

ECONOMIC EVALUATION OF THE FISH LAKE PROJECT, B.C.

COMINCO LTD.

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SYNOPSIS

THIS ECONOMIC EVALUATION OF THE FISH LAKE COPPER/GOLD PROJECT SHOWS THAT THE DEPOSIT IS UNECONOMIC UNDER CURRENT COSTS AND METAL PRICES.

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SUMMARY

The Fish Lake deposit has been identified as being a large tonnage deposit containing copper and gold mineralisation with a minor amount of silver. The deposit is located in B.C. on the plateau east of the Coastal Mountains some 85 air miles south west of Williams Lake.

The deposit is estimated to contain some 200 million tonnes of 0.24% Cu and 0.015 oz./tonne Au, with the likelihood of a slightly higher grade core within the deposit. The deposit is covered by variable depths of overburden but is amenable to standard open pit mining - using truck and shovel/loader equipment. The initial waste to ore ratio will be about one to one.

Preliminary metallurgical testing has been carried out and Cominco has concluded that the deposit would produce a copper gold concentrate with acceptable recoveries.

The property is currently under option to Cominco Ltd. by Taseko M.L. Under the terms of the deal Cominco can earn an 80% interest in the project by placing the property in production.

This Economic Evaluation concludes that this Fish Lake project is not economic at this time (and would not recover the investment). This Evaluation has assumed mining initially a high grade ore. A Capital Cost of \$250 Millions and an Operating Cost of \$5.00 per tonne have been assumed. Both these estimates are considered to be optimistic.

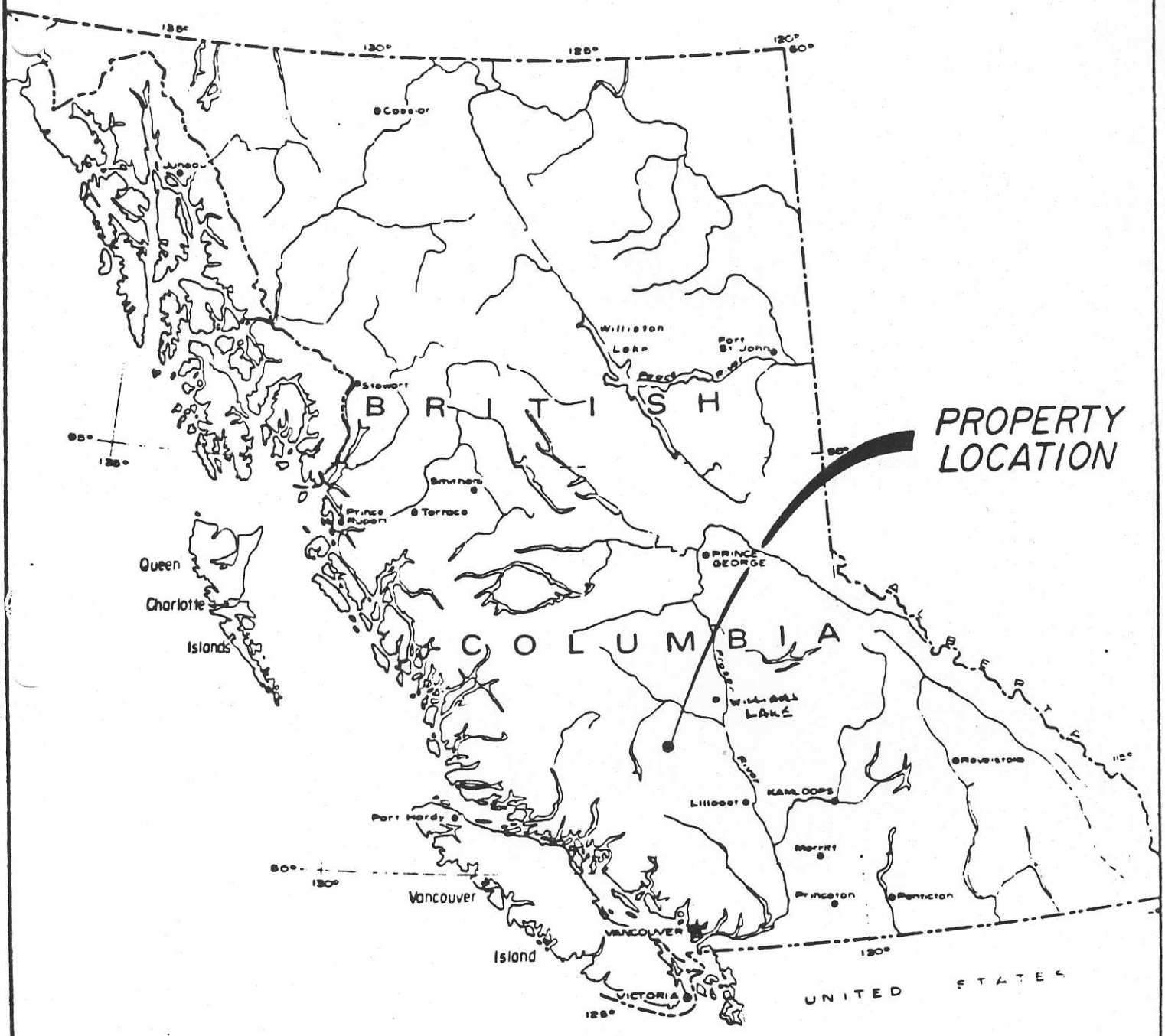
LOCATION

The Fish Lake Deposit is located in the Taseko Lakes area of B.C., some 85 miles south west of Williams Lake. (See location map and map showing Fish Lake Main Deposit with the property area). This area is part of the plateau located east of the Coastal Mountains, where the road access from Williams Lake to the property exists, (approximately 105 miles), using a combination of paved and gravel roads. Significant road improvements would be required at the property end of the road.

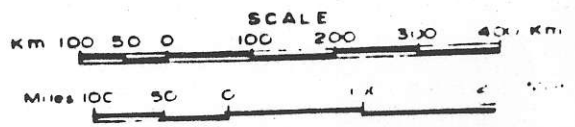
There are no conveniently located towns or villages which could be used as bases for the housing of personnel during construction or production. Some expenditures would be necessary for the establishment of a camp at the property. Williams Lake could be used as a base for personnel during production, utilising a short stay, motel-like camp at the project.

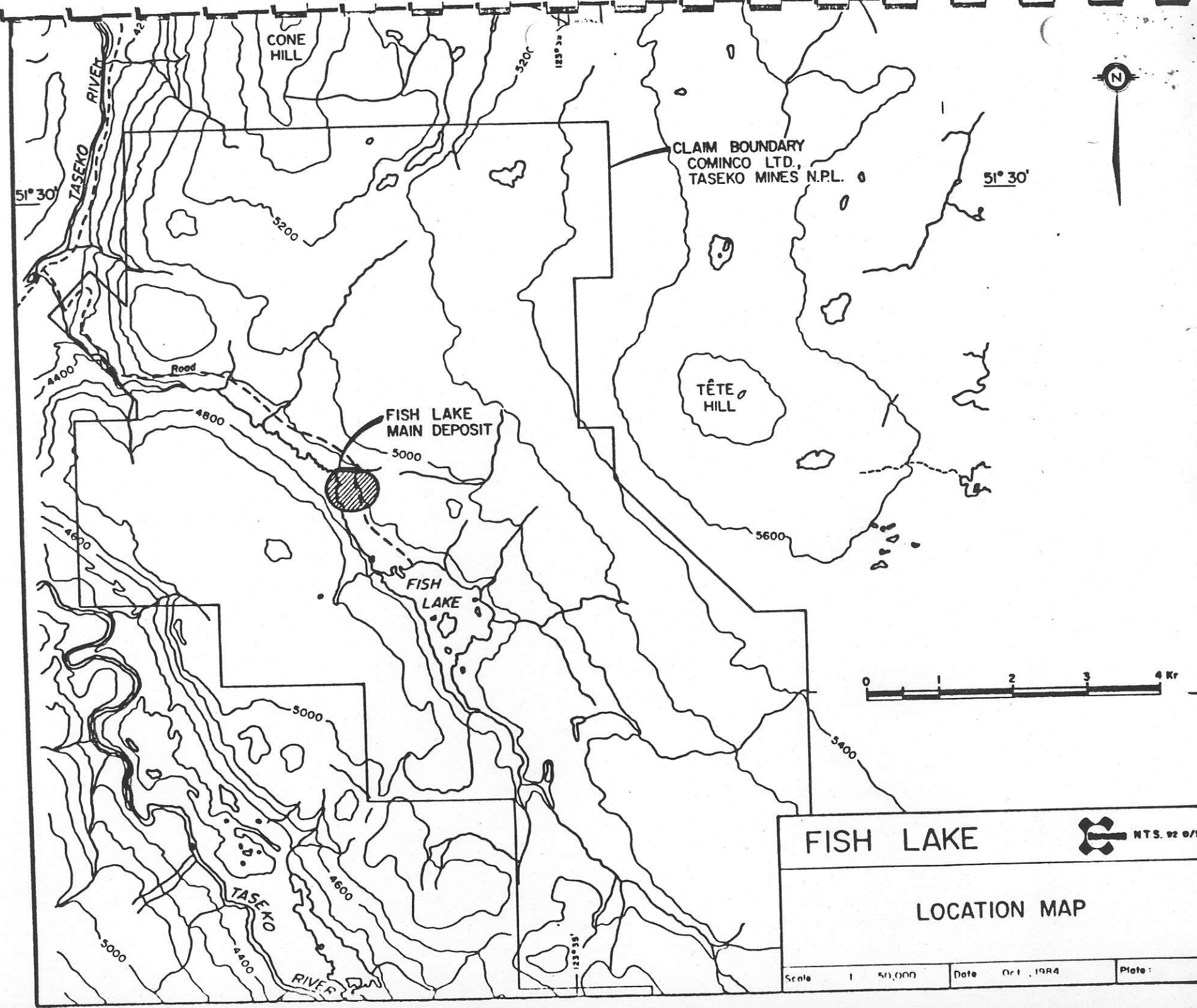
Supplies would be brought to the property by road or a combination of road/rail. The Evaluation has assumed that the concentrate produced would be trucked to Williams Lake for rail shipment to the coast.

A major power line exists some 60 miles to the east of the property.



FISH LAKE PROPERTY
 CLINTON M.D.
 92 0-5/E





CONE HILL

CLAIM BOUNDARY
COMINCO LTD.,
TASEKO MINES N.P.L.

TÊTE HILL

FISH LAKE
MAIN DEPOSIT

FISH LAKE

FISH LAKE



LOCATION MAP

Scale 1 50,000 Date Oct. 1984 Plate:

BRIEF SUMMARY OF GEOLOGY OF FISH LAKE DEPOSIT

The Fish Lake deposit occurs in a northwestern trending zone of hydrothermally altered quartz diorite intrusive and sediments of Upper Cretaceous Age. The Fish Lake Alteration Zone is at least 3 kilometers long by 2 kilometers wide, and the copper/gold mineralisation occurs in a 700 meters by 1,000 meters area of intense biotite, chlorite and sericite alteration. Visible sulphide mineralisation consists of pyrite, chalcopyrite and rarely bornite which occur both disseminated and in quartz veins. The Main Deposit occupies the eastern part of the mineralised zone where grades exceed 0.009 oz. per tonne gold and 0.15% copper.

MINERAL RESERVES

The tonnage of the Fish Lake deposit has been estimated to contain 200 million tonnes of 0.24% Cu and 0.015 oz./tonne Au. Drilling suggests the possibility of higher grade central zones of mineralization. While more detailed work would be needed to confirm its presence, for the purposes of this evaluation the higher grade material is assumed to be present and, the higher grade intersections involved have been used to predict production for the first 5 years of operation.

PRODUCTION YEARS	RESERVES MINED		
	MILLIONS TONNES	%Cu	Au OZ/TONNE
1 TO 5	50.0	0.27	0.017 : 85000 : 1700000
6 TO 20	150.0	0.23	0.014 : 2100000

PROJECT CONCEPT

For the purpose of conducting this Economic Evaluation, it has been assumed that all permits and other approvals have been obtained and the construction would commence in 1985. Two years have been allowed for the construction period, with production commencing in 1987 (80% capacity). 100% of production capacity would be achieved in 1988. The initial production is assumed to be mined from a higher than average grade core of the deposit, which contains some 50 million tonnes. This higher grade feed would supply the mill for approximately 5 years.

The project requires the pre-stripping of the deposit for the open pit mining and the construction of mine service facilities and concentrator plant to handle 30,000 tonnes of ore feed per day. Suitable back-up facilities are needed for other services and concentrate loadout as well as administration facilities. It has been assumed that permission for tailings disposal at a convenient site will be obtained. During construction temporary portable power generators would be used for power supply. For production, a feeder line connection will be made to the site from the main B.C. Hydro line.

The construction personnel would be housed in a temporary on-site camp. The production personnel would be transported from Williams Lake with a short-term motel type camp on site. A STOL airstrip would be constructed at the minesite for emergency and other uses.

METALLURGY

Metallurgical testwork has been carried out by four different laboratories essentially in two distinct time periods - namely 1973/74 and 1981. All the metallurgical work has attempted to provide basic data with which to evaluate the economic viability of the orebody. While further test work would be required for the design of the milling circuit, it is considered that sufficient work has been carried out to indicate the recoveries of Cu and Au and the grade of concentrate to be expected. It is estimated that 88% of the copper can be recovered in a copper gold concentrate of 20% Cu. The tests indicate that 65% of the Au and 45% of the Ag would be contained in the copper concentrate.

Two metallurgical tables are presented below.

"Metallurgy for the high grade core which would feed the mill for the initial 5 years of production."

FISH LAKE PROJECT

METALLURGY - YEARS 1 TO 5

Item	Tonnes	<u>ASSAYS</u>			<u>DISTRIBUTION</u>		
		%Cu	Au oz/T	Ag	Cu	Au	Ag
0.30 Feed	1.0000	0.27	0.017	0.033	100	100	100
Cu Conc.	0.0118	20.00	0.936	1.258	88.0	65.0	45.0
Tailings	0.9882	0.03	0.006	0.018	12.0	35.0	55.0

"Metallurgy Year 6 and Onward" is the interpolated Metallurgy for for the project from the project from Production Year 6 and onwards."

FISH LAKE PROJECT

METALLURGY - YEAR 6 AND ONWARD

Item	Tonnes	<u>ASSAYS</u>			<u>DISTRIBUTION</u>		
		%Cu	Au oz/T	Ag	Cu	Au	Ag
0.24 0.015 Feed	1.0000	0.23	0.014	0.033	100	100	100
Cu Conc.	0.0101	20.00	0.901	1.47	88	65.0	45.0
Tailings	0.9899	0.02	0.005	0.018	12	35.0	55.0

Use of the above tables for calculation of Net Smelter Returns will be referred to in the Economics Section of this report, with the calculations in the appendices.

CAPITAL COST ESTIMATE

It has been estimated that the Capital Cost of the Fish Lake Project would be \$250 millions for a 30,000 tonnes per day project.

This estimate has been made by comparing with other similar completed projects, but this estimate is considered to contain some optimism.

For comparison, the Highmont mine cost \$150 millions in 1981 for a capacity of 22,500 tonnes per day. The Highmont operation is quite favourably located compared with Fish Lake. By indexing Highmont's costs and using a factor for size, but not trying to correct for remoteness, an estimate for Highmont in \$ 1984 would exceed \$220 Millions. Correcting for remoteness would bring the figure to at least \$250 million.

A similar calculation for Lornex, with a downsize factor for size estimates Lornex would cost some \$270 Millions.

OPERATING COST ESTIMATE

It has been estimated that the Fish Lake project would cost \$5.00 per tonne to operate. This does not include the Operating Fee which is allowed for in the agreement with Taseko M.L. An operating fee of 3% has been provided for elsewhere in the calculations.

For comparison, the Highmont cost for 22,500 tonnes per day was \$5.66 per S.T. (\$6.24/tonne) in 1982.

Gibraltar had costs of \$3.96 per S.T. (\$4.36/tonne) in 1982 for 38,000 tons per day. The Valley Mine had costs in 1983 of \$5.90 per tonne for 21,600 tonnes per day. The relative remoteness of Fish Lake will have a significant bearing on operating costs, and the \$5.00 per tonne estimate can be considered optimistic.

METAL PRICES

The following metal prices which were in effect on October 1st, 1984 have been used for this Evaluation.

Cu	=	\$0.765	(Can. \$)	£ 7	120	1.15
Au	=	\$453	(Can. \$)	477	600	425
Ag	=	\$9.82	(Can. \$)			4.25

An Exchange Rate of \$1.312 (Can) = \$US has been used.

CALCULATION OF NET SMELTER RETURNS

The detailed calculation of the Net Smelter Returns are in the Appendices. It has been assumed that the Copper/Gold concentrate would be shipped to a Japanese Smelter.

For the higher grade feed:-

NSR per tonne of feed	\$ 6.26
Op. Cost per tonne	<u>5.00</u>
Op. Profit per tonne	\$ 1.26
Annual Operating Profit (For years 2 to 5)	<u>\$13.23 Millions/Year</u>

For average grade feed:-

NSR per tonne of feed	\$ 5.36
Op. Cost per tonne	<u>5.00</u>
Op. Profit per tonne	\$ 0.36
Annual Operating Profit	<u>\$ 3.78 Millions/Year</u>

SUMMARY OF RESULTS OF ECONOMICS

The above calculations show the Fish Lake project would produce an Operating Profit before interest costs but a negative cash flow after interest. The project would not recover the investment over the 20 year production life. The Fish Lake project is not a project which should be considered for production at this time. The attached table shows the calculation

FISH LAKE PRO. (CASH FLOW 1)

\$MILLIONS

YEAR	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Tonnes of Mill Feed(x10 ⁶)	-	-	8.40	10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.50
Revenues	-	-	52.58	65.73	65.73	65.73	65.73	56.28	56.28	56.28	56.28
Operating Cost	-	-	42.00	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50
Operating Fee	-	-	1.26	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
Operating Profit	-	-	9.32	11.66	11.66	11.66	11.66	2.21	2.21	2.21	2.21
Less CCA	-	-	9.32	11.66	11.66	11.66	11.66	2.21	2.21	2.21	2.21
Resource Profits	-	-	-	-	-	-	-	-	-	-	-
Resource Allowance	-	-	-	-	-	-	-	-	-	-	-
Profits Before Depletion	-	-	-	-	-	-	-	-	-	-	-
Less Earned Depletion	-	-	-	-	-	-	-	-	-	-	-
Taxable	-	-	-	-	-	-	-	-	-	-	-
Fed. Corp. Taxes	-	-	-	-	-	-	-	-	-	-	-
Prov. Corp. Taxes	-	-	-	-	-	-	-	-	-	-	-
B.C. Mining Taxes	-	-	-	-	-	-	-	-	-	-	-
Net	-	-	-	-	-	-	-	-	-	-	-
+ CCA	-	-	9.32	11.66	11.66	11.66	11.66	2.21	2.21	2.21	2.21
+ Res. Allow.	-	-	-	-	-	-	-	-	-	-	-
+ E. Depletion	-	-	-	-	-	-	-	-	-	-	-
Cap. Cost	(90.0)	(160.0)	-	-	-	-	-	-	-	-	-
Work Cap.	-	-	(15.0)	-	-	-	-	-	-	-	-
Sustain. Cap.	-	-	-	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)	(1.0)
Cash Flow	(90.0)	(160.0)	(5.676)	10.66	10.66	10.66	10.66	1.21	1.21	1.21	1.21
To Taseko M.L.	-	-	-	(0.42)	(0.42)	(0.42)	(0.42)	(0.05)	(0.05)	(0.05)	(0.05)
Interest @ 10%	-	(9.0)	(25.9)	(29.1)	(30.9)	(33.0)	(35.3)	(37.8)	*		
Cominco Cash Flow	(90.0)	(169.0)	(31.5)	(18.8)	(20.6)	(22.7)	(25.1)	(36.6)	*		
Accumulated Cominco Cash Flow	(90.0)	(259.0)	(290.5)	(309.3)	(329.9)	(352.6)	(377.7)	(414.3)	*		

* Project Profits clearly unable to repay investment - calculation terminated.

20%

20 - .01 x 2205 X

APPENDIX I

FISH LAKE PROJECT

CALCULATION OF NET SMELTER RETURN

MINE FEED YEARS 1 - 5

COPPER CONC.

(Concentrate Grades: Cu = 20%, Au = 0.936 oz./tonne, Ag = 1.25 oz./tonne)

PAYMENTS

Cu	-	(20 - 1.0) x 22.05 x \$0.765	=	\$320.49	481.80
Au	-	(0.936 - 0.03) x 95% x (\$453. ⁴²⁵ 5)	=	\$385.59	365.80
Ag	-	(1.25 - 1.00) x 95% x (\$9.82 - 0.25) ^{4.25}	=	\$ 2.27	.76
<u>TOTAL PAYMENTS</u>				\$708.35	848.35

DEDUCTIONS

Treatment	-	\$ 85.28	
Refining	-	<u>33.52</u> (8 cents/lb. product)	
<u>Total treatment deduction</u>			\$118.80

TRANSPORT

Road	-	\$ 10.00	
Rail	-	16.00	
Ocean	-	25.00	
Handling	-	<u>8.00</u>	\$ 59.00

NSR per tonne of Concentrate		<u>\$530.55</u>	670.55
NSR per tonne of Ore		<u>\$ 6.26</u>	\$ 7.91

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