Property Submission

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92F

SEP 20 1972
92F

To: Glen Hogg

From: W.M. Sirola 19 September 1972

Subject: BIG INTERIOR PROPERTY, Bedwell River Area, Vancouver Island, B.C.

J.H.S.
P.M.K.
G.M.H.
R.D.S.
B.C.B.
I.D.B.
M.D.R.
J.H.F.
E.C.J.

Introduction

Mr. R.C. Cootes, who has been an associate of Andrew Robertson since the inception of the Endako deposit in 1962, told me that he had worked on this property when it was optioned to Kopan Developments in 1960, and he said he was impressed by the amount of disseminated copper in the intrusive rocks on the property.

It was Coote's opinion that too much effort had been concentrated on a limestone area on the upper part of the property, and that insufficient work had been done to properly evaluate the low grade potential of the deposit.

Location

In Strathcona Park, 36 miles north west of Port Alberni and 11½ miles north east of the head of Bedwell Sound.

History

Discovered in 1899 and limited work done in 1906. No serious effort until 1959 when the 26 claims were acquired by Andrew Robertson and optioned to Kopan Developments of Toronto. On behalf of Kopan, Robertson contracted a total of 4,074 feet of Diamond Drilling, of which 909 feet was done by packsack drill on the contact metamorphic upper portion of the deposit.

Geology

The geology of the deposit has been adequately described by Hartley Sargent in Bulletin #13 of the B.C. Department of Mines in 1941, and a copy of Dr. Sargent's work is enclosed.

The property was mapped on a scale of 1" = 100' during the course of the Kopan Development work by Peter Heenan. There are two types of copper deposition on the property: (a) stringers and lenses of ore grade chalcopyrite at the contact of Permian limestone with Jurassic diorite, and (b) chalcopyrite and pyrrhotite in fractures and joints in diorite containing numerous inclusions of andesite, basalt and gabbro. The term "inclusion" here is rather loosely used in the sense that some of the gabbro, for example, could be a phase of the diorite.

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This Jurassic complex is cut by younger diorite and feldspar porphyry dykes, and, in some cases, chalcopyrite is somewhat more abundant near the dyke contacts.

Economic Geology

The topography at Big Interior Mountain is such as to preclude any notion of an open pit operation. Mineralization is in a glacial cirque, the top of which is at elevation 6000' and the bottom of the cirque is at elevation 3800'. Mr. Cootes had in mind, the possibility of block-caving the deposit by driving an adit from Della Lake one mile south-east of the deposit. This would provide a maximum of 2000' of mining height. This in itself is a valid premise, but I am completely unable to agree with Cootes on the grade of the deposit. The contact metamorphic zone has been indicated by 23 short Diamond Drill holes, to have copper values of from 0.85% across 25 feet, to 2.11% acrass 72 feet, and 7.72% across 10 feet, but the indicated tonnages were small and were not really the subject of the examination. After three hours of breaking rock on the north and east walls of the cirque in the intrusive complex, I have to conclude that the average grade is less than 0.2% copper and that being the case, there would be no hope of mining the deposit by any procedure.

The Kopan Syndicate drilled some very deep holes (1700 feet) in an effort to tap the contact metamorphic mineralization at depth, but the programme was overly ambitious and the skarn-type mineralization was not encountered.

Cootes appeared to be enamoured by the fact that he had drilled one 70 foot drill hole (not shown on any maps) into the intrusive complex and to his surprise this hole intersected 70 feet, averaging 1% copper. Regardless of this information, the fact remains that the combination of visual grade together with the results of the Diamond Drilling, indicate that the copper content is very low indeed.

It is unfortunate that the Diamond Drilling did not indicate lower limits of the contact-type mineralization. My own feeling is that the Permian limestones are a folded remnant within the Jurassic diorites and that their lower limit would be found approximately 600 feet below the outcrop. In any case, the topography and weather conditions, would make mining a costly and hazardous process not justified by the tonnages encountered.

Apart from these considerations, is the problem of obtaining permission to start a mining operation in Strathcona Park. Western Mines does have an operation within the Park, but it was begun before the hue and cry from conservationists became what it is today.

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Conclusions

In estimating the grade of the copper mineralization in the intrusive complex, we took into consideration the possibility that some of the copper content may have been lost through leaching. We also were aware of the fact that very occasionally, small amounts of molybdenite could be seen in the rock. We have to think that the leaching is negligible based on the absence of voids, the absence of post-chalcopyrite limonite, and the absence of malachite stain. The combination of climate and rapid erosion do not provide much opportunity for oxidation or leaching. There would be some by-product molybdenite, but scarcely enough to make a difference in grade estimates.

The discrepancy between the grade required to make a viable operation in that environment and that of the mineralization seen in the cirque, is too great to consider spending money on exploring the deposit. A grade of approximately 0.8% copper would be an economic necessity for any underground mining procedure.

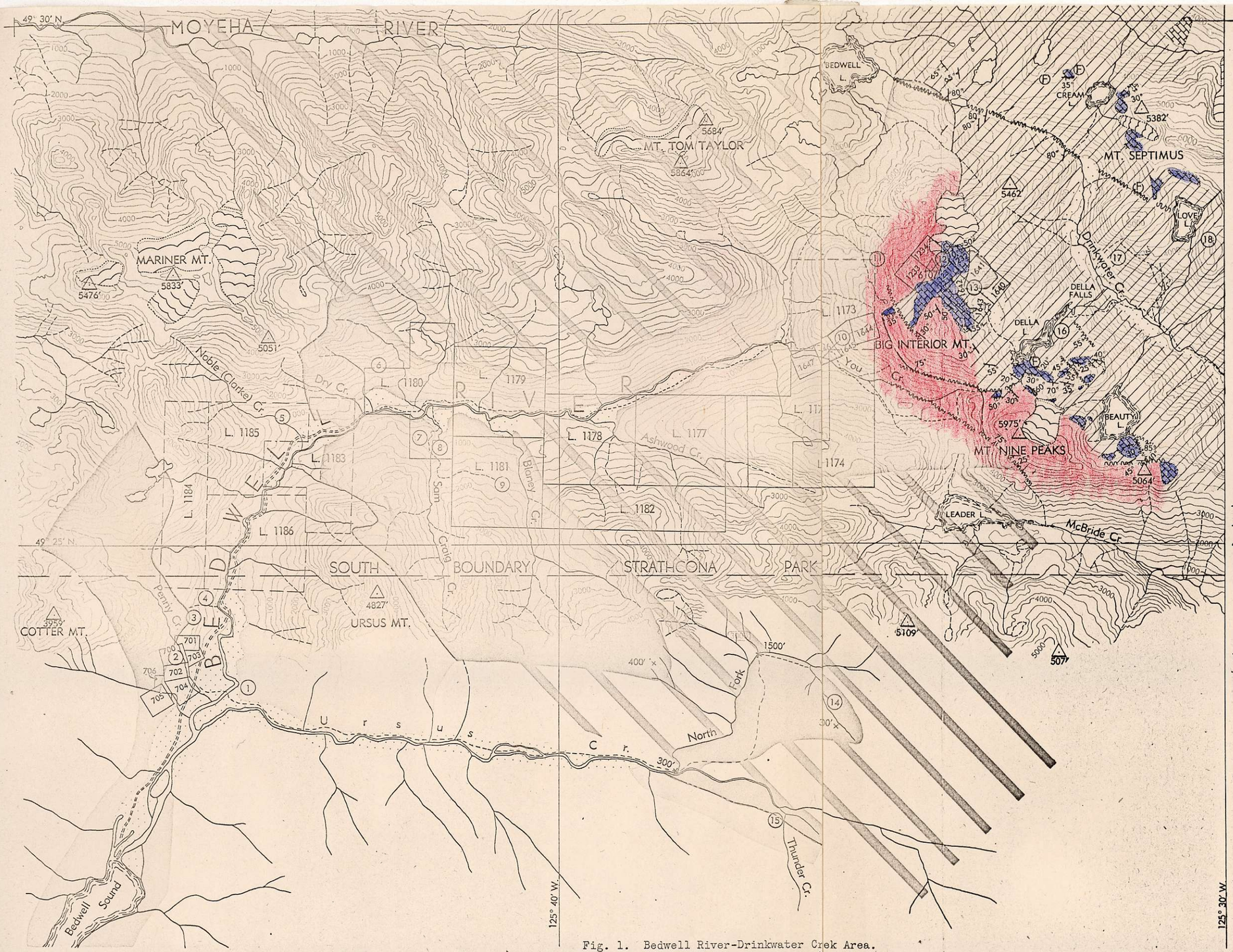
W.M.Sirola

Encs.
Panoramic photograph copy
Copy Bulletin #13 B.C. Dept. of Mines
Topographical map

Bill Sirola finds - and I agree with my opinion a very fair assessment of the picture - indicates that grades are prohibitively low. No further interest recommended.

Agreed Mark Sept. 29/72.

Sept 28/72



LEGEND

Recent.

Unconsolidated material.

Mesozoic.

Jurassic and, or, Cretaceous (Coast Range)—granitic rocks, chiefly quartz-diorite.

Note.—Sections indicated by the pattern were not traversed closely and are probably underlain by Coast Range granitic rocks, which may contain roof-pendants.

Palaeozoic and Mesozoic.

Chiefly Lower Mesozoic (Vancouver Group)—andesite, basalt, fine-grained, impure tuffs, limestone.

Permian—limestone, in part recrystallized, also includes at some points overlying thin-bedded siliceous and tuffaceous (?) argillites.

Complex stratigraphically below the Permian limestone; volcanics tuffaceous and argillaceous sediments, generally of fine-grained cherty appearance, of Palaeozoic age; basic intrusives, related to Lower Mesozoic volcanics; and granitic intrusives (Coast Range).

Note.—The Palaeozoic and Lower Mesozoic rocks are invaded by dykes and other small bodies of granitic rock, not mapped, which are related to the larger masses of granitic rock. Dykes are numerous near the contacts of the larger granitic masses.

Geological boundary defined.

Geological boundary approximate.

70° Fault with dip.

50° Bedding or foliation.

(F) Fossil locality.

4827' Triangulation station, with elevation in feet.

3800' Spot elevation in feet.

Road.

Trail.

Glacier.

PROPERTIES

*1. Prosper.	*10. You.
*2. Seattle.	*11. Casino.
*3. Avon.	12. Ptarmigan.
*4. Galena.	13. Big I.
*5. Noble and Noble B.	*14. Trophy.
*6. O.K.	*15. Thunderbird.
7. Joker.	16. Della.
8. Musketeer Mines, Limited.	17. Sherwood.
9. Buccaneer Mines, Limited.	18. P.D.Q

*Described in Bulletin No. 8, 1940—Bedwell River Area.

Scale 1 0 1 Miles

Fig. 1. Bedwell River-Drinkwater Creek Area.
(contour interval 200 feet)

Topography from British Columbia Department of Lands
Map 92 F/5.

Subdivision of

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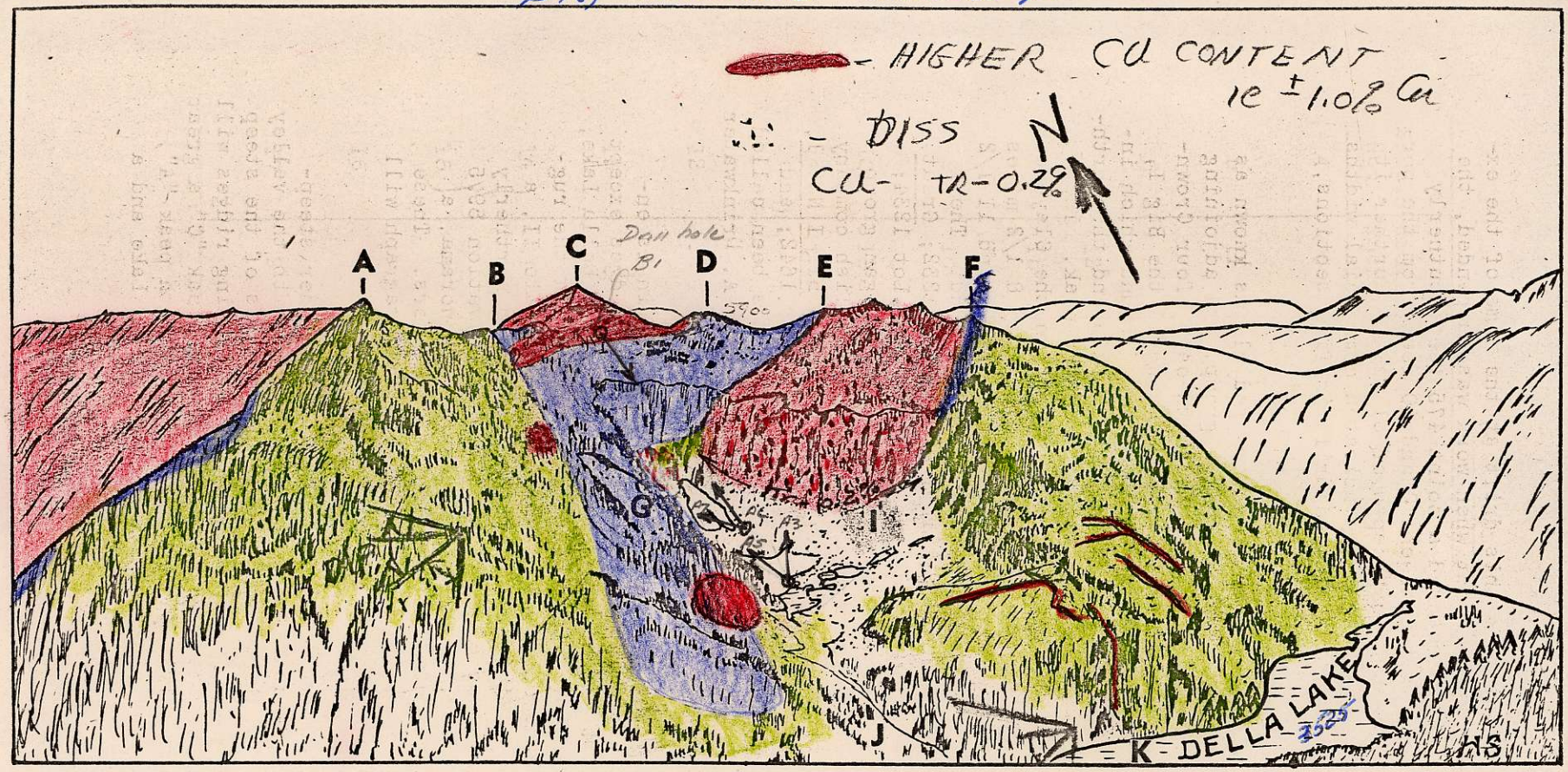
B.I. INTERIOR PROPERTY.



A. South Peak—elevation 5,900 feet.
B. Southern margin of limestone, on south spur.
C. Main Peak, Triangulation station—elevation 6,107 feet.
D. Knob of limestone.
E. Eastern margin of limestone on ridge.
F. Fracture on western side of peak.
G. Draw.
H. Top of snow mass in north-west corner of cirque.
I. Eastern end of quartz-diorite.
J. Outlet of cirque.
K. Fracture at Della Lake—elevation 3,525 feet, approximately.

Fig. 4. Looking northerly into cirque, Big Interior Mountain, copied from panoramic photograph Plate II.

Note: From E-F, grade (visual), is < 0.2% Cu Sept. '72

SEP 25 1972

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

To GLEN HOGG *From* W.M. SIROLA

Subject BIG INTERIOR PROPERTY - Bedwell River Area, Vancouver Island, B.C. *Date* September 21, 1972

J.H.S.
P.M.K.
G.M.B.
R.D.S.
D.G.B.
I.C.S.
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J.H.F.
E.C.J.

Accompanying this memorandum is a geological plan on a scale of 1" = 100 ft., and an east-west section showing two long diamond drill holes.

Shown on the plan are the locations of short diamond drill holes in the limestone contact area on the west side of the cirque, and also a number of long diamond drill holes intended to probe this contact zone at depth and at the same time determine the disseminated copper content of the intrusive rocks.

The drilling of the limestone contact zone indicates that there are short, discontinuous skarn sections which have highly variable grades of copper (1 - 7%), but the volume of this mineralization is too small for tonnage calculation purposes.

The long diamond drill holes indicate that there is no alteration of the phyllic or potassic grade, and that copper mineralization in these rocks is meagre, to say the least. When I wrote my previous memorandum on September 19th, I was not aware that drill hole B1 had a total length of 1500 feet, since it was only indicated to be 700 feet long in the section. The section now indicates that the skarn zone was encountered in drill hole B1 at a vertical depth of 900 feet below the outcrop. This appears to have been too large a bite, because no assays were taken from the skarn in the drill hole and we have to assume that copper mineralization in the skarn was very weak indeed.

I am a little surprised at Bob Coutts' enthusiasm for the east part of the cirque, but this may arise from the fact that it is the least explored part of the property.

Had there been strong alteration in that area, then I would agree that more work was indicated, but from the low rank (propyllitic) alteration seen, it does not justify any additional consideration on our part.

To give you some idea of the widths and grades encountered in the drilling of the limestone contact area, I have enclosed a copy of Mr. Robertson's summary of that drilling.

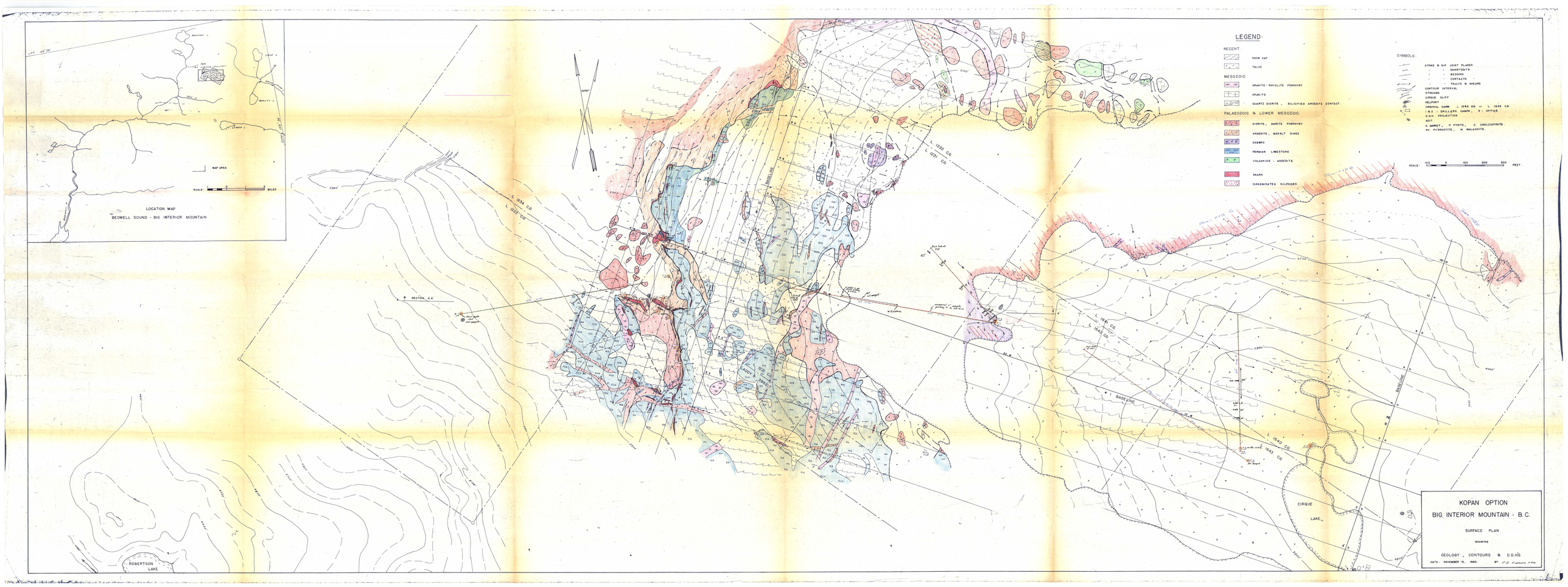
Bill

WMS/fs
Enclosures

W.M.Sirola

KOPAN DEVELOPMENTS LIMITED
BIG "I" MINE
SUMMARY OF TOP DRILL HOLES
NOVEMBER 30, 1960

D.D.H. No.	CO-ORDINATES North	South	East	West	INTERSECTIONS From	To	Core Length	Azimuth	AVERAGE ASSAY VALUE Copper %	Gold oz.	Silver oz.	Angle	Remarks
T1		365'		330'	31	84	53	27°	0.95	0.01	1.16	45°	30 ft. Limestone
T2		380		262	31.4	35.4	4	38	7.70	0.12	2.50	35	ditto
T3		173		336	66.4	77	10.6	130	1.35	0.08	0.82	40	Mostly limestone
T4		285		320	19	78	59	207	0.93	0.03	0.75	30	Lost
T5		20		450	0	12	12	46				35	Fault
T6	5			450	1	11	10	99	7.72	0.13	4.79	60	"
T7	10			430	1	11	10	99	2.22	0.055	0.97	80	"
T8	15			420	0	13	13	193	2.58	0.017	0.79	60	"
T9	198			522	0	7	7	27	2.80	0.005	1.30	65	Dyke
T10	212			500				190				45	
T11		335		440	11	36	25	202	0.85	0.02	1.13	45	
T12		340		515	18	19	1	215	2.90	0.015	0.85	45	Limestone
T13		522		165	3	11	8	49	2.05	0.03	1.60	45	
T14		527		156	3	9	6	140	3.50	0.12	2.15	60	
T15		148		148				205				30	Post-fault
T16		315		365	0	72	72	145	2.11	0.042	1.20	60	
T17		350		440	1	32	31	Vert.	1.24	0.007	0.63	90	
T18		21		402	0	20	20	274	3.00	0.05	1.16	10	
T19		526		433	1	5.5	4.5	Vert.	3.25	0.36	2.45	90	Limestone
T20		775		313	2	8	6	333	3.60	0.16	1.05	70	Broken ground
T21		763		200	0	4	2	Vert.	3.10	0.02	2.15	90	ditto
T22	215			518	2	26	24	303	1.02	0.004	0.92	10	
T23	387			510	0	7	6	160	1.65	0.005	0.40	60	


LOCATION MAP
BEDWELL SOUND - BIG INTERIOR MOUNTAIN
MAP AREA
SCALE
MILES
LEGEND
REGENT.
SNOW CAP
TALUS
MESOZOIC.
GRANITE - RHYOLITE PORPHYRY
GRANITE
QUARTZ DIORITE , SILICIFIED ANDESITE CONTACT
PALAEOZOIC & LOWER MESOZOIC.
DIORITE , DIORITE PORPHYRY
ANDESITE , BASALT DIKES
GABBRO
PERMIAN LIMESTONE
VOLCANICS - ANDESITE
SKARN
DISSEMINATED SULPHIDES
SYMBOLS.
STRIKE & DIP JOINT PLANES
" " SCHISTOSITY
" " BEDDING
" " CONTACTS
" " FAULTS & SHEARS
CONTOUR INTERVAL
STREAMS
CIRQUE CLIFF
HELIPORT
ORIGINAL CAIRN L 1640 CG — L 1643 CG.
I & 2 - DRILLER'S CAMPS , B - OFFICE.
D.D.H. PROJECTION
ADIT
G GARNET, P PYRITE, C CHALCOPYRITE.
PH PYRRHOTITE, M MALACHITE.
SCALE
100 0 100 200 300
FEET
SECTION 4 N
L 1634 CG
L 1633 CG
L 1632 CG
L 1631 CG
L 1640 CG
L 1643 CG
BASE LINE
CIRQUE
LAKE
ROBERTSON
LAKE
KOPAN OPTION
BIG INTERIOR MOUNTAIN - B.C.
SURFACE PLAN
SHOWING
GEOLOGY , CONTOURS & D.D.H'S
DATE: NOVEMBER 19, 1960.

LEGEND:
RECENT
SNOW CAP
TALUS
MESOZOIC
GRANITE - RHYOLITE PORPHYRY
GRANITE
QUARTZ DIORITE , SILICIFIED ANDESITE CONTACT
PALAEOZOIC & LOWER MESOZOIC
DIORITE, DIORITE PORPHYRY
ANDESITE, BASALT DIKES
GABBRO
PERMIAN LIMESTONE
VOLCANICS - ANDESITE
SKARN
DISSEMINATED SULPHIDES
PROJECTION OF D.D.H'S.
5000' EL.
4200' EL.
3500' EL.
No ore
3 B.L., 230 S.
1 B.L., 2760 W.
KOPAN OPTION
BIG INTERIOR MOUNTAIN - B.C.
VERTICAL SECTION AA'
THROUGH
1 B.L., 2760 W. & # 3 B.L., 230 S.
DATE: NOVEMBER 19, 1960.