EXPLORATION PROPOSAL FOR THE VAVENBY MAP SHEET: 3211/12

R.H. Pinsent November 28, 1982

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PLACER DEVELOPMENT LIMITED

EXPLORATION PROPOSAL FOR THE VAVENBY MAP SHEET: 82M/12

By: R.H. Pinsent

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Introduction:

The Eagle Bay Formation, shown in Figure 1 (G.S.C. Open file 637 by Campbell and Okulich 1979) is a mixed assemblage of metavolcanic and metasedimentary strata noted for the widespread development of minor volcanogenic, exhalative, "massive sulphide" deposits. These consist of two main varieties (1) Pb, Zn, Ag deposits in calcareous sediments (Mosquito King, Lucky Coon, Nimsic) and (2) predominantly Cu bearing deposits in which chalcopyrite occurs in lenses of pyrrhotite and pyrite in rocks presumed to be acidic flows or tuffs (May, Broken Ridge, VM).

Detailed remapping of the Eagle Bay Formation south of the Baldy Batholith has shown that the deposits in this area are largely clustered around two previously unidentified centres of acid volcanism (Preto, 1981).

The Eagle Bay Formation located to the north of the Baldy Batholith is stratigraphically similar (Figure 1) but it has not, as yet, been remapped. It contains comparable mineral showings to those in the southern block but it appears to have generated considerably less recent exploration activity. Figure 2 is a compilation map showing the extent of known exploration activity covering the Eagle Bay Formation in N.T.S. Map Sheet 82M/12. The figure shows the following: (1) the locations of known mineral deposits, (2) the extent of current claim holdings, (3) the extent of known airborne geophysical surveys (4) the location of known survey grids over currently open ground, (5) the sites of geochemically anomalous Government Survey silt samples and (6) the locations of silt and heavy mineral (Fipkie) samples collected by Placer Development personnel in 1982.

Location and Access:

The northern block of Eagle Bay strata is bisected by the North Thompson River east of Clearwater. The area of interest is therefore serviced by one of the main road and rail communication arteries in the Province (Figure 2).

The Eagle Bay Formation crops out in a series of steep, wooded hills to the south and north of the river. Most of the ground is reasonably accessible from a series of logging roads which give moderately good overall coverage of the hills adjacent to the North Thompson River.

Regional Geology:

Figure 3 is an enlargement to 1:125,000 of a portion of Figure 1. It shows the published geological map of the northern block of Eagle Bay strata between the Baldy Batholith in the south and the Raft River Batholith in the north.

The Eagle Bay Formation consists of a multiply deformed and recrystallized succession of metasedimentary and metavolcanic strata of probable Devonian to Triassic age (Preto, 1980). The succession was originally mapped as a Cambro-Ordovician stratigraphic package (Campbell and Okulich, 1979).

Figure 3 shows that there are two principal components to the stratigraphy which can be traced both north and south of the North Thompson River. The sucession contains a major unit of predominantly siliceous metasediment (COEBq), with locally interbedded acid volcanic material (COEBVa), and a major unit of "greenstone" (COEBV) which also includes appreciable amounts of conglomerate and (agglomerate (COEBCg), black shale (COEBp) and limestone (COEBT and COEBC).

The contact between the predominantly sedimentary and the predominantly volcanic packages is sharp, and it is commonly defined by lenses of carbonate. The horizon can be identified on both sides of the "greenstone belt" and it can be traced from the Raft River Batholith in the north to the Baldy Batholith in the south. Acid volcanic strata occur locally in the sediment immediately below the contact.

Figure 4 is a simplified 1:50,000 scale extrapolation of the geological map which also incorporates additional geological data from assessment reports. The figure shows the location of known mineral showings and the positon of major positive magnetic anomalies. These anomalies (>58,500) appear to be reflecting minor amounts of magnetite in limestone and either pyrrhotite or magnetite in acid volcanic material.

Mineral Deposits

There are at least five mineral deposit types in the Eagle Bay Formation east of Clearwater. These are: (1) U, F, Mo deposits (2) Cu deposits, (3) Pb, Zn, Ag deposits, (4) Au deposits and (5) Ag, Pb vein deposits. In addition, there are a few other polymetallic vein occurrences quoted as carrying Cu, Pb, Zn, Au and Ag.

(1) U, F, Mo Deposits

The Rexspar U, F, Mo deposit is one of the best known but most enigmatic properties in the map area. The mineralization occurs in a conformable acid volcanic centre within the Eagle Bay Formation. Extensive trachytic tuff and breccia and intrusive alkali feldspar porphyry and rhyolite appear to be altered and mineralized by late-stage volcanogenic, hydrothermal fluids. The alteration process lead to the development of secondary fluorophlogopite and abundant pyrite (Preto, 1978)

(2) Cu Deposits

There are several Cu showings in the area. The most significant discovered to date appears to be on the Sue-Hail-Goof property at the head of Harper Creek. This deposit is considered to be formed from "hydrothermal metamorphic fluids" which were channelled along a post deformation structure about the time of emplacement of the Baldy Batholith (Belik; 1973). Despite the above, the deposit shows many of the characteristics of a recrystallized, volcanogenic, deposit related to a local centre of acid volcanism. The deposit is tabular although it appears to be slightly discordant to stratigraphy. The best Cu grades appear to correlate with a basic tuff horizon. It has a constant thickness and a sharp grade controlled cut-off point at 0.2% Cu. It consists largely of disseminated and fracture controlled, pyrite, pyrrhotite and chalcopyrite and it locally contains massive lenses of sulphide and magnetite. Quartz and quartzcarbonate veins are considered to be secondary (Belik, 1973).

The VM Cu property is recognized to be volcanogenic. Disseminated chalcopyrite occurs in a quartz-eye rhyolite below an exhalative chert horizon (assessment report 6878). The Sin and the ESP-VAV occurrences are presumed to be similar. The latter consists of disseminated pyrite and chalcopyrite in two conformble bands of quartz sericite schist (assessment report 6933). The occurrence lies to the east of a known acid volcanic centre. Similar exhalative Cu deposits are located on Foghorn Mountain.

The Hilltop property lies immediately adjacent to the Baláy Batholith and the Cu mineralization on the property was originally considered to result from emanations from the batholith (assessment report 3430, 6792). The mineralization occurs in chloritic schist or "greenstone" and it is accompanied by silicification, pyritization and alteration to potassium feldspar. There does appear to be an element of stratigraphic control, however, as several showings occur as pods and lenses of pyrite and pyrrotite between the lower contact of the greenstone unit and the top of the underlying limestone unit.

Neither the Rob nor the Reg properties are described in detail but it appears that pyrite, pyrrhotite and chalcopyrite are disseminated in sericitic and chloritic schists.

(3) Pb, Zn, Ag Deposits

The Red Top, Snow and Sunrise properties on Mount McClennan lie along a single mineralized stratigraphic horizon. The mineralization in the two westerly properties consists of pyrite with minor amounts of sphalerite and galena in acid tuffs and sediments immediately below a major limestone unit. Lenses of

massive pyrrhotite with sphalerite and galena are restricted to the easternmost property (assessment report 5813, 6603).

(4) Au Deposits

The Morrison Au occurrence on the lower slopes of Mount McClennan is the only known Au occurrence in the area. Little is known about it; except that it is assumed to be a vein occurrence at the contact between quartz-sericite schist and "greenstone" adjacent to the McCorvie fault, (assessment report 436).

(5) Ag, Pb, Vein Deposits

The geology of the Bearsden and Tinkirk prospects are not known in detail but they are thought to be quartz veins carrying argentiferous galena and pyrite. The Brenda prospect and several occurrences on Foghorn Mountain appear to be similar. Some of the latter may be related to the known occurrence exhalative Cu mineralization on Foghorn Mountain.

Stream Sediment Geochemistry

The Vavenby map area falls within the boundaries of the National Geochemical Reconnaissance Release (NGR 27-1977; G.S.C. Open File 516) for N.T.S. Map Sheet 82M. This Government sponsored stream sediment sampling programme successfully identified most of the drainages that are known to contain mineralization and produced geochemical anomalies in several drainages that have not, so far, produced evidence of mineralization.

The existing claims staked to the south of the North Thompson River cover the Rexspar and Foghorn Mountain mineral deposits. Their principal drainages, Foghorn and Lute Creek, are anomalous in Cu, Pb, Zn, Mo, U and F. The Sue-Hail-Goof deposit shows up in Cu, Pb and Zn at the head of Harper Creek and the Sin and VM copper mineralization shows up as a Cu anomaly in the drainage north of Vavenby Mountain and as a Cu, Pb anomaly in its southern drainage. The Hilltop and Vav copper showings have no obvious geochemical signature in their adjacent drainages.

The Creeks draining Mount McClennan, north of the North Thompson River, have an elevated background Pb content, in common with most of the Eagle Bay (Figure 5). Peavine Creek is anomalous in Zn (Figure 6) and Crossing Creek is anomalous in F. None of the creeks are significantly enriched in Cu (Figure 7).

The upper secton of Reg Christie Creek and some of its tributaries are distinctly anomalous in Pb, Zn and Cu (Figures

5-7) and they are also enriched in Mn and Fe. These anomalies may be partly, but cannot be entirely explained by the presence of mineralization on the Reg property.

A total of 19 heavy mineral (Fipkie) and 25 stream silt samples were collected in October 1982. The sample locations, shown in Figure 2, give good overall coverage of the Eagle Bay Formation north and south of the North Thompson River. The samples were collected to test the heavy mineral dispersion trains of known mineral showings and to test for similar mineral dispersion characteristics in apparently non-mineralized creeks.

Individual heavy mineral samples have been processed and split into two size fractions (-35 + 150 and -150 mesh) and the heavy mineral component of each has been separated into heavy magnetic (HM), heavy paramagnetic (PM) and heavy non-magnetic (HN) subfractions. These fractions will be studied for their mineralogical characteristics and then submitted for analysis.

The -80 mesh silt samples have been analysed for Mo, Cu, Zn, Pb, Cd, Ni, Co, Ag, Au, U, W, F, Ba and Sn. The results for the samples listed in Table 1 are given in Table 2. The silt samples reflect the presence of Mo, Cu, Pb, Zn, Ag, U and F mineralization on the Foghorn and Rexspar properties but few other copper showings in the district display recognizable geochemical anomalies. The silt sample from Peavine Creek, north of the North Thompson River, is distinctly anomalous in Pb, Zn and Au. The Crossing Creek sample was taken upstream from the Brenda Mineral showing and it does display the anomalous F content found in the Government sample.

Discussion

The compilation of geological data in Figure 4 shows that most of the known mineral deposits in the map area occur either within or immediately below a major band of greenstone. This is particularly true of the exhalative Cu and Pb, Ag, Zn deposits and it may also be true of the U, F, Mo deposits. The rocks underlying the greenstone are predominantly quartz-sericite schists and for the most part they have been interpreted as being siliceous metasediments. The most recent mapping of the Vavenby area has shown that at least some of the schist immediately underlying the greenstone unit is recrystallized acid volcanic material.

Acid volcanism in some form or another has been identified on or adjacent to the Rexspar, Sue-Hail-Goof, VM, Sin, Vav and Snow-Sunrise properties. Some geologists, notably Nels Vollo of Craigmont Mines Ltd., consider that nearly all the so called "siliceous metasediment" is a product of acid volcanism. The time of exhalative mineralization probably occurred during the

waning stages of a major episode of acid volcanism. It was accompanied by limestone deposition and terminated by mafic volcanism.

The geology of the greenstone belt has not been defined in detail as the terrain is heavily timbered and outcrop is scarce. The publication of the geological map in Open File 637 in 1979 was a major advance in the understanding of the geology in the area. Its publication in 1979 appears to have coincided with, or it may even post date, the last main period of regional exploration in the area; when Craigmont Mines Ltd., Barrier Reef Resources Ltd. and Union Oil Co. Ltd. covered much of the southwest part of the map area with a Dighem II survey. These surveys did not extend over the main greenstone belt in the east and there is no evidence to suggest that it has ever been flown.

Figure 2 shows that there is presently only one major claim holding which covers the base of the greenstone unit; the three units "After You" Claim held by Kangold Resources Ltd. There are however, a few isolated two post claims scattered around the base, of the greenstone belt between the Vav and the Reg showings.

The exploration activity to date has shown that the sericite schists underlying the greenstone unit in Figure 4 are at least locally derived from acid volcanic strata and that they host three types of stratiform mineral deposits; (1) exhalative Pb, Ag, Zn mineralization, (2) exhalative and/or epigenetic Cu mineralization and (3) epigenetic U, F, Mo mineralization. Tonnages and grades are not available, but clearly the Sue-Hail-Goof (Cu) and the Rexspar (U, F, Mo) deposits are appreciable in size. Several mineral showings have been identified near the base of the greenstone unit, despite the nature of the terrain and the scarcity of outcrop. These have hitherto been explored in isolation. The horizon has excellent potential for other, perhaps covered, deposits comparable to those that have already been found.

Recommendations:

I recommend that the Company stakes a few key areas around the base of the greenstone belt. These areas, shown on Figure 4 include:

(1) Mt. McClennan. (Redtop-Sunrise and Bearsden-Tinkirk). The Redtop-Sunrise stratigraphic horizon appears to be folded about a minor anticlinal axis. The south limb horizon remains untested. The same unit may be offset on a fault in McCorvie Creek; in which case the Bearsden and Tinkirk showings may be significant.

(2) Reg Christie Creek (Vav-Reg-Rob)

The presence of known mineralization on the Vav, Reg and Rob claims and the presence of unexplained mineral claims and geochemical anomalies in tributaries feeding Reg Christie Creek make the eastern end of the belt a logical target area.

(3) Vavenby Mt. (Vm-Sin)

These prospects occur in a recognizable package of acid volcanics.

I further suggest that the Company conduct a major programme of regional geological mapping, prospecting and geochemical sampling over the greenstone belt in 82M/12 with a view to (a) refining the stratigraphy and structure and (b) picking up additional mineral occurrences.

I then suggest that we use this additional data to define target areas for an airborne EM geophysical survey.

R.H. Pinsent

References:

- Belik, G.D. (1973); Geology of the Harper Creek Copper Deposit; Unpublished M. Sc. Thesis, University of British Columbia.
- Campbell, R.B. and Okulick, A.V. (1979): Thompson, Shuswap, Okanagan Map Sheet; Geological Survey of Canada Open File 637.
- Preto, V.A. (1977) Rexspar Uranium Deposit (82M/12W); B.C. Ministry of Energy Mines and Pet. Res. Geological Fieldwork, 1977, paper 1978-8 pp. 19-22.
- Preto, V.A. (1981) Barriere Lakes Adams Plateau Area (82M/4 5W, 92P/1E): B.C. Ministry of Energy, Mines and Pet. Res. Geological Fieldwork, 1980, Paper 1981-1, pp. 15-23.

RHP/cs

HEAVY MINERAL (HM) AND SILT (SS) SAMPLE LOCATION Sites, North Barriere Lake Area: 82 M/5

Sample(s)	Northing	Easting	Location
HM 1098 SS 48690	5706750	311250	Barriere River north of Saskwan Lake
HM 1099 SS 48691	5705100	302050	Harper Creek
HM 1100 SS 48692	5689500	298100	Birk Creek above Barriere River

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HEAVY MINREAL (HM) AND SILT (SS) SAMPLE LOCATION Sites, Cayenne Creek Area: 82 M/6

Sample(s)	Northing	Easting	Location
HM 1153 SS 48695	5706250	328800	Burton Creek above Adams River
HM 1154 SS 48696	5703600	328300	Gollen Creek above Adams River

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HEAVY MINERAL (HM) AND SILT (SS) SAMPLE LOCATION Sites, Adams River Map Area: 82 M/11

Sample(s)	Northing	Easting	Location					
HM 1152 SS 486 9 4	5710250	327800	Robert Creek above Burton Creek					

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HEAVY MINERAL (HM) AND SILT (SS) SAMPLE LOCATION Sites, Vavenby Map Sheet: 82 M/12

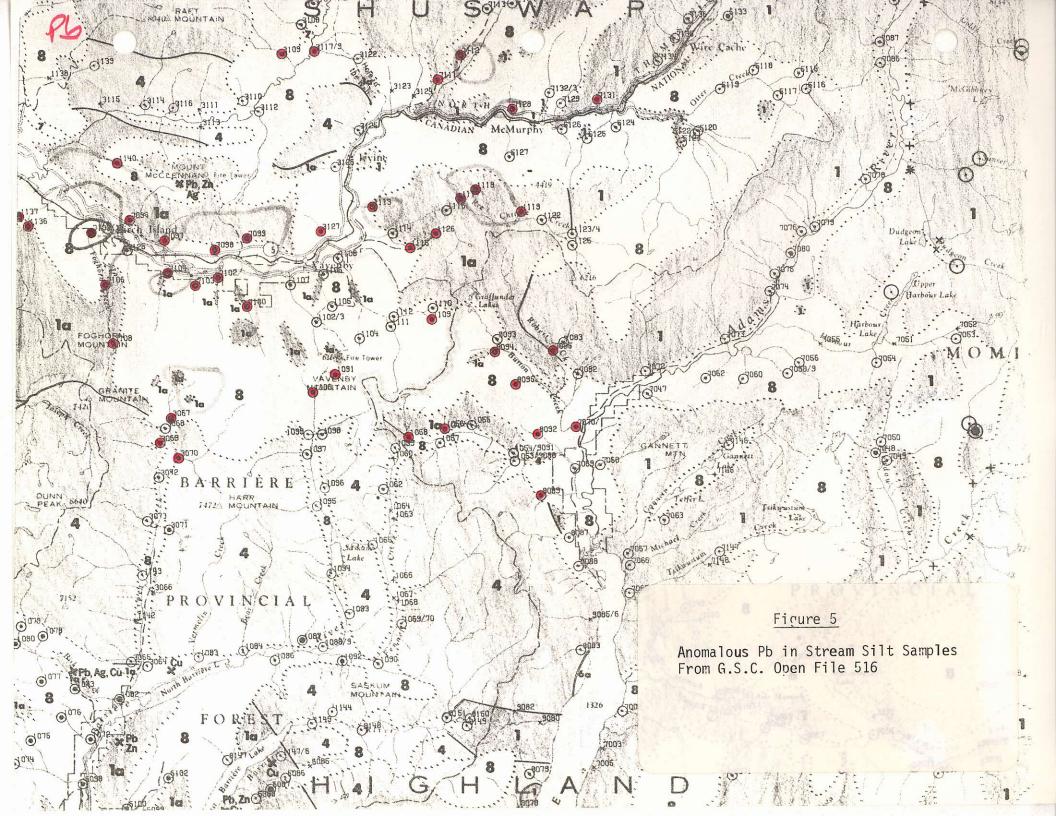
San	nple(s)	Northing	Easting	Location
HM SS	1086 48672	5717900	299600	Clay Creek above North Thompson River
HM SS	1087 48673	5718650	296500	Foghorn Creek above North Thompson River
HM SS	1088 48674	5717700	302150	Lute Creek above North Thompson
HM SS	1089 48675	5717400	305200	Baker Creek above North Thompson River
HM SS	1090 48676	5717450	306750	Jones Creek above North Thompson River
SS	48677	5717050	308000	Tributary above North Thompson River
HM SS	1091 48678	5716800	310000	Avery Creek above North Thompson River
HM SS	1092 48683	5717700	313450	Chuck Creek above North Thompson River
SS	48679	5718200	313100	Chuck Creek above North Thompson River
HM SS	1093 48680	5719000	317000	Tributary above Reg Christie Creek
HM SS	1094 48681	5720350	318150	Reg Christie Creek above North Thompson River

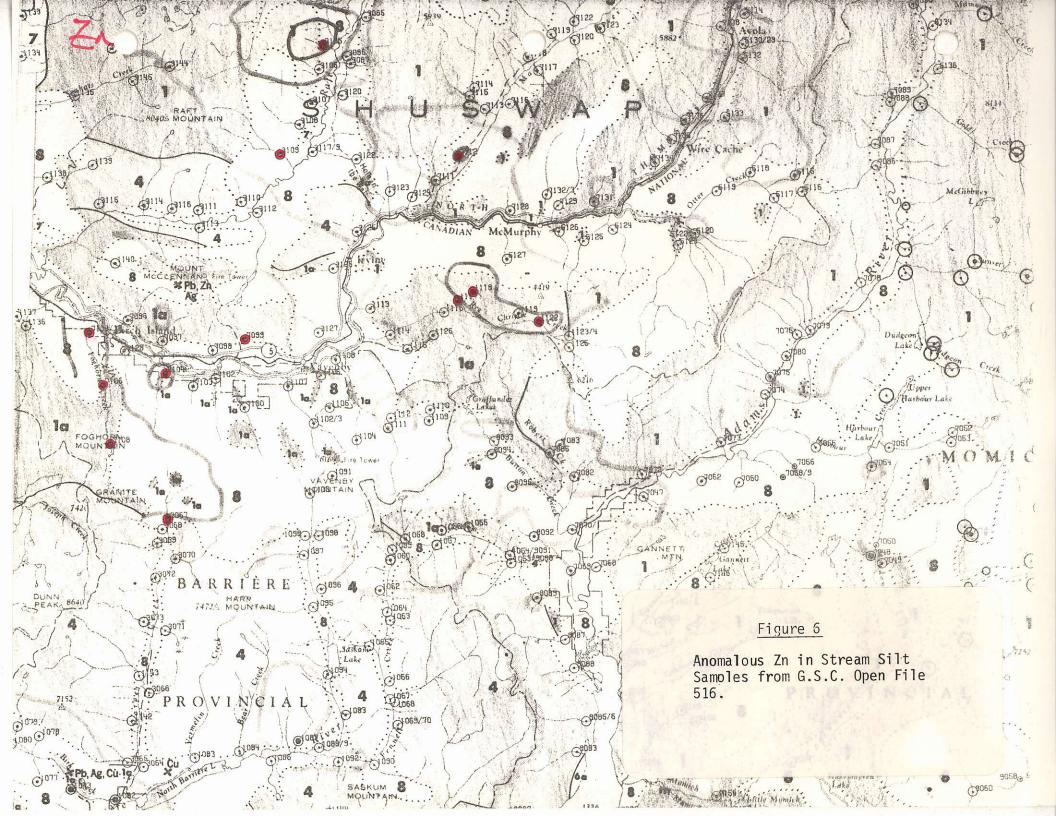
HM SS	1095 48682	5719000	307000	Peavine Creek above North Thompson River
HM SS	1096 48684	5714600	314600	Tributary above Chuck Creek
HM SS	1097 48685	5714350	315900	Chuck Creek above North Thompson River
SS	48686	5714200	316000	Tributary above Chuck Creek
SS	48687	5714500	315100	Tributary above Chuck Creek
SS	48697	5718700	305150	Tributary above North Thompson River
HM SS	1155 48698	5720150	301900	Crossing Creek above North Thompson River
HM SS	1156 48699	5721600	300350	Noblequartz Creek above North Thompson River
SS	48700	5721450	305350	Tributary above North Thompson River

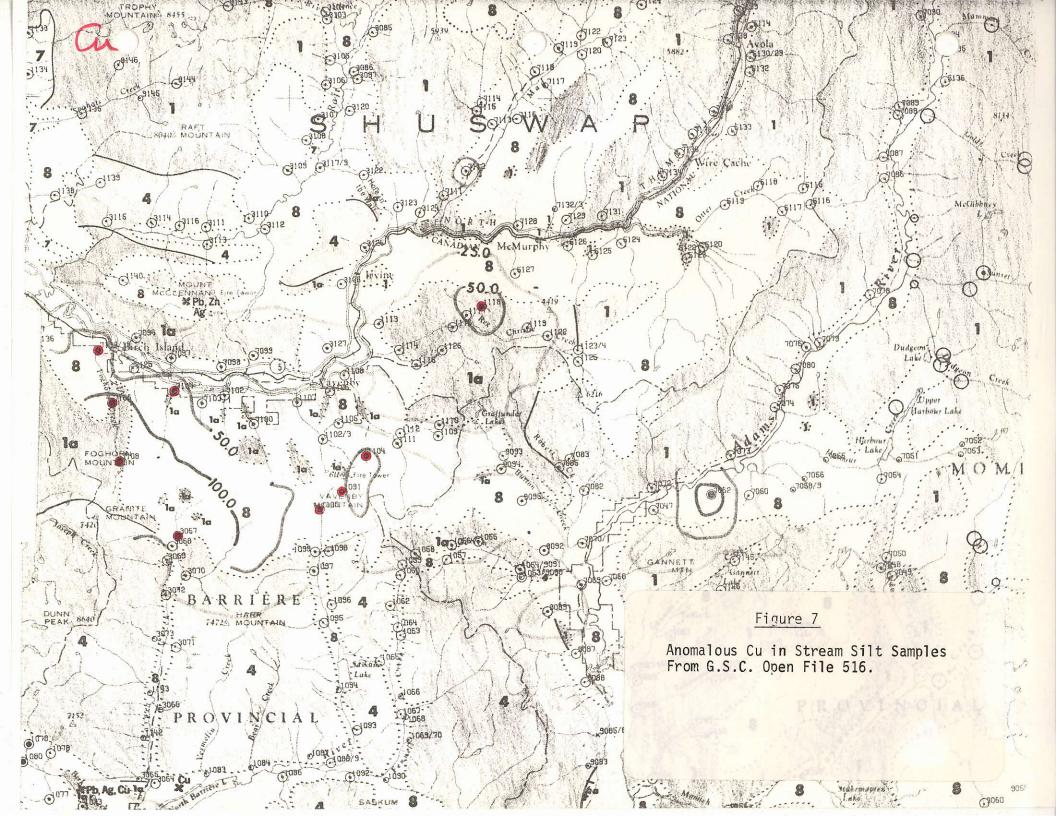
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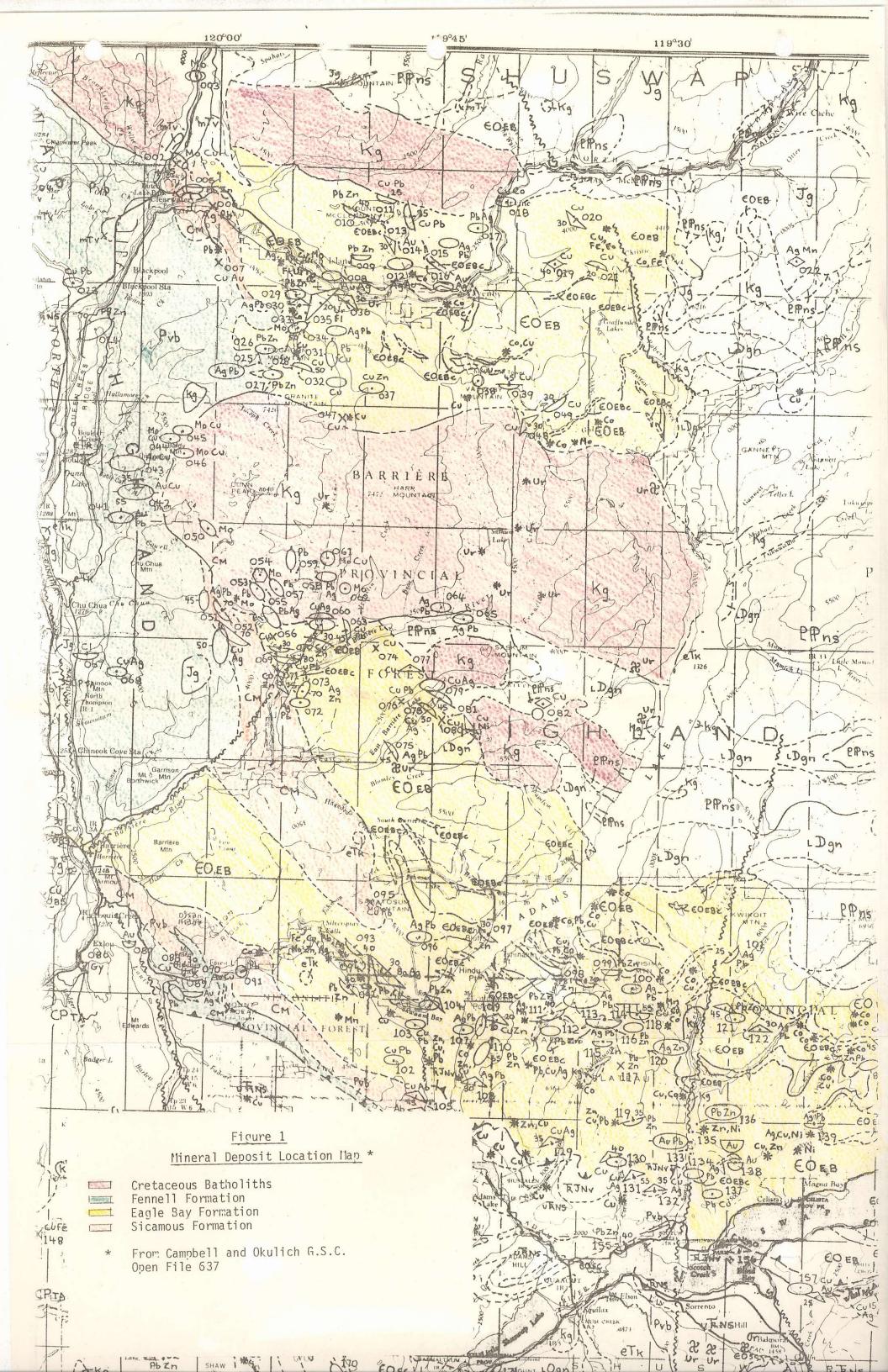
RHP/dd

PLACER	GEOCHEM A	SSAY SYSTE	M: DATA	FROM	Gen.	Ex. 8	. C .	R. Pins	ent						DATE:	82-11-	09	F	PAGE:	1	
GRID	SAMPLE	PROJECT	M O	СU	ΖN	PB	CD	NI	СО	AG	AU	U	W	F	BA	SN					
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82M12W	48673	2208	13	70	146	114	0.2	25		-0.4		5.0	< 5	1360	0.07	< 5					
82M12W	48674	2208	3	70	159	46	<0.2	26	32		<0.02	1.3	< 5	360	0.03	< 5					
82M12W	48675	2208	1	21	54	15	<0.2	35	22		<0.02	1.0	< 5	260	0.04	< 5					
82M12W	48676	2208	2	30	64	19	<0.2	35	27	<0.2	<0.02	1.3	< 5	210	0.04	< 5					
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82M12W	48679	2208	1	19	5 1	6	<0.2	39	25	<0.2	<0.02	1.3	< 5	200	0.03	<5					
82M12W	48680	2208	1	48	65	12	<0.2	41	25	<0.2	<0.02	1.0	< 5	360	0.06	<5					
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82M12W	48697	2208	1	26	62	18	<0.5	31	19		<0.02	<1.0	7	210	0.04	< 5				39	
82M12W	48697*	8025	1	26	65	18	<0.2	33	2 1		<0.02	1.0	6	200	0.05	<5					
82M12W	48698	2208	1	2.2	52	14	<0.2	39	24		<0.02	<1.0	< 5	220	0.04	< 5					
82M12W	48699	2208	2	23	5 9	19	<0.2	35	55		<0.02	1.5	< 5	230	0.06	< 5					
82M12W	48700	2208	1	18	5.5	14	<0.2	27	19	<0.2	<0.02	<1.0	<5	280	0.06	< 5					









SAMPLE	PROJECT	MO	- cu	-ZN	PB	C D	ÅG	AU	U	W	AS(- BA	SN
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1155CHP 1155CHN 1155FHP 1155FHN 1156CHP 1156FHP 1156FHP	22222222 222222222 2222222222 22222222	8 4 10 7 5 2	149 137 284 128 1186 1851	187 120 1236 159 1098	865517 85547	< 0.00000000000000000000000000000000000	0.5 0.4 0.0 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	0.20 5.50 <0.04 <0.04 <0.04 0.05 <0.04	9.9 18.0 4.1 11.0 8.1 15.7 31.3	2000 2500 170 170	42 26 40 46 10 22	0.06 0.11 0.02 0.03 0.02	<5 <5 <5 <5 <5

