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REPORT

ON

GEOLOGICAL, GEOPHYSICAL AND GEOCHEMICAL SURVEYS

of the

"BIG G" (Gilkie Mine) PROPERTY

on

Greenstone Creek, near Campbell River, Vancouver Island, B.C.

(50°00' North and 125°40' W, approximately)

for

William E. Fraser

by

Gunnex Limited

covering the period from May 3rd to October 5th, 1965.

Compiled and Written By:

H.Laanela, c/o Gunnex Limited, Nanaimo, B.C.

1965.

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ABSTRACT: The "Big G" showing consists of an apparently lens-like body of "skarn", some 150' x 10', as a replaced metamorphosed part of a limy horizon in tuffaceous Vancouver Group volcanics, which in turn are underlain by more basic flows, and is exposed on the north wall of Greenstone Creek canyon. Economic mineralization consists of Cu - Fe - Zn sulphides and magnetite, seen in several open cuts and adits; the assays average over 1% of Cu, from 0.15% to 4.6% Cu along 150' length.

In the summer of 1965 a grid was cut, the area was mapped geologically, soil sampled and a magnetometer survey and an E-M survey were run subsequently by Gunnex Limited.

I GENERAL INFORMATION:

A. Introduction:

This report is intended a) to accompany the geological, geochemical soil survey, ground-magnetometer survey and electro-magnetic survey maps of the "Big G" area, b) to account for the work done, and c) to describe the results obtained. It is based on a number of previous reports by the writer and Mr. T. F. Schorn, both employed by Gunnex Limited, 366 Selby St., Nanaimo, B.C., during summer, 1965.

B. Location and Access:

The "Big G" (also called Gilkie Mine) property is located immediately south of 50th parallel, 16 miles west of the town of Campbell River, Vancouver Island, B.C. It consists of old workings on the north wall of the canyon of Greenstone Creek, at the end of an old logging road, about 2 miles west (in straight line) from Strathcona Dam on the north end of Upper Campbell Lake. The distance along road is several miles longer.

The access is via Island Highway, past Campbell River, up Buttle Lake road, across Strathcona Dam and then taking the first turnoff

to the left (west), following the south shore of Fry and Whymper Lakes, then turning left again before a large sawdust pile, up the Martha Lake road. Road continues for a few miles past Martha Lake turnoff, ending near a fallen-down log cabin and an ore pile, above the showing. Road is unsuitable for cars, but passable for high-clearance vehicles. However, a new logging road ending in NW quadrant of the map grid is probably accessible by cars also, as well as the road along the south side of the creek (partly). These last two roads do not reach the showing proper and some walking is necessary.

C. Topography:

Elevation of the showing is approximately some 1,500' above sea level. Terrain on the north side of the creek is fairly flat, on the south side of the creek it slopes gently toward the north and northeast.

Although the creek bed can be traversed, except for one 20-25 foot waterfall just below the showing, there are some rocky bluffs and canyons along its course, the most deeply incised canyon being directly below the showing. The showing is exposed on the north wall of this canyon and a narrow path leads from the ore pile at the end of the road to the various open cuts and adits. The creek can be crossed at most places, except during high water. The canyon is some 50 - 100 feet deep.

There is a noticeable lack of outcrop in the general area, with the exception of the canyon walls and cliffs along the creek. Hence only detailed mapping could be carried out along the creek. The rest of the terrain is covered either by heavy, mature timber, or by 20-30 year old dense second growth in burned-off and logged-off areas with many dead-falls. Overburden might be from 5 to 20 feet deep in places. In the north-western quadrant there are some exposures of limestone, with attendant sinkhole resembling depressions, while in the southern part of the grid there are a few low rocky ridges, which apparently are parts of a more rocky hill south of the grid.

D. Standing:

The 50th parallel forms the northern boundary of the E & N Railway Co. Land Grant, with the exception of a block of ground east and south of the "Big G" showing. The old showing consists of two old Crown-Grants, "Rainbow" (MC 1216) and "Thundercloud" (MC 1215), now held by Mr. W. E. Fraser, a prospector. He also holds 8 more claims by location, some of which may be located on E & N ground to the west, at least partly. The old M.C. stakes were seen on the south side of the creek, across from the showing.

E. List of Reports and References:

B.C.Minister of Mines: 1) Annual Report 1916, page 326 (description)
2) Annual Report 1924, page 368 (not available to the writer)
3) Annual Report 1928, page 377 (quotes 1916 report only)
4) Annual Report 1929, page 386 (quotes 1916 report only)

Geol. Survey of Canada: -Summary Report 1930, Part A, by H.C.Gunning, pages 72A - 73A (rest of the report describes geology and shwoings south of the 50th parallel only; with a sketchy geological map of the area south of the 50th parallel).

Gunnex Limited: -Report on "Big G" property, May, 1965, by T.F.Schorn.
-Weekly reports, by T.F.Schorn,1965; see for following weeks: May 3- May 9, June 7 - June 13, June 14 - June 20, June 21 - June 27.
-Geological Report on "Big G", July 8, 1965 by H. Laanela.
-Additional remarks on "Big G" (appendix to above), September 5, 1965 by H.Laanela.

F. Summary of Work Done Previously:

B. C. Minister of Mines Annual Report for 1916 gives the first available description of the showing and earlier work done on it; the

following is a summary of this report:

During 1916 this group ("Big G" Group) was acquired by J. B. Woodworth and brother, of Vancouver, who have been working on the property previous to August 16th, but were not available during the visit at this date to the property. Six miles of corduroy road had been built by Woodworths for hauling the ore from the mine to the Campbell River (and Lake). From the lower lake it was then shipped by wagon road to ocean-dock at Campbell River Landing.

The mine workings consisted (in 1916)/of several large open cuts and two adits on the north side of the canyon. One adit was 60 feet long with an upraise of about 30 feet high at the face; the other adit was 30 feet long. Reportedly a shipment of 40 tons of copper ore was made in 1916 from these workings.

Reports of 1928 and 1929 do not mention any further work being done on the property. Neither does Gunning in his 1930 report; he only mentions that the area might be suitable for prospecting. There apparently are no further govenment reports on this property, or any other reports.

Possibly additional work was done only a few years ago, since there is some ore piled up at the end of the road, and there is evidence of some blasting been done not too long ago. There is also evidence of diamond drilling carried out a few years ago, as 3 diamond drill set-ups were seen by our prospectors while working on the property; however, no drill core was seen and there is no information available on it.
Not much exploration work was done by Mr. Fraser previous to our visit aside from staking.

II. WORK DONE BY GUNNEX LIMITED, SUMMER, 1965:

A. Introduction:

The "Big G" was visited 4 times by Gunnex Limited during the field season of 1965.

(1) Preliminary examination of the property by T. F. Schorn, H. Laanela and W. E. Fraser on May 3rd, 1965. This included sampling and sketching of the showing by T. F. Schorn.

(2) June 7 - 17 (incl.) 1965: Line cutting, geological mapping, soil sampling, and part of a magnetometer survey. Crew included H. Laanela, W. E. Fraser, R. Fraser and L. Harper.

(3) June 21 - 25 (incl.) 1965: Completion of magnetometer survey and mapping, by H. Laanela and R. Fraser.

(4) October 1 - 5 (incl.) 1965: E-M survey by W. Langley and W.E.Fraser.

B. Preliminary Examination:

During this first visit Fraser and I did some "scouting" along the lower part of the creek, to familiarize ourselves with the geology and topography. Terry Schorn sketched the sectional view of the showing and took 16 samples of ore, along canyon wall near the workings, for assay purposes. Smaller, minor occurrences of copper were noticed east of the showing, along canyon walls; these were not sampled.

The ore samples were taken along a 150' length, numbered 1 - 16, and assayed the following percentages of Cu, respectively:
1.63; 0.35; 0.15; 0.21; 0.23; 0.29; 2.32; 0.61; 4.59; 0.98; 0.88; 0.57; 1.93; 3.63; 0.64 and 0.27.

Samples #1 and #10 were assayed for Au and Ag; both contained traces of gold and 0.1 oz/ton of silver.

The Cu assays averaged 1.18% of Cu, arithmetically, along the 150' length of the main showing.

C. Line-Cutting:

During the month of June we did more work on the property. During the first two-week period on the property 4 men camped out there and a 3,000' x 3,000' line-grid was cut (by compass) and chained using 200' line interval, and tagged with flagging tape at each 100' of the line. This included 3,000' of N-S base line, centered just north of the showing, by the road.

All in all 16 lines of 2,800' each were cut, totalling 44,800 feet, most of it in heavy timber or dense second growth. These lines formed a 100' x 200' grid, covering the area equivalent of 4 claims. The later geochemical and geophysical work was done on this grid; geological mapping was tied to the grid also.

Some reconnaissance type work was done outside of the grid in the general area, mostly to the east, along roads.

D. Geological Mapping:

(a) Regional Geology:

H. C. Gunning, 1930, has mapped the rocks south of the 50th parallel as Palaeozoic and Mesozoic volcanics and sediments without any further differentiation of rock types. This area would include Sicker and Vancouver groups, and also minor bodies of Coast Range intrusives (dioritic rocks). He indicates a large area of intrusives along the east side of Upper Campbell Lake, which protrudes as a large "tongue" across Upper Campbell Lake and extends as far north as Becher Lake, toward "Big G" property. Apparently he did not map the area north of 50th parallel.

J. E. Muller of G.S.C., 1964, also mapped the area south of the 50th parallel (map 2 - 1965 by G.S.C.), copy of which was obtained after our work was finished on "Big G". He has mapped the rocks in the "Big G" and surrounding area as Vancouver Group Volcanics, with a belt of sedimentary rocks, mostly limestone, toward east, trending NW and passing through Becher Lake. South of this lake the sedimentary rocks are shown to be offset toward west by a long fault. Here they are in contact with a stock of

Coast Range Intrusives to the east, the contact running through Bacon Lake. These limy sediments are part of the Vancouver group, overlaying the andesitic volcanic rocks. Farther east, surrounding the north end of Upper Campbell Lake, Muller indicates the presence of tuffaceous and brecciated volcanics, which form the highest horizons of Vancouver group. This map has no geology north of the 50th parallel either.

During Gunnex work on the "Big G" a traverse was made southeast of the property, covering roads north and west of Becher Lake. Only rocks seen were Vancouver Group volcanics; much of the area was covered by overburden.

The writer also noticed some outcrops of dioritic intrusives north of the 50th parallel toward Campbell Lake, both south and north of Greenstone Creek (see insert on geology map). General lack of outcrops prevented establishing any definite contacts. North and northeast of the line-grid some limestone was seen as horizons in Vancouver Volcanics (Gunning's "intercalated limestone"). There are at least several such bands of linestone on the grid. North of the grid a wider band of limestone was mapped; this was observed to come into contact with dioritic intrusives along road NE of the grid, resulting in limy metamorphic rock containing wollastonite and vesuvianite (idocrase), while diorite also becomes quite rich in calcium due to contamination. More limestone was noticed on branch road southwest of Martha Lake.

The writer did not see any rocks of Sicker Group anywhere near the showing. Toward east, between the town of Campbell River and Upper Campbell Lake, Nanaimo Group sediments were noticed. Both Muller and Gunning show these sediments also south of 50th parallel.

Hence, due to the limitations of our visits and lack of any previous information, not much detail is known about the regional geology north of the 50th parallel, except what is shown on the insert map (see).

(b) Local Geology (on the claims):

After the line-grid was cut the writer mapped the grid area on a map scale of 1 inch to 100 feet, using pace and compass. All geological features were tied to the 100' x 200' grid. From field sheets a final geological map was drawn up, included here.

As mentioned, there is a lack of outcrop both on the grid and outside of it, except along the canyon of the creek. Gunning (1930) gives a short geological description of the showing, excerpts of which follow:

> "The rocks in the vicinity include andesitic tuffs, lavas, and some intercalated limestone all cut by basic porphyry dykes. The dips vary from 10° - 20° N. In the open-cut is exposed 10 feet or so of heavily mineralized material, containing abundant pyrrhotite and small amounts of chalcopyrite, pyrite, calcite, garnet, chlorite, and foliated magnetite. The last mineralization appears to have replaced an andesitic tuff immediately below a massive flow and the ore, following the bedding, dips 20° and less to the north. In one place a foot of almost pure chalcopyrite was noted. In addition there are small veins of sulphides along joints and cracks in the country rock. What was taken to be the main adit follows the flat-lying zone of sulphides for about 30 feet and the ore seems to pinch out almost entirely at the face. 1 1/3 mile below mine, (near creek), banded, silicified, and otherwise altered, crystalline limestone outcrops for 25 feet at the water's edge, striking N 60° E, dip 25° SE. Sphalerite, galena, pyrite, and chalco-pyrite were found across a width of one foot. A thin section showed that the limestone is largely replaced by quartz, wollastonite, diopside, garnet, and the sulphides. (This is similar to the lime-silicate rocks found north of here, along road, where limestone lies next to intrusives, as mentioned before. It seems to indicate the presence of more intrusive rocks eastward, along the creek. -- H.L.) The locality seems worth prospecting."

(c) Notes on rock types and economic mineralization:

As mentioned, there was a noticeable lack of outcrop, except along the creek, in the area, which greatly hindered mapping. In addition to Gunning's (1930) remakrs, the following observations by the writer could be added:

First, 4 main rock types were mapped, all of which belong to the Vancouver Group of Triassic and/or Jurassic age, primarily consisting of volcanic rocks:

1) Dark green amygdaloidal basic volcanic flows seem to form the lower horizon, exposed below the showing, along the canyon floor, and farther east along the creek. Some minor Cu stains were seen in these rocks on canyon walls, and also a mineralized quartz vein 1" - 3" wide and over 60 - 70' long, below the waterfall.

2) Tuffaceous andesitic rocks seem to overlay the basic flows, the contact dipping gently northward. Often they seem to be quite coarse-grained. They contain, apparently, several bands of limestone and limy argillaceous beds, and most of the economic mineralization seems to be in this type of rock.

3) Intercalated limestone and limy argillaceous beds were mapped in several locations along the creek, north of the creek, and farther north and northeast outside of the grid. In most cases the limestone is whitish-gray and re-crystallized, not subject to any high degree of metamorphism or replacement. The exceptions are the skarn zone at the showing and other lime-silicate rocks NE of the claims.

(Particular attention should be paid to these intercalated sediments near intrusive contacts in the area, when prospecting).

4) Skarn (lime-silicate metamorphic-metasomatic rocks) is apparently the contact facies of the limy sedimentary beds, near intrusive bodies. These rocks seem to contain most of the economic minerals, such as at the main showing.

The skarn at the showing seems to form a lens, or a lens-like

body, some 10' thick and 150' long, dipping about 20° northerly. Its thickness apparently diminishes on the face of the adits. Toward the west it cannot be followed, appearing to pinch out; toward east it seems to grade into more limy horizon. Steepness of the canyon walls and the presence of undergrowth makes the tracing of it there most difficult.

Minerals present in the skarn (on the showing) are fibrous, greenish amphiboles, garnet, possibly some vesuvianite, calcite, chlorite, magnetite, pyrrhotite, pyrite, chalcopyrite and minor sphalerite. Of metallic minerals magnetite and pyrrhotite are quite massive and most abundant. Occurrence of chalcopyrite is more erratic and "patchy".

Skarn is normally a contact-metamorphic (metasomatic) feature of intrusive contacts, although no intrusives were seen near the showing here. Yet there is an intrusive belt (dioritic rocks) east of the showing, to which it is probably related. However, the lime-silicate rocks along this contact contain more calcium-rich minerals, such as wollastonite and vesuvianite, with Pb and Zn predominant in sulphides. The possibility of finding more skarn along this contact should not be overlooked.

(d) Other Skarn-Type Mineral Occurrences in the Vicinity:

1) The former Argonaut Mine is also on the same intrusive contact, about six miles south from "Big G", and south of Upper Quinsam Lake. It is also a skarn-magnetite deposit. In Gunning's report it is called the "Iron Hill" showing (see also report by G.A.Young, G.S.C., Ec.,Geol. Series No. 3, Vol.1, pp 73-78). Limestone, dipping gently NE, underlain by volcanics, is replaced by garnet and magnetite, due to nearby intrusion of granodiorite. 1.7 million tons of Fe ore is mentioned.

2) The Iron River showing is about 6 miles SE from "Big G" (see also same report by Young, p. 71). Magnetite and some chalcopyrite is in skarn in argillaceous Vancouver Group rocks, near intrusives.

3) Sumpter Group is on the north side of Upper Campbell Lake, and consists of skarn containing garnet, epidote, some magnetite, bornite and chalcopyrite in gray crystalline limestone. (See Gunning's report).

E. Magnetometer Survey:

A magnetometer survey was run by Ron Fraser and the writer on a 100' x 200' grid, using a Sharpe A-3 magnetometer.

Since the instrument readings were taken off a vernier scale, which can be read within one division accuracy, they could be converted later into actual gamma readings using a variable curve graph, supplied with the instrument. However, these conversions are not overly accurate, due to the limitations of the graph, and it is easy to make an error, say within 10-20 gammas. However, due to large range (over 7000 gammas) this error is insignificant.

It was thought that a more accurate contour map could be drawn using the original vernier readings. After this map was contoured, the actual gamma values could then be contoured by interpolation, such as the heavy lines (gamma contours of each 1000 gammas) on the map here.

The A-3 type "mag" is really nothing more than a self-levelling and self-orienting, "dip-needle", yet it could be read within 20-40 gamma accuracy; it measures the absolute vertical magnetic intensity.

All readings were corrected for diurnal variations, taken at a base station at least several times during each day; a graph was drawn for each day's diurnal from which the corrections were then taken for each reading.

The final map is enclosed here. It shows total magnetic variation from 53280 gammas at 2S - 8W to 60300 gammas at 14N - 6+50E, a range of 7020 gammas. The average values (background) seem to be between 57500 and 59000 gammas.

There are several "high" anomalous areas in the east half of the grid area, noticeably in the NE quadrant, where the largest anomaly is "left open" on the north edge of the grid, indicating that possibly additional "mag" work could be done by adding a few lines there. No high values were

encountered near the showing, although there are some low readings just NE of it. Readings over and near the showing, although there is considerable magnetite and pyrrhotite present, can be considered rather low than high (see map). In general, there seems to be a SW - NE trend or lineation of both high and low readings, especially on the east half of the grid. Some of them may suggest faults or geological contacts. Limestone exposures seem to be associated with "negative" anomalies ("lows").

F. Soil-Sampling Survey:

Soil samples were taken on the grid at 200' x 200' intervals. Samples were also taken along most of the roads which are outside of the grid. Because of generally good soil cover, resulting from lack of outcrop, most samples were taken at depth in excess of 1 - 1½ feet, using a "soil-auger" (made of large wood - auger welded to a handle).

The soil samples were then analyzed for Total Heavy Metals in parts per million in soil (ppm of THM) and results plotted on a final map, enclosed here. The analysis was done by Jens Mogenson Laboratory in Toronto, using hot HNO_3 acid extraction method.

Values of all samples taken on the grid were plotted on a frequency graph (see) and from this the following values were estimated:

Background:	40 - 100	ppm of THM	range
Threshold:	100	ppm of THM	
Anomalous:	Weak - 100 - 200	ppm of THM	(contoured)
	Medium 200 - 400	ppm of THM	(contoured)
	Strong 400+	ppm of THM	(contoured)
	600+	ppm of THM	(contoured)

The limit of anomalous values picked are arbitrary, and might appear rather low since only three samples gave readings of 600 ppm (on the grid), and none were higher. Normally, near a well oxidized showing, readings could be expected to go at least twice as high, especially if lead, and zinc particularly, are present. Unless these THM readings are caused

mainly by copper (which is possibly the case here), the anomalies outlined on the map cannot be considered very high or very large. Possibly the depth of overburden is the limiting factor here in some instances.

The largest anomaly is along the creek, starting some 200' upstream from workings (200-300 ppm THM), follows the creek eastward, where it is left "open" with a 600 ppm reading.

The other "highs" are: 12E - 8N (a single 600 ppm), 6W - 6N (600 ppm), and a weakly anomalous belt (100 - 200 ppm) from 6E - 4S (500 ppm) to 14E - 12S (400 ppm), where the anomaly is left "open". The only high readings near the showing are two 500 ppm at 2E and 4E, respectively, on line "0". (All co-ordinates in hundreds of feet).

No particular correlation can be made between soil anomalies and geology. The anomaly along the creek could be caused by metals in seepages along slopes and banks.

As far as correlation of soil anomalies with magnetometer anomalies goes, it is rather with negative (i.e. low readings) "mag" anomalies, such as eastward along the creek. The high "mag" anomaly in NE quadrant of map does hardly correspond with soil anomalies there. It is possibly due to thick overburden in this particular area.

Only recommendations based on soil sampling can be these: Resample some of the soil anomalies, possibly on 100' x 200' or 100' x 100' grid and run tests for copper on these samples. If values turn out to be predominantly copper, then additional work can be considered if mag survey interpretation and geology are favourable. This possibly would include the area east of the showing, along the north side of the river, or better yet, it could include the central part of the grid and NE quadrant. As it is now, the soil survey indicates no particularly favourable new areas.

G. Electro-Magnetic Survey:

An electro-magnetic (E-M) survey was done over "Big G" property during the period of October 1st to 5th (inclusive), 1965. The survey was carried out by our company's geophysical operator W. Langley from Toronto office and he was assisted by W. E. Fraser. Much time was lost due to adverse weather during which the instruments could not be used.

The instruments used were 2 dual-frequency two-way Sharpe Model SE-300 Electromagnetic Tranceivers. Only the high-frequency (1600 c.p.s.) was used; it is a normal procedure to use only high-frequency, unless there are high anomalous readings which necessitates further evaluation by taking also low frequency (400 c.p.s.) readings.

The method used was the so-called "parallel-line" - "vertical-coil" configuration, in which both operators walk along parallel lines and alternately transmit and receive an electromagnetic signal from stations opposite on lines. The transmitter coil is held vertical, with coil axis horizontal and parallel with the line, while the receiver coil is held horizontally, with coil axis vertical and then being rotated around a horizontal axis pointing toward the transmitter (e.g. coils are at 90° angle toward each other). In presence of an underground (or other) conductor, such as a sulphide ore body, a secondary electromagnetic field is formed around the conductor, distorting the primary field. The resultant is measured as the "tilt" angle of the receiver coil by means of a clinometer mounted on the coil. The readings, consisting of degrees of "tilt" are then plotted on a graph; in presence of conductor the graph shows typical "cross-overs". The magnitude of readings indicates the size and attitude of the conductive bodies. This configuration works best if conductive bodies are more-or-less perpendicular to the lines and dip deeply, and is not affected by differences in elevation.

The instrument separation used was 400 feet, which normally would give the penetration up to 200 feet (about half of coil separation).

The results obtained were not encouraging, the "cross-overs" obtained being too small to have any significance. It could be argued that the configuration used was not the most favourable for more flat-laying ore bodies, especially when they are smaller than the coil-separation used, such as the case could be here. By using a smaller separation and also running the survey at right angles to the present survey more favourable results might be expected if there are ore bodies present; the weather conditions did not permit this additional checking. A more favourable coil configuration cannot be recommended because of the topographic effect (e.g. based on differences in elevations) attendant to such configurations.

H. Conclusions:

The old "Big G" showing, has limited extent, being a lens-like body of ore some 150 feet long and apparently "pinching-out" both at the face of adits and at each end. The purpose of these surveys was to pick up any additional showings and/or anomalies, both on the grid and in the general vicinity.

The general area seems to be quite favourable geologically for more prospecting and exploration, especially for skarn-type deposits near intrusive contacts with limestone.

As for the grid area, some extra "mag" lines could be run north of NE quadrant. There is room for additional E-M work also, as mentioned before. Induced polarization (I.P.) survey could be considered but is not recommended due to its high cost, - at least not at the present stage. A Ronka EM - 15 type survey is more recommendable, to be run over the present showing as it might outline this ore body; however its penetration is limited to 20-30 feet only.

As for trenching and "bulldozing", some stripping could be done in the high "mag" anomaly area in the NE quadrant, to find out the depth of overburden, the nature of the underlying rock and possibly the cause of the magnetic "high". The cost again is a limiting factor here,

although the terrain is flat and open and there is no big timber to hinder any such work. Similarly, some stripping could be considered just east of the workings, along a limestone-skarn belt there, but the terrain is more difficult there, with big trees and steep slopes; overburden is possibly less shallow there.

A self-potential (S.P.) survey could also be considered, being fairly inexpensive and easy to run. It would work best with ore bodies coming to the surface or close to it, where there is oxidation in the upper parts of the ore body.

In summary..... Due to lack of correlation between different types of anomalies in the area all future work should be carried out with the cost factor in mind. More prospecting is recommended, however, near the showing and east and north-east of it, including the intrusive contacts outside of the grid and also outside of the claims area.

Hugo Laanela

Hugo Laanela, Geologist
c/o Gunnex Limited

November 26, 1965.
Nanaimo, B. C.

HL:s

The above report is an accurate and reliable description of the work done on the "Big G" property in 1965 by Gunnex Limited. The work was done by or supervised by Gunnex staff employees whose abilities have been demonstrated. I concur with their conclusions.

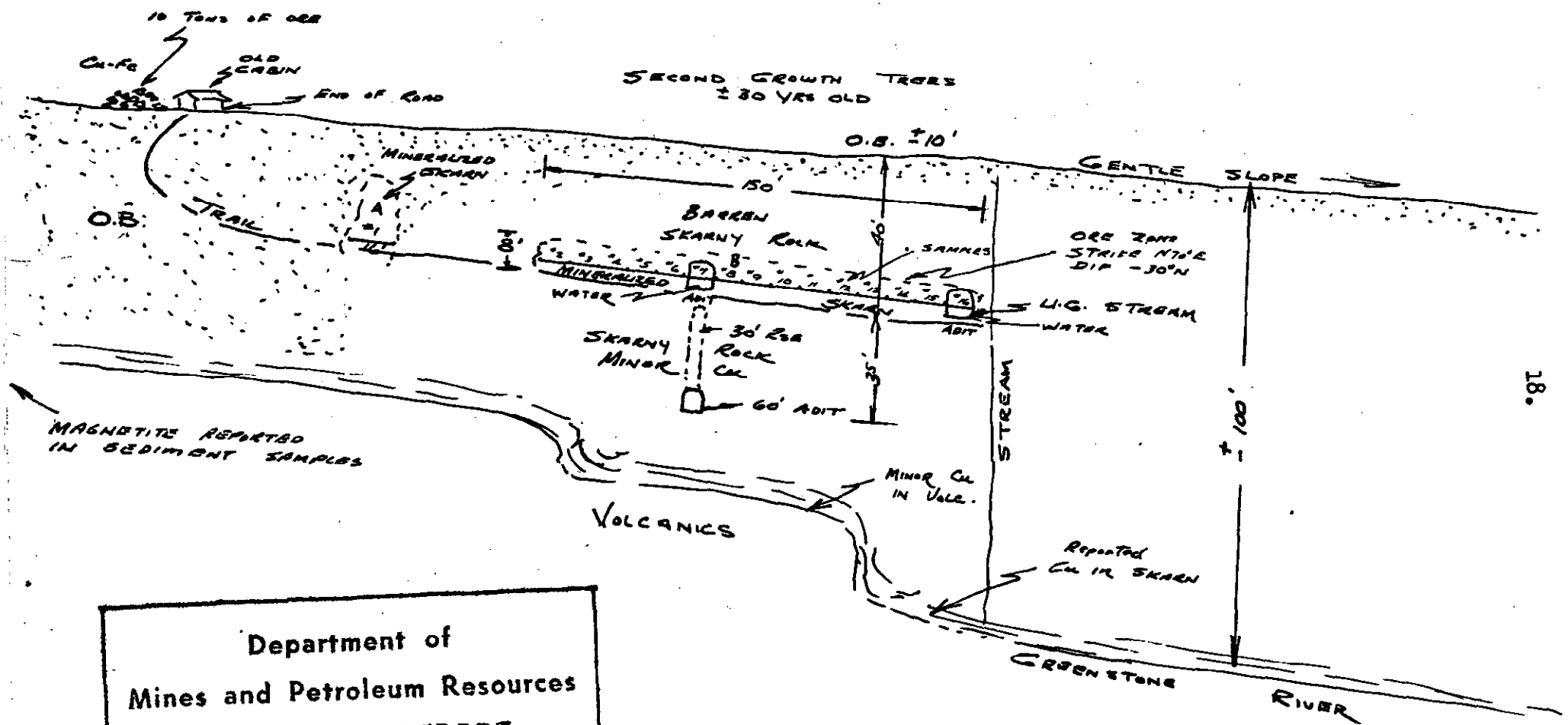
Kenneth C. Rose

Kenneth C. Rose, P.Eng.
GUNNEX LIMITED - Manager-Western Division

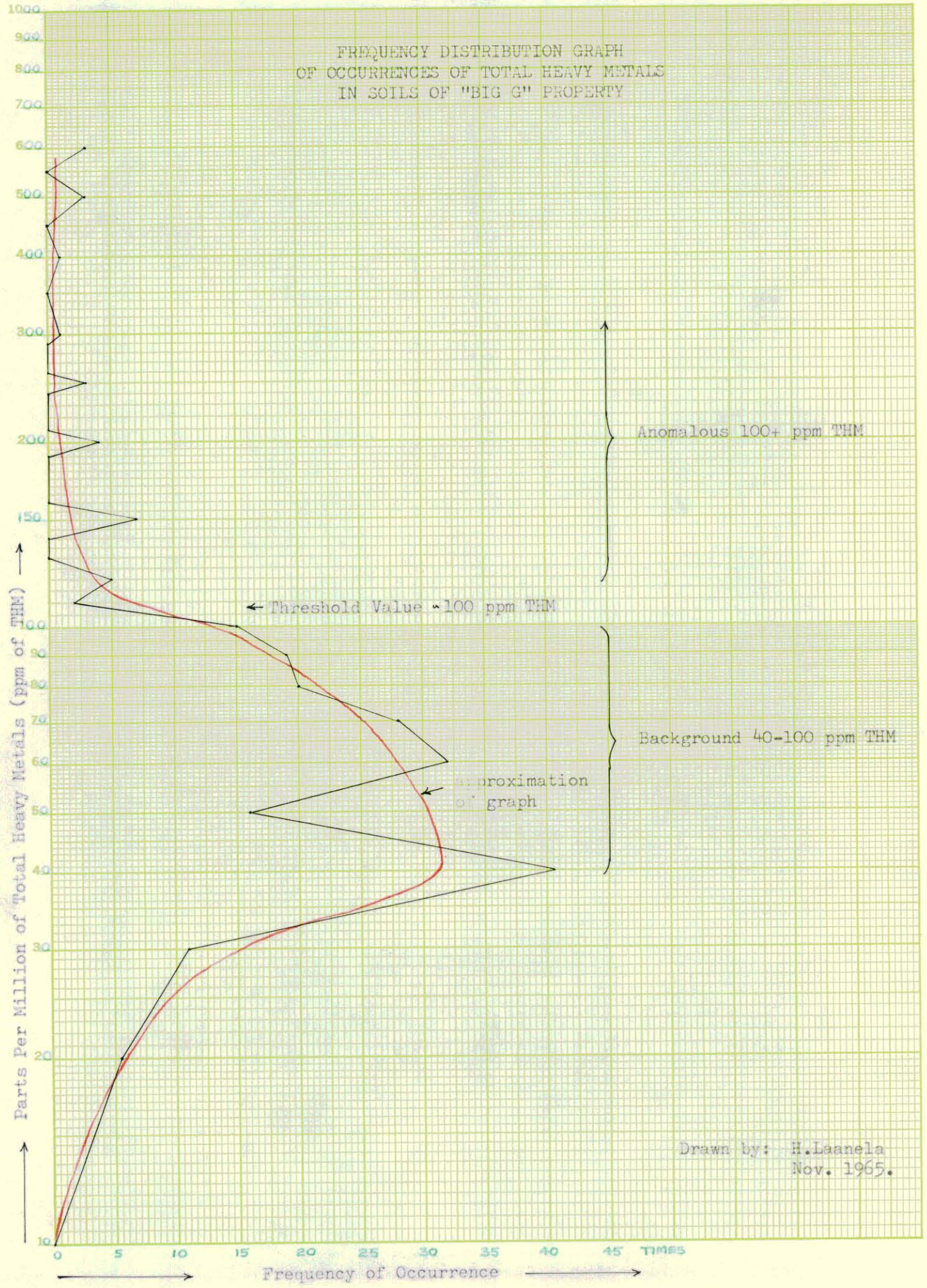
III. APPENDIX:

(on the following pages)

VERTICAL SECTION - View North



BIG G PROPERTY
CAMPBELL RIVER, B.C.
NOT TO SCALE
MAY 1965 T.F.S.


FREQUENCY DISTRIBUTION GRAPH
OF OCCURRENCES OF TOTAL HEAVY METALS
IN SOILS OF "BIG G" PROPERTY
Anomalous 100+ ppm THM
← Threshold Value ~100 ppm THM
Background 40-100 ppm THM
Approximation of graph
Parts Per Million of Total Heavy Metals (ppm of THM)
Frequency of Occurrence
TIMES
Drawn by: H.Laanela
Nov. 1965.

GUNNEX EXPENDITURES ON THE "BIG G" PROPERTY

near Campbell River, B.C.

May 3rd, 1965

Preliminary investigation of the property by Mr. H. Laanela, Mr. W. Fraser and T. F. Schorn.

Wages.....	$ 125.00	(Fraser $25.00, Laanela & Schorn $50.00)
Expenses.....	10.00	(meals)
Vehicle.....	30.00	(12¢ / mile)
Assays.....	50.00	(Coast Eldridge Limited)
	$215.00	

June 7 - 17th, 1965

Line cutting, geological mapping, magnetometer survey and soil sampling. The crew consisted of H.Laanela, W.Fraser, L.Harper and R.Fraser.

Wages.....	$ 980.00	(including Board & Lodging)
Vehicle.....	70.00	(12¢ / mile)
Mag. Rental....	70.00	
	$1,120.00	

June 21 - 25th, 1965

Magnetometer survey and geological mapping; crew consisted of H.Laanela and R. Fraser.

Wages.....	$ 300.00	(including Board & Lodging)
Vehicle.....	30.00	(12¢ / mile)
Mag. Rental....	30.00	
	$360.00	

October 1 - 5th, 1965

E-M (SE300) survey of property. The crew consisted of W.Langley of Gunnex Limited, Toronto and W. Fraser of Gunnex Limited, Nanaimo.

Wages.....	$ 250.00	
Vehicle.....	50.00	(12¢ / mile)
E-M Rental.....	50.00	
Expenses.....	70.00	(Board and Lodging at Forbes Lodge)
	$420.00	

continued....page 21

GUNNEX EXPENDITURES ON THE "BIG G" PROPERTY CONT'D.

Soil Sample Costs - 440 x .50¢	$ 220.00
Supervision	250.00
Report writing and drafting	135.00

TOTAL EXPENDITURES = $2,720.00

Prepared by:
T. F. Schorn.
November 29, 1965.
Nanaimo, B. C.

I HEREBY CERTIFY:

That to the best of my knowledge the expenses in the amount of $2,720.00 as accounted for on pages 20 and 21 of this report is a true statement of the costs incurred by Gunnex Limited in the exploration of the "Big G" property in 1965.

GUNNEX LIMITED

Kenneth C. Rose, P.Eng.
Manager - Western Division

THE ABOVE STATEMENT WAS DECLARED BEFORE ME TO BE TRUE AND CORRECT BY KENNETH C. ROSE THIS 2nd DAY OF December 1965.

A NOTARY PUBLIC IN AND FOR THE
PROVINCE OF BRITISH COLUMBIA

STATEMENT OF QUALIFICATIONS

I, Kenneth C. Rose, of the Municipality of North Vancouver in the Province of British Columbia, do hereby certify that:

1. I am a geological engineer residing at 680 Blueridge Avenue, North Vancouver, B.C., and maintain an office at 1019 - 409 Granville Street, Vancouver, B. C.

2. I am a graduate of Queen's University having received the degrees of B.Sc. in engineering geology in 1945 and M.Sc. in economic geology in 1947 and I have practiced my profession for the past twenty years.

3. I am a registered Professional Engineer of the Province of British Columbia.

4. I have had extensive experience in mining and exploration geology in various parts of Canada. I have been chief geologist for Madsen Red Gold Mines Ltd., consulting geologist for Starratt Olsen Gold Mines Ltd. and am currently manager of the Western Division of Gunnex Limited.

5. I have not personally examined the "Big G" property, but the work embodied in this report was done under my direction by experienced professional men whose abilities I affirm. I have studied their maps and reports and uphold their conclusions.

6. I have no interest, direct or indirect, in the mineral claims known as the "Big G" property nor do I expect to receive any interest.

Kenneth C. Rose, P.Eng.

Vancouver, B.C.
November 18, 1965.

STATEMENT OF QUALIFICATIONS

I, Hugo Laanela, of the City of Nanaimo in the Province of British Columbia, do hereby certify that:

1. I am a geologist residing at Anderson's Trailer Court, R.R.#1, Nanaimo, B. C.

2. I am employed as a geologist in mining exploration by Gunnex Limited at 366 Selby Street, Nanaimo, B. C.

3. I am a graduate of the University of British Columbia with a Bachelor of Arts degree in geological sciences in 1961 and I have worked as a geologist in mining exploration since that time.

4. I have the following experience in mining exploration:
   As a student I worked during 1958 and 1959 seasons with Kennco Exploration Ltd. both at Highland Valley and Stikine areas doing prospecting, geophysical and geochemical field work.

   During 1960 season I worked with McIntire-Porcupine Mines Ltd. in Southern B.C., doing mapping, prospecting, geophysical and geochemical field work and was in charge of the field party.

   Upon my graduation I have worked continuously for Gunnex Limited as a geologist, first in Northwest Territories, then about two years in Nova Scotia as a party chief in charge of the large crew doing extensive geochemical and geophysical surveying, and the last two years on Vancouver Island doing detailed geological mapping on the E & N Railway Company Land Grant.

5. I have personally examined the "Big G" property and have made the geological and magnetometer surveys, have checked the mineral occurrences and various outcrops and have supervised the line-cutting and soil sampling on the property.

6. I have no interest, direct or indirect, in the mineral claims known as the "Big G" property nor do I expect to receive any interest in future.

Hugo Laanela

Hugo Laanela

Nanaimo, B.C.
November 26, 1965.

NEW LOGGING SLASH

NEW LOGGING ROAD

LEVEL TERRAIN

NO OUTCROPS - PROBABLY VOLCANIC ROCKS

NEW LOGGING SLASH

MATURE TIMBER

EDGE OF LOGGING SLASH

LEVEL TERRAINE

SECOND GROWTH

ROAD TO CAMPBELL RIVER & STRATHCONA DAM

I.P. 575155
I.P. 575156

SECOND GROWTH

NO OUTCROPS - PROBABLY VOLCANIC ROCKS

LIMESTONE BOULDERS & SINKHOLES (?)

GREY LIMESTONE

LMS.

PROBABLY VOLCANICS

MATURE TIMBER

CENTRE OF GRID

U/G STREAM IN ADIT

OPEN CUTS & ADITS WITH Cu, Zn, Mag. & Pyrite

CABIN (FALLEN DOWN)

ORE DUMP

OPEN CUT Cu

LOWER FALLS 20'+

1'-3" QTZ VEIN WITH Cu

OLD CROWN GRANT POST: RAINBOW M.C. 1216 AND B.T. 3 1/2

I.P. 528644
I.P. 516027

LOCATION LINE

PROBABLY VOLCANICS

TUFFACEOUS ANDESITE

ALLUVIUM

TUFF

LMS.?

PYRITE

CLIFFS

FALLS

ANDESITIC DYKES

MATURE TIMBER

TERRAIN SLOPING NORTHERLY

ROCKY RIDGE OF COARSE ANDESITIC TUFF (?)

BASE LINE

MATURE TIMBER

EDGE OF MATURE TIMBER

DENSE SECOND GROWTH IN OLD BURN WITH DEADFALLS

NO OUTCROPS - PROBABLY VOLCANIC ROCKS

ROCKY RIDGE OF COARSE ANDESITIC TUFF (?)

DENSE SECOND GROWTH IN OLD BURN WITH DEADFALLS

HIGH BANKS

RUSTY ANDESITE

ANDES.

TUFF

ANDES.

LOG JAM

RUST & PYRITE SEVERAL FEET THICK

LMS. BOULDERS

ANDES.

CLIFFS

MINOR Cu STAIN

DARK GREEN, BASIC AMYGDALOIDAL FLOWS

BASIC FLOWS

TUFF

1'-3" QTZ VEIN WITH Cu

BANDS

FALLS 20'+

1'-3" QTZ VEIN WITH Cu.

OLD LOGGING ROAD - IMPASSABLE

SLOPE

ALLUVIUM

ANDESITE

GREENSTONE CR.

ANDESITE

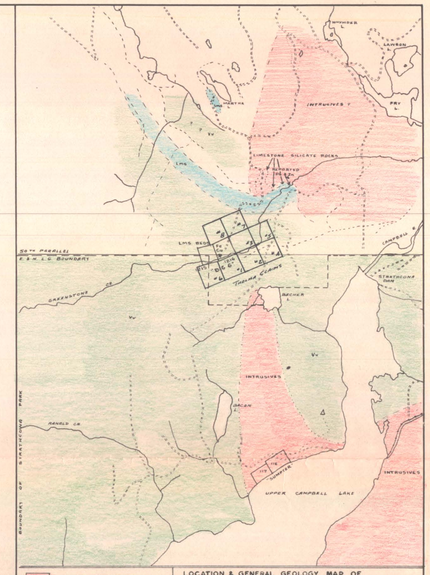
ALLUVIUM

SLOPE

PYRITE & RUST

FRACTURED & SILICIFIED SHEARS

SLOPE



COAST INTRUSIVES	LOCATION & GENERAL GEOLOGY MAP OF "BIG G" & GREENSTONE CR.
VANCOUVER GROUP LMS.	SCALE: 1.25"=1 MILE
VANCOUVER GROUP VOLCS.	GEOLOGY SOUTH OF 50th PARALLEL: GUNNING, 1930
	GEOLOGY NORTH OF 50th PARALLEL: LAANELA, 1965

LEGEND

TRIASSIC AND/OR JURASSIC (VANCOUVER GROUP):

4 — SKARN AND LIME-SILICATE METAMORPHIC ROCKS WITH AMPHIBOLES, GARNET, CALCITE, CHLORITE, MAGNETITE, PYRRHOTITE (MASSIVE), PYRITE, CHALCOPYRITE, MINOR SPHALERITE.

3 — LIMESTONE (INTERCALATED) AND LIMY ARGILLACEOUS ROCKS; LOCALLY GRADES INTO SKARN. MOSTLY DIPPING GENTLY NORTHWARD.

2 — TUFFACEOUS ANDESITIC ROCKS, WITH INTERCALATED LIMESTONE AND ARGILLACEOUS BEDS (LOCALLY). ALSO UNDIFFERENTIATED VANCOUVER GROUP ROCKS.

1 — DARK GREEN, AMYGDALOIDAL BASIC VOLCANIC FLOWS.

- OUTLINE OF ROCK OUTCROP
- GEOLOGICAL CONTACT: DEFINED; UNDEFINED.
- DIP AND STRIKE.
- SHEARING, WITH DIR.
- OPEN CUT AND ADIT.
- QUARTZ VEIN (VERTICAL)
- BANK, GRADING INTO CLIFF.
- CLAIM POST (WITH TAG NUMBERS).
- FALLS
- EDGE OF TIMBER.

Kenneth E. Rose
Nov 25/65

To accompany:
GEOLOGICAL, GEOCHEMICAL & GEOPHYSICAL REPORT
by: K. E. Rose, P. Eng.,
on "Big G" Property on Greenstone Creek
Nanaimo Mining Division
DATED: November 26, 1965.

GUNNEX LIMITED
VANCOUVER, B.C.

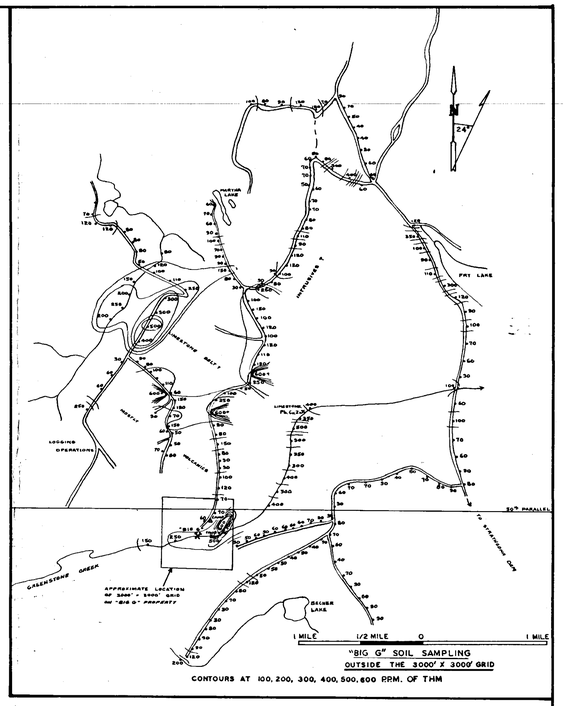
N.T.S. - 92-K-4

GEOLOGY
"BIG G" COPPER SHOWING (Gilkie Mine)
NEAR CAMPBELL RIVER, VANCOUVER ISLAND, B.C.

100' 0 100' 200'

DATE - JUNE, 1965 DRAWN BY - H.LAANELA/S

699



"BIG G" SOIL SAMPLING
OUTSIDE THE 3000' X 3000' GRID

CONTOURS AT 100, 200, 300, 400, 500, 600 PPM. OF THM

14W 12W 10W 8W 6W 4W 2W 0 2E 4E 6E 8E 10E 12E 14E

14N 12N 10N 8N 6N 4N 2N 0 2S 4S 6S 8S 10S 12S 14S

BASE LINE

N 24°

BACKGROUND - 40 - 100 ppm OF THM
THRESHOLD - 100 ppm OF THM

ANOMALOUS - WEAK - 100 - 200 ppm OF THM
- MEDIUM - 200 - 400 " " "
- STRONG - 400+ " " "

CONTOURS AT 100, 200, 400 & 600 ppm OF THM

ANALYSES BY JENS MOGENSON, ONTARIO

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 699 MAP #2

699

To accompany:
GEOLOGICAL, GEOCHEMICAL & GEOPHYSICAL REPORT
by: K. C. Rose, P.Eng.,
on "Big G" Property on Greenstone Creek,
Nanaimo Mining Division
DATED: November 26, 1965.

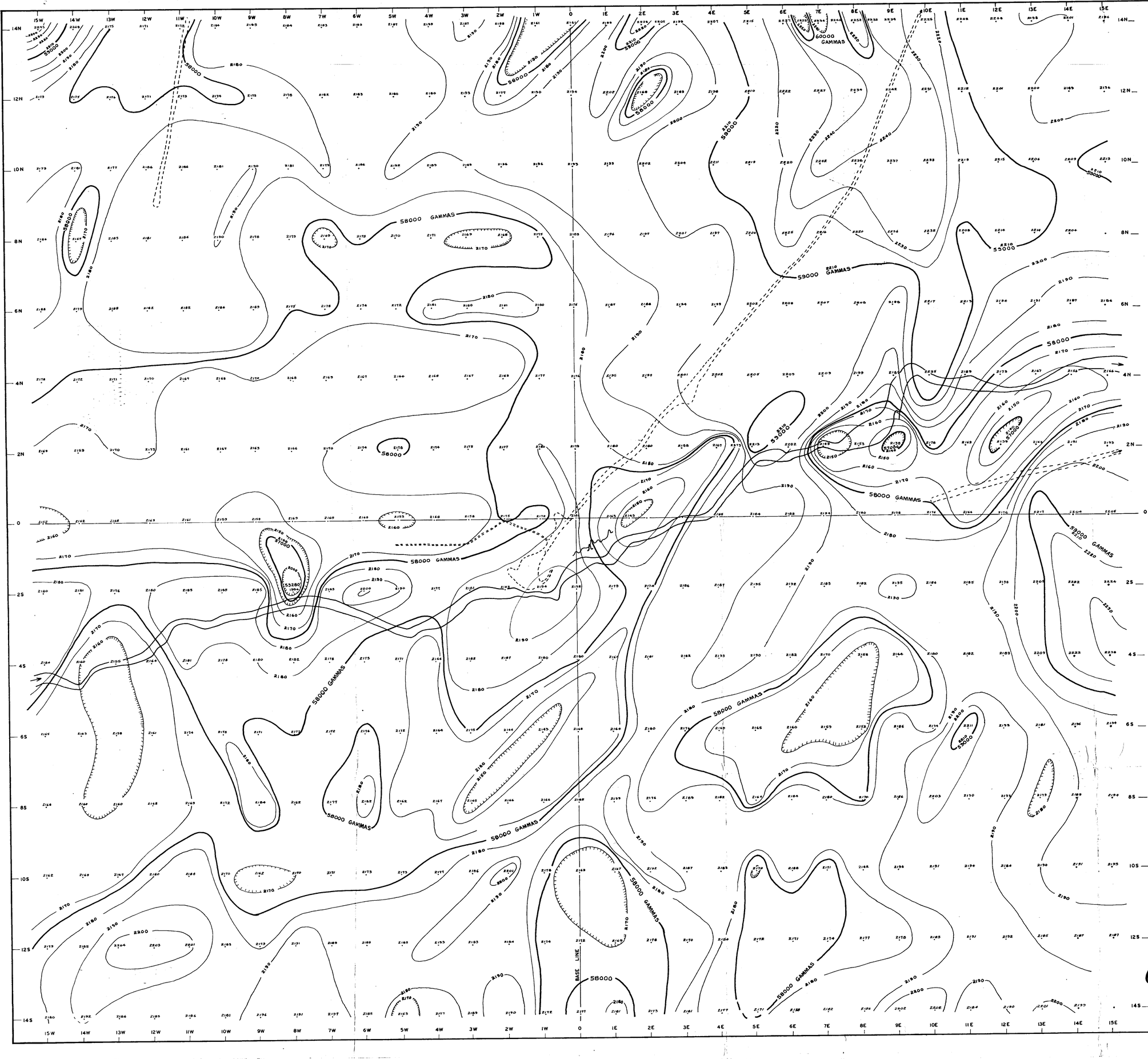
GUNNEX LIMITED
VANCOUVER, B. C.

N.T.S. - 92-K-4

GEOCHEMICAL (THM) SURVEY
"BIG G" COPPER SHOWING (Gilkie Mine)
NEAR CAMPBELL RIVER, VANCOUVER ISLAND, B.C.

100' 0 100' 200'

DATE - JULY 31, 1965. DRAWN BY - HL / S



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 699 MAP #3

TABLE FOR CONVERSION OF SCALE DIVISIONS TO GAMMAS

2245	VERNIER DIVISION	= 60000 GAMMAS	(OF TOTAL VERTICAL MAGNETIC VALUE (APPROXIMATE)
2210	"	= 59000 "	
2175	"	= 58000 "	
2140	"	= 57000 "	
2105	"	= 56000 "	
2070	"	= 55000 "	
2030	"	= 54000 "	
1980	"	= 53000 "	

SURVEYED WITH A SHARPE A-3 ABSOLUTE VERTICAL INTENSITY MAG.

CONTOUR INTERVAL: AT EACH 10 VERNIER READINGS
AT 1000 GAMMA INTERVALS

To accompany:
GEOLOGICAL, GEOCHEMICAL & GEOPHYSICAL REPORT
by: K.D.Rose, P.Eng.,
on "Big G" Property on Greenstone Creek
Nanaimo Mining Division
DATED: November 26, 1965.

Kenneth D. Rose
Nov 12/65

GUNNEX LIMITED
VANCOUVER, B. C.

N.T.S. - 92-K-4

MAGNETOMETER SURVEY
"BIG G" COPPER SHOWING (Gilkie Mine)
NEAR CAMPBELL RIVER, VANCOUVER ISLAND, B.C.

100' 0 100' 200'

DATE - JUNE, 1965 DRAWN BY - HL/S

699

14W 12W 10W 8W 6W 4W 2W 0 2E 4E 6E 8E 10E 12E 14E

16N

14N

TX AT 10+00 N

12N

10N

TX AT 14+00 N

8N

6N

TX AT ABOUT 4+00 S

TRAVERSE LINE

4N

2N

TRAVERSE LINE

TX AT ABOUT 400 N

0

2S

4S

6S

8S

10S

EAST

WEST

DIRECTION OF CROSS-OVER

TRAVERSE

INSTRUMENT : SHARPE MODEL SE 300
E.M. TRANSCEIVERS
(USING H.F.)

SCALE OF TILT ANGLES: 1/5" = 1 DEGREE

N

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 699 MAP #4.

To accompany:
GEOLOGICAL, GEOCHEMICAL & GEOPHYSICAL REPORT
by: K.C.Rose, P.Eng.,
on "Big G" Property on Greenstone Creek,
Nanaimo Mining Division
Dated: November 26, 1965.

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GUNNEX LIMITED
VANCOUVER, B. C.

N.T.S. - 92-K-4

ELECTROMAGNETIC (E.M.) SURVEY
"BIG G" COPPER SHOWING (Gilkie Mine)
NEAR CAMPBELL RIVER, VANCOUVER ISLAND, B.C.

100' 0 100' 200'

DATE: SEPTEMBER, 1965.

SURVEY BY: W.G.LANGLEY & W.FRASER
DRAWN BY: H.LAANELA / S.