

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT

NO. 2897 ..... MAP.....

GEOLOGICAL AND EXPLORATION REPORT  
OF  
MOTHERLODE, SUNSET, GREYHOUND AREA  
OF  
GREYHOUND MINES LIMITED (N.P.L.)  
GREENWOOD, B.C.

BY

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2897

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November 23, 1970  
Vancouver, B.C.



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### SUMMARY

This report on 39 mineral claims of Greyhound Mines Limited in the Greenwood Mining Division, B.C. is based on the information provided by Aabro Mining and Oils Limited, Mr. G. F. Groves, manager of Greyhound Mines Limited and the author's number of visits and traverses and geological mapping during the period of March 1970 to August 1970.

The property overlies the Brooklyn limestone of Attwood Series, granite and granodiorite of jurassic and pblaskite porpyry of Miocene ages. The Brooklyn limestone at the contact of the granite and granodiorite altered and limesilicate minerals are formed. The skarn zone is the host rock for the low grade copper deposits. This skarn zone coincides with the high changeability higher resistivity and magnetic anomalous zones near Motherlode and Greyhound pit areas.

These areas are warrented for further exploration and 40,000 feet of drilling is recommended.

INTRODUCTION:

Submitted herewith is a report on 39 Mineral claims of Greyhound Mines Limited, in the Greenwood Mining Division, B.C. This report is based on the information provided by the Adbro Mines Limited, Mr. G.F. Groves, the manager of Greyhound Mines Limited, and the writer's number of visits and traverses since March 1970. The area was mapped geologically by the author during the period of August 27, 1970 to September 21, 1970 to Lay out the further Exploration programme.

PROPERTY AND OWNERSHIP:

The property consists of 39 Mineral claims. Most of these Mineral claims are Crown Grant. Greyhound Mines Limited holds these claims either by agreement or option with Adbro Mines and Oil Limited and others.

<u>CLAIM NAME</u>	<u>RECORD NUMBER</u>
JOHNSON	L 1961
ANTHERE	L 1960
GREYHOUND	L 1014
PLUTO	L 2393
HOUND NO. 1	22640
ECB	L 827
MT 4	27036
GREAT HOPE	L 602
BUCKINGHAM FR.	22643
LS	1223
BUTTE CITY	L 1230
PEACOCK	L 1245

PLUTONIA	L 884
TORONTO	1013
RAGMOROCK FR.	22451
SUNFLOWER	916
GEM	L697
HIDDEN TREASURE	L 896
GOLD BUG	L 895
DEER HORN	L 1714
LOST 1	27071
LOST 3	27073
SUNSET	L 188
PRIMROSE	L 927
TENDERBROCK FR.	
T. EUGENE FR.	L 2321
	2907 Z
	27074
ST. LAWRENCE	L 1255
MOTHERLODE	L 704
	15443
	15444
	13259
CROWN SILVER	L 789
FLORENCE FR.	L 1470
BONANZA	L 928
MTI	26832
NMI	21994
BIRTHDAY	14997
MT 16 FR.	

LOCATION AND ACCESS:

The property is located about 3 miles north-west of the town of Greenwood, British Columbia and is accessible in any type of vehicle by 3 miles of all weather, gravel road from Greenwood.

PROGRAM:

During the period from June 5, to September 21, 1970 the following program was implemented:

- (1) A number of traverses were taken in order to study the geology of the area.
- (2) Approximately 42 line miles of line were cut. The base line was established which is oriented N 30° E. The grid line runs perpendicular to the base line at 200' intervals and stations 100' apart at each line.
- (3) Induced polarization and magnetometer survey was conducted by Seigal Associates Limited on 22 line miles during the period of July 1, 1970 to August 1, 1970.
- (4) The area under survey was geologically mapped.
- (5) Some of the geophysical anomalous zones are tested by the air track drilling.

HISTORY AND PREVIOUS WORK:

Rossland discovery of copper gold in 1891 stimulated the prospecting over a wide area in southern British Columbia, and as a result of this the Motherlode claim was located on May 23, 1891 by William McCornack and Richard Thompson; the Sunset and Crown Silver on June 2, 1891 by John East and William Ingram respectively. The Motherlode mineral claim was put into

production in 1901 to 1918. It became one of the leading copper producing camps in 1910 in British Columbia. The mine was closed in 1919, not due to the shortage of ore but due to a labour strike in the Crowsnest coalfield which cut off the supply of coke for the Greenwood smelter. The mine was again put into production from 1956 to 1957 by Woodgreen Copper Mines Limited. It was closed in August 1957. It was re-opened in June 1959 to May 1962. The production at various times was as follows:

<u>Period of Production</u>	<u>Ore Produced Tons</u>	<u>Copper lbs.</u>	<u>Gold oz.</u>	<u>Silver oz.</u>
1901-1918	3,772,575	67,827,575	158,912	619,772
March-Aug. 1957	101,274	1,100,000	-	-
1959-1962	543,985	5,354,205	11,489	43,359

The Sunset mineral claim produced 130,000 tons of ore during the period of 1913 to 1918. At the present time, Greyhound mineral claim is put into production by the Company and producing about 2,000 tons per day.

#### TOPOGRAPHY:

The slope of the ground is gently rising from SE to NW. The highest point in the area is about 3,700' above sea level, and the lowest elevation is 3,000' at Greyhound or Deadwood Flat and lightly treed. The area is drained by SE flowing tributaries of the Boundary Creek.

#### GEOLOGY:

The property overlies the Brooklyn Limestone of Attwood Series, granodiorite, quartz porphyry of Jurassic and pulaskite porphyry of Miocene ages. Approximately 25% of

the rocks are exposed at the surface and in the pit areas. The rest of the area is covered by the glacial drift, which consists of clays, sands and gravels with rounded boulders distributed as a mantle of varying thickness. The stratigraphical sequence is as follows:

Quaternary	Glacial and Recent	Modified drift clays, sands and gravels.
Tertiary	Miocene	Fulaskite porphyry and trachyte dikes.
Mesozoic	Jurassic	Granite and granodiorite and diorite intrusives.
Palaeozoic	Carboniferous	Attwood Series - Brooklyn Limestone (unfossiliferous crystalline limestone, skarn).  Knob Hill Group. Tuff and silicified sediments and quartzite and quartz conglomerate.

#### PALAEZOIC

These rock formations consist of Knob Hill group and Attwood Series. The Knob Hill group consists of Jasperoids chert and quartzite and quartz conglomerate and is overlain by tuff and silicified sediments.

The Jasperoids, quartzite, quartz conglomerate is light gray to greenish gray in colour, oval, rounded and sub-angular chert pebbles which are embedded in the matrix of argillaceous material. The argillaceous matrix consists of calcareous silicified material in the chlorite, quartz and chert. ~~Pyrite~~ Epidote, magnetite, chlorite and pyrite are also present in the matrix which is associated with the ore bodies, which may be due to the contact metamorphism.



These formations are very closely jointed and brittle with concoidal structure. It gives the rusty colour on weathering and may be due to the decomposition of the pyrite and magnetite.

The tuffs and silicified sediments are fine grained, a dark gray with greenish tinge colour, finely jointed and fractured rock. It is generally massive fine banded, which gives the appearance of sediments which are silicified.

These rocks consist of quartz, chlorite and Feldspar with minor pyrite. It gives the rusty colour on weathering.

#### BROOKLYN FORMATION:

This formation is a lower member of the Attwood Series of carboniferous age. It consists of unfossiliferous crystalline limestone, which at places silicified and is white to light gray in colour. This limestone is replaced by the lime silicates in a zone of contact metamorphism and contains the ore bodies of low grade copper. This zone is prominently developed in the Motherlode, Sunset and Greyhound mineral claims area and known as skarn zone. It consists essentially of actinolite, garnet, epidote, calcite and quartz, with the mineralization of chalcopyrite, pyrite, pyrrhotite and magnetite. But in the Greyhound area actinolite is less than talc and in <sup>place</sup> ~~state~~ of magnetite hematite is noticed. The rock is generally massive, but in Motherlode area occurs roughly banded. It weathers to a reddish brown due to decomposition of the pyrite.

The north-west wall of Motherlode is practically vertical and consists of crystalline white coloured limestone. According to LeRoy this contact between the limestone and the Knob Hill group rocks is due to block faulting rather than a sharp folding or normal stratigraphic contact. This fault runs parallel to the ore body i.e. north south. No surface evidences are noticed but previous workers noticed the crush zone from the 200' to 400' levels. The limestone is in contact of the Knob Hill rocks as a result of the above mentioned fault. This zone later on cut of pulaskite and diorite dikes.. These dikes vary in size, strike and attitude.

#### MESOZOIC

The granite, granodiorite of jurassic age out crops at the eastern part of the area and also occurs as dikes in the Motherlode pit and other parts of the area as shown in the map. It ranges in composition from granite to monzonite. It is light gray to greenish gray coloured, fine to medium crystalline rock and consists of quartz, feldspar, biotite and hornblende, with minor pyrite and iron ore. At some places the epidote, calcite, chalcoprite, pyrite and magnetite are formed by metasomatic replacement.

#### TERTIARY:

The youngest rock types are represented by the pulaskite porphyry and trachytic rocks of Miocene age. These intrusions occur as dikes and sills in the area, particularly in the north-west part of the area and in Sunset mineral claims, which have spoiled the ore. These rocks vary in colour, gray to dark gray, and on weathering the outer surface gives brownish gray to pinkish brown colour. It is a fine crystalline compact rock and consists of light gray to pinkish feldspar, as phenocrysts embedded in the felsitic ground mass.

### MINERALIZATION AND OCCURANCE OF ORE

The ore is finely distributed in the skarn zone along fractures and interstitially between the grains. It consists of chalcopyrite, pyrite, pyrrhotite, and magnetite in the Motherlode and Sunset area, but in case of Greyhound area hematite is more and magnetite is rare or practically absent. The chalcopyrite and pyrite is more associated with calcite and quartz. In the termolite, chlorite, calcite and quartz. In the Greyhound pit talc is in abundance due to the alteration of the diorite dike.

The occurance of the ore is irregular. It occurs as fracture fillin, blobs, along cleavages, shearplanes, and fine stringers and interstitially between the individual grains of gangue minerals.

CONCLUSIONS:

The lime silicate skarn zone is the most favourable host rock for ore mineralization. The mineralization is not very regular. The east and north-east of Motherlode pit and south of the Greyhound pit coincides with the high chargeabilities and a zone of higher resistivity and a skarn zone. The Motherlode area also coincides with the zone of magnetic distortions. These areas warrant the further explorations, which should be followed by drilling.

RECOMMENDATIONS:

1. I.P. and magnetic anomalous areas coincide with the skarn zone should be drilled by diamond drill or by percussion drilling, to a depth of 300'.
2. Percussion drilling is required as shown on the plane. Sixteen holes in the Motherlode area and 8 holes in the Greyhound Area at 400' spacing should be drilled vertically and if these holes indicate ore, more holes should be drilled at 200' spacing to a total of 30,000'. The percussion drilling is recommended if structural conditions are favourable. The drill hole sites and spacing mostly depend upon the results of the previous hole and the discretion of the Engineer in charge of Exploration.
3. The sections which are mentioned in the report <sup>of</sup> Mr. Francis H. Frederick of 1951 should be established on the Motherlode pit area and on each section two diamond drill holes at 45° toward N 74°W should be drilled. The depth of the holes depends upon the underground working and the fractures created due to early mining. Total estimated *diamond* drilling is about 10,000 feet.
4. The other I.P. and magnetic anomalies should also be tested by drilling at a later date. Exact footage is difficult to estimate at this time.

5. Motherlode, Sunset and Greyhound pits should be geologically mapped in detail.
6. Mineralized sections of Motherlode and Sunset pits should be chip sampled.

Respectfully Submitted,

G. C. Singhal,  
G.C. Singhal, ~~S.~~ Eng.

COST OF PROGRAM

Diamond drilling 10,000' @ \$10.00 per foot	\$100,000.00
Percussion drilling 30,000' @ \$3.50 per foot	\$105,000.00
Assaying and sampling	\$ 5,000.00
Engineering and geological mapping of pit areas	\$ 5,000.00
Total	<u>\$215,000.00</u>

Respectfully Submitted

*G. C. Singhai*  
G. C. Singhai  
P. Eng.

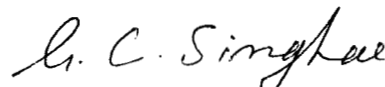
Vancouver, B.C.  
November 23, 1970

CERTIFICATION

I, Gyan Chand Singhai of 875A No. 2 Road, Richmond, British Columbia, do hereby certify that:

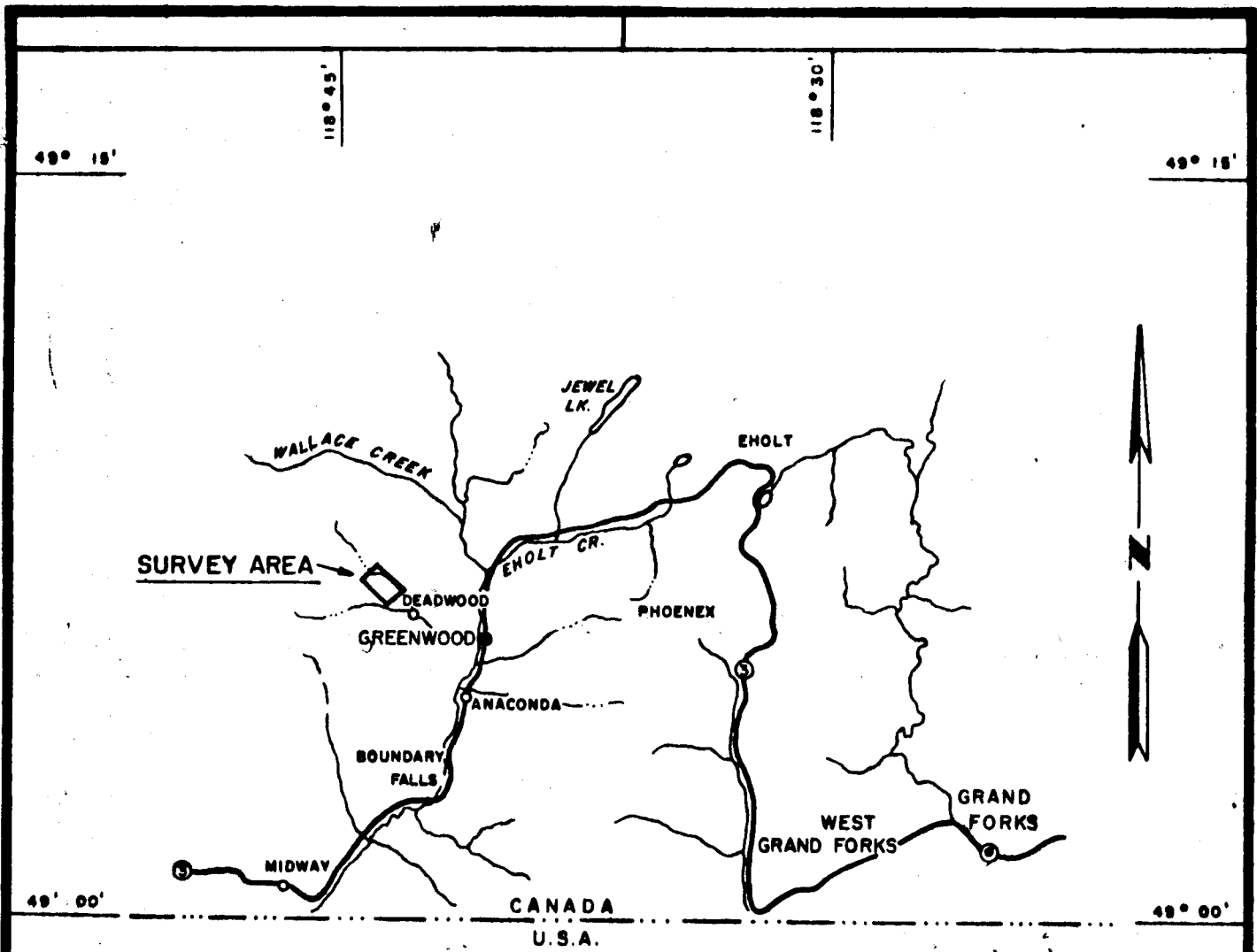
1. I am a graduate of the University of Saugor, Sagar, Madhya Pradesh, India. ( B.Sc., M.Tech.). 1959.
2. I am a member of the Professional Engineers Association of British Columbia and have been since 1969.
3. I have practiced my profession continuously since graduation while employed by the Lahiri Degree Collage, Chirimiri M.P. India; N.M.D.C.Limited; Faridabad, India; Scurry Rainbow Oils Ltd., Calgary, Alberta; Rayore Mines Ltd. (N.P.L.), Vancouver, B.C. and now employed by Cadillac Explorations (N.P.L.) Calgary, Alberta.
4. This report is based on my examination of the property and geological mapping.
5. I examined all parts which I came across in the courses of my geological mapping and found them to be staked in accordance with the Mineral Act of the Province of British Columbia.

Respectfully submitted.

  
G.C.Singhai, P.Eng.;

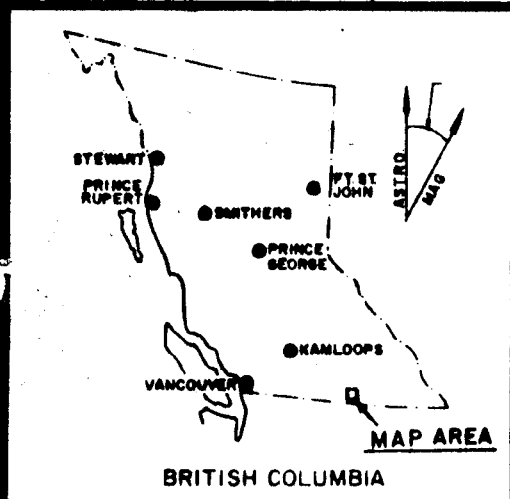
Vancouver, B.C.

November 23, 1970

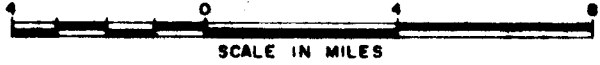


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*P. C. Smyth*



**GREYHOUND MINES LIMITED (N.P.L.)**  
 LOCATION MAP  
 GREENWOOD AREA, B. C.

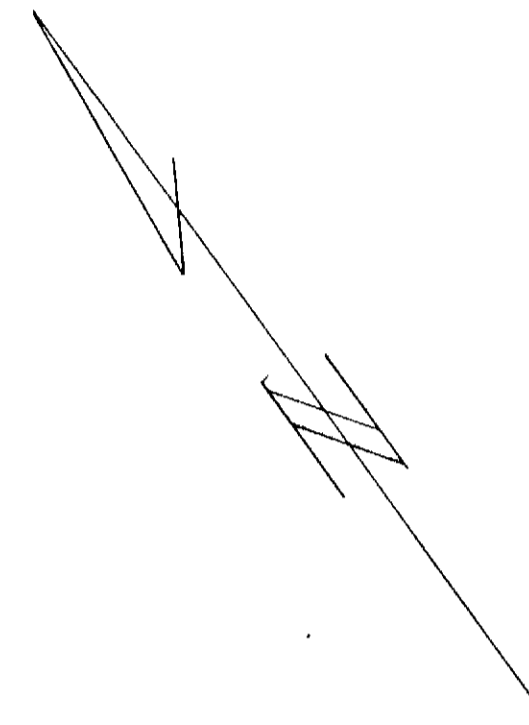


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**PLATE I**



52W 48W 44W 40W 36W 32W 28W 24W 20W 16W 12W 8W 4W 0+00 4E 8E 12E 16E 20E 24E 28E 32E 36E



L5S \_\_\_\_\_  
 L7S \_\_\_\_\_  
 L8S \_\_\_\_\_

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M-2 *A.C. Simpson*

PLAN  
 I.P. SURVEY LINES  
 SCALE: 1" = 400 FT.



52W 48W 44W 40W 36W 32W 28W 24W 20W 16W 12W 8W 4W 0 00 4E 8E 12E 16E 20E 24E 28E 32E 36E



- LEGEND**
- TERTIARY:**  
 Miocene  
 6 Pulaskite Porphyry Dike, Trachyte
- MESOZOIC:**  
 Jurassic  
 Granodiorite, Diorite
- PALAEOZOIC:**  
 Carboniferous  
 Limestone  
 Shale  
 KNOB HILL GROUP  
 Tuff, Silicified Sediments  
 Quartzite, Quartz Conglomerate
- Bedding  
 Shear Zone, Inferred Fault  
 Geological Contact  
 Out Crops  
 Pit  
 Shaft  
 Trench  
 Adit  
 Mine Dump  
 Tailing Pipeline  
 Road  
 Creek
- DM Diamond Drill Hole  
 ○ TH Test Hole  
 □ Buildings  
 ○ Claim Post  
 --- Fence
- Proposed Hole (Repression drill)  
 --- Magnetite  
 ○ Proposed Diamond Drill (Along Frederick's sections from A-J)

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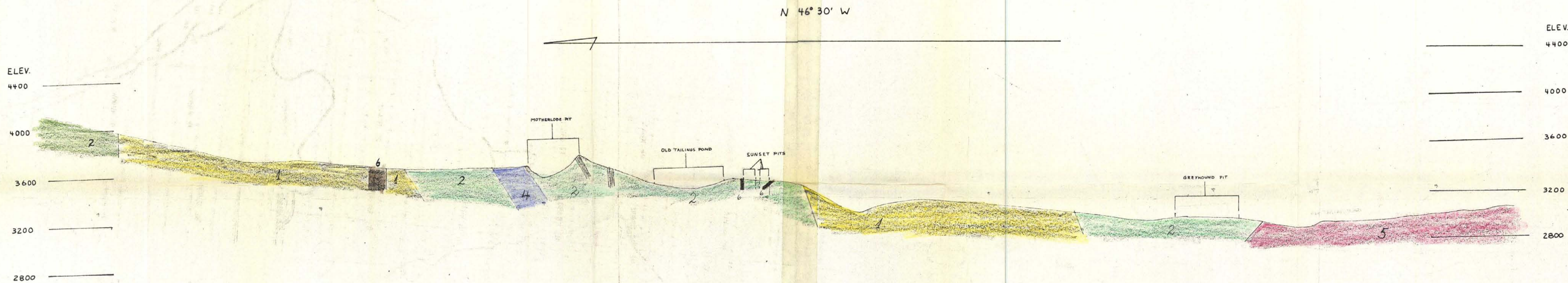
M-3

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G.C. Singhal

GREYHOUND MINES LTD. (N.P.L.)		
Scale: 1" = 400'	GEOLOGICAL MAP OF	
Date: Oct 1970	MOTHER LODE, SUNSET, GREYHOUND AREA GREENWOOD B.C.	By G.C. Singhal P.Eng.





- LEGEND**
- TERTIARY  
Miocene  
Pulaskite Porphyry Dike, Trachyte
- MESOZOIC  
Jurassic  
Granodiorite, Diorite
- PALAEOZOIC  
Carboniferous  
Limestone  
Shale
- KNOB HILL GROUP  
Tuff and silicified sediments  
Quartzite, Quartz Conglomerate

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GREYHOUND MINES LIMITED (N.P.L.)		
SCALE: 1"=400'	GEOLOGICAL SECTION 'A-A'	DATE: NOV. 26/64
DWN: G.C.S.		

*Handwritten signature*