5870

GEOPHYSICAL, GEOCHEMICAL and GEOLOGICAL ASSESSMENT REPORT

on the

HOPE GROUP of MINERAL CLAIMS

92H/6W

Hope No. 1 to No. 32 (inclusive) and Mineral Lease M-35
known as the

EMANCIPATION PROPERTY

#5870

situated 27 km. northeast
of
HOPE
Coquihalla River Area
New Westminster Mining Division, B. C.

Latitude 49°30'N; Longitude 121°15'W
N.T.S. 92H/6W & 11W

for

LONGBAR MINERALS LTD.

Report by:

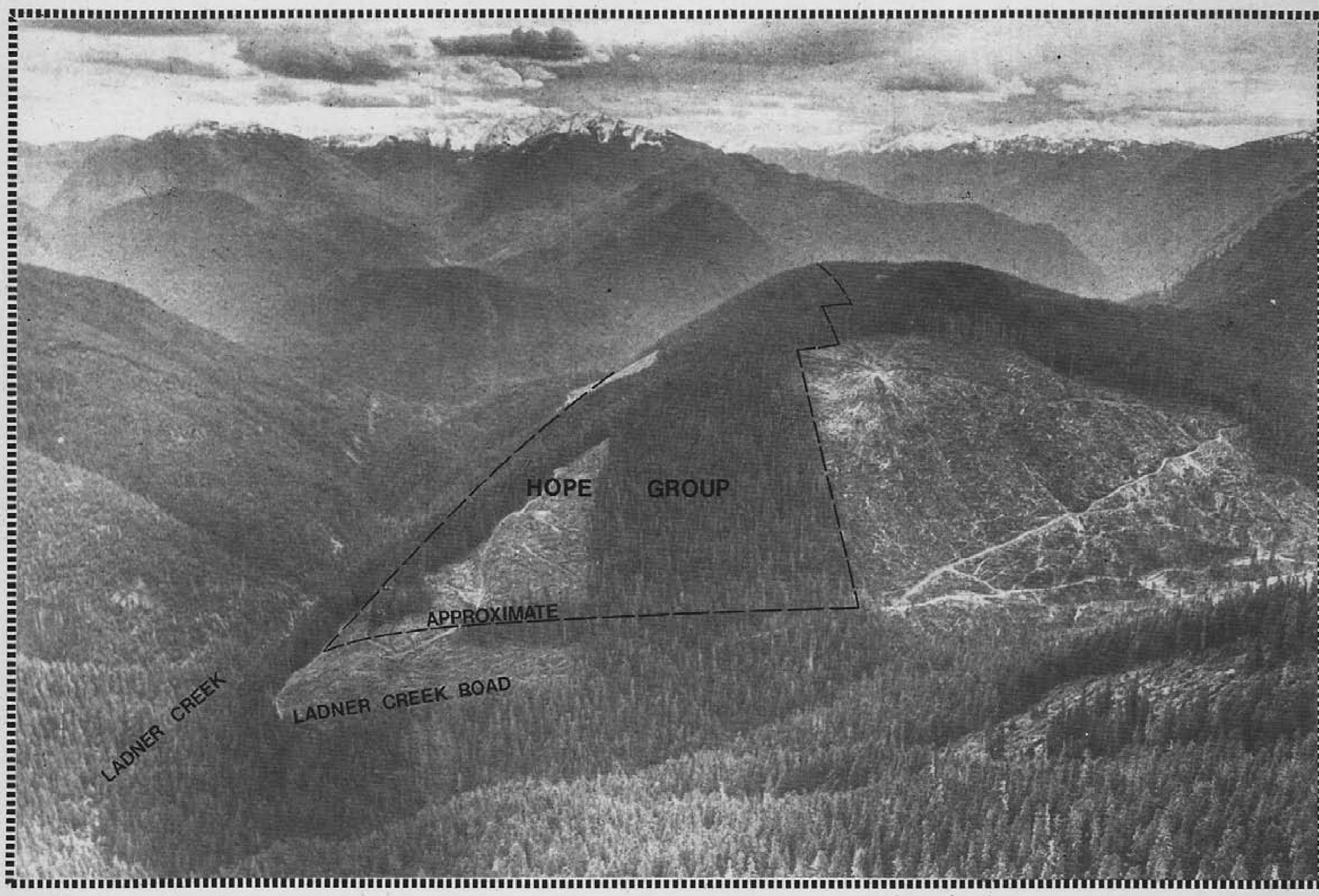
D. R. Cochrane, P.Eng.,
May 28, 1976
Delta, B.C.

Part 1 of 2

see also
5870 Maps
Part 2 of 2

Cochrane Consultants Limited
4882 Delta St., Delta, B.C. V4K 2T8 946-9221
Geotechnical Consulting / Exploration Services

geology
geophysics
geochemistry



View looking south from the north end of the HOPE GROUP.

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INTRODUCTION:

In the fall of 1975, an exploration crew completed approximately 12.5 line km. of linecutting, fluxgate magnetometer, VLF-EM, geochemical soil sampling and geological prospecting surveys on the Hope claims. This work was supervised by Messrs. Stewart and Geiger.

This report describes the field, lab and data processing procedures and briefly discusses the results obtained. Much of the data is presented in graphic form on the several maps accompanying this report.

In keeping with recent practise, metric units have been used exclusively in this report. A conversion table is appended in order to avoid possible misinterpretation.

PART A: SUMMARY AND CONCLUSIONS

1. Longbar Minerals Ltd. holds title to thirty-two (32) contiguous full sized located mineral claims, and Mineral Lease M-35, situated in the Coquihalla Gold Belt, New Westminster Mining Division. The claims lie immediately south of Carolin Mines Ladner Creek property, and they cover a former producing gold mine, the Emancipation (or Dawson) Mine.

2. The claims are well located being just over 160 km. due east of downtown Vancouver in southern British Columbia. Access during snow free months can be made by car via the Coquihalla Road which proceeds northeasterly from the town of Hope, B.C., the local distribution centre.

3. The property is set in the northern Cascade Mountains, a rugged upland surface with high peaks and deeply incised stream valleys. The region is extremely well forested and logging operations are numerous. Logging roads provide fair access in the claims area.

4. The HOPE GROUP of claims occupies a south central position along the Coquihalla Gold Belt. The belt contains numerous gold occurrences but has, to date, achieved only modest past production. The largest producer was the Emancipation (or Dawson) Gold Mine, covered by the Hope 5 and Hope 20 claims. The bulk of previous production occurred during the 1920's and 1930's and totalled just under 3,000 troy ounces of gold.

5. The main axis of the Coquihalla Gold Belt is the Hozameen Fault, a major north-northwest trending tectonic feature which forms the west boundary of the Methow Graben and separates a mafic (serpentine) complex on the west side of the claims, from the Jurassic Ladner Slates on the east side of the belt.

6. In the fall of 1975, an exploration crew, under the supervision of Messrs. Geiger and Stewart, completed some 12.5 kilometers of linecutting, VLF-EM surveys, magnetometer surveys, geochemical soil sample collection, and geological prospecting.

7. The ground fluxgate magnetometer results show that the claims area may be divided into two magnetic divisions: (1) a western region of high magnetic relief and rapid changes and; (2) an eastern region of relatively low magnetic response and gentle magnetic relief. The two response areas are believed to outline two separate lithological divisions, (1) a western region of mafic/basic complex (serpentine, diorite, greenstones, etc.) and (2) an eastern region underlain by steep to moderately dipping Ladner Slates (Jurassic argillites, slates, greywackes, etc.). Magnetic complexities at the boundaries of these two divisions are prime targets for detailed exploration, and the sharp division between the two is the Hozameen fault system.

8. The VLF-Electromagnetic (EM) survey shows areas of severe conductivity changes, mainly within the Ladner Slate Belt of

gentle magnetic relief. This is believed to be due to a number of possible effects and their combination, including:

(a) disseminated sulphides in the bedrock sequence;

(b) graphitic members of the Ladner sequence;

and, (c) man made materials in the old mine area. (cables, scrap iron, rails, etc.)

9. First derivations of the VLF-EM results were calculated, and, in addition, Fraser's filter was applied to enable contours to be drawn outlining zones of relative conductivity. Many of the highly conductive zones are parallel to lithologic trends and investigation as to the precise cause of the anomalous conductivity is recommended.

10. Prospecting by Mr. Jon Stewart showed that natural bedrock outcrop was limited in extent, however a rough idea of the position of the mafic complex-Ladner slate contact was obtained. The contact is of prime importance since most of the gold occurrences along the belt are spacially related to this major throughgoing feature.

11. Geochemical soil sampling results showed that upper B horizon soils ranged in gold content from less than the detection limit (5 parts per billion (ppb) to a peak value of just over 6,000 ppb, (or approximately 0.2 oz. of gold per ton). It has been the author's experience in the area that highly anomalous areas, with respect to gold, usually indicate nearby auriferous bedrock zones, and as such are prime exploration targets. On the other hand, negative gold in soil response does not necessarily mean that there is a posity of gold in

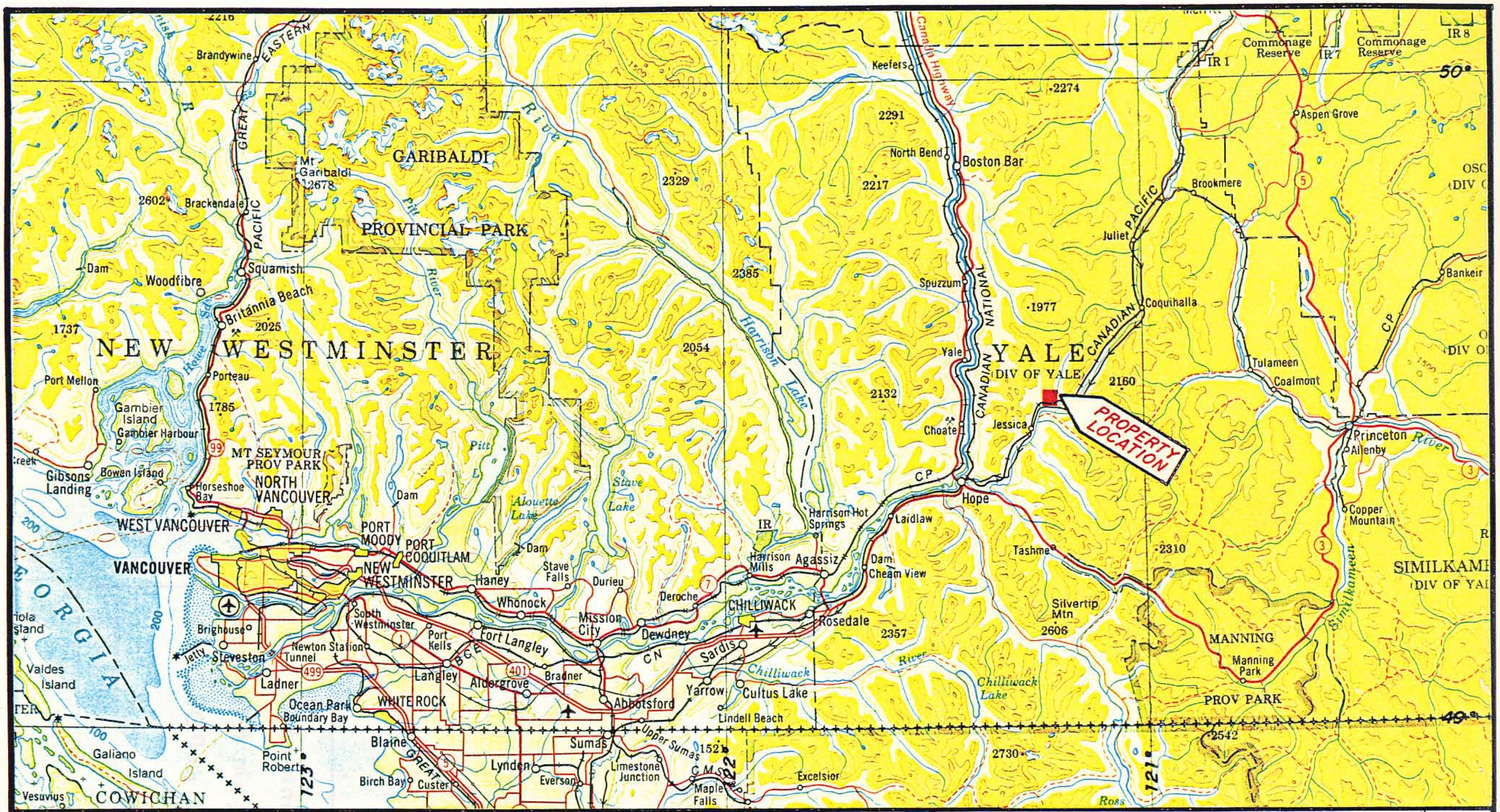
nearby bedrock since other factors may be involved. (thick overburden, clay, slumping, etc.).

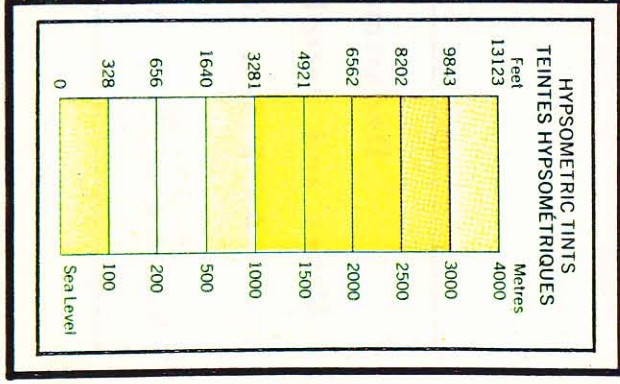
12. Further investigation of the anomalies discovered to date, and "fill in" work is required on the Hope Group.

Respectfully submitted,

PROFESSIONAL PROVINCE OF D. R. COCHRANE BRITISH COLUMBIA ENGINEER

D. R. Cochrane, P.Eng.,
May 28, 1976.





Above map is from Dept. of Energy, Mines & Resources "Vancouver NM 9/10," 1969.

LONGBAR MINERALS LIMITED

HOPE GROUP PROJECT · EMANCIPATION (DAWSON) MINE
COQUIHALLA GOLD BELT AREA
NEW WESTMINSTER MINING DIVISION, B. C.

LOCATION MAP — *Figure 1*

0 5 10 20 30 MILES (1" = 15.75 MILES)

(1:1,000,000)

0 5 10 20 30 40 KILOMETRES

DWN: B.A.C., MAR/76

Cochrane Consultants Limited
4882 Delta Street — Delta B.C.

PART B: SETTING

B-1: Location and Access

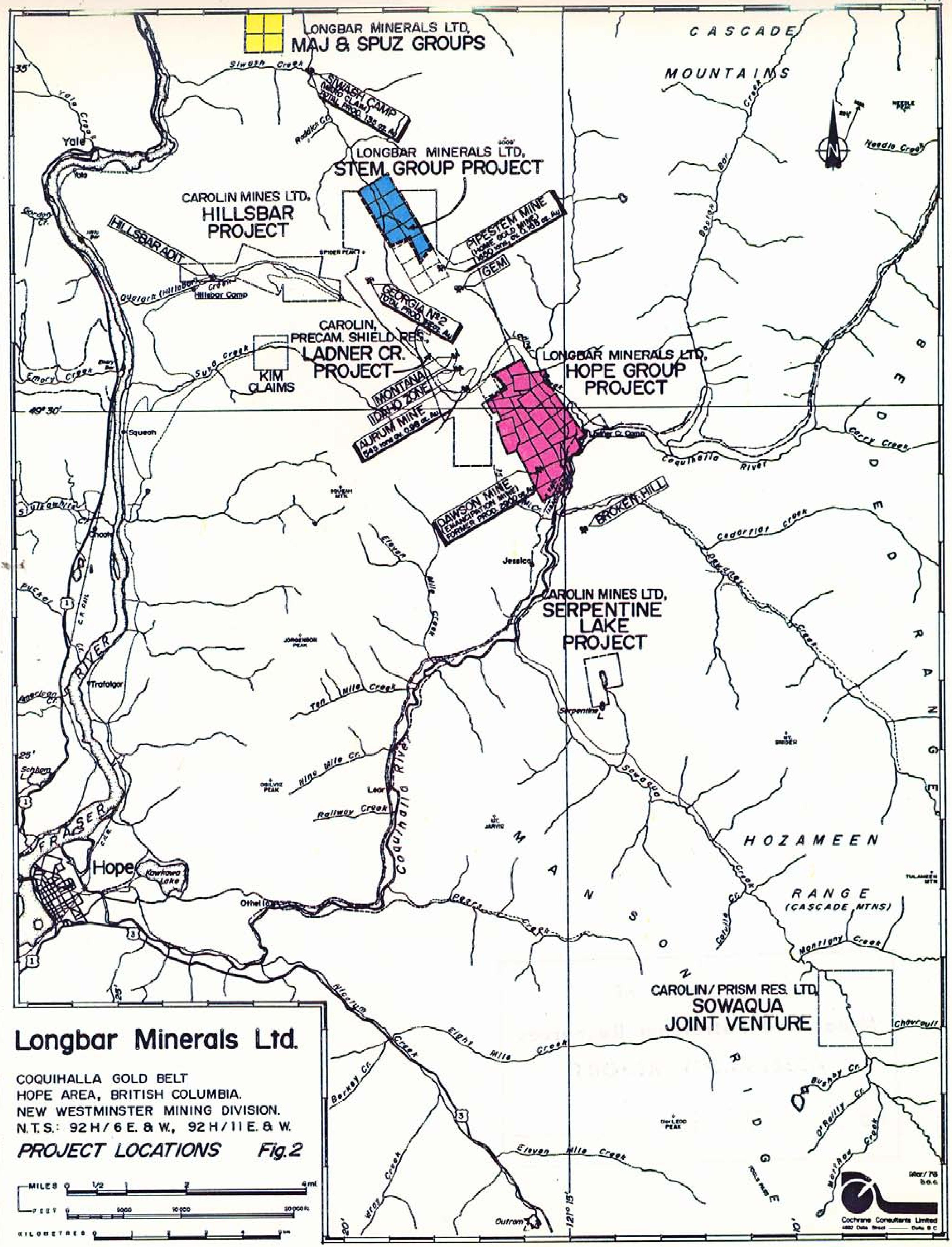
The Hope Claims are favourably located and during snow free months are easily reached by car, being just over 160 kilometers due east of Vancouver, in southern British Columbia. Normal access is northeasterly from Vancouver on Highway B.C. No. 1 to the town of Hope, then through downtown Hope, past Kawkawa Lake, and onto the Coquihalla Road, The Coquihalla Road is built, for the most part, on the abandoned West Kettle railway grade. This gravel road proceeds northeasterly, following the Coquihalla River to the southern portion of the Hope Claims, and these are situated at mile 16 (27 km.) along the road from Hope. The claims lie on the south and east facing ridge lying immediately west of Ladner Creek.

The National Topography System (NTS) code for the area is 92H/6W and 11 west. The center of the claims block lies at longitude 49°30' North and latitude 121°15' West.

B-2 Claims Information

The Hope Group comprises a total of thirty-two (32) contiguous located mineral claims, in addition to Mineral Lease M-35 (lot 1299, the Raymond; and lot 1300, the Sunshine). They are registered in the New Westminster Mining Division, District of Yale.

The claims cover a rough rectangular block of ground just over 3.2 km. long and approxinately 1.6 km. wide.


LONGBAR MINERALS LTD,
MAJ & SPUZ GROUPS
SIWASH CAMP
LONGBAR MINERALS LTD,
STEM GROUP PROJECT
CAROLIN MINES LTD,
HILLSBAR PROJECT
HILLSBAR ADIT
Hillsbar Camp
PIPESTEM MINE
GEM
GEORGIA No 2
CAROLIN, PRECAM. SHIELD RES.
LADNER CR. PROJECT
KIM CLAIMS
MONTANA
IDAHO ZONE
AURUM MINE
LONGBAR MINERALS LTD,
HOPE GROUP PROJECT
DAWSON MINE
BROKEN HILL
CAROLIN MINES LTD,
SERPENTINE LAKE PROJECT
CAROLIN/PRISM RES. LTD.
SOWAQUA JOINT VENTURE
CASCADE MOUNTAINS
BEDDED RANGE
HOZAMEEN RANGE (CASCADE MTNS)
MANSON RIDGE
FRASER RIVER
Coquihalla River
Yale
Hope
Squeah
Trafalgar
Jessica
Othello
Outram
Longbar Minerals Ltd.
COQUIHALLA GOLD BELT
HOPE AREA, BRITISH COLUMBIA.
NEW WESTMINSTER MINING DIVISION.
N.T.S.: 92 H / 6 E. & W., 92 H / 11 E. & W.
PROJECT LOCATIONS Fig. 2
MILES
FEET
KILOMETRES
Cochrane Consultants Limited

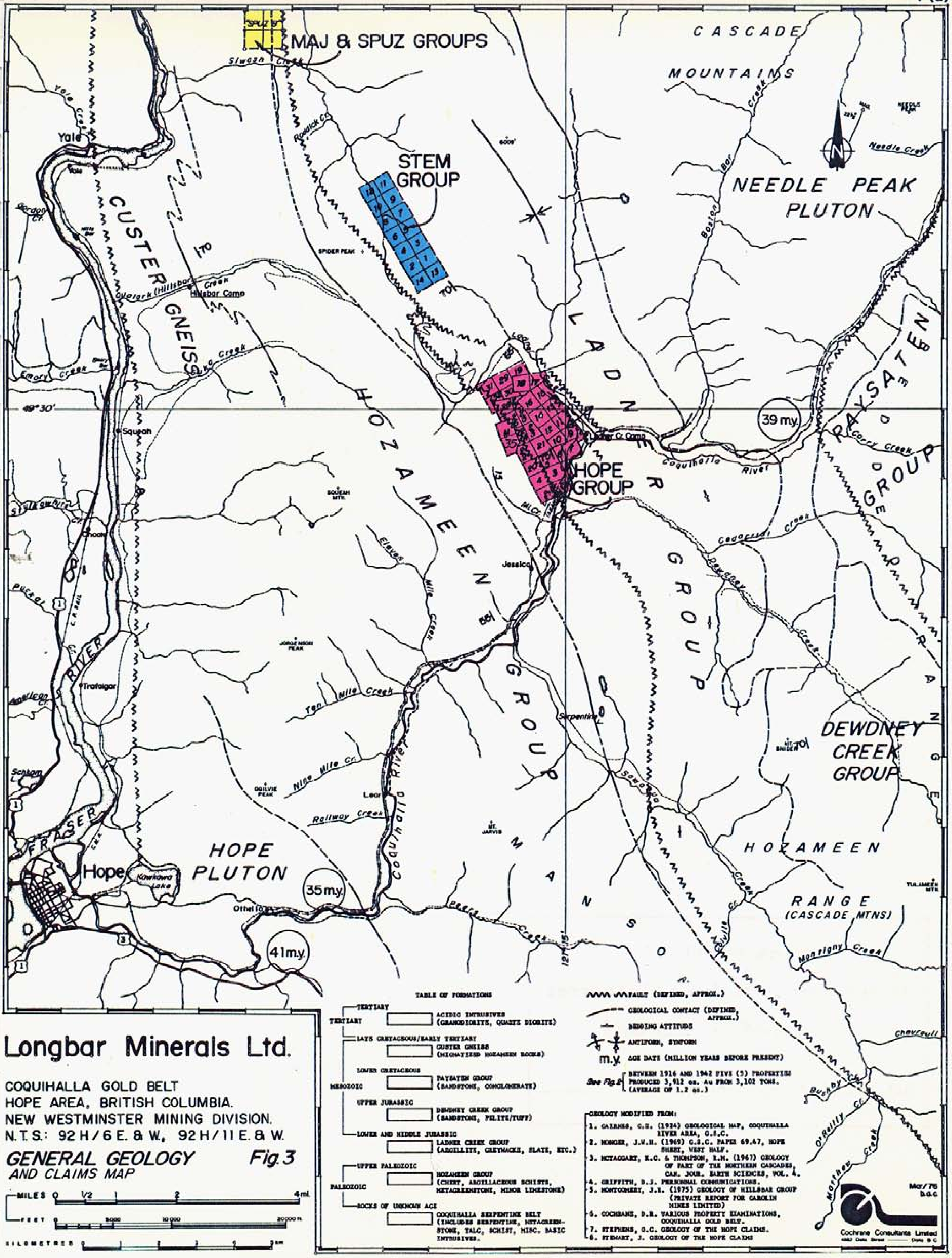
The following table lists pertinent claims information, and the accompanying figures shows their relative positions.

TABLE A

Claim Name	Record Number	*Expiry Date
Hope 1 to 9 incl.	25391 to 99	Apr. 20, 1977
Hope 10	27779	May 19, 1977
Hope 11 to 13 incl.	28472 to 74	May 17, 1977
Hope 14 to 18 incl.	28475 to 79	May 17, 1976
Hope 19	28529	June 19, 1976
Hope 20 to 28 incl.	26578 to 86	June 21, 1976
Hope 29 to 32 incl.	28530 to 33	June 19, 1976
Mineral Lease 35	Lots 1299 and 1300	July 1976

The following above listed claims have been transferred from Mr. K. Warren Geiger and Mr. J. Stewart to Longbar Minerals Ltd.

* as of March, 1976.



Longbar Minerals Ltd.

COQUIHALLA GOLD BELT
HOPE AREA, BRITISH COLUMBIA.
NEW WESTMINSTER MINING DIVISION.
N.T.S.: 92 H / 6 E. & W., 92 H / 11 E. & W.

GENERAL GEOLOGY AND CLAIMS MAP — Fig. 3

B-3 General Setting

The Hope Claims lie within the northern portion of the Cascade Mountains, a physiographic region characterized by rugged peaks, deeply incised creek valleys, and a dense forest cover. Elevations in the area range from 30 metres above sea level at Hope, B.C. (the confluence of the Fraser and Coquihalla Rivers), to peaks in excess of 1,800 metres. The town of Hope, B.C., is a major local distribution centre with a variety of services and an excellent, experienced, labour pool.

The northwest trending ridge covered by the Hope Claims climbs from the Coquihalla Valley to an elevation of just over 1,200 metres above sea level, through a horizontal distance of approximately 850 metres. Portions of the claim group are "logged off" and logging operations are numerous in the area. The forest cover consists of well developed stands of douglas fir, red cedar, and hemlock at lower elevations, to balsam, hemlock, and yellow cedar at higher elevations. The climate is a modified wet coastal one with mild, damp, summers; and damp, snowy, winters interspersed with above zero, freshet spells. Freshets rapidly create swollen rivers and streams, and access roads are occasionally washed out and otherwise damaged.

The soil cover is widespread but fairly thin at higher elevations consisting of transported glacial overburden and hybrid soils (various mixtures of residual and transported types).

The Hope Mineral Claims straddle a throughgoing north-northwesterly trending fault and contact zone between the Coquihalla

Serpentine Band on the west side of the claims, and Ladner Slates on the east side of the claims, The fault and contact form the western boundary of the Methow Graben separating the Paleozoic Hozameen Series and younger sedimentary rocks. This particular boundary feature including the Hozameen Fault has been traced from the northern portion of Washington State to Boston Bar, B.C. on the Fraser River, a total distance of some 240 km.

The most important economic feature of the belt is the series of gold camps scattered along its length and the most northerly series of deposits, named by Cairnes (1920's), is the Coquihalla Gold Belt, (see accompanying geologic map) and the Hope Claims occupy a south central position within this belt.

B-4 History

The Coquihalla Gold Belt has, to date, achieved only very moderate past production, the total being slightly under 4,000 troy ounces of gold, from five (5) separate deposits. The bulk of production occurred between the late teens and the early 1940's and the largest producer was the Emancipation. (B.C. Department of Mines Records). Although gold production in the belt is modest, some "spectacular high grade" was discovered and mined notably at the Emancipation Mine (the most southerly on the belt) and the Aurum Mine, adjacent to the north. According to B.C. Dept. of Mines Records, the Emancipation produced 2,897 ounces of gold and 605 ounces of silver between 1916 and 1941. The total amount of tons mined is unknown.

The production records show shipments between May, 1916 and December, 1920 totalled 95 tons having a gross value of $34,000 with gold at $20.67 per ounce at that time,(Cairnes, 1929).

The following history of the area is a compilation of information obtained from many of the reports referred to in the bibliography.

In 1906 a prospector named William Teaque discovered gold in quartz veins in Ladner Creek and by the fall of 1907 he had staked several claims and discovered a promising gold belt near the contact of serpentine rocks and the Ladner Slate sequence. The Emancipation (or Dawson) Gold Mine was staked in 1913 by three prospectors named Merrick, Thompson, and Beach. Development of the Liberator, Emancipation, Director, and several other claims proceeded rapidly until the first shipment in 1916. Since that time the property has had a rather checkered history with various companies optioning and working the Emancipation. By the late 1920's, a 12 ton per day stamp mill had been erected on the property and in 1928 the entire belt received considerable interest because of the discovery of "very high grade ore" on the Aurum Property to the north. By 1937, the B.C. Minister of Mines Report read "Some intermittent work was done during the year at this property, formerly known as the Dawson Mine, ..."

Very little exploration and development work has been conducted in the area since the early '40's until the recent rise in the price of gold and the resurgence of gold exploration.

B-5 Recent Exploration on the Hope Claims

Most of the Hope Claims were staked by Messrs. Stewart and Geiger in the spring of 1971. Since that time there has been work completed on the claims each summer. The work to date has included very limited diamond drilling, the establishment of a ground control grid, geological work by Mr. A. Bullis, P.Eng., and Dr. G.C. Stevens, and detailed prospecting by Mr. Jon Stewart. This past year, an electromagnetic survey, magnetometer survey, and the collection of soil samples was conducted. This work has led to the identification of several exploration targets worthy of follow-up work.

B-6 Recent Development

Two significant, recent events have reshaped the future and drastically altered the potential of the Coquihalla Gold Belt. The first occurred early in 1973 when the U. S. Government devalued the U. S. dollar, or raised the price of gold. This was followed closely by a free floating gold price which for the last few years has averaged in excess of $100 per troy ounce compared to the fixed price, since 1933, of $35 per troy ounce.

The second major, recent development has been the development of Carolin Mines "Idaho Zone", a replacement type gold deposit located immediately north of the Hope Group. According to Mr. O. Gillespie, president of Carolin Mines, the Idaho has combined geological and drill indicated reserves of 3½ million tons grading in excess of 0.1 ounces of gold per ton. An underground development program is planned on the Idaho Zone this summer, and if the situation continues on the positive side the Idaho will be brought into production in the next few years. The presence of an operating gold mine adjacent to the Hope Group would, of course, completely alter theminerai economies in the area and substantially increase the statisitical possibilities of finding a viable deposit close by.

PART C: PROCEDURES

C-1 Ground Control Grid

The ground control grid on the Hope Group was previously established, but was extended somewhat in the fall of 1975 to the coverage shown on accompanying maps. The base line runs N 020° W (azimuth 340 true), and cross lines are established at right angles and at separations of 200, 400 and 800 feet (61, 122 and 244 meters). Stations along lines were flagged at 50 foot (15.2 meter) intervals.

C-2 Magnetometer Survey

A McPhar fluxgate ground magnetometer unit was used exclusively on the project, with a continuously recording chart recorder coupled to a Scintrex MF-2 fluxgate unit which monitored diurnal magnetic change. Mr. D. Murphy operated the magnetometer unit, and Carolin Mines personnel operated the base station.

Magnetometer readings were taken at 25 foot (7.6 meter) intervals, and converted for diurnal change by way of the base station graphic output. The corrected readings are relative to an arbitrary base at the Carolin Camp at the confluence of Ladner Creek and the Coquihalla River and are relative to a point in time of September 7, 1976 at 10:30 a.m.

C-3 VLF-EM Survey

A Scintrex VLF-Electromagnetic (EM) unit was deployed on the Hope Group, and this unit was operated by Mr. M. Lee. The station used was Jim Creek Washington (sta. N.P.G.) operating at 18.6 K.Hz. Readings were taken at 25 foot intervals along all cross lines, and were recorded as tilt angle east or west. From the original data, profiles were drawn, and first derivatives calculated (see Whittles reference) and plotted alongside. (see maps) In addition, the VLF-EM data was filtered according to Fraser's method (see reference) in the office of Cochrane Consultants Ltd.

C-4 Prospecting

Mr. Jon Stewart, prospected the claims area, and prepared a map which accompanies this report. Results show the area contains widespread overburden cover but overburden is not believed to be thick, especially at higher elevations.

C-5 Geochemical Soil Sampling

Soil samples from the upper "B" (red) soil horizon were collected at 50 foot (15.2 meter) intervals along the cross lines shown in Figure No. 4. The samples were collected at depths ranging from 10 to 50 cm. and placed in standard Kraft paper sample bags. The air dried samples were shipped to Min-En Labs of Vancouver, B.C. where analysis for their content in gold was made by standard A.A. methods. The results are shown in Figure No. 5.

PART D: DISCUSSION OF RESULTS

D-1 Magnetometer Results

The corrected ground fluxgate magnetometer results ranged from a low of -6,780 gammas to a high of +14,220 gammas relative to an arbitrary near zero base at Carolin Mines camp.

The mode (most frequent range) lies in the -250 to 0 gamma range and this group represents 25 percent of the total population. The arithmetic mean of a sample of the total population is 562 gammas.

A frequency histogram of the magnetometer results was prepared, on a base of 250 gamma groups, and the histogram shows the values are multimodal and positively skewed.

At least two magnetic families are present, family A (representing the bulk of the values) lies below the 500 gamma level, and family B lies above this level and has a dipole couple which is highly negative.

Family A is believed to represent the Ladner Slate group and family B the mafic complex.

The following classification was devised on the basis of the statistical analysis of the magnetometer values.

Range (gammas)	Classification	Family
below $\overline{750}$	anomalously low	dipole couple of B
$\overline{750}$ to 500	background Ladner	A
500 to 1000	hybrid (?)	A/B mixture (?)
above 1000	anomalously high	B

Based on the above classification, the survey area may be divided into two parts, namely:

(a) a western division of high magnetic response and rapid change believed to be underlain by the mafic complex, and

(b) an eastern division of moderate response and gentle magnetic relief believed to be underlain by Ladner group rocks.

The sharp boundary between (a) and (b) above and often marked by a linear magnetic depression is presumably the trace of the Hozameen Fault, one of the key elements of the Coquihalla Gold Belt.

Several abrupt magnetic terminations and linears are shown on the compilation figure and are due to structure/lithology which is at present unknown.

Complexities and re-entrants into the mafic complex along the fault zone indicate favourable exploration target areas and as such require further work.

D-2 VLF-EM Results

The profiles of the raw EM, and first derivative values are shown in profile form in Figure No. 11. Rapid charges on this map indicate areas of contrasting conductivity.

The Fraser Filtered data is presented in accompanying Figures 7 and 8 and the following discussion is in regard to this information. Filtered VLF-EM results below 0 and to -10 are categorized as weakly conductive zones; those between 10 and 20 as moderately conductive zones;

and those response areas above 20 are categorized as strongly conductive. On this basis, Figure No. 8 shows the relative bedrock conductivity, and most of the anomalies lie on the eastern (Ladner slate) side of the survey area.

The abnormally high conductivity is believed to be a result of one, or various combinations of the following:

(a) sulphides
(b) graphite
(c) man made objects
(d) fault and shear zones.

Since Carolin Mines Idaho replacement zone, located immediately north of the Hope group, is strongly conductive, investigation as to the cause of the anomalous conductivity is warranted.

D-3 Geochemical Results

Gold is present in the Hope group B horizon soils and varies from less than detection limit (less than 5 parts per billion (ppb) to 6,250 ppb (0.2 oz Au per ton). In order to correlate with Carolin Mines, work values in excess of 90 ppb are considered anomalous and anomalous areas are shown graphically in accompanying Figure No. 5. It is obvious from this map that areas other than the old workings require further investigation, and, in addition, "fill" in information is required.

D-4 Compilation

In order to combine information, and to provide an overview, a compilation map was prepared and accompanies this report.

High priority exploration target areas are obvious and should meet one or more of the following criteria:

(a) be located close to the Hozameen Fault system;

(b) be anomalous with respect to subsurface conducitivity;

(c) if overburden conditions are amenable for soil sample response, be anomalous with respect to gold in soils.

Respectfully submitted,

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. R. COCHRANE

D. R. Cochrane, P.Eng.,
May 28, 1976.

APPENDIX I

Assessment Work Details

Project: Emancipation/Hope Group N.T.S. 92 H/6 & 11
Sponsor: Longbar Minerals Ltd.
Location: Coquihalla Gold Belt, New Westminster M.D.
Type of Work: Geophysical, Geochemical, prospecting
Field Work Dates: August 17 to 20, September 7 to 12, 1975.

Field Crew:

1. Dr. K. W. Geiger, P.Eng, supervision
2. Mr.J. Stewart, prospecting and soil sampling
3. Mr. Mark Lee (Vananda, B.C.) VLF-EM
4. Mr. D. Murphy (Vananda, B.C.) Magnetometer
5. Mr. Jeff White, and Mr. George Bayko (Powel River, B.C.) linecutting

Data Processing:

1. Preparation of prospecting map, Mr. J. Stewart
2. VLF-EM profiles, Mr. M. Lee
3. Magnetometer Reduction, Mr. M. Lee
4. 1 in.:500ft. maps, Mr. B. A. Cochrane
5. VLF EM Filter, D. R. Cochrane and V. Elliot
6. Report Preparation, D. R. Cochrane

Cost Breakdown:

1.	Field Work, transportation, labour, camp costs	$ 6,317.61
2.	Geochemical analytical costs (Min Em Labs)	3,549.70
3.	Data processing, compilation, report prep.	1,471.88
	Total	$11,339.19

D. R. Cochrane, P.Eng.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. R. COCHRANE

APPENDIX II

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APPENDIX III

Conversion Tables

A. Length

	Centimeters	Meters	Inches	Feet	Miles
Metric					
1 Angstrom	10^{-8}	10^{-10}	3.9370×10^{-9}	3.2808×10^{-10}	—
1 millimicron	10^{-7}	10^{-9}	3.9370×10^{-8}	3.2808×10^{-9}	—
1 micron	10^{-4}	10^{-6}	3.9370×10^{-5}	3.2808×10^{-6}	—
1 millimeter	0.1	0.001	0.03937	3.2808×10^{-3}	—
1 centimeter	1	0.01	0.3937	0.032808	—
1 meter	100	1	39.37	3.2808	.0006
1 kilometer	100,000	1000	39,370	3280.8	.6214
English					
1 inch	2.5400	0.0254	1	0.08333	
1 foot (12 in.)	30.480	0.3048	12	1	.000189
1 yard	91.440	0.9144	36	3	.0005618
1 mile (statute)	160,940	1609.4	63,360	5280	1

B. Weight

	Grams	Kilograms	Oz. Troy	Lb Avoirdupois	Short Tons
Metric					
1 milligram	0.001	10^{-6}	3.215×10^{-5}	2.205×10^{-6}	—
1 gram (1000 mg.)	1	0.001	0.032151	0.002205	—
1 kilogram (1000 g.)	1000	1	32.1507	2.2046223	0.0011023
1 metric ton	10^{6}	1000	32,151	2204.6223	1.1023
Troy					
1 grain*	0.064799	6.480×10^{-5}	0.0020833	1/7000	7.134×10^{-8}
1 pennyweight (24 grains)	1.55517	0.001555	0.05	.00342857	1.71426×10^{-6}
1 ounce (20 dwt.)	31.10348	0.0311035	1	0.0685714	3.4286×10^{-5}
1 pound	373.24	0.37324	12	0.8228569	0.000411428

*1 grain troy = 1 grain apothecary's weight = 1 grain Avoirdupois

C. Assay Values

	Per Cent	*Grams per Metric Ton	Oz. Troy per Short Ton
1 per cent	1	10,000	291.667
*1 gram per metric ton	0.0001	1	0.0291667
1 kg per metric ton	0.1	1,000	29.1667
1 dwt per short ton	0.00017143	1.71426	0.0500
1 dwt per long ton	0.00015306	1.53061	0.0446428
1 oz troy per short ton	.00342857	34.2857	1
1 oz troy per long ton	.00306122	30.6122	0.892859

* or parts per million

D. Mesh Sizes (Us Standard Sieves)

Mesh NBS	Mesh (Tyler)	Opening Microns	Opening Inches
10	9	2000	0.0787
100	100	149	0.0059
325	325	44	0.0017

NOTES

Longbar Minerals Limited

Hope Group Project
New Westminster Mining Division
British Columbia 92 H/6 E. & W.

0 500 1000 2000 FEET

1" = 500' 1:6000

0 10 20 30 40 50 60 METRES

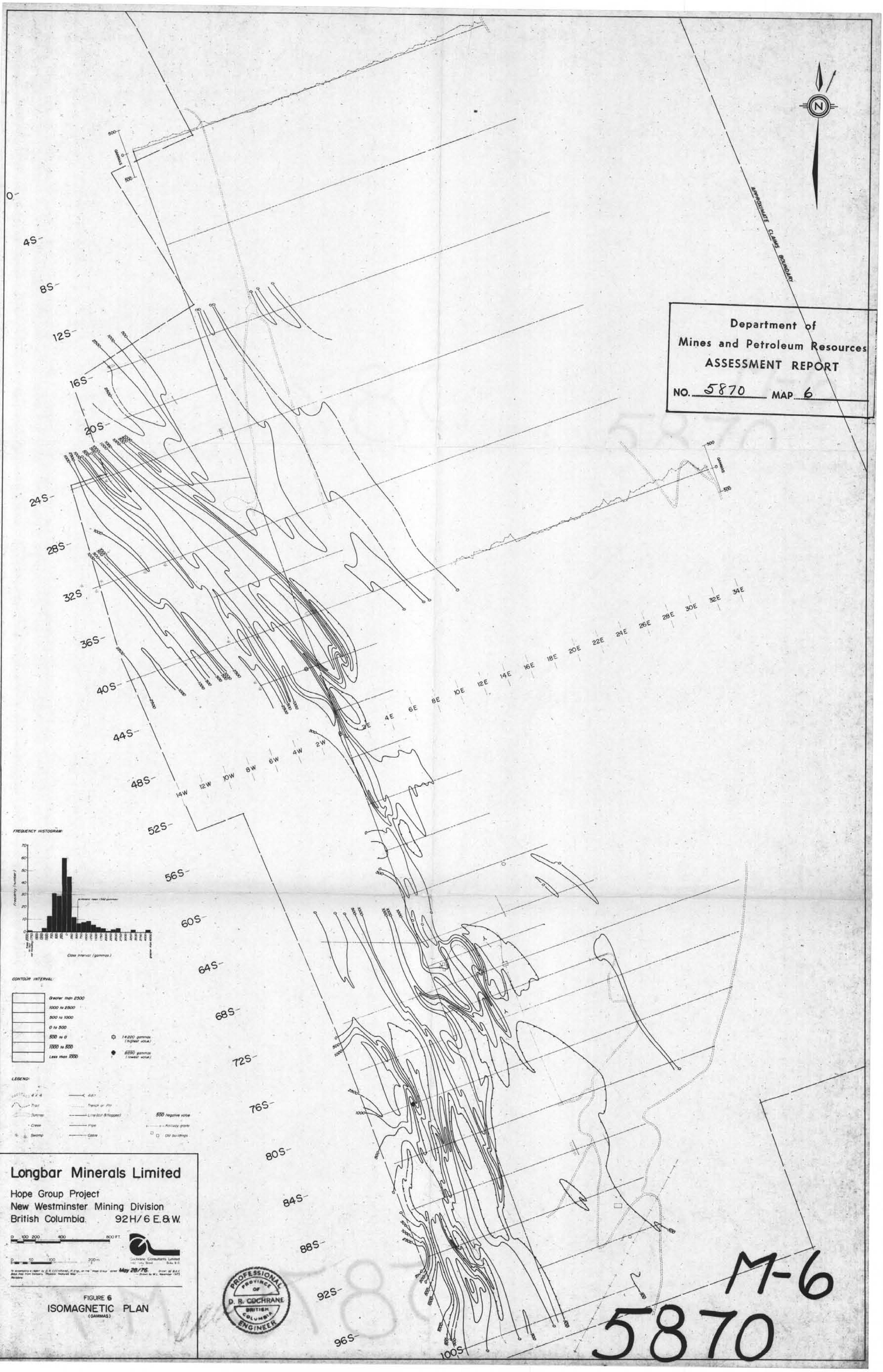
To accompany a report by D. R. COCHRANE, P. Eng., on the "Hope Group" dated May 28, 1976.
Base map traced from Company map drawn Nov/74, A.R.B. Drawn Apr/76, B.A.C.

FIGURE 4
GEOCHEMICAL DATA (Au - p.p.b.)

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA D. R. COCHRANE

Cochrane Consultants Limited
4882 Delta Street —— Delta B.C.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5870 MAP 5
N
AURUM MINE.
APPROXIMATE CLAIMS BOUNDARY
HOPE
LEASE
GROUP
M - 35
EMANCIPATION MINE
LADNER CREEK ROAD
C.P. RAIL (ABANDONED)
COQUIHALLA (PIPELINE) ROAD
BL
10E
20E
30E
30.5E
32.5E
31E
33.5E
35E
8W
14W
15W
5W
5E
8E
9E
12.5E
15E
26E
24.5E
22.5E
19.5E
12E
10.5E
0
4 S
8 S
12 S
16 S
20 S
24 S
32 S
36 S
40 S
44 S
48 S
52 S
56 S
60 S
64 S
68 S
72 S
76 S
80 S
84 S
88 S
92 S
96 S
100 S
5
90
LEGEND:
27 NEGATIVE VALUE
LINE CUT & FLAGGED
TRAIL
4 WHEEL DRIVE
2 WHEEL DRIVE
LESS THAN DETECTION LIMITS
5 TO 90 P.P.B.
GREATER THAN 90 P.P.M.
Longbar Minerals Limited
Hope Group Project
New Westminster Mining Division
British Columbia 92H/6E. & W.
0 500 1000 2000 FEET
1" = 500' 1:6000
0 10 20 30 40 50 60 METRES
To accompany a report by D. R. COCHRANE, P. Eng., on the "Hope Group" dated May 28, 1976
Base map traced from Company map drawn Nov/74, A.R.B. Drawn Apr/76, B.A.C.
FIGURE 5
GEOCHEMICAL CONTOURS (Au - p.p.b.)
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA D. R. COCHRANE
Cochrane Consultants Limited
4882 Delta Street —— Delta B.C.
5870 M-5



Longbar Minerals Limited

Hope Group Project
New Westminster Mining Division
British Columbia. 92H/6 E.&W.

0 100 200 400 800 FT.

0 50 100 200 m

Cochrane Consultants Limited

May 28/76

FIGURE 6
ISOMAGNETIC PLAN
(GAMMAS)

Longbar Minerals Limited

Hope Group Project
New Westminster Mining Division
British Columbia 92H/6E. & W.

0 500 1000 2000 FEET
1" = 500' 1:6000
0 10 20 30 40 50 60 METRES

To accompany a report by D. R. COCHRANE, P. Eng., on the "Hope Group" dated May 28, 1976.
Base map traced from Company map drawn Nov/74, A.R.B. Drawn Apr/76, B.A.C.

FIGURE 7
FILTERED VLF-EM DATA (FRASER'S FILTER)

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — D. R. COCHRANE

Cochrane Consultants Limited
4882 Delta Street —— Delta B.C.

Longbar Minerals Limited

Hope Group Project
New Westminster Mining Division
British Columbia 92H/6E. & W.

0 500 1000 2000 FEET

1" = 500' 1:6000

0 10 20 30 40 50 60 METRES

To accompany a report by D. R. COCHRANE, P. Eng., on the "Hope Group" dated May 28, 1976.
Base map traced from Company map drawn Nov/74, A.R.B. Drawn Apr/76, B.A.C.
Revisions: May/76.

FIGURE 8
FILTERED VLF - EM CONTOURS
(FRASER'S FILTER)

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA D. R. COCHRANE

Cochrane Consultants Limited
4882 Delta Street —— Delta B.C.

5870 M-8

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5870 MAP 9

Longbar Minerals Limited

Hope Group Project
New Westminster Mining Division
British Columbia 92H/6E. & W.

0 100 200 400 800 FT.
1" = 200' 1:2400
0 50 100 200 m

Cochrane Consultants Limited
4882 Delta Street —— Delta B.C.

To accompany a report by D. R. COCHRANE, P. Eng., on the "Hope Group" dated May 28, 1976.
Plotted by M. L., November 1975.
Revisions:
Drawn by B.A.C.

FIGURE 9
MAGNETOMETER DATA
(IN GAMMAS)

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA D. R. COCHRANE

5870 M-9

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO 5870 MAP 10
N
GAMMAS
500
0
500
Approximate Claims Boundary
0
4S
8S
12S
16S
20S
24S
28S
32S
36S
40S
44S
48S
52S
56S
60S
64S
68S
72S
76S
80S
84S
88S
92S
96S
100S
14W 12W 10W 8W 6W 4W 2W
2E 4E 6E 8E 10E 12E 14E 16E 18E 20E 22E 24E 26E 28E 30E 32E 34E
FREQUENCY HISTOGRAM:
Frequency (number)
Arithmetic mean (562 gammas)
from 2000 to (but not including) 1750
greater than 4000
Class Interval (gammas)
CONTOUR INTERVAL:
Greater than 2500
1000 to 2500
500 to 1000
0 to 500
500 to 0
1000 to 500
Less than 1000
14220 gammas (highest value)
8890 gammas (lowest value)
LEGEND:
4 X 4
Trail
Outcrop
Creek
Swamp
Adit
Trench or Pit
Line (cut & flagged)
Pipe
Cable
500 Negative value
Railway grade
Old buildings
Longbar Minerals Limited
Hope Group Project
New Westminster Mining Division
British Columbia 92H/6 E.& W.
0 100 200 400 800 FT.
1" = 200' 1: 2400
0 50 100 200 m
Cochrane Consultants Limited
4882 Delta Street Delta B.C.
To accompany a report by D. R. COCHRANE, P. Eng., on the "Hope Group" dated May 28, 1976. Drawn by B.A.C.
Base map from Company "Physical Features Map" Drawn by M.L. November 1975
Revisions:
FIGURE 10
ISOMAGNETIC PLAN
(GAMMAS)
PROFESSIONAL PROVINCE OF D. R. COCHRANE BRITISH COLUMBIA ENGINEER
5870 M-10

Longbar Minerals Limited

Hope Group Project
New Westminster Mining Division
British Columbia 92 H/6 E. & W.

0 100 200 400 800 FT.
1" = 200' 1:2400
0 50 100 200 m

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4882 Delta Street — Delta B.C.

To accompany a report by D. R. COCHRANE, P. Eng., on the "Hope Group" dated May 28, 1976. *Drawn by B.A.C.*
Plotted by D. M., November 1975.
Revisions:

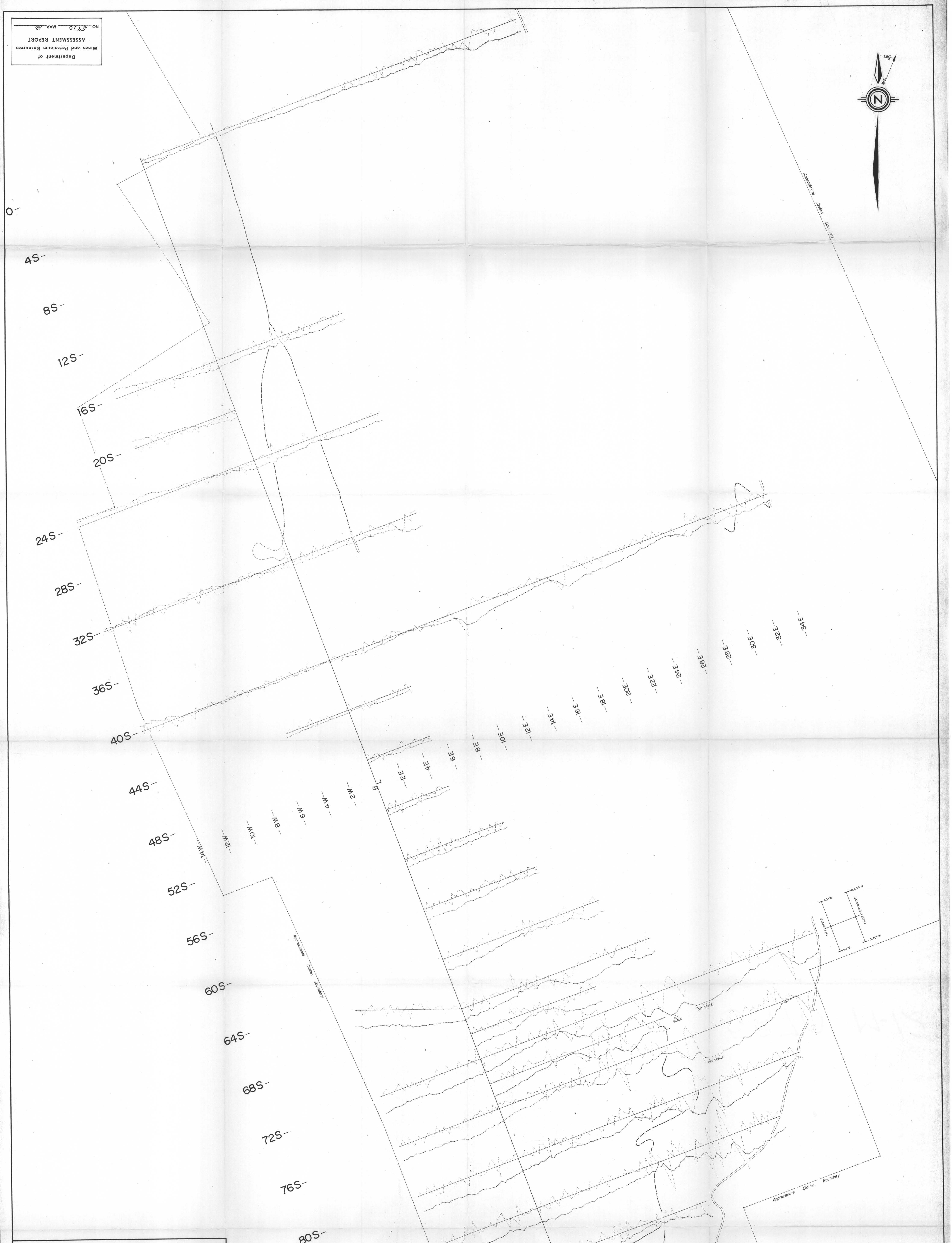
FIGURE 11

VLF-EM FIRST DERIVATIVE DATA.

(IN DEGREES PER FOOT)

POSITIVE VALUES
NEGATIVE VALUES

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. R. COCHRANE



Longbar Minerals Limited

Hope Group Project
New Westminster Mining Division
British Columbia 92H/6 E. & W.

0 100 200 400 800 FT.
1" = 200' 1:2400
0 50 100 200 m

Cochrane Consultants Limited
4882 Delta Street — Delta B.C.

To accompany a report by D. R. COCHRANE, P. Eng., on the "Hope Group" dated May 28, 1976. *Drawn by B.A.C.*
Profiles plotted by M. L., October 1975.
Revisions:

FIGURE 12

VLF-EM TILT ANGLE & FIRST DERIVATIVE PROFILES

TILT ANGLE (IN DEGREES)
FIRST DERIV. (IN DEGREES PER FOOT)
SEE LINE 72 S. FOR VERTICAL SCALES

PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, D. R. COCHRANE

5870 M-12

Longbar Minerals Limited

Hope Group Project
New Westminster Mining Division
British Columbia 92H/6 E. & W.

0 100 200 400 800 FT.
1" = 200' 1:2400
0 50 100 200 m

Cochrane Consultants Limited
4882 Delta Street — Delta B.C.

To accompany a report by D. R. COCHRANE, P. Eng., on the "Hope Group" dated
Base map from Company "Physical Features Map" — Drawn by M.L. November 1975
Drawn by B.A.C.
Revisions:

FIGURE 13
PROSPECTORS ORIENTATION MAP

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA D. R. COCHRANE

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5870 MAP 14
N
MAG
AURUM MINE
HOPE
LADNER
GROUP
SLATES
LEASE
M - 35
MAFIC COMPLEX
HOZAMEEN FAULT SYSTEM
ADIT
EMANCIPATION MINE
ADIT
APPROXIMATE CLAIMS BOUNDARY
LADNER CREEK ROAD
C.P. RAIL (ABANDONED)
COQUIHALLA (PIPELINE) ROAD
BL
0
4 S
8 S
12 S
16 S
20 S
24 S
32 S
36 S
40 S
44 S
48 S
52 S
56 S
60 S
64 S
68 S
72 S
76 S
80 S
84 S
88 S
92 S
96 S
100 S
30 E
35
10 E
10 E
10 E
35 E
45
75
80
63
LEGEND:
27 NEGATIVE VALUE
LINE CUT & FLAGGED
TRAIL
4 WHEEL DRIVE
2 WHEEL DRIVE
VLF - EM CONDUCTOR
GEOCHEMICAL ANOMALY (GOLD)
GEOPHYSICALLY INTERPRETED FAULTS
MAGNETIC LINEAR
Longbar Minerals Limited
Hope Group Project
New Westminster Mining Division
British Columbia 92H/6E.& W.
0 500 1000 2000 FEET
1" = 500'
1:6000
0 10 20 30 40 50 60 METRES
To accompany a report by D. R. COCHRANE, P. Eng., on the "Hope Group" dated May 28, 1976.
Base map traced from Company map drawn Nov/74, A.R.B.
Drawn Apr/76, B.A.C.
Revisions: May/76
FIGURE 14
COMPILATION MAP
PROFESSIONAL PROVINCE OF D. R. COCHRANE BRITISH COLUMBIA ENGINEER
Cochrane Consultants Limited
4882 Delta Street Delta B.C.
5870 M-14