

Report
on the

Bank of Vancouver Group
of Copper-Gold Mineral Claims
Situated

on the head waters of Seymour Creek, Burrard Inlet B.C.

By
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Vancouver B.C.

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~~Notes~~

Messrs
Vancouver B.C.

Dear Sirs -

In accordance with your instructions the writer left Vancouver on April 4th with Dr. J. Sautter our guide, and a crew of four men, to make a thorough examination. Sampling & Reports on the Bank of Vancouver group of mineral claims, as far as climatic conditions would allow at this point of the year.

Our party took the steamer to the outlet of the Ferry or South Valley creeks, landed and followed the trail from the shore up along Ferry Creek: over the mountain divide, and down the west fork of Seymour Creek, to the main Creek, and then arrived at the Group. South Valley landing lies by sea twenty-eight miles up Haro Sound from Vancouver and the trail is 12 miles. We returned to Vancouver on April 15th after sampling the tunnels and outcrops on the Group.

I now have you an exhaustive report on the topography, geology, values, costs to be incurred, proposed treatments, and all the details, that are likely to be required in gauging, financing and undertaking the further development of the mine in conjunction with a general customs smelting enterprise.

The conclusions and deductions are carefully thought out from the data and details obtained.

You are to be congratulated from a financial standpoint of future profits in securing so sound a property.

Report on the "Bank of Vancouver" Group of gold copper mineral claims: -

Situate on head Waters Seymour Creek,
Burrard Inlet, B. C.

Ronald C. Campbell Johnson: -

Description: -

The Bank of Vancouver Group with surrounding claims to be secured covers an extensive area of mineral ground affording a large prospective tonnage of commercial ore for treatment, combined with a long life of prosperity in the future, therefore justifying the elaborate equipment proposed to conserve all profits to those concerned and allowing a prolonged period of years to pay off all outlays by sinking fund in addition to set dividends. —

Character of Ore: -

The ore is a segregation of values in copper, gold and silver from the magma of a triassic eruptive rock at contact with an older sedimentary formation. The concentrating agency is partially a lower jurassic eruptive granite in addition to the usual dynamic forces created by natural cooling process. — The average values in copper are from 100 to over 20 lbs of copper per ton, valued at normally \$10 to \$12.50 per ton mined, with gold values of \$1, and more, and silver 50¢ and more or a total of \$11.50 gross and up. — These values and also the richer ores outcropping to be even further low grade ores not estimated

in prospective tonnage, will afford large dividends on the quantity treated (1) after all slag losses and costs have been deducted. —

Treatment:—

all values lie in metallics as sulphides from the elimination of the silica (quartz) and alumina is the first object.

The magnetite present acts as a flux but carries no values. The quartz gangue is harder than the metallics so that in crushing to separate the quartz from the metals the latter are shivered to an impalpable and can not be caught—therefore water concentration and incidentally the Elmore oil process, are not treatments applicable here. — Smelting the ore in mass as mined without previous treatment is the only feasible method and allows the handling of large amounts. — Detailed analysis of the ore shows great excess of silica and a wantage of iron and lime but local properties carry the required ingredients with values attached to more than pay for their way through the furnace are to be purchased on Texada Island and elsewhere so that the question of fluxes is to be overcome comparatively easily. This is fully gone into later with the question also of obtaining coke and the variety of furnaces best suited to the ore. —

Situation:—

This group lies at an elevation

of from 2100 to 3600 feet above sea level near the head waters and source of Seymour Creek in order to form a catch basin, — This is 24 miles in a tortuous course following the main creek for 21 miles, as the crow flies, from the mouth or outflow into Burrard Inlet, —

Acreage; —

Six claims covering over 300 acres, with the ground to be secured the acreage should exceed 500 acres and ample surface will then be held on which to erect all bunkers, buildings, houses for employees, etc and the lowest ~~sale~~ levels obtained to drive the ore for sinking shafts have to be resorted to.

Title: —

The map of the claims accompanied this report.

The government recording office for this mining district is New Westminster.

The writer has not examined the titles as this is the work of a solicitor.

A Crown grant gives a fee simple title in perpetuity as long as the taxes are paid at present amounting to 25¢ per acre on Crown granted unworked claims or in lieu a royalty on each claim from which ore is mined, treated or shipped, of 2% on gross values less mining and smelting costs deducted. As it is advisable in all cases that these claims should be at once surveyed the requisite amount of work completed and a Crown Grant applied for in compliance with the Mineral Act. —

Climate:-

As the elevation of the proposed workings of the mine are two thousand feet and more above sea level there will be deep snow on the mine during winter. The mountains also rise to five thousand feet so that these conditions make a long winter but this snow does not cause a severe climate nor does it interfere with underground work at any period of the year, nor with the moving down to sea level with the ore nor the return freight or incoming supplies.

On the sea shore at the proposed smelter site for many winters the snow never lasts and in the most severe winter not for long. During the balance of the year the rainfall is normal and like the drier parts of Great Britain. —

Timber:-

Timber as shown in the photographs is plentiful and of large dimensions. At some parts of the group the cut will average 75000 ft. board measurement (12" x 1") per acre and is scanty on others but there are certainly over three million feet on the property. —

The varieties are Spruce, hemlock and some cedar with transport of lumber from local mills on the coast can be brought in at moderate prices. —

Water Supply & Power:-

From Loch Lomond the commencement and fountain head

of Seymour Creek, a splendid supply of water for power and all uses can be obtained.

The writer has not measured the volume, elevation, flow or distance from pipe line, but from 500 to 1,000 feet elevation are reported and can be confirmed by comparison with elevations taken on claims.

The flow of the main Seymour Creek at low water is several thousand miners inches, equal to 1.5 gals per mine per inch. — This would give up to one thousand and more yards power ample for all operating, lighting and other uses of the mine, —

Smelter Site

The points to be considered in deciding on a suitable smelter site are the conditions existing for cheaply assembling ore, both from the mine and custom ore, fuel, fluxes, materials for construction, Supplies etc. and facilities for marketing product. The sea board here answers these demands, and so it will be best to provide means to bring the ore from the mine to the sea board. Suitable sites having ample room for slag tip, affording landing facilities for fuel & ~~fluxes~~ fluxes, materials & supplies. exposure of walls, protection for wharf for shipping from mine & coast. and deep water at all tides.

Communication & Transportation

On account of the even track, found by survey, amounting to one in fifty or two per cent, down Seymour Creek to the North Side of Burrard Inlet. this route is the one to be chosen, the distance approximately is 24 miles with few bridges necessary and a side hill cut or on the level.

Topography and adjacent mines

The district is a sea of mountains cut by creeks and their forks, these mountains rise to 5000'. The accompanying photos give some ocular demonstration of the profile and topography of the ground forming the surface of the mountain sides.

The mineral belts do not necessarily follow the course of the beds of the creeks which flow in all angles and directions from North. The mineral zones trend Northerly and Southerly with

eastly dip at this point, and on the, therefore, cross sections by the creek,

On this group the main Seymour Pass by a bend in its course on the "Copper Mountain." Chain crosses the zone, and offers great opportunity of attack in our and the running of levels along the trail, in time winning doors of ore on the "Bank of Vancouver" claim, amounting to 1500' in height that this gives millions of tons of ore for extraction before sinking has been resorted to.

The mineral zones in these mts. are ~~parallel~~ parallel. being several in No., and one dependent on the uplift of the eruptive ranges. A map is given showing the connection of this group with the Goldsmith. Butte - Supers.

In the Butte Supers. group the writer from professional knowledge knows that the ore chutes run in parallel streaks over a zone 600' and more wide. As this group is the Geological extension of the same zone.

Geology. To open up these mines intelligently and to be sure of discovering all the ore possible at contacts, in fissures, parallel planes, veins, feeders, robbers, spurs and angles, dykes and blind leads, where the geology and age of disposition of the rocks in the vicinity, and on the ground itself, are of vital importance in determining the origin, source, and subsidiary enrichment of the economic metals, and the whereabouts of the channels filled by and conducting enriched aqueous waters and steam.

A theoretical and Technical premise must be advanced to be proven or disproven later by actual developments, and data gathered from microscopic examination and magnifying of thin sections of rocks encountered, to classify their constituents, sequence in geological periods, and so economic value. - The earliest period necessary for consideration here of the rocks in evidence is that of the Devonian. Carboniferous or Palaeozoic (ancient life) represents originally by shale, sandstone, conglomerate & coal bearing stratified seams.

was now metamorphosed by late dynamic magnetic and aqueous action into slates, cherts, shists and crystalline texture such as marble. These sedimentaries originally carried no Cu or metallic ingredients of value -

The Palaeozoic rocks in their pristine lamina were subsequently pierced, surrounded, and in parts overlain, rifted and floated up, by basic eruptive rocks of Plutonic deep seated origin. during the latter Triassic period of Geology.

These Triassic came up in the form of molten magma and brought Cu, Fe, and other economic metals ~~into~~ ^{extensively} interspersed through their consistency as sulphides. where the fluid rocks come in contact in their heated state - with the cold stratified former period, a magnetic & dynamic force of concentration and attraction came into play - and ~~condensation~~ ^{condensation} of steam, and the economic metals became segregated from the ~~mass~~ ^{mass} and came together at ^{the} contacts as. Koematite.

Chalcopyrite etc accounting for the occurrence of the richest ores at these positions. Also as the diabase eruptive rocks cooled, steam and heated waters are drawn up by attraction to the older Palaeozoic. carrying with them in solution Silica, As, Ag, and other metals depositing much of the Cu as Boronite.

So the Devonian Carboniferous rocks were metamorphosed. relicified by heat and Silicious waters, their organic coal and carbonaceous matter intensifying the deposition and resolution of the ascending and descending vapours & waters.

These fluids dissolved the earthy materials along cleavages and fracture planes and pptd into and enriched the cavities and channels with Cu, Au, Ag & Ph & other metals. it then took place of time for matters to quiet down, when again a later more violent upheaval of molten rocks of volcanic as well as of plutonic origin took place in the still later Jurassic period. This upheaval was on a most gigantic scale, & was the key to the Batholiths that built and modelled the mts ranges of the Coast of B.C. & Territory to the North & South. These rocks were acid granites. carrying no economic metals

in any quantity. But their dynamic effects was stupendous on their geological predecessors. The solfataric waters and vapours created by their intense heat, and caused also by their cooling, converted still further the limestones into cherts, the diabases into diorites, the ~~soewatites~~ into magnetites, and many more metamorphic conditions. They generated the sericite (Silby) schists from the slates and shales by lateral and vertical pressure, replacing the planes by layers of silica, apite, gabbro, micrite and other dyke matters pierced in the Tertiary period, the proceeding rocks, giving still more vents and channels for the flow of siliceous waters. These give secondary enrichments by dissolving chalcopyrites and re ^{ppies} it as a bonite again dissolving bonite and using its atoms of S for other purposes. & re ^{ppies} native Cu - Cu at depth has in places new found of phenomenal value, also probably due to this enrichment by Carbonic acid and soft corals by siliceous waters -

This then seems the present condition of the ore and offers a reasonable basis on which to work to lay open the large stores of acid rocks, heavily impregnated by pyrites, magnetite etc - holding stores of base chalcopyrites -

Glaciers of later Tertiary period have ground and worn down the Suez and overlying rocks & formed valleys - also making it easier for human hand to build up and piece together the geological structure by exposing some of the deeper seated rocks at the present day, that otherwise would be obscured -

Several of the photos are given with the report to show the contact of Jurassic granite with Tertiary diorite and the transformation of the stratified rocks into schists & cherts -

Work already
accomplished

The trend of the contact on the group is
N. 10 W. S. 10 E. with steep dip into the
mountain to the East. It also constitutes
the trend of the ore zone - and it follows the
contact there. The course rises diagonally
up the face of the bluff & crags forming the
mountain, flanking the Seymour Creek Valley,
& again descends out by the East foot of
Seymour Creek joining the main zone - One
or a half miles below the group.

On the Copper Mountain Claim - in elevation 8600'
above sea level - a tunnel has been ~~driven~~ put in with
course from entrance magnetic N. 10° E for 33', then
N. 45° E for 41' at entrance a tunnel to crosscut
the zone almost easterly runs for 12' all in splinted
ore - as the course of the contact is N 10° W, the first
33' of the tunnel is diagonally along course being 200 out
when it turns N 45° E it cuts the trend at an angle of
55° working this out gives a cross section of 8' across
the trend, or less than the crosscut at the mouth. Then N
45° E for 41' gives another crosscut of 25' or 33' in all -
8' of which is in paleozoic rock, the balance in
Jurassic peg granite.

Sample 421 = (give assay results & where taken)

$$\begin{array}{r} \text{Cu net assay} = 5.30 \\ \text{Less } .3 = \text{slag loss} \quad .3 \\ \hline 4.75 \text{ dy} \end{array}$$

$$\begin{array}{r} \text{Au} = \$1.20 \\ \text{Ag} = 0.50 \\ \hline \$1.70 \end{array}$$

$$\text{less } 10\% \text{ slag loss} = \$1.53$$

Bancroft Claim =

As shown by map lies due South
of the Cu Mt claim and the ore
zone angles up the side of the Mt
to 3600' above sea level from
2100' at cross on Copper Mt

The ore outcrops on the crags

Possible ore

= "Technical ore in Sigbee zone blocks out
on four sides - in blocks of not more than
200' each way, and half that distance is the
more reliable - then these sides can be
sampled at intervals of 5 or 10' apart so
that an assay plan can be made, an average
value and thickness determined, and the tonnage
and the total value of the blocks closely estimated

In arriving at a prospective value of a mine open for sale the one
must be understood to be only prospective. The data given on which
an estimate is based, and the details at hand mentioned -

In this case on the Cu Mt - a width of 20' width of
ore giving a commercial value of \$10.93 is proven in the tunnel

On the Bancroft of a streak of 20' width of commercial
ore gives \$14.18 recoverable is proven - average = \$12.50 approximately

One can trace from workings to workings at intervals
for the full distance of 1700' in length, from the cross to the
highest point where the ore outcrops is the difference between
2100' above sea level and 3600' or a height of 1500' before
sinking shafts is required, for tonnage an average of 750'
can be taken - Allowing 12 cu ft to be ton in place, a
liberal allowance, then the Tonnage Totals up to over 2000000
above cross - The writer does not say that this large tonnage
is technically block out, and can be accurately relied on
But he does say that for a rough estimate of prospective ore
to have some idea of the value of the mine - ignoring

the parallel pay chute str. how on surface
anticipates to show their existence, the method of
calculation is legitimate, until closer underground work is
carried out & technically blocking out of ore completed

Speculative	= Cost sheets show total costs of \$9.33
Market Value	\$12.50
of mine	9.33
	3.00 profit per ton

this on 2000000 tons of ore gives a speculative value
to the mine of \$6 000 000

Proposed Work = A vigorous attack with machine drills
should be made on the ore body where it
crosses the crease on the main claim -

Another level 100' vertically in elevation should be started on the ore,
also on at the stake elevations - To keep the blocking of
ore several years ahead of extraction - Each level should be
made wide enough for double tracks, and up rises starting
every 50' to the level above to allow for extensive stoping -
the chutes & gates installed to allow many miners to
stop - Intermediate levels @ 50' for stoping will
allow all ore between walls to be stoped at once - the
roop cover to save timbering - A diamond drill for
cross-cutting will be essential to show up parallel
lenses of ore - The filling of stopes from by mullock or
waste or the heavy expense of square set timbering (35¢ per ton)
will be avoided by caving system

Cost Sheets -

The following cost sheets on normal a
should be attained on this property -

Mining per ton -

Drilling	.46
Blasting	.05
Explosive	.16
General mine Supplies	.04
Mine lighting (Candles)	.02
" " (Electric)	.02
Blacksmithing	.04
Framming & Shoring (direct)	.28
" " (apportioned)	.12
Timbering (labour)	.25
" material	.12
Machine drills - fitting repairs	.08
General mine labour	.13
Hauling underground (transportation)	.01
" shops (to smelter)	.04
Compressor air	.11
Ventilation	.02
Assaying	.05
Surveying	.02
General	.27
	<u>\$ 2.53</u>

Development per ton	.74
Smelting (direct)	4.05
" (indirect for fluxes)	1.72
Raising per ton	38.60
Drying	18.18
Washing	55.07
Crusher drill	2.58

Table shows = for analysis of ore etc -

Silica (mineral)	70.00	57.40 %
Al ₂ O ₃	5.87	3.55 -
Fe	7.54	16.66
Cu	5.00	6.60
P	7.50	8.40

Lime - trace

Oxygen (by difference) 3.29 - 6.38

1 lb of lime replaces 1.285 - the former oxide. 44 %
Silica is the highest economic slag possible in blast
furnaces - the a mixture follows -

FeO	28.08	9.24
CaO	8 -	24 -
SiO ₂	63.82	66.76

The first has an iron base the latter a lime base -
The latter would probably be the easier

Equipment To equip the mine with working capital will
require

2000' of Drifting	\$ 40 000.00
2000' raising for stops	80 000.00
Cars - Rails, Ties, etc	20.000.00
Buildings	10 000.00
Extra for diamond & rock drills	35 000.00
incidental	10 000.00
Road to coast	30 000.00
Tram way to coast	175 000.00

Fixed charges

Based on the present data the cost per ton is

Mining & transportation	\$ 2.53
Development	.74
Smelting	5.81
all amortization, sinking fund royalties, and other costs already deducted	
Margin for profit	<u>.20</u> \$ 5.28

Overhead Value ore \$12.50
Cost 8.23
profit \$ 3.27

RC - Campbell Johnston