

GEOPHYSICAL AND GEOCHEMICAL  
ASSESSMENT REPORT ON THE  
ERMELINA CLAIM BLOCK

20758

Victoria Mining Division  
British Columbia  
NTS: 92B/13 W

Latitude: 48 55.2'  
Longitude: 123 56.8'

FILMED

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

FOR

Rafael Resources Ltd.  
1020-475 Howe Street  
Vancouver, B.C.  
( Owner/Operator )

15,136

BY

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Ashworth Explorations Ltd.  
1590-609 Granville Street  
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May 20, 1986

## SUMMARY

The Rafael Resources Ltd. Ermelina claim block, consisting of 12 mineral claims, is located approximately 16 km west of Chemainus, B.C. Regional mapping (Muller, 1980) shows the property to be underlain by the Myra Formation and the Sediment-Sill transitional unit rocks of the Sicker Group.

The Myra Formation is an attractive exploration target for Kuroko-type volcanogenic massive sulphide deposits. The two stratabound taconite deposits, Lady A and Lady C, and the vein-type Anita Cu-Ag showing occurring with the Ermelina claim block are consistent with those deposits associated with volcanogenic mineralization.

A VLF-EM geophysical survey (totalling 8.65 line kilometres) was conducted in the area of the showing and has defined three conductors with similar SSW trends to the strike direction of the taconite deposits. Results of this survey indicate there is a good potential for the discovery of additional zones of mineralization. A geochemical survey (54 soil samples) was also carried out over part of the property, but results were poor and inconclusive. It is recommended that this Phase I program of exploration be completed over the remainder the property.

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## INTRODUCTION

This report is a summary of geological work done on the Ermelina claim block from March 7, 1986 to March 17, 1986. Ashworth Explorations Ltd. was retained by Rafael Resources Ltd. to perform geophysical and geochemical surveys and prepare a report on the property.

## LOCATION AND ACCESS

The claims are located on the southwestern side of Coronation Mountain about 16 km west of Chemainus, B.C. (Fig. 1), within NTS map sheet 92B/13, in the Victoria Mining Division of British Columbia (Latitude:  $48^{\circ} 56' N$ , Longitude:  $123^{\circ} 56' W$ ).

Access is via a system of logging roads from Ladysmith and possibly Chemainus. Road conditions necessitate the use of a four-wheel drive vehicle.

## PHYSIOGRAPHY

The claims encompass an area extending from the south flank of Coronation Mountain west across an intervening valley to the eastern flank of the adjacent unnamed mountain (Fig. 2). Chipman Creek occupies the valley and drains south into the Chemainus River. Elevation ranges from 500 metres to 1,100 metres giving a total relief of 600 metres. Topography is rugged and characterized by up to  $40^{\circ}$  slopes.

## PROPERTY STATUS

The Ermelina claim block, consisting of 12 mineral claims, has been optioned by Rafael Resources Ltd. from claim owners Mike Willis, Ray J. Morus and Anna Marie Joyce in an agreement signed April 4, 1986.

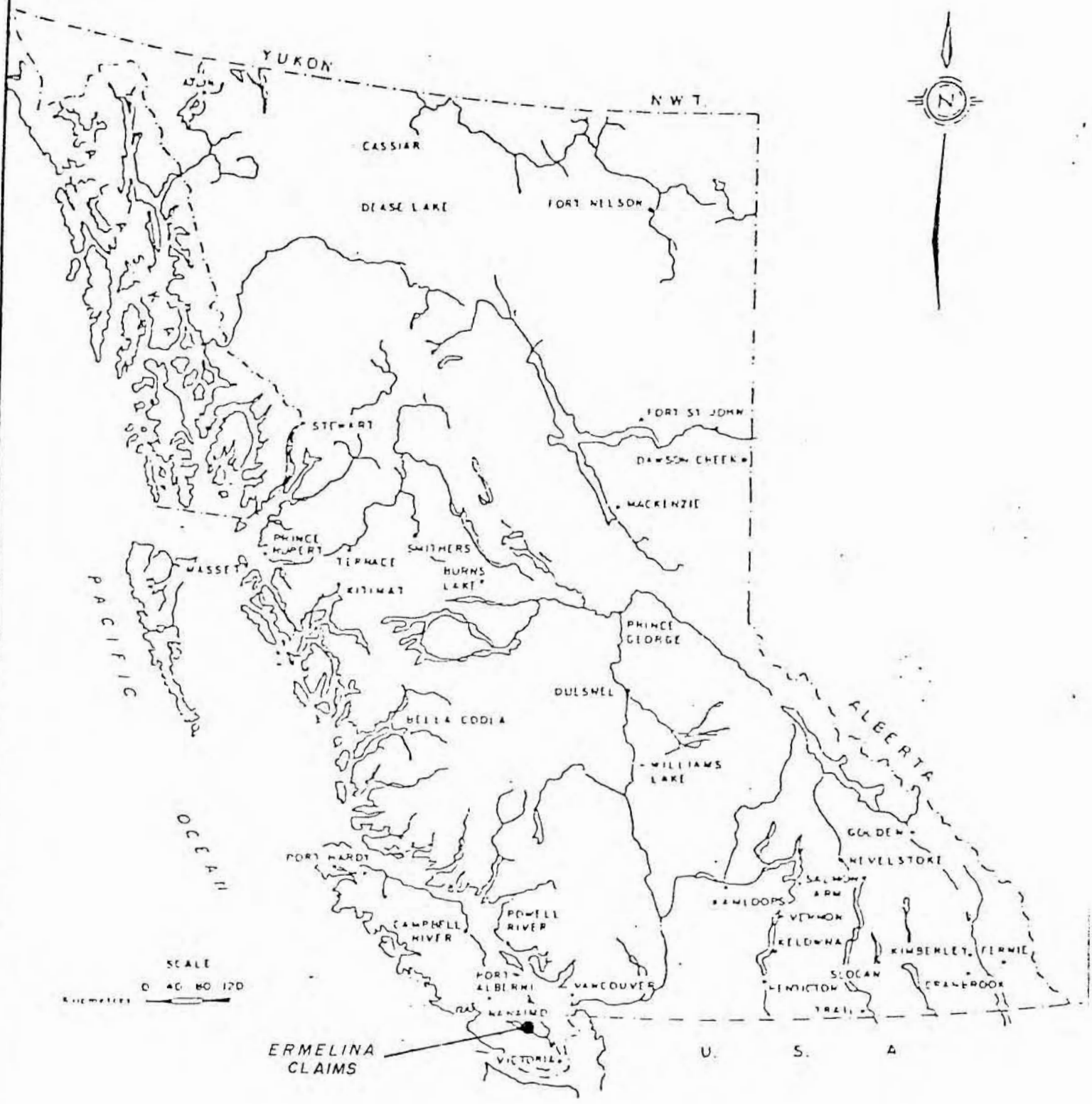


FIGURE 1: GENERAL LOCATION MAP FOR THE ERMELINA CLAIM BLOCK.

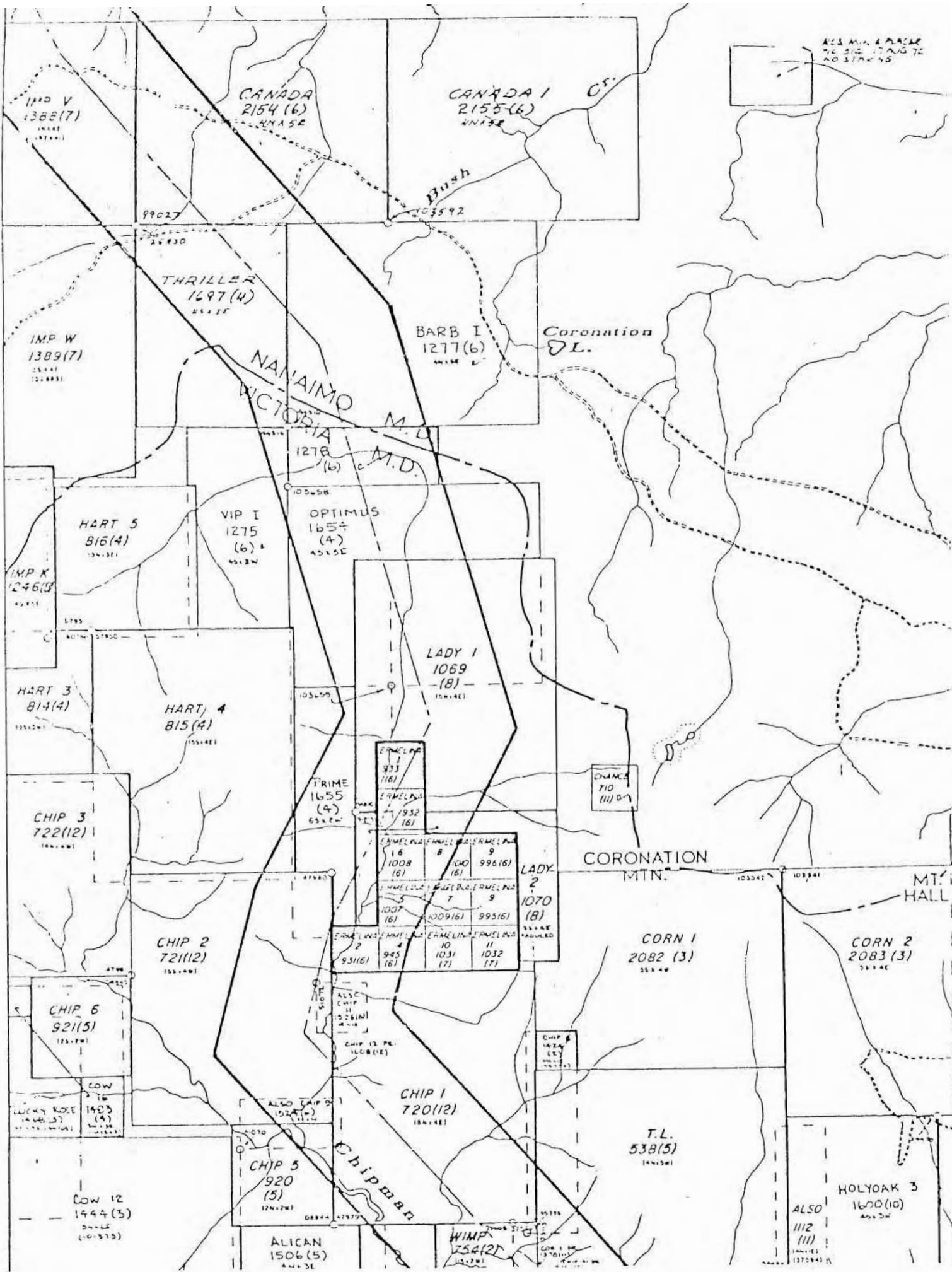


FIGURE 2: Claim Location Map for the Ermelina Claim Block

Pertinent claim data are as follows:

TABLE 1  
CLAIM STATUS

<u>Claim Name</u>	<u># of Units</u>	<u>Lot/Record No.</u>	<u>Expiry Date</u>
Ermelina 1	1	933	June 2, 1986
Ermelina	1	932	June 2, 1986
Ermelina 2	1	931	June 2, 1986
Ermelina 4	1	945	June 8, 1986
Ermelina 5	1	1007	June 9, 1986
Ermelina 6	1	1008	June 9, 1986
Ermelina 7	1	1009	June 9, 1986
Ermelina 8	1	1010	June 9, 1986
Ermelina 9	1	995	June 16, 1986
Ermelina 10	1	996	June 16, 1986
Ermelina 11	1	1031	June 13, 1986
Lady 1	20	1069	August, 1986
Lady 2	12	1070	August, 1986
Optimus	20	1654	April 7, 1987
Prime	10	1655	April 7, 1987

#### HISTORY

Government geological work in the area of the Ermelina claims includes mapping by C.H. Clapp (1912 and 1914) and J.E. Muller (1977, 1980a and 1980b).

Three mineralized zones are known to occur within the Ermelina claims; the Lady A and Lady C taconite deposits and, the Anita Cu-Ag deposit (please refer to geology map in back



pocket for locations). Previous exploratory work on the showings dates back to 1917 with the development of an open cut and a 50 foot shaft on the Anita showing. Assay results from old workings have yielded 3.3% Cu, 0.3 oz Ag/ton and trace Au (B.C.D.M. Annual Report, 1917). The two taconite showings (banded magnetite with minor hematite in grey chert or red jasper), Lady A and Lady C, were drilled in 1953 by Ladysmith Development Ltd. Rough reserve estimates, of 720,000 tons of 25% Fe have been calculated from drilling results. To date, there has been no recorded Au analysis carried out on the taconite showings.

## REGIONAL GEOLOGY

### Lithology

The Cowichan Lake to Ladysmith area of south-central Vancouver Island is underlain by a northwest trending belt of Paleozoic Sicker Group rocks including the Myra Formation, the volcanic rocks of the Triassic Karmutsen Formation and numerous granodiorite to quartz diorite Jurassic intrusive units. South of Cowichan Lake are extensive exposures of the Karmutsen Formation which are overlain by the Upper Triassic to Lower Jurassic Quatsino Limestone and Bonanza Formations. Sediments of the Nanaimo Group unconformably overlies all the above lithologies.

### Structure

Structure is dominated by north-northwest trending anticlinal structures and west-northwest trending faults. Folding, indicated as Jurassic by radiometric potassium-argon age dating, is characterized by sub-vertical southwest limbs and moderately dipping northeast limbs. Minor Mesozoic faulting has controlled, to some degree, emplacement of the Jurassic Island intrusions. The most significant faulting occurred

during the Tertiary and is best illustrated by displacement of the Nanaimo Group sediments.

### Mineralization

Vancouver Island hosts numerous mineral deposits. Those significant to this report are the Kuroko-type volcanogenic massive sulphide deposits hosted by the Myra Formation of the Sicker Group. Well known occurrences of this deposit-type are the Myra, Lynx and HW (Au, Ag, Cu, Pb, Zn) deposits of central Vancouver Island, presently being mined by Westmin Resources Ltd. and the Lara (Zn, Cu, Au, Ag, Pb) prospect currently owned by Aberford Resources Ltd. and Laramide Resources Ltd. located 5 km southwest of the Ermelina claim block. In both occurrences, the deposits are characterized by felsic volcanic, volcanoclastic and chemical exhalative lithologies.

## PROPERTY GEOLOGY

### Lithology

Mapping by Muller (1980) shows the Ermelina claims as being underlain by the Sicker Group Myra Formation, which is a composite of felsic volcanoclastic and sedimentary rocks, and, the Sediment-Sill unit, a transitional unit between the Myra and Buttle Lake Formations (as defined by Muller, 1980) (Fig. 3, back pocket). Due to the transitional nature of the Sediment-Sill unit the contact with the Myra Formation is poorly defined.

### Structure

A north-northeast trending fault is believed to occupy the valley of Chipman Creek and to be responsible for the offset perpendicular to strike of the Myra and Sediment-Sill units.

The displacement is in doubt, however, due to the existence of two taconite showings, Lady A and Lady C, which occur directly along strike on opposite sides of the valley.

### Mineralization

Three mineralized zones are known to exist within the Ermelina claim block. These are, the Lady A and Lady C taconite showings and the Anita Cu-Ag showing (see Fig. 3, back pocket). From previous reports (B.C.D.M., 1917; 1956) the showings are described as follows.

The Lady A and Lady C showings are stratabound taconite lenses composed of grey chert and red jasper. These lenses host bands of very fine grained magnetite with minor specularite and hematite. The Lady A deposit, composed of two taconite lenses, outcrops along strike for a distance of 105 metres (350 ft.) with a width of up to 18 metres (60 ft.). An average thickness determined from drilling is less than 9 metres (30 ft.). The Lady C deposit, consisting of a single taconite lens, outcrops along strike for a distance of 42 metres (175 ft.) with an apparent thickness of approximately 12 metres (50 ft.). Drilling on this showing has revealed a down dip extent of at least 48 metres. Average grades for the taconite deposits range from 9.5 to 30.5% Fe.

Mineralization at the Anita Cu-Ag showing occurs as mineralized quartz veins which infill fissures in schistose host rocks. The vein system can be traced in outcrop a distance of 48 metres (200 ft.) with an estimated width of 3.6 metres (15 ft.). A sample of mineralized quartz assayed trace Au, 0.3 oz/ton Ag, 3.3% Cu. Recent attempts to locate this showing have been unsuccessful.

## 1985 PROGRAM

## Field Procedures

Preliminary geological work on the Ermelina claims by Ashworth Explorations Ltd. included VLF-Em geophysical and soil geochemical surveys in the areas of the Lady A, Lady C and Anita showings.

Two flagged grids were laid out from a baseline bearing  $330^{\circ}$ . Lines were spaced at 200 metre intervals and stations were spaced every 50 metres along the lines (Fig. 3, back pocket). The northern grid commences at line 0+00 S and terminates at line 4+00 S. The southern grid commences at line 12+00 S and terminates at line 15+00 S. The geophysical survey was conducted over 8.65 kilometres at both grids. Samples for the geochemical survey were collected from the south grid only.

## Geophysical Survey

The geophysical survey was done using a Phoenix VLF-2 receiver on the northern grid and an EM-16 receiver on the southern grid. Results from the survey are presented in profile form (Fig. 4, back pocket) and summarized below. The transmitter station used was Seattle, Washington (24.8 kHz) which is at a bearing of  $140^{\circ}$  from the property.

The geophysical survey defined anomalies on both the northern and southern grids. Anomalies on the southern grid are stronger and more continuous than those on the northern grid. Two conductors with sub-parallel trends striking approximately  $120^{\circ}$  SE are identified in the area of the southern grid. Conductors on the northern grid are less continuous than those to the south, however, there is an indication of similar trends.

Results from the VLF-EM survey are significant. Correlations can be made between the characteristics of conductors and

mineralized zones. The trends of the conductors and the strike of the taconite lenses are similar. The conductors are comparable in character and therefore may define similar features. There is a good distinction between anomalous and background values which indicates the presence of a body with good conductive properties.

#### Geochemical Survey

A total of 55 samples were collected over 1.15 km of flagged grid. Samples consisted of 54 soil samples and one rock chip sample. Soil samples were taken from both A (8 cm depth) and B (20 cm depth) soil horizons at each station. The rock chip sample was taken from a mineralized outcrop at line 12+00 S, station 0+10 E. No description of the rock type or mineralization has been recorded.

Vangeochem Lab Ltd. was retained to analyse the soil samples by induced coupled plasma and the rock sample by fire assay. Soil samples were dried and sieved to minus 80 mesh. Samples of 0.5 grams were digested with 5 mL of 3:1:2 HCL : HN03 : H2O at 95°C for 90 minutes, then diluted to 10 mL solutions with water. The rock chip sample was prepared by pulverization to minus 120 mesh. A sample of 15 grams was analyzed for gold. A further 15 grams of the sample was analysed for Cu, Pb, Zn and Ag.

Data from the analyses are listed in Appendix A. Anomalies from the ICP data were determined using the statistical technique: Mean +2 Standard Deviations = Anomalous.

TABLE 2

## STATISTICAL ANALYSIS OF GEOCHEMICAL DATA

<u>Element</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Anomalous</u>
Copper	61 ppm	35 ppm	131 ppm
Lead	20 ppm	5 ppm	30 ppm
Zinc	103 ppm	159 ppm	421 ppm
Silver	0.3 ppm	0.2 ppm	0.7 ppm
Gold	3.7 ppb	5.4 ppb	14.5 ppb
Total number of samples = 55			

The results for copper show only one anomalous value located along line 14+00 S at station 1+00E. Lead values for all soil samples are generally low. The rock chip sample from line 12+00 S station 0+10 E shows the only anomalous value. Analysis for zinc show no anomalous values. Silver analysis defined four anomalous samples with values of 0.8 ppm. Two samples are from both the A and B soil horizons at line 13+00 S, station 0+00. The remaining two samples are from line 13+00 S, station 1+00 E and line 14+00 S, station 1+50 E. The response for gold in the samples was generally poor. Two samples showing anomalous values are from line 13+00 S, station 1+00 W and line 14+00 S, station 1+00 E.

Analysis of the geochemical results yields the following observations. Anomalous values for Cu, Zn, Ag and Au are confined to soil lines 12+00 S, 13+00 S and 14+00 S. Although samples were taken from both A and B horizons, there is an insufficient number of anomalous values to enable a correlation to be made between the geophysical and geochemical surveys.

## CONCLUSIONS

The Ermelina claim block is underlain by volcanic, volcanoclastic and sedimentary rocks of the Myra Formation and Sediment-Sill unit. Regionally, the Myra Formation is a well known host of the Kuroko-type volcanogenic massive sulphide deposits. Both the vein-type (Anita showing) and stratabound taconite deposits (Lady A and Lady C showings) which occur on the property are consistent with mineralization in a volcanogenic massive sulphide environment.

Previous work on the claims has included the development of an open cut and 50 ft. shaft on the Anita showing (1917) and drilling on the Lady A and Lady C showings (1953). Work on all three deposits showed encouraging results.

The 1986 field work consisted of geophysical VLF-EM and soil geochemical surveys. Results from the VLF-EM survey defined two conductors with continuous, consistent, sub-parallel trends on the southern grid and a less continuous conductor with a similar trend on the northern grid. The soil geochemical survey was less successful and showed only low anomalous values for copper, lead, silver and gold. Follow up work is warranted on the basis of the geophysical results.

## REFERENCES

- Clapp, C.H., 1912. Southern Vancouver Island. G.S.C. Memoir 13.
- Clapp, C.H., 1914. Geology of the Nanaimo Map Area. G.S.C. Memoir 51.
- Kiernan, W.K., 1956. British Columbia Report of Minister of Mines. Don McDiarmid Royal Printers. pp. 135-136.
- Muller, J.E., 1977. Geology of Vancouver Island (West Half). G.S.C. Open File 463.
- Muller, J.E., 1980a. The Paleozoic Sicker Group of Vancouver Island, British Columbia. G.S.C. Open File Map 701.
- Muller, J.E., 1980b. Geology, Victoria Map Area, Vancouver Island and Gulf Islands, British Columbia. G.S.C. Open File Map 701.
- Sloan, W., 1917. British Columbia Report of Minister of Mines. William H. Cullin Royal Printers. pp. F270-271.



APPENDIX I  
ITEMIZED COST STATEMENT

APPENDIX I

ITEMIZED COST STATEMENT

Wages

Geophysical Operator  
 March 7-March 17, 1986 @ \$220.00/day \$ 2,200.00

Geotechnician  
 March 7-March 17, 1986 @ \$190.00/day 1,900.00

Supervision  
 2 days @ \$450.00/day ,900.00

Room and Board

20 man days @ \$60.00/day 1,800.00

Transportation

Truck Rental (4x4) and fuel  
 10 days @ \$90.00/day ,900.00

B.C. Ferries , 80.00

Materials

Flagging, hip-chain thread, etc. ,216.00  
 Hand-held radios 10 days @ \$10.00/day ,100.00

Geophysical Survey Costs

Phoenix VLF-2 rental  
 10 days @ \$35.00/day ,350.00

EM-16  
 7 days @ \$35.00/day ,245.00

Geochemical Survey Costs

Soil Samples - Multi-element ICP Analysis ,659.00  
 - Gold geochemical Analysis

Rock Samples - Gold Fire Assay/AAS Finish , 13.75

Stand By Charge ,375.00

Administration @ 15% ,606.75

Report ,656.24

TOTAL: \$11,001.75

APPENDIX 2  
GEOCHEMICAL RESULTS



# VANGEOCHEM LAB LIMITED

MAIN OFFICE  
1521 PEMBERTON AVE.  
NORTH VANCOUVER, B.C. V7P 2S3  
(604) 988-5211 TELEX: 04-352578

BRANCH OFFICE  
1630 PANDORA ST.  
VANCOUVER, B.C. V5L 1L6  
(604) 251-5656

## GEOCHEMICAL ANALYTICAL REPORT

CLIENT: ASHWORTH EXPLORATION  
ADDRESS: 1590 - 609 Granville Street  
: Vancouver B.C.  
: V6Z 1N3

DATE: March 25 1986

REPORT#: 860087GA  
JOB#: 860087

PROJECT#: LADY  
SAMPLES ARRIVED: March 24 1986  
REPORT COMPLETED: March 25 1986  
ANALYSED FOR: Cu Pb Zn Ag

INVOICE#: 860087NA  
TOTAL SAMPLES: 1  
SAMPLE TYPE: 1 pulp  
REJECTS: DISCARDED

SAMPLES FROM: ASHWORTH EXPLORATION  
COPY SENT TO: ASHWORTH EXPLORATION

PREPARED FOR: MR. CLYCLE ASHWORTH

ANALYSED BY: VGC Staff

SIGNED: \_\_\_\_\_

GENERAL REMARK: None



# VANGEOCHEM LAB LIMITED

MAIN OFFICE  
1521 PEMBERTON AVE.  
NORTH VANCOUVER, B.C. V7P 2S3  
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BRANCH OFFICE  
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(604) 251-5656

REPORT NUMBER: 8600876A

JOB NUMBER: 860087

AGNORTH EXPLORATION

PAGE 1 OF 1

SAMPLE #	Cu	Pb	Zn	Ag
	ppm	ppm	ppm	ppm
LD 86 L12S 0+10E	60	15	95	.6

(Rock Chip Sample)

DETECTION LIMIT

nd = none detected

1

2

1

0.1

-- = not analysed

is = insufficient sample



# VANGEOCHEM LAB LIMITED

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(604) 986-5211 TELEX: 04-352578

BRANCH OFFICE  
1630 PANDORA ST.  
VANCOUVER, B.C. V5L 1L6  
(604) 251-5656

REPORT NUMBER: 8600816A

JOB NUMBER: 860081

ASHMORTH EXPLORATION

PAGE 2 OF 2

SAMPLE #	Au
	ppb
BLD86 L14S 0+50E	nd
BLD86 L14S 1+00E	20
BLD86 L14S 1+50E	10
BLD86 L14S 2+00E	5
BLD86 L14S 2+50E	10
BLD86 L14S 3+00E	nd
BLD86 L14S 0+50W	5
BLD86 L14S 1+00W	nd
BLD86 L15S 0+00	nd
BLD86 L15S 0+50E	5
BLD86 L15S 1+00E	15
BLD86 L15S 1+50E	5
BLD86 L15S 2+00E	10
BLD86 L15S 2+50E	nd
BLD86 L15S 3+00E	nd
LD86 L12S 0+10E	nd

DETECTION LIMIT

5

nd = none detected

-- = not analysed

is = insufficient sample

VANGEOCHEM LAB LIMITED

MAIN OFFICE: 1521 PEMBERTON AVE. N.VANCOUVER B.C. V7P 2S3 PH:(604)986-5211 TELEX:04-352578  
 BRANCH OFFICE: 1630 PANDORA ST. VANCOUVER B.C. V5L 1L6 PH:(604)251-5656

ICAP GEOCHEMICAL ANALYSIS

A .5 GRAM SAMPLE IS DIGESTED WITH 5 ML OF 3:1:2 HCL TO HNO3 TO H2O AT 95 DEG. C FOR 90 MINUTES AND IS DILUTED TO 10 ML WITH WATER.  
 THIS LEACH IS PARTIAL FOR SN, W, FE, CA, P, CR, MG, BA, PD, AL, NA, K, W, PT AND SR. NO AND PD DETECTION IS 3 PPM.  
 IS= INSUFFICIENT SAMPLE, ND= NOT DETECTED, -- NOT ANALYZED

COMPANY: CLYDE ASHWORTH  
 ATTENTION: C. ASHWORTH  
 PROJECT: LADY

REPORT#: B60081PA  
 JOB#: B60081  
 INVOICE#: B60081NA

DATE RECEIVED: 86/03/19  
 DATE COMPLETED: 86/03/21  
 COPY SENT TO: C. ASHWORTH

ANALYST *col Russell*

PAGE 1 OF 2

SAMPLE NAME	AG	AL	AS	AU	BA	BI	CA	CD	CO	CR	CU	FE	K	MG	MN	MO	NA	NI	P	PB	PD	PT	SB	SN	SR	U	W	ZN
	PPM	I	PPM	PPM	PPM	PPM	I	PPM	PPM	PPM	PPM	I	I	I	PPM	PPM	I	PPM	I	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
ALDB6 L1250+00	.1	3.94	7	ND	73	ND	.13	.1	22	38	69	5.74	.01	.64	1044	ND	.01	25	.07	14	ND	ND	ND	ND	15	ND	ND	86
ALDB6 L1250+50E	.4	4.77	9	ND	71	ND	.14	.8	30	60	108	4.76	.02	.83	4539	3	.01	48	.11	14	ND	ND	ND	ND	15	ND	ND	208
ALDB6 L1251+00E	.1	5.20	8	ND	143	ND	.15	.2	50	17	83	7.95	.01	.60	2010	ND	.01	19	.08	13	ND	ND	ND	ND	24	ND	ND	141
ALDB6 L1250+50W	.2	4.44	14	ND	62	ND	.11	.2	30	33	95	7.04	.02	.98	1915	ND	.01	29	.08	15	ND	ND	ND	ND	10	ND	ND	112
ALDB6 L1251+00W	.4	3.49	ND	ND	71	ND	.16	.1	14	71	73	3.87	.02	.73	360	ND	.01	32	.08	15	ND	ND	ND	ND	7	3	ND	49
ALDB6 L1251+50W	.5	2.58	4	ND	77	ND	.13	.1	13	44	63	2.95	.04	.56	892	ND	.01	18	.08	22	ND	ND	ND	ND	9	9	ND	46
ADLB6 L1350+00	.8	3.20	4	ND	100	3	.20	.2	17	63	59	4.66	.03	.93	543	ND	.01	38	.06	19	ND	ND	ND	ND	10	ND	ND	135
ADLB6 L1350+50E	.1	3.87	87	ND	67	ND	.08	.2	58	17	130	10.26	.01	.85	3275	2	.01	17	.17	22	ND	ND	ND	ND	18	ND	3	122
ADLB6 L1351+00E	.5	3.20	ND	ND	64	ND	.15	.1	17	71	60	4.58	.01	.76	828	2	.01	40	.06	17	ND	ND	ND	ND	7	ND	ND	95
ADLB6 L1350+50W	.3	3.16	ND	ND	68	ND	.16	.1	13	39	36	4.55	.01	.71	491	1	.01	23	.05	18	ND	ND	ND	ND	11	ND	ND	77
ADLB6 L1351+00W	.1	2.88	ND	ND	54	ND	.15	.1	7	47	43	3.54	.01	.58	549	ND	.01	16	.11	20	ND	ND	ND	ND	8	ND	ND	42
ADLB6 L1450+00	.1	3.02	ND	ND	123	ND	.14	.1	12	13	6	3.58	.01	.88	572	ND	.01	13	.04	17	ND	ND	ND	ND	29	ND	ND	79
ADLB6 L1450+50E	.2	2.16	ND	ND	116	ND	.16	.1	15	46	38	3.77	.01	.66	959	ND	.01	27	.03	20	ND	ND	ND	ND	9	ND	ND	84
ADLB6 L1451+00E	.6	3.20	ND	ND	164	ND	.22	.2	24	47	91	5.17	.01	.73	1143	2	.01	46	.04	18	ND	ND	ND	ND	13	ND	ND	101
ADLB6 L1451+50E	.3	2.97	7	ND	114	ND	.19	.1	21	63	75	4.30	.01	.86	662	1	.01	51	.04	18	ND	ND	ND	ND	10	ND	ND	95
ADLB6 L1452+00E	.2	2.82	9	ND	78	ND	.19	.1	17	59	69	4.62	.01	.79	844	2	.01	35	.04	19	ND	ND	ND	ND	14	ND	ND	92
ADLB6 L1452+50E	.3	5.02	ND	ND	148	ND	.20	.2	21	68	95	6.46	.01	.70	681	ND	.01	44	.06	11	ND	ND	ND	ND	10	ND	ND	114
ADLB6 L1453+00E	.1	5.74	ND	ND	103	ND	.19	.1	16	44	174	4.73	.01	.68	462	ND	.01	38	.06	10	ND	ND	ND	ND	10	ND	ND	72
ADLB6 L1450+50W	.2	.88	ND	ND	37	ND	.06	.1	3	33	4	1.97	.01	.14	153	ND	.01	4	.01	24	ND	ND	ND	ND	1	4	ND	21
ADLB6 L1451+00W	.3	1.75	ND	ND	38	ND	.11	.1	6	34	17	3.07	.01	.58	171	ND	.01	14	.03	23	ND	ND	ND	ND	6	ND	ND	36
ADLB6 L1550+00	.1	1.33	ND	ND	29	ND	.06	.1	2	11	2	.94	.01	.26	80	ND	.01	8	.01	21	ND	ND	ND	ND	4	4	ND	25
ADLB6 L1550+50E	.4	1.89	ND	ND	43	ND	.16	.1	10	50	31	3.52	.01	.64	383	ND	.01	26	.04	22	ND	ND	ND	ND	7	ND	ND	53
ADLB6 L1551+00E	.4	2.11	ND	ND	48	ND	.12	.1	9	39	30	3.62	.01	.60	512	ND	.01	23	.05	22	ND	ND	ND	ND	6	ND	ND	77
ADLB6 L1551+50E	.1	3.97	3	ND	60	ND	.08	.1	27	45	82	5.66	.01	.86	973	ND	.01	32	.08	14	ND	ND	ND	ND	7	ND	ND	84
ADLB6 L1552+00E	.3	1.77	6	ND	143	ND	.11	.1	13	44	18	3.52	.01	.44	2520	ND	.01	19	.06	24	ND	ND	ND	ND	7	ND	ND	68
ADLB6 L1552+50E	.6	1.89	ND	ND	50	3	.12	.1	7	63	51	4.23	.01	.32	444	ND	.01	14	.07	24	ND	ND	3	ND	6	ND	ND	47
ADLB6 L1553+00E	.5	2.13	ND	ND	72	ND	.12	.1	8	33	31	4.30	.01	.39	372	ND	.01	17	.06	23	ND	ND	ND	ND	6	ND	ND	76
BLDB6 L1250+00	.1	4.62	9	ND	60	ND	.20	.1	24	30	79	6.66	.01	.63	905	1	.01	22	.10	12	ND	ND	ND	ND	28	ND	ND	94
BLDB6 L1250+50E	.5	4.44	5	ND	90	5	.13	.5	23	74	84	4.26	.02	.93	2661	1	.01	71	.08	12	ND	ND	ND	ND	9	ND	ND	208
BLDB6 L1251+00E	.5	5.30	10	ND	92	ND	.17	.2	27	24	112	4.94	.03	.64	2380	1	.01	43	.08	11	ND	ND	ND	ND	36	5	ND	105
BLDB6 L1250+50W	.2	3.95	17	ND	62	ND	.11	.2	27	30	84	6.41	.02	.83	1714	ND	.01	27	.07	15	ND	ND	ND	ND	9	ND	ND	106
BLDB6 L1251+00W	.3	2.91	4	ND	60	5	.14	.1	12	64	69	3.37	.02	.76	268	ND	.01	29	.06	16	ND	ND	ND	ND	7	ND	ND	38
BLDB6 L1251+50W	.2	2.52	ND	ND	59	3	.10	.1	12	41	49	2.82	.01	.56	427	ND	.01	16	.07	18	ND	ND	ND	ND	7	ND	ND	49
BLDB6 L1750+00	.8	2.87	5	ND	74	6	.16	.2	16	58	52	4.37	.02	.88	409	ND	.01	33	.05	18	ND	ND	ND	ND	8	ND	ND	106
BLDB6 L1750+50E	.1	3.24	57	ND	80	ND	.08	.2	44	15	93	9.53	.02	.81	3249	4	.01	15	.13	25	ND	ND	ND	ND	13	ND	ND	127
BLDB6 L1751+00E	.8	2.18	6	ND	84	ND	.13	.1	15	63	42	4.44	.03	.60	552	2	.01	32	.07	23	ND	ND	ND	ND	6	3	ND	95
BLDB6 L1750+50W	.6	3.16	ND	ND	59	ND	.12	.1	13	39	47	3.89	.04	.63	289	ND	.01	21	.04	18	ND	ND	ND	ND	8	7	ND	66
BLDB6 L1751+00W	.2	4.91	ND	ND	53	ND	.10	.1	8	60	51	4.87	.04	.64	307	ND	.01	20	.20	14	ND	ND	ND	ND	5	4	ND	53
BLDB6 L1450+00	.2	2.57	4	ND	125	ND	.11	.1	12	11	6	3.16	.03	.96	546	ND	.01	12	.03	22	ND	ND	ND	ND	25	7	ND	83

SAMPLE NAME	AG PPM	AL I	AS PPM	AJ PPM	BA PPM	BI PPM	CA I	CD PPM	CO PPM	CR PPM	CU PPM	FE I	K I	MG I	MN PPM	MO PPM	NA I	NI PPM	P I	PB PPM	PD PPM	PT PPM	SB PPM	SN PPM	SR PPM	U PPM	V PPM	ZN PPM
BLD86 L1450+50E	.4	3.64	ND	ND	157	ND	.27	.1	32	56	109	5.44	.01	.77	1114	1	.01	42	.05	22	ND	ND	ND	ND	16	ND	ND	86
BLD86 L1451+00E	.5	4.16	ND	ND	183	ND	.30	.4	27	62	162	4.90	.02	1.08	1686	2	.01	65	.05	18	ND	ND	ND	ND	18	ND	ND	100
BLD86 L1451+50E	.8	3.49	4	ND	164	3	.19	.1	34	55	93	4.85	.01	.86	1121	1	.01	61	.05	21	ND	ND	ND	1	12	ND	ND	124
BLD86 L1452+00E	.3	3.89	11	ND	117	ND	.17	.1	25	49	93	4.98	.01	1.08	1821	2	.01	52	.08	25	ND	ND	ND	ND	24	ND	ND	116
BLD86 L1452+50E	.3	4.91	ND	ND	123	ND	.14	.1	23	63	114	5.04	.01	.71	431	ND	.01	48	.04	18	ND	ND	ND	2	7	ND	ND	85
BLD86 L1453+00E	.4	2.67	ND	ND	101	3	.14	.1	17	36	41	4.85	.01	.34	584	ND	.01	18	.04	29	ND	ND	ND	3	7	ND	ND	62
BLD86 L1450+50M	.1	2.93	ND	ND	43	ND	.08	.1	8	37	27	3.60	.01	.81	212	ND	.01	13	.06	23	ND	ND	ND	1	6	ND	ND	44
BLD86 L1451+00M	.1	3.29	ND	ND	68	ND	.12	.1	10	38	53	2.87	.01	.85	237	ND	.01	26	.03	20	ND	ND	ND	2	7	3	ND	39
BLD86 L1550+00	.1	1.91	ND	ND	39	ND	.05	.1	3	14	2	1.35	.01	.40	94	ND	.01	3	.01	25	ND	ND	ND	1	5	8	ND	27
BLD86 L1550+50E	.4	2.11	ND	ND	56	5	.17	.1	14	57	39	3.77	.01	.81	598	ND	.01	28	.05	27	ND	ND	ND	3	8	3	ND	67
BLD86 L1551+00E	.4	3.70	ND	ND	64	ND	.15	.2	15	45	62	4.49	.02	.83	642	ND	.01	35	.08	22	ND	ND	ND	1	8	4	ND	127
BLD86 L1551+50E	.1	3.34	ND	ND	74	ND	.08	.2	21	47	60	5.49	.01	.72	939	ND	.01	28	.07	22	ND	ND	ND	ND	6	ND	ND	83
BLD86 L1552+00E	.5	2.02	4	ND	155	ND	.11	.1	11	54	22	4.00	.01	.59	1104	1	.01	24	.06	29	ND	ND	ND	3	7	ND	ND	67
BLD86 L1552+50E	.6	1.76	ND	ND	61	3	.13	.1	8	64	25	4.16	.02	.38	421	ND	.01	18	.07	31	ND	ND	3	4	6	5	ND	51
BLD86 L1553+00E	.5	1.72	ND	ND	83	ND	.13	.1	8	36	38	4.39	.01	.34	356	ND	.01	17	.05	29	ND	ND	ND	3	7	ND	ND	61
LD86 L1250+10E	.1	1.56	ND	ND	89	ND	.11	.1	12	27	50	4.37	.04	.68	202	1	.01	9	.01	33	ND	ND	ND	ND	47	6	ND	73
DETECTION LIMIT	.1	.01	3	3	1	3	.01	.1	1	1	1	.01	.01	.01	1	1	.01	1	.01	2	3	5	2	2	1	5	3	1





# VANGEOCHEM LAB LIMITED

MAIN OFFICE  
1521 PEMBERTON AVE.  
NORTH VANCOUVER, B.C. V7P 2S3  
(604) 986-5211 TELEX: 04-352578

BRANCH OFFICE  
1630 PANDORA ST.  
VANCOUVER, B.C. V5L 1L6  
(604) 251-5656

## ----- GEOCHEMICAL ANALYTICAL REPORT -----

CLIENT: ASHWORTH EXPLORATION  
ADDRESS: 1590 - 609 Granville St.  
: Vancouver B.C.  
: V6Z 1N3

DATE: March 24 1986

REPORT#: 860081GA  
JOB#: 860081

PROJECT#: LADY  
SAMPLES ARRIVED: March 19 1986  
REPORT COMPLETED: March 24 1986  
ANALYSED FOR: Au ICP

INVOICE#: 860081NA  
TOTAL SAMPLES: 55  
SAMPLE TYPE: 54 Soil 1 Rock  
REJECTS: DISCARDED

SAMPLES FROM: ASHWORTH EXPLORATION  
COPY SENT TO: ASHWORTH EXPLORATION

PREPARED FOR: MR. CLYCLE ASHWORTH

ANALYSED BY: VGC Staff

SIGNED: \_\_\_\_\_  


GENERAL REMARK: None



# VANGEOCHEM LAB LIMITED

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BRANCH OFFICE  
1630 PANDORA ST.  
VANCOUVER, B.C. V5L 1L6  
(604) 251-5656

REPORT NUMBER: 8600816A

JOB NUMBER: 860081

ASHMORTH EXPLORATION

PAGE 1 OF 2

SAMPLE #	Au
	oob
ALD86 L12S 0+00	nd
ALD86 L12S 0+50E	5
ALD86 L12S 1+00E	nd
ALD86 L12S 0+50W	nd
ALD86 L12S 1+00W	5
ALD86 L12S 1+50W	nd
ALD86 L13S 0+00	nd
ALD86 L13S 0+50E	nd
ALD86 L13S 1+00E	5
ALD86 L13S 0+50W	nd
ALD86 L13S 1+00W	25
ALD86 L14S 0+00	10
ALD86 L14S 0+50E	nd
ALD86 L14S 1+00E	nd
ALD86 L14S 1+50E	nd
ALD86 L14S 2+00E	nd
ALD86 L14S 2+50E	10
ALD86 L14S 3+00E	5
ALD86 L14S 0+50W	nd
ALD86 L14S 1+00W	nd
ALD86 L15S 0+00	10
ALD86 L15S 0+50E	5
ALD86 L15S 1+00E	10
ALD86 L15S 1+50E	nd
ALD86 L15S 2+00E	nd
ALD86 L15S 2+50E	nd
ALD86 L15S 3+00E	5
BLD86 L12S 0+00	nd
BLD86 L12S 0+50E	nd
BLD86 L12S 1+00E	nd
BLD86 L12S 0+50W	5
BLD86 L12S 1+00W	nd
BLD86 L12S 1+50W	nd
BLD86 L13S 0+00	nd
BLD86 L13S 0+50E	nd
BLD86 L13S 1+00E	nd
BLD86 L13S 0+50W	5
BLD86 L13S 1+00W	nd
BLD86 L14S 0+00	5

*'A' - horizon soil samples*

*'B' - horizon soil samples*

DETECTION LIMIT

5

nd = none detected

-- = not analysed

is = insufficient sample

APPENDIX 3  
STATEMENT OF QUALIFICATIONS


APPENDIX 3

STATEMENT OF QUALIFICATIONS

I, KIM C. GREEN of 3051 Procter Avenue, West Vancouver, British Columbia, V7V 1G2, do hereby state that:

1. I am a graduate of the University of British Columbia with a B.Sc. degree in Geology, 1986.
2. I have actively pursued my career as a geologist in British Columbia for three years.
3. I have no direct or indirect interests in the property or securities of Rafael Resources Ltd., nor do I expect to receive any such interest.

Vancouver, British Columbia  
May 20th, 1986

  
Kim C. Green  
Kim C. Green, B.Sc.,  
Ashworth Explorations Ltd.

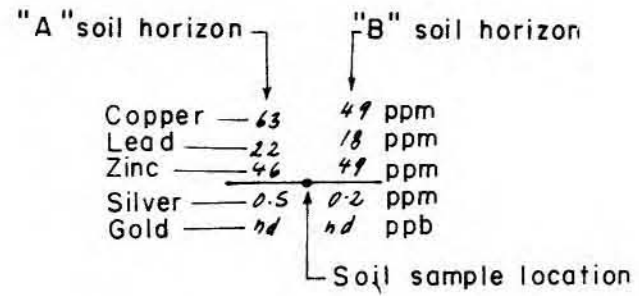
L. 12+00S	63 22 46 0.5 nd	49 18 49 0.2 nd	73 15 49 0.4 5	69 16 38 0.3 nd	95 15 112 0.2 nd	84 15 106 0.2 5	69 14 86 0.1 nd	79 12 94 0.1 nd	108 14 208 0.4 5	84 12 208 0.5 nd	83 13 141 0.1 nd	112 11 105 0.5 nd
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Rock chip: 50 [60]  
33 [15]  
73 [45]  
0.1 [0.6]  
nd [nd] — Re-assay

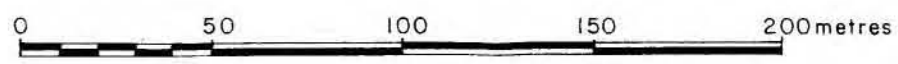
L. 13+00S	43 20 42 0.1 25	51 14 53 0.2 nd	36 18 77 0.3 nd	47 18 66 0.6 5	59 19 135 0.8 nd	52 18 106 0.8 nd	130 22 122 0.1 nd	93 25 127 0.1 nd	60 17 95 0.5 5	42 23 95 0.8 nd
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L. 14+00S	17 23 36 0.3 nd	53 20 39 0.1 nd	4 24 21 0.2 nd	27 23 44 0.1 5	6 17 79 0.1 10	6 22 83 0.2 5	38 20 84 0.2 nd	109 22 86 0.4 nd	91 18 101 0.6 nd	162 18 100 0.5 20	75 18 95 0.3 nd	93 21 124 0.8 10	69 19 92 0.2 nd	93 25 116 0.3 5	95 11 114 0.3 10	114 18 85 0.3 10	114 10 72 0.1 5	41 29 62 0.4 nd
-----------	-----------------------------	-----------------------------	----------------------------	----------------------------	----------------------------	---------------------------	-----------------------------	------------------------------	------------------------------	-------------------------------	-----------------------------	------------------------------	-----------------------------	-----------------------------	------------------------------	------------------------------	-----------------------------	-----------------------------

Baseline	2 21 25	2 25 27	31 22 53	39 27 67	30 22 77	62 22 127	82 14 84	60 22 83	18 24 68	22 29 67	51 24 47	25 31 51	31 23 76	38 29 61
L. 15+00S	0.1 10	0.1 nd	0.4 5	0.4 5	0.4 10	0.4 15	0.1 nd	0.1 5	0.3 nd	0.5 10	0.6 nd	0.6 nd	0.5 5	0.5 nd



NB : Anomalous values are underlined



GEOLOGICAL BRANCH  
ASSESSMENT REPORT

15,136

RAFAEL RESOURCES LTD.	
ERMELINA CLAIMS VICTORIA MINING DIVISION, B.C.	
Cu, Pb, Zn, Ag AND Au IN SOILS	
Drawn : AH./J.S.	Date : NOVEMBER, 1986.
Scale 1 : 2000	Fig. 5
Ashworth Explorations Ltd.	

LINE

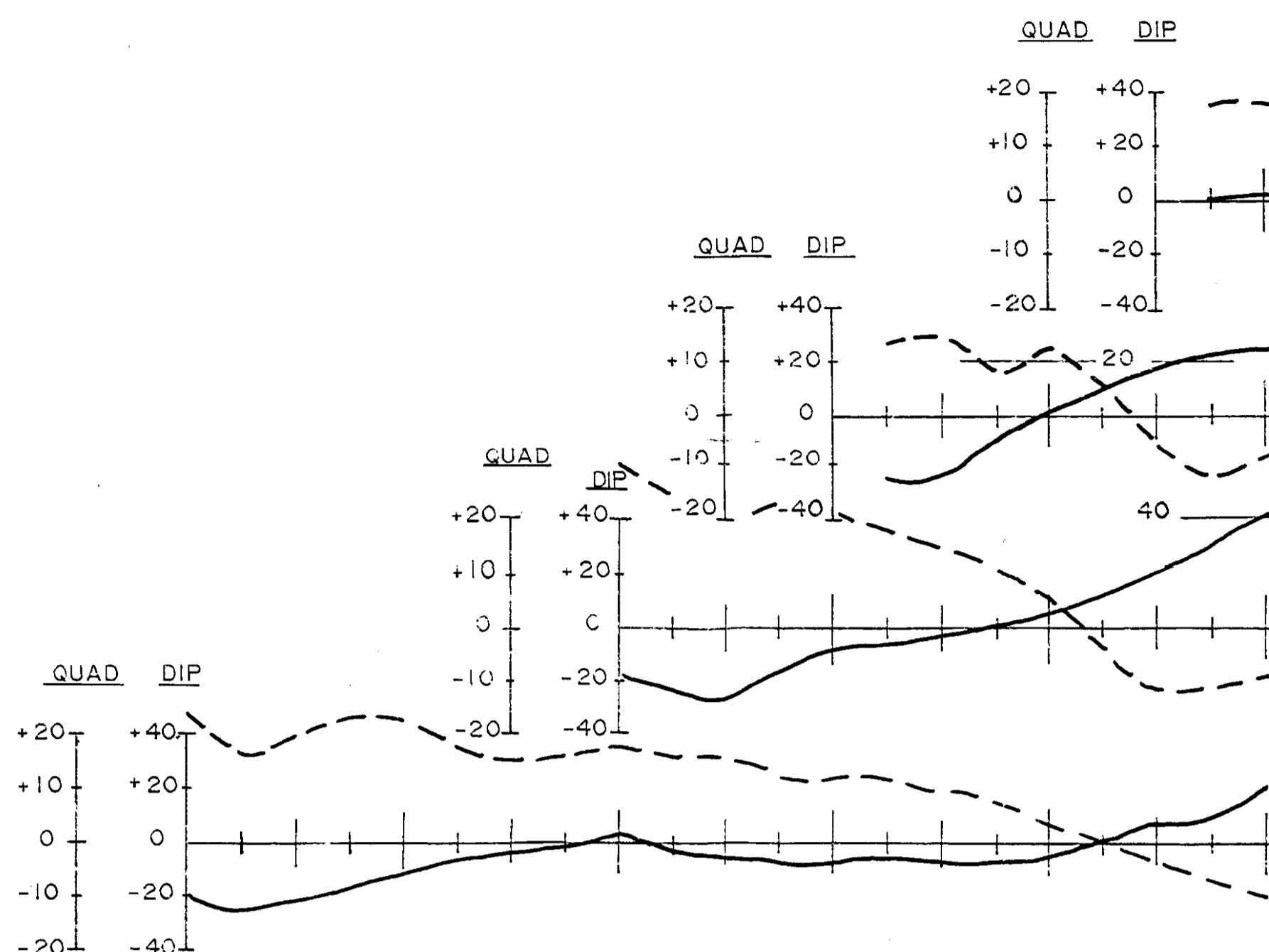
0 + 00 SOUTH

1 + 00 S

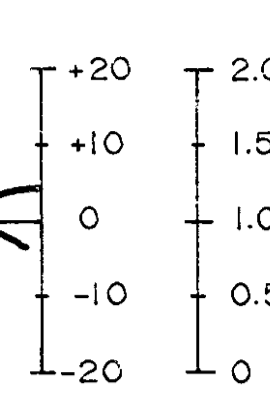
2 + 00 S

3 + 00 S

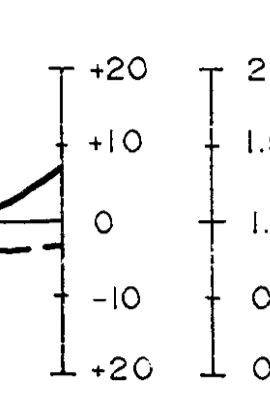
4 + 00 S



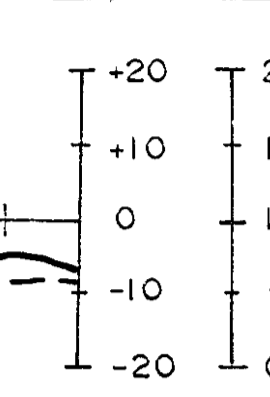
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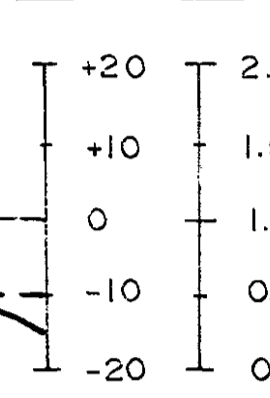
DIP F.S.



DIP F.S.



DIP F.S.



GEOLOGICAL BRANCH  
ASSESSMENT REPORT

# 15,136

ERMELINA GROUP  
VLF - EM PROFILES

- - - QUADRATURE OR FIELD STRENGTH
- DIP ANGLE
- ANOMALY LOCATIONS
- - - CONDUCTOR AXIS  
(PROBABLE BEDROCK CONDUCTOR)

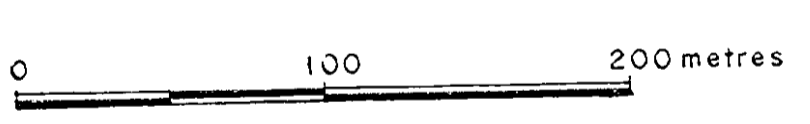
SCALE 1:2500

Lines 0+00S to 4+00S were done with a PHONIX VLF-2. All other lines were done with a VLF EM-16.

FIELD WORK BY ROBERT PASELER AND PAUL LEPINE  
DRAWN BY KIM GREEN  
ASHWORTH EXPLORATIONS LIMITED

FIGURE 4

Transmitter station used was Seattle, Washington (24.8 kHz)



direction of transmitter

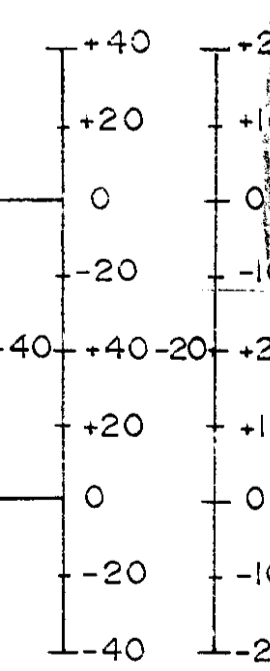
12 + 00 S

13 + 00 S

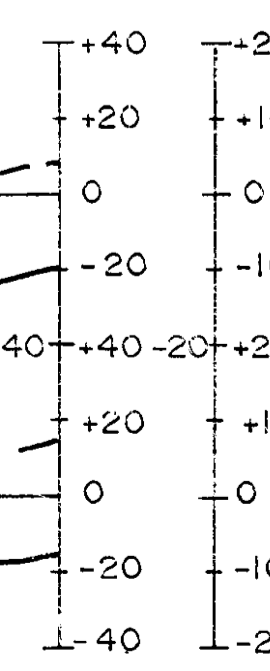
14 + 00 S

15 + 00 S

DIP QUAD



DIP QUAD



5 + 00 WEST

4 + 00 W

3 + 00 W

2 + 00 W

1 + 00 W

0 + 00 (Base Line)

1 + 00 EAST

2 + 00 E

3 + 00 E

4 + 00 E

5 + 00 E

6 + 00 E

7 + 00 E

8 + 00 E

9 + 00 E

10 + 00 E

11 + 00 E

12 + 00 E