gold deposits to structural features such as faults, fissures and folds. Many rock types are represented including graphitic sediments, basic to ultrabasic volcanics, and granite intrusives. Alteration of wall rocks varies considerably from little or none to extensive carbonate and other well recognized types thought to be typical of gold deposits. Apart from the commonly expected carbonates, tourmaline, albite, chlorite and muscovite (sericite) are also relatively abundant as associated alteration products. Unlike most Vancouver Island gold-quartz vein deposits the

Valentine Mountain occurrences are found as oriented fracture controlled fillings along the crest of a major anticlinal structure in a moderately high grade metamorphic terrain. Some of the host rocks - the schists - are highly carbonaceous, the local amphibolites are tourmalinized, and the metasandstone host shows silicification. The evidence so far indicates strong similarities of the Valentine Mountain gold-quartz veins to a variety of gold deposits in other metamorphic terrains.

Commercial gold deposits have a tenor of from 0.10 to 1.0 ounce Au per ton with the typical deposit averaging 10 ppm Au and about 2 ppm Ag. In the remote host lithologies of these deposits the average abundance is 2 ppb Au and 100 ppb Ag (Tilling et al, 1973) and enrichment of from 5 to 30 ppb above background is common in locally enriched sedimentary units. An ore deposit therefore represents an enrichment factor of 10,000 for Au and about 2 for Ag above normal background. Arsenic, another ubiquitous metal typically associated with gold deposits, also has a concentration factor of about 10,000 above background. Boron, present in basalts at 5 ppm and in shales at 100 ppm (Turk and Wedepohl, 1960), commonly exceeds 10,000 ppm in gold deposits representing a consentration factor of from 100 to 2,000.

The Valentine Mountain work has not yet entailed

a detailed lithogeochemical component because of the primary concern first to understand the distribution of the rocks and their structure. However, some limited trace element analyses can be presented for the three major rock types hosting the gold-quartz veins (Appendix II).

Sample #	Rock Type	Cu ppm	Pb ppm	Zn ppm	As ppm	Ni ppm	Ag ppm	Au
25	metapelite	127	2	16		7	0.2	< 5 ppb
48476	"			18	30	52	0.2	< 0.07 ppm
W0236	"				0.2			10 ppb
W0240	"				0.2			70 ppb
W0245	"				0.2			40 ppb
48477	metasandstone			12	2	19	0.2	< 0.07 ppm
57359	" near veins						0.11	1.75 ppm
57360	" " "						0.08	0.12 ppm
57361	" " "						0.16	0.02 ppm
51202	amphibolite	400	100				1.7	0.07 ppm
51203	"	300	100				4.08	0.07 ppm
51204	"	100	100				2.04	< 0.07 ppm

Obviously, the incomplete data presented above has no statistical validity and merely represents a few random samples. There are no surprises in the data, and no obvious indication that would lead one to suspect either the local metasediments or metavolcanics as the main source for the gold, silver and arsenic.

the country rock. Soil surveys are therefore one method of prospecting for gold-quartz veins in this area and would probably be the most efficient method in the unexplored forested zone north of the known gold-quartz exposures.

CONCLUSION

The simple gold-quartz veins found localized on the upper east slope of Valentine Mountain are confined to a unique fracture system formed in moderately high grade metamorphic rocks along the crest of a major fold in an easterly plunging sequence of altered volcanic and sedimentary rocks. It has been suggested here that these quartz veins and the accessory minerals are the logical product of high temperature prograde regional metamorphism similar to that in many parts of the world where economic gold-quartz deposits have been intensely studied. The gold-quartz veins on Valentine Mountain appear to be more concentrated in the schists and metasandstones rather than the amphibolite layers which also form part of the complex local sequence. The apparent high competency of the amphibolite layers appears to have allowed these dense rocks to form barriers to the migrating hydrothermal fluids which in effect ponded minerals in the underlying fractured members.

Like many of the gold-quartz deposits on Vancouver Island, the veins on Valentine Mountain are continuous, form

part of a more extensive system, and have relatively good values with native gold the main mineral accompanied by pyrite and arsenopyrite. Continuity of the vein system over a vertical distance of 200 meters and horizontally over almost 3000 meters in several rock types shows that the mineralization does not comprise one or two isolated occurrences. Although incomplete, prospecting and geologial mapping suggest that the vein zone extends northerly into the area covered by forest.

RECOMMENDATION

Preliminary exploration work completed on the Valentine Mountain property has included stream panning, prospecting, some trenching, a few lines of soil geochemistry, a regional stream silt geochemical survey, and a geological mapping project limited to the logged off area. A large number of parallel to sub-parallel, fairly continuous gold-quartz veins with significant values within an area about 3000 meters long by 200-300 meters wide at the edge of a heavily forested area on the upper east slope of Valentine Mountain have now been outlined. In order to explore the possible limits of the gold vein zone to the north and at depth, a more concentrated program is recommended. This should include extension of the geological map into the forested area, a detailed soil geochemistry sampling program

of the forest area adjacent to the gold-quartz vein zone, trenching and sampling in the known zone, and diamond core drilling of the most promising segments of the mineralization.

The recommended program could be carried out during the fall and early winter of 1982 or the spring of 1983.

DETAILED SURVEYS

1. Geological mapping of the forested upper ridge of Valentine Mountain, including detailed lithology and structural analysis, overall supervision of the soil surveys, trenching, and core logging.

1 geologist, field work	$9,500	
Transportation	1,000	
Report preparation & drafting	4,500	
		$15,000

2. Geochemical soil sampling including picket lines, markers, 20 x 50 meter grid spacing adjacent to outcrop area, 50 x 100 m grid beyond.

2 men, $200/day, 15 days	6,000	
850 soil samples (Au, Ag, As) @ $10.50/sam.	9,000	
100 rock/mineral samples @ $35/sample	3,500	
Transportation @ $50/day	1,500	
		20,000