

89

GEOLOGICAL REPORT ON THE BLUE-BELLE GROUP

Consisting Of:

Blue #3 Mining Claim  
Blue #4 Mining Claim  
Belle #1 Mining Claim  
Belle #2 Mining Claim  
Belle #3 Mining Claim  
Belle #4 Mining Claim

August 15th till August 31, 1953

25 miles Northwest of Stewart, B.C.  
Lat. 56° Long. 130° N.W.  
Skeena M.D.

Work Supervision by J.J. Crowhurst.

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## GEOLOGICAL REPORT ON THE BLUE-BELLE GROUP

### Introduction:

The following report is the result of a geological survey of the Blue-Belle group of mineral claims made during the summer of 1953 by Granduc Mines Ltd.

The claims were examined by Mr. L.F. Postle, Vice-President and General Manager of The Granby Consolidated Mining, Smelting and Power Company Ltd. and President of the Granduc Mines Ltd., and Mr. J.J. Crowhurst, Assistant Mine Superintendent of The Granby Consolidated Mining, Smelting and Power Company Ltd. and Manager of the Granduc Mines Ltd., in order to evaluate these claims for southern extensions of the Granduc ore zone.

The claims were surveyed by W. Shindle and Gordon Wright in advance of the examination. This survey served as a control for the geological work done by J. Sullivan and P.E. Olson.

All the surveying and traversing was done by compass and tape.

### Location and Access:

The Blue-Belle group is situated 3,500 feet south southwest of the Granduc portal. These claims are traversed by Lat.  $56^{\circ} 13'$  Long.  $130^{\circ} 22'$  about four miles east of the Alaskan border on the southern edge of the Leduc glacier, which forms the headwaters for the Leduc river.

The best approach to this group is from Stewart on the Portland Canal to the Leduc Glacier by helicopter. Other types of aircraft cannot land in this area during the summer months. An alternative route is a three to four day hike from Boundary Lake on the Unuk river up the Unuk to the south fork, then up the south fork to the Leduc Glacier.

Status of Claims:

The Blue-Belle Group consisting of Blue #3, Blue #4, Belle #1, Belle #2, Belle #3 and Belle #4 mineral claims is held by location by the Granduc Mines Ltd. Location dates range from April, 1953 to August, 1953.

Summary:

The rugged topography which extends across the claims of the Blue-Belle group limits the amount of surface exploration and development that can be done in this area. It is apparent, however, that the sulphide and oxide exposures on the Belle No. 3 are worthy of further investigation. For, although the oxide zone on this claim is yet inaccessible for sampling, sufficient likeness between this deposit and those on Granduc mountain can be found in the surrounding float and bed rock.

Conclusions:

- (1) The underlying rocks of the Blue-Belle group can be correlated on a structural basis and lithological character to those of the Hazelton Group of Hanson's in the Portland Canal area.
- (2) Judging from the rock types on the Belle No. 3, the oxidized zone on the valley wall is a continuation of the mineralized zone on Granduc mountain to the south. Although it is certain that the sulphides of ore grade are not continuous for this distance, the favorable horizon most certainly is, and the yet unexplored oxide zone on Belle No. 3 lies within it.
- (3) It is apparent that the amount of surface development that can be done on the Belle No. 3 is limited because of the steep valley walls. No doubt sufficient water could be obtained for a small diamond drilling program by damming off the rills during mid summer. It is possible to mount a B.B. S2 drill

on top of the lateral moraine and slide rock 100 feet south of section C - C on the accompanying map sheet. From this point two horizontal holes could be drilled, one bearing due west and one bearing southwest. In addition, a down hole at  $-50^{\circ}$  could be drilled bearing due west. After this, undercutting the oxide zone with a man sized opening to facilitate an underground drilling program is the only practical method of development.

(4) Because sufficient water for exploration purposes is one of the major problems on this group of claims, it would be advisable to explore the area for the most suitable water supply before any surface or underground investigations are considered.

Topography, Timber and Water:

The topography on the group, in the areas not covered by glaciers, is extremely rugged. The main valley glacier and minor hanging glaciers from the ice capping above have successfully quarried and abraded the mountain slopes into rugged valley walls. As a result, a large portion of the higher regions on the Blue-Belle group is inaccessible. Figure 1, facing northwest on Belle #3, illustrates the steep slopes in the areas classified on the accompanying map sheet as inaccessible.

Figure 1.

The closest timber to the group is a clump of stunted spruce three miles to the west down the Ladue valley.

There is no permanent water supply on the claims. A few rills flow occasionally when the temperature is high enough to melt the snow and ice capping around the summit to the south.

#### General Geology:

The rocks underlying the area have not yet been correlated with other districts by the Geological Survey of Canada. However, there is a marked similarity to these rocks and some of those described by George Hanson in his description of the Portland Canal Area, G.S.C. Memoir 175.

The rocks of the area are essentially volcanics and sediments. Volcanics to the east and sediments to the west. These two types are conformable in most places where they are exposed and any unconformities seen appear consequent on shearing along the contact. The general trend of the contact is north and south dipping steeply west, but many local variations can be seen within the two main units.

The sediments have been highly altered in most places, probably from the action of the Coast Range intrusives. In many cases it is doubtful if any of the original constituents still exist.

The area is traversed by a few narrow dykes and sills of granodiorite and felsite compositions. They are all vertical, or nearly vertical, striking in a northwest southeast direction.

The sediment-volcanic contact lies a few hundred feet to the west of the summit of the Granduc mountain. On the west end of this mountain the rocks have undergone relatively little alteration. The bulk of the series in this area is a banded greyish-brown siltstone, with the exception of a few

narrow beds of fine grained quartzite.

Within 7,000 feet west of the volcanics an increase in the degree of alteration is noted with an increase in the amount of chlorite and biotite present. From here to the contact is a mixed assemblage of chlorite schist, biotite schist, impure sheared limestones, limy argillites and narrow cherty beds. It is very probable that these units are tuffaceous with an intermediate to basic composition after the eastern volcanic series. Although it was concluded that the rocks west of the volcanic flows were definitely waterlain, there are portions that could be classified as volcanics.

No attempt was made to lay out a sequence in the volcanic rocks. It was noted, however, that considerable variation in the types is to be found. There are massive varieties varying from andesite to basalt with abundant epidote, porphyritic flows with large grey feldspar phenocrysts, augite porphyrys with phenocrysts up to one-half inch, plus beds of tuffs and coarse fragmentals. Within the above types of volcanics are dyke-like masses of granitic rock and regions of recrystallization suggesting an assimilation process by an underlying granitic mass.

#### Detailed Geology:

The sedimentary series underlying the Blue-Belle group fall into no less than thirteen members, some of which are so highly altered that a megascopic examination rarely discloses any information on the original nature of the rock. The cross section examined is, from east to

west, as follows:

<u>Description</u>	<u>Thickness</u>
Siliceous biotite schist	> 60'
Thin bedded limestone, with lenticular cherty beds	50'
Banded biotite and chlorite schist	100'
Coarse volcanic breccia	110'
Carbonated biotite schist	90'
Thin bedded limestone	450'
Limy argillite	130'
Gritty argillite	> 250'
(Under the hanging glacier)	600'
Banded biotite-chlorite schist	> 200'
Biotite schist	140'
Chlorite schist	90'
Banded biotite chlorite schist	160'
Biotite schist	360'
Siltstone and quartzite	> 800'

Structural Geology:

The major structure of the area appears to be the west limb of the broad anticline which embraces the area west of Summit Lake on the Portland Canal map sheet. It is noted, however, that there is a general flattening of dips to the west which suggests the presence of the east limb of a syncline toward the Alaskan boundary.

On the Blue-Belle group there are very few local variations in the general north south trend and steep westerly dip. On Belle No. 4 there is a local roll of small amplitude within the biotite schist, a combination that has favored the deposition of copper mineralization on the Grandus mountain. It is apparent, however, that greater distortion and brecciation is necessary before the sulphides localise.

The long oxide zone on the face of the valley wall on Belle No. 3 could well be the result of drag folding and brecciation, but unfortunately the zone is inaccessible at the present so that very little




can be said about the structures at this point.

Mineralization:

The large oxidized outcrop on Belle No. 3, although on the precipitous face of the valley wall, is the most attractive showing on the group. The outcrop has a vertical extent in the order of 350 feet and a horizontal width slightly under 100 feet. From an examination of the valley wall below the showing, the oxidation lies within a heterogeneous assemblage of impure sediments similar to the types found in the area of the Grandue portal. The strike is  $N10^{\circ}E$  and the dip is  $80^{\circ}W$ . Copper stains show high up in the oxidation, but the face is inaccessible and the best evidence of copper lies in the chalcopyrite mineralization on the eastern edge of the gossan and in mineralized float at the base of the cliff. The stains examined in the accessible lower regions of the outcrop are transported limonite, and any sulphides that may exist bottom above the 3,300 ft. elevation.

Again on Belle No. 3, but in close to the southeast boundary, a siliceous zone 4.5 feet wide was found. There are considerable amounts of coarse galena and lesser chalcopyrite. The showing is a vein type deposit with a spectacular array of sulphides, but disappointing in that it lenses out both north and south leaving a strike length of about 25 feet.

  
Registered Professional Engineer.

Allenby, B.C.,  
October 27, 1953.

SOUTH LEDUC TRAVERSE

Compass and Tape

Assumed elevation Belle 2 South = 3200'

(B.28.)

BLUE-BELLE GROUP

J. Sullivan

P. Olson

August 22, 1953.

<u>Sta.</u>	<u>FB</u>	<u>Azimuth</u>	<u>Vert. Angle</u>	<u>Slope</u>	<u>Hor. Dist.</u>	<u>Vert. Diff.</u>	<u>Elevation</u>
B28	1	237°	+ 30°	296	259	+ 149	3349.0
1	2	274	+ 13	90	88.5	+ 20.5	3369.5
2	3	312	- 32	100	85.0	- 53.0	3316.5
3	4	304	- 3	110	110.0	- 6.0	3310.5
4	5	270	- 4	98	98.0	- 7.0	3303.5
5	6	298	- 26	107	96.0	- 47.0	3256.5
6	7	210	+ 25	100	91.0	+ 42.0	3298.5
7	8	210	+ 13	100	97.5	+ 22.5	3321.0
8	9	300	- 20	100	94.0	- 34.0	3287.0
9	10	345	- 24	100	91.0	- 40.5	3246.5
10	11	302	- 10	100	98.5	- 17.5	3229.0
11	12	298	- 8	100	99.0	- 14.0	3215.0
12	13	310	+ 3	100	100.0	+ 5.0	3220.0
13	14	306	- 7	100	99.0	- 12.0	3208.0
14	15	302	+ 2	100	100.0	+ 3.5	3211.5
15	16	302	0	100	100	0	3211.5
16	17	315	- 12	100	98.0	- 21.0	3190.5
17	18	340	- 18	100	95.0	- 31.0	3259.5
18	19	012	- 15	100	96.5	- 26.0	3133.5
19	20	352	- 12	100	98.0	- 21.0	3112.5
20	21	008	- 21	100	93.5	- 36.0	3076.5
21	22	320	+ 19	100	94.5	+ 32.5	3109.0
22	23	290	+ 27	100	89.0	+ 45.5	3154.5
23	24	315	+ 2	100	100.0	+ 3.5	3158.0
24	25	330	- 4	100	99.5	- 7.0	3151.0
25	26	343	- 12	100	98.0	- 21.0	3130.0
26	27	000	- 30	60	52.0	- 30.0	3100.0
27	28	313	+ 9	100	99.0	+ 15.5	3115.5
28	29	328	- 8	100	99.0	- 11.0	3101.5
29	30	314	- 14	100	97.0	- 24.0	3077.5
30	31	334	0	70	70.0	0	3077.5
31	32	323	- 11	110	108.0	- 21.0	3056.5
32	33	300	0	100	100.0	0	3056.5
33	34	285	+ 6	105	104.5	+ 11.0	3067.5
34	35	280	+ 27	120	107.0	+ 54.5	3122.0
35	36	250	+ 42	65	48.0	+ 43.5	3165.5
36	37	307	- 20	95	89.0	- 32.5	3133.0
37	38	000	- 41	100	75.5	- 65.5	3067.5
38	39	328	- 13	70	68.0	- 16.0	3051.5
39	40	334	- 20	100	94.0	- 34.0	3017.5
40	41	004	- 30	110	95.0	- 55.0	2962.0
41	42	350	- 24	100	91.5	- 40.5	2921.5
42	43	300	- 10	100	98.5	- 17.5	2904.0
43	44	300	0	85	85.0	0	2904.0
44	45	320	- 10	100	98.5	- 17.5	2886.5
45	46	310	- 10	78	77.0	- 13.5	2873.0
46	47	315	- 14	100	97.0	- 24.0	2849.0
47	48	290	- 8	100	99.0	- 14.0	2835.0
48	49	305	- 14	100	97.0	- 24.0	2811.0
49	50	275	- 20	50	44.5	- 16.0	2795.0
50	51	297	- 12	100	98.0	- 21.0	2774.0
51	52	273	+ 2	110	110.0	+ 4.0	2778.0
52	53	306	- 22	100	92.5	- 37.5	2740.5
53	54	265	- 8	40	39.5	- 5.5	2735.5

SPECIALLY QUALIFIED WORKERS

(who are not Registered Professional Engineers)

J. Sullivan, Geologist.

Graduate in Applied Science, Geological Engineering.  
University of B.C. 1951.

Mine Engineer and Geologist for Kootenay Base Metals  
Ltd., Fort Steele, B.C., from May 1951 till October 1952.

Mine Geologist for True Fissure Mines Ltd., Ferguson,  
B.C. from October 1952 till February 1953.

Field Engineer for Granby Consolidated Mining, Smelting  
and Power Co. Ltd., from February 1953 till date of work.

P.E. Olson, Geologist.

Graduate in Applied Science, Geological Engineering.  
University of B.C. 1951.

Mine Engineer and Field Geologist for Granby Consolidated  
Mining, Smelting and Power Co. Ltd., May 1950 till date of work.

W. Shindle, Surveyor.

Graduate in Applied Science, Mining Engineering.  
University of B.C. 1950.

Mine Engineer at Copper Mountain Mine of the Granby  
Consolidated Mining, Smelting and Power Co. Ltd., March, 1952  
till January, 1953.

Chief Engineer for Granduc Mines Ltd. from January, 1953  
till date of work.

SCHEDULE OF COSTS

The following statement shows labor costs chargeable against the Blue-Belle Group for the geological survey. All work was performed between August 15th and August 31st, 1953.

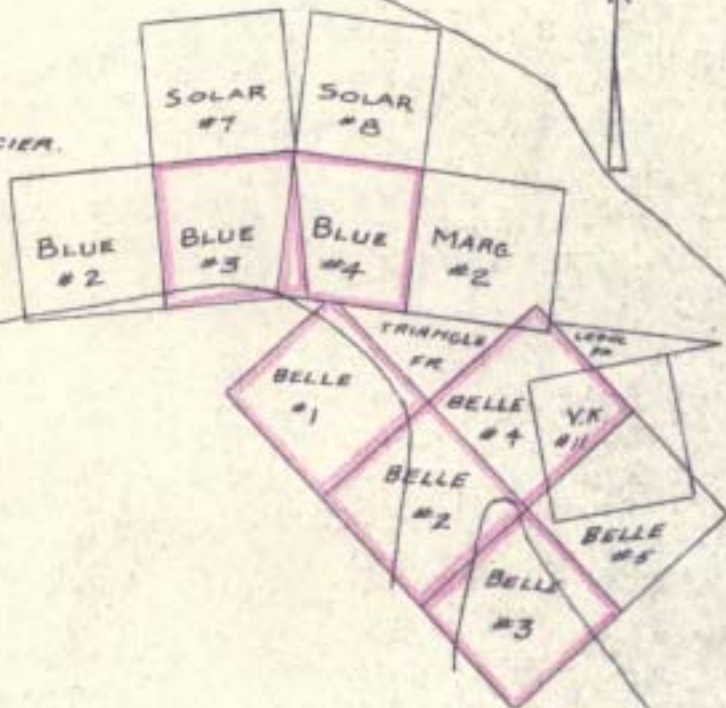
<u>Name</u>	<u>Occupation</u>	<u>Rate</u>	<u>Amount</u>
J. Sullivan	Geologist	9 days @ \$15.00	\$135.00
P.E. Olson	Geologist	9 days @ \$15.00	135.00
W. Shindle	Surveyor	6 days @ \$15.00	90.00
G. Wright	Helper	6 days @ \$13.17	79.02
J.J. Crowhurst	Prof. Engineer	3 days @ \$35.00	105.00
L.T. Postle	Prof. Engineer	1 day @ \$60.00	60.00
			<u>604.02</u>

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Mines and Petroleum Resources  
ASSESSMENT REPORT

NO. **89** MAP **#1**

SKETCH MAP of the BLUE-BELLE GROUP  
and Adjacent Claims.

LEONIC GLACIER.



GABRIEL MINES LTD.

*J. J. Crowhurst*

OCT. 20, 1953 - Scale: 1" = 2000'  
REF. 50-25-0

3400

3200

3000

2800

2600



BLUE 3

BLUE 4

BELLE 1

BLUE 4

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NO. **89** MAP **72**

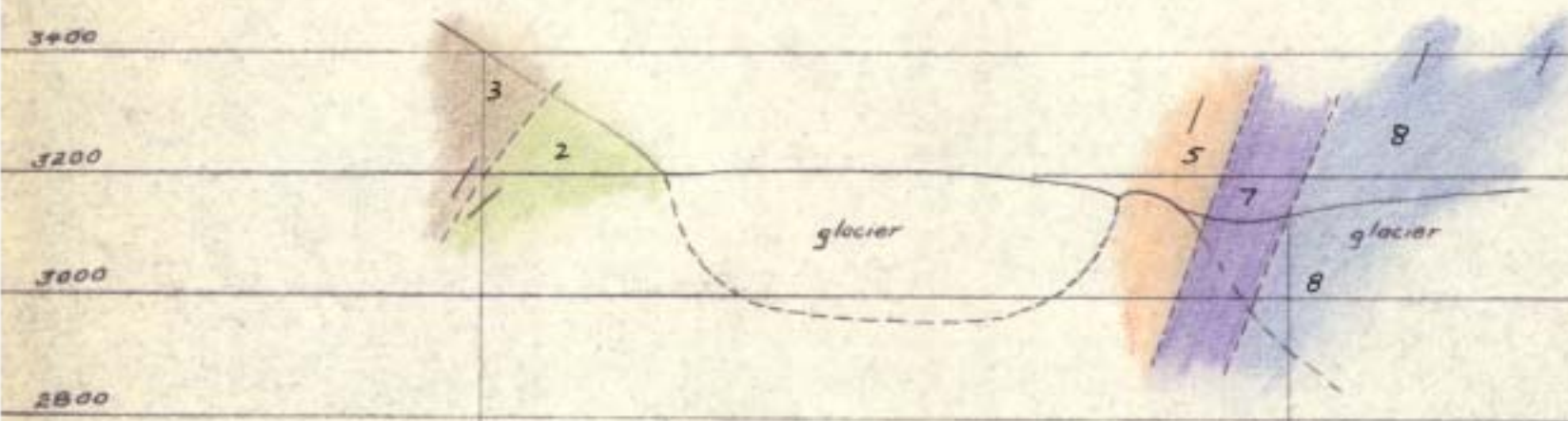
SECTION A-A of *Crowhurst*

TITLE

GRANDUC MINES LTD

SCALE 1:300

PRICE 50.25.0



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 No. 49  
 Map #3

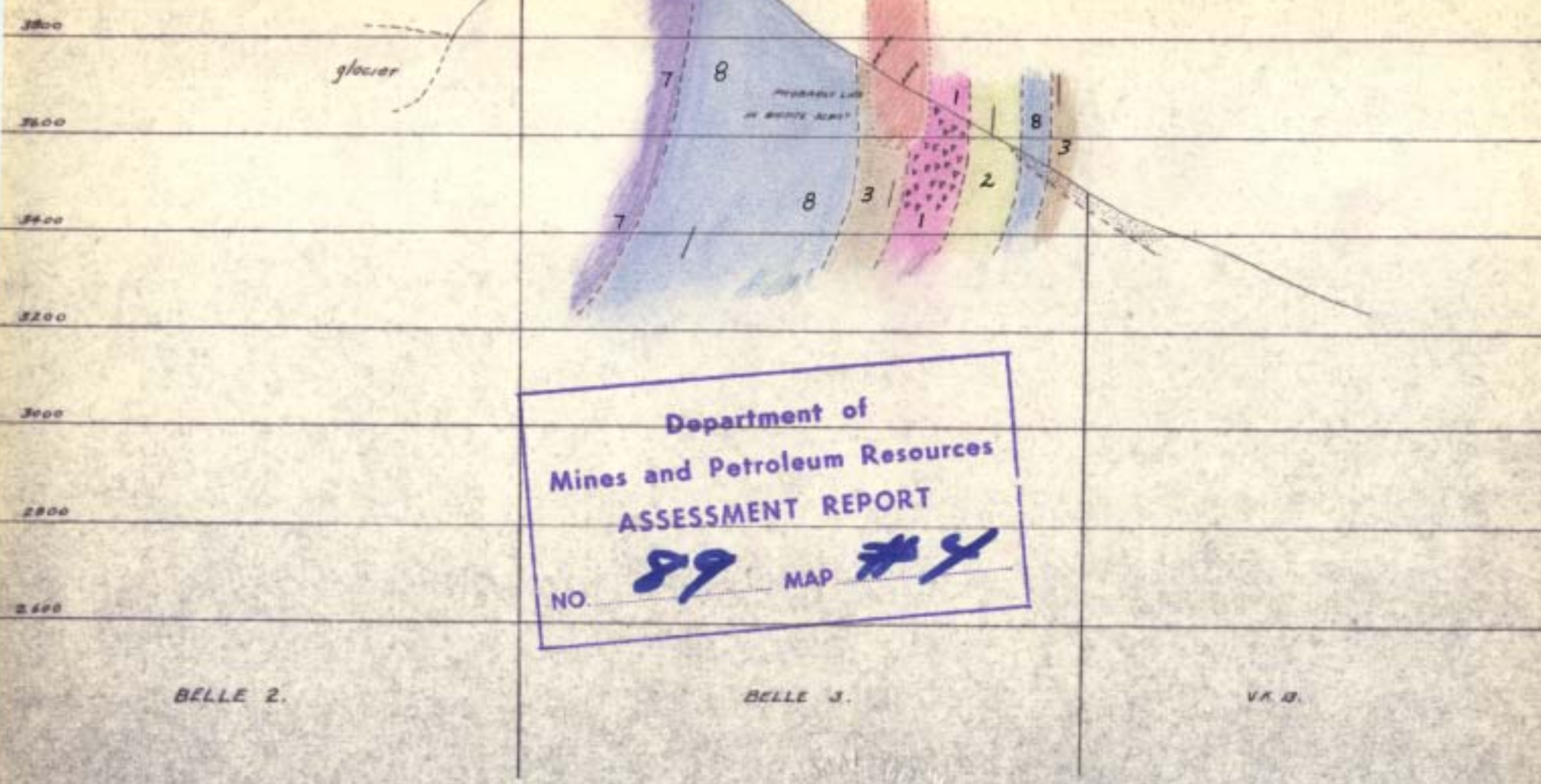
BELLE 1.

BELLE 2.

BELLE 4.

SECTION B-B *J. J. Courbasset*

TITLE	SCALE 1"=300'
GRANDUC MINES LTD.	REF
	30-25-0

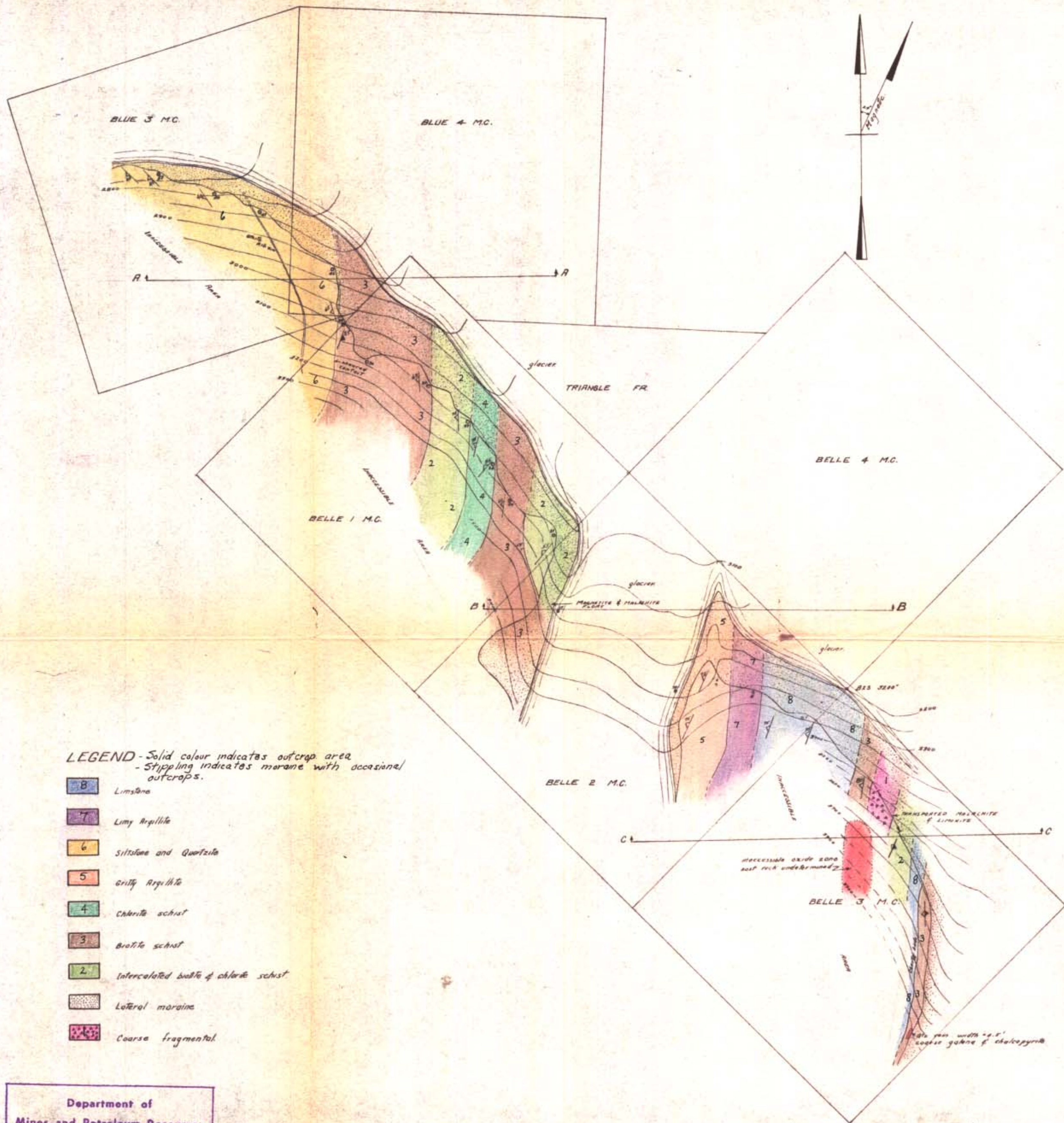


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 NO. **89** MAP **#4**

SECTION C-C. *J. J. Coakley*

TITLE	1" = 300'
GRANDUC MINES LTD.	50-25-0





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 NO. **89** MAP **#5**

# 89  
 Map 5

*J. J. Crowhurst*

TITLE GEOLOGICAL PLAN OF THE BLUE-BELLE GROUP. GRANDUC MINES LTD.	SCALE 1" = 300' REV 27 Nov 53	GRANBY CONS. M. S. & P. CO. LTD. ALLENBY, B. C. No. 50-25-0
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