



Mineral Creek
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1.0 INTRODUCTION

Phase I geological exploration of the McQuillan claim has been completed by MPH Consulting Limited at the request of Mr. N. Cowling of Hollycroft Resource Corporation. Phase I work was carried out from September 9 to 18, 1985. The work carried out included installation of 20.0 line km of flagged, un-slope corrected grid, geological mapping at 1:2,500 scale, rock sampling on the grid and on roads previously unmapped west of the grid, and soil sampling at 50 m intervals on the grid. Geological mapping was carried out by K. Heberlein, B.Sc. Roadside geology was previously mapped at 1:5,000 scale in 1984 (Hawkins and Neale, 1984) and in 1985 (Neale, 1985). Traverses were concentrated between roads in Phase I exploration to extend geological coverage and verify previous interpretation. Geological mapping on roads to the west attempted to define the extent of the acidic volcanic unit, but was restricted due to active logging in the area.

A total of 16 rock samples was collected and analyzed for Au and by 30 element ICP. All rock samples were also subjected to whole rock analysis. A total of 374 soil samples was collected and analyzed for Ag, As, Cu, and Zn.

April 25/88

X Property File 92F/2E
Effec. Date March 2/88

2.0 LOCATION, ACCESS, TITLE

The McQuillan claim is located 17 km southeast of Port Alberni on the northeastern slopes of Douglas Peak, in the Alberni Mining Division of British Columbia. It is centred at approximately 49°08'N latitude, 124°37'W longitude on NTS mapsheet 92F/2 (Figure 1).

Access is provided by the China Creek Road of MacMillan Bloedel Ltd. A network of logging roads crosses the western half of the claim, while a single logging road up McQuillan Creek traverses the eastern portion of the claim. Active logging in the western part of the claim was being carried out by MacMillan Bloedel at the time of Phase I work, limiting access to this area to week-ends only.

The McQuillan claim is owned by Nexus Resource Corporation. The record number is 1258(6), the claim is 20 units in size and has an anniversary date of June 23, 1986 (Figure 2). Hollycroft Resource Corporation is the operator of the claim by virtue of an option agreement with Nexus.

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3.0 PREVIOUS WORK

Government geological work in the area includes mapping by C.H. Clapp (1912), J.E. Muller and D.J.T. Carson (1969), and J.E. Muller (1977 and 1980) and a mineral compilation report by J.S. Stevenson (1945).

A regional aeromagnetic survey flown by Hunting Survey Corp. Ltd. in 1962 covered the claim block.

During the period 1963-1966, Gunnex Ltd. carried out a regional mapping program with some prospecting and silt sampling. They compiled a list of all the known mineral occurrences in the area and visited many of them.

In September, 1983, MPH Consulting Limited visited the McQuillan claim and prepared a preliminary assessment report and a recommended work program (Hawkins and Willoughby, 1983). A sample of mineralized felsic tuffaceous rock taken during the visit returned anomalous Au and Ag values and indicated the possibility of Myra Formation lithologies occurring on the property. A two-phase exploration program including surface geochemistry, geological mapping and sampling, ground geophysics, and follow-up diamond drilling estimated to cost \$182,000 was recommended.

A brief program of reconnaissance geological mapping, rock sampling, and prospecting was carried out on the McQuillan claim by MPH Consulting Limited for Nexus Resource Corporation in June 1984 (Neale and Hawkins, 1984). Mapping indicated that all of the claim is underlain by Nitinat Formation volcanics, although Myra Formation lithologies may be present in the southeastern area of the claim. Anomalous rock sample analytical results of up to 50 ppb Au and 1.2 ppm Ag appear to be related to shear



zones. A boulder of felsic tuff which was discovered in the southeastern portion of the claim returned 40 ppb Au, 1.8 ppm Ag, and 800 ppm Zn, indicating the possible presence of mineralized Myra Formation rocks in the vicinity. Feldspar porphyritic dacite dykes which may be genetically related to the gold-quartz vein deposits of the China Creek area cut the volcanics in the southeastern area of the McQuillan claim, indicating potential for locating gold-quartz vein(s) in the area.

Assessment work carried out by MPH Consulting for Hollycroft Resource Corporation on the McQuillan claim in June 1985 (Neale, 1985) included detailed geological mapping and sampling of road-cut exposures in areas indicated by previous work to contain anomalous Au and/or Cu concentrations. Two lithologic intervals were identified as worthy of further exploration due to their similarity with portions of the sequence hosting Westmin Resources Ltd.'s Buttle Lake volcanogenic massive sulphide deposits. The two intervals are a dacitic agglomeratic lapilli tuff in the northwestern part of the claim and a hematitic jasper horizon and the hematitic, basaltic rocks immediately overlying and underlying it in the southeastern area of the claim.

4.0 REGIONAL GEOLOGY

The predominant rock units in the Port Alberni-Nitinat River area are the Upper Paleozoic Sicker Group rocks and the Lower Mesozoic Vancouver Group rocks. Both are eugeosynclinal sequences of volcanic and sedimentary rocks. Lesser amounts of the Upper Cretaceous Nanaimo Group and of intrusive rocks of various ages also occur (Figure 3).

4.1 Sicker Group

The oldest rocks in the area are those of the Sicker Group. Muller (1980) proposed the following subdivision of the Group from youngest to oldest: Buttle Lake Formation, Sediment-Sill Unit, Myra Formation, and Nitinat Formation.

The Nitinat Formation (Unit 1) consists predominantly of basic volcanic rocks, most commonly flow-breccias, including some massive flows and rare pillow basalts or agglomerates. Locally, medium grained, generally massive basaltic tuff is interbedded with the flows. The flow-breccia is composed of fragments of basalt up to 30 cm in length containing uralite phenocrysts and black or white amygdules, both from 1 mm to more than 1 cm in size, in a matrix of finer grained, similar basalt(?). Thin sections show that the uralite is replacing diopside. Uralitized gabbroic rocks underlie and intrude the volcanics and are believed to represent feeder dykes, sills, and magma chambers to the volcanics. The Nitinat Formation may be distinguished from the similar Karmutsen Formation by the usual lack of pillow basalts, the abundance of uralite phenocrysts, the pervasive shear foliation, and lower greenschist or higher metamorphic grade.





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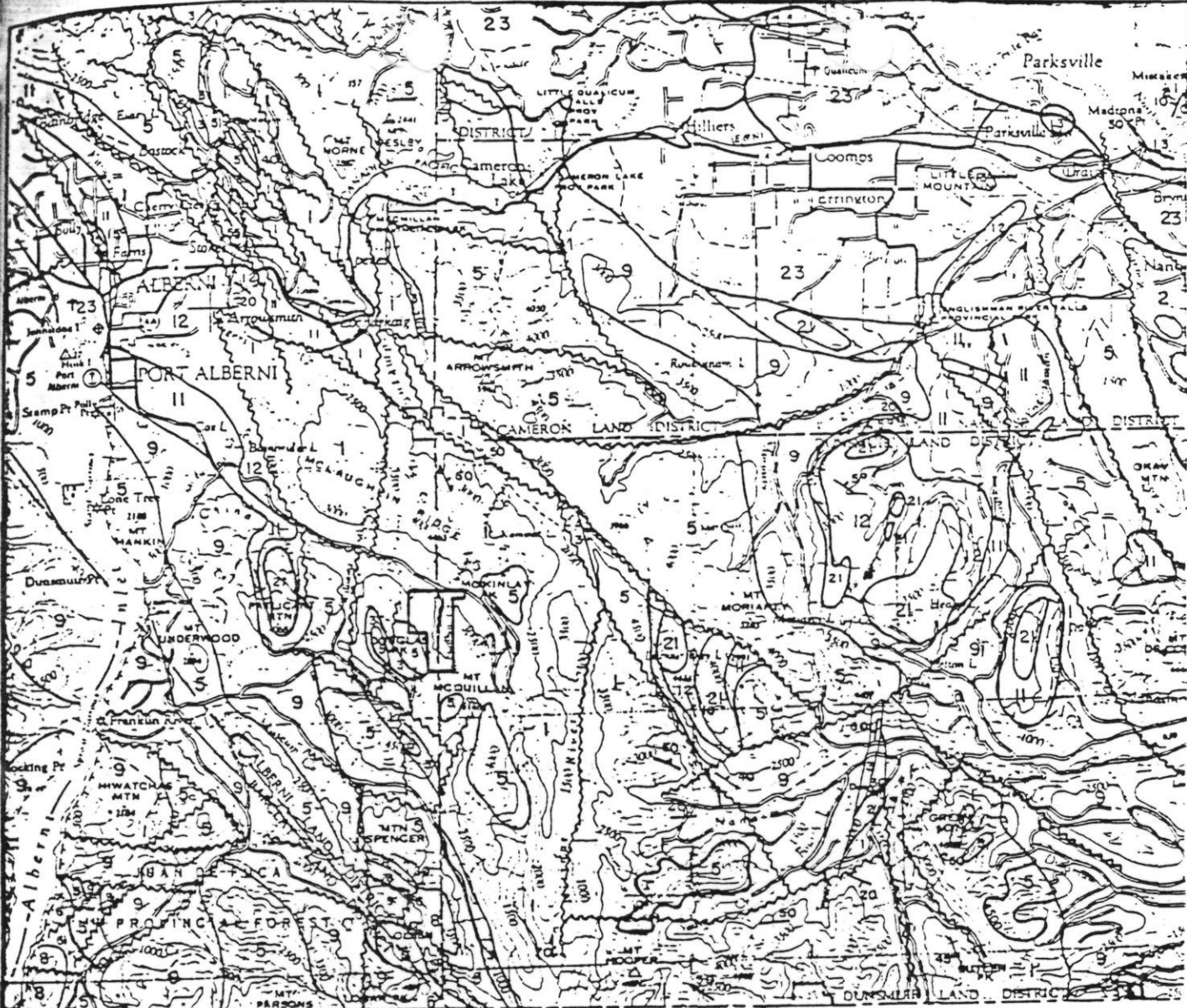
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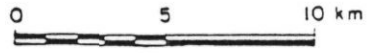
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LEGEND

- QUATERNARY**
 23 Glacial and alluvial deposits
- TERTIARY**
 21 Hornblende quartz diorite, leucoquartz monzonite, porphyritic dacite, breccia.
- UPPER CRETACEOUS**
NANAIMO GROUP
 13 EXTENSION-PROTECTION FM.: sandstone, conglomerate, shale, coal.
 12 HASLAM FM shale, siltstone, fine sandstone.
 11 COMOX FM.: sandstone, conglomerate, shale, coal.
- MIDDLE TO UPPER JURASSIC**
 9 ISLAND INTRUSIONS: biotite-hornblende granodiorite, quartz diorite.
- LOWER JURASSIC**
 8 BONANZA GROUP: andesitic to latitic breccia, tuff, and lava; minor greywacke, argillite, and siltstone.
- UPPER TRIASSIC**
VANCOUVER GROUP
 6 QUATSINO FM.: massive to thick bedded limestone, minor thin bedded limestone.
 5 KARMUTSEN FM.: pillow-basalt and pillow breccia, massive basalt flows; minor tuff, volcanic breccia; Jasperoid tuff, breccia and conglomerate at base.
- TRIASSIC OR PERMIAN**
 4 Gabbro, peridotite, diabase.

- LOWER PERMIAN TO PENNSYLVANIAN**
SICKER GROUP
 3 BUTTLE LAKE FM: limestone, chert.
 2 MYRA FM.: lower unit, argillite, greywacke, conglomerate, tuff, minor limestone. Upper unit; rhyodacite to rhyolite tuff, lapilli tuff, breccia lesser siliceous siltstone, argillite, quartz porphyry and mafic flows.
 1 NITINAT FM.: basaltic uralite porphyry, agglomerate, pillow lava; greenschist.



HOLLYCROFT RESOURCE CORPORATION

REGIONAL GEOLOGY MAP
Mc QUILLAN CLAIM
 ALBERNI MINING DIVISION

Project No:	V 166	By:	T N
Scale:	1:250,000	Drawn:	J. S.
Drawing No:	3	Date:	NOV. 1985.

MPH Consulting Limited



The Myra Formation (Unit 2) unconformably overlies the Nitinat Formation. In the Nitinat-Cameron River area the Myra Formation is made up of a lower massive to widely banded basaltic tuff and breccia unit, a middle thinly banded pelitic albite-trachyte tuff and argillite unit, and an upper thick bedded, medium grained albite-trachyte tuff and breccia unit. In the lower unit crudely layered mottled maroon and green volcanoclastic greywacke, grit, and breccia are succeeded by beds of massive, medium grained dark tuff up to 20 m thick interlayered with thin bands of alternating light and dark fine grained tuff with local fine to coarse breccias containing fragments of Nitinat Formation volcanics. The middle unit is comprised of a sequence of thinly interbedded, light feldspathic tuff (albite trachyte or keratophyre composition) and dark marine argillite which has the appearance of a graded greywacke-argillite turbidite sequence. In the upper part of the middle unit sections of thickly bedded to massive black argillite occur. The upper unit contains fine and coarse crystal tuffs in layers up to 10 m thick with local rip-up clasts and slabs of argillite up to 1 m in length as well as synsedimentary breccias of light coloured volcanic and chert fragments in a matrix of black argillite.

The type locality of the Myra Formation is Myra Creek, at the south end of Buttle Lake, about 80 km northwest of the McQuillan claim. There, volcanoclastic rocks consisting dominantly of rhyodacitic or rhyolitic tuff, lapilli tuff, breccia, and some quartz porphyry and minor mafic flows and argillite (Upper Myra Formation) are host to Westmin Resources' Myra, Lynx, Price, and H-W massive sulphide (Cu-Zn-Pb-Au-Ag-Cd) deposits.

Muller (1980) estimated the thickness of the Nitinat Formation at about 2000 m and that of the Myra Formation at 750 to 1000 m. Both the Nitinat and Myra Formations were dated as Devonian and/or older by Muller (1980).



The Sediment-Sill Unit contains thinly bedded to massive argillite, siltstone, and chert with interlayered sills of diabase. It is transitional between the Myra and Buttle Lake Formations. It is not mapped within the report map area.

The Buttle Lake Formation (Unit 3) consists of a basal green and maroon tuff and/or breccia overlain by coarse grained crinoidal and calcarenitic limestone, fine grained limestone with chert nodules and some dolomitic limestone. Lesser amounts of argillite, siltstone, greywacke, or chert may also be present.

The Buttle Lake Formation is up to 466 m thick. The age of the formation, on the basis of fossil dating appears to be Middle Pennsylvanian, but could possibly be as young as Early Permian (Muller, 1980).

4.2 Vancouver Group

The Karmutsen Formation volcanic rocks (Unit 5) overlie the Buttle Lake Formation limestone paraconformably to form the base of the Vancouver Group. They are the thickest and most widespread rocks on Vancouver Island. The formation, which is well exposed southeast of Port Alberni, consists mainly of dark grey to black pillowed basalt, massive basalt, and pillow breccia. Flows are commonly aphanitic and amygdaloidal. Pillowed volcanics generally occur toward the base of the section.

Conglomerate containing clasts of Sicker Group rocks and jasperoid tuff form basal sections in the Nitinat-Horne Lake area.

Karmutsen Formation rocks are generally relatively undeformed compared to Sicker Group rocks and are dated Upper Triassic and older.



Massive to thick bedded limestone of the Quatsino Formation (Unit 6) occurs south of Mount Spencer. The limestone is black to dark grey and fine grained to micro-crystalline. In the vicinity of intrusive rocks, coarse grained marble is recognized. Thin bedded limestone also occurs in the formation. Fossils indicate an age of Upper Triassic (Muller and Carson, 1969).

4.3 Bonanza Group

The Bonanza Group (Unit 8) is made up of interbedded lava, breccia, and tuffs ranging in composition from basalt to rhyolite with intercalated beds of marine argillite and greywacke. It is exposed south of Mount Spencer and south of Corrigan Creek and consists of light coloured andesite to latite breccia, tuff, and flows with minor greywacke, argillite, and siltstone. The Bonanza Group is considered to be of Lower Jurassic age.

4.4 Nanaimo Group

Upper Cretaceous Nanaimo Group sedimentary rocks are scattered throughout the area. Extensive exposures occur near Port Alberni, Patlicant Mountain, and south and northwest of Mount Moriarty. The formations present comprise the basal portions of the Nanaimo Group.

The Comox Formation (Unit 11) consists mainly of quartzofeldspathic, cross-bedded beach facies sandstone and lesser conglomerate. Numerous intercalations of carbonaceous and fossiliferous shale and coal are characteristic.



The Haslam Formation (Unit 12) is a near shore littoral depositional facies unit characterized by massive bedded fossiliferous sandy shale, siltstone and shaly sandstone.

Interbedded coarse clastic conglomerate, pebbly sandstone and arkosic sandstone of the Extension-Protection Formation (Unit 13) are beach and deltaic sands. Minor shale and coal are reported.

4.5 Intrusive Rocks

Gabbro, Peridotite, Diabase (Unit 4). Mafic and ultramafic rocks of Triassic or Permian age are scattered throughout the area. A large band is exposed approximately 8 km north of Port Alberni.

Although mapped as intrusive, some of these rocks may be basal flow units of the Karmutsen Formation.

Island Intrusions (Unit 9). Exposures of mainly quartz diorite and lesser biotite-hornblende granodiorite occur throughout the area and are assigned an age of Middle to Upper Jurassic. Intrusive contacts with Sicker and Bonanza Group volcanic rocks are characterized by transitional zones of gneissic rocks and migmatite although contacts with Karmutsen Formation volcanic rocks are sharp and well defined. Skarn zones are reported at the contact of Island Intrusion rocks with Quatsino Formation limestone and less frequently with Buttle Lake Formation limestone.

Tertiary (Catface or Sooke) Intrusions (Unit 21). Sills and stocks of mainly hornblende-quartz diorite and dacitic hornblende-feldspar porphyry plus lesser leucocratic quartz monzonite intrude Nanaimo Group sedimentary rocks and Sicker Group rocks in the area.



4.6 Structure

The Buttle Lake Arch, Cowichan-Horne Lake Arch and Nanoose Uplift are north-northwesterly trending axial uplifts and are believed to be the oldest structural elements in south central Vancouver Island. Uplifting occurred before the late Cretaceous, and possibly before the Mesozoic (Muller and Carson, 1969). Sicker Group volcanic and sedimentary rocks occur at the core of these uplifts.

Asymmetric southwest verging anticlinal structures characterized by sub-vertical southwest limbs and moderately dipping northeast limbs are reported at Buttle Lake and in the Cameron-Nitinat River area. Intense shearing and metamorphism to chlorite-actinolite and chlorite-sericite schist occurs in steep and overturned limbs of folds. Overlying Buttle Lake Formation limestones are relatively undeformed except where they are thin.

Vancouver Group units are not as intensely folded; gentle monoclinical and domal structures have been mapped. However, Karmutsen Formation volcanic rocks locally conform to the attitude of underlying Myra and Buttle Lake Formations (Muller, 1980).

Some early Mesozoic faulting occurred in the area prior to emplacement of Island Intrusions. Middle to Upper Jurassic intrusive activity (Island Intrusions) occurred along northwesterly trends.

Extensive west-northwest trending faulting occurred during the Tertiary and is best illustrated by large displacements of Nanaimo Group sediments. The north trending Alberni Valley fault is traced over 45 miles and displaces a section of Karmutsen Formation approximately 5,000 feet (Muller and Carson, 1969).



4.7 Economic Setting

The Sicker Group, and to a lesser extent, the Vancouver Group of volcanic rocks, have been explored intermittently since the 1890's for gold and base metal mineralization.

Until recently, deposits of copper and gold-silver in quartz veins and shear zones hosted by mafic to intermediate volcanic rocks and base metal plus gold-silver skarn deposits were the most widely recognized economic and subeconomic metal concentrations in the Port Alberni area. Placer mining for gold was carried out during the 1940's in various localities, especially in the China, Mineral and Corrigan Creeks area.

The volcanogenic massive sulphide deposits of Westmin Resources Ltd., first discovered in 1917 although not recognized as volcanogenic until the late 1960's, occur at Buttle Lake, approximately 70 km northwest of the Port Alberni area. Four zones of mineralization consisting of the ore minerals sphalerite, chalcopyrite, galena, tetrahedrite-tennantite plus minor bornite and covellite, are hosted by pyritic rhyolitic to rhyodacitic volcanic and pyroclastic rocks of the Myra Formation.

Proven reserves of the Lynx (open pit), Price and Myra deposits are 1,021,400 T grading 1% Cu, 0.9% Pb, 7.4% Zn, 0.06 oz Au/T, 2.6 oz Ag/T (1983). Published reserves of the H-W zone are 15,232,000 T averaging 2.2% Cu, 5.3% Zn, 0.3% Pb, 0.07 oz Au/T and 1.1 oz Ag/T (Walker, 1983). In the 3 years 1980 to 1982, there were 895,048 T of ore milled producing 16,109,000 lbs Cu, 96,356,000 lbs Zn, 14,231,000 lbs Pb, 56,000 oz Au, 2,528,000 oz Ag and 129,000 lbs Cd.

Another volcanogenic massive sulphide deposit in the Sicker Group is the Twin J Mine near Duncan on Mount Sicker, about 70 km



southeast of the McQuillan claim. Two parallel orebodies, each containing pyrite, chalcopyrite, sphalerite and minor galena in a barite-quartz-calcite gangue and chalcopyrite in quartz, occur in schists believed to have been derived from acidic volcanics (Myra Formation).

Total production from 1898 to 1964 was 305,770 tons producing 44,491 oz Au, 934,522 oz Ag, 21,053,360 lb Cu and 45,864,654 lb Zn with at least 362,854 lb Pb and 10 lb Cd.

On the Lara property, 60 km southeast of the McQuillan claim, Aberford Resources Ltd. has completed 40 diamond drill holes on geochemical and geophysical anomalies. In January 1985 an intersection of 26.2 feet (true thickness) of mineralization grading 0.1 oz Au/ton, 1.97 oz Ag/ton, 3.01% Zn, 0.68% Cu, and 0.45% Pb was announced. By July 1985 the discovery zone had been traced for 1,300 feet and to an average depth of 350 feet. The zone is open on both ends and to depth. The zone grades 0.051 oz Au/ton, 1.12 oz Ag/ton, 1.98% Zn, 0.44% Cu, and 0.36% Pb and averages 20.53 feet in true width. A diamond drill hole located 1,650 feet east of the zone along strike intersected 12.07 feet (true thickness) of massive sulphide mineralization grading 0.213 oz Au/ton, 8.60 oz Ag/ton, 9.22% Zn, 1.16% Cu, and 2.53% Pb.

The mineralized zone is stratiform and is hosted by a rhyolite porphyry unit of the Sicker Group. Metal ratios of the zone are very close to those of the Buttle Lake mines of Westmin Resources Ltd. The Twin J Mine is located 9 km southeast of the Lara property (i.e. on strike) and is geologically similar.

On the Villalta property, massive hematite up to 46 feet thick carries Au. The hematite occurs in a paleo-karst topography at the top of the Buttle Lake Formation. A reserves estimate of 200,000 tons indicated ore grading 0.1-0.2 oz Au/ton with minor



base metals content was made in 1981. Asarco Exploration Co. of Canada Ltd. and Falconbridge Ltd. have carried out exploration programs since 1981. The Villalta property is located 12 km east-southeast of the McQuillan claim.

Five past producing mines occur in the Port Alberni area. The Thistle Mine produced 2,760 oz Au, 2,120 oz Ag and 681,425 lbs Cu from 6,920 T of ore. It was originally considered to be a skarn deposit (Stevenson, 1945; Carson, 1968) but is now being explored as a volcanogenic massive sulphide prospect. A total of 16 significant Cu and/or Au mineralization occurrences have been located on the property, 15 of which are located within a 225 m thick unit of mainly basaltic flows which are believed to be correlative with Muller's Sediment-Sill Unit and/or Myra Formation. Surface assays reported range from 0.226 to 1.22 oz Au/ton, 0.15 to 1.33 oz Ag/ton, and 2.71 to 10.2% Cu over apparent true thicknesses of 15 cm to 4 m. The best assay from 1984 diamond drilling was 0.514 oz Au/ton over 20 cm. Westmin has spent approximately \$406,000 on the property in 1983 and 1984. A further \$400,000 is to be spent in 1985. A recent news release (October 22, 1985) states that the exploration target on the Thistle property is a volcanogenic deposit of at least 3 million tons grading 0.2 oz Au/ton and 2% Cu. The Thistle Mine is located 3 km south of the McQuillan claim, on the adjacent property.

The Havilah Mine (1,046 T produced 259 oz Au, 1,404 oz Ag) and the Vancouver Island Gold Mine (483 T produced 384 oz Au, 52 oz Ag) are quartz vein deposits hosted by andesite and andesite tuff of the Sicker Group.

The Black Panther Mine is a quartz vein deposit hosted by a shear zone in Sicker Group andesite and Island Intrusions diorite located 2 km south of the McQuillan claim. Production of 1,890 T



of ore yielded 509 oz Au, 953 oz Ag, 12,319 lbs Pb and at least 4,478 lbs Zn and 498 lbs Cu.

The other past producer in the area is the 3-W Mine which consists of gold-bearing quartz veins in Island Intrusions diorite and granodiorite. Production amounts to 116 tons of ore grading 4.0 oz Au/ton, 4.3 oz Ag/ton, 0.23% Cu, and 1.1% Pb. The 3-W Mine is located 13 km south-southwest of the McQuillan claim.

4.8 Mineral Occurrences and Deposits

1. Vancouver Island Gold; (Victoria, L.205G; Alberni, L.206G; Missing Link, L.214G; Alberni Consolidated) Au Ag Cu

Geology

The area is underlain by highly altered massive, tuffaceous, slightly porphyritic, and amygdaloidal andesites of the Sicker Group. Three main quartz veins follow well developed shears and contain a small amount of pyrite and some free gold. As well, a 40 foot wide shear zone has been extensively altered by ankerite, quartz stringers, occasional pyrite veinlets, and kaolinitization.

Economic Features

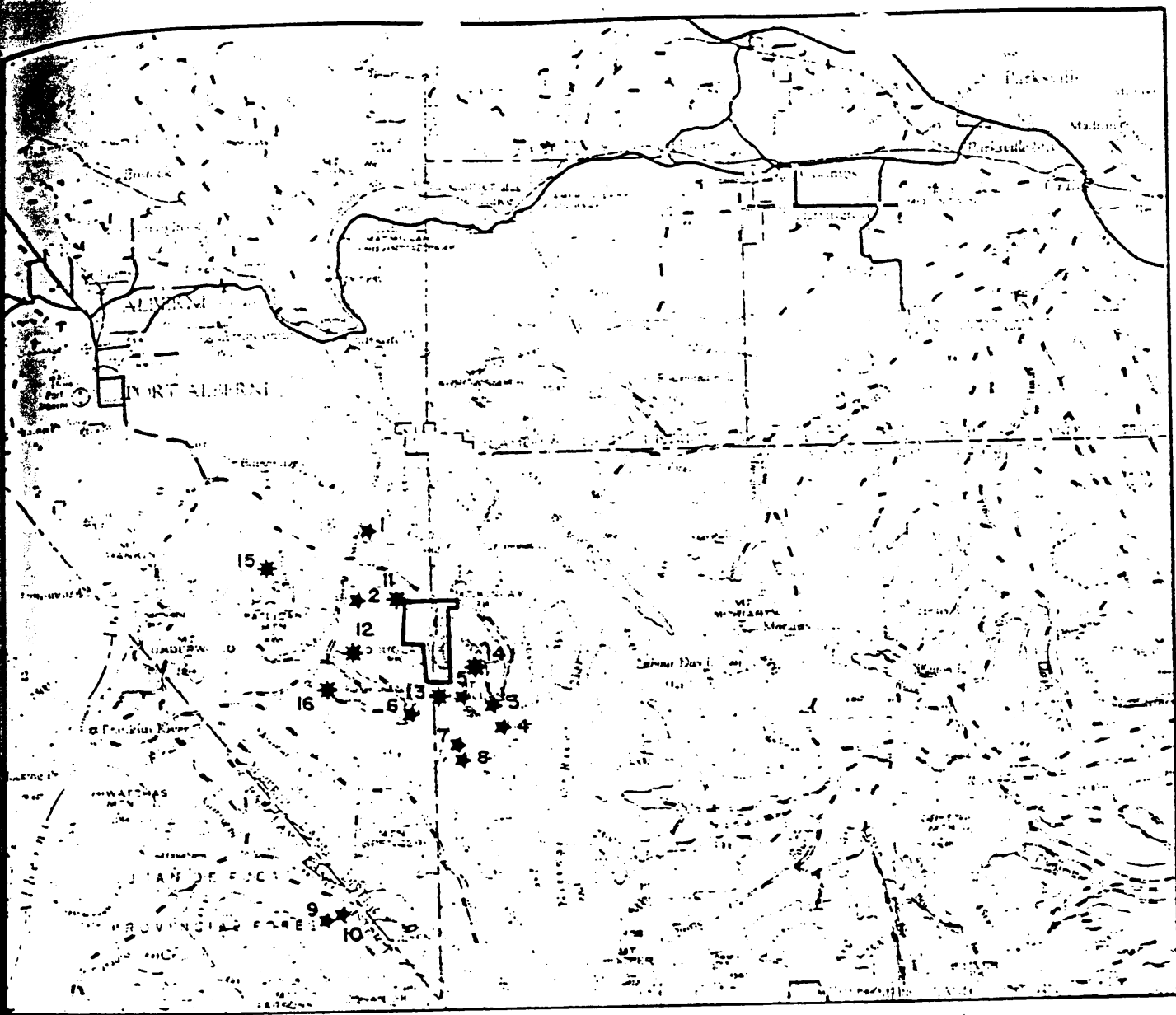
Recorded production in 1896, 1898, 1933-36, and 1939 totals 483 tons of ore yielding 384 oz Au, 52 oz Ag, and 194 lb Cu.

The Mac vein is traced for 250 feet and ranges from 3 to 18 inches wide, averaging 5 to 6 inches. Sixty-three samples taken over the 250 feet averaged 6 inches in width and 3.69 oz Au/ton. The highest assay was 20 oz Au/ton. A 40 ton shipment from the Mac vein returned 2.9 oz Au/ton and 0.5 oz Ag/ton (Ref. 1-1934).

GOL
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3. C
4. E
5. H
6. T
7. B
8. B
9, 10. 3

* No

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GOLD DEPOSITS AND OCCURRENCES

- 1. Vancouver Island Gold Mine
- 2. Regina
- 3. Golden Eagle
- 4. B & K
- 5. Havilah
- 6. Thistle
- 7. Black Panther
- 8. Black Lion
- 9, 10. 3-W *

BASE METAL OCCURRENCES

- 11. Bank Group
- 12. Lizard Lake
- 13. Mc Quillan Creek
- 14. Sol
- 15. Grizzly Arsenic Showing
- 16. Upper Franklin R



* Not described in Section 4-8.



HOLLYCROFT RESOURCE CORPORATION

MINERAL OCCURRENCE
LOCATION MAP
McQUILLAN CLAIM

Project No.	V 166	By	T. N.
Scale	1 : 250,000	Drawn	J. S.
Drawing No.	4	Date	NOV. 1985

 MPH Consulting Limited



The Belcher vein is exposed discontinuously for 950 feet and ranged from almost nothing to 4 feet in width, averaging 6 to 12 inches in the upper adit. Gold content is reported to be low except in the shaft and stope workings. Recent sampling results show from 0.003 to 0.29 oz Au/ton and from 0.06 to 0.10 oz Ag/ton over 5 foot lengths (Ref. 3).

The Dunsmuir vein is exposed in trenches for about 400 feet and ranges up to 10 inches in width. No assays are reported (Ref. 1-1936).

The Waterfall vein is exposed for 108 feet and is 3 inches to 2.5 feet wide. Gold assays were low in sampling done by Vancouver Island Gold Mines Ltd., except for two samples which ran 1.4 oz Au/ton over 3 inches and 11.8 oz Au/ton over 6 inches (Ref. 1-1934). This illustrates the very spotty nature of free gold distribution.

Seventy-nine chip samples taken from the carbonatized shear zone by the BCDM assayed from nil to 0.16 oz Au/ton over widths of 5 and 10 feet (Ref. 1-1936).

A 1934 BCDM report stated that there is a possible relationship between bands of sediments and gold mineralization, as the gold values in the Mac vein are concentrated just above a bed of argillaceous sediments, and are low below that.

History

1895: Alberni, Chicago, Warspite, Victoria claims staked; dispute over ownership.

1896: Alberni Consolidated Mining Co.; won dispute, shaft at 40 feet and a tunnel being driven, two tons of ore



- shipped from a smaller vein (Dunsmuir?) uphill from main vein, open cut on 8-30 inch vein on Chicago claim.
- 1897-98: An English company built a 10 ton per day 8 stamp mill and only made two clean-ups. Results unknown.
- 1933-39: Vancouver Island Gold Mines Ltd. (NPL); R.W. Williams leased the reverted Crown Grants in 1933 and turned them over to Vancouver Island Gold Mines. Numerous open cuts were made, 5 adits totalled 1,905 feet including various raises, etc. on the quartz veins and 2 adits totalling 277 feet and 12 strippings were made on the carbonatized shear zone. A total of 403 tons of ore was mined. In 1936 a 35 ton pilot mill was built, but only milled a few tons of ore before the operations were ceased due to operating difficulties. In 1939 some rehabilitation work was done in the Mac adits and 48 tons of ore were shipped.
- 1964: Gunnex Ltd.; visited property, some sampling. Mapping planned for 1966.
- 1973-74: Keywest Resources Ltd.; (Sam Group) sampling in Belcher adits, prospecting, geological mapping on surface and underground.
- 1976: Western Mines Ltd.; (Tasha-Shannon and Rupert-Dog claim groups) reconnaissance geological mapping and soil sampling.

References

- | | | |
|------|---------|---|
| 1) | MMAR | 1895-650, 1896-6, 1897-566, 1898-1132, 1934-F2-4, 1936-F25-30, 1944-148 |
| 2) | GEM | 1973-230, 1974-173 |
| 3,4) | AR | 4915, 6153 |
| 5,6) | GSC | P68-50 p38
Map 1963-49 |
| 7) | Gunnex | #6 |
| 8) | Minfile | 92F079 |



2. Regina (L.55G) Au Ag Cu

Geology

Lenses and veinlets of quartz with pyrite, chalcopyrite, some galena, and Au and Ag values occur in shears in silicified and pyritized Sicker Group andesite. Some reports also mention sphalerite in the quartz. Another type of showing occurs in highly silicified and leached pyritic, ankeritic andesite which contains gold values.

Economic Features

The quartz lenses and silicified zones vary up to 2 feet in width but the mineralized portions appear to be very discontinuous. A grab sample of quartz with considerable pyrite, chalcopyrite, and galena from the dump assayed at 0.66 oz Au/ton, 14.0 oz Ag/ton (Ref. 1-1944). A large, highly oxidized bulk sample from the carbonatized zone assayed 0.64 oz Au/ton, trace Ag (Ref. 1-1944). A sample from 20 tons of ore on the dump (possibly hand sorted) in 1930 returned \$3.60 Au/ton, 5 oz Ag/ton, 5.0% Cu (Ref. 1-1930). A grab sample from 40 tons of high grade hand-picked ore on the dump in 1964 assayed 0.02 oz Au/ton, 1.8 oz Ag/ton, 2.57% Cu, 1.98% Pb, and 9.01% Zn (Ref. 7).

History

1898: Alberni Gold Development Syndicate; granted Crown Grants L.54, 55, 57.

1930: E. Maralia; an open cut and an incline shaft a few feet deep. Twenty tons of ore from this work on a dump.

1944: E. Marillia; no recent work. Five adits totalling 288 feet, a 30 foot incline shaft, 2 open cuts, and a 5 foot pit at the entrance to one of the adits exist. All probably date back to the late 1890's.

1964-65: Gunnex Ltd.; visited the workings, sampling, prospecting, in the general area.

1976: Western Mines Ltd.; (Tasha) geological mapping 1:14,400, soil sampling.

References

- 1) MMAR 1898-1197, 1930-291, 1944-148-150
- 2) EBC 1976-111
- 3) BCDM Bull 1 p132
(Special Report #5, 1936)
- 4) AR 6153
- 5,6) GSC P68-50 p38
Map 1963-49
- 7) Gunnex #7
- 8) Minfile 92F078

3. Golden Eagle (L.198G) Au

Geology

A vein of ribbon-quartz cuts a small intrusion of feldspar porphyritic diorite and contains pyrite, minor sphalerite, galena, chalcopyrite, and arsenopyrite (about 10% total sulphides) and gold values. Sicker Group volcanics and bedded cherts occur in the area.

Economic Features

The vein varies from a few inches to 8 feet, averaging about 3.5 feet, in width and has been traced in outcrop for 400 feet along strike and 325 feet vertically. An assay of \$56 Au/ton, 3 oz Ag/ton, and 1% Cu is reported, and assays of up to \$103 Au/ton are reported to have been obtained in 1894 (Ref. 1-1899). A tunnel 500 feet below the surface showing never intersected the vein despite being driven 1,500 feet beyond the estimated intersection point of 600 feet.



History

1892: The discovery of 2 quartz veins by prospectors searching for the source of the China Creek placer gold prompted the original claims to be staked.

1893-1902: Various individuals and/or companies; 4 adits totalling 205 feet in upper workings, an adit driven at a lower level to avoid snowslides from 1896-1902 reached 2,100 feet without intersecting mineralization, "development work" of an unspecified nature.

1964-65: Gunnex Ltd.; prospecting and silt sampling in the general area. Also visited the lower adit and a showing near Summit Lake (B and K?) where rock samples were taken.

References

- 1) MMAR 1893-1080, 1894-773, 1895-651, 1896-7, 556, 1897-566, 1898-1132, 1899-607, 779, 785, 1902-230, 1944-G150
- 2) AR 10194
- 3,4) GSC P68-50 p38
Map 49-1963, 17A
- 5) Gunnex #12
- 6) Minfile 92F080

4. B and K Au Ag

Geology

Many widely scattered narrow quartz veins containing pyrite, and minor galena, sphalerite, and chalcopyrite with Au and Ag values occur in andesite tuffs and flows, basalt, and local black chert; often in shear zones. A zone of strongly carbonatized andesite 6 to 25 feet wide contains minor pyrite, galena, and sphalerite in narrow veinlets. In the southern workings, veins are surrounded by a strong ankeritic carbonate alteration zone.



Economic Features

The "high-grade" vein has been exposed in open cuts for 130 feet and is 5 to 8 inches wide. A sample assayed at 3.84 oz Au/ton, 3.2 oz Ag/ton, 0.06% Cu over 5 inches. This vein may be on Golden Eagle property (Ref. 4).

A vein near the north end of the workings varies from 2 to 6 inches to a 6 foot stringer zone in width. Assays of 2.56 and 2.26 oz Au/ton are reported (Ref. 1-1944).

A sample from quartz nodules containing galena and pyrite from an open cut on two parallel shears, each 18 inches wide, ran 0.82 oz Au/ton and 0.7 oz Ag/ton (Ref. 4).

No assays are reported from the carbonatized zone. Many other quartz veins, from a hairline to 8 inches wide, for which no assays are available, occur within an area about 1,250 feet long.

History

1938-40: Angus Beaton, Ed Keisig; staked claims, prospecting, 17 open cuts and trenches, stripping.

1964-65: Gunnex Ltd.; prospecting and silt sampling in the general area.

References

- 1) MMAR 1944-151
- 2,3) GSC P68-50 p38
Map 49-1963
- 4) Gunnex #13
- 5) Minfile 92F081



5. Havilah (King Solomon, Storm, Red Rose, Spike, Sol 14) Au
Ag Cu Pb Mo

Geology

Sicker Group andesite is intruded by Jurassic diorite and by Tertiary hornblende-feldspar and quartz-feldspar porphyry stocks, dykes, and sills. Ribbon-quartz veins and lenses containing abundant pyrite, sphalerite, and galena and lesser chalcopyrite and arsenopyrite occur in shears in the andesite. Occurs on the same shear zone as Black Panther (#7 below) and Black Lion (#8 below).

Economic Features

The recorded production in 1936 and 1939 totals 1,406 tons yielding 259 oz Au, 1,404 oz Ag, 4,243 lb Cu, and 12,676 lb Pb. There are three main veins.

The Gillespie vein is the lowest. It is 3 to 34 inches wide and has been traced for 650 feet in 5 trenches. Most of the production came from the Gillespie vein. Assays range up to 0.4 oz Au/ton, 2.2 oz Ag/ton, 0.4% Pb, and 0.30% Zn over widths from 4 to 63 inches (Ref. 1-1936, 1944). Some oxidized samples taken over 1 foot assayed as high as 7 oz Au/ton and 3 oz Ag/ton. Average grade of the ore shipped from the Gillespie vein was 0.235 oz Au/ton and 1.28 oz Ag/ton (Ref. 1-1939). The vein was faulted off in two of the three adits, and could not be re-discovered.

The Alberni vein consists of a 10 foot wide by about 70 feet long zone of intense shearing containing 1 to 3 lenticular quartz veins 4 to 24 inches wide. Assays of 3.66 oz Au/ton and 5.2 oz Ag/ton over 4 inches and 1.8 oz Au/ton and 2.3 oz Ag/ton over 20 inches are reported. (Ref. 9).



The McQuillan vein was prospected with a 57 foot adit. It ranges up to 8 inches in width. Assays of up to 1 oz Au/ton over 8 inches and 1.6 oz Ag/ton over a different 8 inches, are reported (Ref. 9).

A fourth vein on the easterly side of the cirque 1 to 2 feet wide assayed 0.16 oz Au/ton and 0.6 oz Ag/ton from an oxidized 2 foot sample (Ref. 9).

History

- 1893: First mentioned in MMAR (King Solomon).
- 1895: An open cut on the McQuillan(?) vein.
- 1936-44: Havilah Gold Mines Ltd.; claims staked in 1934 and 1936 by Walter Harris. In 1936, 7 tons of ore were mined from the upper showings (Alberni and McQuillan veins). In 1938-39, 2,072 feet of drifting, crosscutting and raising on three levels on the Gillespie vein resulted in production of 1,039 tons of ore. Diamond drilling and prospecting were also carried out. A high-line tram was built to transport ore and supplies between the base camp and the mine. Little if any work was done after 1939.
- 1947: Nitinat Mines Ltd.; owned the ground.
- 1964: Gunnex Ltd.; silt sampling in McQuillan Creek drainage, rock sampling wherever mineralization was observed.
- 1974-77: Cominco Ltd.; geological mapping 1:4,800, soil sampling, trenching, several IP and resistivity surveys.

References

1)	MMAR	1893-1080, 1895-652, 1936-F30, 1939-38, 1944-G153
2)	GEM	1974-172
3)	EBC	1975-E95, 1976-E111, 1977-E110
4-6)	AR	5354, 6138, 6643



- 7,8) GSC P68-50 p38
 Map 49-1963, 17A
- 9) Gunnex #11
- 10) Minfile 92F082

6. Thistle Au Ag Cu

Geology

The area is underlain by a belt of upper Sicker Group volcanic rocks folded into a large complex anticline. The mine is located within a package of rocks known as the Flow Complex (probably correlative to Muller's Sediment-Sill Unit) which unconformably(?) underlies the Buttle Lake Formation. The Mine Flow Unit of the Flow Complex hosts the mine and 15 of 16 additional Cu and/or Au showings on the property.

At the mine, a highly variable succession of basaltic flows, flow breccias, and massive to bedded and graded tuffs and cherty tuffs is mapped.

Mineralization is found within relatively thin stratabound to crosscutting? intervals of moderate to very strong chlorite alteration of the basaltic host rocks. Sericite-epidote alteration also occurs, but apparently is not associated with mineralization.

The ore consists of gold-bearing pyrite-chalcopyrite (and local magnetite) in quartz-calcite gangue occurring in 3 or 4 main stratabound? zones of discontinuous anastomosing veins and veinlets to massive to semi-massive beds?

The Thistle Mine was reported by early workers to be a skarn deposit in altered limestone intruded by fine-grained diorite.



Economic Features

The ore occurs in layers 5 to 45 cm thick. Assays from 1983 sampling of the old workings range from 3.8-11.8% Cu, 0.14-2.16 oz Au/T, and 0.39-1.04 oz Ag/T. Older reports indicate that ore was found in lenses up to 18' by 25' in size. Diamond drilling in 1984 (NW of the mine) yielded assays ranging from 0.046 oz Au/T to 0.284 oz Au/T over massive sulphide intersections of 2-27 cm. The best assay was 0.514 oz Au/T over 20 cm of chloritic basalt including 2 cm of massive pyrite. A recent (October 22, 1985) news release states that the exploration target on the Thistle property is a volcanogenic deposit of at least 3 million tons of 0.2 oz Au/ton and 2% Cu.

History

- 1896: First staked.
- 1899: A. Watson et al; lower adit (500 adit) driven 65 feet but had not intersected ore that was 6 to 8 feet wide on surface, upper adit (300 adit) driven 90 feet but also had not intersected an orebody. A pit on one of the surface showings.
- 1901: Alberni Gold and Copper Co. Ltd.; roadbuilding, development work.
- 1902: J.M. Watson; granted Crown Grant L.91G.
- 1927: A. Watson et al; a 25 foot tunnel with a 20 foot crosscut, all in ore. (300A adit?)
- 1938-1940: United Prospectors Ltd.; shipments of ore were made from open cuts and glory holes and the old dumps.
- 1941-1942: Vancouver Island Diamond Drilling and Exploration Co.; 1,789 tons ore mined, shut down July 25, 1942.
- 1944: The workings existing on the property included four adits totalling 527 feet, an 18 by 25 foot stope 60 feet long, two glory holes totalling about 6,000 cubic yards,



and several open cuts. Owned by United Prospectors Ltd., but no work done since 1942.

1962: Hunting Survey Corp.; regional aeromagnetic survey, geological mapping at the mine area.

1964-1965: Gunnex Ltd.; visited the area, but no mapping done, silt sampling and prospecting in the general area.

1965: Vananda Explorations Ltd.; magnetometer, SP, and geochemical surveys, 4 diamond drill holes totalling 1,745 feet.

1979: Kargen Development; linecutting, soil sampling.

1982: McQuillan Gold; airborne EM and magnetometer surveys, soil sampling, rock sampling, trenching, EM survey.

1983-85: Westmin Resources Ltd.; geological mapping, rock sampling (for assay, whole rock geochem and thin sections), prospecting, diamond drilling.

References

- 1) MMAR 1899-778, 1901-1097, 1902-307, 1927-340, 1928-366, 1930-291, 1939-40,88, 1940-73, 1941-71, 1942-66, 1944-154-157, 1965-238
- 2-5) AR 8088, 9126, 10237, 11064
- 6-7) GSC P68-50 p38
Map 49-1963
- 8) Gunnex #10
- 9) Minfile 092F083
- 10) Nexus Resource Corporation; News Release dated November, 1983
- 11) VS October 22, 1985



7. Black Panther (Nitinat) Au Ag Pb Zn Cu

Geology

Ribbon-quartz lenses containing variable amounts of sulphides, mainly pyrite with minor galena and sphalerite occur in a shear zone which follows the contact of andesite lava on the west and diorite breccia on the east. The wall-rock of the shear is strongly altered by ankeritic carbonate for widths of a few inches to 30 feet which locally is cut by numerous quartz stringers.

Economic Features

The shear zone has been traced for at least two miles but the best mineralization is at the Black Panther workings where quartz lenses are one inch to three feet thick and up to 40 feet long. Four samples containing "heavy sulphides" from the 2700 and 2790 adits assayed from 2.30 to 2.88 oz Au/ton (Ref. 1-1944). A 1964 assay from the dump is reported as 1.16 oz Au/ton, 2.1 oz Ag/ton, 0.14% Cu, and 1.73% Pb (Ref. 4).

Production in 1947, 1948, and 1950 totalled 1,890 tons which yielded 509 oz Au, 953 oz Ag, 498 lb Cu, and 12,319 lb Pb, and at least 4,478 lb Zn.

History

1936: Claims first staked, upper adits driven shortly thereafter.

1939: Walter Harris; prospecting, drifting, cross-cutting (presumably those adits referred to above).

1941: Pioneer Gold Mines of B.C. Ltd.; drove the 2700 (Main) adit and the 2450 adit (about 1,200 feet of drifting, crosscutting, and raising), 1,631 feet of diamond drilling.



1944-48: Nitinat Golds Ltd. (became Nitinat Mines Ltd. in 1947); built a 25 ton flotation mill, mining, shipped 68.5 tons of concentrate.

1962: Hunting Survey Corp.; regional aeromagnetic survey, geological mapping at the workings.

1964-65: Gunnex Ltd.; visited the workings, took a rock sample.

References

- 1) MMAR 1939-88, 1941-71, 1944-157, 1945-114, 1947-182
- 2,3) GSC P68-50 p38
Map 49-1963
- 4) Gunnex #14
- 5) Minfile 92F084

8. Black Lion Au Ag

Geology

Similar to Black Panther (#7 above), as the Black Lion is on the southerly extension of the same shear zone as Black Panther. Zones of quartz-sulphide (pyrite, galena, gold values) stringers are found in a strongly carbonatized zone 10 inches to 9 feet wide with local evidence of strong shearing.

Economic Features

Open cuts exposed the "vein" for 175 feet with another exposure located 1,300 feet to the south. The quartz-sulphide stringer zone is 12 to 18 inches wide. A sample of quartz and sulphides assayed 1.2 oz Au/ton. Samples of quartz-sulphide stringers and carbonatized country rock ranged from 0.27 to 0.43 oz Au/ton. The carbonatized rock itself assayed at trace to 0.03 oz Au/ton (Ref. 1-1944, Ref. 4).



History

- 1941: Bralorne Mines Ltd.; prospecting, open cuts.
1942-64: Some diamond drilling is reported to have been done sometime during this period.
1964-65: Gunnex Ltd.; silt sampling and prospecting in the general area.

References

- 1) MMAR 1944-159
2,3) GSC P68-50 p38
Map 49-1963
4) Gunnex #15
5) Minfile 92F085

9,10. 3-W (WWW, Corrigan Creek Mine) Au Ag Pb Cu

Geology

Tongues of granodiorite alternate with masses of hybrid diorite; both rock types have been cut by feldspar porphyry dykes. Two quartz veins occupy fissures and contain pockets of pyrite, galena, and sphalerite. Another quartz vein is a mineralized gouge zone that does not everywhere contain quartz.

Economic Features

No. 1 vein measures 300 feet long by 4 to 10 inches wide and is exposed in one adit, four open cuts. A channel sample near the adit assayed 6 oz Au/T, 4 oz Ag/T over 4 inches (1935).

No. 2 vein measures 160 feet long by 8 inches wide. A channel sample assayed 7.3 oz Au/T, 5.3 oz Ag/T over 10 inches (1935).



No. 3 vein measures 308 feet long by 2 to 14 inches wide. A channel sample assayed 1.3 oz Au/T, 0.9 oz Ag/T over 14 inches (1935). Grab samples assayed 7.25 oz Au/T; and 0.18 oz Au/T, 0.2 oz Ag/T (1964).

A recently discovered(?) vein measures 1,000 feet long by 2 inches to 2 feet wide. The best grab sample assayed 1.7 oz Au/T, 3.99 oz Ag/T (1970). A grab sample taken by MPH in 1983 returned 18,000 ppb Au, 3,060 ppm Pb, 12,000 ppm Zn, 11.2 ppm Ag.

Production

1899-1941: A total of 116 T of ore was mined, yielding 471 oz Au, 500 oz Ag, 2,424 lb Pb, and 538 lb Cu.

History

1898-1899: Various owners; staking, prospecting, one adit driven.

1930-1935: Franklin River Gold Mines Ltd.; development, some mining.

1940's: Various, prospecting, sampling.

1963-1964: Gunnex Ltd.; prospecting, sampling.

1970: John Cotowick; limited mining operations.

1974: Corrigan Creek Gold Mines Ltd.; geological mapping (surface and underground), geophysics, trenching, stripping, 50' underground work.

References

- 1) MMAR 1898-1132, 1899-607, 1906-198, 1921-206, 1922-228, 1926-295, 1927-341, 1930-291, 1932-203, 1933-250, 1935-F49, 1940-27, 1941-27, 1944-59
- 2) GEM 1970-289, 1974-172
- 3) BCDM Bull 1 p132



- 4) AR 2771
- 5) GSC P68-50 p38
Map 1963-49
- 6) The Miner October 1935
- 7) Minfile 092F141, 092F085

11. Bank Group Au Ag Cu

Geology

Pyrite, chalcopyrite and galena with Ag and trace Au occur in quartz veins in sheared and fractured metamorphic rock. Occurs in an area mapped as Sicker Group volcanics.

Economic Features

The width of mineralization is reported to be up to 10 feet or more and it was traced for several hundred feet along strike. A grab sample from the dump assayed at trace Au, 1 oz Ag/ton, and 3.2% Cu (Ref. 1).

History

1917: James Dryden and I.B. Atkinson; a series of open cuts with a 25 foot shaft in the largest of the cuts, caved adit.

References

- 1) MMAR 1917-247
- 2) Minfile 92F167

12. Lizard Lake Au Ag Cu

Geology

Sicker Group cherts, andesitic to dacitic fine-grained tuffs or cherty tuffs, and agglomerates overlain by Buttle Lake Formation limestone occur on the eastern part of the



property. Small to large dykes and plugs of feldspar and feldspar-hornblende porphyry intrude the Sicker rocks, which are locally heavily pyritized adjacent to the dykes. The dykes are believed to be co-magmatic with the Sicker volcanics. Narrow quartz-carbonate veins containing massive and disseminated pyrite with associated gold values and minor chalcopyrite and malachite outcrop in fairly massive andesite. Gold values and massive sulphides are reported to occur in a tuffaceous pyritic chert layer (pyritic dacitic cherty tuff exhalative horizon) below the quartz vein-bearing andesite.

Economic Features

Assays of up to 0.13 oz Au/T, 0.70 oz Ag/T, 0.13% Cu over 2 m are reported from the Discovery showing. Values of up to 155 ppb Au are reported from the tuffaceous chert layer. Soil sampling located a triangular area of anomalous Au (up to 3500 ppb Au) with a smaller coincident Cu anomaly SE of Lizard Lake. An airborne geophysical survey located an EM conductor as well as a magnetic anomaly coincident with a large number of weak EM conductors in the area. 1984 soil sampling located 4 major zones of anomalous Au with coincident, slightly larger As anomalies running subparallel to bedding. The largest anomalies are associated with pyritic dacitic cherty tuff. DDH 84-5 intersected several pyritic cherty tuff exhalative horizons assaying up to 0.033 oz Au/T, 0.105 oz Ag/T over 1.8 m

History

1963-65: Gunnex Ltd.; regional mapping and prospecting, reconnaissance soil and silt sampling.

1971: Nippon Mining of Canada Ltd.; mapping, soil sampling.

1976: Western Mines Ltd.; mapping, soil sampling.



1978-82: UMEX Inc.; mapping, soil and rock sampling, EM, trenching.

1981: McQuillan Gold Ltd.; Oliver Resources Ltd., Jan Resources Ltd.; airborne VLF-EM, mag survey included the eastern part of Lizard Lake.

1983-85: Noranda Exploration Co. Ltd.; IP, mag, detailed soils, geological mapping, 5 DDH for 544.4 m.

1985: Torhsen Energy Corp.; optioned 49% interest in property.

Comments

Located in Port Alberni watershed. Located within an area to which Noranda Exploration Co. Ltd. holds the base metal rights under option from MacMillan Bloedel.

References

GEM 1971-233
EBC 1976-E111, 1978-E127, 1979-128
AR 6153, 7719, 8568, 8981, 9126, 10401, 10890 (12664, 84-559, 84-1159)
Minfile 92F285
TML 1985 #064
MER 1984 p30

13. McQuillan Creek Fe

Geology

An outcrop of jasper between a large bed of argillaceous schist and crystalline rock is locally heavily charged with hematite.

Economic Features

Not known.



History

1895: First reported.

1964: Gunnex Ltd.; relocated the showing while working around Havilah (#5 above).

References

- 1) MMAR 1895-652
- 2) Gunnex #11
- 3) Minfile 92F429

14. Sol Cú Mo

Geology

A widespread area of low-grade copper mineralization occurs in an area of Sicker Group volcanics intruded by Jurassic diorite and by narrow rhyolite or quartz feldspar porphyry dykes or sills of Tertiary age. The mineralization consists of pyrite and pyrrhotite disseminations and fracture fillings and minor chalcopyrite and molybdenite occurring mainly in northeast trending fractures and quartz veinlets within the iron sulphide zones. Most of the mineralization occurs either in andesite near to the diorite, or adjacent to and within the Tertiary dykes or sills.

Economic Features

Soil sampling located three anomalous zones up to 1,200 by 1,200 by 1,000 feet vertical in size. Mineralization was subsequently located in all three areas (Ref. 3). A large IP anomaly was also located (Ref. 4). Covers the old Havilah property (#5 above).



History

1962: Hunting Surveys; regional aeromag survey over the area.

1962-65: Gunnex Ltd.; examined the old Havilah workings and covered the area with silt sampling and prospecting.

1974-77: Cominco Ltd.; geological mapping 1:4,800, soil sampling, trenching, several IP and resistivity surveys.

References

- 1) GEM 1974-172
- 2) EBC 1975-E95, 1976-E111, 1977-E110
- 3-5) AR 5354, 6138, 6643
- 6) Minfile 92F385

15. Grizzly Arsenic Showing As Ag, minor Au

Geology

Stringers of arsenopyrite and pyrite plus native arsenic nodules occur in sheared Nanaimo Group argillite. Disseminated pyrite and carbonate stringers occur in the host rock.

Economic Features

The mineralized zone measures 30 feet long by 2 feet wide by 15 feet deep. A grab sample of mineralized carbonate vein assayed 4.7% As (1927). The best channel samples assayed 5.97% As, 0.01 oz Au/T over 2 feet and 22.72% As, 0.5 oz Ag/T over 9 inches (1964). Estimated reserves are 150 T of ore grading 90% As (1942).



History

1927: Unknown; 40 foot shaft sunk, 50 feet of drifting.

1942: Cominco Ltd.; prospectus report noted that a previous worker exposed the zone for 150 feet by trench, adit and shaft. An ore reserve estimate was made.

1963-1964: Gunnex Ltd.; channel sampling.

References

Hawkins and Willoughby, 1983

16. Upper Franklin River Occurrences Cu

Geology

Chalcopyrite and malachite occur within quartz stringers and epidotized shears in andesite (Vancouver Group).

Economic Features

One zone measures a few feet long by 2 feet wide; a grab sample assayed 1.74% Cu. Another zone is 5 to 6 feet wide. Grab samples assayed 2.75% Cu and 1.42% Cu.

History

1963-1965: Gunnex Ltd.; ground magnetometer survey, soil sampling, prospecting.

References

Hawkins and Willoughby, 1983



5.0 PHASE I EXPLORATION PROGRAM

phase I exploration of the McQuillan claim comprising installation of a grid over the southern and northwestern parts of the claim, 1:2,500 scale geological mapping of the grid, and soil sampling of the grid has been completed by MPH Consulting Limited.

5.1 Property Geology

Property geology is generally as mapped by Benvenuto (Neale, 1985). In the south and east of the claim the dominant lithology is massive to pillowed basalt flows and pillow breccias. Felsic volcanic rocks increase to the northwest and form a thick wedge within the mafic flows. Basalt flows also appear to grade laterally to intercalated mafic tuffs, breccias and flows in a north-northeasterly direction. The rocks are divided into 6 units which strike approximately 170° and dip moderately to steeply west. Pillow tops and poorly graded pyroclastic units indicate younging to the west. The units, from oldest to youngest, are:

Unit 1 Basalt Flows

(Samples R63154, R63164, R63165)

This unit outcrops in the southeast of the property and in places forms prominent cliffs. Apparent thickness is greater than 300 m. Outcrop is characteristically blocky fractured and weathers medium green to green-brown and white. On fresh surfaces, the flows are medium-dark green, fine to medium grained, predominantly massive basalt. Irregular green mafic (chloritic) lenses (3 mm) form 7-10% of the rock and appear to be relict



mafic phenocrysts. Poorly defined pillows occur in places. Chlorite-calcite filled amygdules (to 3 mm across) form a maximum of 2% of the rock. Carbonate, and minor jasper, occur as masses within the flows. The rocks are metamorphosed to a chlorite-epidote assemblage, and fractures are coated with carbonate, epidote and chlorite. At L3+00N, 2+00E (sample R63154) disseminated pyrite-pyrrhotite blebs (to 3 mm) form 3% of the rock, but elsewhere pyrite is present in trace amounts only. This unit looks similar to Nitinat Formation basalt flows.

Unit 2 Hematitic Basalt Pillow Breccia

This unit outcrops in the southeast of the claim, but float found in the central portion of the property indicates the unit extends to the north. Apparent thickness is 200 m in the south, and possibly 50 m in the north. Outcrops weather reddish-purple with green mottling. The red-purple colouring is due to moderate to strong pervasive hematitic staining, which in places outlines the greener chloritic pillow fragments. Pillows and pillow fragments range to 35 cm in diameter and average 5 cm to 10 cm. These occur in a fine to medium grained basalt matrix. The fragments are stretched parallel to a weakly to strongly developed foliation that trends between 150° and 180° and dips vertically to steeply east or west. No mineralization was seen in this unit.

Unit 3 Basalt Massive to ? Pillowed to ? Agglomeratic with Interbedded Felsic Volcanics

(Samples R63152, 63153, 63157-63159, 63166)

Unit 3 forms steep slopes and bluffs to the west of the McQuillan Road in the central portion of the property. Apparent thickness is approximately 600 m. Outcrops weather dark green to green-brown and are blocky fractured. This unit comprises predominantly medium-dark gray-green, fine to medium grained massive basalt

flows. These contain from 0% to 20% chlorite-calcite (\pm quartz) filled amygdules to 4 mm diameter. Rare poorly defined pillows to 30 cm in diameter are outlined by dark-green chloritic rims. Irregular green mafic (chloritic) lenses (to 3 mm) form 7-10% of the rock and may be relict mafic phenocrysts. The unit is chloritized and epidotized throughout. Epidote, chlorite and carbonate form clots to several centimetres in diameter. Locally, the basalt seems to be fragmental. Subhedral to euhedral pyrite (to 0.5 mm) is disseminated in patches and forms less than 0.5% of the rock. Thin beds to 30 cm thick of gray-green fine-grained dacite tuff, gray-green chert, medium green fine-grained volcanic sandstone and rare argillite appear to increase to the west. Near the top of unit 3 a brick-red jasper horizon approximately 1.2 m thick, marks the top of the bluffs. This horizon is delineated by one outcrop and float. The outcrop is barren, but pyritic stringers were seen in jasper float and sampled. No anomalous values were obtained. The top of this unit is intensely limonite stained with minor ankerite-fuchsite alteration. Unit 3 is apparently gradational to the north with unit 4.

Unit 4 Mafic (Crystal) Lithic Lapilli Tuff-(Breccia)

This unit outcrops in the north of the property. Apparent thickness is 400 m. The unit comprises dark gray-green, fine to coarse mafic tuffs with up to 20% lapilli sized (to 4 mm) sub-round to subangular fragments and 2-3% angular blocks (to 20 cm) of massive basalt, amygdaloidal basalt, dacite tuff, and chert; crystal tuffs with up to 15% subhedral feldspar crystals (to 3 mm long) in a fine mafic matrix; pillowed basalt; basalt pillow breccia; massive fine to medium grained basalt; and minor fine grained gray-green dacite tuff. The rocks are epidotized and chloritized, and are ankerite (?) altered at L27+50N, 6+00W, where mineralization was found in 1983 and 1984 (samples 9869 - 2.4 ppm Ag, 7266 - 176 ppm Cu, 11.2 ppm Ag, 220 ppb Au).



Unit 5 Dacite (Agglomeratic) Lapilli Tuff-Breccia

This unit outcrops in the west of the property. Apparent thickness is from 0 m to 250 m. The unit appears to pinch out to the north but is open to the south. The rock weathers white. Fresh surfaces are generally light gray-green to gray, fine to medium grained dacite tuff with 15% to 50% subangular to subround lapilli (from 2 mm - 4 cm) and 5% angular blocks (to 15 cm). Clasts are mainly dacitic to rhyolitic, but basaltic fragments are common. Locally, vague rounded clasts (to 8 cm) are crowded together, forming approximately 70% of the rock, and appear to be approximately spheroidal dacitic bombs with chloritized green cores. The unit is variably chlorite-epidote-saussurite altered. Sorting of the clasts is poor to non-existent. Sulphide content varies from 0% to 2% very fine-grained pyrite occurring near the lower contact.

Dacite tuff boulders at L11+00N, 1+00E appear to have rolled downhill from the east where Muller (1980) has mapped Myra Formation rocks in fault contact with the Nitinat Formation.

Unit 6 Feldspar Porphyry Basalt Intrusives

This unit outcrops in the southeast of the claim, and is contained wholly within units 1 and 2. Thickness is from 20 m to 50 m. No talus of this was found north of L7+00N. The unit weathers white to buff. The rock is formed of 40% to 80% feldspar (plagioclase?) crystals (to 1.5 cm long maximum and averaging 8 mm) in a chloritic-epidotized fine to medium grained basandesitic matrix. The feldspars are pale green, gray, to pink-gray, subhedral to euhedral and seem saussuritized. Anhedral mafics (? hornblende) to 4 mm maximum form 1% of the rock. No sulphides were seen. Abundant chlorite, epidote and carbonate filled fractures crosscut the rock. A fine-grained



dark gray-green basalt dyke 30 cm thick cuts the feldspar porphyry. The basalt of unit 1 to the east appears to be re-crystallized in part by unit 6. Unit 6 appears to have intruded partly parallel and partly crosscutting units 1 and 2. A Tertiary age has been suggested for this unit, but the basic composition and degree of chlorite-epidote-saussurite alteration suggests an older age is possible and that the intrusive may even be part of the Paleozoic sequence.

The problem indicated by Benvenuto (Neale, 1985) concerning the stratigraphic placement of the volcanic rocks is still unresolved. While the amount of pillowing is unusual, the lower greenschist metamorphism, variable development of foliation (best developed in unit 2) and presence of dark green mafic lenses (relict mafic phenocrysts?) suggest the rocks belong to the Paleozoic Sicker Group volcanics, although no well preserved uralitized pyroxenes were seen. While the first appearance of bedded pyroclastic rocks and presence of felsic pyroclastics is usually considered the marker for the base of the Myra Formation (Muller, 1980) to do so here would mean including the hematitic basalt pillow breccia in the Nitinat Formation. The hematized horizons at Westmin Resources Ltd.'s Buttle Lake mines are considered to be in the upper section of the Myra Formation. However, if the hematized unit on the property is within the Myra Formation then the rest of the units would also have to be Myra Formation. The thickness and nature of the basalt flows underlying the hematitic unit suggests that this is unlikely. It is possible that unit 5 is in fault contact with the underlying unit 3, as this contact was seen in only one place (L8+00W, 15+00N) where heavy limonite staining and leaching are associated with what may be a fault (sample R63160). The argument against this is the apparent increase to the west of acidic volcanics in unit 3. It is most likely that units 1 and 2 belong to the Nitinat Formation while units 3, 4 and 5 belong to the Myra Formation.



Faults seen on the property were minor, with displacement on the order of centimetres to a few metres.

5.2 Alteration and Mineralization

No major alteration was seen on the property. All rocks are generally chlorite-epidote-carbonate altered to lower greenschist facies. Whole rock analysis of the "ankerite-fuchsite" altered samples associated with the contact between units 3 and 5 indicates that alteration is less extensive than identified in the field, and the bright orange colour is probably due mainly to limonite staining. The altered basalts at this contact appear to be slightly $\text{Na}_2\text{O} + \text{CaO}$ "depleted" and $\text{Al}_2\text{O}_3 + \text{K}_2\text{O}$ "enriched" with respect to unaltered basalts (see whole rock analyses in Appendix III). This may be due to weathering only. A bright green mineral field-identified as fuchsite was apparently correctly identified at one locale (sample R63162, Cr-529 ppm); at others it may have been some other, unidentified mineral (not malachite or annabergite) since Cr, Cu, and Ni content of these samples are low. No mineralization appeared to be associated with this alteration.

The 1983 anomalous samples (#7266-220 ppb Au, 11.2 ppm Ag; #9869-2.4 ppm Ag) at L28+00N, 5+75W are associated with ankeritic alteration within unit 4. Unfortunately, the logging activity prevented follow-up on the ground. However unit 4 appears to pinch out to the south and is open to the north, so further follow-up may need to be directed north.

The outcrop at L14+00N, 0+25W with pyrite-chalcopyrite in basalt (1984 sample #9877) was re-sampled. Mineralization is restricted to the chloritic fractures. No elements other than Cu were anomalous. No significant alteration seems associated with these

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fractures. It seems unlikely that these could be part of a pyritic stringer zone.

A sample of interbedded pyritic dacite tuff, chert and volcanic sandstone float taken near this last outcrop, but apparently belonging to unit 3, returned no anomalous values. However the pyrite in this sample appeared to be poorly bedded, indicating a possibility for bedded massive sulphides within unit 3.

5.3 Geochemical Soil Survey

Soil samples of the "B" horizon were taken at 50 m spacings on lines 100 m apart; a total of 374 soil samples. These were analyzed by Rossbacher Labs of Burnaby for Cu, Zn, Ag and As by AAS. Results were plotted on probability paper to determine high background and anomalous thresholds for each element. The thresholds were:

	<u>High Background</u>	<u>Anomalous</u>	<u>Maximum Value</u>
Ag	>0.7 ppm	>1.2 ppm	1.6 ppm
As	>80	>160	318
Cu	>110	>170	188
Zn	>96	>130	208

Depth of the "B" horizon varied from 5 cm to 25 cm. The area has been extensively disturbed by logging (as much as 50 years old) resulting in removal of some of the topsoil and possible contamination, particularly between L8+00N and L11+00N on the west side of McQuillan Creek, where abundant logging debris was found.

Geochemical values over the property are generally low. Three areas of anomalous values were delineated which may warrant further work.



In the southeast of the grid, a low Cu-Ag anomaly (approximately 500 m long by 50 m to 150 m wide) trends approximately 030° and crosscuts units 1 and 6. However this anomaly closely follows two logging roads and the highest values are downhill from the roads suggesting the possibility of contamination. Some anomalous values were found uphill from the road (1.2 ppm Ag, 134 ppm Cu) and may be associated with the Myra Formation or the fault mapped uphill to the east by Muller (1980). Sample R63154, of pyrite-pyrrhotite disseminated in unit 1 basalt outcrop was taken in the area of this anomaly. Although the rock did not return any anomalous values, the soil anomaly should be prospected further. This anomaly is also in the area of 1984 anomalous sample 9880 (420 ppm Cu), which was not followed up.

An area of scattered Zn anomalies between L9+00N and L11+00N, east of McQuillan Creek (values up to 172 ppm Zn) is believed to be due to seepage from the base of the cliffs and probably does not warrant further investigation.

An As-Ag anomaly on the west side of McQuillan Creek between L9+00N and L11+00N (300 m long by 150 m wide and with values up to 1.6 ppm Ag and 172 ppm As) is in the area of visible logging debris and may be due to contamination of some sort. No outcrop was found here, but the area is thought to be underlain by units 1 and 2.

Soil analysis results over unit 5 were uniformly low. Some spot Ag-As anomalies were found above and below this unit (high values of 318 ppm As, 1.2 ppm Ag) on the edge of the grid.

Soil samples taken immediately uphill from the pyritic-chalcopyritic fractures on L14+00N, 0+25W contain slightly elevated As values. Ag-Cu-Zn values were low. The As content of the outcrop was low, so the relationship between the soils and rock is unknown.



5.4 Whole Rock Analyses

All of the rock samples were subjected to whole rock oxide analysis. The whole rock analyses were subsequently processed by computer. The computer program assigns rock names to the samples using 4 different classification systems and evaluates the geochemical factors that may indicate the presence of alteration typically associated with volcanogenic base metal and/or gold mineralization. Whole rock analyses are included in Appendix III and computer evaluations are included in Appendix IV.

Computer evaluation of the whole rock results indicates some highly anomalous alteration is present on the property, especially in unit 3 rocks close to the contact with unit 5 rocks. The two most anomalous samples (63162 and 63158) were collected from the area within 150 m east of the unit 3/unit 5 contact. Four other samples with somewhat less anomalous results were also collected from unit 3 (samples 63158, 63153, 63152, and 63159). The anomalous alteration present in unit 3, as well as the presence of a layer (layers?) of jasper, indicates good potential for the location of a volcanogenic style occurrence. A discontinuous, weak Zn soil anomaly and a spot Ag anomaly on the western edge of the grid from L4+00N to L8+00N could be related to the anomalous whole rock results. No rock samples have been collected from the area of the soil anomalies.

Field identification of rock types is generally consistent with the rock names assigned by the computer program.