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1663

CANADIAN MINE SERVICES LTD.
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VANCOUVER 1, B.C.

GEOLOGICAL REPORT

ON

THE MORRIS MINE COPPER SHOWING

TATLAYOCA LAKE

CLINTON MINING DIVISION

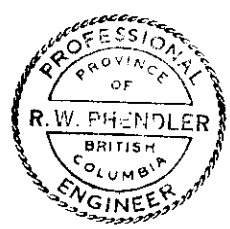
FOR

RICO COPPER 1966 LTD. (N.P.L.)

BY

R.W. PHENDLER, B.Sc., P. ENG.

September, 1968.



Summary of Geological Report
on
The Morris Mine Copper Showing
Tatlayoca Lake
Clinton Mining Division

Rico Copper 1966 Ltd. (N.P.L.) holds six crown granted and nine mineral claims in the Tatlayoca Lake area, located about 110 miles southwest of Williams Lake and 100 miles north of Campbell River.

Narrow gold quartz stibnite veins have been known of since 1907 and sporadic activity has taken place on them over the years. They do not appear to be of commercial grade and no further work is recommended at this time.

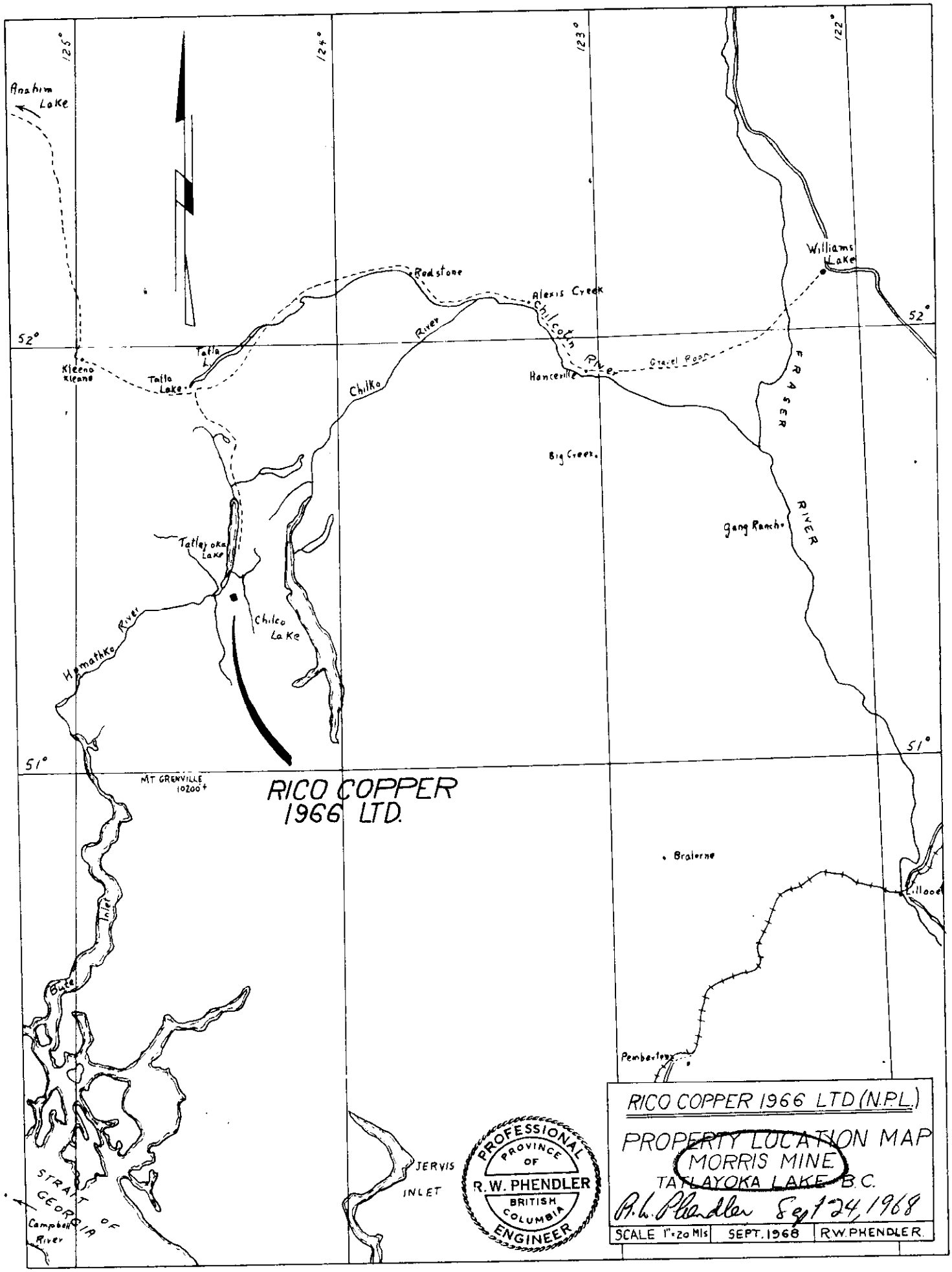
Disseminated bornite mineralization occurs within a fractured, competent band of andesite, located a few thousand feet northeast of the veins described above. Prior to 1921, some underground development was carried out on the showing but little is known of results.

The continuity of the mineralization over a strike length of 2,000' and a difference in elevation of 450' is impressive and in the opinion of the writer warrants additional exploration. Diamond drilling over the most heavily mineralized 700' strike length is recommended. A possible 370,000 tons of 1.5% Cu is indicated.

Respectfully submitted,

R.W. Phendler, B.Sc. Eng.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R.W. PHENDLER



RICO COPPER 1966 LTD (N.P.L.)

PROPERTY LOCATION MAP

MORRIS MINE

TATLAYOKA LAKE B.C.

R.W. Phendler Sept 24/1968

SCALE 1" = 20 Mls	SEPT. 1968	R.W. PHENDLER

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MORRIS MINE COPPER SHOWING

INTRODUCTION:

Since 1907, when the Morris Mine was first discovered, almost all interest has been in the stibnite-arsenopyrite veins that were drifted on but never mined. One of these veins was traceable on surface for eight hundred and fifty feet and the second has a known strike length of one hundred and thirty feet in the adit.

It has been estimated that the principal vein averages 0.30 oz. Au, 3.2 oz. Ag, 0.9% As and 2.1% Sb. This in itself is sub-commercial as the rather flat dip (35^{o}) and narrow widths (3.0') makes for expensive mining.

Little is known or recorded of the copper showings which are located about 3,000 feet to the northeast of the mine workings and the assessment of these showings is the basis of this report.

Disseminations and blebs of bornite and chalcopyrite are found along the hanging wall side of a 200' thick band of medium to fine grained andesite flows in contact with overlying purplish basalts. Widths of this mineralization vary from a few feet up to fifty feet and can be found along a strike length of 2,000'.

Mineralization is erratic throughout this length with continuous zones carrying on for a few hundred feet.

SCOPE

The property examination was carried out between August 26th to August 29th, 1968, in the company of Mr. J.S. McNulty, representing Rico Copper 1966 Ltd. During this time detailed outcrop mapping was done and eleven chip samples were taken. The portal on the principal Morris vein was entered but not mapped or sampled. Previous reports well covered the mine workings but the copper occurrences were never fully assessed.

LOCATION AND ACCESS

The mineral occurrences under discussion are situated three miles southeast of the south end of Tatlayoca Lake at an elevation of 6,000' above sea level and 3,200 feet above the lake. Tatlayoca Lake lies close to Chilco Lake and is located 200 miles north of Vancouver, 110 miles southwest of Williams Lake and a few miles east of the rugged Coast Range Mountains.

Precipitation is relatively low throughout the summer and snowfall may total a few feet in the winter. Sub zero weather is uncommon.

Access is from Williams Lake for 150 miles along the gravel road to Bella Coola. At Tatla the south access road is followed for 24 miles to the sawmill on Tatlayoca Lake. A

fifteen mile helicopter flight from the sawmill area gets one to the landing pad at the minesite. The road can be followed an additional 6 miles south along the east side of the lake to shorten the distance to the property.

A serviceable cabin still stands on the property and would be adequate for housing during any additional exploration work.

No great difficulty would be encountered in pushing a road through the remaining eight miles although some bridges would be required.

Local water supply is somewhat limited although adequate for drilling.

Approximate co-ordinates of the claim group are as follows:

West Longitude	124° 25'W
North Latitude	51° 24'N

HISTORY

In 1907 Mr. I.T. Morris and Mr. A. Sheppard discovered quartz stibnite vein outcropping on what is now the Morris Mine ground and six claims were staked. In 1909 underground work was begun under the guidance of the Tatlayoca Gold Mines Ltd. Activity stopped in 1912 and was not resumed until 1920.

Much effort was put into the transportation difficulties and little underground work was carried out.

Much trenching was carried out during the years 1921-1934 when the Bridge Island Gold Ltd. assumed control. Additional roads, trails and an incline haulage way was put into operation. Tunnelling was carried out but stopped in 1937. Nothing was done until 1966 when the property was acquired by Rico Copper 1966 Ltd. (N.P.L.). During the summer of 1968 prospecting of the copper zone was carried out and nine additional claims were staked. This work followed the recommendation of H.D. Forman, P. Eng., who visited and reported on the property in 1967.

CLAIMS

The six claims that were staked in 1907 were crown granted in 1911. They are as follows:

Tatlico	699	Spokane	702
Tyee	700	Copper Dyke Extension	703
Isaac T	701	Copper Dyke	704

Nine claims, Tat 1-9, were staked in 1968. The group comprises a total of 15 mining claims and they lie within the Clinton Mining Division.

GEOLOGY

Gold-Silver-Antimony

Mixed sedimentary and volcanic rocks of the Tacla group of copper Triassic age underlie the area under discussion. Granitic rocks of the Coast Range intrusive complex lie about five miles to the south.

In the vicinity of the north end of Tatlayoca Lake, the Triassic formations are overlain by mixed Cretaceous sedimentary rocks.

The Morris Mine quartz-stibnite veins occur within a host rock of blocky argillites and sandstones but enter schistose argillites to the south. It is possible that the veins weaken in this new type as the principal level was stopped at approximately the projected location of this contact.

Andesite diorite and basalt dykes intrude the country rock in the vicinity of the veins and probably are related to the quartz diorite intrusive that is located about 500' to the west. The principal vein, which averages about two feet in width, is followed by a basalt dyke. The dyke crosses and re-crosses the mineral zone, which is made up of pyrite, arsenopyrite, stibnite, quartz and calcite.

COPPER

The volcanic formation in which the disseminated bornite occurs is located about 3,000' northeast of the mine area. The interbedded andesites and basalts strike about N20°W and dip about 70° to the east. For 2,000 feet along the hangingwall side of a 200' thick band of competent andesites are scattered concentrations of blebs and disseminations of bornite. Immediately above the mineralized zone lies a 100' thick band of relatively incompetent friable purplish brown basalts. No mineral was seen in the basalts, other than within small lenses of contained andesites.

A second andesite formation overlying the basalt mentioned above contains blebs of chalcopyrite and disseminated bornite in minor quantities.

A pre-ore rhyolite dyke intrudes the formations, striking N80°W and dipping 75°S.

MINERAL DEPOSITS

Copper Zone

The following samples were taken by the writer during the examination:

Sample No.	%Cu	Width	Location
1	1.75	54'	Main rock face, elev. 6020'
2	1.95	23'	400' N. of Sample 1- 5910
3	1.90	8'	500' N. of Sample 1
4	1.00	25'	700' N. of Sample 1.
5	0.59	4'	250' W of Sample 2, HW band 5720
6	0.84	10'	1000' N. of Sample 1
7	0.13	20'	800' S. of Sample 1
8	0.83	20'	1100' S of Sample 1, HW band, 6350'
9	0.24	20'	500' S of Sample 1
10	0.22	20'	400' S of Sample 1
11	0.24	35'	300' S of Sample 1
Averages	1.04	19.9'	

The middle 700' of this zone averages 1.63% Cu across 27' width.

On August 7, 1968, the following samples were taken by J. McNulty.

Sample No.	%Cu	Oz. Ag	Oz. Au	Location
1	0.55	0.20	0.01	South Zone, near rhyolite dyke
2	0.05	tr.	tr	" "
3	0.15	0.10	.005	" "
4	0.15	0.05	.005	" "
5	0.35	0.10	tr	" "
6	0.50	0.10	tr	" near old adit
9	0.35	0.10	tr	Central zone
10	0.22	tr	tr	"
11	0.37	0.10	0.010	"
12	0.80	0.20	0.015	"
13	0.20	0.05	0.005	"
14	14.00	0.90	0.015	"
15	1.65	0.25	0.015	"
16	1.05	0.30	0.020	N central zone
17	1.50	0.35	0.020	"
18	2.65	0.55	0.010	12" lens within basalt
19	0.20	0.30	0.005	North zone near dyke
20	0.25	0.25	0.010	"
21	0.45	tr	0.005	South end
22	0.35	tr	0.005	North end
23	0.77	0.05	0.010	North end - above adit
Average	1.25	0.18	0.008	

The second group of assays indicate the ratio of precious metals to copper assays. It was for this reason that only copper was assayed for on the recent samples.

The continuity of the mineralization is impresive throughout the favourable andesite formation. The richest zone of mineralization lies in the north central zone and has a strike length of 700'. Although based on only four samples, indications are that the zone contains 370,000 tons of 1.65% Cu (undiluted) based on a width of 27', a strike length of 700' and a vertical extend of 200'.

The possibility of surface secondary enrichment should not be overlooked. The abundance of malachite and the possibility of secondary chalcocite indicates that the grade will worsen at depth, as it gets below the zone of enrichment.

DEVELOPMENT

The principal vein has been drifted on for 382' although the vein has been traced on surface for 850'. Vein widths averages somewhat less than 2.0'. At a point 345' SW and 200' lower, the No. 2 vein has been drifted on for 240'. Dips are irregular and widths average about 8".

Old reports state that a 300' tunnel was driven on the copper zone but lacks 200' to intersect the zone (E. Ehrenberg, Nov. 1921).

No raise work was reported from any of the development drifts.

Gold Antimony Veins

Mr. H.D. Forman, P. Eng., carried out extensive sampling of the veins in 1966 and in his opinion the grade averages 0.30 oz. Au, 3.2 oz. Ag with a gross value of $18.00 per ton in Au and Ag. Average for other metals is estimated to be 0.9% As and 2.1% Sub.

Forman calculates that with a 50 ton per day operation 40 men would be required on the property. With labour costs being 70% of total costs and taking into account depreciation and return of invested capital the minimum value of ore for the establishment of an economic operation is $52.10 per ton.

With metallurgical losses of 10%, ore values are calculated to be $16.20 per ton. With a few dollars from possible recoverable arsenic and antimony, the operation of the vein mining wouldn't be economic.

Ore Reserves and Possibilities

(A) Grade of the gold-silver veins appears to be insufficient for an economic venture. Enough Antimony to supply normal demands is recovered as a by-product from smelting copper, silver and lead ores. However, there is a small regular market for antimony oxide ores. In time of abnormal demands stibnite concentrates are purchased. Even so, only rich antimony ore can compete with Chinese stibnite. Present price is 44¢ per pound.

There is rarely a market for arsenopyrite as an arsenic ore. Adequate arsenic to supply normal demands is recovered as a by-product from smelting gold, copper and other ores containing arsenopyrite, enargite and tennantite. In fact, large stocks of fine dust and Cotrell dust accumulate at times because it is unprofitable to process them. Penalties are generally applied in smelters for concentrates containing arsenic.

Based on a strike length of 340' as developed on the #1 level, a total of 21,000 tons of "ore" can be inferred grading 0.30 oz. Au and 3.2 oz. Ag.

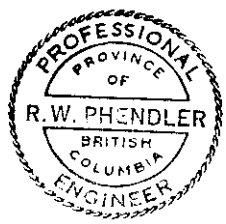
CERTIFICATION

I, Roy William Phendler, of the City of West Vancouver in the Province of British Columbia, hereby certify as follows:

1. That I am a registered Professional Engineer of the Province of British Columbia.
2. That I am a graduate of McGill University, Montreal, Quebec, with a Bachelor of Science in geology.
3. That I have practiced my profession as mining and exploration geologist for the past fifteen years in Quebec, Ontario, Saskatchewan and British Columbia in Canada and Peru and Colombia in South America.
4. That I have no interest directly or indirectly in the mineral claims of the Rico Copper 1966 Ltd. (N.P.L.) nor do I expect to receive any.
5. That the information contained herein was compiled during an examination of the ground between August 26 and August 29, 1968.

R.W. Phendler, B.Sc., P. Eng.

Vancouver, B.C.
September 23, 1968.



(B) Although bornite has been found along a strike length of 2000' it appears that only 700' has grades approaching that required to operate economically.

Good possibilities exist for the presence of a minimum 370,000 tons of ore grading about 1.2% - 1.5% Cu. Additional tonnage could be proved up with exploration work. It is not beyond the realm of possibility that a few million tons of copper ore in the 1.0% range could be developed by diamond drilling.

CONCLUSION

Disseminated copper mineralization has been found along the 2,000' strike length of the favourable andesites. About one third of this strike length shows mineralization approaching commercial grade. The dip (70^{o}) and relatively narrow widths (20-50') precludes the possibility of an open pit operation.

The continuity of the mineral is impressive and warrants additional exploration.

RECOMMENDATIONS

No further work is recommended for the stibnite veins of the Morris Mine.

PHASE 1.

The following program is recommended to assess the ore-making possibilities of the copper zone:

(1) Diamond Drilling - 5-200' holes - 1,000' at $10 per foot	$10,000.
(2) Engineering and administration	3,000.
(3) Mobilization and demobilization of men and materials	2,000.
Total	$15,000

PHASE 2.

Dependent on favourable results from Phase 1 3500' of deephole diamond drilling at $10/foot	35,000
Total	$50,000

DECLARATION OF EXPENDITURES

R.W. Phendler - 4 field days Aug. 26 to Aug. 29th. 4 days @ 100.00	$400.00
3 office days - Sept. 10, 20, 23rd. 3 days @ 100.00	300.00
Travel Expense account	60.75
Assays	36.30
J. McNulty - 3 days - field assistant to geologist $40 x 3	120.00
Preliminary triangulation survey for mapping control: July 15-18, 1968 { W.J. McNulty - 3 days @ 30/day D. Culhane - 3 days @ 30/day	90.00 90.00
Helicopter charges for survey work	260.00
Helicopter charges for geological work	260.00
Charter flight - Vancouver - Tatlayoka - Geologist - Aug. 26	200.00
Transportation of survey crew - 572 miles @ 10¢/mile	57.20
Truck rental - 6 days @ $15 per day	75.00
Food for survey crew - 6 days @$10/day	60.00
Food for geological crew - 4 days @ $10/day	40.00
	$ 2,049.25

I declare this to be correct.

Declared before me at the City of Vancouver, in the Province of British Columbia, this 17 day of October 1968, A.D.

R.W. Phendler, B.Sc., P. Eng.

A Commissioner for taking Affidavits within British Columbia or
A Notary Public in and for the Province of British Columbia.

SUB - MINING RECORDER

N

TAT # 6

L 702

L 704

L 703

L 699

L 700

L 701

5700' PORTAL - No 2 LEVEL

5300' PORTAL - No 1 LEVEL

BASE LINE

Sample 1 - Width 23'-1.36% Cu

Sample 2 - Width 35'-0.27% Cu

Sample 3 - Width 8'-1.20% Cu

Sample 4 - Width 20'-0.22% Cu

Sample 5 - Width 6'-0.59% Cu

Sample 6 - Width 10'-0.89% Cu

Sample 7 - Width 20'-0.13% Cu

Sample 8 - Width 25'-1.00% Cu

Sample 9 - Width 20'-0.29% Cu

Sample 10 - Width 20'-0.22% Cu

Sample 11 - Width 35'-0.27% Cu

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1663 MAP 1

1663

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. W. PHENDLER

R.W. Phendler
Sept 24, 1968

RICO COPPER 1966 LTD. (N.P.L)

GEOLOGICAL MAP
of
COPPER SHOWING, MORRIS MINE, TATLAYOKA LAKE, BRITISH COLUMBIA.

SCALE 1" = 100' SEPT, 1968

LEGEND

3 --- VOLCANICS, BASIC . BASALT } UPPER TRIASSIC.
2 --- VOLCANICS, INTMT, ANDESITE }
1 ------ ACID ROCKS, RHYOLITE DYKE, JURASSIC.

Note: This map to accompany geological report by R.W. Phendler, P.Eng on the Morris Mine Copper Showing, Tatlayoka Lake area, Clinton Mining Division, dated Sept 23, 1968.

(1)

TAT #4

TAT #5

TAT #3

L 704 C.G. COPPER DYKE

TAT #6

TAT #2

BASE LINE

TAT #7

L 702 C.G. SPOKANE

L 703 C.G. COPPER DYKE EXTENSION

TAT #1

L 699 C.G. TATLICO

No 2 PORTAL

No 1 PORTAL

L 701, C.G. ISSAC

L 700 C.G. TYEE

TAT #8

TAT #9

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1663 MAP 2.

RICO COPPER 1966 LTD (N.P.L.)
CLAIM MAP
of
MORRIS MINE, TATLAYOKA LAKE.
BRITISH COLUMBIA.
SCALE 1"=300' SEPT, 1968

Note: This map to accompany geological report by R.W. Phendler, P.Eng. on the Morris Mine Copper Showing, Tatlayoka Lake area, Clinton Mining Division, dated Sept 23, 1968.

Sept 24, 1968 R.W. Phendler

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA R.W. PHENDLER

1663

(2)