

GEOLOGICAL, GEOPHYSICAL, GEOCHEMICAL  
EVALUATION REPORT

on part of

THE LIKELY PROJECT

CARIBOO MINING DIVISION  
NTS 93A/11W, 12E

Latitude 52°29'; Longitude 121°36'

OWNER AND OPERATOR:  
CAROLIN MINES LTD.

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

11,658

by

Paul W. Richardson, Ph.D., P.Eng.

Field Work Completed July 1-4, 1983

Vancouver, B.C.

September 30, 1983



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## SUMMARY

A large claim group in the Cariboo placer area near Likely, B.C. is being investigated for local bedrock gold deposits. Geological, geophysical and geochemical work has demonstrated that gold soil anomalies occur in areas with geology and geophysical response similar to those of known gold deposits in the vicinity. Bulldozer trenching in 1982 demonstrated that the overburden in the area is, in general, deeper than first realized, and an examination was made of part of the claims, Group 4, to determine the best means of exploration to use next. It is recommended that the soil geochemical anomalies be investigated with short percussion drill or diamond drill holes rather than bulldozer trenches. At a later date, areas of interest where the overburden is relatively shallow can be investigated with a backhoe.

### I. INTRODUCTION

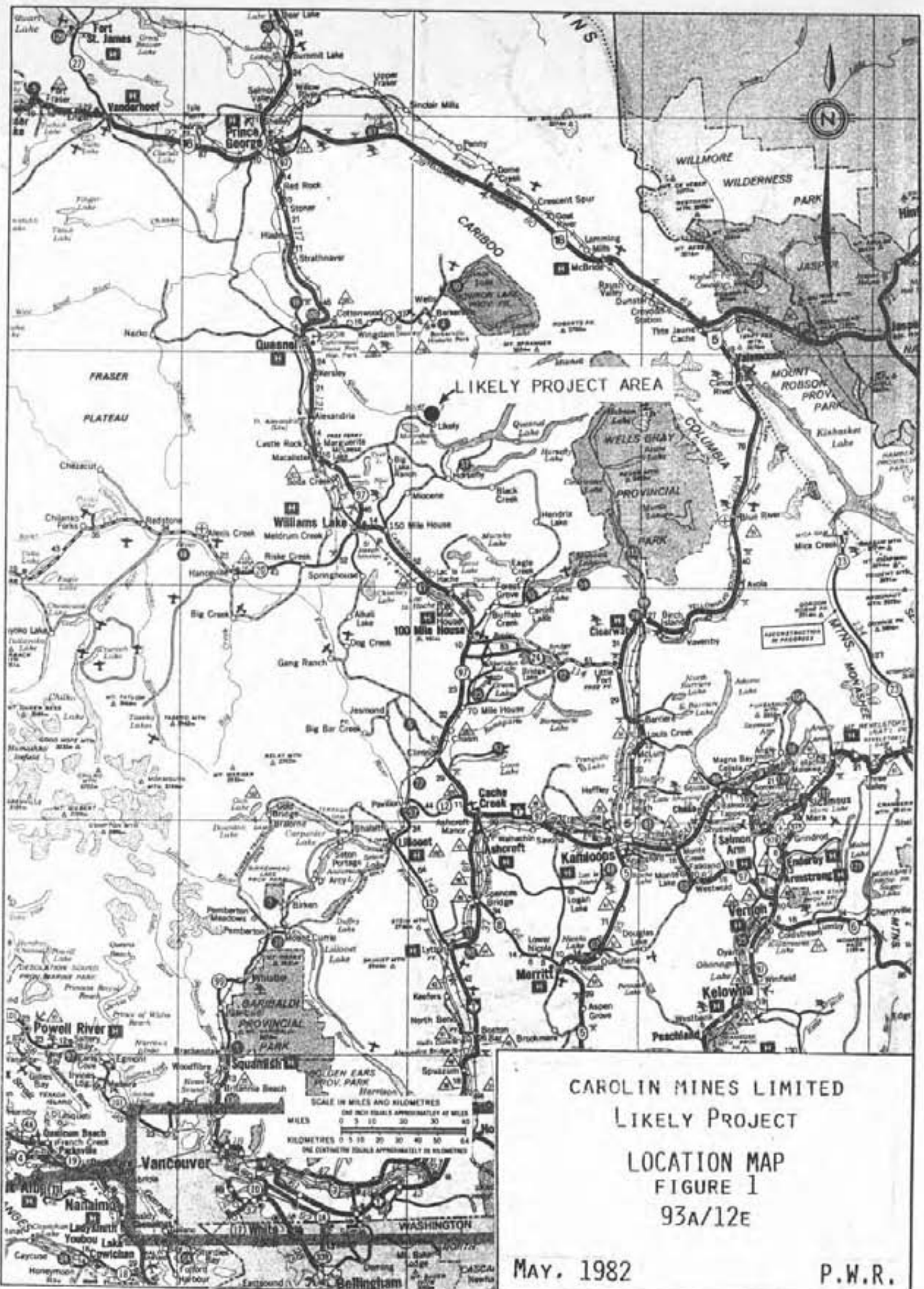
The Likely Project is made up of 394 units in an area of gold placer workings near Likely, B.C. (Figure 1). The claims were optioned and staked on the premise that local bedrock gold deposits were the sources of the placer gold. Added encouragement was received when Dome Mines Ltd. announced the discovery of a gold deposit 6 km west of the Likely Project in 1981. The Cariboo Bell copper-gold porphyry deposit is 8 km southwest of the Property.

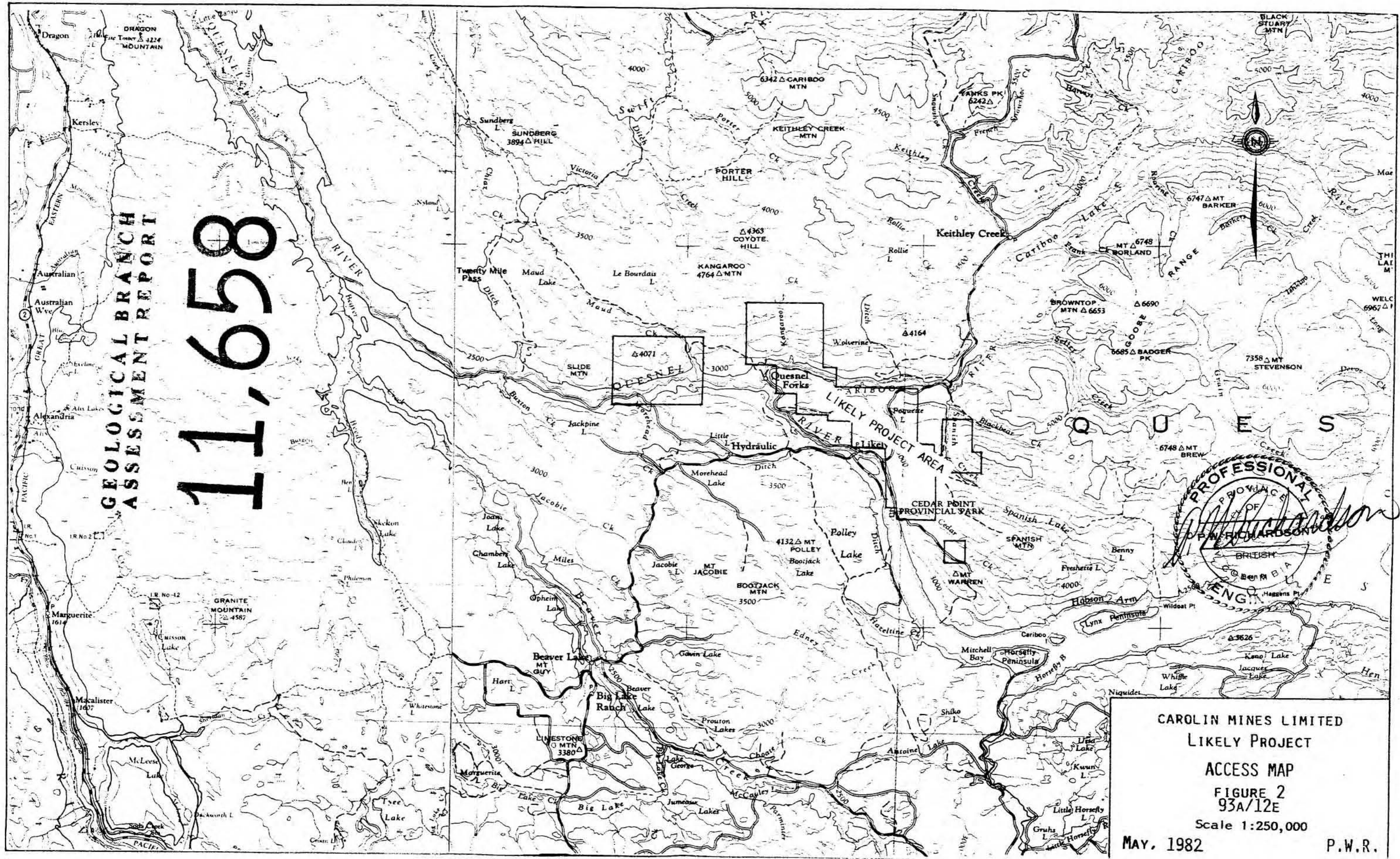
An airborne magnetometer and electromagnetometer survey was conducted in February, 1981, and several anomalous areas were found. Field examination of the areas of the anomalies, line cutting and geochemical soil sampling were done. A modest trenching and drilling programme was done to begin investigation of the geochemical anomalies, but in most cases the trenches did not reach bedrock, and the single drill hole had 6.4 metres of casing. It was decided that, before a larger programme was mounted, it would be necessary to study the distribution and depth of overburden in order to determine the best approach to future exploration on the Property. In order to do this, roads on Group 4 were traversed, many old overburden trenches were examined, areas with soils anomalous in gold were visited and an area of outcrop with altered and mineralized basalt was mapped.

## II. LOCATION AND ACCESS

The Property is immediately east of the towns of Likely and Quesnel Forks, and lies from Spanish and Quesnel lakes in the south to the flank of Kangaroo Mountain in the North(Figure 2). Most of the claims are south of the Cariboo River and northeast of the Quesnel River.

The area is accessible from Highway 97 at 150 mile House by 75 km of all-weather gravel road to Likely (Figure 1). All-weather roads lead from Likely to Quesnel Forks and Keithley Creek through





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CAROLIN MINES LIMITED  
 LIKELY PROJECT  
 ACCESS MAP  
 FIGURE 2  
 93A/12E  
 Scale 1:250,000  
 MAY, 1982 P.W.R.

the central portion of the Property. Numerous logging roads, which vary from good two-wheel-drive roads to overgrown walking paths, provide ready access to most of the property.

Elevations vary from 604 m at the Quesnel River to 1500 m on the March 1 Claim (Figure 3).

### III. CLAIMS AND CLAIM GROUPS

The Likely Project consists of 28 modified grid claims, two 2-post claims and one fractional claim totalling 394 units which are owned by Carolin Mines Ltd. The claims have been grouped into four groups for applying assessment work. This report describes work carried out on Group 4 (Figure 3). The pertinent claim data are as follows:

#### GROUP 4

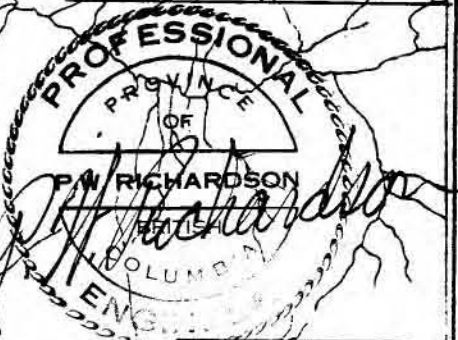
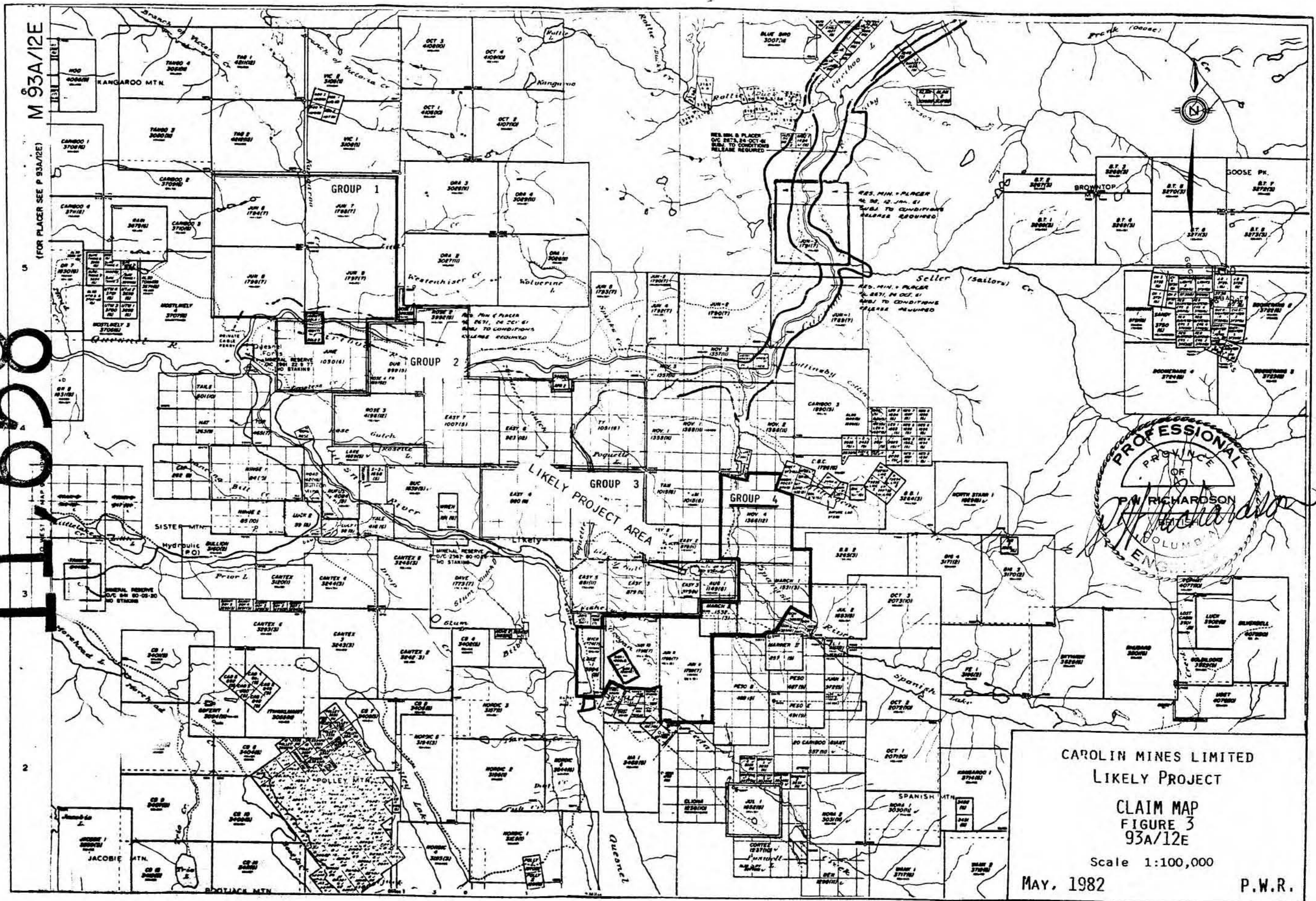
<u>Claim Name</u>	<u>Record Number</u>	<u>Units</u>	<u>Date Recorded</u>	<u>Expiry Date*</u>
Nov 4	1366	20	Dec. 6, 1979	Dec. 6, 1983
March 1	1531	20	March 17, 1980	March 17, 1984
March 2	1532	4	March 17, 1980	March 17, 1984
Jun 11	1799	18	July 7, 1980	July 7, 1984
Jun 10	1798	18	July 7, 1980	July 7, 1984
Lake 1	3994	<u>8</u>	Aug. 24, 1981	Aug. 24, 1984

88 units total

\* Expiry dates after the assessment work applied for in this report is credited.

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CAROLIN MINES LIMITED  
LIKELY PROJECT  
CLAIM MAP  
FIGURE 3  
93A/12E  
Scale 1:100,000  
May, 1982 P.W.R.



#### IV. HISTORY

The first gold discovery in the Cariboo was in mid 1859 on the Horsefly River about 20 km south of the Likely Project area. By late 1859, numerous miners were working shallow placer deposits on gravel bars around the junction of the Cariboo and Quesnel rivers. Subsequent discoveries of richer placer deposits at Keithley Creek in 1860 and then the bonanza of Williams Creek in 1861 attracted a stampede of men through the area.

Quesnel Forks townsite was surveyed by the Royal Engineers in 1861, and remained the main supply centre for the Cariboo until 1865 when the Cariboo Wagon Road was completed via Quesnel and Lightning Creek.

Recent exploration in the region has resulted in the discoveries of the Cariboo Bell porphyry copper-gold deposit on Mount Polley in 1960 and the Dome Mines Limited Quesnel River gold deposit in 1976 between lower Maud Creek and Slide Mountain. A significant proportion of the gold in the placer deposits in the Likely Area probably originated from similar types of bedrock mineralization.

The claims on which the Likely Project is based were assembled between 1979 and 1982 by Carolin Mines Ltd. and Aquarius Resources Ltd. Initial work by these companies was a helicopter-borne magnetic and electromagnetic survey. In 1981, Carolin purchased Aquarius' interest in the project

and continued exploring the Property. In November 1981, a soil geochemical programme was designed to investigate the three areas of anomalous response outlined by the airborne survey. Numerous isolated high gold-in-soil geochemical values were found throughout these grid areas. A broad area of slightly anomalous gold-in-soil associated with high arsenic occurs in one area.

In 1982, nine bulldozer trenches were dug and one 11.9 metre diamond drill hole was drilled in areas of anomalous soils. In most cases, bedrock was not reached by the trenches. There were 6.4 metres of casing in the drill hole.

#### V. GEOLOGY

The Property is on the eastern boundary of the Quesnel Trough which, in this area, consists of Upper Triassic, coarse-grained augite and augite-olivine basalt and monolithologic autobreccia with minor greywacke and fossiliferous mudstone and conglomerate. A profound regional fault that can be traced over 100 km to the north occurs along the NE edge of the Property. Within the Property there are three discrete magnetic anomalies, the southern two of which have associated dioritic rocks. The copper-gold mineralization at the Cariboo Bell and the gold mineralization at Dome's Quesnel River Property are both related to dioritic intrusions. Propylitized basalt float has been found in the vicinity of the northernmost magnetic

anomaly which lies on Group 2, which lies north of the area dealt with in this report.

#### VI. GEOCHEMISTRY

A total of 300 soil samples was collected on the South Grid which is partly on Group 4, the area which is the subject of this investigation. The soil sampling was done in the vicinity of magnetic anomalies found by the airborne survey. All samples were analysed for Au, Ag, As, Cu, Zn, Pb, Mo, Ni, Co, Sb and W. There is little variation in Mo, Sb and W values throughout the South Grid (Figure 4). A few anomalous Au readings occur in the area being reviewed. These are often coincidental with As, Ag and Cu anomalous readings.

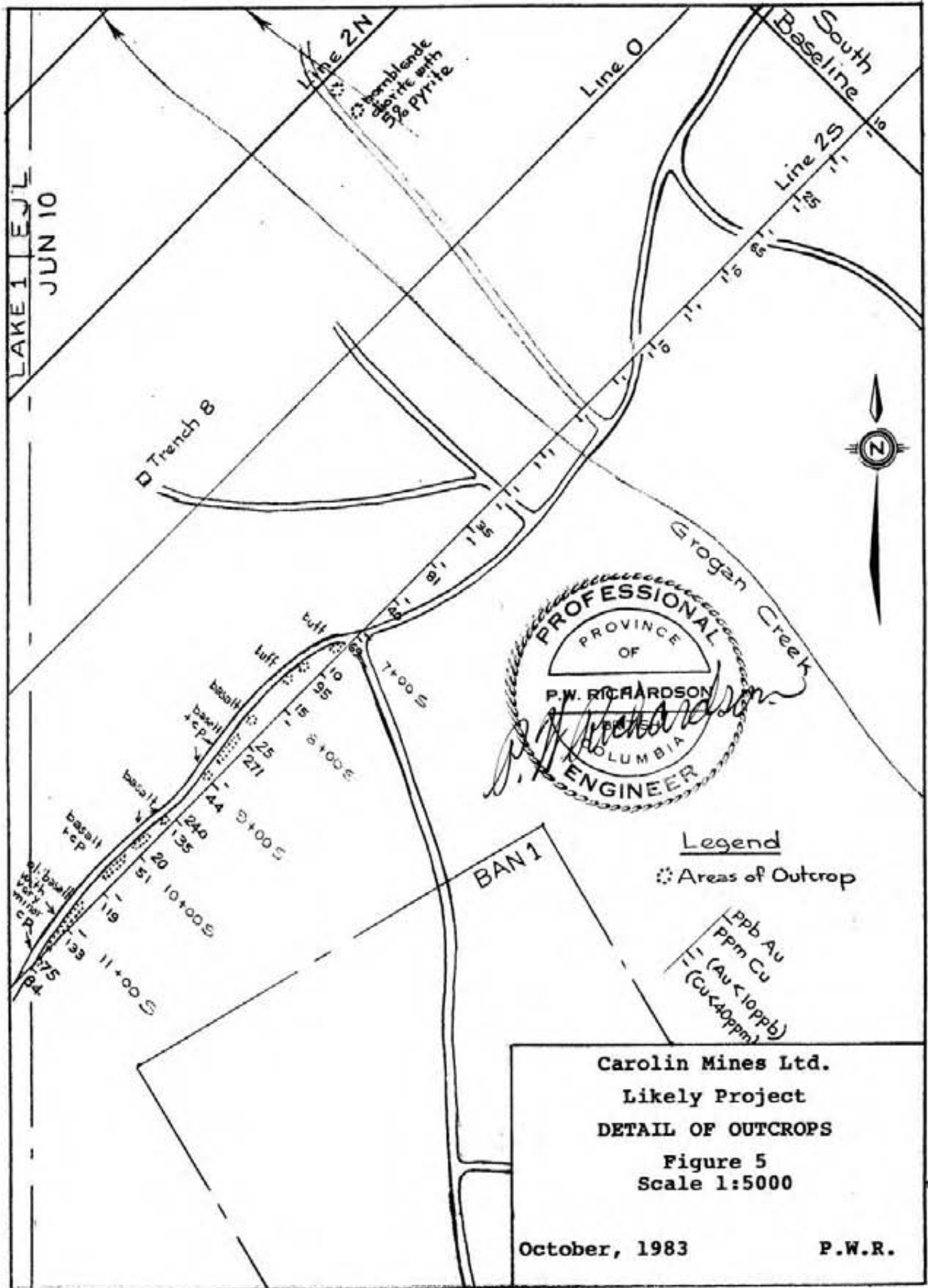
#### VII. FIELD EVALUATION

The object of the field evaluation was to determine, using the geochemical and geological maps done previously, how further exploration money could be spent best. It was apparent that the overburden was deeper than originally expected because the 1982 bulldozer programme failed to reach bedrock in six of nine trenches, and the one diamond drill hole had 6.4 metres of casing.

It was decided to do reconnaissance road traverses where possible on Group IV, to note all areas of outcrop and to try to determine whether overburden is thin or, if the area is an old river terrace, is too thick for the effective use of geochemistry

or bulldozing. To this end, road traverses were carried out, geochemical anomalies were examined and all outcrops were mapped (Figure 4). The only area of extensive outcrop is on the road along the western end of Line 2S. This area of outcrop was mapped, and was found to have significant amounts of chalcopyrite in the basalts, which were bleached and altered in places (Figure 5).

There is very little outcrop in the flat parts of the area lying between the Quesnel and Cariboo rivers.



## VIII. CONCLUSIONS

The overburden in most of the area requiring investigation is too deep to be trenched using a bulldozer.

Examination of the surface features in the vicinity of the soil geochemical anomalies, especially those that are multi-elemental, and in the general vicinity of rocks which are altered, pyritized and near magnetic anomalies that are spacially related to known areas of diorite, require further investigation.

## IX. RECOMMENDATIONS

In order to investigate the geochemical anomalies, it is recommended that a series of short holes be drilled using either a percussion drill or a diamond drill, depending on availability and costs.

In any areas where the overburden appears to be shallow and a trench might be dug, a backhoe rather than a bulldozer should be used for trenching because the overburden has been found to be deeper than expected.

The areas of outcrop on the road lying along Line 2S from 7+00W to 11+50W should be sampled in detail, and the samples assayed for gold, silver and copper.

X. STATEMENT OF COSTS

The programme was carried out in the period  
July 1 - 4, 1983.

P.W. Richardson, 4 days @ \$500/day	\$2,000.00
Room and board	157.80
Truck rental, 1,319 km @ \$0.35/km	<u>461.65</u>
	<u>\$2,619.45</u>



## XI.

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Parsnip River British Columbia Sheet 93; Geological Survey of Canada Map 1424A, Scale 1:1,000,000 Map plus correlation chart.

STATEMENT OF AUTHOR'S QUALIFICATIONSP.W. Richardson, Ph.D., P.Eng.

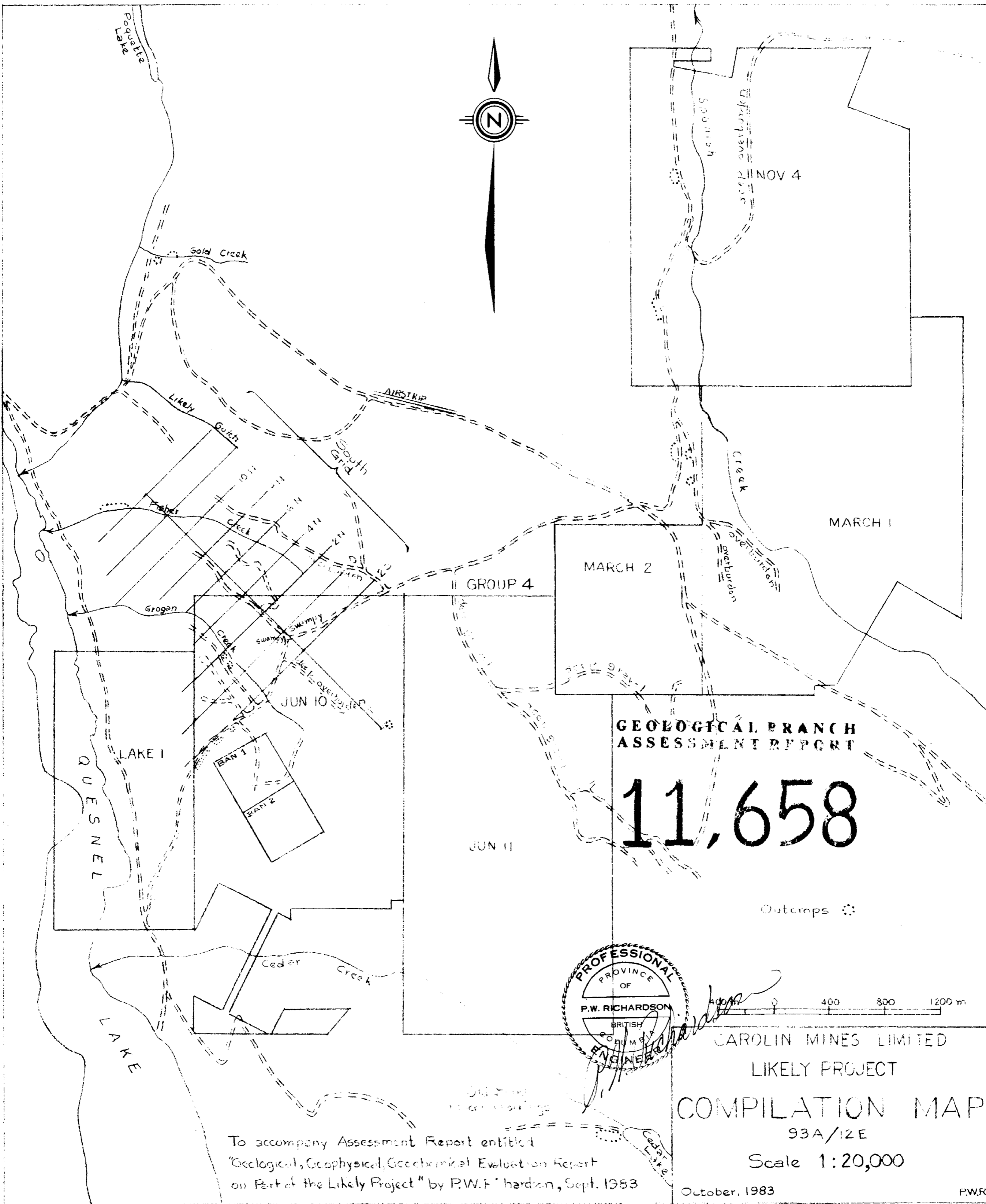
B.A.Sc.(1949), M.A.Sc.(1950) from the University of British Columbia in Geological Engineering.

Ph.D.(1955) from Massachusetts Institute of Technology in Economic Geology and Geochemistry.

- 1950-52: Mine Geologist at Sullivan Mine, B.C.
- 1955-66: Exploration Geologist with Dome Exploration (Canada) Limited, Toronto.
- 1966-68: Exploration Geologist with Amax Exploration Limited, Vancouver.
- 1968-78: Vancouver Manager for Newconex Canadian Exploration Ltd.
- 1978 -  
Jan.31/81: Principal of Richardson Geological Consulting Ltd.
- Feb.1/81 -  
Present: Vice-President, Exploration of Carolin Mines Ltd.

I have had an interest in and have practised exploration geochemistry from 1953 to the present time. In addition, I have supervised numerous trenching and drilling programmes from 1949 to the present time.

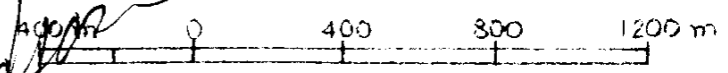
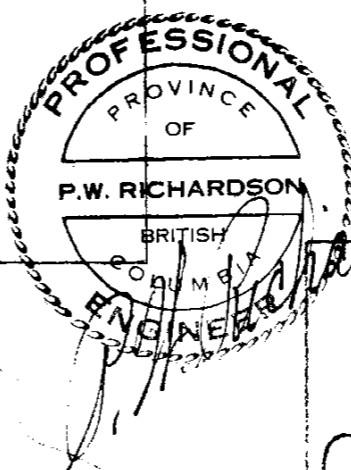




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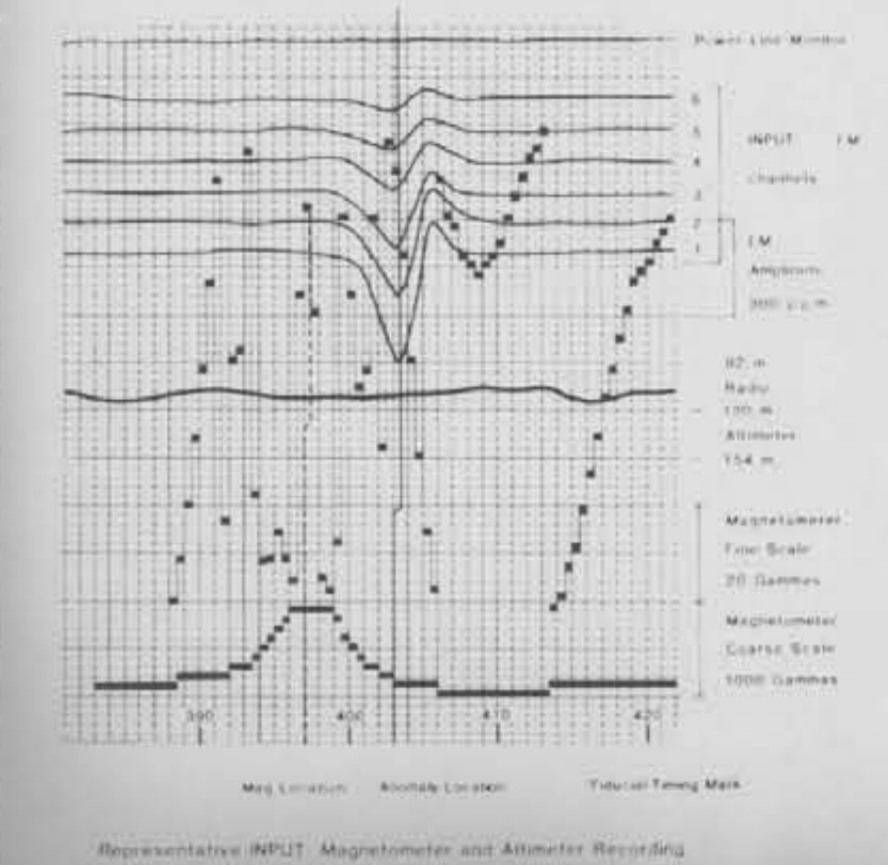
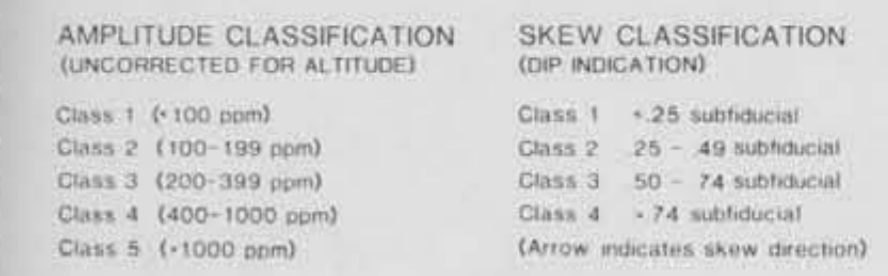
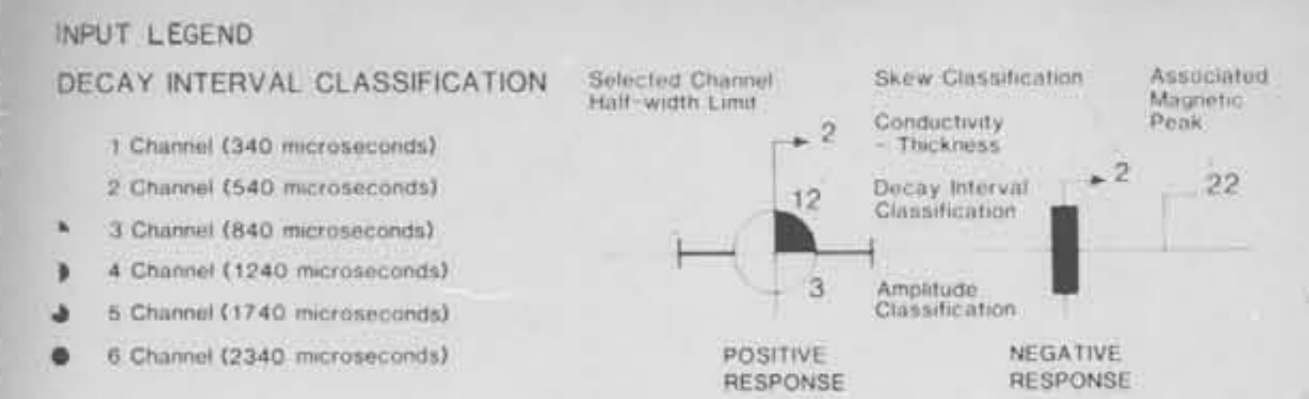
Outcrops ☉



CAROLIN MINES LIMITED  
 LIKELY PROJECT  
**COMPILATION MAP**  
 93A/12E  
 Scale 1:20,000  
 October, 1983

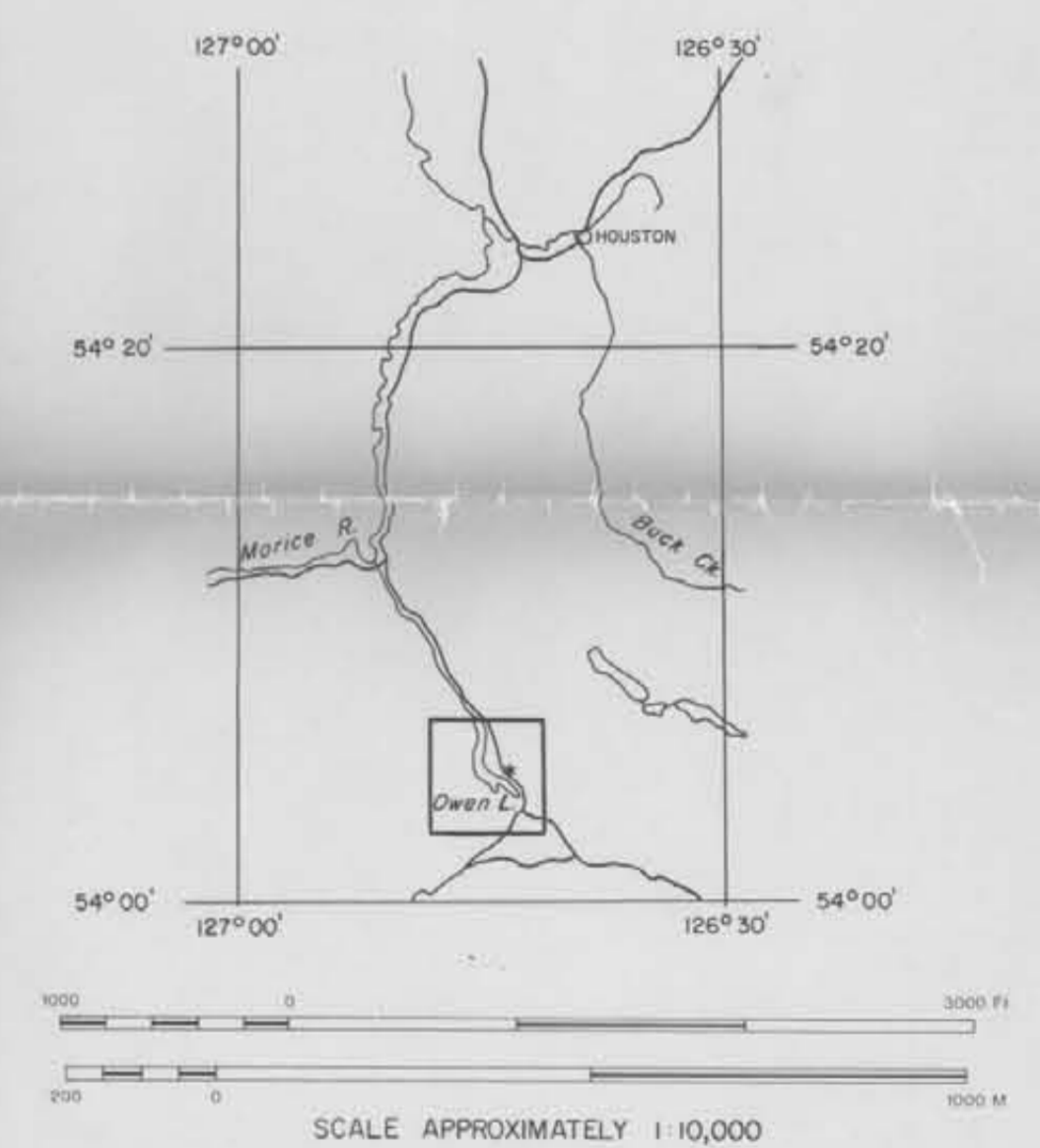
To accompany Assessment Report entitled  
 "Geological, Geophysical, Geochemical Evaluation Report  
 on Part of the Likely Project" by P.W. Richardson, Sept. 1983

P.W.R.



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ASSESSMENT REPORT**

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**HELICOPTER MK VI INPUT<sup>®</sup> SURVEY  
NADINA TEST AREA**

FLOWN	JUNE, 1982	DRAWN BY	C. J.
COMPLETED	AUGUST, 1982	SHEET N <sup>o</sup>	1 of 1
CHECKED	B. D.	FILE N <sup>o</sup>	NADINA



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