86-838-15847
10/87

DRILLING

ASSESSMENT REPORT

CASCA CLAIM GROUP

CARIBOO MINING DIVISION

93 A/13, 14

LAT 52 48

LONG 121 30

OWNER: Cascadia Mines and Resources Ltd.

OPERATOR: Cascadia Mines and Resources Ltd.

AUTHOR: Marthe Archambault, M.Sc., Geologist

AMENDED BY: W.G. Timmins, P. Eng July 15, 1987

SUBMITTED: December 23, 1986

W. G. T. CONSULTANTS LTD.
CONSULTING GEOLOGISTS

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SUMMARY

The Cariboo Mountain Belt has been subdivided into four distinct terranes, each one bounded by two major thrust faults. The property is located within the Barkerville Terrane which is bounded to the east by the northeast dipping Pleasant Valley thrust and to the west by the southwest dipping Eureka thrust. The terrane is characterized by continental shelf clastics, carbonates and volcanics, more specifically grit with black quartz grains and black siltite. The rocks have been metamorphosed and vary from chlorite to sillimanite although the rocks in the vicinity of the property are mainly of chlorite grade.

Gold mineralization in the belt is hosted by two different types, 1 - replacement deposits in the carbonate, and 2 - quartz veining. So far, gold in quartz veins is the only type known in the property area. The gold mineralization is believed to be 185 50 Ma. or Middle Mesozoic which is alos interpreted as being the age of the latest metamorphism related to the Columbia orogeny. However, one set of quartz veining related to magmatism is known to have occurred round 140 Ma. Galena-lead-isotope studies show that, whether the gold deposition occurred by lateral secretion during regional metamorphism or by hydrothermal activity related to magmatism, the most likely source for the lead and the gold remains the host rocks.

The property consisting of six claims containing 100 units, is being explored for gold mineralization in quartz, typical of the Cariboo Gold belt by Cascadia Mines and Resources Ltd. Cascadia has also been exploring and testing a buried channel containing placer gold on the J-1 claim.

A diamond drilling program consisting of five holes totalling 533.7 meters was carried out by Cascadia to test fault structures and geophysically anomalous conditions during 1986.

INTRODUCTION

The mineral claim group is situated along the north shoe of Cariboo Lake approximately 90 air km northeast of Williams Lake, in the Cariboo Mining Division. It is principally a gold in quartz vein prospect so typical of the Cariboo Gold Belt. Other commodities such as Ag., Pb., Zn., Cu and WO2 are present in some occurences but usually of lesser importance. The 1986 program consisted of a 1219 m (4,000 ft) diamond drilling program, some prospecting and trenching. A total of 533.7 m (1751 ft) was carried out on the J-1 and Casca 1-5 claims.

LOCATION AND ACCESS

The property is located in the Keithley Creek area, just north of Cariboo Lake. Camp facilities, consisting of 2 trailers, are situated in the middle of the claim group, approximately 1 km due east of the junction of Snowshoe Creek with Keithley Creek. Camp is accessible by 35 km of gravel road from the town of Likely at the discharge of Quesnel Lake. This gravel road is part of the old carriage trail joining Likely with Barkerville.

Most of the property, except for the western edge and the southwestern corner, has been logged, providing good access and rock exposure. Therefore the noth side of Keithley Creek is accessible by the old Likely-Barkerville trail and numberous secondary logging roads. The south side of Keithley Creek and the Rabbit Creek area are accessible by the 1500 logging road starting from the shore of Cariboo Lake, south of the narrow section. The Asserlind Cr area is accessible by a logging road turn off at km 3 on the 1500 road, and finally the Rollie Creek area can be reached by the Wolverine Lake logging road from the bridge on Cariboo River. This road stops at a logged out area on the north side of the Rollie meadows, on the western boundary of the CASCA 4 claim. The Rollie claim is not accessible by road but the meadows provide an easy trail.

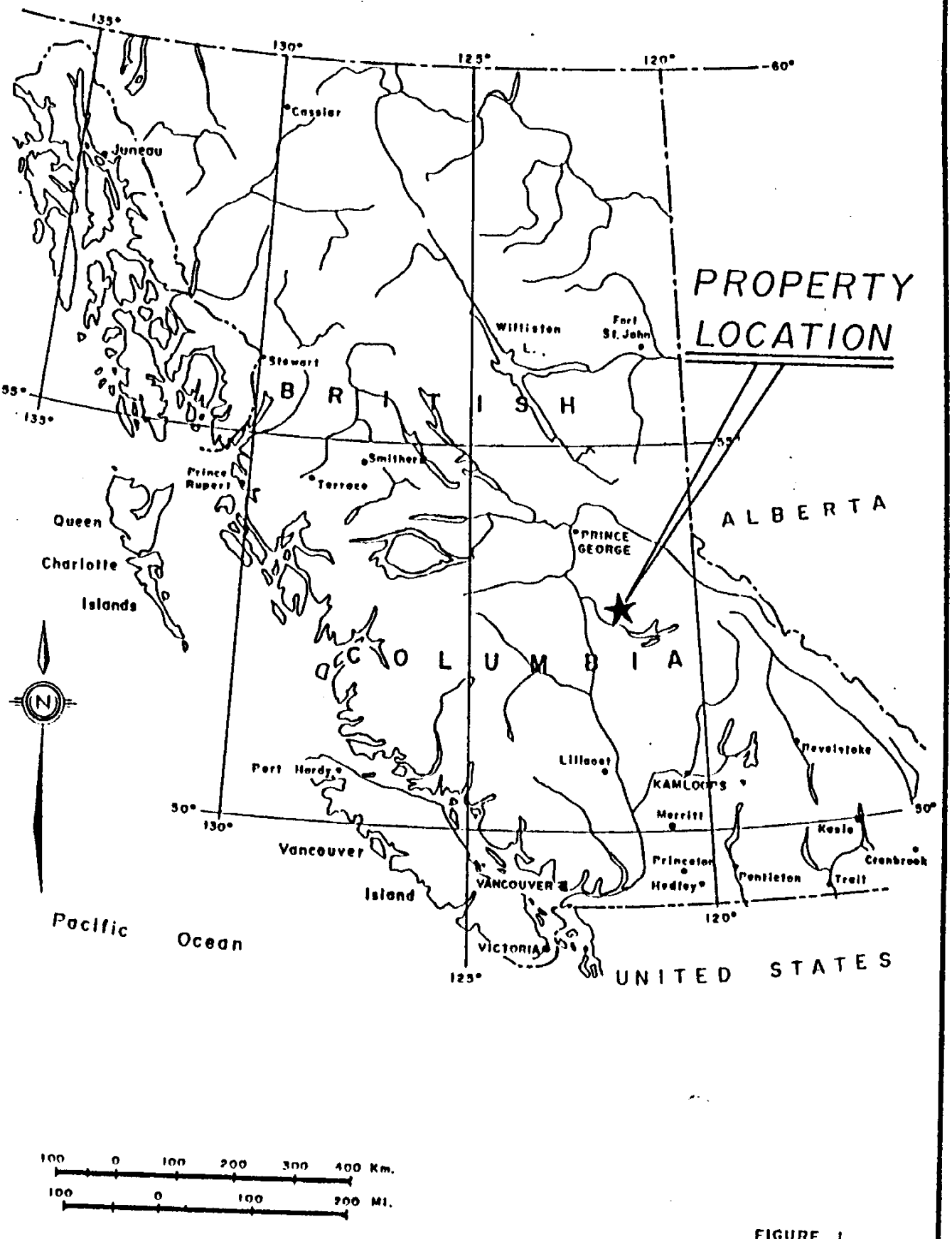
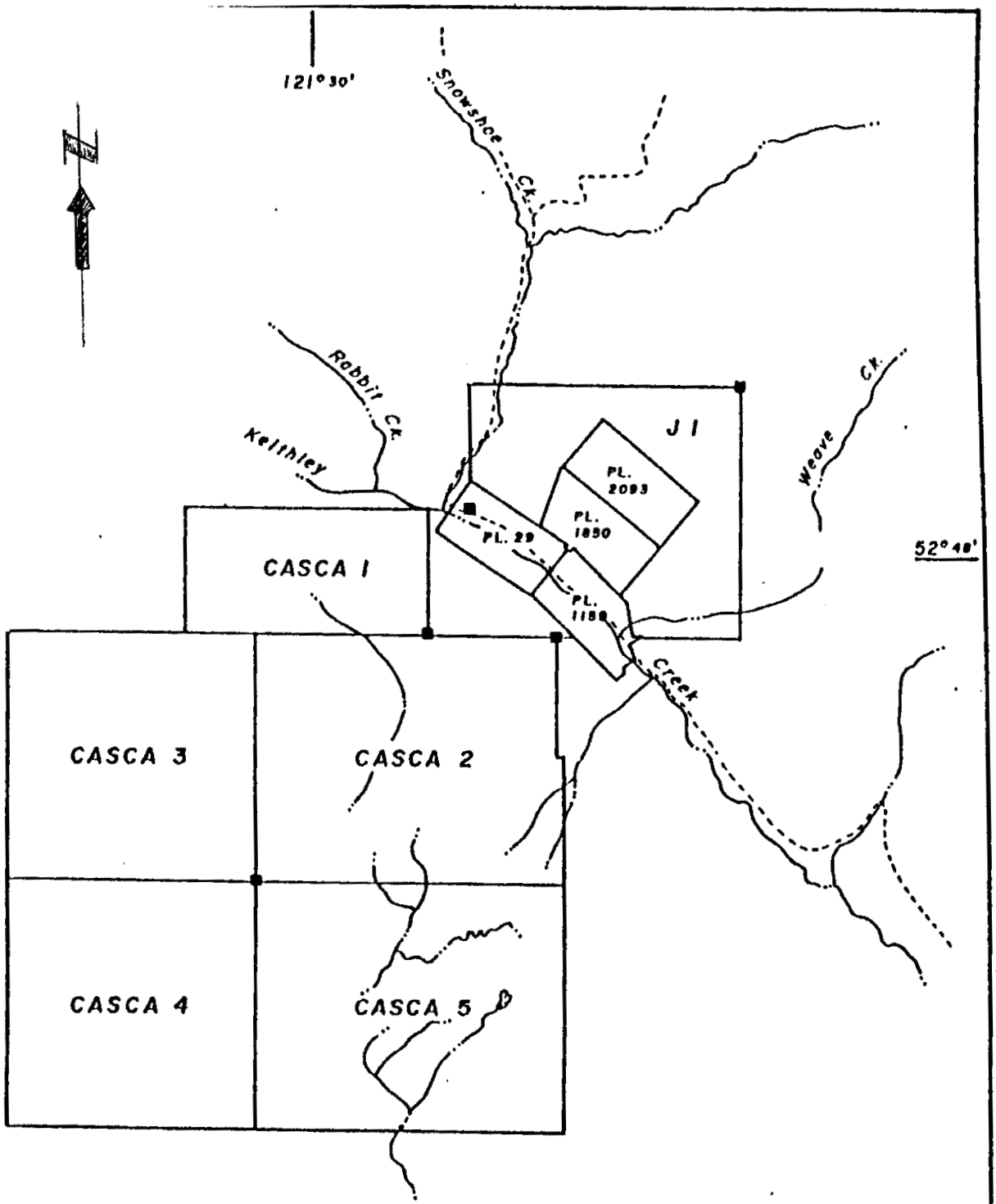


FIGURE 1

BRAD'S DRAFTING SERVICES



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CASCADIA MINES & RESOURCES LTD.

CASCA CLAIM GROUP

KEITHLEY CREEK, CARIBOO LAKE ARM

CARIBOO M. D., B. C.

CLAIM MAP

SCALE:	DATE:	FIG.	N.T.S.
1:50,000		2	93 A/14W,13E

1Km 0 1Km

HISTORY

Much of the past lode deposit history of the area consisted of staking "Quartz Claims". These claims were 100 feet square and were normally placed on top of an encompassing a showing.

On October 25th, 1862, Hayward and Jeffery, two prospectors in the area, announced their discovery of the Douglas Vein. This led to a rush of quartz - claim staking on Little Snowshoe Creek in Spring of 1863 on which two samples were taken. One sample showed only a trace of gold and silver while the other assayed 3.6 oz/ton gold and .4 oz/ton silver. The sample width in both cases being 1.5 feet (Report of the Minister of Mines 16 Geol 5 p. A161).

Intermittent activity in the area has been noted from the late 1860's until the 1970's. Cascadia initiated exploration during 1979.

Considerable exploration work has been carried out in the area during te late 1970's and to the present by Cascadia, and numerous companies now surrounding the Cascadia property. These companies include such majors as Esso, Dome Mines, Noranda, Sun Cor, Denison Mines, Amoco and Teck Exploration.

On October 24th, 1985 a letter report was submitted to Cascadia by Dr. A.J. Bickel of Lompoc California; Dr. Bickel profiled the Cascadia claim group of Keithley Creek with the intent of testing lode metal mineralization. His letter report outlines promising potential for lode metal mineralization on the property.

REGIONAL GEOLOGY

Introduction

The Cariboo Mountain Belt has been mapped and interpreted by L.C. Struik. He has divided the belt into "four stratigraphically and tectonically distinct packages of rock (terranes). They are inferred to have thrust together and metamorphosed during the Jurassic, remetamorphosed during the mid-Cretaceous, and disrupted by dextral strike-slip and associated faults from the mid-Cretaceous to the early Tertiary. The terranes are included in, or are correlative to, terranes mapped the length of the North AMerican Cordillera (Struik, 1985c).

The terranes are from east to west: Cariboo (continental shelf clastics and carbonates), Barkerville (continental shelf clastics, carbonates and volcanics), Slide Mountain (oceanic rift volcanics, intrusives and clastics), and Quesnel (island arc volcanics and clastics) (Fig. 3). The thrusts that separate the terranes are the east-dipping Pleasant Valley (placing Cariboo on Barkerville), flat Pundata (placing Slide Mountain on Barkerville and Cariboo), and west-dipping Eureka (placing Slide Mountain and Quesnel on Barkerville) (Fig. 3, 4) (Struik, 1985a; 1985b; 1985c).

Within the Canadian Cordillera, Cariboo is a subterrane of Cassiar, Barkerville contains equivalents of Kootenay and Yukon-Tanana terranes and Slide Mountain and Quesnel are Cordillera-wide terranes" (Struik, 1986a).

Barkerville Terrane

The property is underlain by rocks of the Barkerville Terrane for which the stratigraphic column is illustrated on figure 5. Rocks of this terrane are characterized by grit with black quartz grains and black siltite. They are metamorphosed and vary from chlorite to sillimanite grade with the lower grade occuring

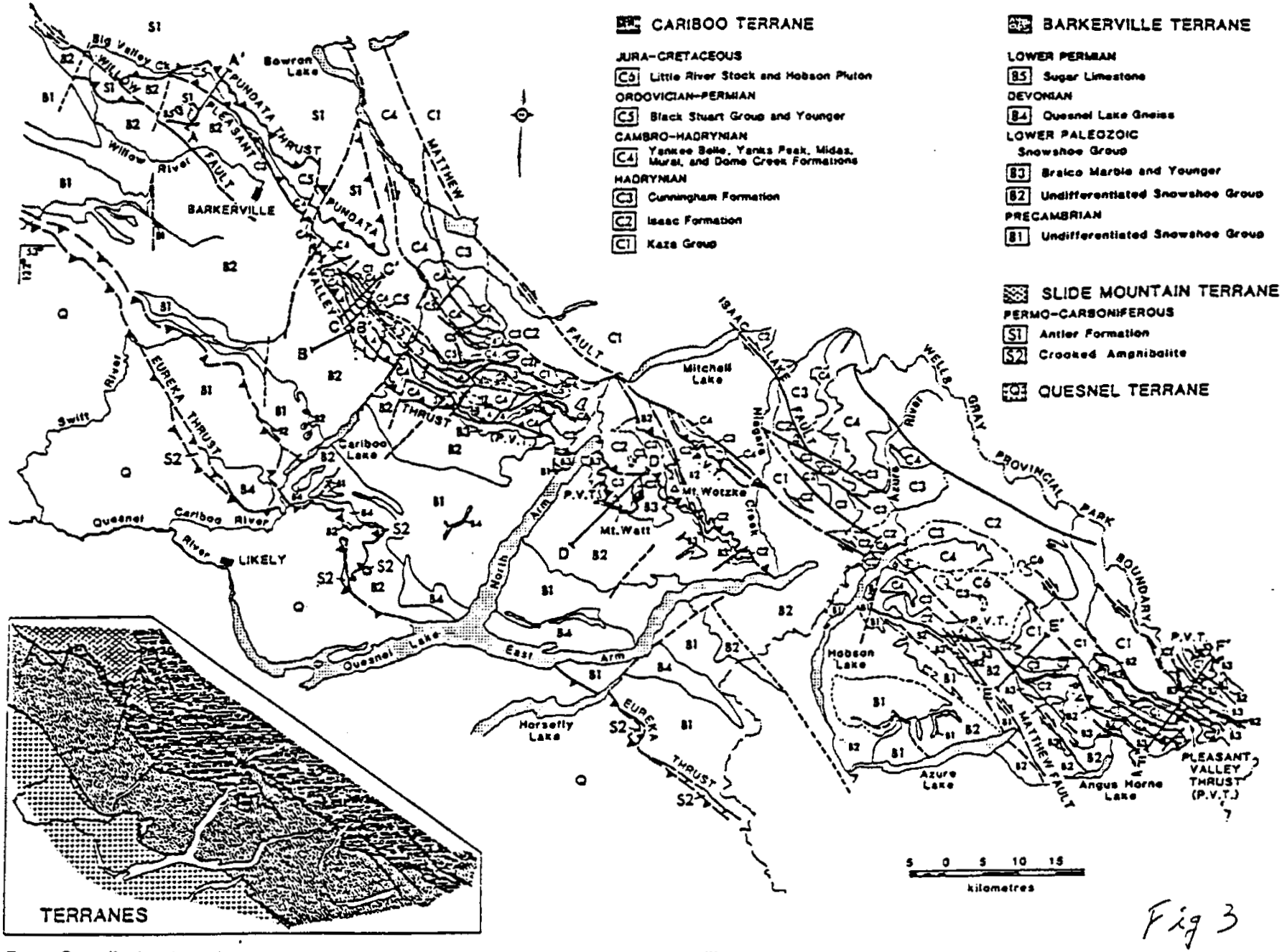


FIG. Generalized geology of the Cariboo gold belt, emphasizing units within Cariboo and Barkerville terranes.

Fig 3

1986b

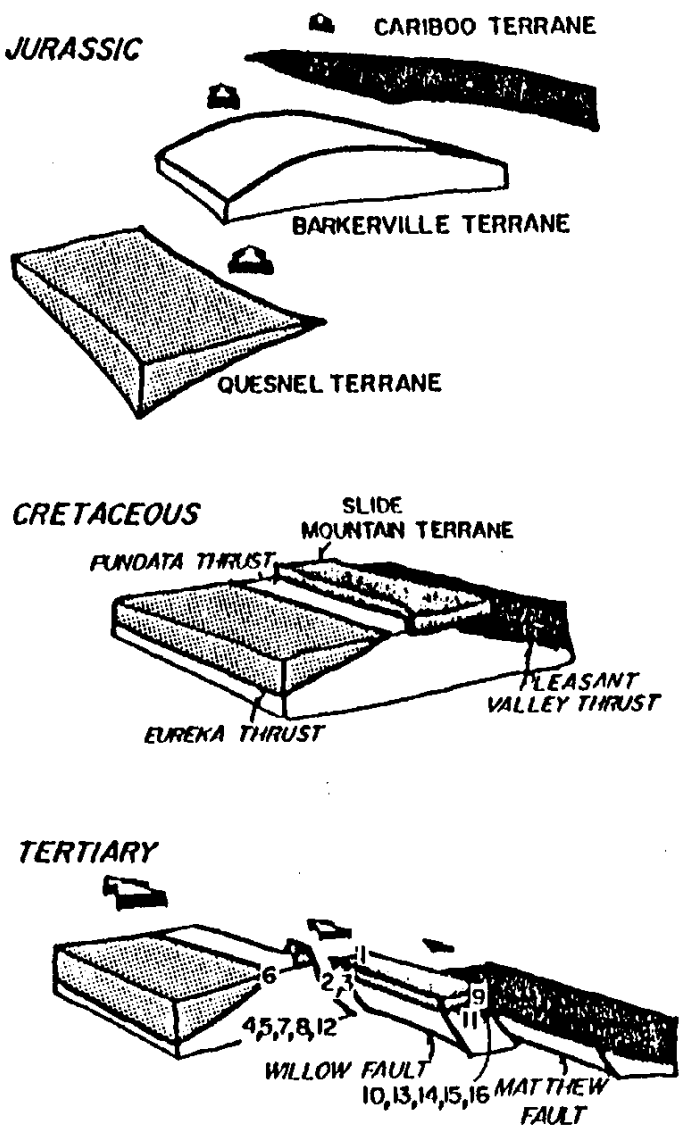


Figure Structural relations of the terranes through the (a) Jurassic, (b) Cretaceous and (c) Early Tertiary? The hypothesis is that the terranes have moved relatively northward with respect to the North American craton and that the displacement increases to the west. The present thrust overlap of the terranes is a record of transpression between the margin of North America and the oceanic and island arc terranes to the west. The pervasive northwest trending stretching lineation and fold axes are compatible with the transpression model. Northwesterly translation of the terranes along steep to moderately east dipping faults offsets terrane boundary thrusts and high temperature metamorphic isograds. This translation may have a small component of compression and records a change from the more compressive strain of the Jurassic northward movement of the terranes.

Fig 4
1975 c.

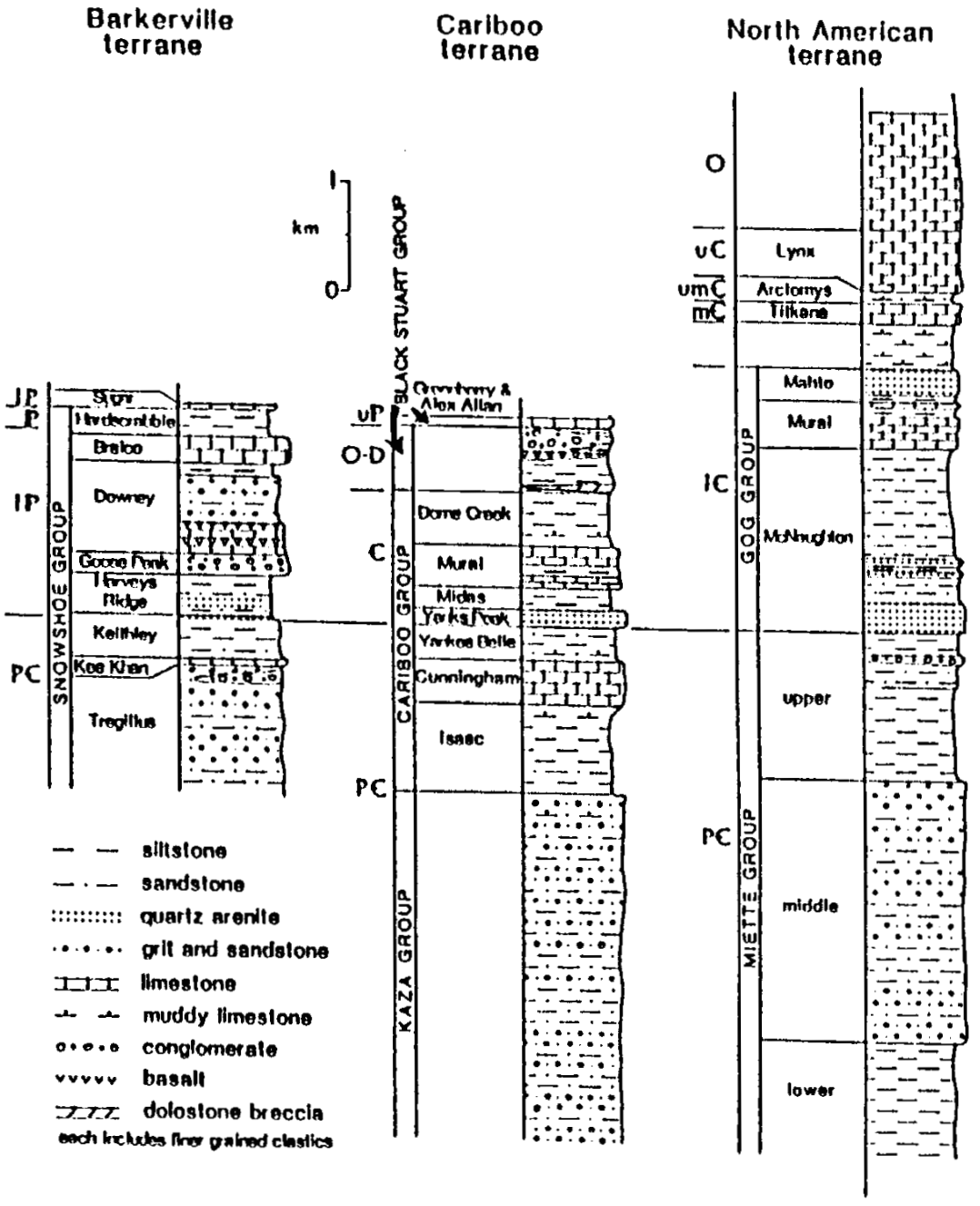


FIG. 8. Generalized stratigraphy of Barkerville, Cariboo, and North American terranes. The stratigraphy of North American terrane is from R. B. Campbell *et al.* (1973). (Struik, 1986 b)

northwest of Cariboo Lake and increasing towards the southeast, attainig sillimanite grade along the east arm of Quesnel Lake. The "age of these rocks is unknown but speculated to be lade precambrian and Paliozoic. Regional uncomformities may exist at the base of the Harvey Ridge succession (separating Precambrian from the Paliozoic) and the base of the Sugar limestone." (Struik, 1985c).

Lower Snowshoe Group

"The lower Snowshoe Group underlies the western exposures of Barkerville terrane along its contact with Slide Mountain and Quesnel terrane (Fig. 3). It is best exposed at low metamorphic grades along the Keithley Creek valley north of Cariboo Lake.

It is dominated by olive - grey grit and thinner interbeds of pelite, olive - grey pelite, and very fine grained equivalents of the grit (Fig. 5). It has secondary amounts of marble, black siltite, tuff, and white orthoquartzite.

It is characterized by the sequence of grit, marble, fine grained grit equivalent, and orthoquartzite and by the presence of granule to pebble conglomerate at the contact between the grit and marble."

"The thickness of the unit is in excess of 1 km." (Struik, 1986b)

Upper Snowshoe Group

The unit mainly underlies the northeastern part of Barkerville terrane in a northwest trend parallel to the Pleasant Valley Thrust (Fig. 3). It is in chlorite grade of regional metamorphism north of Cariboo Lake.

The upper Snowshoe Group consists of dark grey grit, siltite, and pelite, quartzite peblle to cobble conglomerate, quartzite, olive

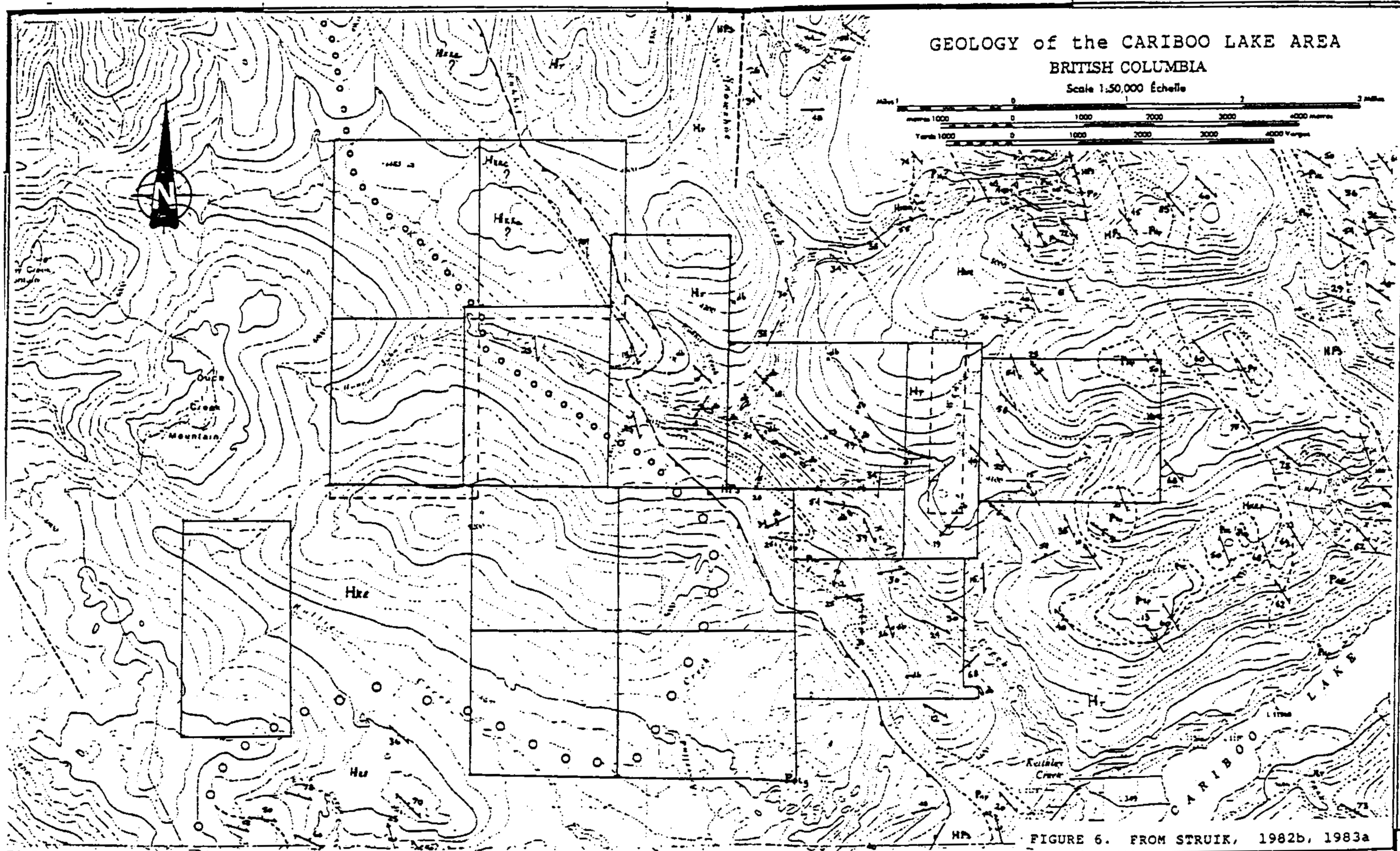


FIGURE 6. FROM STRUIK, 1982b, 1983a

KEY

Geological contact (defined, approximate, assumed or limit of confidence)

Thrust fault (defined, approximate, assumed)

Fault (defined, approximate, assumed, inclined attitude)

Anticline (upright, overturned)

Syncline (upright, overturned)

Bedding attitudes (unknown top, inclined, vertical)

(known top, inclined, overturned)

Cleavage attitudes (first phase, inclined, vertical)

(n + 1 phase (n = 1→∞), inclined, vertical)

Multiple fold axis (first phase, n + 1 phase (n = 1→∞))

Drag fold axis

Clast long axis lineation

Glacial Striae

Metamorphic isograds, minerals occur on side with ticks

garnet

sillimanite

Metamorphic minerals

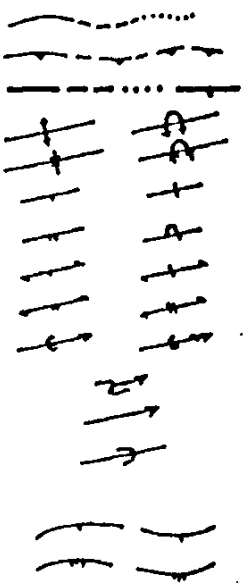
staurolite — S

kyanite — K

locality reported by J.S. Getsinger — ◊

locality reported by L.C. Struik — O

Asbestos — Asb



CRETACEOUS AND/OR LOWER TERTIARY

KTg — muscovite quartz feldspar pegmatite

JURASSIC AND/OR CRETACEOUS

JKg — Little River Stock granodiorite and quartzmonzonite

PALEOZOIC

Pgd — foliated biotite granodiorite

db — diorite, diabase

rd — rhyodacite

Devonian?

PaLg — Quesnel Lake Gneiss leucocratic feldspar quartz phenocrystic quartzmonzontic orthogneiss

LEGEND

RECENT

Rv — basalt, pyroclastic basalt

UPPER TRIASSIC AND/OR LOWER JURASSIC

TrJa — black shale and argillite, andesite derived greywacke andesite, basalt

Upper Triassic

uT — undifferentiated uTp , black shale slate and argillite siltite, micritic limestone, limey sandstone; uTb , agglomeratic and pyroclastic andesite; uTa , pyroclastic rhyodacite and rhyolite

MISSISSIPPIAN TO PERMIAN

uPSM — SLIDE MOUNTAIN GROUP undifferentiated uPsm , amphibolite; uPsm , serpentinite; uPsm , talcose altered utramafic rock

HADRYNIAN? AND PALEOZOIC?

SNOWSHOE GROUP

Paleozoic?

Ps — "Braico succession": white and grey marble

PD — "Downey succession": grey and olive-grey quartzite, phyllite and schist and undifferentiated Ps , grey limestone marble with lesser amounts of basic pyroclastic volcanic rocks and schist; Ps , basic pyroclastic volcanic and dioritic rocks with lesser amounts of marble and schist; Ps , amphibolite, marble and schist (metamorphic equivalents of Ps and Ps); Ps , mainly staurolite-garnet-biotite-chlorite-quartz-muscovite schist and lesser amounts of garnet, biotite, muscovite quartzite and amphibolite

PP — "Pine Creek conglomerate": quartzite pebble to cobble conglomerate with minor amounts of quartzite and black phyllite

PGP — "Goose Peak succession": coarse grained feldspathic quartzite and interbedded grey and olive phyllite and schist minor black phyllite and marble

PH — "Harvey Creek succession": dark grey and grey micaceous quartzite and interbedded dark grey phyllite, schist and siltite and undifferentiated Ph, black quartzite, siltite, argillite and phyllite and minor amounts of dark micritic limestone; Ph , limestone and limestone conglomerate; Ph , purpley dark grey very micaceous quartzite and black phyllite

Hadrynian?

HKE — "Keithley succession": olive and olive grey fine-grained quartzite and phyllite and undifferentiated HKEq , white and grey medium coarse grained orthoquartzite; HKEp, grey phyllite

HKR — "Kee Khan succession": HKRs , phyllite, schist, quartzite, calc-silicate rocks; HKRc , limestone, calcareous quartzite, phyllite

H — "Tregillus succession": olive and olive-grey grit, olive and grey phyllite, light brown and grey sandstone and undifferentiated Hs, olive and grey slate and greywacke, may be in part equivalent to HKE; Hp , black siltite and phyllite

HPs — undifferentiated Snowshoe Group; HPs, amphibolite and marble.

PLEASANT VALLEY FAULT

west

east

- grey grit, mafic tuff, and marble (Fig. 5). It is characterized by the abundance of dark grey grit, pelite, and siltite, by the conglomerate, and by the abundant light grey marble and mafic tuff. The thickness of the upper Snowshoe Group is estimated to be in excess of 1 km.

The Goose Peak Fm is the youngest unit of the Upper Snowshoe Group occurring on the west side of the Willow Fault.

GOLD MINERALIZATION

Geological Setting

Gold Mineralization in the Cariboo occurs in two different types: 1- as auriferous pyrite in quartz veins and 2- as "replacement ore" in limestone.

The Barkerville terrane is cut by several generations of quartz veins, most of them being barren. The ore bearing veins are reported to carry up to 25 percent pyrite and up to 70 grams gold per tonne (Aldrick, 1983).

The replacement ore consists of structurally massive pyrite lenses. "The finest grained pyrite contains the highest gold values." They are "locallized in the crests or noses of the minor folds, less frequently in fold troughs... in steeply dipping limbs of the main fold structure and in flat lying tabular lenses where the limestones have flattened." (Aldrick, 1983).

Carylyle, 1983, suggests that quartz vein ore developed outward from the replacement ore.

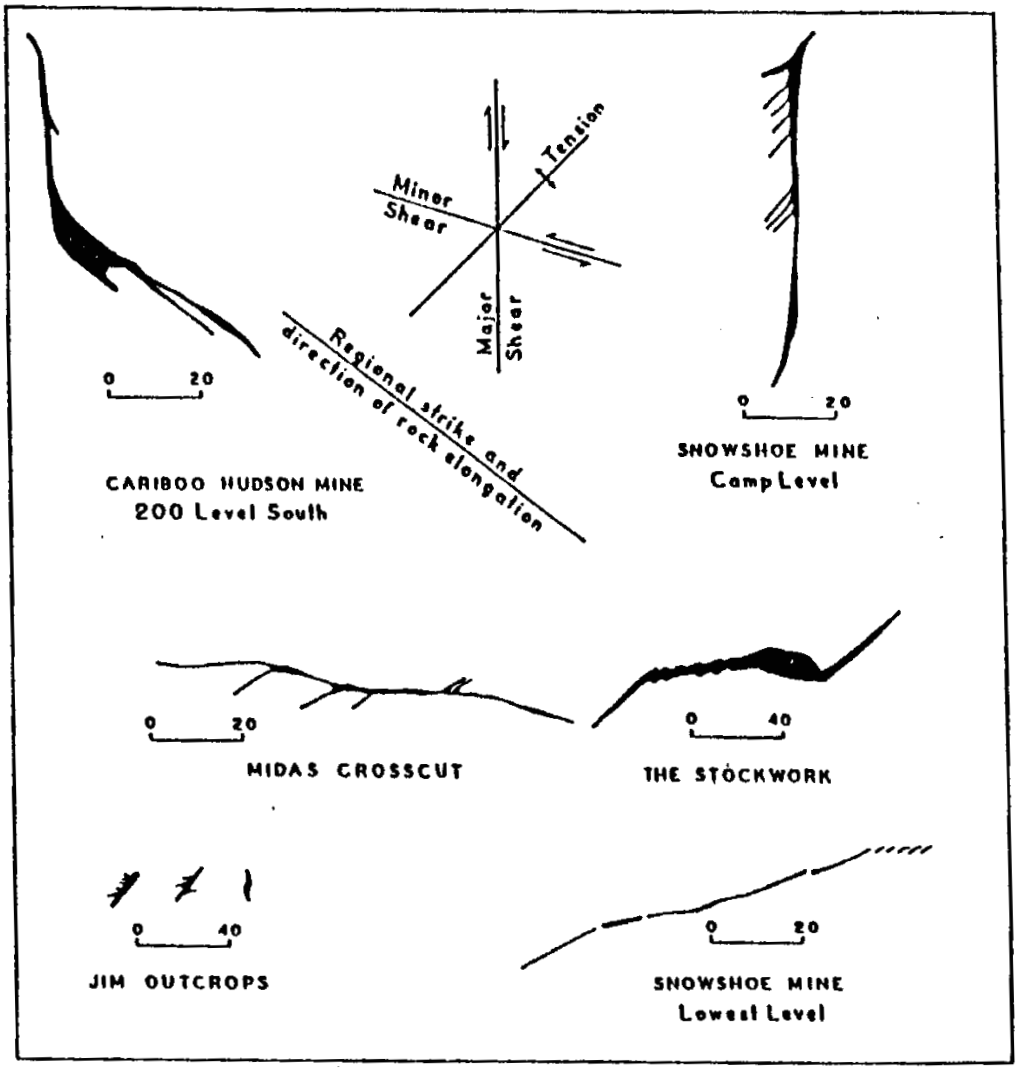


Figure **Patterns of branching veins shown in relation to the major directions of fracturing.**

Fig 7
(Stuart, 1954)

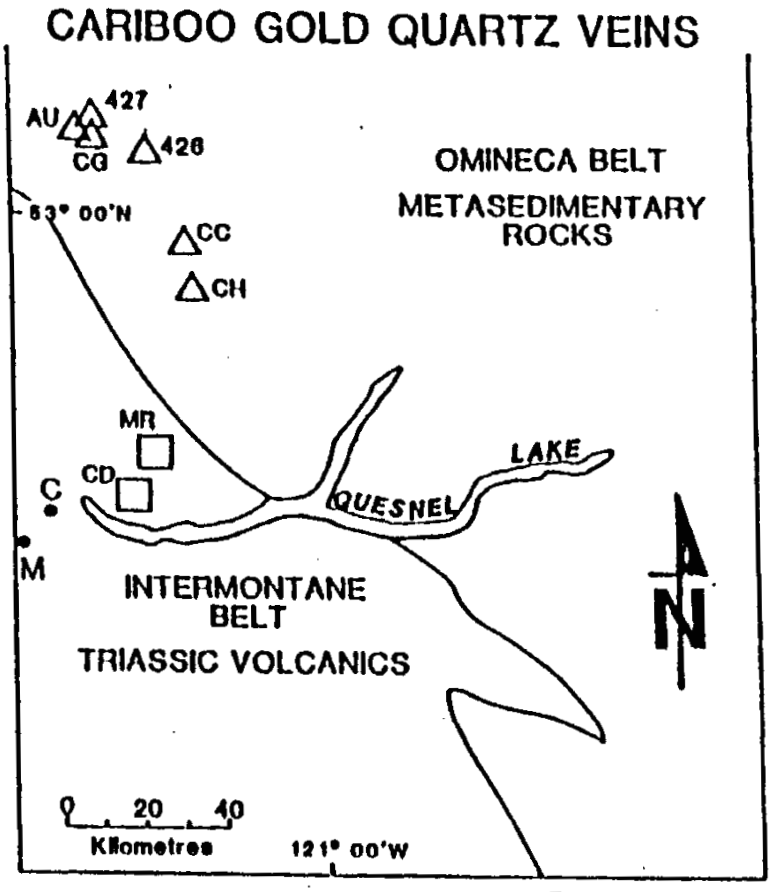


Figure 107. Locations of gold deposits from which galena-lead isotope analyses were obtained (refer to Table 1 for deposit names). K/Ar analyses were obtained from a vein and phyllite near CG. The line dividing the Omineca and Intermontane Belts is probably a generally west-dipping thrust. C is Cariboo Bell porphyry deposit, and M is Mitchell Bay porphyry deposit.

306

Fig 8
Andrew, 1983.

Age and Genesis

The age and genesis of the mineralization was studied by Andrew and al, 1983. The interpretation is derived from Pb istopic ratios of samples collected from Aurum (Island Mountain), Au, Cunningham Creek, cc, Cariboo Gold Quartz, CG, Cariboo Hudson, CH, Pin Money, 426, and Mosquito Creek, 427 (Fig. 7).

The age calculated from the galena-lead isotope "shale curve" model is 185 50 Ma. A K/Ar date from a regionally metamorphosed phyllite gives an age of 179 8 Ma, which is interpreted as being the age of the latest metamorphism."

Struik (1981b) suggests that metamorphism occurred during the Middle Mesozoic Columbian orogeny. "Similarity in metamorphic and mineralization ages suggest that the veins may be synmetamorphic, rather than magmatic in origin." (Andrew and al, 1983).

On the other hand, three phases of vein mineralization were recognized in the Cariboo Gold Quartz mine, although not all of them are gold bearing. A K/Ar date from a muscovite in a quartz-barite vein yielded an age of 141 5Ma which corresponds to the age of post-tectonic granodiorite plutons southeast of the mine. Therefore at least one set of quartz veins is related to magnatism. (Andrew and al, 1983).

According to Andrew and al's work, whether the gold deposition occurred by lateral secretion during regional metamorphism or by hydrothermal activity related to magmatism, the most likely source for the lead and gold remains the host rocks (upper crustal) (Andrew and al, 1983).

Occurrences in the Vicinity of the Property

Replacement type deposits are absent in the Yanks Peak area (Fig. 2) and all gold mineralization occurs in structually controlled

quartz veins. The veins were divided by Holland, 1954, into three main classes according to their attitude: northerly striking, northeasterly striking and easterly striking. Northwesterly striking veins, parallel to the strike of the rocks are rate and overlooked.

The northerly striking veins hosts the largest veins, up to 12 m wide and 500 m long. They vary from 350 to 10 in strike and dip steeply east.

The northeasterly striking veins vary from 40 to 80 in strike and dip steeply southeastward. They occupy tension fractures and movement along this direction is rare. They usually are from a few centimeters to thirty centimeters wide and rarely more than 30 m long. Veins of this group generally occur in swarms and are associated with a northly striking fault having a right hand movement.

The easterly striking veins occur in fractures varying from 80 to 105. They are narrow, less than 1 m wide, and "slightly longer than the northeasterly striking ones" (Holland, 1954) greater than 30 m.

In general, the quartz contains little sulphide mineralization, rarely more than 1 or 2 percent. "Pyrite is the most abundant of the vein sulphides and occurs in irregular masses and dissimiated grains... Assays indicate that the quantity of gold is closely related to the amount of pyrite in a vein." (Holland, 1954)

Closer to the property, Lnag, 1936, reports quartz veins in two locations. The first one occurs on the ridge between the two forks of Fourmile Crrek at an elevation of 1,460 m. It consists of two veins, 45 cm and 60 cm wide, striking 100 and 120 respectively. The wall-rock of impure quartzite contains pyrite cubes. The second occurence is located on the ridge between Weaver and Fourmile creeks. It consists of one vein, 1.2 m wide,

striking 120 and dipping 88. The vein follows a contact between argillite and quartzite, and contains some pyrite.

Cockfield and Walker, 1933, report quartz seams and veins up to 1 m. wide on Duck Creek (Rollie Creek). Seven small quartz veins were seen in a distance of 150 m in the creek bed. The veins strike generally to the northeast and dip to the southeast at angles frm 42 to 60 degrees. The mineralization is generally sparce consisting of galena, pyrite, chalcopyrite, and zinc blende... On several of the veins the wall-rock is apparently an altered intrusive carrying mariposite... Reported assays from picked samples showed: "gold, 0.02 ounces/Ton; silver, 24 ounces/Ton; lead, 42 percent; zinc, 6 percent." (Cockfield and Walker, 1933).

Bowman, 1887, reports a vein located 90 m above the Forks Trail crossing on Duck Creek (Rollie creek). The vein is vertical, strikes S.W. and is 0.6 to 1.2 m wide. It contains galena, pyrite, sphalerite and white, yellow and green oxides. A reported assay showed a trace of gold and 3.8 ounces/ton of silver. Another trench, on the north side of the creek, is reported to "disclose considerable quantities of galena". (Bowman, 1887) A third vein located, 3.2 km above the trail crossing, crops out on the north side of the creek. It strikes S.W. and dips vertically. Its width varies from 1.2. to 1.5 m and assays showed only a trace of gold.

DIAMOND DRILLING PROGRAM 1986

A total of 533.7 meters (1,751 feet) of NQ diamond drilling in five holes was carried out by Cascadia Mines and Resources Ltd., during May and June, 1986, on the J-1 mineral claim.

Locations and details of the drilling are described in the following table reported in meters.

The core was logged by R. Krause, B.Sc., geologist, and M. Archambault, M.Sc., geologist, employed by W.G.T. Consultants Ltd.

Drill Hole No.	Co-Ord.	Azimuth	Inclination	Depth(m)
86-1	See Enclosed Plan Map	270	-71	144.2
86-2	"	270	-60	61.9
86-3	"	280	-60	173.7
86-4	"	270	-60	118.9
86-5	"	N/A	Vert	35.0

The drilling was carried out by Cascadia to test fault structures and geology in the vicinity of the buried placer gold channel. Drill hole locations are plotted on the plan map following, and drill logs are appended at rear.

The drilling intersected mudstones, siltstones, graywacke and sericite schist with minor andesite dikes. Alteration consists of chlorite and limonite.

Disseminations, blebs, veinlets and fracture coatings of pyrite generally less than 2% are common throughout the core.

Extreme water pressures were encountered in drill holes 86-4 and 86-5.

The drill program has provided a better understanding of the geological and structural data in the area. No significant gold and silver assays were obtained from sampled sections, however known mineralized vein structures to the north remain untested.

The core is located at the Cascadia camp at Keithley Creek.

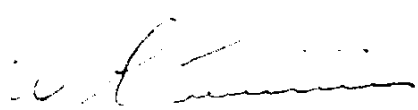
CONCLUSIONS

The lode gold potential as indicated by the early history of the mineralized quartz veins in the area is promising. Gold showings in the area are associated with northerly striking fault systems, which occur on the property.

Several major companhies surrounding Cascadia claims have been carrying out exploration programs in current years.

Geological mapping, prospecting, sampling and geochemical soil sampling surveys would assist in determining future drill targets.

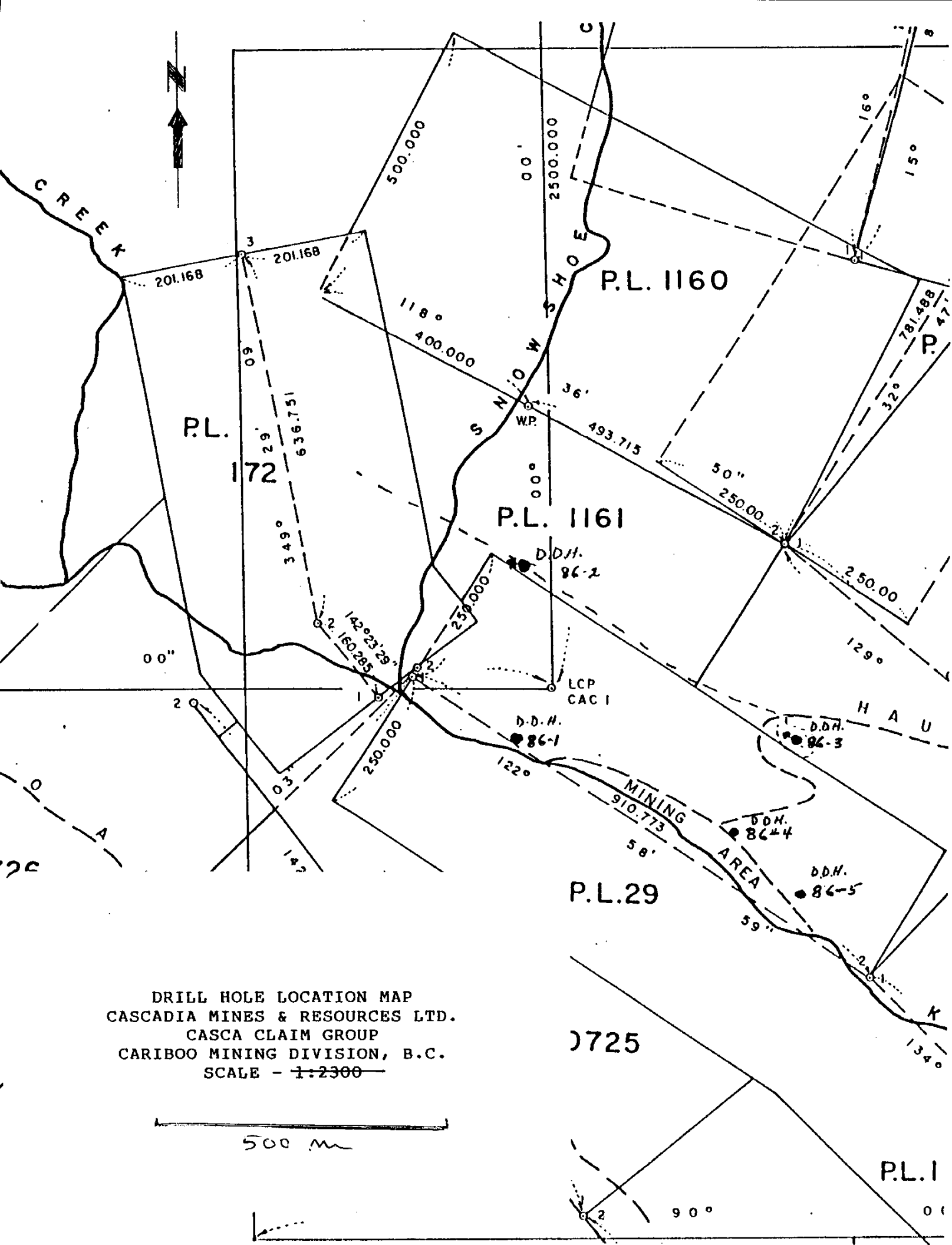
Respectfully Submitted,



W.G. Timmins, P.Eng.
for M. Archambault, M.Sc.

Amended by W.G. Timmins, P.Eng.

July 16th, 1987



DRILL HOLE LOCATION MAP
CASCADIA MINES & RESOURCES LTD.
CASCA CLAIM GROUP
CARIBOO MINING DIVISION, B.C.
SCALE - ~~1:2300~~

500 m

ITEMIZED COST STATEMENT

The total cost was divided into 3. Each amount is dependant on the amount of drilling done on each claim. Therefore 43.8% of the total cost was applied to the claim J-1, 41.8% to STU-1 and 14.4% to DD2.

	J-1	STU-1
Drilling	33,090.00	31,579.00
Fuel	1,541.44	1,471.06
Accomodation - 4 men	1,752.00	1,672.00
Consulting Geologist	525.60	501.60
Geologist	3,504.00	3,344.00
Helper	1,401.60	1,337.60
Report Preparation	3,000.00	3,000.00
	44,814.44	42,905.26

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DRILL LOG

PAGE 1 OF 3
HOLE 86-1
LOCATION
ORIENTATION 270°
INCLINATION -71°

LENGTH 144.2 m.
STARTING DATE MAY 12/86
COMPLETION DATE MAY 17/86
SCALE 1:250

DRILL BOYLES 37A CORE NQ
CONTRACTOR L. SPENCE
DATE LOGGED
LOGGED BY R. KRAUSE

METER-AGE	CORE LGTH	% REC	ROCK TYPE	STRUCTURE	ALTERATION	MINERALIZATION	NOTES	ANALYSIS NO.	oz/T Au	Ag
3			Overburden							
5			4 Graphitic siltstone 7		slightly carbonatized with small stringers // to bedding? foliation? Fe_2O_3 on some fracture surfaces		blk laminated; extremely broken up			
10			Gritty Dol-metal speckled appearance 9.4; 10 Fault gouge		Sericite formed on fractures surfaces; minor epidote envelopes on some veins up to 2 cm; Fe_2O_3 clay with small rock frag	finely disseminated py throughout 1-2%; ankerite siderite veins and chlorite fibre mm's up to 2 cm; 80% sericite	7 dark grey, light grey with convolute beds; inclusions of siltst (minor) which have been stretched and contorted 9.5	861001	.002	03
							10	861002	.012	01
15			light to med grey limestone		minor epidote alt. ankerite veinlets and veins pre-defor. cva ≈ 40°	light grey speckled calcite veins ≈ 2 cm cva ≈ 45°; py ≈ 1% massive above with pre-defor veins and the darker breccia fragments	this unit is also a sed. breccia in which fragments are up to 10 cm; 11.6 extreme convolute bedding alternating light and med grey 13.1	861003	.002	.01
							*: 1st was deposited, intruded by bluish	861004	.002	.01
								861005	.002	.01
20					17.6-18.2 plenty of Fe_2O_3; trace of py with some ankerite		calcite and then folded evidenced by epigenetic py and alteration envelopes around these contorted veins; med grey beds contain most of the py 12.2 also contain higher silt content, preferentially deposited in these darker beds 12.2	861006	.002	.01
								861007	.012	.01
25			22.2 med-dark grey 23.2 siltstone; med grey limst bx from 23.2 to 28 gradational, breccia and fault contact siltst to limst 28	brecciated	minor Fe_2O_3 on some fractures	py scales on fracture surfaces & [illegible] stringers < 1%; py scales on some fractures < 1%	17.6-18.2 zone of vuggy calcite veins ≥ 5 mm and small; 3/foot ???; finely laminated [illegible] locally has bx appearance with white interstitial calcite, soft sed def. ① 22.7 small ankerite vein? blob? contains py cubes ② 23.6 [illegible] cm calcite vein (banded) cva [illegible]; cva, cpa 0-50°; cba 50°; some soft sed. def.			
30			med grey bluish green meta-greywacke with laminae of siltst	slightly brecciated	slightly chloritized prevalent on fractures; folia developed; tr of Fe_2O_3 on fractures	tr of py on some fractures	gritty in appearance, locally fine sand and silt particles; fine laminae locally of siltst; c/folia ≈ 10°; cba ≈ 50; ① 28.2 1.3 cm blue & white qtz vein, cva ≈ 60°; locally bx with interstitial calcite, calcite veinlets 2 mm random			
35							locally fragments up to 8 cm in core length of dirty limst (light grey) < 5%			
40			41.4-43.9 Dark Green-42 grey meta-greywacke with laminae of siltst 43.9		pervasively chloritized chlorite well developed on fracture and foliation surfaces		41.4-43.9 extremely broken up in core; cf/ba ≈ 20°; 43.9			
45			light grey-blue meta-greywacke	locally in place, minor brecciation with minor offsetting - calcite later	minor Fe_2O_3 on fracture surfaces	minor blebby - scaly py on fracture surfaces < 1%	brecciated with calcite: interstitial, stringers ≈ 1-2 mm; minor soft sed. deformation; pods of light bluish calcite; minor chloritized siltst frag.			
50										

DRILL LOG

PAGE 2 OF 3
HOLE 86-[illegible]
LOCATION
ORIENTATION
INCLINATION

LENGTH
STARTING DATE
COMPLETION DATE
SCALE

DRILL CORE
CONTRACTOR
DATE LOGGED
LOGGED BY

METERAGE	CORE LGTH	% REC	ROCK TYPE	STRUCTURE	ALTERATION	MINERALIZATION	NOTES	ANALYSIS NO.	oz/T Au	Ag
50–55			Light grey - blue meta greywacke			53.9 [struck through: py white] 54.1 py	51.2-51.3 } 52.7-52.9 } siltstone fragments → blue qtz (30%), cream coloured calcite 53.9	86/008	.002	.01
55–60				Brecciated	54.65-56.7 minor chloritization of siltstones with foliation developed ∥ to bedding 57.6-57.8 has been silicified and carbonatized by small stringers	black siltst unit have tr→1% disseminated py → diss py <1% associated with stringers	higher % of dark siltst fragments 55.5 breccia siltst frags + greywacke, fragment supported 57.6 57.8	86/009	.002	.02
60–65					some siltst has been slightly chloritized, others are black 61.9-63.4 some chlorite → possibly leached (or epidote) epidote developed up to 3-4 cm in zones of high density veinlets	; possibly some sphalerite? <1%	61.9 63.4	86/010	.002	.02
65–70			65.5 66.25 Fault Gouge quartz vein + calcite + silicified intrus. 68.5 Intrusive		minor FeOx	tr of py blebs	med green clay with small fragments vein appears to be 1 m+ speckled appearance, white and med-blue-grey quartz 68.5	86/011 86/012 86/013	.002 .002 .002	.03 .01 .01
70–75			Chloritized intermediate dyke 74.1	brecciated in places, some movement along fractures with quartz and calcite interstitial (≈1mm)	Chloritized, med green well developed on fault surfaces slightly carbonatized and silicified	Trace of pebbly py in bx stringers Finely diss py, trace	speckled appearance locally leached, silicified and calcareous @74.4 - 6 cm quartz vein, blue + white, barren			
75–80			meta-greywacke with beds of siltstone	kinked bedding from intrusion? cba ≈ 40° unit brecciated and intruded by predominantly		trace of py on fracture surfaces, massive	grades from very dirty greywacke to black thinly bedded siltstone beds soft sed. deformation			
80–85				quartz until after 129.5 m, then predominantly calcite			@80.8-83.8 greywacke verging on quartzite @82.7-82.9 max width 6 cm; white + cream quartz [illegible] 80° rock has been leached (epidote? → light green) and has been silicified 82.7 83.2	86/014	.006	.01
85–90							@86.1 - 6 cm qtz vein? or interstitial qtz to bx; white → blue-grey, barren			
90–95							@93.3 6 cm qtz vein or interstitial qtz to bx; white to blue-grey, barren			
95–100										

DRILL LOG

PAGE 3 OF 3
HOLE ZK-1
LOCATION
ORIENTATION
INCLINATION

LENGTH
STARTING DATE
COMPLETION DATE
SCALE

DRILL CORE
CONTRACTOR
DATE LOGGED
LOGGED BY

METERAGE	CORE LGTH	% REC	ROCK TYPE	STRUCTURE	ALTERATION	MINERALIZATION	NOTES	ANALYSIS NO.	oz/T Au	oz/T Ag
100			meta-greywacke		silicification	tr of blebby py on fracture surfaces	101.5-103.8 spotmely silicified; minor stockwork, 1 mm veinlets interstitial;			
105							@105-107 silicified (blue-grey) speckled dark grey and white with a slight greenish tinge			
110					109.1-109.4 pervasive epidote? leached chlorite? (light green)		109.4-109.57 small stockwork, bluish 109.7 qtz veins with trace of finely diss py 111.2			
115							110.9-114 bluish in color, greywacke with small bluish well rounded chert fragments (<2%)	SL1015	.002	.01
120				118.5-120.1 brx infilled with blue white qtz, bottom of outcrop	minor epidote alteration of siltstone fragments		114-114.5 light green leached chlorite? epidote? soft ≈ 3-4, weathered 114.1 117 118.5 120.1	SL1016	.004	.06
								SL1017	.002	.01
125							120.4-122.8 light green (leached chlorite? epidote?) soft 3-4			
130										
135							132.6-135 light green (leached chlorite? epidote?) soft ≈ 3-4.			
140										
142.2			End of hole				Hole abandoned: too much water			

DRILL LOG

PAGE 1 OF 1
HOLE 86-2
LOCATION
ORIENTATION 270°
INCLINATION -60°

LENGTH 61.9 m
STARTING DATE May 12/86
COMPLETION DATE May 12/86
SCALE 1:250

DRILL Boyles 37A CORE NQ
CONTRACTOR L SPENCE
DATE LOGGED
LOGGED BY R. KRAUSE

METERAGE	CORE LGTH	% REC	ROCK TYPE	STRUCTURE	ALTERATION	MINERALIZATION	NOTES	ANALYSIS NO.
0-61.9			Overburden				Hole abandoned	

DRILL LOG

PAGE 1 OF 4
HOLE 86-3
LOCATION
ORIENTATION 280
INCLINATION -60

LENGTH 173.7 m
STARTING DATE MAY 19/86
COMPLETION DATE
SCALE 1:250

DRILL BOYLES 37A CORE NQ
CONTRACTOR L. SPENCE
DATE LOGGED
LOGGED BY R. KRAUSE

METERAGE	CORE LGTH	% REC	ROCK TYPE	STRUCTURE	ALTERATION	MINERALIZATION	NOTES	ANALYSIS NO.	Au	Ag
0			Overburden							
5										
			7							
					; has been partially altered to chlorite					
10					23-10:					
			Chloritic greywacke (± siltstone)		; ankerite? or siderite? veinlets altered to Fe_2O_3					
15										
20										
			21.9							
			Blue-grey dirty limestone	convolute bedding evident by contrast of laminae colours	; weathered veinlets of Fe_2O_3 (ankerite), trace amount of sericite formed	; quartz or calcite veinlets 1-3 mm - barren	; red breccia ; contains some laminae of siltstone other than fragments			
25										
			(Sed. breccia)	; locally has appearance of shatter bx	; locally epidote envelopes 2 mm on some small veinlet of calcite, ankerite, quartz	; interstitial bx veinlets ankerite? calcite (ank. appears carbonate but is Fe_2O_3 stained)	25.0			
30							28.9	86-3001	.002	.1
					Fe_2O_3 on 90% of fractures	veinlets range from 0-6/foot (.3 m) ; Py trace associated with veinlets minute				
35										
						blebs ± assoc. with ankerite?				
40							38.9 - 40.2 shatter breccia interstitial quartz + calcite 20% Py 2-3% with some ankerite ; also some azurite + malachite visible			
							38.7			
45							40.2	86-3002	.043	.01
50							47.4	86-3003	.004	.01

PAGE 2 OF 4
HOLE 76-3
LOCATION
ORIENTATION
INCLINATION

LENGTH
STARTING DATE
COMPLETION DATE
SCALE

DRILL CORE
CONTRACTOR
DATE LOGGED
LOGGED BY

METERAGE	CORE LGTH	% REC	ROCK TYPE	STRUCTURE	ALTERATION	MINERALIZATION	NOTES	ANALYSIS NO.	Au (oz/T)	Ag (oz/T)
50–55			Blue-grey dirty limestone with fragments of siltstone up to 10 cm.				50.9	563003		
55–65										
65–70				locally this unit, no soft sed. deformation + cba ≈ 80°		Diss. py. on margin of veinlets + blebby on fracture Tr → 1%	65.2–66.1 lmst breccia intruded by seam quartz and calcite ± ank.; minor epidote alteration around + within veinlets; Fe_2O_3 on fractures + veinlets (65.2–66.1)	563004	.003	.01
70–75							; locally this unit becomes non-fizzing – v. dirty lmst. 73.7	563005	.002	.01
75–80			79.1				75.3			
80–85			Fine grained meta greywacke with locally gritty mudst. sections	fractured	slightly chloritized	unit has been fractured in places + intruded by qtz calcite veinlets ≈ 6/m ; diss py – trace	locally laminae of siltstone in wacke ; speckled appearance ; thought intrusive but not cooked margins of Kb			
85–90			87.8 Fine grained siltstone + mudstone				Coarsening downward. grey-green, going to black down-section as becomes siltstone			
90–95			93 Limestone breccia (blue-grey)	Convolute bedding		blebby py in veinlets within box – Trace	slightly bedded, more visible in siltst rather than mudst.			
95–100			95.7 Fine gr. meta greywacke	fractured in place with small veinlets		Trace of diss. py.	; slight greenish colour ; speckled appearance, green + white			
100			99 lmst breccia	cba = 45°, minor convolute bedding			light to med grey			

DRILL LOG

PAGE 3 OF 4 HOLE 76-3 LOCATION ORIENTATION INCLINATION

LENGTH STARTING DATE COMPLETION DATE SCALE

DRILL CORE CONTRACTOR DATE LOGGED LOGGED BY

METER-AGE	CORE LGTH	% REC	ROCK TYPE	STRUCTURE	ALTERATION	MINERALIZATION	NOTES
100			Lmst Brx 101.3				
			102.1 Mudstone			Tr of diss py.	black bedded, foliated
			Fine gr greywacke 104.2	Fractured in places	chloritized	calcite stringers + calcite pods up to 3 cm, 3-4/foot (.3m) blebby py within stringers	speckled med green & white
105			Siltstone 105.5 (?)				black, thinly bedded? - foliated?
			Intermediate dyke 107.7	40% of wallrock or more of bx. Brecciated	epidote alt of wallrock chloritized ←	105.5-105.6 — 10 cm wide py vein with tr of blebby py.	
			Lmst bx. 110.2	same as 21.9 - 77.1		diss py within bx.	light to med blue-grey. locally high silt content.
110			Fine grained greywacke 113.7	same as 102.1 - 104.2			
115						up to 2% diss. py. in	; grades to med gr. in which rounded qtz &
			Interbedded dirty limestone & green fine gr. greywacke			f. gr. greywacke from 113.7-116.7 - blebs of py up to 1cm in diameter on some fractures	chert fragments can be seen ; fractures infilled, in places, by bluish calcite + quartz ; possibly just greywacke, that has been intensely carbonatized with bluish calcite
120			122.5				
			Fine gr. greywacke with minor siltst 125		chlorite	at 124 py blebs on fract.	med greenish grey
125			Interbanded phyllite, siltst and fine gr greywacke	rip-up clasts schistosity 70° to c/a	chlorite		
130			131				
			Coarse gr. quartzwacke 132.7				Blue & grey quartz frag. up to 6mm in diameter in a chlorite matrix
			Med gr greywacke	foliated 50° to c-a			
135			Siltst to schist minor med gr. greywacke 137.6 intervals (?)	schistosity 70° to c-a		pyrite on fractures	
			Med grained greywacke with	foliated 70° to c-a			
140			minor siltstone partings 143.2				
145			Siltstone - schist				
150							

ANALYSIS NO.

DRILL LOG

PAGE 4 OF 4
HOLE 76-3
LOCATION
ORIENTATION
INCLINATION

LENGTH
STARTING DATE
COMPLETION DATE
SCALE

DRILL CORE
CONTRACTOR
DATE LOGGED
LOGGED BY

METERAGE	CORE LGTH	% REC	ROCK TYPE	STRUCTURE	ALTERATION	MINERALIZATION	NOTES	ANALYSIS NO.
150			siltstone - velvet					
155			156.4 Interbanded silty greywacke and phyllitic siltstone	schistosity 60° to c-a				
160								
165			164.9 Fine gr. to med gr. phyllitic greywacke	foliated	chlorite			
170				169.1 - 173.7 = broken				
			173.7				END OF HOLE 173.7	

DRILL LOG

PAGE 1 OF 3
HOLE 36-4
LOCATION
ORIENTATION 270°
INCLINATION -70°

LENGTH 118.9 m
STARTING DATE
COMPLETION DATE
SCALE 1:250

DRILL BOYLES 37A CORE NQ
CONTRACTOR
DATE LOGGED
LOGGED BY M. ARCHAMBAULT

METERAGE	CORE LGTH	% REC	ROCK TYPE	STRUCTURE	ALTERATION	MINERALIZATION	NOTES	ANALYSIS NO.						
0–5			Overburden											
9.1–10			sericite schist	folded; various schistosity		rust along fractures	light to med grey							
10.9			[illegible] dyke	massive		rust at contact	aphanitic - pale green							
15			Sericite schist	folded; various orientation of schistosity	slightly chloritic in places	rust along fractures								
17.3 / 17.6 / 18.2				schistosity 70° to c-a	[illegible] ... 18; pale grey - [illegible]; chloritic	small pyrite lenses along schistosity								
19.65–20.4			limestone				pale to dark grey							
20–23.5			intermediate dyke (?)	massive			dark greenish grey, hard difficult to break; 21.5 → 50cm of [illegible] limestone with minor phyllite at lower contact							
25			sericite schistose	foliation or schistosity ⊥ to c-a			med grey							
25.2–26.6			limestone	foliated	bleaching at 25.5	tr of diss. py	→ 25.5 qtz lenses and chlorite along schistosity							
29.1			andesite dyke	massive			dark greenish grey; difficult to break							
30–35			sericitic and slightly chloritic phyllite-schist	isoclinally folded	32.4–33 } more chloritic	minor qtz veining at 32.9; → 33.6 qtz vein, 1cm wide rusty, 10° to c-a	32.4–33 calcareous phyllite							
36.3–40			limestone	calcareous; gouge mud - 30cm wide; → folded	minor narrow chloritic bands; calcareous; rusty on fractures									
45						44 quartz-calcite vein 2-3cm wide - barren	→ contains brecciated limestone fragments							
46–47			interbanded chlorite schistose and altered limestone	schist ⊥ to c.a.	chlorite	qtz lenses in contact with dyke	med grey to green							
48.9			Intermed. dyke				slightly calcareous; mixed limestone intervals							
50			limestone		minor chlorite intervals with irregular calcite veining		mottled light and med grey							

DRILL LOG

PAGE 2 OF 3
HOLE 86-4
LOCATION
ORIENTATION
INCLINATION

LENGTH
STARTING DATE
COMPLETION DATE
SCALE

DRILL CORE
CONTRACTOR
DATE LOGGED
LOGGED BY

METER-AGE	CORE LGTH	% REC	ROCK TYPE	STRUCTURE	ALTERATION	MINERALIZATION	NOTES	ANALYSIS NO.
50			50.8 limestone					
			Interbanded chloritic schistose and altered (?) limestone		chlorite	minor qtz lenses	mottled	
				→ brecciated	→ bleached to light green			
55				calcareous + sericitic fault gouge mud				
			aphanitic intermediate dyke		chlorite		→ minor chlorite schistose dark green, aphanitic	
60			60.5					
			61.5 diorite		mafic minerals alt. to chlorite			
			62.7 Breccia		silicified + chloritized		med gr., avg 1mm in diameter, equigranular	
65			Fine gr. greywacke altered		silicified + chloritized			
			65.5 Sericite (chlorite) 67 schistose	schistosity 70° to c.a.	chloritic		med grey	
70			Greywacke		chloritic matrix	→ 68 Barren white quartz pocket	Very fine grained <.1mm med greenish grey black and white grains + qtz in chloritic matrix	
			70.5 Sericitic schistose → sericite schist with minor fine gr. greywacke	schistosity 60-70° to c.a.	minor chlorite	→ white qtz + pyrite pocket		
75							→ 76.5-76.8 fine gr. greywacke	
			77.85					
			79.1 Greywacke	foliated			fine gr. <.1mm, [illegible] qtz + black + white grains chloritic matrix	
80			Sericite-chlorite schist	schistosity 70° to c.a.			dark grey to green	
			80.75					
			Greywacke	foliated 70° to c.a.	chlorite		med. greenish grey, med to fine grained various grains <.1mm up to .5mm.	
85					↑ chloritized bands up to 40 cm wide ↓		→ 86.2 pocket of grey quartz	
90								
95					→ 96.8 chloritized, bleached on both sides, irregular			
100						→ white qtz pockets		

DRILL LOG

PAGE 3 OF 3
HOLE 86-4
LOCATION
ORIENTATION
INCLINATION

LENGTH
STARTING DATE
COMPLETION DATE
SCALE

DRILL CORE
CONTRACTOR
DATE LOGGED
LOGGED BY

METERAGE	CORE LGTH	% REC	ROCK TYPE	STRUCTURE	ALTERATION	MINERALIZATION	NOTES	ANALYSIS NO.
100			Greywacke	+ more foliated				
105			102 sericite-chlorite schist minor bands of fine gr. greywacke	schistosity 65-70° to c.a.	chlorite envelope around qtz	→ white qtz + calcite pocket		
110			107.2 Greywacke schistose		chlorite		Dark grey, fine gr. < .1 mm	
115			111.3 Sericite schist 114 [illegible]	Schistosity 40° to c.a. [illegible]			[illegible]	
			sericite-chlorite schist 116.2 Sericite-chlorite schist	schistosity 40° to c.a. → slickenside 40° to c.a. folded and crenulated → 117.96 clay for 15 cm brecciated greywacke	- chloritized + clay		with 10-20 mm wide bands of med gr. greywacke altered and deformed on both sides of fault zone END OF HOLE - 118.9	

DRILL LOG

PAGE 1 OF 1
HOLE 96-5
LOCATION
ORIENTATION
INCLINATION

LENGTH 35.0
STARTING DATE
COMPLETION DATE
SCALE 1:250

DRILL BOYLES 37A CORE NQ
CONTRACTOR L SPENCE
DATE LOGGED
LOGGED BY M. ARCHAMBAULT

METERAGE	CORE LGTH	% REC	ROCK TYPE	STRUCTURE	ALTERATION	MINERALIZATION	NOTES	ANALYSIS NO.
0			Overburden				Various boulders cored	
5								
10								
			11.0 Original rock is totally silicified	now laminated - 2mm wide bands Folded and granulated	Silicified			
15								
			15.5 - 15.7 - 20 cm of med gr. greywacke					
			19.2		bleached			
20			Sericite schistose		minor limonite on fractures		Broken	
25							24.7 - 25.2 Very broken	
30							Broken	
					31.4 - 10 cm of sand		28.3 - 31.4 TUBE NOT LOCKED 31.7 calcareous for 30 cm	
35			34.2 Possible altered diorite			quartz pocket & contact	34.2 med gr. equigranular 35.0 END OF HOLE	