

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,115**

DRILLING AND GEOCHEMICAL SURVEY REPORT

on the **H**

**BJ, CB and POLLEY MINERAL CLAIMS**

**POLLEY MT. AREA - CARIBOO MINING DIVISION**

LATITUDE - 52°33'N  
LONGITUDE - 121°38'W  
N.T.S. - 93A/12E

**OWNER - E & B EXPLORATIONS INC.  
1440 - 800 West Pender Street  
Vancouver, B.C. V6C 2V6**

**RONALD G. SIMPSON, PROJECT GEOLOGIST**

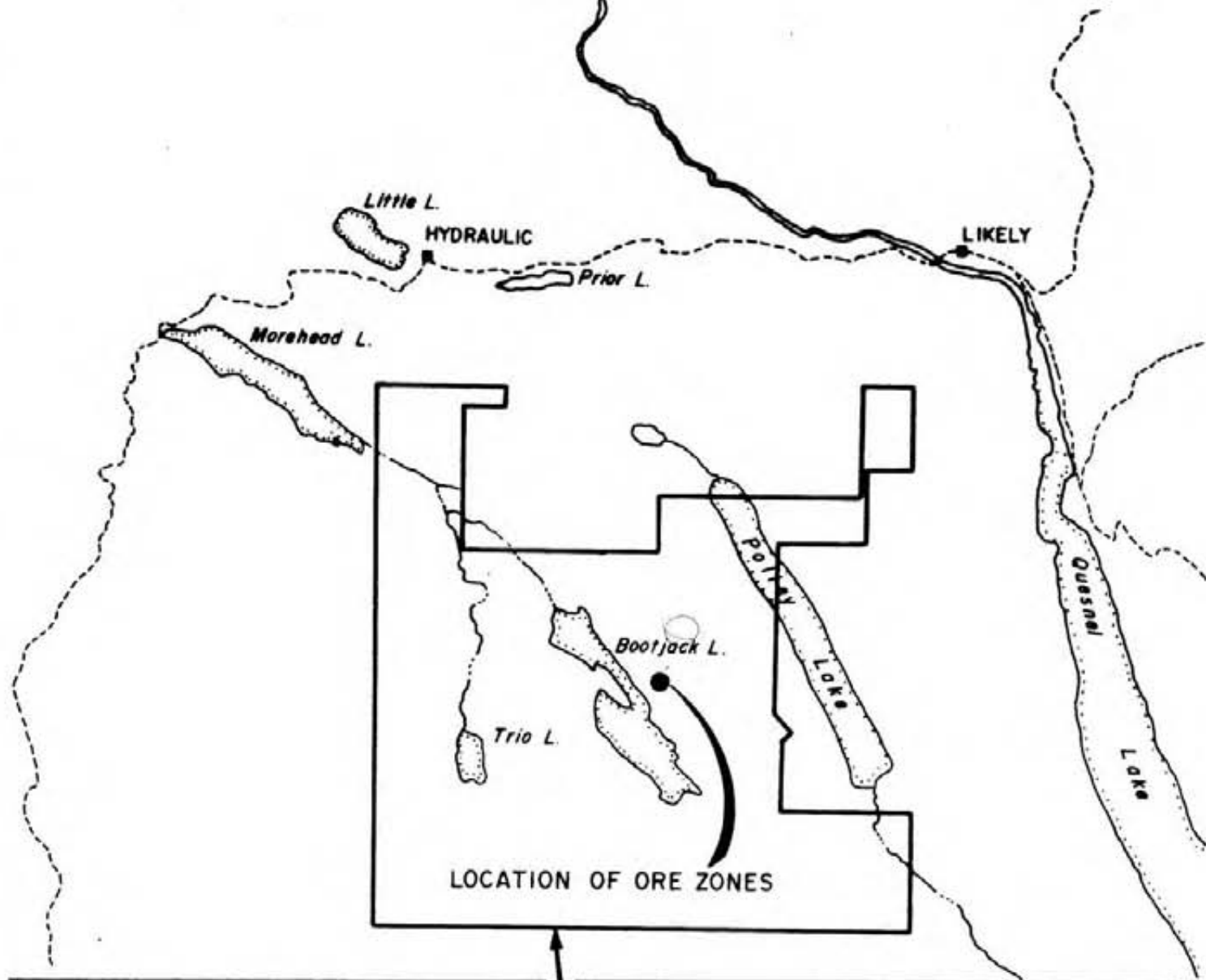
**WORK PERIOD - JUNE 7 to OCTOBER 29, 1982**

**FEBRUARY, 1983**

**Part 1 of 3**

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**CARIBOO-BELL  
PROPERTY**

E B B EXPLORATIONS INC.  
**CARIBOO-BELL PROJECT**  
 CARIBOO MINING DIVISION, B.C.



## SUMMARY AND RECOMMENDATIONS

The Cariboo-Bell project, located 56 km. northeast of Williams Lake, B.C. consists of 103 mineral claims totalling 381 units held by E & B Explorations Inc. Total project expenditures for 1982 will amount to approximately \$900,000 including \$375,000 in acquisition costs. Field exploration costs for the 1982 season total \$438,500.

A total of 5121 meters of combined diamond and rotary/percussion drilling was carried out in 1982. Drilling established the presence of high grade mineralization in parts of the East and West zones and delineated the boundaries of the North zone. Areas to the northwest and south were also explored with positive results.

A recently completed ore reserve update is summarized below.

<u>GEOLOGICAL RESERVES</u>						
(mining criteria not taken into account)						
<u>Equip Cu Cutoff (%)</u>	<u>Zone</u>	<u>Tons (x1000)</u>	<u>Equip Cu (%)</u>	<u>Sulfide Copper (%)</u>	<u>Oxide Copper (%)</u>	<u>Gold (oz/ton)</u>
.30	West	33,738	.59	.35	.10	.011
	North	18,861	.59	.31	.03	.014
	Central & East	<u>46,706</u>	<u>.66</u>	<u>.25</u>	<u>.11</u>	<u>.018</u>
	Total	98,706	.62	.30	.09	.015

$$\text{Equivalent Cu} = \left( \begin{array}{c} (.85 \times \text{CuS}) + (.30 \times \text{CuO}) + 32.25 (.75 \times \text{Au}) \\ (\%) \qquad \qquad \qquad (\%) \qquad \qquad \qquad (\text{oz/ton}) \end{array} \right)$$

Recommended work in 1983 includes; metallurgical testing to better establish copper oxide recovery from flotation; further drilling to find the limits of the East zone and to follow up on intersections in the southern area; and further investigation of untested geophysical anomalies.

SECTION A - SUMMARY OF WORK

## INTRODUCTION

This report details the work carried in 1982 out by E & B Explorations Inc. on the Cariboo-Bell property located near Quesnel Lake in east central British Columbia.

Cariboo-Bell is classified as a Triassic alkaline porphyry copper deposit. Porphyry type copper-gold mineralization occurs in and around two adjacent breccia zones near the top of a subvolcanic intrusive complex in the four main mineralized zones. Established geological reserves total 98.7 million tons grading 0.39% Cu and 0.50 grams per tonne Au (0.015 oz/ton).

The objectives of the 1982 exploration program were to continue the upgrading of ore reserves by better defining the limits of the known zones, and to explore areas of interest to the northwest and to the south.

Work completed included seventeen diamond drill holes totalling 3585 meters and eleven rotary/percussion holes totalling 1536 meters. Geologic mapping and soil geochemical sampling was carried out in areas south and northwest of the main zones and several trenches were sampled. A series of aerial photographs were also taken.

Access roads and site construction was carried out by L. Trehearne Construction of Williams Lake, B.C. using a Fiat-Allis HD 21-B bulldozer with ripper. The same contractor was also employed to construct an extension to the core storage shed.

## CLAIM STATUS

The property consists of 103 mineral claims totalling 381 units. In addition, 23 placer claims are located between Bootjack and Polley Lakes. Claim details are summarized as follows:

<u>Claim Name</u>	<u>No. of Units</u>	<u>Record No.</u>	<u>Recording Date</u>	<u>Expiry Date</u>
BJ 1-27	27	28639-665K	13 Aug 64	13 Aug 92
BJ 43	1	28978M	15 Sep 64	15 Sep 92
BJ 45	1	28980M	15 Sep 64	15 Sep 92
BJ 47	1	28982M	15 Sep 64	15 Sep 92
BJ 49-60	12	28984-995M	15 Sep 64	15 Sep 92
BJ 63,64	2	28996,997M	15 Sep 64	15 Sep 92
BJ 69	1	29002M	15 Sep 64	15 Sep 92
BJ 113-126	14	29046-059M	15 Sep 64	15 Sep 92
BJ 130	1	29063M	15 Aug 64	15 Sep 92
BJ 132	1	29065M	15 Aug 64	15 Sep 92
Bootjack #1 Fr.	1	29851G	02 Jun 65	02 Jun 92
Bootjack #2 Fr.	1	29852G	02 Jun 65	02 Jun 92
BJ 144	1	31175P	12 Nov 65	12 Nov 92
BJ 146	1	31177P	12 Nov 65	12 Nov 92
BJ 148	1	31179P	12 Nov 65	12 Nov 92
Polley 3-22	20	3330-49(4)	09 Apr 81	09 Apr 83

<u>Claim Name</u>	<u>No. of Units</u>	<u>Record No.</u>	<u>Recording Date</u>	<u>Expiry Date</u>
CB 1	20	3401 (5)	4 May 81	4 May 83
CB 4	8	3402 (5)	4 May 81	4 May 86
CB 5	20	3403 (5)	4 May 81	4 May 83
CB 6	15	3404 (5)	4 May 81	4 May 86
CB 7	20	3405 (5)	4 May 81	4 May 86
CB 8	8	3406 (5)	4 May 81	4 May 86
CB 9	20	3407 (5)	4 May 81	4 May 83
CB 10	20	3408 (5)	4 May 81	4 May 86
CB 11	4	3409 (5)	4 May 81	4 May 86
CB 13	20	3410 (5)	4 May 81	4 May 83
CB 14	20	3411 (5)	4 May 81	4 May 85
CB 15	20	3412 (5)	4 May 81	4 May 85
CB 16	20	3413 (5)	4 May 81	4 May 86
CB 17	20	3414 (5)	4 May 81	4 May 83
CB 18	20	3415 (5)	4 May 81	4 May 83
CB 19	20	3416 (5)	4 May 81	4 May 83
CB 20	20	3417 (5)	4 May 81	4 May 83

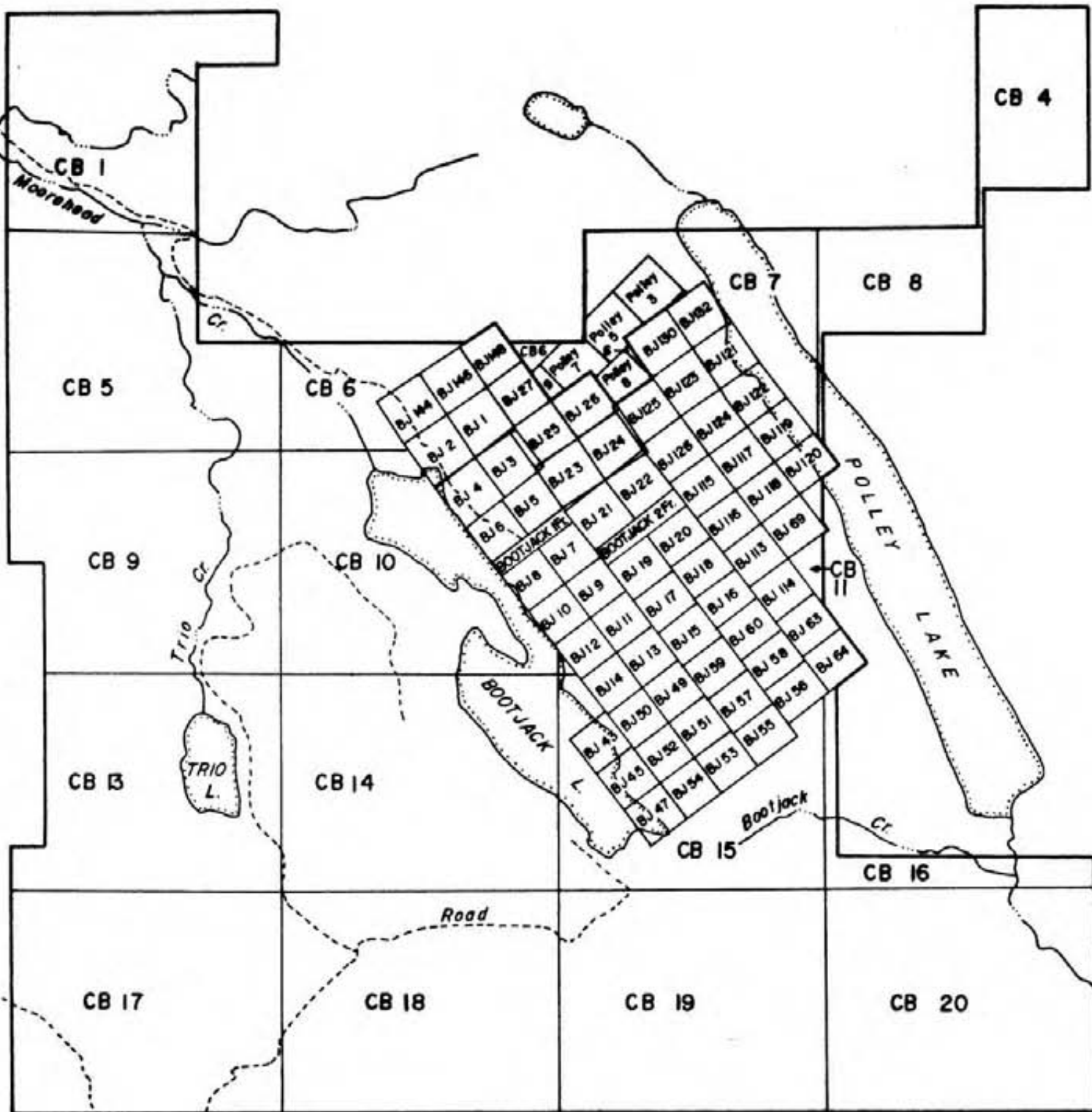
#### LOCATION AND ACCESS

The Cariboo Bell deposit is located 56 km northeast of Williams Lake in the Cariboo Mining division of east-central British Columbia. Access is obtained via 90 kilometres of all-weather road from Highway 97 at 150 Mile House. An access road into the property leaves the Williams Lake - Likely road 1.5 km past Morehead Lake. The nearest settlement is the town of Likely located at the head of Quesnel Lake, 8 km to the northwest.

#### TOPOGRAPHY AND PHYSICAL ENVIRONMENT

The Cariboo Bell deposit underlies the west side of Polley Mountain between Bootjack and Polley Lakes. Elevations in the vicinity range from 915 to 1260 metres.





E & B EXPLORATIONS INC.  
 CARIBOO - BELL PROJECT  
**CLAIM PLAN**  
 CARIBOO MINING DIVISION, BRITISH COLUMBIA  
 CB-82-2

The area is fairly heavily timbered with spruce, balsam, cedar and fir. The cedar is best developed in the southern and northern parts of the claim group. Since 1975 the area has been subjected to extensive logging and up to the present time over half of the property has been cleared. Heavy secondary growth has obscured many old roads and trenches while logging has obliterated old claim and survey lines.

## HISTORY

The Cariboo Bell deposit was initially staked in 1964 by Mastodon-Highland Bell Mines Ltd. in partnership with Leitch Gold Mines Ltd. after copper oxides were discovered at the site of a prominent aeromagnetic anomaly.

Early exploration consisted of bulldozer trenching along with geochemical and magnetometer surveys. Results from this initial work led to the formation of a new company, Cariboo-Bell Copper Mines Limited, which began drilling in 1966 and was joined subsequently by a consortium of Japanese companies which later withdrew owing to metallurgical difficulties presented by the degree of oxidation of the deposit. In 1977, Highland Crow Resources Ltd. acquired control of Cariboo Bell Copper Mines Ltd.

Between 1966 and 1970, 18,341 meters of diamond drilling and 7257 meters of percussion drilling were completed.

Geophysical surveys including aeromagnetics, seismic and induced polarization were carried out in 1970. An additional 3102 meters of percussion drilling were completed between 1972 and 1979.

E & B Explorations Inc. began work on the property in 1981 under an option agreement with Highland-Crow Resources Ltd. Exploration carried out by E & B in 1981 included 1747 meters of diamond drilling, 1295 meters of rotary drilling, a soil geochemical survey and a ground control survey.

Under a purchase agreement dated August 31, 1982, E & B Explorations Inc. acquired 100% interest in and title to the Cariboo-Bell property.

## GEOLOGY

### Geologic Mapping

Mapping of the southern area was carried out by S. Wilkinson on a scale of 1:6000. Rock exposure was found to be poor and several cat trenches were dug in order to gain additional information. Two diamond drill hole, S-82-252 and 253 were collared in this area and several ore samples were sent to Vancouver Petrographics Ltd. for thin section study.

The most widespread unit is the diorite-andesite. In hand specimen it is fine grained, dark blue-grey to grey-green and may contain relic phenocrysts up to 5mm in diameter. In thin section, the rocks are seen to be highly altered and often recrystallized, volcanic and subvolcanic rocks of latite-andesite composition. Plagioclase laths have been largely altered to fine grained clay. Pervasive K-spar alteration is usually present replacing the groundmass. Vein alteration consists mainly of K-spar and pyrophyllite but may also include calcite, analcite, epidote and chlorite. These rocks appear to be a finer grained equivalent of the syenodiorite but may also include recrystallized tuffaceous volcanics.

Numerous monzonitic sills and dykes intrude the sequence. Some appear to correspond to the three monzonite porphyry phases recognized to the north while others exhibit different, non-porphyrific textures and are classified as M<sub>1</sub>.

Screens of green altered tuffaceous volcanics and breccias are common in the baseline vicinity. Where measurable, bedding strikes northwest and dips 50° to 60° northeast. Metasomatism of some calcic tuffs has resulted in the formation of a garnet diopside skarn intersected near the bottom of drill hole S-82-252.

A major fault zone closely parallels the old baseline from 16S to 48S. A trench crossing the fault has exposed shattered rock over a width exceeding 50 metres.

Several outcrops of intrusion breccia occurs in the vicinity of the fault zone but their orientation and extent is undetermined. Some appear to be related to the Mount Polley breccia as they contain fragments of M<sub>3</sub>.

The geology of the southern area is shown on Map CB-82-4 in section E.

### Regional Geology

The deposit is centrally located in the Quesnel Trough, a narrow strip of early Mesozoic volcanic-sedimentary rocks lying along the eastern edge of the Intermontane Belt.

The alkalic complex which hosts the deposit intrudes a sequence of upper Triassic volcanoclastics and flows which form a proximal volcanic assemblage trending northwestward and dipping northeast. The lower unit comprises of submarine flows of green angite trachybasalts with associated pillow breccia and aquagene tuff. Succeeding strata consists of purple and maroon polymictic volcanic breccia and analcite trachybasalt flows that have been subaerially deposited.

Green crystal and lapilli tuffs form screens within the intrusive complex and extend in a broad apron to the northwest and east indicating airfall deposition at an eruptive center. The polymictic volcanic breccias incorporate fragments of this material and probably represent lahar deposits further downslope.

### Property Geology and Rock Types

The Cariboo-Bell intrusive complex is a tilted multiple laccolith of alkalic composition underlying approximately 25 km<sup>2</sup> between Trio and Polley Lakes. Six distinctive lithologic phases have been recognized, occurring primarily as sill-like lenses concordant with the northeast-dipping host volcanic strata. The one exception to this is an intrusive

breccia pipe plunging steeply westward. A K-Ar date of  $184 \pm 7$  m.a. has been obtained from the upper part of the laccolith.

The two lower most lenses lie southwest of Bootjack Lake and are both composed of coarse grained, pseudoleucite syenite. They are differentiated primarily on the basis of mafic content, the southernmost (lower) lens containing 15 to 25% mafics and the overlying syenite less than 5%. The contact between the two is sharp with two narrow screens of crystal tuff present locally. The relative age of the pseudoleucite syenite is undetermined.

The upper part of the laccolith lies between Bootjack and Polley Lakes and is typified by fine grained porphyritic textures, breccia zones, dykes and screens of country rock indicating high level, subvolcanic emplacement. All rock types contain augite as the main mafic mineral and none contain quartz or feldspathoids. Magnetite content is generally between 4 and 7%. The relative age of the upper intrusive units has been established from oldest to youngest as syenodiorite, monzonite porphyry, intrusive breccia and pyroxenite-gabbro.

Syenodiorite forms a broad lens lying along the east side of Bootjack Lake and a second smaller lens lying 500 metres further east between two major breccia zones. Its older relative age is indicated by the presence of large rafted syenodiorite inclusions within monzonite porphyry beyond the breccia zones. The rock is dark grey, fine to medium grained and may exhibit weak foliation. Mafic content is approximately 20%.

Monzonite porphyry forms the eastern most lens of the laccolith and may range in texture from fine grained syenite to coarse grained porphyritic monzonite. The rock is typically buff to pink with 30 to 40% subparallel plagioclase laths in a finer grained matrix of K-feldspar, plagioclase and biotite. Mirolitic cavities, often filled with prehnite and zeolites, are common.

Several bodies of intrusion breccia occur at or near the contact of the monzonite porphyry complex and the syenodiorite. The breccia bodies which host the Central, North and West ore zones contain fragments of syenodiorite, monzonite porphyry and volcanics in a pink, fine grained syenite matrix. The easternmost breccia body and several smaller zones to the south contain monzonite porphyry, volcanic and later stage dyke fragments in a sanidine monzonite porphyry matrix indicating a younger relative age.

Pyroxenite-gabbro is a coarse grained rock known only from a diamond drill hole inclined beneath Bootjack Lake and several shallow percussion holes on the east shore.

Two late stage monzonite porphyry dyke phases are recognized in the upper part of the intrusive complex. One is a crowded plagioclase porphyry referred to as M<sub>2</sub> which forms narrow dykes in and adjacent to the intrusion breccias. The second type, designated M<sub>3</sub>, contains prominent euhedral sanidine phenocrysts up to 2 cm. in length along with plagioclase, augite and apatite phenocrysts in a fine grained matrix of K-feldspar and plagioclase. M<sub>3</sub> occurs as irregular bodies as well as dykes and is also found as fragments in the breccia zone underlying Polley Mtn.

Augite lamprophyre dykes are the youngest intrusive phase of the complex and occur in a northeast trending swarm originating from the pyroxenite-gabbro body. They tend to follow faults and zones of weakness within the breccia and monzonite porphyry and are rarely found within the more massive syenodiorite.

#### Rock Alteration

A roughly concentric pattern of rock alteration is developed in the upper part of of the laccolith and consist of a central potassic zone, an intermediate garnet-epidote zone and a peripheral epidote zone. Later stage alteration minerals including zeolites, calcite and chlorite, occur throughout the complex but are most abundant in the potassic zone. Moderately intense sericitic and argillic alteration of feldspars is present throughout the upper part of the laccolith.

A zone of intense potassic alteration encompasses the mineralized breccias and is characterized by a K-feldspar-biotite-diopside assemblage. The alteration minerals occur as disseminated patches in veinlets and drusy cavities. A combination of K-feldspathization and fine grained hematite imparts an intense salmon-pink colour to the rocks.

The garnet-epidote zone is poorly defined but appears to surround the central potassic zone and extend northeastward. The zone is typified by a brown garnet which occurs in minor amounts as disseminations and in veinlets with carbonate, epidote, chlorite, zeolite and prehnite.

The peripheral epidote zone may contain up to 5% epidote in disseminations and veinlets and extends to the outer boundary of the monzonite porphyry.

Skarn zones have been developed in calcic tuffs and commonly contain pale green garnet, diopside and epidote. The skarn exposed on surface in the East Zone contains up to 50% magnetite.

#### Mineralization

Copper-gold mineralization is concentrated in two intrusive breccia bodies and a zone of crackle brecciation in monzonite porphyry and volcanic tuff. Grade is directly proportional to the degree of superimposed crackle brecciation. The West zone occupies the core of the west breccia pipe and extends to a drilled depth of 275 m. The Central and North zones are contained in an eastward dipping, sill-like intrusion breccia body. They have sharp boundaries against the underlying syenodiorite but grade into weakly mineralized breccia and monzonite downdip and to the east. The East zone is hosted by crackle brecciated monzonite porphyry and calcic tuff which has been partially altered to magnetite-garnet-diopside skarn.

The main stage of copper-gold mineralization accompanied crackle brecciation and K-feldspathization which occurred following emplacement of the main monzonite porphyry phase and during formation of the host intrusion breccia. The M<sub>2</sub> and M<sub>3</sub> dyke phases along with the Mt. Polley breccia are essentially post mineral.

Hypogene minerals in the ore zones consist of magnetite and chalcopyrite with minor pyrite, pyrrhotite and bornite. These occur as fine grained disseminations and in fractures and cavities. Gold is present in native form as microscopic inclusions in chalcopyrite.

Secondary copper minerals predominate near surface and account for 20% of the copper contained in the four zones. Chrysocolla and malachite are dominant with minor amounts of native copper, cuprite, azurite, chalcocite, digenite and covellite.

A pyritic halo lies east of and structurally above the ore zones and widens to the south. Intrusive rocks in this area contain up to 6% pyrite while screens of altered volcanic rock tend to contain pyrrhotite. The boundary between the pyrite halo and the east edge of the Central and North ore zones is gradational.

#### AERIAL PHOTOGRAPHY

A series of N-S lines were flown on September 17, 1982 and photos taken at scale of 1:10,000 and 1:20,000. The contractor was Pacific Survey Corporation.

#### SOIL GEOCHEMICAL SURVEY

The primary purpose of the 1982 soil geochemical survey was to fill in gaps left in the old survey grid and to test for Au as well as Cu content of the soil. Two widely separated areas were concentrated on: the southern area near the old baseline from lines 24S to 52S; and an area northwest of the main deposits from lines 46N to 56N. A total of 273 samples were collected and analysed for Cu and Au (and in some cases, As). Sample locations are shown on map CB-82-5.

Copper analyses from samples in the southern area generally corresponded to previously outlined anomalies while Au values tended to be low.



High Au-Cu anomalies were obtained to the northwest but subsequent investigations revealed the presence of thick boulder till in this area which is immediately "down ice" from the West Zone. Mineralized float boulders are quite common in this vicinity.

<u>E-W Line</u>	<u>Sample Locations</u>	<u>No. of Samples</u>	<u>Analysis</u>
24S	0 - 20W	21	Cu, Au, As
28S	0 - 25E	26	Cu, Au, As
	0 - 20W	19	Cu, Au
32S	3W - 24W	21	Cu, Au
33S	0 - 1W	2	Cu, Au
36S	0 - 24W	24	Cu, Au
40S	0 - 23W	25	Cu, Au
44S	0 - 23W	23	Cu, Au
48S	0 - 24W	25	Cu, Au
52S	0 - 24W	25	Cu, Au
46N	0 - 17E	19	Cu, Au
52N	23W - 42W	22	Cu, Au
56N	23W - 43W	21	Cu, Au
		<u>273</u>	

### TRENCH SAMPLING

Surface sampling was carried out along four separate trenches, two located in the main zones and two situated in the southern area.

Ten chip samples were collected along an east-west trench constructed near drill hole R-81-7. No significant Cu-Au mineralization was present.

Forty-three chip samples, each ten feet in width, were collected consecutively over 430 feet along a trench near line 23S west of the old baseline. The rock type was an intensely sheared monzonite porphyry. Geochemical analysis revealed only one 30 foot zone approaching economic grade from 170 to 200 feet which averaged 363 ppb Au and 367 ppm Cu.

Two 10 foot samples were collected along the trench at 7700N immediately west of drill hole S-1 and averaged .602% Cu: .549% Cuox and .019 oz/T Au.

Thirty-nine consecutive 10 foot chip samples were collected along a trench at 7900N between drill holes S-81-230 and S-81-251 and results are summarized below.

<u>From</u>	<u>To</u>	<u>Width</u>	<u>T Cu%</u>	<u>N.S. Cu %</u>	<u>Fe<sub>2</sub>O<sub>3</sub>%</u>	<u>Au oz/ton</u>
50	170	120	.782	.775	6.26	.022
170	240	20	.801	.716	33.05	.061
240	370	130	.282	.279	24.67	.007

### DIAMOND DRILLING

A diamond drilling program was carried out on the Cariboo-Bell property between June 16 and August 26, 1982. Seventeen NQ drill holes were completed totalling 3585 meters (11,762 feet). The contractor was Rainbow Drilling Co. Ltd. of Merritt, B.C. utilizing a Longyear Super-38 drill rig. Results are summarized in the accompanying table. Locations are plotted on maps CB-82-4 and 6.

#### North Zone

The first eight holes, designated S-82-237 to 244 outlined the boundaries of the North Zone. The interruption between The Central and North ore zones was found to be due to a pipe-like body of M<sub>3</sub> monzonite porphyry and a narrow syenodiorite body which flanks it to the west, both rock types being essentially unmineralized. The contact between the breccia zone and the weakly mineralized syenodiorite lying to the west dips between 65° and 80° eastward and can be either sharp and irregular or gradational over several feet. Two drill holes, S-82-237 and 240 intersected faulted contacts.

High Au:Cu ratios were found in hole S-82-237 but decreased towards the north where the zone pinches out. The pyritic halo lying on the northwest flank of the zone was not found to contain significant Au values.

Drill hole S-240 followed a narrow M<sub>2</sub> monzonite porphyry dyke dipping steeply eastward which contained pyrite mineralization but no significant Cu or Au values.

#### Central Zone

One drill hole, S-82-245, was located in the Central Zone as a fill-in hole. The oxide zone at this point only extends to 90 feet in depth. Au:Cu ratios were found to be considerably higher near the bottom of the hole approximately 600 feet below surface.

#### West Zone

Fill-in drilling of the West Zone was continued with holes S-82-247, 248 and 249. The first hole intersected 640 feet of high grade mineralization grading .53% Cu and .016 oz/T Au. Results from holes S-82-248 and 249 generally confirmed previous interpolations but Au:Cu ratios were found to be quite inconsistent. Drill hole S-82-250 was a northward step-out and intersected low grade oxide copper mineralization for most of its length.

#### East Zone

Two widely spaced holes were drilled to test the East Zone. S-82-246 encountered two mineralized intervals of moderate grade within type 3 monzonite porphyry. Hole S-82-251 located further south intersected a complex section of alternating tuffs volcanic breccias and monzonite porphyries with several ore-grade intervals. From 378 to 392 feet a magnetite-garnet-diopside skarn was penetrated which assayed 2.24% Cu, .070 oz/T Au and contained up to 40% Fe<sub>2</sub>O<sub>3</sub>.

Southern Area

Two exploratory holes were drilled in an area lying 1 km southeast of the main zones to test geophysical anomalies. Hole S-82-252 passed through a complex assemblage of altered and volcanic breccias cut by monzonite porphyry dykes. From 913 to 1133, the rocks consisted mainly of pale garnet diopside skarn. Copper mineralization in the form of chalcopyrite occurred sporadically with one 40 foot intersection grading .265% Cu and .008 oz/T Au. The dominant sulfides were pyrite and pyrrhotite which normally comprised 2 to 3% of the rock. Minor sphalerite was present in the skarn/zone.

Hole S-82-253 encountered weakly pyritized monzonite porphyries and intrusive breccia before passing into diorite/andesite at 591 feet. No significant Cu or Au mineralization was present.



1982 DIAMOND DRILL HOLE INTERSECTIONS

<u>Drill Hole</u>	<u>From</u>	<u>To</u>	<u>Length</u>	<u>Total Cu %</u>	<u>Oxide Cu %</u>	<u>Au oz/ton</u>	<u>Au:Cu X10<sup>-4</sup></u>
S-82-237	4	300	296	.374	.055	.024	2.2
	40	110	70	.602	.080	.054	3.1
S-82-238	100	150	50	.164	.034	.006	1.3
	400	440	40	.291	.035	.010	1.2
S-82-239	4	100	96	.244	.075	.008	1.1
	170	290	120	.225	-	.008	1.2
S-82-240	110	160	50	.379	-	.011	1.0
	210	310	100	.500	-	.014	1.0
S-82-241	No significant intersections						
S-82-242	170	350	180	.300	-	.008	0.9
	410	530	120	.589	-	.017	1.0
S-82-243	210	330	120	.215	-	.004	0.6
	330	470	140	.349	-	.010	1.0
S-82-244	no significant intersections						
S-82-245	30	100	70	.29	.26	.009	1.1
	110	240	130	.29	-	.008	0.9
	370	600	230	.26	-	.008	1.0
	620	801	181	.13	-	.007	1.8
S-82-246	80	250	170	.21	-	.009	1.5
	430	550	120	.17	-	.007	1.4

<u>Drill Hole</u>	<u>From</u>	<u>To</u>	<u>Length</u>	<u>Total Cu %</u>	<u>Oxide Cu %</u>	<u>Au oz/ton</u>	<u>Au:Cu X10<sup>-4</sup></u>
S-82-247	320	440	120	.63	.09	.022	1.2
	440	480	40	1.42	.15	.062	1.5
	480	550	70	.65	.21	.024	1.3
	550	730	180	.47	.07	.010	0.7
	730	960	230	.33	.02	.006	0.6
	960	1198	238	.19	-	.006	1.1
	(320	960	640	.53	.08	.016	1.0)
S-82-248	6	130	124	.37	.29	.008	0.7
	240	520	280	.53	.05	.010	0.7
	600	700	100	.27	.06	.010	1.3
S-82-249	10	140	130	.16	.11	.007	1.5
	140	250	110	.37	.29	.012	1.1
	280	390	110	.24	.24	.006	0.9
	530	770	240	.42	.05	.008	0.7
S-82-250	10	300	290	.29	.26	.008	0.9
S-82-251	40	80	40	.24	.02	.007	1.0
	140	300	160	.29	-	.009	1.1
	340	420	80	.74	.09	.020	0.9
	420	570	150	.16	-	.006	1.3
S-82-252	620	660	40	.265	-	.008	1.0
S-82-253	No significant intersections.						

## ROTARY DRILLING

A program of rotary/percussion drilling was conducted on the Cariboo-Bell property from September 27, 1982 to October 26, 1982. A total of eleven vertical holes were completed totalling 1536 meters (5040 feet). The contractor was Ken's Drilling of Victoria, B.C., utilizing a Schramm T-685 drill rig equipped with down-hole hammer. Drill hole data and mineralized intersections are summarized in the accompanying tables. Hole locations are plotted on maps CB-82-4, 6 and 7.

### Northwest Zone

Drill holes R-82-8, 9 and 10 were located in the northwestern zone where previous percussion drilling in 1977 had intersected significant copper mineralization.

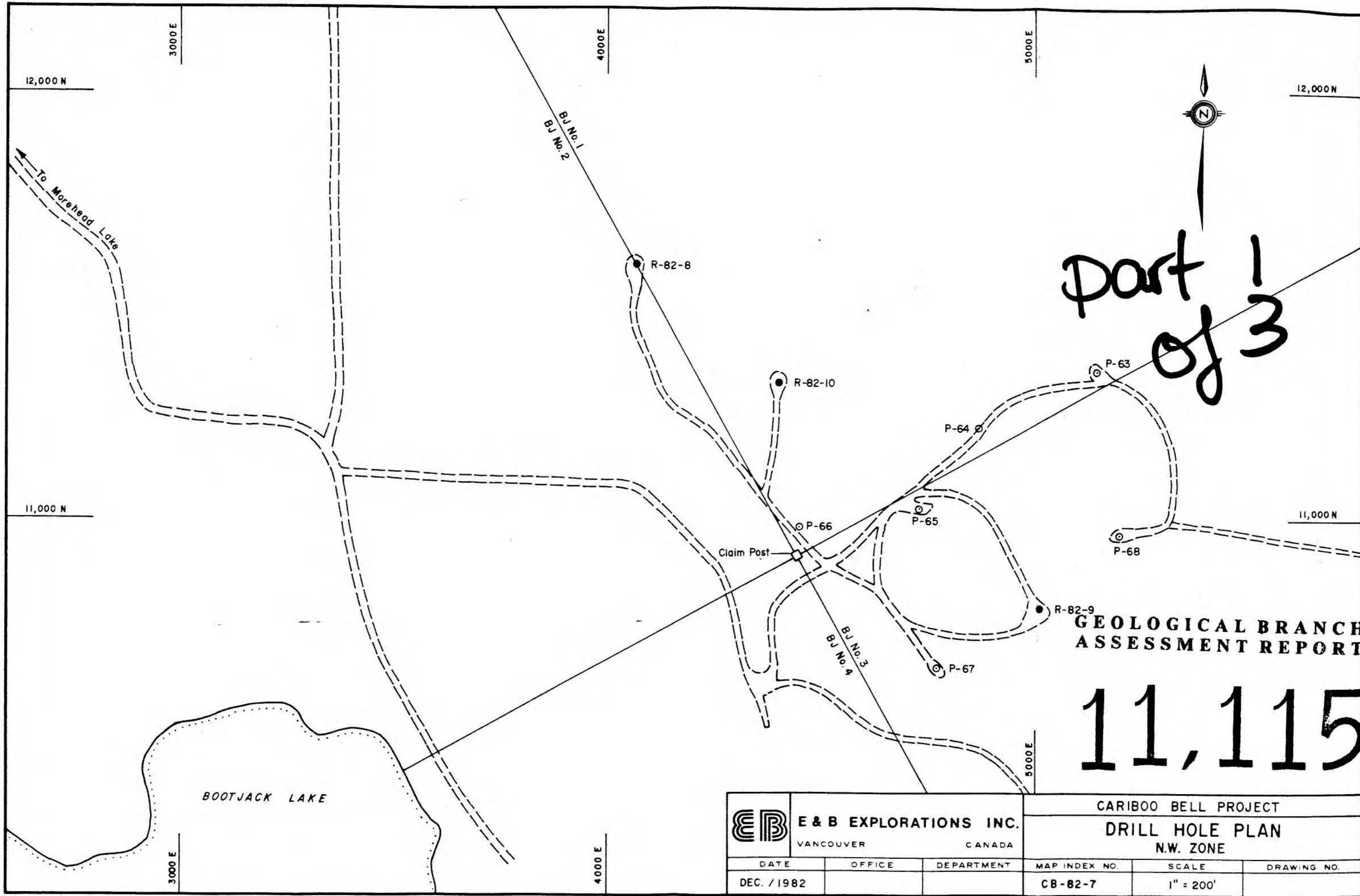
Hole R-82-8, situated 900 feet northwest of percussion hole P-77-65, intersected andesitic volcanics cut by minor monzonite porphyry dykes with no appreciable copper mineralization.

Hole R-82-9, located 400 feet southwest of P-77-65 intersected several mineralized zones within monzonite porphyries and breccias including the last 80 feet from 520 to 600 which graded .26% Cu and .005 oz./T Au.

Hole R-82-10, collared between P-77-65 and R-82-8 again intersected monzonite porphyries and breccias but only the first 30 feet of bedrock contained significant copper mineralization.

Results from the 1982 drilling in the northwest zone show that Au:Cu ratios in the area are considerably lower than those in the ore zones.






part  
of 1  
of 3

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,115**

 <b>E &amp; B EXPLORATIONS INC.</b> VANCOUVER CANADA		<b>CARIBOO BELL PROJECT</b>			
		<b>DRILL HOLE PLAN</b> N.W. ZONE			
DATE	OFFICE	DEPARTMENT	MAP INDEX NO.	SCALE	DRAWING NO.
DEC. / 1982			CB-82-7	1" = 200'	

### Southern Area

Drill holes R-82-13, 14, 15 and 16 were drilled to test an area of soil geochemical and geophysical anomalies east of the old baseline from lines 34S to 42S. Previous percussion drilling in 1972 had intersected anomalous Cu mineralization to depths of 300 feet but the drill cuttings had never been assayed for Au content.

The area of investigation lies some 1,500 metres southeast of the main deposits and is underlain by a volcanic/intrusive complex consisting of andesite/diorite, monzonite porphyry dykes, intrusive breccia zones and various undifferentiated volcanic rocks of andesitic composition (map CB-83-4).

Drill holes R-82-13 and 14 both intersected ore-grade Au-Cu values over respectable widths indicating a mineralized zone which merits further investigation. Oxidation in the immediate area extends to a depth of approximately 60 feet. The rock is highly fractured in this zone.

Holes R-82-15 and 16 intercepted only sporadic Au-Cu mineralization over widths of 10 to 20 feet.

Au:Cu ratios in the southern area were found to be consistently higher than the mean value of the main zones.

### East Zone

Drill holes R-82-11 and 12 were drilled to further test the magnetite skarn zone intersected in DDH 5-82-251 and exposed on surface along trench 7900N.

Hole R-82-11 intersected high grade Cu-Au mineralization in the first 60 feet grading 1.859% Cu and .047 oz/T Au. Ore grade mineralization continued to 300 feet and low grade values were obtained from 300 to 400 feet.

Hole S-82-12 penetrated ore grade mineralization from 0 to 90 feet and from 190 to 290 feet.

Drill holes R-82-17 and 18 were fill-in holes to test the East Zone south of 7900N. Both averaged ore grade mineralization over their entire length. The East Zone remains open to the south.

E & B EXPLORATIONS INC.

DRILL HOLE DATA

Drill Type : Rotary : Schramm T-685  
Project : Cariboo-Bell

Drill Hole No.	Lat. (N)	Dep. (E)	Collar Elev.	Total Depth	Collar Dip
R-82-8	11600	4068	3332	500'	-90°
R-82-9	10795	5017	3498	600'	-90°
R-82-10	11322	4402	3380	550'	-90°
R-82-11	7890	9731	3781	400'	-90°
R-82-12	7885	9856	3787	300'	-90°
R-82-13	4342	13860	3488	500'	-90°
R-82-14	4042	13680	3523	500'	-90°
R-82-15	4072	14200	3450	250'	-90°
R-82-16	4378	12967	3565	500'	-90°
R-82-17	7683	9631	3757	500'	-90°
R-82-18	7459	9811	3745	440'	-90°
TOTAL:				5040'	

1982 ROTARY DRILL HOLE INTERSECTIONS

<u>Drill Hole</u>	<u>From</u>	<u>To</u>	<u>Length</u>	<u>Cu %</u>	<u>Au oz/ton</u>	<u>Au:Cu X10-4</u>	<u>Area</u>
R-82-8	no significant intersections						NW
R-82-9	60	90	30	.342	.002	0.2	NW
	130	160	30	1.043	.008	0.3	
	520	600	80	.260	.005	0.7	
R-82-10	90	120	30	.37	.002	1.9	NW
R-82-11	0	60	60	1.859	.047	0.9	East Zone
	60	300	240	.279	.009	1.1	
	300	400	100	.101	.006	2.0	
	( 0	300	300	.595	.017	1.0	
R-82-12	0	90	90	.362	.009	0.9	East Zone
	90	190	100	.190	.003	0.5	
	190	290	100	.266	.0095	1.2	
R-82-13	0	220	220	.209	.011	1.8	South
	220	270	50	.075	.005	2.3	
	270	330	60	.194	.010	1.8	
	410	480	70	.506	.017	1.2	
R-82-14	230	340	110	.235	.014	2.0	South
	420	500	80	.175	.011	2.2	
R-82-15	120	140	20	.152	.0105	2.4	South
R-82-16	no significant intersections						South
R-82-17	0	140	140	.264	.011	1.4	East Zone
	140	460	320	.129	.007	1.9	
	460	500	40	.311	.017	1.9	
R-82-18	0	110	110	.288	.013	1.6	East Zone
	110	440	330	.174	.005	1.0	

## CONCLUSIONS AND RECOMMENDATIONS

Drilling carried out by E & B on the Cariboo-Bell property during 1982 has served to delineate the boundaries of the North Zone; established the presence of high grade mineralization in part of the East and West zones; and has intersected significant ore grade mineralization in an area to the south.

Current geological reserves in the four main zones using a cutoff grade of 0.30% equivalent Cu, total 98.7 million tons grading 0.39% Cu and 0.50 grams per tonne (0.015 oz/ton) Au.

Recommended work in 1983 includes metallurgical testing to better establish copper oxide recovery from flotation; further drilling to find the limits of the East zone and to follow up on intersections in the southern area; and further investigation of untested geophysical anomalies.

Respectfully Submitted,



R. G. Simpson  
Project Geologist

**STATEMENT OF QUALIFICATIONS  
RONALD G. SIMPSON**

1. Attended the University of British Columbia and graduated in May 1975 with a B.Sc. degree in Geology.
2. Employed by Cominco Ltd. as an exploration geologist from May to October 1975 and was involved in lead-zinc exploration in the Yukon and Northwest Territories.
3. Employed by the Geological Survey of Canada in their Vancouver office from November 1975 to April 1976.
4. Employed by Bethlehem Copper Corporation as a project geologist from April 1976 to March 1981 and has been involved in base and precious metal exploration in the Yukon, Northwest Territories, B.C. and Washington State.
5. Commenced employment with E & B EXPLORATIONS INC. in March 1981 as project geologist assigned to the Cariboo-Bell Project.



SECTION B - STATEMENT OF COSTS



1982 FIELD WORK (JUNE 7 - OCTOBER 29)  
COST SUMMARY

I DIAMOND DRILLING PROGRAM (June 7 - Sept. 3)

Drilling: - 3585 meters NQ core @ \$60.02/meter (Contractor: Rainbow Drilling Ltd.)	\$215,176.53
Laboratory: - 1174 samples for Au,Cu, Cu oxide Min-En Lab. 639 samples @ \$19.88/sample = \$12,701.25 Vangeochem Lab 535 samples @ \$24.00/sample = \$12,839.50	25,540.75
Field Equipment: - core boxes, core racks, sample bags - materials for core storage shed expansion	8,246.10
Accommodation: - Morehead Lake Resort	6,161.24
Transportation: - Vehicle lease fuel and maintenence, air travel freight costs	12,993.84
Site Work:	
catwork 200 hrs. @ \$114/hr.	\$22,800
standby @ \$2500/month	7,500
core shack expansion (labour) 130.5 hr.	2,349
(Contractor: Trehearne Construction)	32,649.00
Field Personnel Salaries	
Geologists: R. Simpson - 78 days	\$11,214.84
S. Wilkinson - 5 days	584.35
Assistants: T. Edwards - 13 days	780.00
D. Oishi - 42 days	2,520.00
R. Nielson - 15 days	1,125.00
	16,224.19
<b>TOTAL</b>	<b>\$316,991.65</b>

DISTRIBUTION

BJ 1 FRACT	\$32,396.55	BJ 19	\$15,374.09
BJ 2 FRACT	33,823.01	BJ 20	8,146.69
BJ 6	20,826.35	BJ 21	31,635.77
BJ 7	29,068.13	BJ 22	79,533.20
BJ 13	19,082.90	BJ 24	16,071.48
BJ 16	31,033.48		

II ROTARY DRILLING PROGRAM (Sept. 7 - Oct. 29)

Drilling: - 1536 meters @ \$33.82/meter  
(Contractor: Ken's Drilling) \$ 51,944.50

Laboratory: - 505 sample assay or geochem analysis  
for Au,Cu, Cu oxide  
Lab: Min-En 9,907.25

Field Equipment: - sample bags etc. 598.36

Accommodation: - Morehead Lake Resort 2,898.02

Transportation: - Vehicle lease  
fuel and maintenence, freight 5,453.14

Site Work:  
catwork 121 hrs. @ \$114/hr. \$13,794  
standby @ \$2500/month 5,000 18,794.00

Field Personnel Salaries  
Geologist : R. Simpson - 53 days \$ 7,620.34  
Assistants: R. Nielson - 23.5 days 1,762.50  
R. Williams - 11 days 825.00 10,207.84

**TOTAL** \$ 99,803.11

DISTRIBUTION

BJ 1 \$20,788.99  
BJ 3 11,886.55  
BJ 19 32,475.93  
BJ 58 24,751.17  
BJ 60 9,900.47

### III SOIL GEOCHEMICAL SURVEY

#### Laboratory:

Vangochem Lab	138 samples	\$ 1,155.90	
Min-En Lab	135 samples	\$ 1,059.75	\$2,215.65

#### Field Personnel Salaries

Geologist :	S. Wilkinson - 2 days	\$ 233.74	
Assistants:	R. Nielson - 11 days	825.00	
	S. Kemp - 5 days	300.00	<u>1,358.74</u>

**TOTAL** \$ 3,574.39

### IV TRENCHING

Site Work: cat 27 hrs @ \$114/hr. \$ 3,078.00  
(Contractor: L. Trehearne)

Laboratory: - 40 assays \$ 1,409.50  
57 geochem analyses 545.00  
(Min-En Lab) 1,954.50

**TOTAL** \$ 5,032.50

### V GEOLOGIC MAPPING

#### Field Personnel Salaries

Geologists:	S. Wilkinson - 49 days	\$ 5,726.63	
	R. Nielson - 8 days	600.00	\$ 6,326.63

Transportation: - vehicle rental, fuel & maintenance 4,051.14

**TOTAL** \$ 10,377.77

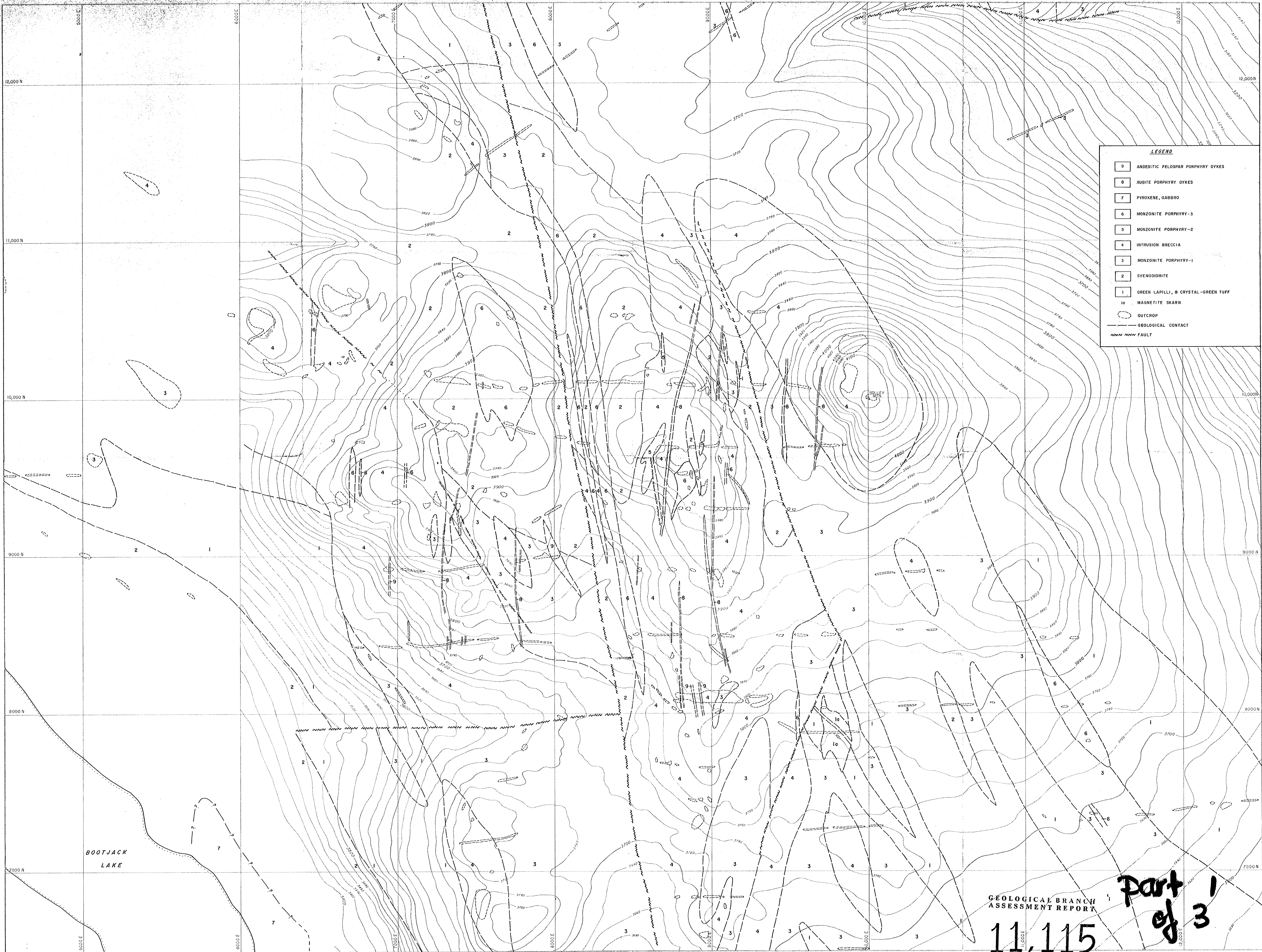
### VI AERIAL PHOTOGRAPHY

(Contractor: Pacific Survey Corp.) \$ 2,722.56

**TOTAL** \$ 2,722.56

**COMBINED TOTAL** \$438,501.98

SECTION E - ILLUSTRATIONS



**LEGEND**

9	ANDESITIC FELDSPAR PORPHYRY DYKES
8	AUGITE PORPHYRY DYKES
7	PYROXENE, GABBRO
6	MONZONITE PORPHYRY-3
5	MONZONITE PORPHYRY-2
4	INTRUSION BRECCIA
3	MONZONITE PORPHYRY-1
2	SYENODIORITE
1	GREEN LAPILLI, & CRYSTAL-GREEN TUFF
1a	MAGNETITE SKARN
○	OUTCROP
---	GEOLOGICAL CONTACT
	FAULT

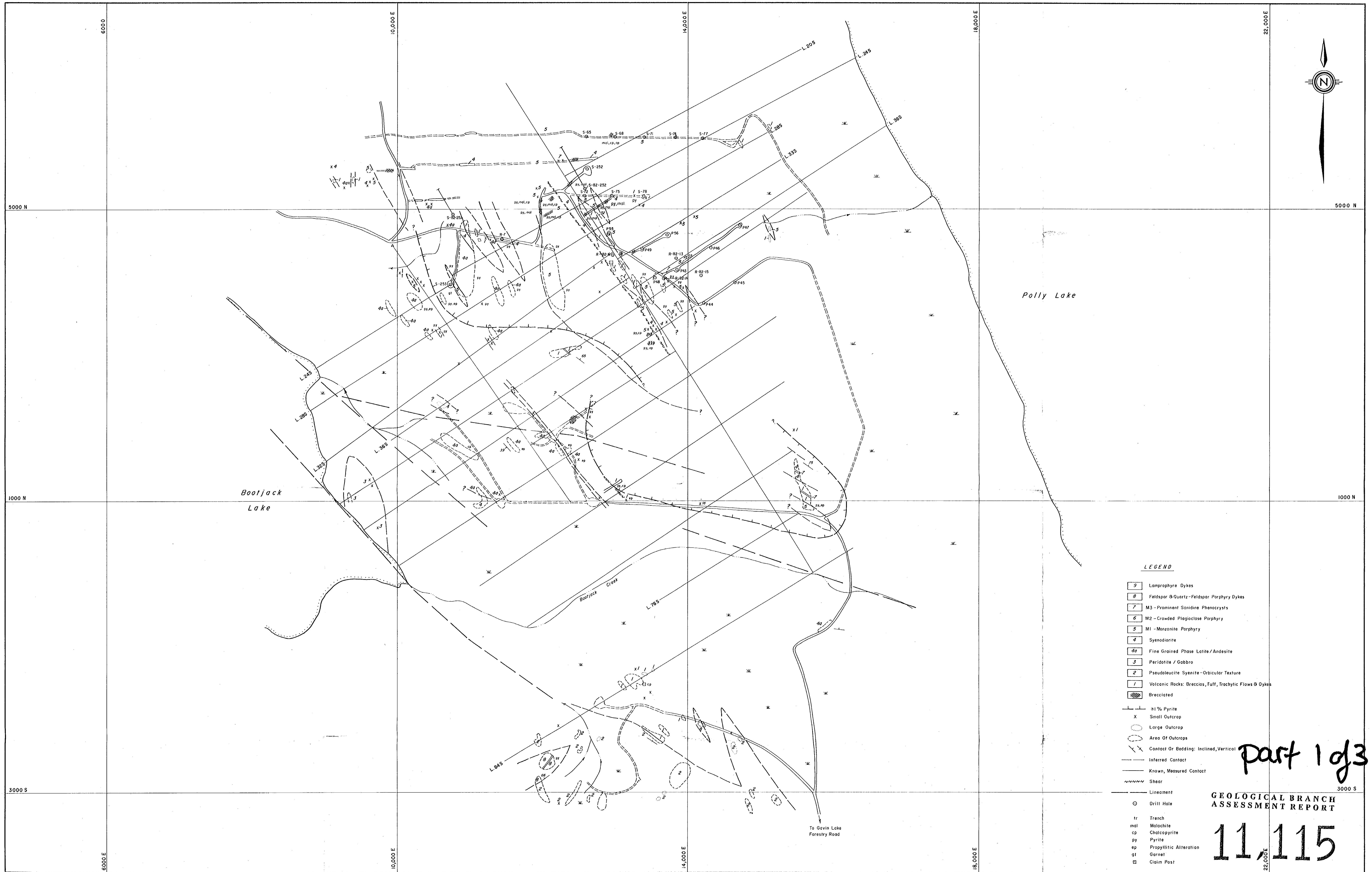
BOOTJACK LAKE

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

11,115

*Part of 3*

MAP SCALE 0 48 96 144m 0 200 400 Ft N.F.S. 93-A/12	No. 1 Date Nov./1992 MADE BY m.s. DESCRIPTION ADD GEOLOGY		CARIBOO BELL PROJECT GEOLOGICAL PLAN	
	DATE May / 1992 DRAWN BY CHECKED APPROVED		OFFICE DEPARTMENT	MAP INDEX NUMBER CB-82-3



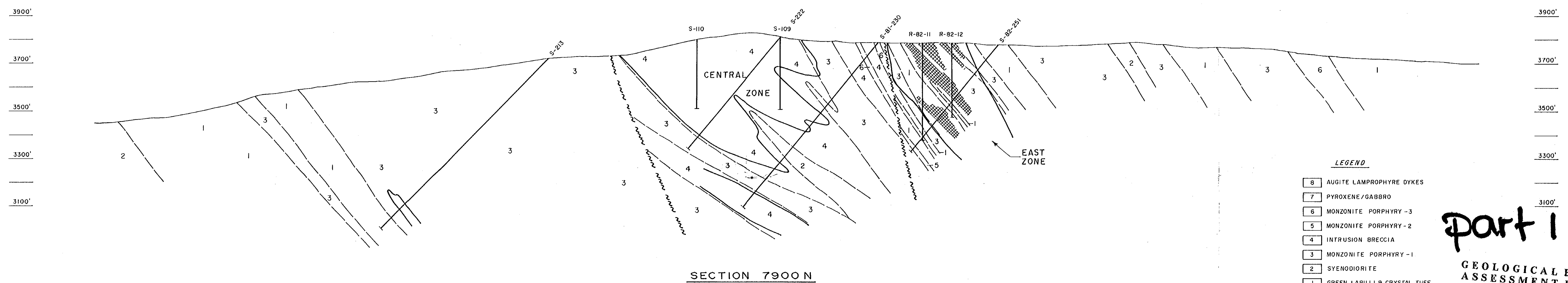
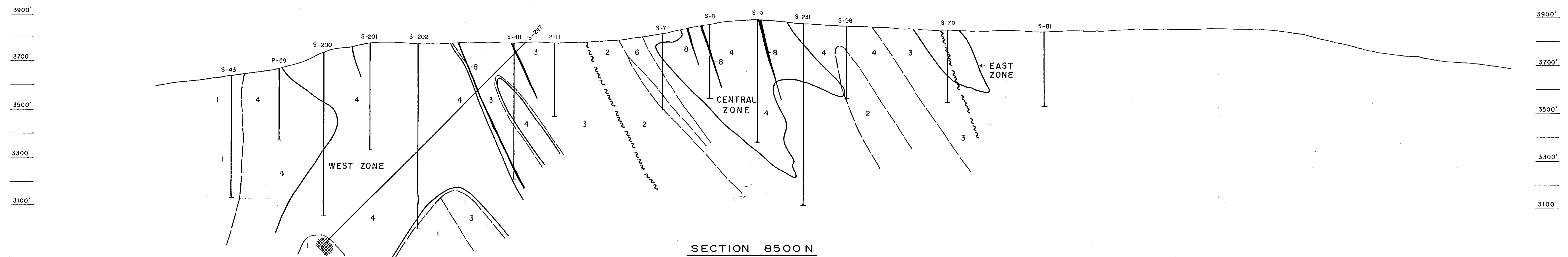
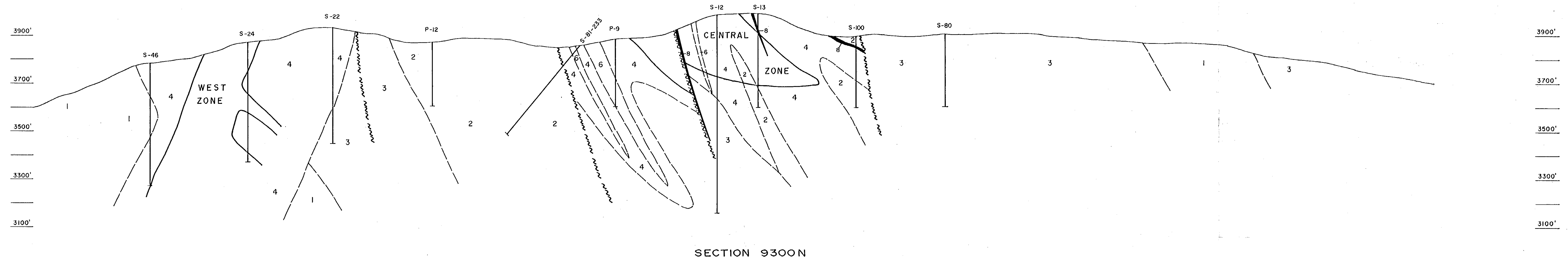
- LEGEND**
- 2 Lamprophyre Dykes
  - 8 Feldspar & Quartz-Feldspar Porphyry Dykes
  - 7 M3 - Prominent Sanidine Phenocrysts
  - 6 M2 - Crowded Plagioclase Porphyry
  - 5 M1 - Monzonite Porphyry
  - 4 Syenodiorite
  - 40 Fine Grained Phase Latite / Andesite
  - 3 Peridotite / Gabbro
  - 2 Pseudotachyte Syenite - Orbicular Texture
  - 1 Volcanic Rocks: Breccias, Tuff, Trachytic Flows & Dykes
  - Braciated
  - 51% Pyrite
  - X Small Outcrop
  - Large Outcrop
  - Area Of Outcrops
  - Contact Or Bedding: Inclined, Vertical
  - Inferred Contact
  - Known, Measured Contact
  - Shear
  - Lineament
  - Drill Hole
  - Tranch
  - mal Malachite
  - cp Chalcopryrite
  - py Pyrite
  - ep Propylitic Alteration
  - gt Garnet
  - Claim Post

part 1 of 3

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,115**

MAP SCALE METRES 0 120 240 360 480 FEET 0 500 1000 1500 N.T.S.	MAP SCALE METRES 0 120 240 360 480 FEET 0 500 1000 1500 N.T.S.	REVISIONS No. Date MADE BY DESCRIPTION 1 2 3	DATE DRAWN BY CHECKED APPROVED Nov. / 1992 m.k.		<b>CARIBOO BELL PROJECT</b> <b>GEOLOGY AND DRILL HOLE LOCATIONS</b> <b>(SOUTHERN AREA)</b>
	OFFICE DEPARTMENT	MAP INDEX NUMBER SCALE DRAWING NUMBER CB-82-4 1" = 500'			

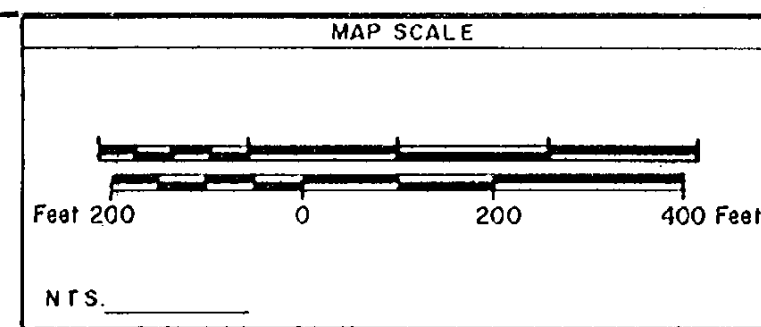


- LEGEND
- 8 AUGITE LAMPROPHYRE DYKES
  - 7 PYROXENE/GABBRO
  - 6 MONZONITE PORPHYRY - 3
  - 5 MONZONITE PORPHYRY - 2
  - 4 INTRUSION BRECCIA
  - 3 MONZONITE PORPHYRY - 1
  - 2 SYENODIORITE
  - 1 GREEN LAPILLI & CRYSTAL TUFF
  - MAGNETITE SKARN
  - GEOLOGICAL CONTACT
  - FAULT
  - DRILL HOLE

part 1 of 3

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

11,115

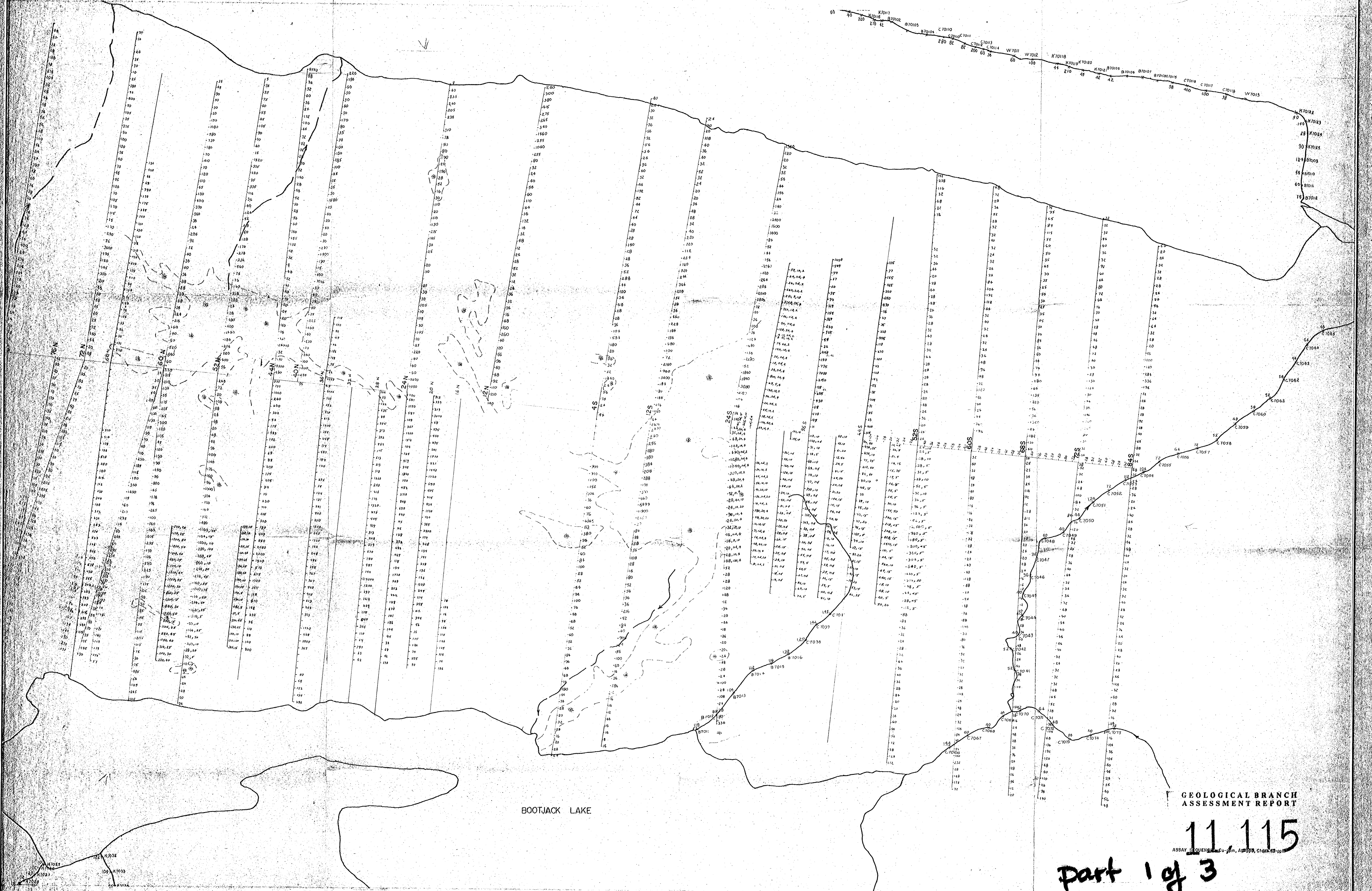
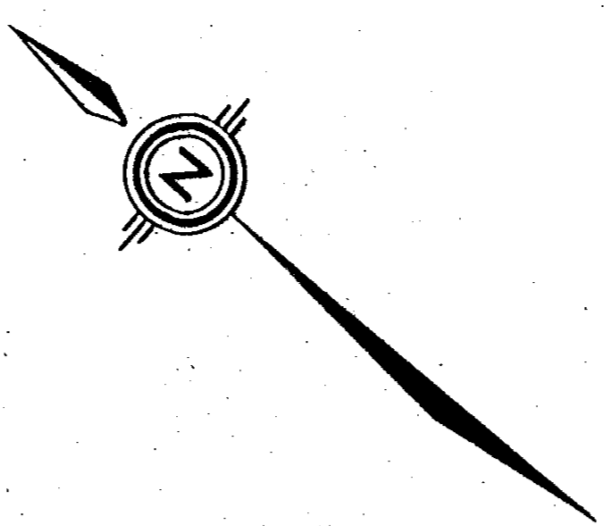


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DEC./1982	m.k.		

**E & B** E & B Explorations Inc.

CARIBOO BELL PROJECT		
GEOLOGICAL SECTIONS		
MAP INDEX NUMBER	SCALE	DRAWING NUMBER
	1" = 200'	



GEOLOGICAL BRANCH  
ASSESSMENT REPORT

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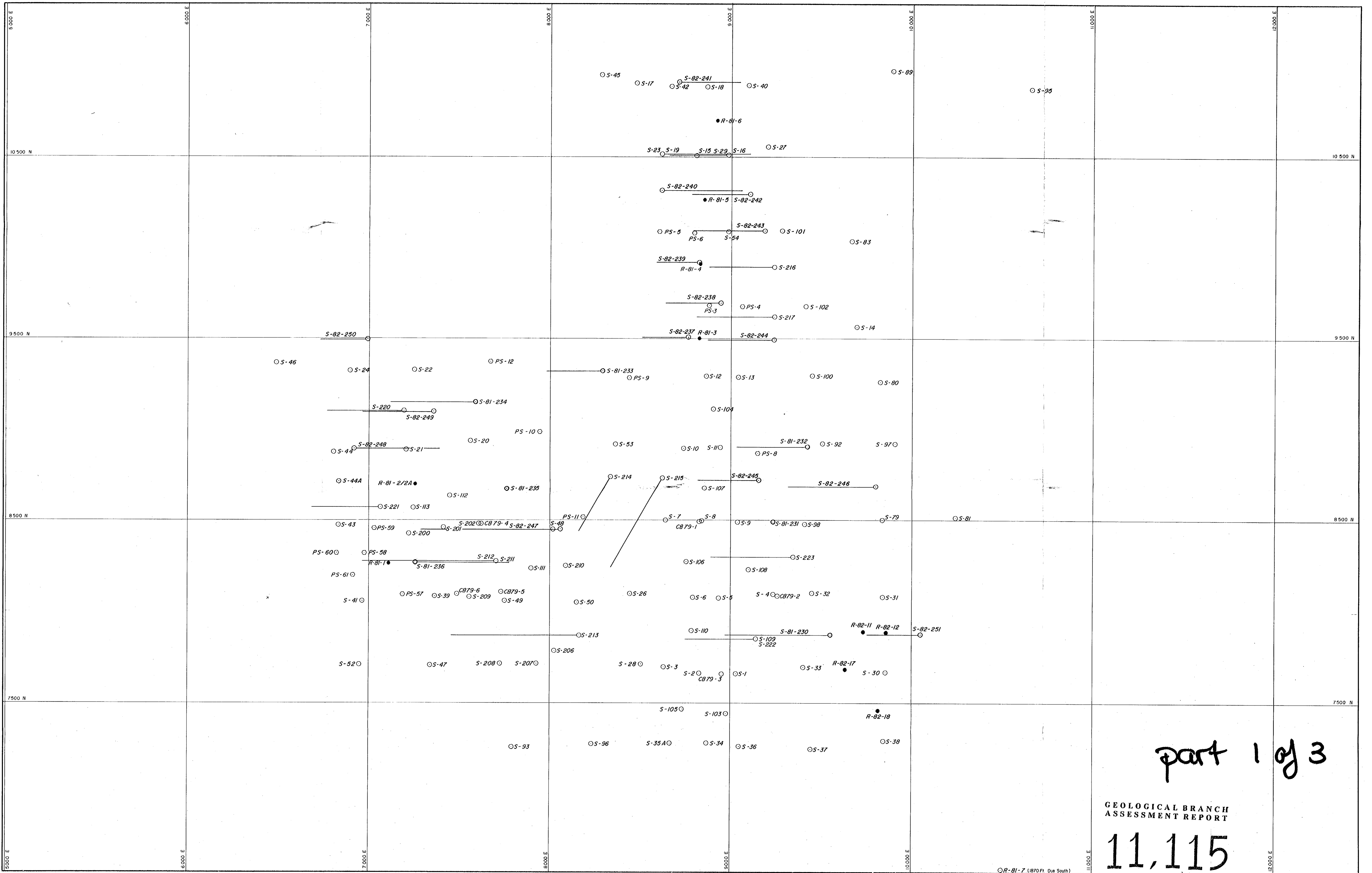
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Part 1 of 3

BOOTJACK LAKE

MAP SCALE 	No. Date MADE BY DESCRIPTION 1 2 3 4 5		OFFICE DEPARTMENT E & B Explorations Inc. GEOCHEMICAL PLAN Cu-ppm, Au-ppb
	DATE DRAWN BY CHECKED APPROVED JAN. 7/1983		



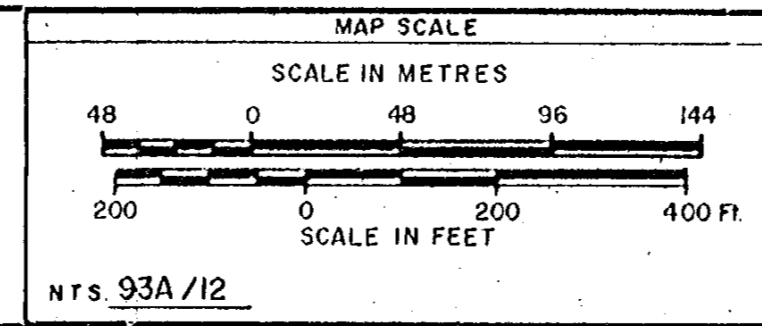


part 1 of 3

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

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S-81-230 ○ DIAMOND DRILL HOLE  
R-81-1 ● ROTARY DRILL HOLE  
PS-3 ○ PERCUSSION DRILL HOLE



No.	Date	MADE BY	DESCRIPTION
1	12/16/81	min. etc.	original map
2		etc.	additional data
3			
4			
5			

**E & B** E & B Explorations Inc.

CARIBOO - BELL PROJECT

DRILL HOLE LOCATION PLAN

DATE	DRAWN BY	CHECKED	APPROVED	OFFICE	DEPARTMENT	MAP INDEX NUMBER	SCALE	DRAWING NUMBER
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