F. C. UNDERHILL J. T. UNDERHILL H. McN. FRASER

811945

93L Copper Island
Babine Lake

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GENERAL ENGINEERING
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ROOM 27, 413 GRANVILLE STREET
VANCOUVER, B.C.

May 7th, 1937.

Roy W. Moore, Esq.,
1206 Pacific Mutual Building,
Los Angeles, California.

Dear Mr. Moore;

I am enclosing a report on a copper prospect, by the late Newton W. Emmen, which is situate on an island in Babine Lake in Northern British Columbia.

I do not know whether you are interested in a copper property or not, but the report sounds interesting, although it would appear a low grade proposition.

From Mr. E. F. Campbell who is a co-owner with a Mr. McDonald, I get a short history as follows.

Since 1914 little further work appears to have been done until 1929 when the Consolidated took a three year working bond on the property and instituted a drilling programme. In 1930, when the slump came, they stopped the work and the only results as far as Mr. Campbell knows appear in a short report of the B. C. Government Report of 1929. Since that time till now only work sufficient to keep the claims in good standing has been done. At the present time they hold seven key claims but the remaining ground is open for location. Mr. Campbell is leaving for the property in afew days and intends to relocate the remaining eight claims to cover the Island. Since the time of the Emmen report, the method of transportation has altered considerably and it is quite easy to get into the property for examination. I enclose a typewritten page by Mr. Campbell on the transportation route.

If you are interested, an examination could be made at any time from now on. The property is held by these two men only and a working bond for three years could be easily obtained. I understand from Campbell that the price for the property is $135,000 but he would like to get $2,000 cash for a six months option after an examination.

Mr. E. F. Campbell's address is 1305 West 15th Avenue, Vancouver, B. C.

It is nearly three years since we saw you up at Bridge River and I hope you are still enjoying a busy and prosperous life. Horace is away in the Omineca Country about 60 miles North East of this prospect, operating a placer operation for Mr. C. F. de Ganahl of New York.

Yours sincerely, F. C. Underhill

93L Copper Island
Babine Lake

E. F. Campbell
1305 - 15th West
Vancouver, BC

Property not of type to be of interest to us at this time Stop but wish to express thanks for opportunity to consider it Regret delay in getting reply to your Stop Please advise Underhill

RWM

Chge HGM.
12068. Mt. Bldg

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INCORPORATED
R. B. WHITE, PRESIDENT

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Accepted up to 2:00 A.M. for delivery on the morning of the ensuing business day, at rates still lower than standard night message rates, as follows: The standard telegram rate for 10 words shall be charged for the transmission of 50 words or less, and one-fifth of such standard telegram rate for 10 words shall be charged for each additional 10 words or less.

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In further consideration of the reduced rates for this special Night Letter service, the following special terms in addition to those enumerated above are hereby agreed to:

Night Letters may at the option of the Telegraph Company be mailed at destination to the addressees, and the Company shall be deemed to have discharged its obligation in such cases with respect to delivery by mailing such Night Letters at destination, postage prepaid.

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NIGHT MESSAGE		NIGHT LETTER	
NIGHT LETTER		SHIP RADIOGRAM	

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R. B. WHITE, *PRESIDENT* — NEWCOMB CARLTON, *CHAIRMAN OF THE BOARD* — J. C. WILLEVER, *FIRST VICE-PRESIDENT*

Send the following message, subject to the terms on back hereof, which are hereby agreed to

OFFICE COPY
OF
H. S. MUDD

LOS ANGELES CALIF

THE FOLLOWING DICTATED BY R.W.M. JUNE 15, 1937 FOR FILES; WIRE HAVING BEEN SENT JUNE 1, 1937.

E. F. CAMPBELL
1305 FIFTEENTH WEST
VANCOUVER B.C.

PROPERTY NOT OF TYPE TO BE OF INTEREST TO US AT THIS TIME BUT WISH TO EXPRESS THANKS FOR OPPORTUNITY TO CONSIDER IT STOP REGRET DELAY IN GETTING REPLY TO YOU PLEASE ADVISE UNDERHILL

(SIGNED) ROY W. MOORE

CHARGE H.S.MUDD ACCOUNT
1206 PACIFIC MUTUAL BLDG.

C O P P E R I S L A N D

SUMMARY

Copper Island is situated in Babine Lake, in the Omineca Division of the Skeena Mining District of British Columbia. It is roughly oval in shape, a little over one mile long by four-fifths of a mile wide, the whole of which is included within the area of the mineral claims examined.

The most important ore deposit on the Island consists of an intrusive dyke or diorite-porphyry (which constitutes the South Eastern part of the Island), in a brecciated condition, the cementing material of which is copper-iron sulphides and silica.

By means of drives, shafts, cuts, and outcrop, this mineralized diorite-porphyry has been exposed over an area of two thousand feet by fifteen hundred feet, at altitudes ranging from sixty to three hundred and fifty feet above lake level. From the presence of mineralized float, and rock in places it is evident that this mineralized formation occupies a considerably greater area than that mentioned.

On the Richmond claim this ore bearing rock reaches its maximum elevation in a hill which rises to an altitude of three hundred and fifty feet above the lake level, and will be most easily mined in benches, by means of a steam shovel.

Average samples assayed from o.12 ounces silver and o.75% copper to o.05 ounces gold, 0.60 ounces silver and 3.9% copper, and it may reasonably be expected that the average tenor of the deposit when mined en masse, will be 0.025 ounces gold, o.25 ounces silver, and 1.5% copper, and possibly higher.

From the topographic and geologic conditions of the Island, I believe a zone of secondary enrichment will be encountered between the level of the existing workings and that of the lake, and that here will be found seams and masses of solid bornite of a high copper and silver content.

On the Oversight claim is a vein of galena (lead sulphide) carrying some zinc blende (zincsulphide), varying from four to sixteen inches in width, lying between a rhysolite foot-wall and a decomposed tuff hanging wall, well defined in a drive that has been run in on it for a distance of thirty-six feet, and crosses the peninsular which forms the southwest corner of the island. The ore (clean) is rich in lead and carries good gold and silver values, but there is only a small tonnage available above lake level, and for that reason together with the present lack of proper transportation facilities are not considered of material importance in arriving at conclusions regarding the economic value of the Island as a whole, from a mineral producing standpoint.

The facilities for economic mining are excellent; the ore can be mined by means of steam shovels, and can be concentrated by ordinary well known methods on a ratio of ten to one at a total gross cost for mining milling administration, etc., of $1.50 per ton. It is estimated that the concentrates will have a marketable value of $43.75 per ton (on a basis of 15¢ per pound for copper, 50¢ per ounce for silver and $20.00 per ounce for gold and that a saving of 85% of the values in the ore will be made, an exceedingly low estimate. Assuming a freight and treatment cost of $20.00 per ton of concentrates, there will remain a profit of 85.7¢ per ton of crude ore mined, which, on a basis of 1,000 tons daily output, equald $857.00 per day, which is amply sufficient to warrant the capital expenditure required to develop and equip the property.

Before, however, considering the matter of equipment the available tonnage of ore must be ascertained. From the work already done, the character of the ore and the areas over which its existence (at surface) has been demonstrated, it is reasonable to expect a supply of several million tons, but this has not yet been actually proved, and until it is the property cannot be considered other than a most excellent prospect.

Taking all the facts into consideration, I consider the property to be well worth additional development and recommend certain surface work being done, the No. 1 adit being continued for an additional two hundred and fifty feet, the installation of two core drills, (one diamond and one clix), and the drilling of several series of holes, as being the cheapest, quickest, and most efficient method of arriving at a close estimate of the available tonnage of payable ore.

I consider that the sum required for this will be $25,000 and that the results will warrant the further expenditures necessary to complete the development and equipment of the property with a mining and milling plant of a capacity commensurate with the apparent magnitude of the deposits.

From the date upon which the foregoing is based you are referred to the detailed report which follows:

Yours respectfully,

(signed) Newton W. Emmen,
Mining Engineer.

Vancouver, B. C.
January 15th, 1914.

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C O P P E R I S L A N D

PROPERTY & LOCATION

The property known as Copper Island comprises fifteen (15) mineral claims as follows:

Victor: Richmond: The Pioneer Meta Hill: Copper Hill estension Castle: Grande: Oversight: Porphyry: Lake Shore Copper and Oversight Extension; embracing the whole of the Island, as will be seen by the map attached hereto. These claims are held by location, and all requirements of the "Mineral Act" having been complied with, are in good standing.

Copper Island is situated in Babine Lake, about twelve (12) miles north of Wright Bay, Omineca Division of the Skeena Mining District of British Columbia, and at the present time is most easily reached by way of Prince Rupert, thence by the Grand Trunk Pacific Railroad to Burns Lake, thence by pack horses to Donald's cabin on Babine Lake (21 miles) and then down the lake by boat to the Island (about 40 miles). The time occupied in going in over this route from Prince Rupert is five (5) days, allowing two (2) for the railroad journey.

The route followed by the existing trail from Burns to Babine Lakes, crosses the Babine Range, through a low pass near its southern end, and the maximum elevation attained is 3150 feet above sea level (baronetric measurement); the elevation of Burns Lake being 2275 feet and that of Babine Lake being 2220 feet above sea level. By building a road commencing at Decker Lake about nine (9) miles northwest of Burns Lake, through a parallel pass, the distance can be reduced to about fifteen (15) miles and the range crossed at a maximum elevation of 3000 feet. The building of a wagon road by this route offers no

difficulties and the grades would nowhere exceed two hundred (200) feet to the mile, with long level stretches. The matter of constructing this road is now being considered by the Provincial Government and it is probably that is will be commenced this year.

TOPOGRAPHY

The country eastward, from the Coast Range, when viewed from a height, gives the impression of a dessicated peneplane and is undoubtly the remains of an ancient plateau which was elevated contemporaneously with the Coast Range. This elevation would give renewed energy to the erosive agencies, causing the streams to rapidly deepen their channels in the elevated plateau. This carving action of the great ice-sheet which subsequently covered the land and the combined action of these agencies has resulted in a very irregular topography.

Babine Lake (elevation 2220 feet above sea-level) occupies what is evidently an ancient pre-glacial valley which has been scored out and deepened by glaciation. It is a narrow fiord like body of water, about 110 miles long by 2 to 8 miles wide, lying between the southern portion of the Babine Range on the West and a range of low hills on the East, forming the divide between the Babine and Tacla Lake watersheds. To the West and Northwest, as the Coast range is approached, the mountains become more rugged in outline and attain altitudes of 6000 to 8000 feet, while to the south and east they rarely exceed 4500 feet in altitude. In this direction the hills become more rounded in outline and of gradually lessening altitude till they finally merge into the rolling intermountain plateau which now forms the great agricultural belt of central British Columbia.

Copper Island is one of a group of Islands in an arm of Babine Lake which runs in a northeasterly direction for a distance of some eight (8) miles. Near its souther end, on the Richmond claim is a hill which reaches an altitude of three hundred and fifty (350) feet above the lake level, rising steeply from the south and ending in a talus slope and rock bluff. To the east, north and northwest, this hill slopes by easy gradients to the water and to the west, more steeply to a narrow valley extending inland from the head of a small bay on this oversight Extension claim. The western boundary of this valley is a low ridge terminating in a peninsular at the southwest corner of the Island. With the exception of a few places, there is a narrow rocky beach extending around the Island, and the vegetation comes down to a high water line.

The country around Babine Lake, including the Island is well timbered with Spruce, Jack-pine, Poplar, Alder, and Cottenwood, few of which exceed twelve (12) inches in diamter, although on some of the flats close to the Lake, and along some of the larger streams, there are a few spruce and cottonwood trees from two (2) to four (4) feet through. The underbrush is not heavy except where the ground is swampy, so that travelling on foot is easy and with very little cutting pack animals can be taken through the country. The rocks are for the most part buried under soil and rocky debris, so that prospecting is more easily done along the streams, bluffs bordering the lakes, and on the higher hills where the formation is exposed.

GEOLOGY

Copper Island lies along the Eastern base of the Coast Range Granitic uplift in a formation composed of rocks belonging to the porphyrite group of the Cretaceous era, and the latter eruptives of the Tertiary period, which formation also constitues the major portion of Babine Range, Hudson Bay, and Rochner de Coules mountains. The rocks comprising the porphyrite group consist of andesite, tuffs and agglomerate cout by a series of coarsely crystaline rocks of a later volcanic period and which are mainly diorite-porphyry, syenite-porphyry and granite prophyry, to which the name "the later eruptives" has been given. Referring to these latter the Canadian Geological Survey says:

"These rocks (the later eruptives) have evidently played an important part in the deposition of the various mineral deposits of the district, since it is in the immediate neighborhood of these intrusice masses that all the principal ore bodies have been discovered.

Copper Island is mainly composed of these later eruptives with some exposures of the porphyrite group. Tuff and addesite in the West and North parts, while near the Northeast corner of the Island is an exposure of a dense dark coloured igneous rock (trap) forming a low cliff rising from the lake at that point. In a number of places along the shore and in the talus at the base of the hills, boulders and fragments of agglomerate brown and red vesiscular lava rocks were noted but no deposit seen in place.

CHARACTER OF ORE DEPOSIT

The most important ore deposit on Copper Island occurs in an intrusive dyke of diorite porphry in the Southeastern part of the Island where it forms a hill, (on the Richmond claim) and extends along the shore line from the Castle claim, around the eastern end of the Island to the Lake Shore claim. The rock is cracked and fissured in all directions (largely due to contraction of the plastic mass on colling), giving it the appearance of breccia, the cementing material of which copper-iron sulphies (bornite and chalcopyrite) and silica (quarts). In texture the rock is coarsely crystalline, except at and near the contacts with other formations, where it is of a much finer grain (merging into andesite) and more brecciated.

This dyke extends in a north 45° east direction across the island and has been traced by surface trenching and outcrop exposure for a distance of 2000 feet (1875 feet in a straight horizontal line) by a width of 1500 feet. But it evidently extends over a much greater area for the reason that same type of rock mineralized with copper-iron sulphides has been found both as float and in places along the shore line of the Castle, Pioneer, Victor, and Lake Shore Claims. It is probably therefore that the whole of the Southeastern end of the Island is underlaid with this mineralized diorite-porphyry. The diorite-porphry is intruded by later syenitic and rhyllite dykes and is overlaid by tuff and trap to the Northwest, whether these latter are extrusive flowes of any considerable thickness is unknown, and can only be determined by future exploration but copper bearing diorite-porphyry float has been found on the Veta Grande, Copper Hill Extension, and North Shore Claims.

The most prominent exposure of ore occurs in the hill on the Richmond Claim, where the rock is bare over an area of 750 by 1500 feet horizontal measurement) with a vertical difference of elevation between the lowest and highest points of this exposure of 250 feet. This is locally called the "bare hill." On its Southwestern side the bare hill rises from a bench (180 feet above lake level) in a long talus slope ending in a bluff of weathered and broken rock at an elevation of 350 feet above the lake level. In this talus slope and bluff there appears to be three zones of major mineralization shown by three green bands of copper staining of greater prominence than elsewhere.

The talus is weathered and leached so that at first glance it does not appear to contain any copper (except along the bands previously spoken of), but on digging below the surface rock its presence is seen by the green stain of the copper carbonate (malachite). The same condition holds good with regard to the bluffs - at surface the copper is nearly all leached and the rock must be dug into before its presence is detected.

From the manner in which the ore occurs it is evident that the mineralization took place subsequent to the uplift of the diorite-porphyry mass, probably about the period of the intrustion of the latter eruptives, and it is likely to be more pronounced near the lines of contact with the adjoining formation where the brocciation is greater and the rock fragments more permiable to the ore-bearing solutions so that a certain amount of replacement could take place.

From the leached condition of the surface and the shattered condition of the rock mass, (meteoric waters have been unable to circulate readily) it may reasonably be expected that a zone of secondary enrichment will be encountered between the level of the present workings and that of the lake.

DEVELOPMENT

Most of the development work has been done on the Richmond claim in the vicinity of the "bare hill" and in detail is as follows:

No1. Drive:

(Altitude 185 feet above lake) This work commences in the talus 77 feet vertically above the base of the bare hill and the bench previously referred to. This drive has an east course and a total length of 41.5 feet, of which the first thirty feet is through slide and broken rock. For its entire distance it is in copper bearing diorite-porphyry and a sample taken across the face (width of 52 in.) assayed o.03 ounces Gold, 0.06 ounces Silver, and 1.4% (28 lbs) Copper to the ton.

This drive does not attain much depth and the rock shows considerable evidence of leaching, the mineralization being malachite (copper carbonate) bornite and chalcopyrite (the copper-iron sulphides)

No. 2. Drive:

Elevation 233 feet above the lake). This commences the bare hill 565 feet southeast of No. 1 Drive. It has been driven in a N. 45o E. direction 54.5 feet of which the first 18,5 feet is an open cut, much leaching - the walls of the drive are streaked with malachite stain and show only a small proportion of the sulphide ore. A sample taken along the west wall, or side of the drive assayed 0.06 ounces Silver and 1% (20lbs.) Copper the ton. The fact of the drive was in a tongue of syenite which intrudes the diorite-porphyry at this point and a sample of which assayed o.02 ounces silver and 0.75% (15 lbs.) Copper to the ton.

SHAFT

Elevation 302 feet above the lake. This is a prospect pit sunk to a depth of 27 feet at a point 410 feet N. 63° of No. 1 Drive. The shaft is 5½ feet by 9 feet in size and is sunk vertically in the ore bearing diorite porphyry. The ore shows much leaching from the surface to the bottom of the shaft from which a sample taken across the floor lengthwise assayed o.01 ounces Gold, 0.19 silver ounces, and 1% (20 lbs.) Copper to the ton; and a general sample down the sides gave o.02 ounces Gold, 0.25 ounces silver and 1.1% (22 lbs) per ton.

All the foregoing samples were taken by making cuts across the samples' faces without any sorting out of waste. A sample from the dump at the shaft, excluding obvious waste, assayed o.05 ounces Gold, 0.6 ounces silver and 3.9% (78 lbs) copper per ton.

CUT "A" (Elevation 236 feet above the lake) At a distance of 937 feet in a direction of N. 23° E. from the No. 1 Drive an open cut 60 feet long has been made through the surface soil to bedrock, exposing the line of contact between the copper bearing diorite-porphyry and rhyolite a light coloured yellow weathering rock, consisting of lime-alkali feldspar, and quartz, containing iron-pyrite. The diorite-porphyry is here much leached but shows the same characteristics as on the "bare hill."

CUT "B"

Is on Copper Hill Claim, 80 feet beyond Cut "A" in the same direction from No. 1 Drive. This cut is 20 feet long wholly in the yellow weathering rhyoltite, the yellow color of which is due to the iron oxide formed by the decomposition of the iron pyrite

contained in the rock. A s ample of this rhyolite was taken and assayed for Gold and Silver but give negative results.

CUT "C"

(Elevation 170 feet above the lake) This cut is on the line between the Copper Hill and Lake Shore Claims 1125 feet No. 50° E. from the No. 1 Drive and shows the same copper bearing diorite-porphyry as that on the "bare hill."

CUT "D" (Elevation 186 feet above the lake) This cut is 860 feet N. 52° E. from the No. 1 Drive and consists of a shallow pit in the copper bearing diorite-porphyry which comes to surface at this point.

CUT "E" (Elevation 192 feet above the lake) This is a shallow pit in an outcrop of the copper bearing diorite-porphyry 750 feet N. 56° E. of the No. 1 Drive.

CUT "F"

(Elevation 60 feet above the lake) This on the Pioneer Claim and consists of a shallow cut to bedrock made at a point 940 feet S. 30° of the No. 1 Drive. It exposes the same class of copper bearing diorite-porphyry as exists on the "bare hill" and in the other cuts.

At the discovery post of the Castle Claim 825 feet S. 50° West, of the No. 1 Drive and at an elevation of 108 feet above the lake is an outcrop of the same copper bearing diorite-porphyry, but beyond breaking off a few pieces so as to see the nature of the rock, no work has been done at this place.

No samples were taken from any of the cuts for the reason that they were all in more or less leached rock and any assays made of material from the places would be of no use in arriving at conclusions at to the average tenor of the deposit as a whole. In every instance rock taken from the cuts above enumerated, showed the presence of copper, either as stain or partly decomposed sulphides.

The samples from the drives and shaft were to all intents and purposes surface samples because none of the working are below the leached zone and it is reasnable to expect that the ore will have an average tenor in copper considerably higher than that indicated by the assays when this zone is penetrated.

OTHER ORE OCCURENCES

On the Oversight Claim is a vein of solid galena (lead sulphide) from 4 to 16 inches wide, at the contact between a rhyolite foot-wall and a decomposed tuff hanging well containing inclusions of diorite-porphyry. There is a well defined gouge between the inclusions of diorite-porphyry. There is a well defined gouge between the ore and either wall and it is has a strike of N. 60° E. with a dip of 58° to the southeast.

This vein has been developed by an adit driven in its course, starting from the shore line close to the water's edge on the West side of the peninsular forming the southwest corner of the Island. The adit has been driven 36 feet and the ore is plainly visible in the roof and floor for the entire distance, its average width being about 8 inches. In the face the ore is 16 inches wide and the hanging wall tuff greatly distorted and much decomposed.

The peninsular upon which this vein occurs is narrow and does not attain an altitude above lake level exceeding 100 feet so that tonnage of ore available above the water level is not large. It is a sufficiently good prospect to warrant additional development work being done on it and not only should the adit be continued but a test shaft should be sunk on it for 50 feet.

In view of the small size of this ore body and its present rempteness from market it is not considered as a factor of material

importance in arriving at conclusions regarding the economic value of the Island, as a whole as a source of mineral production, and for that reason the samples taken were not assayed.

This ore has a very high lead content and carries good values in Gold and Silver, so that it would be profitably mined in conjunction with the mining of the copper ore and its shipment to the smelters.

MINING FACILITIES:

From the nature of the deposit and its situation it can be most easily and cheaply mined in a series of benches. The rock being first shattered by a means of explosives and then loaded into cars by steam shovels for transportation to the mill which would be located at some convenient place on the shore.

On the Castle Claim where the present cabin now stands is an excellent site for a plant and the buildings necessary for the housing of the employees. Here a good sized flat exists sloping gently back from the shore of a small bay, which makes an excellent harbour with deep water close inshore.

Water can be obtained by pumping from the lake in unlimited quantities and of excellent quality

All supplies would have to be brought in via Burns or Decker-Babine pass to Donald's Cabin on pack animals and from there to the Island by boat. At present the packing charge would be about 2½cents per pound from Burns or Decker to Donald's Cabin, and about 1-3¢ from there to the Island. When the wagon road is built and with power boats on the Babine Lake, these freighting costs would be materially reduced. The nearest large town where supplies can be obtained is Prince Rupert/

Labour costs would be an average of 25% more per shift, per man, than the Kootenay scale, or say from $3.25 to $4.25 per day for eight hours underground and nine hours at surface, with a deduction of $1.00 per day for board. Foreman $15.00 Assayer $150/00 and Superintendent $250.00 per month and board.

ESTIMATE OF EARNINGS:

With the very limited amount for work that has been done on the property it is only possible to make rough estimates as to the probable earnings.

Assuming that the average tenor of the bulk of the diorite-porphyry will be o.025 ounces Gold, 0.25 ounces silver and 30 lbs. (1½) copper to the ton, which I believe will be found to be a very conservative figure, as a basis to start on.

The cost of mining this deposit be means of benches and steam shovels, including cost of transportation from mine to mill will not exceed 50¢ per ton and that of milling 15¢.

From the nature of the ore it can be readily concentrated by ordinary well known methods and a saving of at least 85% of the ppatallic contents made (in practice this saving will be over 90%) The ratio of concentration being 10 to 1. On this basis the costs will be:

Mining and traming	100 tons @ 50¢	$50.00	
Concentrating	" " @ 75¢	75.00	
Administration etc @	25¢ per ton	25.00	$150.00

From this ore there will be obtained 10 tons of concentrated--assuming a saving of 85% of the minerals only - containing 255 lbs. of Copper 2.13 ounces of Silver and $4.25 in Gold making a gross value of $43.57 per ton - taking copper at 15¢ per lb. silver at 50¢ per ounce and gold at $20.00 per ounce.

The freight and treatment on these concentrates making ample allowance for smelter deductions and losses, will not exceed $20.00 per ton - this gives:

10 tons of concentrates @ $43.57		$435.70
Less		
Mining and Milling 100 tons ore	150	
Freight and treatment concs.	200	
PROFIT		350.00 $85.70

This ore deposit is not suited for handling on a small scale. Development should be carried on until there is sufficient tonnage blocked out to warrant themining and treatment of at least 1000 tons per day, as the working costs in handling a big tonnage do not increase in the same ratio as the increased output and the margin of profit is therefore greater.

RECOMMENDATIONS:

The Copper Island property is of sufficient merit to warrant further development with a view to ascertaining the tonnage and average copper tenor of the ore available for mining with a steam shovel, which from the indications that exist on the island should be very large. The quickest method of doing this is by means of thecore drill, using both the shot and diamont types, the former for all down holes and the latter for the flat and angle holes. The nature of the diorite-porphyry is such that the drill should make fast progress with a minimum of shot and diamond wear.

The best place to commence drilling is at the foot of the talus slope (see plan attached hereto) where three series of holes, ranging from the vertical to the horizontal should be drilled to a depth of 200 to 500 feet each.

Another series of holes should be bored on a line northwest and southeast from the shaft, these should be down holes and carried to a depth of 300 to 325 feet each. The information obtained from this work would enable a furtherplan of drilling to be intelligently laid out.

While the drilling was being done it would be advisable to explore the line of contact between the diorite-porphyry and rhyolite in a southwesterly direction from Cut "A" towards the lake, as it is likely that a sheet of high grade ore may be uncovered along this line.

The No. 1 Drive should be continued for an additional 250 feet to get under the crest of the "bare hill" where a better grade of ore may be expected.

The results of this work being satisfactory, as there is every reason to believe they will be, the drills should be moved to the Castle, Pioneer, Lake Shore, Victor and Copper Hill Extension Claims, and other series of holes put down to define the limits of the payable ore bodies.

The test holes should be drilled on the claims lying to the northwest and west of the "bare hill" to ascertain where the payable ore ends in that direction, as itmay be that the trap rhyolite and tuff, forming the surface rocks on the these claims at this end of the Island, are comparatively thin and are underlaid with the copper-bearing diorite-porphyrt.

It is estimated that the sum of $25,000 spent as outlined above will be ample for the preliminary testing of this property and that the results will be sufficiently good to warrant the extensive opening up and blocking out of the ore preparatory to the installing a plant for its extraction and treatment on an adequately large scale.

Respectfully submitted,

(Signed) Newton W. Emmen.

Mining Engineer

Vancouver, B. C.
January 15th, 1914.

Since the late Mr. Emmen wrote on Copper Island there has been many changes in regard to transportation. You will notice he travelled by pack trail from Burns Lake to Donald's Cabin, on the shore of Babine Lake. Today auto trucks run from Burns Lake to Donald's Cabin. We also have a wagon road from Burns Lake to Silver Island Mining Property, lo miles East of Donald's Cabin on Babine Lake. We have another road coming from the C. N. Railway Station at Topley to Babine Lake. This road is 21 miles and 18 miles of it is finished for truck use, and the balance will be finished this Summer. This road comes within 8 miles of Copper Island and there is a good harbor at the end of this road, and there is a water fall running to waste. I can safely say with many thousands of Horse Power.

Since the report was written we did a lot of Open Work besides driving the 2 tunnels to 100 feet each. In all, we have proven our mineralized Diorite Porphyry to cover a much great area than is mentioned in the Report. The Galena Ledge has improved by further driving of tunnel and it looks very good to me.