



02/87

ASSESSMENT REPORT ON
RECONNAISSANCE GEOLOGICAL MAPPING
AND ROCK SAMPLING
OF THE
COW PROPERTY

VICTORIA MINING DIVISION, BRITISH COLUMBIA
NTS 92B/13~~W~~ and 92C/16~~E~~

48°~~53'~~^{54'} N LAT., 124°00.~~'~~['] W LONG.

FOR

Owner/operator: JBL RESOURCES LTD.
DECEMBER 17, 1985

T. Neale, B.Sc. T.G. Hawkins, P.Geol.

FILMED

GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,462



SUMMARY

A three-day reconnaissance exploration program on the JBL Resources Ltd. Cow property has been completed by MPH Consulting Limited. Work carried out on the property included geological mapping, prospecting and rock sampling along logging roads.

Geological mapping essentially confirms the mapping carried out by Wilson (1964). The bulk of the property is underlain by cherty argillite with diabasic sill-like bodies, of the Sicker Group Sediment-Sill Unit. Myra Formation lithologies outcrop in the southwestern corner of the property. The Sicker Group rocks are intruded by two bodies of Island Intrusion granodiorite to quartz diorite and related (?) dikes and are overlain in the Chemainus River Valley by Nanaimo Group Sediments. Sulfide mineralization is widespread on the property in Sicker Group rocks, although generally in low concentrations. Local remobilization and concentration of the sulfides has occurred, especially near Island Intrusions contacts.

The old "Pogo" showings were relocated and resampled by MPH. Assays of up to 0.72% Zn, 0.48% Pb, 0.13% Cu, and trace Ag were reported in 1964; however, the best 1985 results were only 489 ppm Cu, 100 ppm Zn, 0.6 ppm Ag, and 9 ppm Pb.

The highest analyses returned from 1985 sampling were from a sample of baked argillite (#038) from near a contact with Island Intrusions rocks, which ran 4720 ppm Zn, 1250 ppm Cu, 8.0 ppm Ag, 70 ppb Au, 11.0 ppm Cd, and 6750 ppm P. The highest gold result was from a sample of extremely weathered, rusty, earthy, quartz-



veined Island Intrusions rock (#020) which ran 150 ppb Au (check assay - 0.008 oz Au/ton).

A three-phase exploration program designed to explore the Cow property for economic concentrations of the sulfides which have been demonstrated to occur throughout the property, is recommended. Phase I is to consist of geological mapping, prospecting and rock sampling over the entire property and is estimated to cost \$23,000. Phase II will consist of detailed geological mapping and sampling, soil sampling, and magnetometer and VLF-EM surveys on grids established over target areas at an estimated cost of \$42,000. Phase III is to consist of detailed geophysical surveys and trenching on anomalous grid areas followed by diamond drilling at an estimated cost of \$153,000. Phases II and III are both contingent upon favourable results from the previous phase.



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**COW
PROPERTY**

JBL RESOURCES LTD.

GENERAL LOCATION MAP

COW PROPERTY

VICTORIA MINING DIVISION

Project No: V 198	By: T. N.
Scale: 1 : 8 000 000	Drawn: J. S.
Drawing No: 1	Date: DEC. 1985.



MPH Consulting Limited



1.0 INTRODUCTION

This report represents the compilation of geological fieldwork carried out by MPH Consulting Limited at the request of JBL Resources Ltd. on the Cow property from September 23 to 25, 1985. The program was carried out and supervised by Dr. J.S. Getsinger.

Work carried out in fulfillment of assessment work requirements includes reconnaissance geological mapping, prospecting, and rock sampling. Airphotos and 1:10,000 scale blow-ups of topographic maps were used for mapping control. A total of 29 rock samples were collected and analyzed for Au and by 30-element ICP.

Included in the report is a summary of all known geological and mining exploration activity in the area, a description of regional and property geology, and a discussion of the economic setting of the Cow property. A recommended work program designed to explore the economic potential of the property is provided.



2.0 PROPERTY LOCATION, ACCESS, TITLE

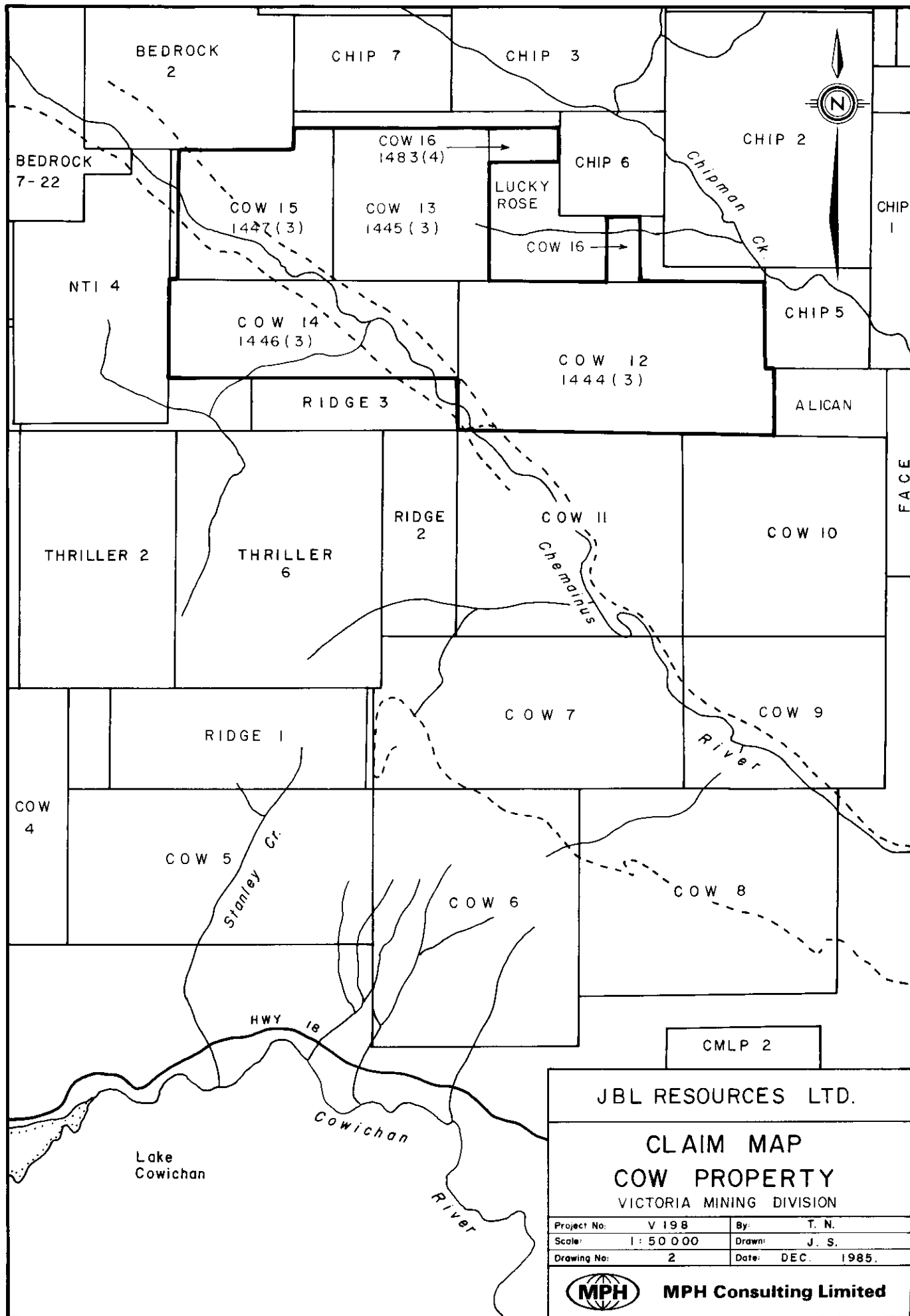
The JBL Resources Ltd. Cow property is located in the Chemainus River valley, 21 km west-southwest of Chemainus, on NTS mapsheets 92B/13 and 92C/16, centred at approximately 48°53.8'N latitude, 124°00.5'W longitude in the Victoria Mining Division of British Columbia (Figures 1, 2).

Access to the property is via the all-weather gravel Chemainus River road from Chemainus. Numerous logging roads, generally in good condition, on both sides of the valley provide access to all of the claims. At the time of the assessment work program, blasting for road construction prevented access to the south-eastern portion of the property.

The Cow property comprises 5 claims totalling 57 units, all owned by JBL Resources Ltd., as summarized below:

<u>Claim</u>	<u>Record No.</u>	<u>Units</u>	<u>Anniversary Date</u>	<u>Year Recorded</u>
Cow 12	1444 (3)	18	March 6, 1986	1985
Cow 13	1445 (3)	9	March 6, 1986	1985
Cow 14	1446 (3)	12	March 6, 1986	1985
Cow 15	1447 (3)	9	March 6, 1986	1985
Cow 16	1483 (4)	9	April 6, 1986	1985

The Cow 16 claim was staked after the Cow 12-15 claims and unknowingly over the Lucky Rose claim. The Cow 16 claim is therefore considerably reduced in size (Figure 2). •



JBL RESOURCES LTD.

CLAIM MAP
COW PROPERTY
 VICTORIA MINING DIVISION

Project No:	V 198	By:	T. N.
Scale:	1: 50 000	Drawn:	J. S.
Drawing No:	2	Date:	DEC. 1985.



MPH Consulting Limited



3.0 HISTORY

Government geological mapping in the area includes work by J.T. Fyles (1955) and J.E. Muller (1977, 1980a, 1980b, 1982).

In 1964 E.M. Wilson carried out geological mapping and rock sampling on and around the "Pogo" property, which consisted of four 2-post claims near the centre of the present Cow property. Five showings are plotted on his geology map. The highest assays from the main showing are 0.43% Zn over 10 feet, 0.48% Pb and 0.09% Cu over 5 feet, and trace Ag over a different 5 feet. A second showing assayed 0.72% Zn, 0.17% Pb, and 0.13% Cu from a grab sample. Little information is given on the other 3 showings. Geological mapping at a scale of 1:600 was carried out over the area near the main showing in addition to mapping at 1:16,800 over a larger area surrounding the Pogo claims (approximately the area of the Cow property).

No other work has been recorded on the Cow property ground since 1964.

A past-producing mine hosted by the Sicker Group in the Duncan area is the Twin J Mine. A total of 305,149 tons of ore mined from 1898 to 1964 yielded at least 40,014 oz Au, 840,472 oz Ag, 21,344,332 lb Cu, 45,864,654 lb Zn, 418,716 lb Pb, and 2600 lb Cd. Corporation Falconbridge Copper is exploring a large property surrounding the Twin J Mine.

Aberford Resources Ltd. is carrying out a major exploration program on the Lara property, 7 km southeast of the Cow property. In January 1985 Aberford announced a 26.2 foot (true thickness) diamond drill intersection of polymetallic mineralization hosted by felsic Sicker Group volcanics. The intersection grades 0.101



oz Au/ton, 3.01% Zn, 1.97 oz Ag/ton, 0.68% Cu, and 0.45% Pb, and contains a 10.6 foot (true thickness) interval of 0.135 oz Au/ton, 5.18% Zn, 2.66 oz Ag/ton, 1.21% Cu, and 0.69% Pb. Diamond drilling demonstrated that at least three exhalative stratabound mineralized horizons occur on the Lara property; the two southern zones can be traced for about 1 km each, while the northern zone can be traced for 6.3 km.

In July 1985, after a total of 40 diamond drill holes had been completed, Aberford announced that a mineralized zone 1,300 feet long by 350 feet deep had been outlined. The zone is open on both ends and to depth. The average true width of the zone is 20.53 feet and it grades 0.051 oz Au/ton, 1.12 oz Ag/ton, 1.98% Zn, 0.44% Cu, and 0.36% Pb. The eastern end of the zone is richer. A diamond drill hole located 1650 feet east of the zone along strike intersected 12.07 feet (true thickness) of massive sulfide 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 Westmin Resources Ltd.'s Buttle Lake mines. The Twin J Mine is located 9 km southeast of the Lara property (i.e. on strike) and is geologically similar.

Further to the northwest, Westmin Resources Ltd. is exploring Nexus Resource Corporation's Thistle property, 20 km southeast of Port Alberni. 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. The Thistle Mine produced 6920 tons of ore yielding 2760 oz Au, 2120 oz Ag, and 681,425 lb Cu in the period from 1938 to 1942. 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.

Significant gold, base metal, and other occurrences and deposits of the Sicker Group in the Duncan-Cowichan Lake area are summarized in the Mineral Occurrences section (4.9).

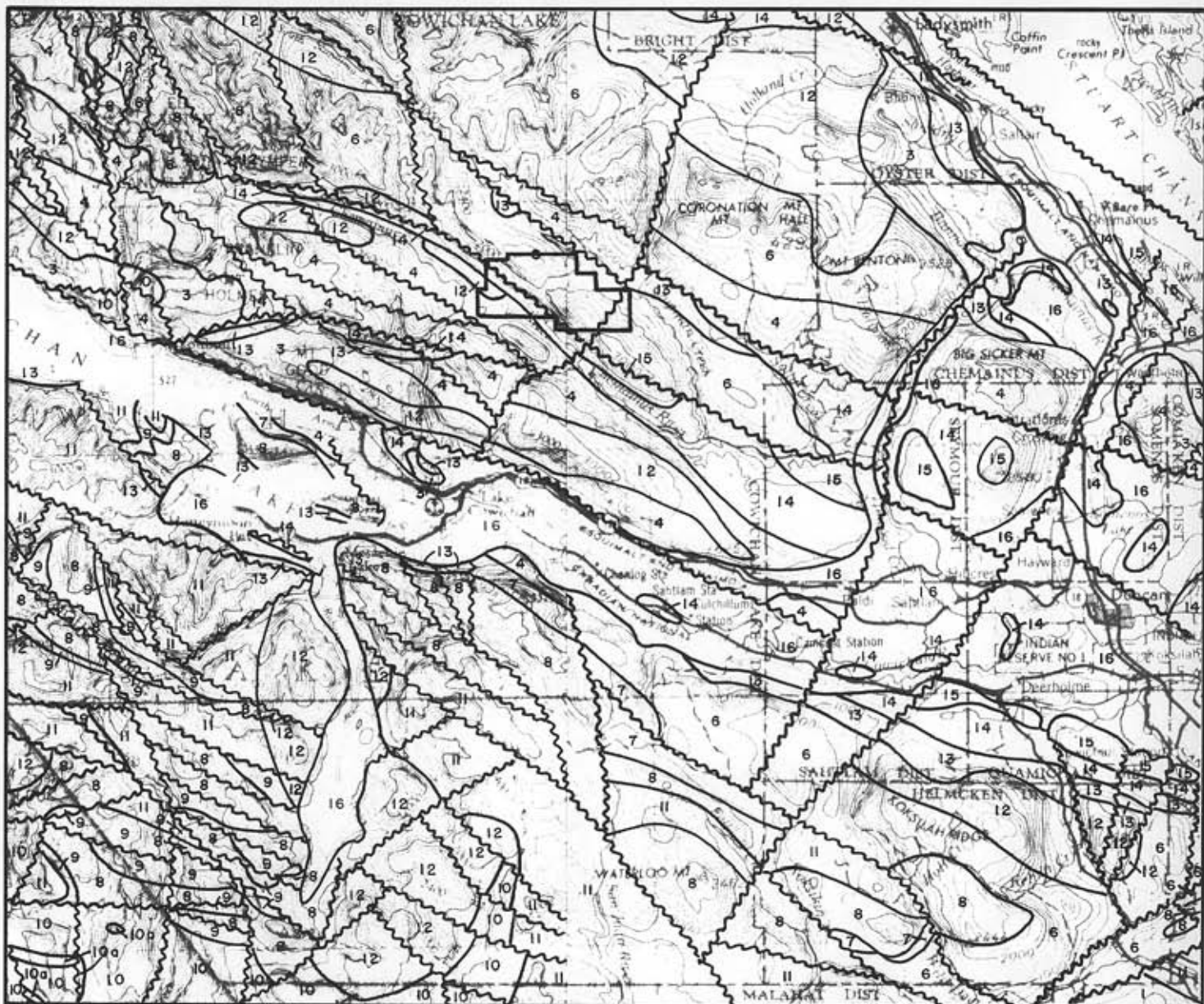
4.0 REGIONAL GEOLOGY

The Duncan to Cowichan Lake area is underlain by a west-northwest trending belt of Paleozoic Sicker Group rocks intruded by various bodies of Jurassic Island Intrusions and overlain by Triassic Karmutsen Formation basalts and Cretaceous Nanaimo group sediments. South of Cowichan Lake, extensive exposures of Bonanza Group volcanics are found, along with Karmutsen Formation, Quatsino Formation, and Island Intrusions rocks (Figure 3).

4.1 Wark-Colquitz Gneiss Complex

Wark Gneiss (Unit 1) consists of irregularly foliated to massive biotite-hornblende diorite and quartz diorite, while Colquitz Gneiss (Unit 2) consists of well foliated biotite-hornblende quartz diorite to granodiorite. The dark, mafic Wark and light, felsic Colquitz gneisses may be intimately interlayered locally. The Colquitz Gneiss was originally thought to intrude the Wark Gneiss, but is now considered to be a paragneiss derived from volcanoclastics. Migmatization of the gneisses has been shown by K-Ar dating to have occurred during the early Jurassic plutonism that produced the Island Intrusions. It therefore seems likely that the Paleozoic Sicker Group is the protolith of the Wark and Colquitz Gneisses, but zircon dating appears to indicate older Paleozoic or even Precambrian material (Muller, 1981).

The Wark-Colquitz Gneiss Complex is exposed in the vicinity of Victoria, where it appears to form the basement of the Insular Belt.



QUATERNARY

16 Glacial and alluvial deposits.

UPPER CRETACEOUS

Nanaimo Group

- 15 Extension - Protection Fm.: sandstone, conglomerate; minor siltstone, shale, coal.
- 14 Haslam Fm.: shale, siltstone, minor sandstone.
- 13 Comox Fm.: sandstone, conglomerate, minor siltstone, shale, coal.

JURASSIC

Lower to Middle Jurassic

12 Island Intrusions: granodiorite, quartz diorite

Lower Jurassic

11 Bonanza Group: basaltic to rhyolitic tuff, breccia, flows, sills, and dykes; minor argillite, greywacke.

UPPER PALEOZOIC AND ? OR TRIASSIC AND JURASSIC

10 Westcoast Complex: quartz diorite, diorite, tonalite, amphibolite, agmatite; minor metavolcanic and metasedimentary rocks. 10a: recrystallized limestone, skarn.

TRIASSIC

Middle ? and Upper Triassic

Vancouver Group

- 9 Quatsino Fm.: limestone
- 8 Karmutsen Fm.: pillow basalt, breccia, tuff; minor flows.

PALEOZOIC

Sicker Group

PENNSYLVANIAN AND PERMIAN

7 Buttle Lake Fm.: limestone, chert, greywacke, argillite.

PENNSYLVANIAN AND MISSISSIPPIAN

6 Sediment - Sill Unit: argillite, greywacke, chert, diabase sills.

LOWER DEVONIAN AND OLDER

- 5 Saltspring Intrusions: meta-granodiorite, meta-quartz porphyry, quartz-sericite schist.
- 4 Myra Fm.: well bedded felsic tuff and breccia, argillite, rhyodacite in flows and sills, minor basic tuff, quartz-sericite schist, phyllite, massive sulphides.
- 3 Nitinat Fm.: pillow lava and breccia of augite (uralite) porphyry, basic tuff; minor chlorite-actinolite schist.

LOWER PALEOZOIC (OR YOUNGER ?)

- 2 Colquitz gneiss: quartz-feldspar gneiss
- 1 Wark gneiss: massive and gneissic metadiorite, metagabbro, amphibolite.



JBL RESOURCES LTD.

REGIONAL GEOLOGY MAP

COW PROPERTY

VICTORIA MINING DIVISION

Project No. V 198	By: T. N.
Scale: 1 : 250 000	Drawn: J. S.
Drawing No: 3	Date: DEC. 1985.



MPH Consulting Limited



4.2 Sicker Group

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

The Nitinat Formation (Unit 3) 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 to dioritic rocks underlie and intrude the volcanics and are believed to represent feeder dikes, 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.

The Myra Formation (Unit 4) overlies the Nitinat Formation, possibly with minor unconformity. 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 comprises 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.

Mapping by Fyles (1955) in the area north of Cowichan Lake located a thick sequence of mainly massive green volcanics (i.e. Nitinat Formation), overlain by a "marker" unit consisting of a sequence of thin bedded, cherty tuffs with several metres of coarse breccia containing fragments of amygdaloidal volcanics between it and the Nitinat Formation. Overlying(?) the marker unit are grey to black feldspathic tuffs and argillaceous sediments and minor breccias. Muller (1980a) considers the marker unit to correspond to the lower unit of the Myra Formation, while the overlying unit of tuffs and sediments is correlated with the middle unit "and probably contains the upper...unit as well."

In the Sicker Mountain area, the Myra Formation is more strongly deformed and consists of well bedded, mainly felsic tuff and breccia interbedded with black argillite and some greywacke. The rocks have been widely converted to quartz-chlorite-sericite schist in steep and overturned isoclinal folds. Breccia fragments are often epidotized. The "Tyee Quartz Porphyry" is a porphyritic rhyolite containing quartz eyes to 5 mm that occurs partly as cross-cutting sills and partly as flows(?) within the Myra Formation. Tyee Quartz Porphyry is related to the Salt-spring Intrusions.

The type locality of the Myra Formation is Myra Creek, at the south end of Buttle Lake, about 160 km northwest of Duncan. Here, 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 Westin Resources Ltd.'s Myra, Lynx, Price, and H-W massive sulfide (Cu-Zn-Pb-Au-Ag-Cd) deposits.

Muller (1980a) estimated the thickness of the Nitinat Formation at about 2000 m and that of the Myra Formation at 750 to 1000 m. Fyles' (1955) work indicates a thickness of at least 1500 m for the Nitinat Formation, and at least 1000 m for the Myra Formation in the Cowichan Lake area. Both the Nitinat and Myra Formations were dated as Devonian and/or older by Muller (1980a).

The Saltspring Intrusions (Unit 5) are fine- to medium-grained, light coloured meta-granite or granodiorite which lacks the speckled appearance of most other intrusive rocks on Vancouver Island. Indistinct gneissic foliation and agmatitic structures occur pervasively. The Saltspring Intrusions have gradational contacts with the Tye Quartz Porphyry of the Myra Formation and are considered to be comagmatic with it. Dating of the Saltspring Intrusions reveals an initial age of latest Silurian.

The Saltspring Intrusions are exposed mainly on Saltspring Island, and do not extend westward into the regional geology map area.

The Sediment-Sill Unit (Unit 6) is transitional between the Myra and Buttle Lake Formations. The upper and lower contacts are poorly defined. Thin bedded, turbidite-like, much silicified or cherty massive argillite and siltstone are interlayered with diabase and gabbro sills. The sediments show conspicuous dark and light banding on joint surfaces. The sills consist of a

fine-grained greenish black matrix containing feldspar phenocrysts up to more than 1 cm, commonly clustered in rosettes several centimetres in diameter, producing a very distinctive "flower gabbro" appearance. The sediments are dated as Mississippian in age while the sills are believed to represent feeders to the Triassic Karmutsen volcanics.

The Buttle Lake Formation (Unit 7) 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.

In the area southeast of Lake Cowichan, the Buttle Lake Formation consists of laminated, calcareous grey siltstone and black argillite containing lenses of coarse-grained calcarenite, minor massive beds of crinoidal limestone about 1 m thick, and lenses and nodules of chert. The section was described by an earlier worker as mainly interbedded chert and limestone (Yole in Muller, 1980a).

The Buttle Lake Formation is up to 466 m thick (approximately 300 m thick southeast of Lake Cowichan). 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, 1980a).

4.3 Vancouver Group

The Karmutsen Formation volcanic rocks (Unit 8) paraconformably overlie the Buttle Lake Formation limestone 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 in the area of El Capitan Mountain, consists mainly of dark grey

to black, tholeiitic 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 to the northwest.

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 9) is widespread in the area south of Cowichan Lake. The limestone is black to dark grey and fine-grained to microcrystalline. In the vicinity of intrusive rocks, coarse-grained marble is recognized. Most of the economic skarn deposits on Vancouver Island are hosted by Quatsino limestone. Thin bedded limestone also occurs in the formation. Fossils indicate an age of Upper Triassic (Muller and Carson, 1969).

The Parsons Bay Formation overlies Quatsino limestone, or locally, Karmutsen volcanics. It is composed of interbedded calcareous black argillite, calcareous greywacke and sandy to shaly limestone. It is included within the Quatsino Formation within the report map area. The Quatsino and Parsons Bay Formations are considered to represent near and offshore basin facies, respectively, in the quiescent Karmutsen rift archipelago (Muller, 1981).

4.4 Westcoast Complex

The Westcoast Complex (Unit 10) comprises a variety of plutonic and metamorphic basic crystalline rocks, including amphibolite, diorite, and quartz diorite with homogeneous, agmatitic or gneissic textures. Dioritic or agmatitic bodies, underlying or intruding the Nitinat Formation are included. Metamorphosed Karmutsen Formation and/or Sicker Group rocks grade locally into the complex and are believed to be its protolith, having been migmatized in Early Jurassic time. The mobilized granitoid portion of the complex is believed to be the source of the Island Intrusions and, indirectly, the Bonanza Group volcanics (Muller, 1981, 1982). Small bodies of recrystallized limestone (Unit 10a) found within the complex are believed to be derived mainly from the Quatsino Formation, and to a lesser extent from the Buttle Lake Formation.

4.5 Bonanza Group

The Bonanza Group (Unit 11) stratigraphy varies considerably from place to place, as it represents parts of several different eruptive centres of a volcanic arc. Basaltic, rhyolitic, and lesser andesitic and dacitic lava, tuff, and breccia with intercalated beds and sequences of marine argillite and greywacke make up the Bonanza Group. In the area south of Cowichan Lake, the volcanics are described as dark brown, maroon, and yellow grey massive tuff, volcanic breccia, and massive or plagiophyric flows (Muller, 1982). The Bonanza volcanics are considered to be extrusive equivalents of the Island Intrusions and to be of Early Jurassic age.

4.6 Island Intrusions

Exposures of Island Intrusions (Unit 12) consisting mainly of 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.

4.7 Nanaimo Group

Upper Cretaceous Nanaimo Group sedimentary rocks are scattered throughout the area. Extensive exposures occur in the Chemainus and Cowichan River valleys. The formations present comprise the basal portions of the Nanaimo Group.

The Comox Formation (Unit 13) 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 14) 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 15) are beach and deltaic sands. Minor shale and coal are reported.

4.8 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 (northwest trending) antiformal folds characterized by subvertical southwest limbs and moderately dipping northeast limbs are reported at Buttle Lake, in the Cameron-Nitinat River area, and north of Cowichan Lake. Intense shearing and metamorphism to chlorite-actinolite and chlorite-sericite schist occurs in steep and overturned limbs of folds. Folding is indicated to have occurred in Jurassic time by K-Ar dating, although circumstantial evidence for an earlier orogeny also exists. 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, 1980a).

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

Extensive west-northwest trending faulting occurred during the Tertiary and is best illustrated by large displacements of Nanaimo Group sediments. These faults have been traced for up to



100 km. Late northeasterly trending tear-faults offset the Tertiary faults in the Cowichan Valley and Saltspring Island area.

4.9 Mineral Occurrences

4.9.1 Gold Occurrences

1. Amore (Summit Group) Au Ag Zn Mo Pb

Geology

Fractures and faults in silicified Sicker Group sediments and volcanics often contain quartz veins which carry pyrite, arsenopyrite, and molybdenite. One vein carries visible gold, sphalerite, pyrite, arsenopyrite, pyrrhotite, and galena.

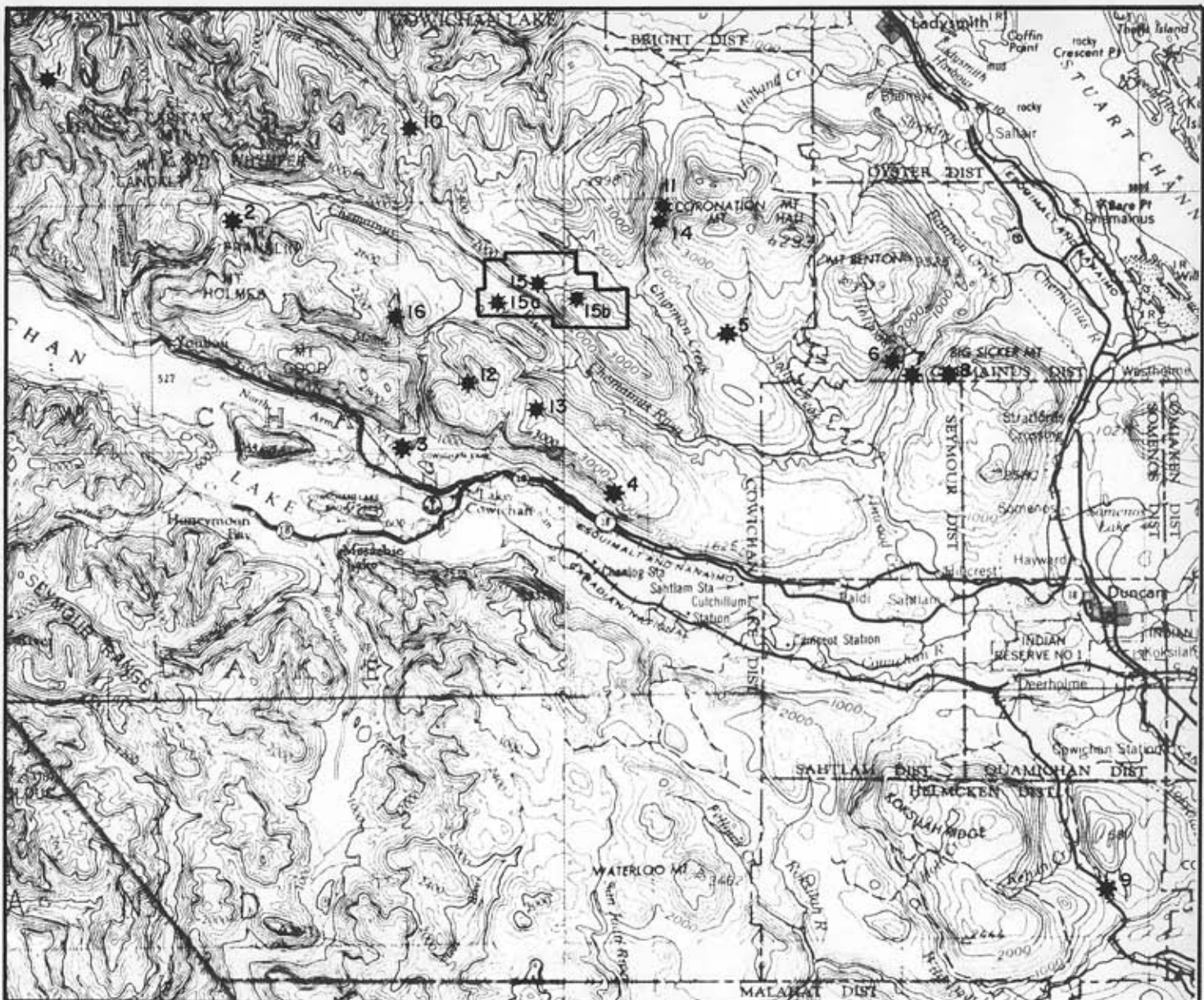
Mineralization Features

The sphalerite-bearing vein is 1 to 12" wide and was exposed for 100' during the mining of a 2.2 T bulk sample. Results are not reported. Another(?) vein is 6 to 10" wide and was traced for about 1000'. The best assays were 0.56 oz Au/T, 1.50 oz Ag/T over 3.5" and 0.52 oz Au/T, 0.24 oz Ag/T over 12.2". All 36 other assays showed trace of 0.01 oz Au/T. Soil sampling has located numerous samples anomalous in one or more of Mo, Cu, Ag, Au.

History

1968: Cominco Ltd.; regional work (no details available).

1978-82: Aquarius Resources Ltd.; prospecting, bulk sample from Amore 2, trenching, 5 DDH for 400'. Soil, silt, and rock sampling in 1981-82.



GOLD OCCURRENCES

- 1. Amore
- 2. Comego
- 3. Meade Ck.
- 10. Sognidoro

BASE METAL OCCURRENCES, DEPOSITS

- 5. Lara
- 6. Pauper
- 7. Copper Canyon
- 8. Twin J
- 9. King Solomon
- 14. Anita
- 15. Pogo
- 15a
- 15b
- 16. Candy

OTHER OCCURRENCES

- 4. Hill 60
- 11. Lady
- 12. Meade
- 13. Stanley Ck.



JBL RESOURCES LTD.

MINERAL OCCURRENCES
LOCATION MAP
COW PROPERTY

Project No. V 198	By: T. N.
Scale: 1:250 000	Drawn: J. S.
Drawing No: 4	Date: DEC. 1985.



MPH Consulting Limited

References

EBC 1978-E125, 1979-126
AR 6963, 7187, 7908, 10324, 10970
Minfile 92C117

2. Comego (Cascade, Kitchener, Widow Group, Anne) Au Cu Mo W
Ag Zn Fe

Geology

The area is underlain by Sicker Group bedded cherts, cherty tuffs, agglomerates, and andesites intruded by a gabbro-diorite sill, a quartz diorite stock, and feldspar porphyry dikes. Three types of mineralization are found in the Sicker rocks: 1) garnet-actinolite-quartz-calcite-epidote-chlorite skarn often containing magnetite, chalcopyrite, pyrite, pyrrhotite, local molybdenite, scheelite, sphalerite, tetrahedrite, rare bornite and arsenopyrite occurring in cherty tuff near the contact of the gabbro-diorite sill; 2) rusty weathering quartz-carbonate stringers in a shear zone containing finely disseminated molybdenite, pyrite, chalcopyrite, tennantite, local bornite and magnetite; and 3) quartz veins associated with the skarn zones containing masses of chalcopyrite, pyrite, and molybdenite.

Mineralization Features

The main skarn zone is 100' wide by 300' high by possibly 1650' long. Best assays are 0.41 oz Au/T over 1 m, 0.8 oz Ag/T over 15', 8.3% Cu over 20', 1.3% Mo over 15', 0.32% WO₃ over 1 m. The best DDH intersection was 0.02 oz Au/T, 0.3 oz Ag/T, 0.5% Cu over 24'. Assays from the quartz-carbonate zones are all very low. The quartz-molybdenite vein(s) are 5' wide, 50' long. Samples over 5' averaged 1.3% Cu, 4.6% Mo, while a 2 m sample assayed 0.035 oz Au/T, 0.62 oz Ag/T, 2.2% Cu, 0.28% Mo, 0.32% WO₃.



History

- 1902-06: G. Lawrence; (Cascade) open cut, stripping, 2 pits.
- 1919: L.A. Sherk; (Kitchener Group) several open cuts and 4 short adits existed on the property.
- 1920's: The Consolidated Mining and Smelting Co. of Canada Ltd.; test work, drove a short adit.
- 1948-55: Duncan Powell and others; unspecified work.
- 1964: O.G. MacDonald; blasted 5 pits, soil sampling, mag survey.
- 1969-70: Hibernia Mining Co. Ltd.; (Anne) soil sampling, mapping, JEM survey.
- 1971: Tagus Syndicate; mapping, 7 DDH for 1641'.
- 1980-81: DRC Resources Corp.; mapping, soil, and rock sampling.

References

- MMAR 1906-211, 1919-239, 1931-163, 1948-158-161
- GEM 1969-223, 1970-290, 1971-230
- AR 641, 1949, 2167, 2849, 8283, 10102
- BCDM Bull. 37, p57
- Carson 1968, pp128-130
- Minfile 92C018

3. Meade Creek Au

Geology

Placer gold deposit. Fine gold was found from bedrock to 20' above high water level.

Mineralization Features

It is reported that results of up to 40 colours from one pan occurred. Total production is not recorded.



History

1950: J.S. Ford, R.A. Nilson and associates; unspecified work.

References

MMAR 1950-204
Minfile 92C057

10. Sognidoro Au

Geology

Gold occurs in narrow honeycomb veinlets cutting a quartz vein. Located in an area mapped as Sediment-Sill unit of the Sicker Group.

Mineralization Features

Assays(?) of up to 1 oz Au/T are reported. The mineralized quartz vein is up to 20' thick and is exposed for over 650'.

History

1983-84: Canamin Resources Ltd.; unspecified work.

References

TML 1984, #066, 140

4.9.2 Base Metal Occurrences and Deposits

5. Lara Zn Cu Au Ag Pb

Geology

The property is mainly underlain by rhyolitic to basaltic, commonly schistose, Sicker Group rocks with minor volcanic



sandstone, slate, tuffaceous slate, and chert interbedded. Felsic volcanics predominate. Nanaimo Group sediments are in fault contact with the Sicker Group in the southern part of the property. At least three exhalative stratabound pyritic horizons in felsic and intermediate volcanics are exposed in five different areas on the property. The mineralized zone outlined by drilling is stratiform and is hosted by a rhyolite porphyry unit. Mineralization is generally disseminated or in small pods and bands, but is semi-massive to massive in one showing. Barite is associated with some showings. The geology of the mineralized zone is very similar to the Twin J massive sulfide deposits, located 9 km southeast of Lara, along strike.

Mineralization Features

The pyritic horizons range from 10" to 30' in thickness. The northern horizon has been traced for 6.3 km, while the two southern horizons have each been traced for about 1 km. A showing on the Silver 2 claim assayed up to 0.095 oz Au/T, 0.80 oz Ag/T, 0.2% Cu, 0.85% Pb, 3.25% Zn (grab samples?).

Recent (1984) sampling yielded results of up to 0.005 oz Au/T, 8.93 oz Ag/T, 3.46% Cu, 0.62% Pb, 10.85% Zn, 2% Ba. Several IP anomalies are associated with the pyritic zones, some of which have coincident VLF-EM anomalies. A linear Zn-Cu-Pb soil anomaly was located on the Elk claim near two of the pyritic showings. Most of the 12 DDH's drilled in 1984 intersected weak polymetallic mineralization. An intersection of 8.01 m (true thickness) of polymetallic mineralization grading 3.01% Zn, 0.101 oz Au/T, 1.97 oz Ag/T, 0.68% Cu, 0.45% Pb has been announced from a single drill hole designed to test the southwestern horizon. Included in the 8.01 m intersection is 3.23 m (true thick-



ness) grading 5.18% Zn, 0.135 oz Au/T, 2.66 oz Ag/T, 1.21% Cu, 0.69% Pb.

Subsequent diamond drilling in 1985 has outlined a mineralized zone 1300 feet long by 350 feet deep grading 0.051 oz Au/T, 1.12 oz Ag/T, 1.98% Zn, 0.44% Cu, and 0.36% Pb over an average true width of 20.53 feet. The zone is open on both ends and to depth and is richer in the eastern portion. A drill hole 1650 feet east of the zone along strike intersected 12.07 feet (true width) of massive sulfide mineralization grading 0.213 oz Au/T, 8.60 oz Ag/T, 9.22% Zn, 1.16% Cu, and 2.53% Pb.

Metal ratios in the mineralized zone are similar to those of Westmin Resource Ltd.'s Buttle Lake mines.

History

1966-67: Cominco Ltd.; (Tot/Rum property) IP, resistivity, soil sampling.

1978: UMEX Inc.; (Elk, Mouse Groups) soil sampling, mapping, mag, EM16, shootback EM.

1981-82: Laramide Resources Ltd.; (Silver 2 claim) soil sampling, IP, VLF-EM.

1983-85: Aberford Resources Ltd.; (Lara) extensive geophysics, geochemical surveys, trenching, EM survey, 40 DDH.

References

EBC 1978-E124
AR 7384, 10116, 11123
MER 1983, p. 30
NM Feb. 7, Aug. 8, 1985



6. Pauper (L.31G, Sharon Copper, Mons 1, Brent 1) Cu Au Ag Zn

Geology

The area is underlain by steeply dipping sericite and quartz augen-sericite schists of the Sicker Group cut by Sicker diorite and gabbro sills and dikes. The mineralization consists of pyrite-chalcopyrite disseminations and is apparently stratabound. Carson (1968) stated that this occurrence is very similar to pyritic zones formed near massive sulfide deposits and that it is found in quartz-sericite-chlorite schists similar to those of Twin J and Western Mines.

Mineralization Features

The pyritic zone is 60' wide. Assays include 2% Cu over 60'; trace Au, 1 oz Ag/T, 7.5% Cu from ore from the adit; and trace Au, 0.2 oz Ag/T, 8% Cu from a showing 300' south of the adit. A DDH drilled about 800 m west of the adit in 1978 cut 10' of 0.192% Cu, 0.08% Zn, 0.11 oz Ag/T, 0.004 oz Au/T.

History

- 1903: Henry Fry; Pauper (L.31G) Crown Granted.
- 1919: E.J. Palmer, L. Levensaler; open cut, 50' adit with 50' crosscut at end.
- 1924: J.P. Tomlinson; Pauper (L.31G) re-Crown Granted.
- 1927: E.F. Miller and associates; no work reported.
- 1977-79: Imperial Oil Ltd./Esso Minerals Canada Ltd.; (Mons 1/Brent 1) airborne EM survey; EM, mag, SP, soil sampling, mapping, 1 DDH for 305'.

References

MMAR 1903-250, 1923-274, 1924-368, 1927-339
EBC 1978-E121
AR 6548, 7323
Carson 1968, p159
Minfile 92B040

7. Copper Canyon Cu Ag Au (Zn Pb)

Geology

The area is underlain by schistose Sicker Group volcanics including quartz-sericite schist, chlorite schist, and rhyolite porphyry, intruded by diorite (of the Island Intrusions?). A band 400 to 600' wide contains five mineralized zones; two on its southern side and three on its northern side. Disseminated to massive pyrite and minor chalcopyrite occur in a quartz vein; in a quartz vein in a shear zone; and in schist with no associated quartz vein. The schists are reported to be more siliceous and less foliated than at the Twin J mine (8). Unlike the Twin J, there is no barite associated with the mineralization.

Mineralization Features

Assays reported include 10.2% Cu from a grab sample from a minor showing south of the Copper Canyon adit; trace Au, 0.5 oz Ag/T, trace Cu over 10' in the Victoria adit; and 0.05 oz Au/T, 1.6 oz Ag/T, 6.77% Cu, 0.01% Pb, 0.06% Zn (location unreported). The mineralized lenses have a maximum width of 6 to 7'. One 6' zone is composed of 1 to 2' of massive mineralization and 4 to 5' of disseminated and veinlet mineralization. The Copper Canyon adit followed a lens for 135' before losing it due to faulting or folding. An EM conductor 10 to 15' wide by 1100' long has been outlined on the Copper Canyon claim.

Production in 1904, 1905, and 1907 came from the Victoria claim and totalled 120 T, yielding 3 oz Au, 110 oz Ag, and 9581 lb Cu.

History

- 1897: P.J. Pearson (Copper Canyon) 100' tunnel.
- 1901-02: Mounts Sicker and Brenton Mines Ltd.; tunnel on Copper Canyon lengthened to 310', various crosscuts and a raise/shaft added; 150' tunnel drive on Victoria; various test pits on all claims, short adits on Klondyke, Susan claims.
- 1971-73: Viva Ventures Ltd.; VLF-EM, LF-EM, shootback EM, mag, seismic, IP, resistivity, SP, gravity, soils, mapping.
- 1977: J.R. Deighton; mapping, soil and silt sampling.
- 1978: Kinneard, Loring, Whittles; VLF-EM, mapping.
- 1979: UMEX Inc.; mapping, EM, mag, soil sampling, 1 DDH for 145 m on Klondyke.

References

MMAR 1897-567, 1898-1148, 1901-1118, 1902-239,252,
1905-216,250, 1907-154,221, 1920-222, 1928-365

GEM 1971-225, 1973-224

EBC 1977-E104 (Margie-Susan), 1978-E102, 1979-122

AR 3099, 4626, 6599, 6600, 6972, 7183, 7435

Minfile 92B086, 004

8. Twin J (Lenora, Tyee, Richard III) Zn Cu Au Ag Pb Cd Ba

Geology

The area is underlain by Sicker Group (Myra Fm. (?)) andesitic flows and cherty tuffs with minor sediments, metamorphosed to quartz-sericite, quartz-chlorite, and chlorite schists which are intruded by sills, dikes, and



irregular masses of gabbro-diorite. The two main orebodies occur 150' apart in strongly dragfolded parts of a schist "panel," often close to the contact of a band of graphitic schist and bounded by an intrusive sodic rhyolite porphyry. Within the orebodies, two types of ore are found. Barite ore is a fine-grained mixture of pyrite, chalcopyrite, sphalerite, and minor galena in a barite-quartz-calcite gangue. It is frequently banded, with chalcopyrite-pyrite and sphalerite layers. Quartz ore consists mainly of quartz and chalcopyrite and occurs in long lenticular masses within barite ore and the host schists.

Mineralization Features

The north orebody is 1700' long by 1 to 10' wide by 120' downdip. The south orebody is 2100' long by 20' or more wide by 150' downdip. Total recorded production from 1898 to 1964 amounts to 305,149 T ore containing 40,014 oz Au, 840,472 oz Ag, 21,344,332 lb Cu, 45,864,654 lb Zn, 418,716 lb Pb, and 2600 lb Cd. Reserves are reported as 350,000 T grading 1.6% Cu, 0.65% Pb, 6.6% Zn, 0.12 oz Au/T, and 4.1 oz Ag/T as of 1971.

History

1897-1927: Operated as three separate mines: Lenora, (Leonora-Mt. Sicker Mining Co.), Tyee (Tyee Copper Mining Co.), and Richard III (Richard III Development Co. Ltd.). Most of the production came from Tyee with a lesser contribution from Lenora, and only minor production from Richard III. Most of the production came in the period from 1900 to 1907.

1928-29: Pacific Tidewater Mines Ltd.; joined the three mines underground (Lenora, Tyee, Richard III).

1939-40: Sheep Creek Gold Mines Ltd.; DD'g, trenching, underground development.



- 1942-47: Twin J Mines Ltd.; 125 tpd concentrator, mining from 1943 to May 1944 and mid-1946 to September 1947 (mainly from Lenora).
- 1949-52: Vancouver Island Base Metals Ltd.; mining 1951 to January 1952 (mainly from Lenora).
- 1964: W. Howden; mined 167 T from Lenora, grade not reported.
- 1967-70: Mt. Sicker Mines Ltd.; 7 DDH for 405', mapping, trenching.
- 1972: Ducanex Resources Ltd.; 5 DDH for 3000', mapping, shootback EM.
- 1973-74: Dresser Industries Inc.; 8 DDH for 5500', IP, soils.
- 1978-80: SEREM Ltd.; 7 DDH for 1236 m, mapping, soils, mag, EM.
- 1983-85: Corporation Falconbridge Copper/Peppa Resources Ltd.; mapping DDH's, sampling. Peppa planned to put Lenora Mine into production by late 1984.

References

- MMAR 1928-365, 1931-164, 1935-G46, 1936-F63, 1939-90, 1940-74, 1942-70, 1943-69, 1944-67, 1946-191, 1947-183, 1949-224, 1950-180, 1951-199, 1952-214, 1964-168, 1967-79, 1968-107
- GEM 1969-224, 1970-291, 1972-240, 1974-163
- EBC 1978-E119
- AR 1104, 1714, 3741, 3950, 3951, 4904, 5164, 6996, 7714, 7875, 8168, 8264
- CIM Trans. Vol. 48, 1945, pp294-308
- CIMM Structural Geology of Canadian Ore Deposits, 1948, p48
- CMH 1972/73
- TML 1984, #042, 064, 136, 192, 195
- Minfile 92B001, 002, 003



9. King Solomon (L.17G, L.152, L.157; Koksilah) Cu Ag Zn Pb
Fe (Au)

Geology

A skarn deposit with pyrrhotite, magnetite, pyrite, chalcopyrite, minor sphalerite, galena, and some tetrahedrite in a garnet-epidote-diopside gangue. It occurs along the contact of a dike-like mass of quartz-bearing feldspathic gabbro and Sicker Group volcanics. Lenticles of limestone and several small stocks of Saanich granodiorite occur nearby. The deposit is covered by a gossanous capping.

Mineralization Features

The first 20 to 30' of the orebody away from the dike is richer, averaging 4 to 5% Cu, while the outer 15 to 20' of the deposit is lower grade, averaging about 2% Cu. The orebody is exposed for 200' but probably extends further under cover. Three lesser "veins" were intersected in the driving of the lower adit, which was expected to intersect the main orebody at 650', giving 450' of backs. It is not known whether the orebody was, in fact, intersected. The lesser veins assayed up to 2.5% Cu, trace Au.

Production in 1904, 1905 and 1907 totalled 270 T ore containing 205 oz Ag and 39,626 lb Cu. A shipment in 1912 of 303 T of picked ore averaged over 5% Cu.

History

1903-07: Maclay, Ryan; mining.

1909: James Humes; granted Crown Grant L.17G.

1913-14: King Solomon Copper Mining Co.; drove lower adit 550'.

1956-60: Cellardor Mines Ltd.; (King Solomon, Blue Bell, and other claims), surface work, SP, dewatered old workings, 13 DDH for 2100', enlarged lower adit for more than 400'.

1985: Reward Resources Ltd.; geological mapping, soil sampling, magnetometer, VLF-EM.

References

MMAR 1903-210, 1904-253, 1905-216, 1907-155, 1908-164,
1909-278, 1913-290, 1914-386, 1916-312, 1923-272,
1928-363, 1959-140, 1960-116
GSC Mem. 96, pp371-377
Minfile 92B015

14. Anita Cu Ag (Au)

Geology

Quartz lenses containing disseminated pyrite and chalcopyrite occur in fissures in Sicker Group schist. Muller (1980a) mapped the area as Sediment-Sill unit.

Mineralization Features

The zone is reported to be at least 200' long and up to 15' wide. An assay of trace Au, 0.3 oz Ag/T, and 3.3% Cu from mineralized quartz is reported.

History

1917: Mrs. E. Forcimer; an open cut and a 50' shaft.

References

MMAR 1917-270
Minfile 92B037

15. Pogo Zn Pb Cu (Ag)Geology

Pyrrhotite, pyrite, chalcopyrite, sphalerite, and galena occur disseminated and on fracture planes in a fractured, fine-grained diabase sill which intrudes black cherty argillites of the Sicker Group (i.e. Sediment-Sill Unit). The mineralization occurs at a synclinal fold axis where the sill is "pinched" as it crosses from the west limb to the east limb. A second showing 4500' southeast of the main showing contains Zn-Pb-Cu mineralization in a rusty shear zone in the diabase sill.

Mineralization Features

The best assays from the main showing are 0.42% Zn over 10' and 0.48% Pb, 0.09% Cu, trace Ag, each from different 5' samples. A grab sample from the second showing assayed 0.72% Zn, 0.17% Pb, 0.13% Cu.

History

1964: E.M. Wilson; mapping, rock sampling.

References

AR 566
Minfile 92C074

16. Candy CuGeology

Fractured and sheared Sicker Group andesite and basalt host quartz veins containing chalcopyrite and pyrrhotite.

Mineralization Features

Results not reported.

History

1969: Four Square Exploration Ltd.; silt sampling, trenching.

References

GEM 1969-223

Minfile 92C076

4.9.3 Other Occurrences

4. Hill 60 (L.12G, L.13G) Mn

Geology

Thinly banded green, cream, and red cherty Sicker Group tuffs with local lenses of red jasper host lenses of rhodonite. A few thin basic dikes cut the cherty tuffs near the main workings. The rhodonite was heavily oxidized to a depth of about 15' in the main workings. A type of yellow manganese garnet occurs locally in chert. Chalcopyrite and bornite are reported to occur disseminated in rhodonite and jasper.

Mineralization Features

The main open pit is about 60' long, 20 to 30' wide and 15 to 20' deep. A 594 T shipment averaged 50% Mn, 19% SiO₂. Assays range from 15.88 to 57.15% Mn with the average of 25 samples being 43.09% Mn over an average of 3.89'. The average Al₂O₃ content of 17 samples was 1.02%. Other thinner, smaller, less oxidized lenses of rhodonite (presumably including the Striker occurrence reported by Cowley [1979]) occur in an area about 1100' long by 350' wide. This is the only Mn deposit in the Sicker Group known to have been significantly oxidized, a

condition which is necessary to make rhodonite into Mn ore. Total production in 1919 and 1920 was 1251 T; Mn content was not reported.

History

1918: Dickie, Wood, Service, Douglas; discovered showing, stripping and cuts.

1919-24: British Columbia Manganese Co. Ltd. (NPL); mining in 1919 and 1920. Constructed an aerial tramway, but no work performed since 1920.

1939: Dominion-Provincial Mining Training Project; cleaned out and extended trenches, trenching and stripping on new occurrences.

References

MMAR 1918-296, 1919-237, 1924-368

BCDM Bull. 37, p67

GSC P72-53; P64-37, p19; EGS 12

Canadian Rockhound, February 1966, p7

Canadian Munition Res. Comm. Final Report, 1920, pp91, 95

Minfile 92B027

Cowley, P. Correlation of Rhodonite Deposits on Vancouver Island and Saltspring Island, British Columbia; UBC B.Sc. Thesis, 1979

11. Lady A, C Fe

Geology

The Lady A deposit consists of 2 lenses of taconite in cherty Sicker Group sediments while the Lady C consists of a single lens of taconite. The taconite is composed of bands of extremely fine-grained magnetite and minor specularite and hematite in grey chert and red jasper. Jasper is more common at Lady C.



Mineralization Features

The A deposit outcrops over a strike length of 350' and is up to 60' wide. Drilling revealed an average thickness of less than 30'.

The C deposit is exposed for 175' along strike and has an apparent thickness of approximately 50'. Limited drilling revealed a thickness of 150' or more (holes were stopped before reaching the hangingwall) locally and downdip extent of at least 200'. Average grades of the 4 holes ranged from 9.5 to 30.5% Fe.

The fineness of the magnetite could prove a problem in the magnetic separation process.

Reserves are roughly estimated at 360,000 T grading 25% Fe for the Lady A (based on diamond drilling). The Lady C is believed to be larger than Lady A, although additional drilling is required.

History

1953: Ladysmith Development Ltd.; 12 DDH for 1278' on Lady A and 4 DDH for 670' on Lady C.

References

MMAR 1956-135
BCDM Bull. 37, p13
Carson 1968, pp101-102
Minfile 92B029, 033

12. Meade MnGeology

Lenses containing rhodonite and manganese garnet occur in red and white Sicker Group cherty tuff. The lenses are very thinly coated with oxides.

Mineralization Features

The lenses are up to 3' thick and are believed to be more or less continuous between the two exposures in open cuts 200' apart.

History

Known at least as early as 1939. The only work reported consists of two shallow open cuts.

References

BCDM Bull. 37, p68
Manganese Deposits of Cowichan Lake, H. Sargent, 1939
Manganese Occurrences in B.C., H. Sargent, 1956
Minfile 92C115

13. Stanley Creek (Lookout Locality) MnGeology

Two irregular lenticular masses of rhodonite lie parallel to bedding in Sicker Group cherty tuff.

Mineralization Features

The lenses are a few inches to 1' wide and about 20' long. A microprobe analysis by Cowley (1979) revealed 42.25% MnO content.

History

Known at least as early as 1939. No physical work on the occurrence is reported.

References

GSC P72-53, p56

BCDM Bull. 37, p68

Manganese Deposits of Cowichan Lake, H. Sargent, 1939

Minfile 92C116

Cowley, P. Correlation of Rhodonite Deposits on Vancouver Island and Saltspring Island, British Columbia; B.Sc. Thesis, UBC, 1979



5.0 1985 ASSESSMENT WORK

The Cow property is underlain by northwest trending Paleozoic Sicker Group rocks intruded by Jurassic Island Intrusions and Tertiary gabbro, and local exposures of Cretaceous Nanaimo Group sediments.

The following description of property geology is based on previous work by Wilson (1964), modifications from Muller (1980b, 1982) by Neale (1985), and three days of reconnaissance mapping and sampling by Dr. J.S. Getsinger (23 - 25 September, 1985).

5.1 Property Geology

The Chemainus River valley, which cuts across the Cow property, is occupied by a 400 m wide strip of Nanaimo Group sediments, bounded on the northeast by a major northwest trending fault.

Rocks exposed to the southwest of the Chemainus River are Sicker Group volcanics of the Myra Formation intruded by Jurassic(?) quartz dioritic and Tertiary(?) gabbroic intrusive bodies.

The Cow property northeast of the valley is mainly underlain by a 2 km wide, fault-bounded section of Sicker Group Sediment-Sill Unit, consisting of cherty argillitic sediments and minor layered volcanic rocks intruded by diabasic sill-like bodies and a quartz dioritic body.

5.1.1 Unit Descriptions

1. Sicker Group: Myra Formation (Age: Devonian?)

Myra Formation layered and massive volcanic rocks occur only in the southwestern part of the Cow property, where they are intruded by a body of granodiorite to diorite, which occupies about half the area included in the property southwest of the Chemainus River. Rock types are greenish-grey, fine-grained felsic to intermediate volcanics and agglomeratic pyroclastic rocks which contain 5-10% disseminated pyrite and pyrrhotite. Volcaniclastic sediments make up only a minor part of this section of Sicker Group rocks.

2. Sicker Group: Sediment-Sill Unit (Age: Pennsylvanian?)

On the Cow property, apparent thickness of the Sediment-Sill Unit is up to 2000 m, although some of the thickness is due to sill-like bodies of diabasic gabbro up to 500 m thick, and some of the thickness may be due to structural repetition by folding.

The structurally lowest rocks consist of interlayered brown chert and medium-grained mafic greenstone which is partly serpentized and bears some resemblance to the Nitinat Formation.

The most predominant rock type in the Sediment-Sill Unit is thin-bedded argillite, which varies from extremely fine-grained black argillaceous rock with well-developed slaty cleavage to lighter grey, more massive siltstone and grey-wacke, and may contain some chert. The black argillite contains ubiquitous finely disseminated pyrite. Many

small, rusty zones distributed throughout the unit contain slightly higher concentrations of sulfides, but nowhere more than about 10%. Interlayered with the grey, rusty-weathering argillaceous rocks are white-weathering layers (average 1 m thick) of light green felsic volcanics, possibly representing flows of rhyolitic to dacitic composition, also containing finely disseminated pyrite, and locally, pyrrhotite. These rocks resemble the dominant rock type of the Myra Formation exposed southwest of the Chemainus River, but here they make up only approximately 10% of the section.

Over most of the Cow property, bedding dips steeply northeast subparallel to cleavage, but in the northern part of the property bedding clearly dips gently southwest, indicating a major fold axis as shown by Wilson (1964). No macroscopic folds were observed. Pervasive slaty cleavage dips steeply to the northeast across the entire property and is probably axial planar to asymmetrical northwest-trending folds developed during late Paleozoic to early Mesozoic deformation.

Secondary pyrite stringers occur along fractures which crosscut slaty cleavage; locally pyrite mineralization extends from a fracture into the surrounding cleavage surfaces in "horsetail"-like texture.

3. Sill Unit: Diabasic Gabbro-Diorite (Age: Triassic?)

Sill-like bodies (up to 500 m thick) of diabasic gabbro intrude metasediments of the Sicker Group Sediment-Sill Unit. A major sill (200 to 500 m thick) cuts across the property from northwest to southeast.

In the area of the Pogo Showing (named by Wilson [1964]), this unit consists of dark green, medium-grained intrusive rock containing visible euhedral plagioclase phenocrysts up to 8 mm seen to be surrounded by mafic minerals (pyroxene \pm hornblende?) in subophitic texture; locally plagioclase is glomeroporphyritic (clustered). Mineralization at the Pogo showing is dominantly disseminated pyrrhotite and pyrite, in blebs up to 3 mm, making up 5% of the rock. In other places the diabase is poor in sulfides. No sphalerite was observed, although assays of up to 0.42% Zn were obtained from 1964 sampling.

A smaller sill was mapped by Wilson (1964) in the northern part of the property. Between these units a new occurrence of coarse-grained hornblende diorite to gabbro was noted. It is apparently gradational in composition with the main sill, but is separated from the main sill by exposures of cherty argillite.

These diabasic bodies are sill-like in that they intrude subparallel to but clearly crosscut both bedding and slaty cleavage of sediments of the Sicker Group. Contacts are interfingering rather than straight. Thus initial deformation and low-grade metamorphism (to slate) are bracketed between Permian (age of Sicker Group) and Triassic (age of Karmutsen volcanics, to which the diabase sills are believed by Muller to be related).

4. Island Intrusions (Age: Jurassic)

Two granodioritic to dioritic granitoid bodies are exposed on the Cow property, one intruding Myra Formation volcanics southwest of the Chemainus River, and one intruding the Sediment-Sill Unit in the southeastern part of the

property. They are similar in composition and texture, medium to coarse-grained, dominantly hornblende-biotite quartz dioritic granular rocks. Near the contact with the Sediment-Sill Unit the quartz diorite is weakly foliated parallel to the contact, which is locally parallel to compositional layering and cleavage in the sediments.

Contact metamorphic effects include hornfelsed argillite and local extensive development of andalusite (chiastolite) porphyroblasts which postdate slaty cleavage in pelitic units.

5. Nanaimo Group: Haslam Formation (Age: Cretaceous)

Sandstone and shale are exposed in a narrow belt restricted to the Chemainus River valley. These were not inspected in detail nor seen in contact with other units on the Cow property.

6. Gabbro (Age: Tertiary?)

A large body of gabbro occurs just to the south of the Cow property and is exposed on the property in lower Zizac Creek about 30 m above the road. It consists of coarse-grained, granular, dark greenish grey intrusive rock composed of about 30% plagioclase, 50% mafic minerals (pyroxene • hornblende), up to 10% magnetite and minor sulfides.

Fractures with minor light-coloured alteration haloes (1 cm wide) trend $045/90 \pm 10^\circ$. The gabbro is intruded by a hornblende-plagioclase porphyry dike (trend $000/40W$) and crosscut by east-west trending quartz veins about 20 cm wide. Epidote and calcite were also noted in veins.

The gabbro was not seen in contact with other rock types on the property. There is no reason to believe it is necessarily Tertiary in age; it may be related to gabbro and diabase intruding the Sediment-Sill Unit.

7. Other Intrusive Rocks (Age unknown, but post-Paleozoic)

Two types of crosscutting dikes were noted on the Cow property intruding the Sediment-Sill Unit. Field relations with Island Intrusions were not observed.

Hornblende-plagioclase porphyry dikes about 1 m wide trend approximately north-south and intrude both the Sicker Group sediments and Tertiary(?) gabbro.

The rock is relatively fresh, with up to 20% acicular hornblende and less common plagioclase phenocrysts in a medium grey-green groundmass, and is probably andesitic to dacitic in composition.

Quartz-feldspar porphyry dikes are wider and lighter in colour; field relations are unclear except that they intrude andalusite (chiastolite) bearing phyllite within the contact aureole of the granodioritic to quartz dioritic intrusion in the southeastern part of the Cow property (road B6), and may be related to Jurassic Island Intrusions.

Plagioclase phenocrysts (20% of rock) are white, blocky in shape, and exhibit visible compositional zoning as well as Carlsbad and albite twins in hand specimen. Round quartz phenocrysts (1-2 mm) occur rarely (one every 3 cm on a fresh surface). Minor phenocrysts are hornblende and biotite, altered to chlorite and epidote. Only minor sulfides were observed in either type of dike.

Quartz veins (probably Tertiary) up to 1 m wide were seen crosscutting Island Intrusions and Tertiary (?) gabbro on the Cow property. Only minor mineralization (pyrite) was observed. Thin quartz-carbonate veins with approximate east-west trends occur in the Sediment-Sill Unit especially in the valley near a major fault trace.

8. Surficial Deposits (Age: Quaternary)

Glacial deposits including till and outwash occur on the Cow property but are not particularly thick except locally in valleys. Till was observed to overlie strongly-weathered rocks in some places, such as at Station 6 (near showing of Wilson [1964] in southwestern part of property). Recent alluvial gravel, likely derived from glacial outwash, lines the bottom of the Chemainus River valley.

5.1.2 Structure

Paleozoic Sicker Group rocks were folded and recrystallized to slate prior to intrusion of Triassic diabase "sills." Fold axes trend northwest, and fold limbs dip either steeply northeast or gently southwest, with axial planes dipping steeply northeast to vertically. Joints and axial planes of later kink-folds crosscut earlier fold trends (one kink-fold axial plane was measured at 050/60E). North to northeast trending fault surfaces were measured in the Sediment-Sill Unit. Fractures of similar orientation, some mineralized, were noted in all rock types. These features may be related to regional Tertiary northeast-trending faulting.

Cretaceous Nanaimo Group rocks dip mainly to the northeast but are more gently folded than underlying Sicker Group rocks.

A major northwest trending fault (post-Cretaceous) has been mapped in the Chemainus River valley (Muller, 1980). Nearby greenstones of the lower Sediment-Sill Unit exhibit common near-horizontal slickensides and subparallel quartz-carbonate veinlets.

In summary, northwest-trending, folding and low-grade metamorphism occurred in late Paleozoic to Triassic time and less intense northwest-trending folding occurred in post-Cretaceous time. Major northwest faulting was post-Cretaceous and may have been related to the deformation in the Nanaimo Group.

Fractures, joints, and kink-band folding may be related to Tertiary northeast-trending faulting.

5.1.3 Mineralization

Some degree of sulfide mineralization is present in most of the rocks underlying the Cow property. Finely disseminated pyrite and minor chalcopyrite is ubiquitous in the sedimentary and volcanic rocks of the Sicker Group. Higher pyrrhotite and pyrite concentrations (up to 10%) occur in some places, particularly in parts of the Sediment-Sill Unit where black argillite is inter-layered with felsic volcanics, all of the rocks mapped as Myra Formation, and locally in the diabase sill in the area of the Pogo showing. Observations by Wilson (1964) of sphalerite and galena mineralization at the Pogo showing have not been confirmed; if present, these minerals are rare in outcrop on the Cow property. Rusty zones signifying higher sulfide concentrations in the Sediment-Sill Unit occur mainly in the black argillite



along shear zones, many northeast-trending. On hand specimen scale, as noted in description of the Sediment-Sill Unit, sulfides are seen to occur not only disseminated throughout the rock, but also as stringers along bedding, cleavage or cross-cutting fractures.

Because pyrite occurs so uniformly throughout the Sicker Group rocks, much of the sulfide component of these rocks probably originated in the depositional environment in which they were formed. However, it is clear from observed textures that subsequent remobilization and perhaps concentration of sulfides has occurred along structurally-favourable zones (such as northwest-trending fold hinges or faults, or northeast-trending fractures) later in the geologic history of the area.

Although no particularly massive concentrations of sulfides were observed, it is worth noting that the entire Sicker Group section on the Cow property--which amounts to a tremendous volume of rock--is sulfide-bearing.

5.2 Lithochemical Results

Twenty-nine (29) grab samples from old showings and mineralized Sicker Group rocks exposed on the Cow property were analyzed for gold and by 30-element ICP geochemical analysis. A table of rock sample descriptions and Cu, Zn, Ag and other results are included in Appendix II. Complete results are included in Appendix III.

Gold was detected geochemically in three samples; the highest value returned was 150 ppb for sample 20. A check assay returned a result of 0.008 oz/T. Sample 20 is from a highly-weathered quartz vein (now mostly boxwork limonite) within quartz diorite near a contact with Myra Formation rocks. It is located near an



old showing (Wilson 1964) on road M4 southwest of the Chemainus River.

Sample 20 is also anomalous in Mn (2185 ppm) and Mo (5 ppm), but not in Cu (22 ppm), Pb (4 ppm), or Zn (40 ppm).

Multi-element ICP analysis of 29 rock samples turned up some interesting results, although anomalies are low except in a few samples.

Sample 026, a pyrite-bearing breccia with fragments of brown cherty argillite in a felsic volcanic groundmass, from near a contact with a diabase sill, gives the highest values (among all 29 rocks analyzed) for the following elements: As (710 ppm), Ca (7.16%), Cr (581 ppm), Mg (5.04%), Ni (432 ppm), and Sr (534 ppm); and the second highest values for Co (60 ppm) and Mn (1814 ppm). High Ca, Mg, Mn and Sr suggest some dolomitic carbonate content either in the sedimentary clasts or in vein material. Apparently anomalous values of Ni and Cr may be explained by proximity to a contact with a diabasic intrusion; these values are not unusual for a mafic rock. Sulfide content is less than 1-2%.

The most interesting rock is sample 038, from a rusty, pyrite and chalcopryrite-bearing zone in baked argillite containing up to 15% chiastolite (andalusite) porphyroblasts, from near the contact of a granodioritic to quartz dioritic intrusive body (Island Intrusions) on road B6. Sample 038 gives the highest values (among all 29 samples analyzed) for Ag (8.0 ppm), Cu (1250 ppm), Zn (4720 ppm), Cd (11.0 ppm), Fe (15.82%), and P (6750 ppm), and second highest value for Au (70 ppb).



These anomalies are likely related to the intrusion of granodiorite and associated felsic dikes. Contact metamorphic minerals such as andalusite, and high P content (suggesting formation of apatite from late-stage magmatic fluids) support this interpretation.

Reconnaissance field investigation and rock geochemistry results indicate that the most economically interesting Sicker Group rocks on the Cow property are those near contacts with intrusive bodies such as diabase "sills" or Jurassic granodiorite to quartz diorite.



6.0 RECOMMENDED WORK PROGRAM

6.1 Plan

The 1985 assessment work program has confirmed the widespread occurrence of sulfide mineralization in Sicker Group rocks on the Cow property. Phase I exploration of the Cow property is designed to explore for economic concentrations of these sulfides through the use of geological mapping, rock sampling, and prospecting over the entire property. Whole rock geochemical analyses will be carried out on volcanic rock samples for use in a computer program designed to identify the presence of alteration features such as K_2O , MgO and FeO enrichment and Na_2O and CaO depletion which are typical of haloes surrounding known volcanogenic massive sulfide deposits.

If warranted by the results of Phase I, Phase II is to consist of detailed geological mapping and sampling, soil sampling, and VLF-EM and magnetometer surveys on grids over favourable areas/showings outlined by Phase I. Soil samples are to be taken at 50 m intervals on flagged grid lines spaced 100 m apart, while geophysical readings will be taken at 25 m intervals on the grid lines.

Contingent upon favourable results from Phase II, Phase III will consist of detailed IP and/or EM surveys and trenching, rock sampling, and geological mapping over anomalous grid areas as defined by Phase II, followed by diamond drilling.

The following detailed cost estimates are for Phase I and Phase II geological, geochemical and geophysical work. A cost estimate for Phase III is also provided; the detailed Phase III budget and schedule will be contingent upon Phases I and II.



6.2 Budget

Phase I

Mobilization/Demobilization		\$	500
Personnel			
Geologist 14 days @ \$325	\$	4,550	
Assistant/Prospector (2)			
14 days @ \$250		<u>3,500</u>	8,050
Support Costs			
Meals and Accommodation			
28 man days @ \$40	\$	1,120	
4WD Truck 14 days @ \$90		1,260	
Communications 14 days @ \$25		350	
Miscellaneous Supplies		<u>250</u>	2,980
Analyses			
75 Rocks (Au, ICP) @ \$12.20	\$	915	
40 Rocks (Whole Rock) @ \$32.00		<u>1,280</u>	2,195
Consulting/Supervision			
4 days @ \$450	\$	1,800	
Expenses		<u>400</u>	2,200
Report Writing			
Geologist 6 days @ \$325	\$	1,950	
Drafting 40 hours @ \$18		720	
Materials		<u>500</u>	<u>3,170</u>
			19,095



Administration @ 15% (on \$7,295)		\$ 1,094
		<u>20,189</u>
Contingency @ 15%		<u>3,028</u>
Total, say		<u><u>\$ 23,000</u></u>

Phase II

Mobilization/Demobilization \$ 750

Personnel

Geologist 15 days @ \$325	\$ 4,875	
Soil Samplers/Geophysical Technicians (3)		
15 days @ \$200	<u>9,000</u>	13,875

Support Costs

Camp Costs 60 man days @ \$40	\$ 2,400	
4WD Truck 15 days @ \$90	1,350	
Communications 15 days @ \$25	375	
Miscellaneous Supplies	<u>500</u>	4,625

Equipment Rental

Magnetometer and Base Station Magnetometer 15 days @ \$150	\$ 2,250	
VLF-EM Receiver 15 days @ \$25	<u>375</u>	2,625

Analyses

450 Soil Samples (Au, Ag, Cu, Pb, Zn) @ \$8.30	\$ 3,735	
60 Rocks (Au, Ag, Ba, ICP) @ \$17.35	1,041	
20 Rocks (Whole Rock) @ \$32.00	<u>640</u>	5,416



Consulting/Supervision		
4 days @ \$450	\$ 1,800	
Expenses	<u>400</u>	\$ 2,200
Report Writing		
Geologist 8 days @ \$325	\$ 2,600	
Geophysicist 1 day @ \$450	450	
Drafting 60 hours @ \$18	1,080	
Materials	<u>1,000</u>	<u>5,130</u>
		34,621
Administration @ 15% (on \$13,271)		<u>1,991</u>
		36,612
Contingency @ 15%		<u>5,492</u>
Total, say		<u><u>\$ 42,000</u></u>

Phase III

IP and/or EM Survey 8 days @ \$2,000 (includes linecutting, camp, report)		\$ 16,000
Trenching (including drill, powder, assaying samples, geological mapping)		10,000
Diamond drilling, 750 m @ \$135 (including camp, geologist, assaying samples, report)		<u>101,250</u>
		127,250



Administration @ 15% (on, say, \$40,000)	<u>\$ 6,000</u>
	133,250
Contingency @ 15%	<u>19,987</u>
Total, say	<u><u>\$153,000</u></u>

6.3 Schedule

The following tables are summaries of the projected time requirements for Phases I and II. Phase III is estimated to take six weeks to complete.

Week	1	2	3	4	5
Mobilization	—				
Geology, Prospecting	—	—			
Soil Sampling					
Geophysics					
Analyses		—	—		
Consulting	—		—		
Demobilization			—		
Report			—	—	

TABLE 1

PHASE I PROJECT SCHEDULE
COW PROPERTY



Week	1	2	3	4	5
Mobilization	—				
Geology, Prospecting	—	—	—		
Soil Sampling	—	—	—		
Geophysics	—	—	—		
Analyses		—	—		
Consulting	—	—			
Demobilization			—		
Report			—	—	

TABLE 2

PHASE II PROJECT SCHEDULE
COW PROPERTY



7.0 CONCLUSIONS

1. The Cow property is underlain mainly by rocks of the Paleozoic Sicker Group with lesser amounts of Jurassic Island Intrusions and Cretaceous Nanaimo Group rocks. The Sicker Group rocks include felsic to intermediate volcanics of the Myra Formation and cherty argillite intruded by diabasic "sills" of the Sediment-Sill Unit.
2. Disseminated sulfide mineralization (pyrite > pyrrhotite > chalcopyrite) is ubiquitous in the Sicker Group rocks on the Cow property, particularly in the Myra Formation, in black argillite of the Sediment-Sill Unit where inter-layered with felsic volcanics, and in a diabase "sill" intruded along a fold axial surface in Sicker Group sediments.
3. The sulfide mineralization probably originated in the depositional environment of the Sicker Group rocks, and has been partially remobilized during periods of deformation, low-grade metamorphism, and contact metamorphism.
4. Twenty-nine (29) grab samples mainly from Sicker Group rocks on the Cow property have been geochemically analyzed for Au and by 30-element ICP. Values of up to 150 ppb Au (check assay - 0.008 oz Au/T), 8.0 ppm Ag, 1250 ppm Cu, 4720 ppm Zn, 710 ppm As, 11.0 ppm Cd, 6750 ppm P, and 58 ppm Pb were obtained (different samples).
5. Geochemically anomalous rocks are located near contacts of Sicker Group rocks with granodioritic to quartz dioritic Island Intrusions rocks.



6. At least 2 old (1964) showings occur on the property. Previous assays of up to 0.72% Zn, 0.48% Pb, 0.13% Cu and trace Ag (different samples) have been reported. Samples collected by MPH from these old showings returned low results (maximum values - 489 ppm Cu, 100 ppm Zn, 0.6 ppm Ag, 6 ppm Pb).

7. The Cow property is located in an area of high potential for locating a volcanogenic massive sulfide deposit and warrants additional exploration.



8.0 RECOMMENDATIONS

1. It is recommended that both volcanogenic massive sulphide deposits and precious/base metal quartz vein deposits be considered primary exploration targets.
2. It is recommended that areas near contacts with intrusive bodies be investigated as secondary exploration targets.
3. Phase I work to consist of geological mapping, rock sampling, and prospecting covering the entire property is recommended at an estimated cost of \$23,000.
4. Petrographic analysis of interesting rock types and whole rock geochemistry on volcanic rocks are recommended for classifying rock types and locating alteration haloes surrounding mineralized zones.
5. It is recommended that old and new showings be mapped and sampled in detail to gain an understanding of the tenor, extent, and significance of the mineralization.
6. It is recommended that tentative plans be made for a Phase II program consisting of detailed geological mapping, soil sampling, and VLF-EM and magnetometer surveys on grids over target areas located during Phase I. Phase II is contingent upon favourable Phase I results, and is estimated to cost \$42,000.



7. Contingent upon favourable results from Phase II, Phase III is recommended to consist of detailed geophysical surveys and trenching on anomalous grid areas followed by diamond drilling. Phase III is estimated to cost about \$153,000.

Respectfully submitted,
MPH Consulting Limited

A handwritten signature in cursive script, appearing to read 'T. Neale'.

T. Neale, B.Sc.

A handwritten signature in cursive script, appearing to read 'T.G. Hawkins'.

T.G. Hawkins, P.Geol.

December 17, 1985



CERTIFICATE

I, T. Neale, do hereby certify:

1. That I am a graduate in geology of The University of British Columbia (B.Sc. 1978).
2. That I have practised as a geologist in mineral exploration for seven years.
3. That the opinions, conclusions, and recommendations contained herein are based on field work carried out on the property by MPH personnel in September 1985, library research, and on my experience in the area.
4. That I own no direct, indirect, or contingent interest in the subject property, or shares or securities of JBL Resources Ltd. or associated companies.

A handwritten signature in cursive script, appearing to read 'T. Neale', is positioned above the printed name.

T. Neale, B.Sc.

Vancouver, B.C.

December 17, 1985

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APPENDIX I

List of Personnel and
Statement of Expenditures



LIST OF PERSONNEL AND STATEMENT OF EXPENDITURES

The following expenses have been incurred on the Cow property as defined in this report for the purposes of mineral exploration between the dates of September 23 and 25, 1985.

Personnel:

J.S. Getsinger, Ph.D. Geologist	7 days @ \$325	\$2,275	
G. Cope, B.Sc. Geologist	2.5 days @ 250	625	
T. Neale, B.Sc. Geologist	2 days @ 325	650	
T.G. Hawkins, P.Geol. Consulting Geologist	4 hrs @ 80	<u>320</u>	\$3,870

Expenditures:

Meals and Accommodation	182.17	
Transportation	339.17	
Analyses 29 @ \$11.95 (Au, ICP)	346.55	
1 @ 6.00 (Au assay)	<u>6.00</u>	
	352.55	
Report Costs (typing, copying, drafting)	727.80	
Miscellaneous (courier, road use fee)	33.70	
Administration Fee	<u>209.31</u>	
		<u>1,844.70</u>
		<u>\$5,714.70</u>



APPENDIX II

Rock Sample Descriptions and Lithochemical Results

Rock Sample Descriptions and
Lithogeochemical Results

Sample No.	Name and Description	Cu ppm	Zn ppm	Ag ppm	Other ppm
010	Diabase (Gabbro-diorite unit). Dark green, med-grained granular texture with (euhedral) plagioclase phenocrysts up to 8 mm (subophitic, probably). 40-50% Plagioclase (striations, twinning, cleavage). 40-50% Pyroxene and/or amphibole altered to chlorite in part. <5% Sulfides: Pyrrhotite (magnetic), pyrite, minor chalcopyrite. (I did not see any sphalerite or galena). Occurrence of mineralization: sulfides finely-disseminated or on fractures; grain size <1 mm.	439	100	0.6	
011	Diabase (Gabbro-diorite unit). Fine to med.-grained, dark green diabase with disseminated sulfides and rusty veins lined with vuggy quartz ± limonite ± chlorite. 40%+ Plagioclase. 45%+ Pyroxene, poss. altered to hbl, definitely some chlorite. 5% Pyrrhotite > pyrite > chalcopyrite; blebs up to 3 mm.	489	60	0.6	
012	Diabase (Gabbro-diorite unit). Dark grey-green, med. grained diabase with discontinuous veins averaging 1 cm wide. Diabase: 40% Plagioclase. Euhedral laths up to 8 mm long exhibiting albite twinning; surrounded by mafics in ophitic to subophitic texture. 50% Pyroxene and/or amphibole much altered to dark chlorite. 5% Disseminated sulfides in blebs up to 3 mm and in 1 mm-wide stringers, discon-	214	30	0.2	

Sample No.	Name and Description	Cu ppm	Zn ppm	Ag ppm	Other ppm
	tinuous: Pyrrhotite > pyrite > chalcopyrite. Veins: Fine-gr. quartz, minor chlorite; inclusions of host rock with cores of pyrrhotite in blebs up to 1 cm long.				
013	Black argillite (Sed.-Sill. Unit) Very fine-grained, black argillite with slaty cleavage. Weathers reddish-rusty to pale blue-grey. Finely disseminated pyrite throughout, 3%(?). Pyrite stringers "horsetail" out from crosscutting fracture into slaty cleavage planes.	38	70	0.2	
014	Black argillite (Sed.-Sill Unit). Near contact with diabase. Very fine-grained, dark-grey to black, hard argillite with slaty cleavage. Weathers reddish-rusty to pale blue-grey. Pyrite is very finely disseminated throughout and also occurs along fractures perpendicular to (and distorting) the slaty cleavage, and otherwise as discontinuous stringers up to 1 mm wide distributed in the rock.	23	120	0.4	110 Ba
015	Altered dike rock (?) (Sed.-Sill Unit) From rusty shear zone in black argillite and other inter-layered rocks. Fine to med.-grained green and grey granular rock with equigranular texture, grain size < 1 mm, (0.5 mm). 45% Altered feldspar. 50% Chloritized mafics. 5% Other. Poss. silvery-grey sparklies, but sulfides not obvious in spite of rusty weathering. Rock disintegrates into blocky pieces (5 cm).	61	100	0.4	153 Cr

Sample No.	Name and Description	Cu ppm	Zn ppm	Ag ppm	Other ppm
016	Layered felsite (dacite?) (Sed.-Sill Unit). Interlayered (1 m) w/seds. Very hard, fine-grained siliceous (or silicified) volcanic rock, pale greenish grey to purplish. 20% Plagioclase phenocrysts. Some appear to be merely silicified relict crystal shapes. 1-3% Disseminated pyrite. Weathered surface is whitish, showing trachytic alignment of mafic phenocrysts now altered to chlorite.	1	50	0.2	100 Ba
017	Black argillite (Sed.-Sill Unit). From rusty zone crosscutting Sed.-Sill Unit sediments. Very fine grained, finely-laminated black argillite with cleavage subparallel to layering; contains finely-disseminated pyrite and/or other sulfides. Weathers orange-rusty. Graphitic slickensides occur on cleaved surfaces.	<1	70	0.2	
018	Fault gouge in black argillite (Sed.-Sill Unit). From small rusty zone <1 m wide x 5 m long. Non-cohesive, wet, black to rusty fault gouge containing up to 10% graphite. Former veins of Q ± chlorite along fault are also weathered. Smearred lenses of broken rock in phacoidal texture.	138	40	2.0	40 Pb 9 Mo 30 ppb Au
019	Rusty-weathered quartz vein in Island Intrusions. Intrusive: Med-coarse grained, weathered. 10-20% Quartz. 40-50% Mafics altered to chlorite. 30% Feldspar.	<1	60	0.4	120 Ba

Sample No.	Name and Description	Cu ppm	Zn ppm	Ag ppm	Other ppm
020	Limonitic-weathered material from same rusty zone as Sample 019. Openwork - weathered, rusty, earthy mass with relict rock in it. Believed to be a product of surface weathering, an extension of paleosol beneath till contact. Rusty zone is 30 cm thick x 2 m long with Island Intrusions.	22	40	0.2	5 Mo 2185 Mn 150 ppb Au (0.008 oz Au/ton)
021	Felsite, poss. dacite or silicified intermediate volcanic. (Myra Formation [?]). Rusty-weathering, blocky rock. Pale greenish-grey ("sea foam"), hard, fine-grained volcanic rock (not enough field evidence to determine flow or sill, but is inter-layered with sed. package. In areas mapped "Myra" it makes up >50% of package; in Sed.-Sill Unit, <10%). Plagioclase phenocrysts up to 1 cm long rarely visible, mostly smaller and silicified (?). 5-10% disseminated sulfides in blebs up to 3 mm are pyrrhotite (magnetic) > pyrite > chalcopyrite. Pyrite also appears related to weathering, occurs on late fractures, fine-grained.	170	20	0.6	
022	Intermediate pyroclastic rock (Myra Formation [?]). Med.-greenish-grey, medium-grained volcanic/pyroclastic breccia (agglomerate). (Fragments are mainly < 1 cm, but up to 2 cm.) Fragments are finer-grained than matrix and may be sedimentary (chert, argillite). Matrix is med.-grained, poss. dacitic to andesitic. Very hard; blocky; rusty-weathering. (Could also be	62	10	0.4	58 Pb

Sample No.	Name and Description	Cu ppm	Zn ppm	Ag ppm	Other ppm
	called lapilli tuff (?) perhaps.) 5%+ Disseminated pyrite, etc.				
023	Diabase (Gabbro-diorite unit of Sed.-Sill Unit). Dark green and greenish-grey, med. grained mafic intrusive, bimodal texture with euhedral glomeroporphyritic phenocrysts of plagioclase ("flowers"), as well as euhedral microphenocrysts of plag. 20% Plagioclase up to 6 mm; phenocrysts. 50% Mafics: Pyroxene and/or amphibole alt. to some chl. 20% Plagioclase microphenocrysts (1 mm long). Matrix av. grain size 1 mm.	190	40	0.4	
024	Felsic volcanic (Sed.-Sill Unit). Fine-grained, poss. porphyritic, pale greenish to purplish-grey volcanic rock. Weathers rusty or white. Mafics altered to chlorite. Poss. pyrite disseminated in it (1%). Calcite veinlets.	193	80	0.6	110 Ba
025	Black Argillite (Sed.-Sill Unit) Fine-grained, dark grey argillitic sediment with rusty patches and "veins." Stringers of pyrite and pyrrhotite. Slaty cleavage. Finely-disseminated pyrite as well (?).	23	50	0.2	
026	Volcanic breccia (Sed.-Sill Unit) Fragments from 5 mm to 2 cm of brown cherty argillite are surrounded by med.-grained, greenish-grey matrix consisting of plagioclase (no detectable K in rock) feldspar phenocrysts (20% matrix) and darker, finer-grained groundmass. Weathers	48	40	0.4	710 As 110 Ba 581 Cr 1814 Mn 432 Ni 534 Sr

Sample No.	Name and Description	Cu ppm	Zn ppm	Ag ppm	Other ppm
	rusty; fresh surface is greenish to lavender-grey. Associated with contact of diabase with black cherty argillite. Contains quartz vein, < 1 cm. Disseminated sulfides, mainly pyrite. Poss. dolomitic carbonate also indicated by high Ca, Mg values in ICP.				
027	Pyrite-bearing black argillite (Sed.-Sill Unit). Fine-grained black argillite with slaty cleavage is bent and broken up, and contains up to 10-20% pyrite, minor chalcopyrite (?). May be kinked perpendicular to structures of first deformation.	27	40	0.8	6 Mo
028	Black argillite (Sed.-Sill Unit). Dark grey, fine-grained argillite with cleavage. Pyrite occurs disseminated and on fractures. Fine horsetail veins of carbonate. Bedding is at a high angle to cleavage. Some laminae are more silty than argillaceous.	11	100	0.4	
029	Felsic Volcaniclastic (Sed.-Sill Unit). Laminated, pale greenish-grey felsic volcaniclastic. Exhibits cleavage, resembling argillite, but looks more like the felsite. Fine-grained. Contains disseminated pyrite (+ pyrrhotite) up to 10%; also on fractures. Weathers rusty.	39	60	0.6	150 As 120 Ba
030	(FLOAT) Volcanic breccia (Sed.-Sill Unit). Angular fragments of brown chert and black argillite (frag. 0.5 to 3 cm) in matrix of purplish-grey volc. rock with feldspar crystals. Sulfides are disseminated mainly in matrix	28	60	0.4	

Sample No.	Name and Description	Cu ppm	Zn ppm	Ag ppm	Other ppm
	(pyrite > chalcopyrite) and occur along fractures (up to 1-3%). From angular boulders in road near one of Wilson (1964)'s "showings." We did not find mineralization in outcrop there.				
031	Pyritic argillite (Sed.-Sill Unit). From far NE corner of property SW of bridge. (Sill was not exposed there, contrary to map). Light grey silty to argillitic rocks contain disseminated pyrite as well as larger blebs of pyrite related to weathering rind and occurring on fracture surfaces. Compositionally-layered rocks here may be of felsitic to intermediate volcanic origin rather than strictly sedimentary, i.e. "tuffaceous."	290	30	1.8	
032	Altered silty argillite (Sed.-Sill Unit). Near SW contact of diabase sill. Fine-grained, grey silty argillite with slaty cleavage in more argillaceous layers. Weathers rusty to reddish or chalky white. Disseminated sulfides (pyrite), v.f.g. (<1%). Rocks at this outcrop are more pervasively weathered than elsewhere (top of hill); and exhibit kink bands perpendicular to slaty cleavage.	49	100	0.4	
033	Gabbro (prev. mapped as Tertiary Gabbro). Coarse-grained, dark green granular intrusive rock with large hornblende crystals. 30-35% Plagioclase. 45-50% Mafics: Pyroxene, Hornblende, altered to chlorite in part. <10% Magnetite. <<5% Dis-	235	60	0.2	

Sample No.	Name and Description	Cu ppm	Zn ppm	Ag ppm	Other ppm
	seminated sulfides (pyrite > chalcopyrite).				
034	Quartzvein (in T. Gabbro). 90%+ Quartz. 5% Chlorite. <2% Pyrite, little blebs; chalcopyrite. Minor Feldspar (?) Vein 20 cm (\pm) wide, approx. E-W trend, 10 m long.	11	10	0.2	
035	Siliceous Volc. rock (Myra Fm.). Purplish and green splotchy, fine-grained, prob. volcanic rock with 5 - 10% sulfides: Pyrite: diss. + on fractures. Pyrrhotite: in blebs up to 7 mm long. Chalcopyrite: minor. Rock is very hard, siliceous, rusty-weathering.	58	160	0.4	
036	Alt. intermediate volcanic (Myra Fm.) Med. greenish-grey, fine to medium-grained granular rock with 50% felsic, 50% mafic minerals. Sulfides are disseminated and occur on fractures and veinlets: pyrite mainly. Rusty quartz veinlet has tiny quartz crystals growing into openings; and includes pyrite along it.	60	40	0.4	
037	Black argillite (Sed.-Sill Unit). Black argillite with cleavage, rusty fractures. Pyrite and chalcopyrite occur along fractures and finely disseminated on cleavage surfaces. <5% sulfides. More aluminous layers of some rock contain 20% andalusite (chiastolite) porphyroblasts (1 mm x 3 mm) which crosscut sedimentary laminations. These indicate close proximity to contact with Island Intrusion (exposed lower on hill to south).	180	490	1.0	410 Ba 2350 P 54 Pb



Sample No.	Name and Description	Cu ppm	Zn ppm	Ag ppm	Other ppm
038	Altered, baked argillite (Sed.-Sill Unit). From near contact with Island Intrusions. Rusty-weathering, pyrite-rich zone in pale grey baked sediment, fine-grained with up to 20% andalusite porphyroblasts in parts. Sample contains pyrite and chalcopyrite, some quartz veins, all rusty.	1250	4720	8.0	11.0 Cd 6750 P 70 ppb Au



APPENDIX III

Certificates of Analysis/Assay



ROSSBACHER LABORATORY LTD.

2225 S. SPRINGER AVENUE
BURNABY, B.C. V5B 3N1
TEL : (604) 299 - 6910

CERTIFICATE OF ANALYSIS

TO : MPH CONSULTING LTD.
301-409 GRANVILLE STREET
VANCOUVER B.C.
PROJECT: V198
TYPE OF ANALYSIS: GEOCHEMICAL

CERTIFICATE#: 85391
INVOICE#: 5612
DATE ENTERED: OCT. 4, 1985
FILE NAME: MPH85391
PAGE # : 1

PRE FIX	SAMPLE NAME	PPB Au
T	10	10
T	11	10
T	12	10
T	13	10
T	14	10
T	15	10
T	16	10
T	17	10
T	18	30
T	19	10
T	20	150
T	21	10
T	22	10
T	23	10
T	24	10
T	25	10
T	26	10
T	27	10
T	28	10
T	29	10
T	30	10
T	31	10
T	32	10
T	33	10
T	34	10
T	35	10
T	36	10
T	37	10
T	38	70

CERTIFIED BY :



ROSSBACHER LABORATORY LTD.

2225 S. SPRINGER AVENUE
BURNABY, B.C. V5B 3N1
TEL : (604) 299 - 6910

CERTIFICATE OF ANALYSIS

TO : MPH CONSULTING LTD.
301-409 GRANVILLE STREET
VANCOUVER B.C.

CERTIFICATE#: 85425.A
INVOICE#: 6040
DATE ENTERED: OCT. 18, 1985
FILE NAME: MPH85425.A
PAGE # : 1

PROJECT: V 198
TYPE OF ANALYSIS: ASSAY

PRE FIX	SAMPLE NAME	oz/t Au
A		20 0.008

CERTIFIED BY :

J. Rossbacher



Chemex Labs Ltd.

-Analytical Chemists -Geochemists -Registered Assayers

212 Brooksbank Ave.
North Vancouver, B.C.
Canada V7J 2C1

Telephone: (604) 984-0221
Telex: 043-52587

CERTIFICATE OF ANALYSIS

TO : ROSSEACHER LABORATORY LIMITED

2225 SOUTH SPRINGER AVENUE
BURNABY, B.C.
V5E 3N1

CERT. # : A8517042-001-A
INVOICE # : 13517042
DATE : 10-OCT-85
P.O. # : NONE
V19E

Semi quantitative multi element ICP analysis

Nitric-Aqua-Regia digestion of 0.5 gm of material followed by ICP analysis. Since this digestion is incomplete for many minerals, values reported for Al, Sb, Ba, Be, Ca, Cr, Ga, La, Mg, K, Na, Sr, Tl, Ti, W and V can only be considered as semi-quantitative.

COMMENTS :
CERTIFICATE 85391

Sample description	Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Ee %	Ga ppm	K %	La ppm	Mg ppm	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm		
010	2.59	0.6	50	60	<0.5	<2	1.25	<0.5	86	59	439	6.45	10	0.04	10	1.73	527	<1	0.07	64	1030	4	10	7	0.38	<10	<10	163	<10	100	--	--
011	1.84	0.6	<10	70	<0.5	<2	1.27	<0.5	42	53	489	5.46	<10	0.04	10	1.23	478	<1	0.08	59	980	6	10	7	0.43	<10	<10	165	<10	60	--	--
012	1.38	0.2	10	50	<0.5	<2	1.49	<0.5	20	33	214	2.67	<10	0.02	10	0.79	302	<1	0.05	29	850	4	10	14	0.26	<10	<10	90	<10	30	--	--
013	1.96	0.2	<10	80	<0.5	<2	0.18	<0.5	10	22	38	3.69	<10	0.14	<10	1.14	475	1	0.02	10	240	8	<10	5	0.17	<10	<10	46	<10	70	--	--
014	2.97	0.4	<10	110	<0.5	<2	0.40	<0.5	9	12	23	6.16	<10	0.15	<10	1.60	863	1	0.03	7	620	8	10	7	0.30	<10	<10	31	<10	120	--	--
015	5.01	0.4	10	50	<0.5	<2	0.54	<0.5	32	153	61	6.29	10	0.13	<10	3.21	726	1	0.08	44	960	6	10	29	0.18	<10	<10	195	<10	100	--	--
016	1.97	0.2	<10	100	<0.5	<2	0.91	<0.5	8	38	1	2.93	10	0.21	<10	0.76	967	<1	0.10	4	770	6	<10	29	0.13	<10	<10	34	<10	50	--	--
017	1.71	0.2	<10	10	<0.5	<2	0.05	<0.5	8	35	1	3.90	<10	0.10	<10	0.98	206	3	0.03	11	440	8	<10	2	0.05	<10	<10	80	<10	70	--	--
018	0.87	2.0	10	50	<0.5	<2	0.13	<0.5	33	20	138	8.49	10	0.16	10	0.12	945	9	<0.01	9	980	40	10	4	<0.01	<10	10	21	<10	40	--	--
019	2.42	0.4	10	120	<0.5	<2	0.50	<0.5	23	22	1	5.18	10	0.18	10	1.51	945	<1	0.05	11	1420	6	<10	24	0.04	<10	<10	106	<10	60	--	--
020	1.42	0.2	<10	50	<0.5	<2	0.13	<0.5	9	72	22	6.20	<10	0.12	10	0.34	2185	5	<0.01	4	480	4	<10	4	<0.01	<10	10	32	<10	40	--	--
021	2.12	0.6	<10	50	<0.5	<2	1.63	<0.5	30	36	170	5.60	10	0.10	10	0.53	421	1	0.11	14	2070	2	<10	67	0.21	<10	<10	68	<10	20	--	--
022	1.12	0.4	<10	50	<0.5	<2	1.07	<0.5	17	48	62	3.20	<10	0.06	10	0.26	192	1	0.15	21	1190	58	<10	37	0.21	<10	<10	38	<10	10	--	--
023	1.69	0.4	10	20	<0.5	<2	1.32	<0.5	16	32	190	3.06	10	0.04	10	0.86	322	<1	0.07	24	790	6	<10	13	0.16	<10	<10	106	<10	40	--	--
024	3.27	0.6	30	110	<0.5	<2	4.86	<0.5	34	57	193	7.52	20	0.12	<10	2.25	1325	<1	0.01	56	740	2	10	89	<0.01	<10	<10	167	<10	80	--	--
025	1.98	0.2	10	50	<0.5	<2	0.19	<0.5	12	27	23	4.29	10	0.16	<10	0.89	497	1	0.02	14	480	10	<10	4	<0.01	<10	<10	40	<10	50	--	--
026	2.20	0.4	<10	110	<0.5	<2	7.16	<0.5	60	581	48	6.03	30	<0.01	<10	5.04	1814	<1	<0.01	432	490	14	20	524	<0.01	<10	<10	101	<10	40	--	--
027	2.44	0.8	50	90	<0.5	<2	0.24	<0.5	12	33	27	5.78	10	0.15	10	1.56	535	6	0.01	43	670	14	<10	25	<0.01	<10	<10	42	<10	40	--	--
028	2.10	0.4	10	30	<0.5	<2	0.22	<0.5	12	28	11	4.78	<10	0.11	<10	1.21	530	<1	0.01	19	490	16	<10	5	0.10	<10	<10	52	<10	100	--	--
029	2.55	0.6	150	120	<0.5	<2	0.21	<0.5	19	26	39	5.98	10	0.13	10	1.38	606	2	0.02	25	840	12	<10	7	<0.01	<10	<10	73	<10	60	--	--
030	1.76	0.4	10	60	<0.5	<2	5.27	<0.5	16	67	28	3.21	30	0.11	<10	1.05	1040	<1	0.06	17	650	8	10	23	0.21	<10	<10	114	<10	60	--	--
031	1.38	1.8	20	10	<0.5	<2	1.01	<0.5	29	49	290	5.66	<10	<0.01	<10	0.42	250	1	0.01	9	1710	2	<10	31	0.11	<10	<10	31	<10	30	--	--
032	2.50	0.4	<10	90	<0.5	<2	0.11	<0.5	16	10	49	4.94	<10	0.05	<10	1.47	1084	<1	0.01	17	600	4	<10	6	0.01	<10	<10	41	<10	100	--	--
033	1.47	0.2	<10	10	<0.5	<2	1.14	<0.5	17	12	235	3.74	<10	0.04	<10	0.45	269	<1	0.10	9	930	2	<10	15	0.16	<10	<10	238	<10	60	--	--
034	0.36	0.2	<10	10	<0.5	<2	0.44	<0.5	2	45	11	0.75	<10	0.04	10	0.10	104	<1	0.03	2	20	2	<10	3	0.01	<10	<10	4	<10	10	--	--
035	4.97	0.4	<10	10	<0.5	<2	3.28	<0.5	11	18	58	3.57	10	0.15	10	0.65	840	<1	0.26	3	1130	2	<10	70	0.11	<10	<10	21	<10	160	--	--
036	2.28	0.4	<10	10	<0.5	<2	2.04	<0.5	16	41	60	4.14	10	0.01	10	0.73	340	1	0.04	15	930	2	<10	8	0.19	<10	<10	83	<10	40	--	--
037	4.06	1.0	<10	410	<0.5	<2	1.99	<0.5	12	28	193	5.21	10	0.08	<10	0.86	721	1	0.28	7	2250	54	<10	60	0.09	<10	<10	45	<10	490	--	--
038	3.21	8.0	<10	10	<0.5	<2	1.42	11.0	27	16	1250	15.82	20	0.31	20	1.82	1415	1	0.01	10	6750	2	10	18	0.09	<10	<10	63	<10	4720	--	--

Certified by

Hart Bichler





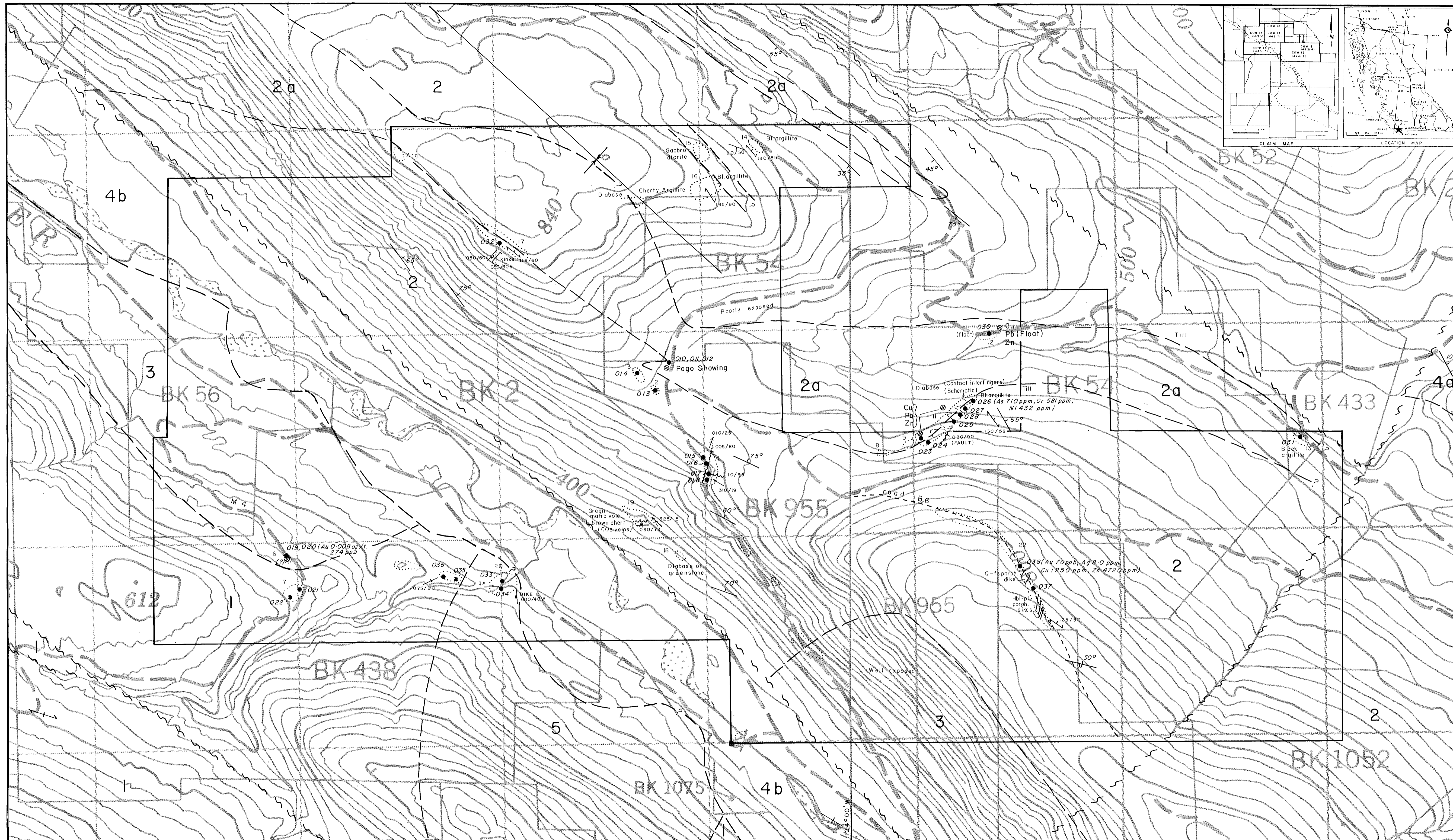
APPENDIX IV

Abbreviations Used in Mineral Occurrences References



ABBREVIATIONS USED IN MINERAL OCCURRENCES REFERENCES

AR	B.C. Ministry of Energy, Mines and Petroleum Resources Assessment Report
BCDM	British Columbia Department of Mines
Bull	Bulletin
Carson	Metallogenic Study of Vancouver Island with Emphasis on the Relationships of Mineral Deposits to Plutonic Rocks; D.J.T. Carson, Carleton University Ph.D Thesis, May, 1968
CMH	Canadian Mines Handbook
EBC	Exploration in British Columbia; B.C. Ministry of Energy, Mines and Petroleum Resources
EGS	Economic Geology Series
GEM	Geology, Exploration and Mining in British Columbia; B.C. Department of Mines and Petroleum Resources
GSC	Geological Survey of Canada
Mem	Memoir
MER	British Columbia Mineral Exploration Review; B.C. Ministry of Energy, Mines and Petroleum Resources
Minfile	B.C. Ministry of Energy, Mines and Petroleum Resources Minfile, Feb. 2, 1984
MMAR	B.C. Ministry of Mines Annual Report
NM	Northern Miner
P	Paper
TML	Today's Market Line



48° 55' N

LEGEND

GEOLOGY (References: Neale, 1984; Wilson, 1964)

CENOZOIC
TERTIARY
 5 gabbro

MESOZOIC
UPPER CRETACEOUS
 Nanaimo Group
 4b Haslam Formation: shale, siltstone; minor sandstone.
 4a Comox Formation: sandstone, conglomerate; minor siltstone, shale, coal.

LOWER TO MIDDLE JURASSIC
 3 Island Intrusions: granodiorite, quartz diorite.

PALEOZOIC
 Sicker Group
PENNSYLVANIAN AND MISSISSIPPIAN
 2 Sediment - Sill Unit: argillite, greywacke, chert, diabase sills.
 2a: gabbro - diorite (diabase) sills.

LOWER DEVONIAN AND OLDER
 1 Myra Formation: coarse volcanic breccia; thin bedded cherty tuffs; grey to black feldspathic tuffs, argillaceous sediments, minor breccias.

SYMBOLS

~ ~ ~ Fault - approximate
 - - - Contact - approximate
 50° 50° Synclinal fold
 50° 50° Bedding - inclined, overturned, vertical and/or compositional layering
 110°/65° Foliation - vertical, with strike and dip
 050°/60° Axial plane of kink folds, strike and dip
 005°/80° Fault surface (measured), strike and dip
 030°/10° Slickensides; with trend and plunge
 325°/15° Lineation, with trend and plunge
 040°/60° Dike or vein, with strike and dip (if measured)
 000°/85° Joint surface, strike and dip
 13 Station number with outcrop outline (approx.)
 031 Grab sample locality (010 to 038)
 Mineral occurrence
 Property boundary

CLAIM MAP

LOCATION MAP

48° 55' N

CLAIM MAP

LOCATION MAP

48° 55' N

GEOLOGICAL BRANCH
ASSESSMENT REPORT

14,462

To accompany Report by
 T.E. Gregory Hawkins, P. Geol.
 dated
 17/12/85

JBL RESOURCES LTD.

PROPERTY PLAN AND GEOLOGY

COW PROPERTY
 VICTORIA MINING DIVISION

Project No: V 198	By: J. G.
Scale: 1 : 10 000	Drawn: J. S.
Drawing No: 5	Date: DECEMBER, 1985.

MPH MPH Consulting Limited