

ASSESSMENT REPORT

on the

SAPPHO PROPERTY

(AFTON, ALKALAI, INGERBELLE, PT#1, SAPHO #1,
SAPHO #2, SAPPHO 3 FR, 4 FR, 5 FR CLAIMS)

NORWEGIAN CREEK

GREENWOOD MINING DIVISION

NTS: 82E/2E
Latitude: 49°00'N - 49°02.2' North
Longitude: 118°40.2'W - 118°43.9' West
Owner: Kettle River Resources Ltd.
Consultant: K.L.Daughtry & Associates Ltd.
Author: W.R.Gilmour
Date: September 11, 1981

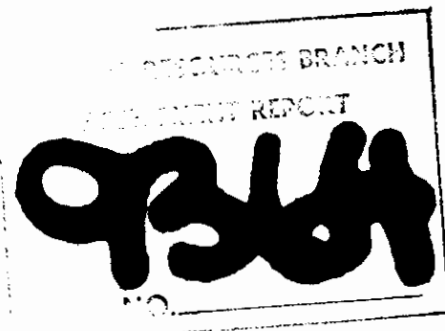


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SUMMARY

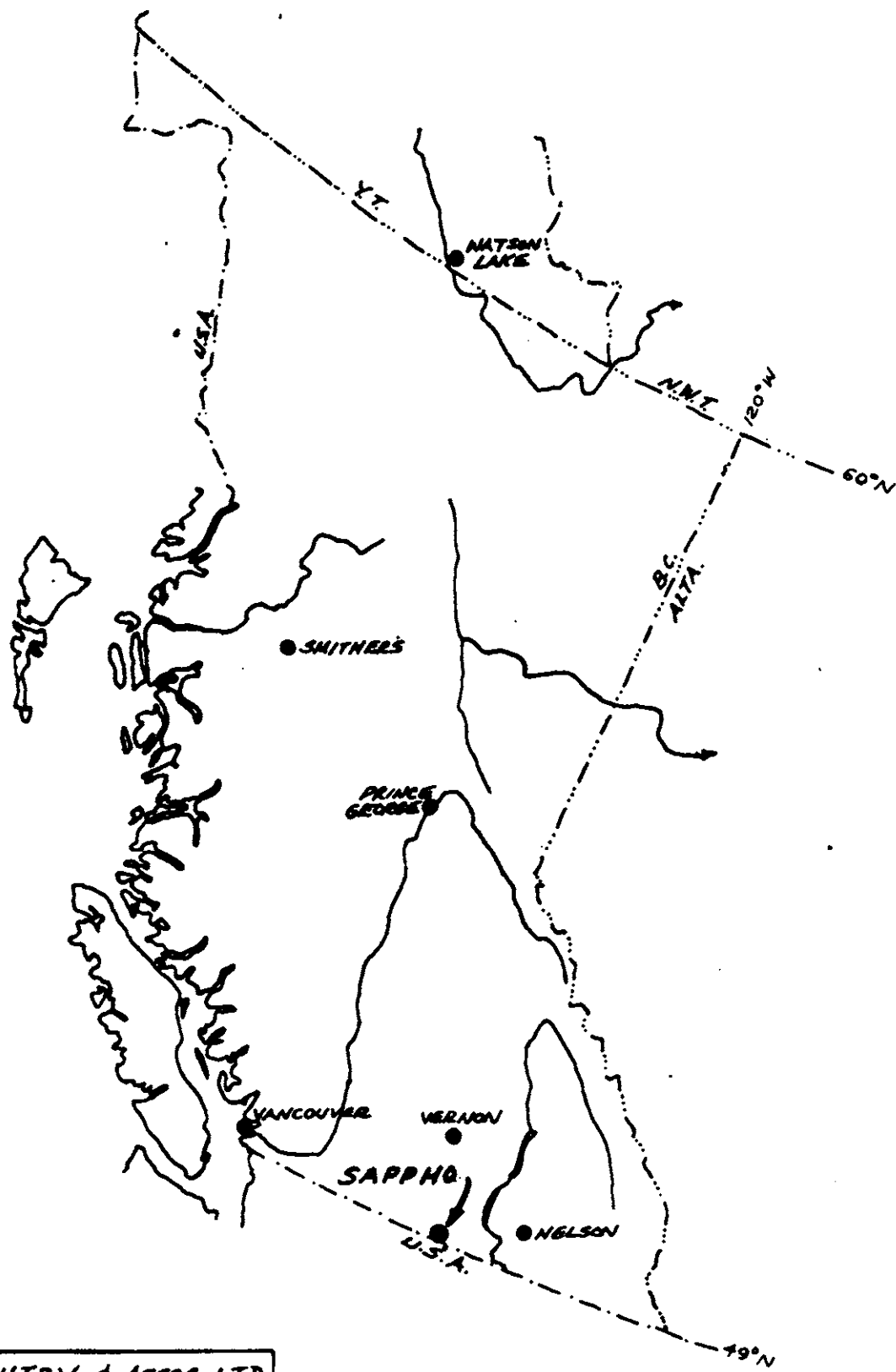
This report describes the results of a geological mapping and sampling programme carried out on the SAPPHO property from October, 1980, to August, 1981. The mapping was done at scales of 1:500 and 1:5,000 and covered the following claims: PT#1, SAPHO #1, SAPPHO 4 FR., INGERBELLE. A grid, totalling 1930 m, was installed for ground control. Significant copper-silver-platinum alkali porphyry mineralization occurs on the property. The property exhibits excellent exploration potential and a programme of further exploration is recommended.

LOCATION, ACCESS, TOPOGRAPHY

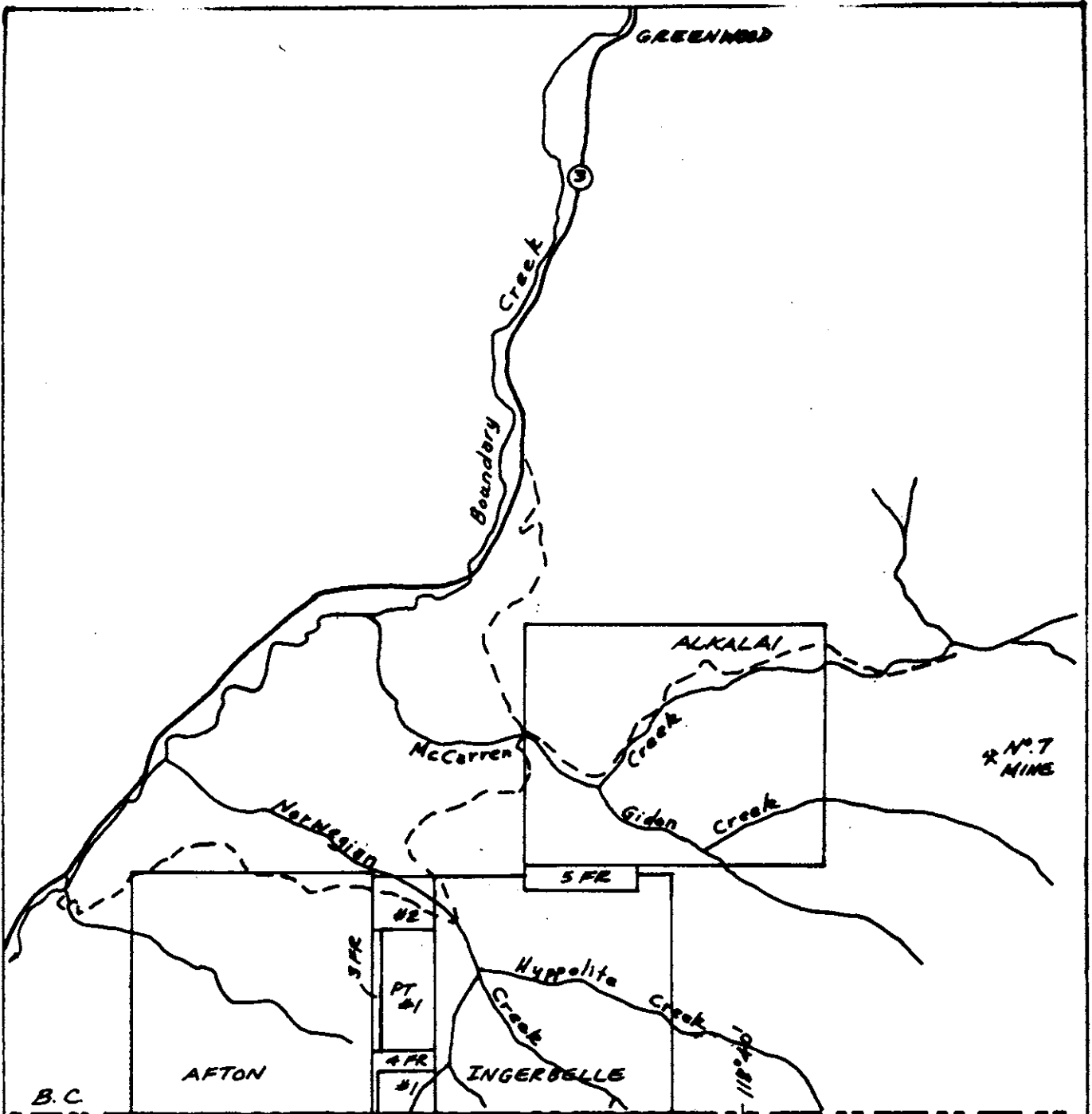
The SAPPHO property is located 9 km east of Midway, in the Boundary District of south-central British Columbia. The property extends from the U.S.A. - Canada border ($49^{\circ}00'$ N. Latitude), north across McCarren Creek to $49^{\circ}02.2'$ N. Latitude, and from $118^{\circ}40.2'$ W. to $118^{\circ}43.9'$ W. Longitude. The National Topographic System map reference is 82E/2E.

Elevations on the property range from 700 m, 0.4 km southeast of Boundary Creek, to 1300 m, along the International Border. The topography has a moderate slope, generally to the northwest, except where cut by Norwegian and McCarren Creeks.

Good access to the general area is provided by Highway 3, only a few kilometres northwest of the property. Well maintained gravel roads and 4-wheel drive roads provide good access on the property.



K.L. DAUGHTRY & ASSOC. LTD	
KETTLE RIVER RES. LTD	
LOCATION MAP	
SAPPHO PROPERTY	
SEPT, 1981	FIG. NO. 1



B.C.
U.S.A.



K. L. DAUGHTRY & ASSOC. LTD.		
KETTLE RIVER RES. LTD.		
INDEX MAP SAPPHO PROPERTY		
SCALE: 1:50,000	DATE: SEPT./81	
DWN BY: WRS	PROJ. N°: 117	FIG. N°: 2

PROPERTY

The SAPPHO property consists of the following claims:

Claim Name	Record No.	Units	Expiry Date	Registered Owner
AFTON	2280	16	June 17, 1983	Kettle River Resources Ltd.
ALKALAI	2383	20	August 13, 1983	Kettle River Resources Ltd.
INGERBELLE	2773	16	July 3, 1983	Kettle River Resources Ltd.
PT#1	43	2	June 10, 1990	Kettle River Resources Ltd.
SAPHO #1	2281	1	June 17, 1984	Kettle River Resources Ltd.
SAPHO #2	2282	1	June 17, 1984	Kettle River Resources Ltd.
SAPPHO 3 FR	2732	1	June 12, 1985	Kettle River Resources Ltd.
SAPPHO 4 FR	2733	1	June 12, 1985	Kettle River Resources Ltd.
SAPPHO 5 FR	2731	1	June 12, 1985	Kettle River Resources Ltd.

The above claims are grouped as the SAPPHO group.

HISTORY

The earliest published reference to the SAPPHO property, in the 1916 British Columbia Annual Report of the Minister of Mines, states that copper-silver ore was shipped from the property. During the period 1916 - 1918, 112 tons of ore grading 5.6% copper and 1.8 oz/ton silver were shipped. Exploration was continued on the property (now the PT#1 claim) in 1927 and 1928. A sample of chalcopyrite-pyrite ore collected by the resident engineer in 1927 assayed 3.2% copper and 0.03 oz/ton platinum.

Triform Mining Ltd. and Coast Exploration Ltd. optioned the property from J. McLean Jr. and P. Gouthro, and conducted a programme of trenching, geophysical surveys and drilling in 1963 and 1964. Bulldozer trenching, totalling 2300 feet, was carried out in the vicinity of the showings. Sampling of the most northerly trenches gave the following results.

50 feet of 0.20% copper

20 feet of 0.44% copper

28 feet of 0.8% copper

Magnetometer and electromagnetic surveys revealed weak anomalies in the area of the trenches. In 1964, seven diamond drill holes totalling 1000 feet, returned "low values in copper and precious metals with the exception of one short section which assayed 0.94 oz/ton gold" (13). Further electromagnetic surveying discovered two anomalies, one of which was drilled to a depth of 315 feet and intersected about 70 feet of about 0.2% copper. Further work was recommended by Hilchey (13) but the option was dropped.

In 1967 Silver Standard Mines Ltd., under the direction of R.H. Seraphim, carried out a programme of geological mapping, rock sampling, magnetometer surveying and 1800 feet of bulldozer trenching. Some of the rock sampling results are as follows (20):

North showing, second trench north of adit	31 feet of .71% Cu
South showing, trench east of cabin	56 feet of .15% Cu

The PT#1 claim was staked in 1975 by George Stewart. Rock sampling and trenching was carried out in that year. This work confirmed old assay values of platinum in the 0.02 to 0.06 oz/ton range. Sampling in 1978 by McIntyre Mines of "high grade copper" in "pyroxenite" (8 foot chip sample) from the "high grade trench south of 'platinum' trench" contained .044 oz/ton Pt. A grab sample from "trench 2", containing abundant biotite, ran .022 oz/ton Pt.

1981 saw resumption of exploration work with a programme of trenching.

Kettle River Resources Ltd. acquired the SAPPHO property in 1981 and commenced an exploration programme. This report describes the exploration work to August, 1981.

REGIONAL GEOLOGY & MINERALIZATION

The geology and mineralization of the SAPPHO property is different from the typical copper-gold-silver "skarn" deposits of the Phoenix type in the Greenwood camp. The geology has some similarities with the Central Camp (No. 7, Mabel and City of Paris mines), notably the presence of ultramafic rocks, diorite and porphyritic felsic dykes. This package of intrusive rocks, with copper-gold-silver mineralization, appears to be associated with a broad arcuate zone of Tertiary faulting and brecciation. This zone starts in Washington State south of Danville, passes through the Comstock and Lone Star Mines and the Central Camp in British Columbia. Just north-west of the No. 7 Mine the zone starts to swing towards the south-west, passing through the SAPPHO property and continuing into Washington State.

Proterozoic(?) gneisses and schists and a Late Paleozoic-Early Mesozoic package of volcanic, pelitic, arenitic and ruditic rocks are cut by intrusive and/or tectonically emplaced by Permian(?) ultramafic and mafic rocks. These rocks have in turn been intruded by Cretaceous/Tertiary syenodiorites. Andesites of the Eocene Marron Formation occur west of the breccia zone. The SAPPHO property appears to be on the east edge of a north-northeast trending Tertiary graben. Numerous swarm-like occurrences of Tertiary dykes are found within the area bounded by the arcuate fault and breccia zone and the U.S.A. - Canada border.

Mineralization in the Central Camp occurs as (1) gold-silver quartz veins (No. 7, Mabel), and gold-copper-silver quartz veins (City of Paris), associated with serpentine; and (2) fracture-filling and disseminated copper mineralization (City of Paris). Teck Corporation is presently actively exploring the City of Paris property, optioned from Grenoble Energy Ltd. A small copper-silver Phoenix type "skarn" deposit, the Ruby, occurs north of the SAPPHO.

PROPERTY GEOLOGY, STRUCTURE, ALTERATION & MINERALIZATION

Geological mapping and rock sampling were restricted to the general area of previous exploration, now chiefly covered by the PT#1 claim. Figure 3 shows the geology and distribution of copper mineralization at a scale of 1:5,000. Detailed mapping and sampling is shown on Figures 4 and 5 at a scale of 1:500. In the area of detailed mapping, most of the rock exposures are in old workings, trenches or road cuts. Backhoe trenching was carried out and a picket and flagged grid was installed to aid geological mapping and sampling.

GEOLOGY

Most of the rocks have undergone intense brecciation, faulting, shearing and/or alteration, creating a complex geological picture. The oldest rocks mapped are regionally metamorphosed rocks of Late Paleozoic(?) age comprising phyllites, greenstones and cherts. These rocks have been assigned to the Anarchist Group.

Intruding and/or tectonically emplaced in the bedded metamorphic rocks are mafic and ultramafic rocks of Permian(?) age. The ultramafic rocks have been serpentized and are commonly intensely sheared. The syenodiorite and syenodiorite breccia is locally serpentized and foliated. Rocks rich in amphibole and pyroxene are common, although much of these minerals appear to be secondary "skarn" minerals. Highly sheared, soft, hornblende-rich rocks have been mapped as gabbro. The serpentinite and the mafic rocks might be a related suite of rocks although, at present, their relation is not clear. However, there appears to be a good regional correlation between the ultramafic rocks and the Anarchist Group (18).

Feldspar (orthoclase?) porphyry dykes have been mapped cutting the metamorphic rocks and the gabbro. These rocks are very similar to copper-bearing Cretaceous(?) Shasket Creek syenite porphyry dykes in the Curlew quadrangle. The porphyry is described as "large tabular orthoclase crystals in subparallel arrangement" with interstitial biotite, hornblende, garnet and magnetite (17). The dykes are late offshoots of larger alkali intrusions. On the SAPPHO property the feldspar porphyry appears to be older than the syenodiorite, although the evidence is indirect; no porphyry dykes have been mapped cutting the syenodiorite.

A fresh looking, essentially non-altered syenodiorite to diorite intrusion has been mapped intruding the metamorphic rocks and the gabbro. Just west of the old shaft this rock is in sharp contact with a very soft and crumbly, sheared gabbro. The contact strikes NW-SE and dips 70° east and is slightly offset, about 20 cm, by later faults; striking 110° and dipping 70° south. This south-west side of the diorite is possibly along a pre-existing NW-SE trending fault. In the two trenches to the east, the contact area is marked by depressions and fault breccia is noted in the easterly trench. Diorite in the north showings, near the contact, does not have the characteristically fresh appearance but the rock could be a contact phase. A felsic veinlet containing minor disseminated magnetite was noted. The previously mentioned locally serpentized and foliated syenodiorite is due possibly to a later stage of hydrothermal alteration and faulting. The syenodiorite is generally not altered (except chlorite), foliated, sheared or mineralized. Some copper-bearing, highly altered and sheared rocks are possibly altered syenodiorite but appear more likely to be altered metamorphic rocks (see discussion under MINERALIZATION). The syenodiorite is probably late Cretaceous to early Tertiary in age.

STRUCTURE

The extent and degree of brecciation is one of the most notable features of the geology. The breccia fragments are usually 1 to 3 cm in diameter, although mega-breccia possibly occurs. Fragments up to one metre in diameter were noted. On an outcrop scale the breccia fragments do not represent a variety of rock types but are restricted to specific types. Also, no exotic fragments were noted. There appears to be very little relative movement of the fragments. Intrusive-metamorphic rock contacts are undisturbed, although both rock units are brecciated. An analogous situation was noted with a quartz vein intruding metamorphic rocks. However, there is commonly minor faulting or more intense brecciation along the contact. The syenodiorite is not brecciated to the same extent or degree as the metamorphic rocks; generally the syenodiorite is only brecciated at its edges. The breccia appears to have formed in zones of structural weakness and the texture indicates that the breccia was formed in situ. All rock types including quartz veins are brecciated, indicating a probable post early Tertiary age for the breccia.

Intense faulting, shearing and brecciation is associated with serpentinite. An apparent exotic limestone fragment, indicating major faulting, was noted on a dump at about 3,070 feet elevation on the INGERBELLE claim. The serpentinitized rocks are probably related, both in origin and alteration, to major faults.

Intense shearing and faulting is common, especially in areas of copper mineralization. There appears to be a possible significant indication of a NW-SE strike with NE dip of faults and mineralized shears.

ALTERATION

Biotite, feldspar (orthoclase?), garnet, sericite, epidote, hornblende, pyroxene, chlorite, calcite and quartz are present as hydrothermal alteration minerals. Hornfelsed sediments, "skarn" and feldspar porphyry are the resultant rocks. The syenodiorite has not undergone this hydrothermal alteration, subject only to chloritization. Ultramafic rocks, and to a minor degree mafic and syenodioritic rocks, have been serpentized.

Biotite occurs in varying amounts from disseminated grains to almost total replacement. Feldspar (orthoclase?) occurs as elongated crystals, commonly 2 cm long, and up to 6 cm long, from in situ replacement to feldspar porphyry dykes. Sericite is more common in the feldspar-rich rocks. Garnets tend to occur in clusters associated with either epidote, biotite, calcite and/or feldspar. Some of the garnets have undergone retrograde metamorphism to mica(?). Hornblende and pyroxene (augite) occur in skarn-like rocks. Chlorite alteration of mafic minerals is common in most altered rocks. Calcite occurs chiefly as small veins associated with shears and with garnet in skarn-like rocks. Minor quartz veins and veinlets and silicified hornfels are exceptions to a generally silica-poor alteration. The quartz veins are probably Tertiary in age. Serpentinization of the ultramafic rocks has been both extensive and intensive. Some diorites and gabbros have slight serpentine alteration and serpentine occurs on shear planes.

There does not appear to be a coherent zoning pattern to the alteration. However, the intense shearing and brecciation most definitely complicates any possible zoning. Copper mineralization does not appear without some or most of the alteration minerals. There is strong alteration and shearing in areas of copper mineralization. The alteration, although described by previous workers (20) as a skarn, more closely fits the type and mode found in alkaline porphyry deposits.

MINERALIZATION

Rock samples, totalling 30, were collected and analysed for Cu, Ag, Au, and/or Pt. The results are shown in Table 1 and sample locations on Figures 3, 4b and 5b. Semi-quantitative analysis (Appendix 1) was carried out on two rock samples. Chalcopyrite with associated malachite and azurite occurs in highly altered and sheared metamorphic rocks. Copper, silver and platinum mineralization is associated with strong biotite and with garnet and calcite alteration. Copper mineralization is also associated with some feldspar porphyry, possibly similar to the City of Paris deposit. Chalcopyrite was noted as disseminations in feldspar crystals.

Chalcopyrite occurs as fine grained disseminations, as blotches, on fractures, as small massive pods, in calcite veins, in quartz veinlets and in shears. The mode of mineralization corresponds well with mineralization in alkaline porphyry deposits (1). Pyrite is usually less than 2%, with magnetite and hematite being more common. Small amounts of gold are associated with some of the more pyritic rocks. The significant platinum mineralization was probably derived from the serpentinites.

In the north zone by the small adit, three mineralized shears have a strike of about 150° with a NE dip. This general NW-SE orientation might be significant in structural interpretations.

The age of the mineralization is the same as that of the alteration. The source of the alteration and mineralization seems to be related to the feldspar porphyry dykes although the exact relation is unclear at present. Hilchey believed the copper mineralization to be restricted to a "differentiated basic intrusive stock" (13) which presumably included gabbroic and syenodioritic rocks. Seraphim (20) showed the mineralization being restricted to skarns.

TABLE 1 ROCK ASSAYS

SAMPLE NUMBER	SAMPLE TYPE	LENGTH m	Cu %	Ag oz/ton	Au oz/ton	Pt oz/ton	COMMENTS
1	chip	3.0	.11	.02	<.002	<.002*	
2	chip	3.0	.94	.55	.004	.025*	
3	chip	3.2	.56	.29	.002	<.002*	
4	grab	---	26.0	3.87	.020	.051	massive cpy
5	chip	3.3	.69	.16	<.002	.005*	
6	chip	3.5	.72	.10	<.002	.005*	
7	chip	3.4	.38	.20	<.002	.005*	
8	chip	2.3	.24	.02	<.002	.005*	
9	chip	3.5	.20	.02	<.002	.003*	
10	chip	3.5	.22	.05	<.002	<.002*	
13	grab	---	.02	.02	<.002	<.002	quartz vein
14	grab	---	.11	.02	.013	<.002	feldspar porphyry, rusty
15	grab	---	<.01	<.02	<.002	<.002	slightly altered diorite
17	grab	---	.01	<.02	<.002	---	feldspar porphyry bx; py
18	grab	---	<.01	<.02	<.002	---	syenodiorite
19	chip	6.0	.01	<.02	<.002	<.002	sheared gabbro
21	chip	2.4	.40	.10	<.002	.006*	
22	chip	0.8	.07	.04	<.002	<.002*	
25	grab	---	.01	---	---	---	intense feldspar alteration
26	chip	3.0	1.74	.35	---	.003*	
29	grab	---	---	.03	.009	<.002	black hornfelsed sediment; py
30	grab	---	---	<.02	<.002	<.002	from dump, altered diorite
31	chip	3.0	.01	<.02	<.002	<.002	serpentine
32	grab	---	.01	.02	<.002	<.002	serpentine
33	grab	---	<.01	<.02	<.002	---	syenodiorite
34	grab	---	2.66	.13	<.002	.002*	
35	grab	---	.03	<.02	<.002	.002	greenstone
36	grab	---	.40	.04	---	.006*	dump
38	grab	---	---	---	.002	---	quartz veinlet, py; dump
40	grab	---	5.58	1.98	---	.018	highgrade

* altered and sheared rock unit 1

DISCUSSIONS & CONCLUSIONS

The intense alteration and associated copper-silver-platinum mineralization is a significant exploration target. The alteration and mineralization appears to be peripheral to a syenodiorite intrusion, however the source of the alteration and mineralization does not seem related to this intrusion. Feldspar porphyry dykes of Cretaceous(?) age appear to be the source of the mineralization. The mineralization occurs mainly in altered and sheared Anarchist metamorphic rocks but also in the porphyry dykes. The type and mode of the alteration and mineralization is a strong indicator of the presence of an alkali porphyry system. The source of the platinum is most probably the serpentinite. It should be noted that the Copper Mountain Mine, also an alkali porphyry, contained some platinum (2). Further geological mapping should greatly increase the understanding of the complex geology. The extent of the mineralization discovered to date is not economic in itself. However, since the property, until now, has never been actively explored as a porphyry target, good exploration potential exists.

RECOMMENDATIONS

The following programme is recommended.

- 1). Geological mapping should be expanded from present coverage.
- 2). Selected samples should be assayed for the remaining platinoid group metals.
- 3). Magnetometer and induced polarization surveys should be run over areas of favourable geology.
- 4). The exploration potential of possible supergene mineralization near the Tertiary Marron Formation contact should be evaluated.
- 5). Testing of geological and geophysical exploration targets by diamond drilling should follow completion and evaluation of above recommendations.

Respectfully submitted,



W.R. Gilmour

September 11, 1981

REFERENCES

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20. Seraphim, R.H. (1967) Map of Cabin Claims, 1"=100'

STATEMENT OF COSTS

1).	Professional Services		
	K.L.Daughtry, P.Eng.		
	Supervision		
	2 days @ \$250/diem	\$ 500.00	
	W.R.Gilmour, Geologist		
	Fieldwork October 8		
	April 28		
	June 6, 7, 11,13, 14, 19, 30		
	July 1, 13-15		
	August 10-12		
	Plus Supervision, Report Writing,		
	Basemap Preparation		
	22 days @ \$200/diem	<u>4,400.00</u>	
		\$4,900.00	4,900.00
2).	Labour		
	J. Graham		
	May 22-24		
	3 days @ \$150/diem		450.00
3).	Transportation		
	GMC Jimmy 4X4		
	October 8		
	April 28		
	May 22-24		
	June 6, 7, 11, 13, 14, 29, 30		
	July 1, 13-15		
	August 10-12		
	19 days @ \$25/day	475.00	
	3758 km @ \$.20/km	751.60	
	Gas, Oil	<u>353.61</u>	
		\$1,580.21	1,580.21

4).	Accommodation & Meals			
	October 8			
	May 22-24			
	June 6, 7, 11, 13, 14, 29, 30			
	August 10-12			446.51
5).	Analysis			
	Au, Ag	25 @ \$11.00	\$ 275.00	
	Au	1 @ 8.00	8.00	
	Ag	3 @ 8.00	24.00	
	Cu	27 @ 6.00	162.00	
	Pt	25 @ 20.00	500.00	
			<u>\$1,059.00</u>	1,059.00
6).	Field Supplies, Shipping			100.00
7).	Telephone, Printing, Secretarial			<u>725.00</u>
			TOTAL	<u><u>\$9,260.72</u></u>

STATEMENT OF QUALIFICATIONS

I, W.R.GILMOUR, of 13511 Sumac Lane, Vernon, B.C., V1B 1A1, DO HEREBY CERTIFY that:

1. I am a consulting geologist in mineral exploration employed by W.R.Gilmour & Associates Ltd., Vernon.
2. I have been practising my profession in British Columbia, the Yukon Territory, and Nevada for 11 years.
3. I am a graduate of the University of British Columbia with a Bachelor of Science degree in geology.
4. I am a Fellow of the Geological Association of Canada and a member of the Society of Mining Engineers of A.I.M.E.
5. This report is based upon knowledge of the SAPPHO property gained from exploration work on the property.
6. I am a Director of Kettle River Resources Ltd.

Vernon, B.C.
September 11, 1981




W.R.Gilmour

STATEMENT OF QUALIFICATIONS

I, KENNETH L. DAUGHTRY, of R.R. #4, Vernon, British Columbia,
DO HEREBY CERTIFY that:

1. I am a Consulting Geologist in Mineral exploration.
2. I have been practising my profession for sixteen years in Canada, the United States and Ireland.
3. I am a graduate of Carleton University, Ottawa, with a Bachelor of Science degree in Geology and Chemistry.
4. I am a member of the Association of Professional Engineers of British Columbia, Ontario, and Yukon Territory, and a Fellow of the Geological Association of Canada.
5. This report is based upon knowledge of the SAPPHO property gained from exploration work on the property.
6. I am a Director of Kettle River Resources Ltd.

Vernon, B.C.
September 11, 1981



K.L. Daughtry, P.Eng.

APPENDIX 1: Semi-Quantitative Analyses



BONDAR-CLEGG & COMPANY LTD.

130 PEMBERTON AVE., NORTH VANCOUVER, B.C. V7P 2R5 PHONE: 985-0681 TELEX 04 352667

Sappho

SEMI-QUANTITATIVE ANALYSIS

No: A21-658

Sample No.: SAP - 4

From: K.L. Daughtry

Method: XRF and E-SPEC

Date: July 23 19 81

No. of Elements: 35

Analyst: _____

TRACE ELEMENTS (%)	< .003	.003-.01	.01-.03	.03-0.1	0.1-0.3	0.3-1.0	1.0-3.0	3.0-10.0	>10.0	REMARKS
Ag			X							
Cu									X	
Pb	X									
Zn						X				
Mo	X									
Fe								X		
W	X									
Ni			X							
Co			X							
Cr	X									
As		*								* < .01%
Sb	X									
Mn			X							
V				X						
Bi	X									
Sn	X									
Zr	X									
B	X									* > 0.2%
Ba		X								
Be	X									* > 0.1%
La	X									
Nb	X									
Sr			X							
Y	X									
Ce		X								
U	X									
Th	X									
MAJOR ELEMENTS (%)										
CaO							X			
MgO					X					
TiO ₂				X						* > 2%
Na ₂ O			X							* > 7%
K ₂ O				X						* < 0.6%
SiO ₂								X		* < 2%
Al ₂ O ₃						X				* < 0.2%
P ₂ O ₅			X							* < 0.4% * > 4.0%

* Not measured less than or above noted detection limit



BONDAR-CLEGG & COMPANY LTD.

130 PEMBERTON AVE., NORTH VANCOUVER, B.C. V7P 2R5 PHONE: 985-0681 TELEX 04 352667

SEMI-QUANTITATIVE ANALYSIS

No: A21-658

Sample No.: SAP - 2

From: K.L. Daughtry

Method: XRF and E-SPEC

Date: July 23 1981

No. of Elements: 35

Analyst: _____

TRACE ELEMENTS (%)	< .003	.003-.01	.01-.03	.03-0.1	0.1-0.3	0.3-1.0	1.0-3.0	3.0-10.0	> 10.0	REMARKS
Ag	X									
Cu						X				
Pb		X								
Zn			X							
Mo	X									
Fe								X		
W	X									
Ni	X									
Co	X									
Cr		X								
As		*								* < .01%
Sb	X									
Mn						X				
V				X						
Bi	X									
Sn	X									
Zr		X								
B	X									* > 0.2%
Ba		X								
Be	X									* > 0.1%
La		X								
Nb	X									
Sr				X						
Y		X								
Ce		X								
U	X									
Th	X									
MAJOR ELEMENTS (%)										
CaO								X		
MgO						X				
TiO ₂						X				* > 2%
Na ₂ O								X		* > 7%
K ₂ O							X			* < 0.6%
SiO ₂									X	* < 2%
Al ₂ O ₃								X		* < 0.2%
P ₂ O ₅					X					* < 0.4% * > 4.0%

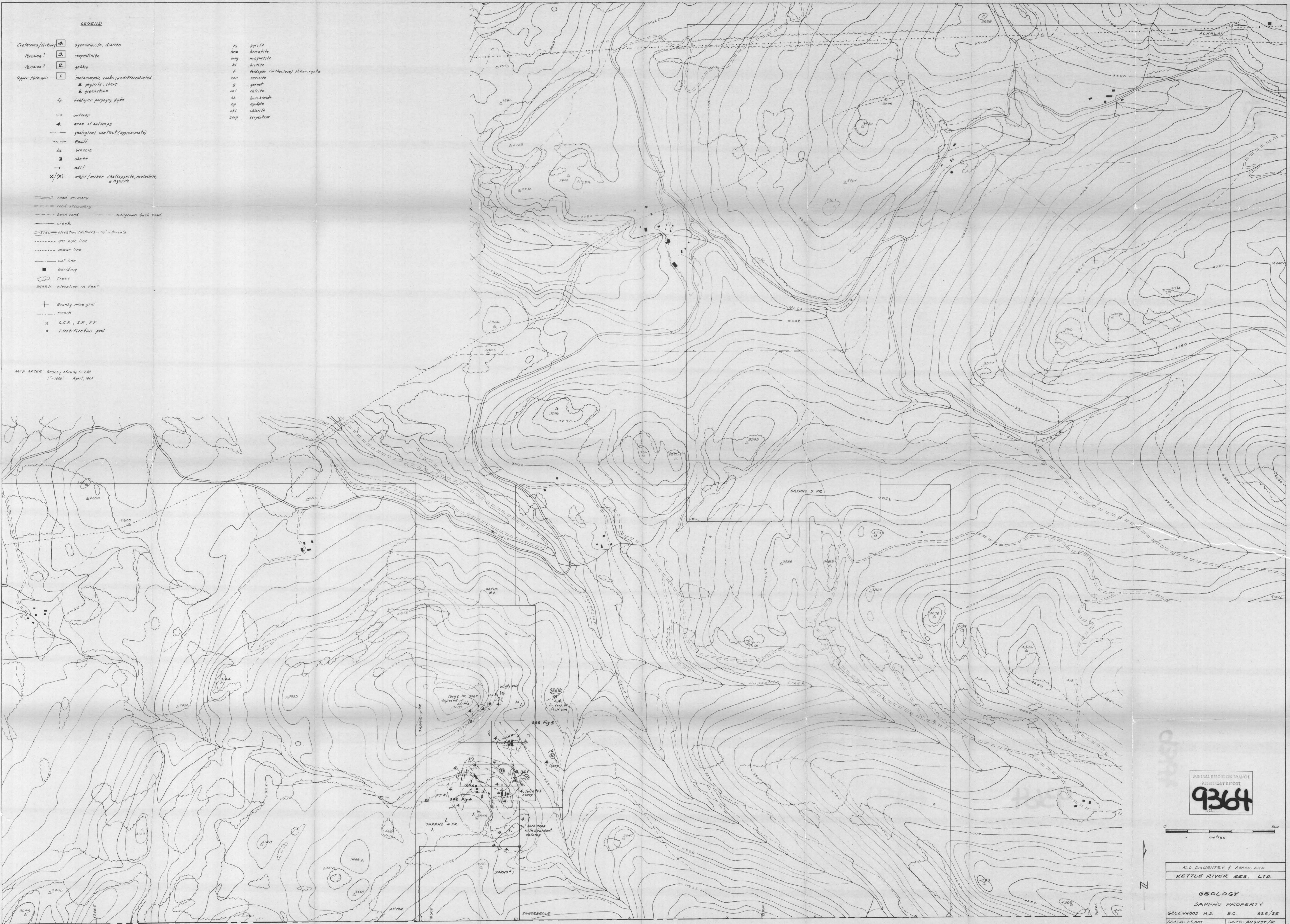
* Not measured less than or above noted detection limits

LEGEND

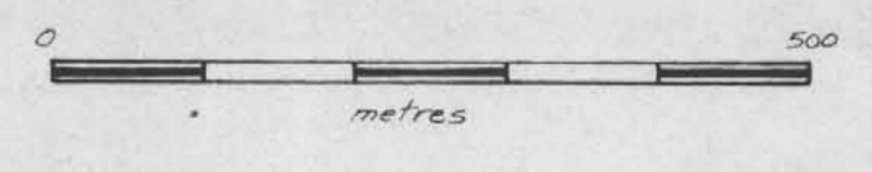
- | | | | | |
|-------------------|---|---|----------|-----------------------------------|
| Crataean/Tertiary | 4 | syenodiorite, diorite | py | pyrite |
| Permian? | 3 | serpentine | hem | hematite |
| Permian? | 2 | gabbro | mag | magnetite |
| Upper Palaeozoic | 1 | metamorphic rocks, undifferentiated | bi | biotite |
| | | ■ phyllite, chert & greenstone | f | feldspar (orthoclase) phenocrysts |
| | | fp | sericite | ser |
| | | feldspar perthite dyke | g | garnet |
| | | outcrop | cal | calcite |
| | | area of outcrops | hb | hornblende |
| | | geological contact (approximate) | ap | apatite |
| | | Fault | chl | chlorite |
| | | breccia | serp | serpentine |
| | | shaft | | |
| | | adit | | |
| | | major/minor chalcopryite, malachite & azurite | | |

- road primary
- road secondary
- - - bush road
- - - overgrown bush road
- creek
- 50' interval elevation contours
- - - gas pipe line
- - - power line
- - - cut line
- building
- ☁ trees
- 3545 b. elevation in feet
- + Grassy mine grid
- - - trench
- L.C.R., I.P., R.P.
- Identification post

MAP AFTER Grassy Mining Co. Ltd.
1"=100' April, 1959

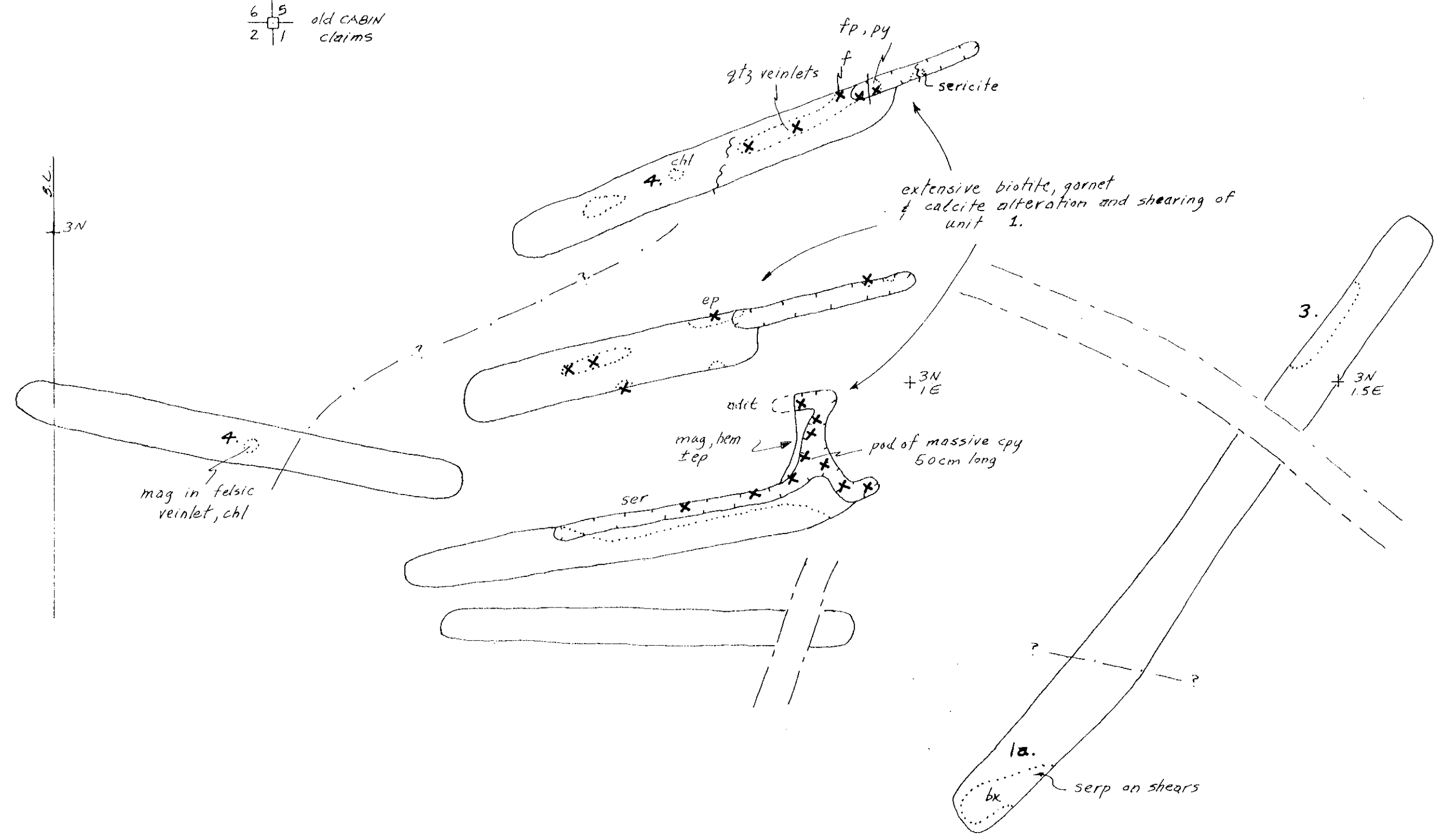


MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
9364



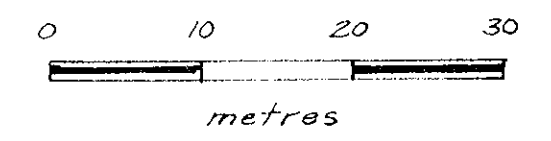
K.L. DAUGHTERY & ASSOC. LTD.
KETTLE RIVER RES. LTD.
GEOLOGY
SAPPHO PROPERTY
GREENWOOD M.D. B.C. 826/25
SCALE 1:5,000 DATE AUGUST/61
DWN. BY NAB PROJ. NO. FIGURE NO. 3

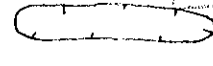


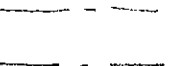
6 5
2 1 old CABIN
claims



LEGEND
see Figure N°3

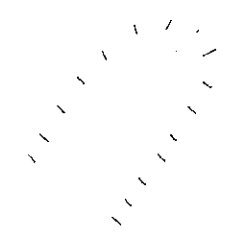
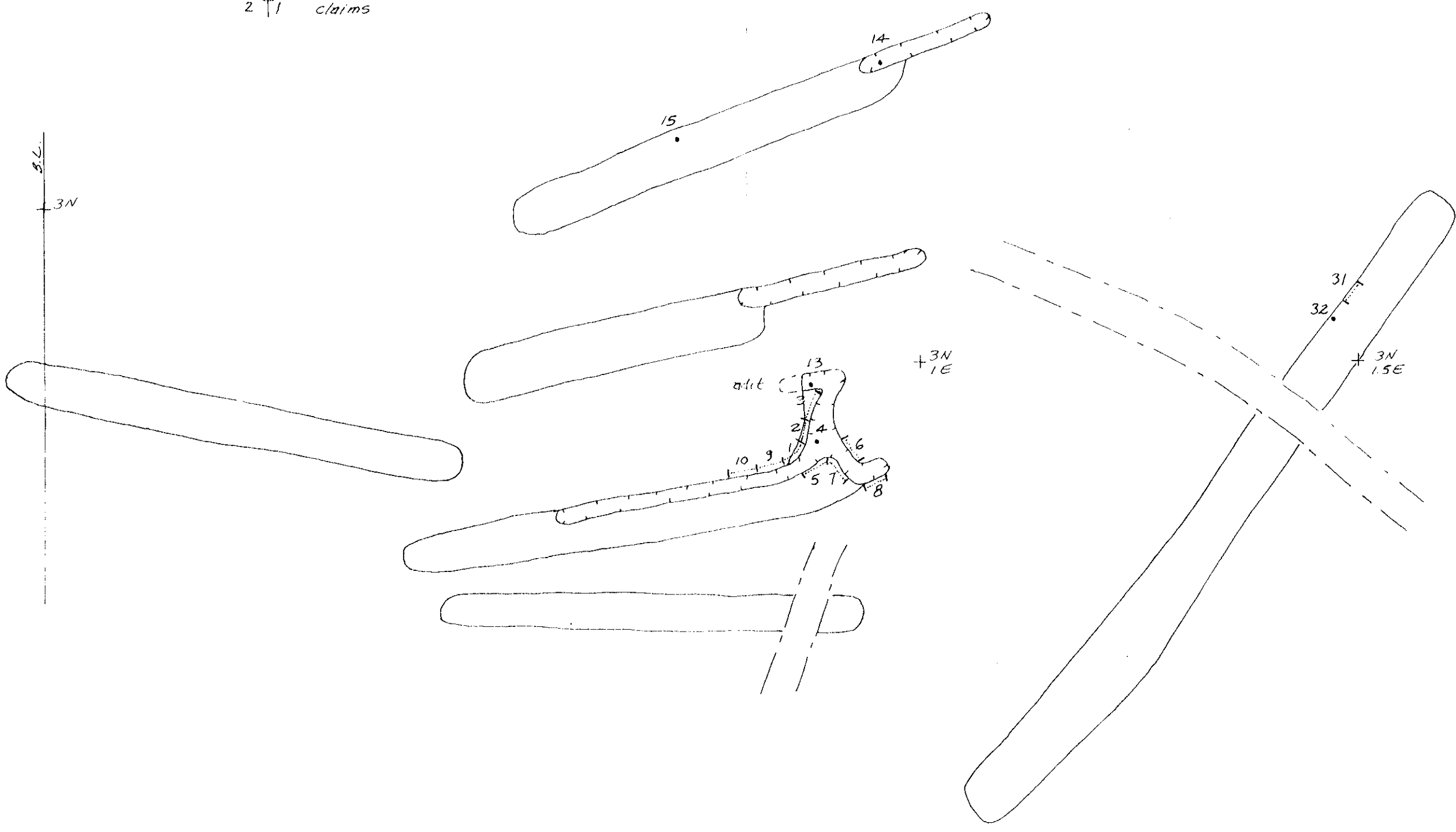
MINERAL IDENTIFICATION BRANCH
LABORATORY REPORT
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NO.



-  backhoe trench
-  bulldozer trench
-  old workings
-  road

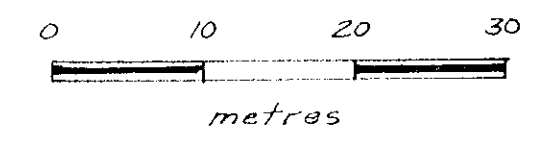
K. L. DAUGHTRY & ASSOC. LTD.		
KETTLE RIVER RESOURCES LTD.		
GEOLOGY		
NORTH SHOWINGS		
SAPPHO PROPERTY		
GREENWOOD M.D.	B.C.	82E/2E
SCALE: 1:500		DATE: AUGUST/81
DWN BY: WRG	PROJ. N°: 117	FIGURE N°: 4a

6 | 5
2 | 1 old CABIN
claims



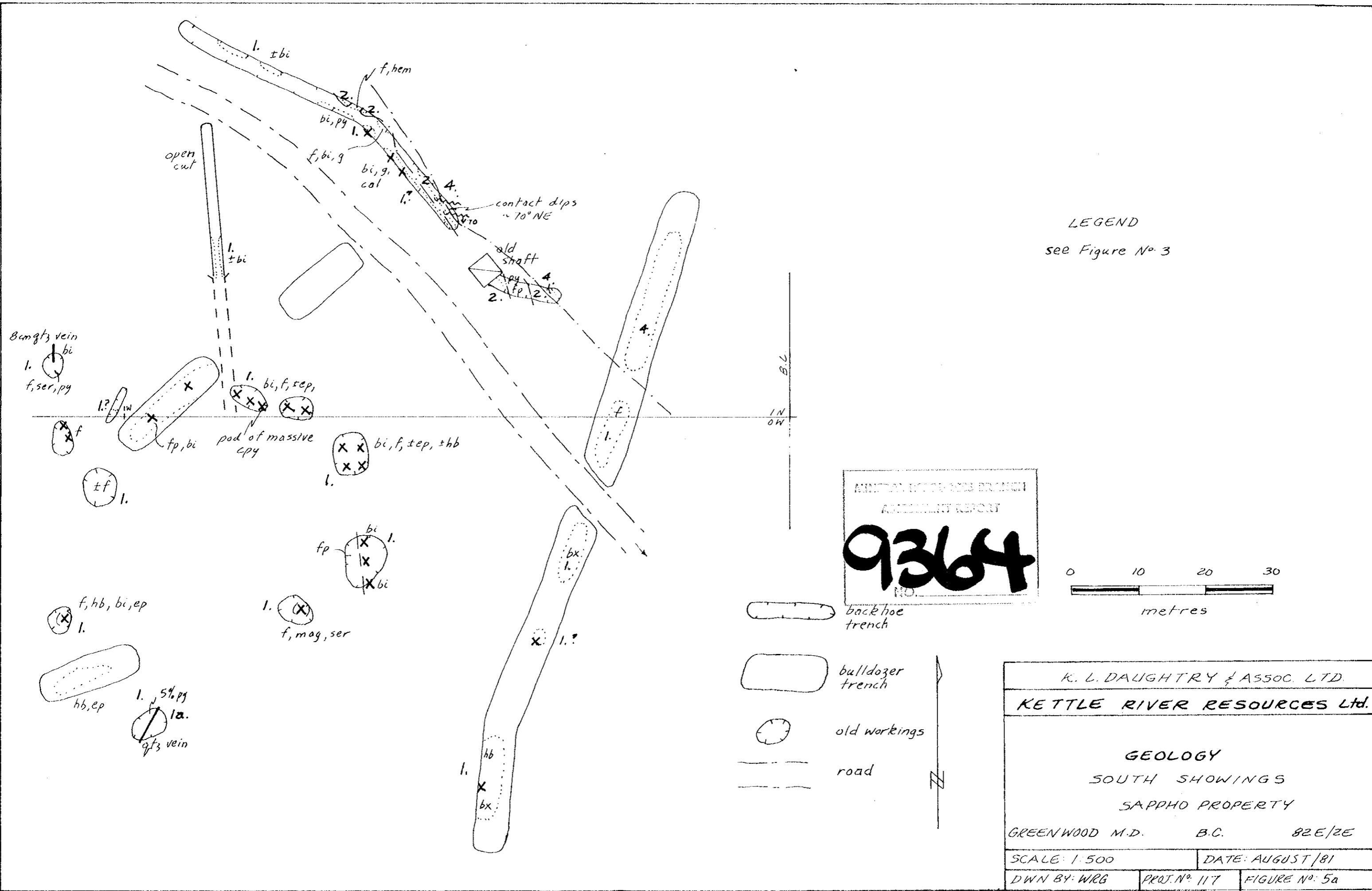
• grab sample
- - - - - chip sample

KETTLE RIVER BRANCH
ACCIDENT REPORT
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NO.



- backhoe trench
- bulldozer trench
- old workings
- road

K. L. DAUGHTRY & ASSOC. LTD.		
KETTLE RIVER RESOURCES LTD.		
ROCK SAMPLE LOCATIONS NORTH SHOWINGS SAPPHO PROPERTY		
GREENWOOD M.D.	B.C.	82E/2E
SCALE: 1:500	DATE: AUGUST /81	
DWN BY: WRG	PROJ. N°: 117	FIGURE N°: 46



1. tbi

f, hem

2. 2.

bc, py

1. x

f, bi, g

bi, g, col

4.

contact dips
~ 70° NE

old shaft

py 4.

fp 2.

open cut

1. tbi

Bcmgtz vein

1. bi

f, ser, py

1. bi, f, tep,

pod of massive
cpy

bi, f, tep, tbb

fp, bi

±f

1.

fp

bi

1.

f, hb, bi, ep

1.

1. (x)

f, mag, ser

hb, ep

1. 5% py

1a.

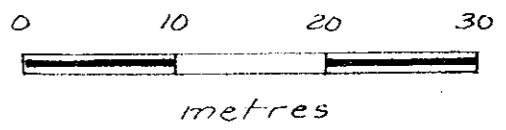
qtz vein

backhoe trench

bulldozer trench

old workings

road



MINERAL RIGHTS AND CLAIMS
ASSESSMENT REPORT
9364
NO.

K. L. DAUGHTRY & ASSOC. LTD.		
KETTLE RIVER RESOURCES Ltd.		
GEOLOGY		
SOUTH SHOWINGS		
SAPPHO PROPERTY		
GREENWOOD M.D.	B.C.	82E/2E
SCALE: 1:500	DATE: AUGUST/81	
DWN BY: WRG	PROJ. NO: 117	FIGURE NO: 5a