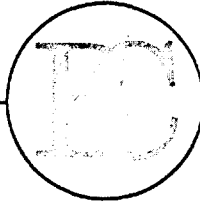


COPPERLINE MINES LTD.
RUTH VERMONT MINE
GOLDEN, B.C.

by: J.J. Crowhurst, P.Eng.

82M 674511

Jan. 4, 1972.



BACON & CROWHURST LTD.

1720-1055 West Hastings Street
Vancouver 1, B.C.

COPPERLINE MINES LTD.

RUTH VERMONT MINE

GOLDEN, B.C.

January 4th, 1972.

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BACON & CROWHURST LTD.
CONSULTING ENGINEERS

January 4th, 1972.

Mr. W. Degemann, President,
Muva Management & Development Corporation,
11320 - 136A Street,
Surrey, B.C.

Dear Mr. Degemann:

Pursuant to your recent request, we have reviewed our calculations concerning the operation of the Copperline Mines Ltd. Ruth Vermont Mine situated southwest of Golden, British Columbia.

Our current estimates, based on conservative assumptions as detailed later in this report, indicate an operating profit amounting to \$1,067,190 can be realized from close to 15 months of operation at 16,000 tons of ore per month. B.C. Mining Tax, calculated at an effective rate of 10%, would reduce this figure to \$960,471.

These estimates are based on current "Metals Week" prices, but it must be noted no definite smelter contract quotations have been obtained. Calculations are based on typical sales agreements now in force.

The following table shows the estimated increase (or decrease) in the operating profit over the life of these reserves as metal prices vary:

	<u>Change in Operating Profit</u>	
	Average	Amount for
	Per Month	14.83 mos.
For each 1¢/lb. change in price of lead	\$9,580	\$142,074
" " 1¢/lb. " " " " zinc	7,699	114,186
" " 10¢/oz. " " " " silver	6,478	96,065

In our opinion, an increase of from one to two cents per lb. for zinc over the current 17¢ per lb. price can be considered likely during the first half of 1972.

The ore deposit consists of a silver-lead-zinc replacement "manto" deposit. Repetitions of ore occurrences of the same size and grade may easily be found by further exploration along the favourable limestone beds, thereby expanding the total tonnage to be mined. It is

reasonable, in our opinion, therefore to expect the eventual discovery of an additional 50,000 tons to 100,000 tons of ore of grade comparable to that already found.

This would add approximately a further \$200,000 to \$400,000 to the estimated operating profit over the life of the mine.

No allowance in this report has been made for the presence of possible orebodies in the upper beds of limestone. It is considered diamond drilling and other exploration results in these areas are inconclusive at the present time; further work is necessary.

It is our recommendation, however, that such exploration work be carried on concurrently with mining operations in the interests of efficiency and economy.

It is estimated that the sum of \$83,000 (as detailed later in this report) is required to cover capital costs and preproduction expense.

Dependent on concentrate marketing considerations, from two to three months working capital must be provided as a revolving fund. Two months working capital would amount to two times the estimated monthly operating cost of \$145,940 or \$291,880.

It is recommended that investigations concerning concentrate sales be continued, and that production be delayed until more favourable concentrate sales agreements can be negotiated. For example, should it be possible at some later date to sell lead and zinc concentrates under the same terms and conditions as realized by the mine from the Bunker Hill Company during the period of operation (September 1970 - June 1971) up to an additional \$48 per ton of lead concentrates would be received.

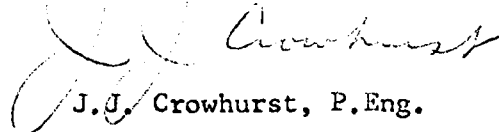
Over the life of the present ore reserves, this would result in up to an additional \$647,664 net smelter returns. It is reasonable to expect that when demand for lead and zinc concentrates resumes, therefore, at least one half this amount or \$323,832 can be realized.

An approximate appraisal has been made regarding the resale value of the plant, machinery and equipment under current conditions. This amounts to \$621,750 as detailed in this report.

<u>SUMMARY</u> - Basic operating profit	\$960,471
Increase of 1½¢ per lb. in price of zinc	213,111
Improvement in lead concentrate contract	323,832
Discovery of additional ore	300,000
Sale of assets	<u>621,750</u>
	\$2,419,164

This report is brief in nature. We shall be glad, however, to discuss the matter more fully with you, or to provide more detailed information.

Respectfully submitted,
BACON & CROWHURST LTD.


J.J. Crowhurst, P.Eng.

ASSUMPTIONS

The assumptions used during the preparation of this report are as below:

- (1) Mining ore and delivery to the concentrator will be carried out by a reputable contractor, under supervision of the mine staff. Several quotations were solicited and received during the last part of 1971; these have been scrutinized carefully during calculations of the operating costs, and best apparent results selected. These quotations would have to be again confirmed.
- (2) Discussions have been held with metal sales agencies representatives. Although it appears there is not any smelter space available at the present time, it would appear that marketing arrangements could be made relative to purchase of lead and zinc concentrates, probably in Europe, for delivery during the third quarter of 1972. Calculations of the value of the lead and zinc concentrates as incorporated in this report have, therefore, been made on the basis of probabilities and judgment as to what charges might result later. Sufficient corroborating verbal information has been secured, however, in our opinion, to justify the estimates in this report.
- (3) It is believed that the lead and zinc tariffs applicable to concentrates entering the United States have reverted to 0.75¢ per lb. and 0.67¢ per lb. from 1.50¢ per lb. and 1.67¢ per lb. respectively, in accord with President Nixon's recent announcement concerning the abolition of the 10¢ surcharge. This, however, has not been checked with U.S. Customs or other officials, but the reduction has been incorporated in this report's calculations.
- (4) A study has been made of all the available metallurgical data. On this basis and Mr. R.G. Gould's recommendations, metal balances have been calculated in accord with our predictions regarding efficient concentrator operation.
- (5) The estimate of operating profit does not include any allowance for school and other local property taxes, Government of Canada income tax, depreciation, depletion, interest on working capital or interest on current debt, wherever these items may be applicable.
- (6) No allowance has been made for additional costs that would be incurred by a shut-down and re-opening of the mine occasioned by weather conditions or water shortages.

ESTIMATED ORE RESERVES - January 1, 1972 - Tons

Section - to - Section	Positive		Probable Below 6000	Possible Veins	
	Above 6000	Below 6000			
925	950	1450			
950	975	2525			
975	1000	3150			
1000	1025	2900			
1025	1050	3325			
1050	1075	3775			
1075	1100	3900			
1100	1125	5150			
1125	1150	6200			
1150	1175	8050			
1175	1200	6775			
1200	1225	5600			
1225	1250	6000			
1250	1275	4925			
1275	1300	6200			
1300	1325	4500			
1325	1350	1650			
1350	1375	1525			
1375	1400	3550			
1400	1425	3900			
1425	1450	2400			
1450	1475	2475			
1475	1500	3250			
1500	1525	4250)			
1525	1550	5075)			
1550	1575	4950)			
1575	1600	2750)			
1600	1650	750			
1650	1700			11,000	
1700	1750			11,000	
1750	1800			8,500	
1800	1850			10,250	
1850	1975			39,375	
1975	2025			13,500	
Total Tons		110,950	32,750	93,625	50,000

SUMMARY - Positive Ore - 143,700 tons
 assaying Ag - 5.29 oz./ton, Pb - 3.85%, Zn - 5.18%

Probable Ore - 93,625 tons
 assaying Ag - 5.1 oz./ton, Pb - 3.7%, Zn - 4.7%

Note - No grade estimated for veins - not sufficient work to show ore shoots -
 probably not economic at current metal prices.

CAPITAL COST and/or PRE-PRODUCTION EXPENSE

Mine		
L.H.D. equipment	\$17,000	
Mine Miscellaneous	<u>3,000</u>	\$20,000
Powerhouse & Compressed Air Plant		
Electric (all units to one bus)	\$2,500	
Start-up all units	1,000	
Flex. connections on comp. outlets	<u>500</u>	4,000
Mill & Crushing Plant		
Building repairs	\$1,000	
Clean-up	1,000	
Mechanical repairs	3,000	
Water supply	<u>1,000</u>	6,000
Camp & Roads		
General repair	\$2,000	2,000
Tailings Disposal		
Pipeline	\$1,500	
Dykes	<u>2,500</u>	4,000
Contractor Mobilization Charge		5,000
Reclamation Deposit (estimate only)		3,000
Inventory		<u>35,000</u>
TOTAL		\$79,000
Plus contingencies		<u>4,000</u>
TOTAL		\$83,000

ESTIMATED OPERATING PROFIT

Revenue - Net Smelter Returns

(a) Positive Ore (first 8.98 mos.)

Lead conc's. - 8.98 mos. x 925 TPM x \$137.43/ton = \$1,140,328

Zinc conc's. - 8.98 mos. x 1256 TPM x \$76.71/ton = 865,203

\$2,005,531

(b) Probable Ore (next 5.85 mos.)

Lead conc's. - 5.85 mos. x 888 TPM x \$137.43/ton = \$713,921

Zinc conc's. - 5.85 mos. x 1141 TPM x \$76.71/ton = 512,028

1,225,949

Total Net Smelter Returns

\$3,231,480

Operating Costs

8.98 + 5.85 mos. = 14.83 mos. x \$145,940

\$2,164,290

Operating Profit

\$1,067,190

Less B.C. Mining Tax @ estimated 10%

106,719

Net Operating Profit

\$960,471

VALUE PER TON -
LEAD CONCENTRATE

<u>Grade of Concentrate</u>	<u>Metal Content per ton</u>	<u>Metal Prices (Dec. 20/71)</u>
Gold 0.0425 oz./ton	.0425 oz.	\$43.67
Silver 75 oz./ton	75 oz.	1.412
Lead 60%	1200 lbs.	.14
Zinc 3.5%	70 lbs.	.17
As Sb -.5%		No penalty
Moisture 9%		Over 8% - .30/%

Payments

Lead - 1.5 units 1200# - 30 = 1170# x 90 = 1053 14 - 2.99 = 11.01 x 1053 =	\$115.93
Silver - 75 x 95 x 1.421	100.60
Gold - .0425 x 91 x 43.67 =	1.69
Zinc - Pay over 8%	_____
Before charges	\$218.22

Deductions

Bare	\$40.00	
Duty - Pb - 1170 x .75 =	8.78	
Zn - 70 - 40 - 30 x .67 =	2.01	
Freight (est.)	<u>30.00</u>	<u>\$80.79</u>
Net Smelter Returns		\$137.43

1¢ increase in lead price would increase value per ton of concentrate \$10.53.

10¢ increase in silver price would increase value per ton concentrate \$7.12

VALUE PER TON -
ZINC CONCENTRATE

<u>Grade of Concentrate</u>	<u>Metal Content</u> <u>per ton</u>	<u>Metal Prices (Dec. 20/71)</u>
Gold	0.018 oz./ton	\$43.67 oz.
Silver	7.5 oz./ton	1.412 oz.
Lead	1.45%	0.14 lb.
Zinc	58.0%	0.17 lb.
Cadmium	0.36%	1.50 lb.
Iron	4%	No penalty under 4%
Moisture	9%	No moisture penalty

Payments

Zinc	- 1160# x 85 - 986# @ (17 - .5)	\$162.69
Silver	- 7.5 oz. - 3 oz. - 4.5 oz. x 80 - 3.6 x 1.412	5.08
Gold	- .018 oz. x 75 - .0135 x 43.67	.59
Cadmium	- 7.2 x 60 - 4.32 x (1.50 - 50)	<u>4.32</u>
Before charges		\$172.68

Deductions

Bare	- \$70.00 @ 17¢ zinc P.W.G. each 1 cent increase, add 3.50 each 1 cent decrease, deduct 2.00	\$70.00
Duty	- 58 - 6 = 52 = 1040# x .67	6.97
Freight		<u>19.00</u>
Net Smelter Returns		<u>95.97</u>
		\$76.71

1¢ increase in zinc price would increase
value per ton of concentrate \$6.36

10¢ increase in silver price would increase
value per ton of concentrate \$0.36

Canadian dollar assumed at par with U.S. dollar

EFFECT OF INCREASE IN PRICE OF METALS

1¢/lb. Increase in Price of Lead

924 tons of conc./month x 8.98 mos. x \$10.53/ton =	\$87,373
888 " " " " x 5.85 " x \$10.53/ton =	<u>54,701</u>
<u>Total</u>	\$142,074

1¢/lb. Increase in Price of Zinc

1256 tons of conc./month x 8.98 mos. x \$6.36/ton =	\$71,734
1141 " " " " x 5.85 " x \$6.36/ton =	<u>42,452</u>
<u>Total</u>	\$114,186

10¢/oz. Increase in Price of Silver

924 tons of conc./month x 8.98 mos. x \$7.12/ton =	\$59,078
888 " " " " x 5.85 " x \$7.12/ton =	<u>36,987</u>
<u>Total</u>	\$96,065

EFFECT OF INCREASE IN NET SMELTER RETURNS - LEAD CONCENTRATES

	<u>NSR/ton of Conc.</u>
Bunker Hill contract - U.S. money @ par	
as per letter F.R.Thompson - Sept. 10, 1971	\$185
Present report estimate	<u>137</u>
Possible increase	\$48

Tons of Concentrates - Pb

924 tons of concentrates x 8.98 mos. =	8298
888 " " " x 5.85 mos. =	<u>5195</u>

Possible increase in total - 13,493 x \$48/ton = \$647,664

OPERATING COST ESTIMATE (16,000 tons/month)

	<u>Monthly</u>	<u>Per Ton</u>
Open stope mining (mine general included)	\$59,200	\$3.70
Stope preparation & development	8,000	.50
Power cost	2,080	.13
Indirect costs	<u>4,800</u>	<u>.30</u>
Total Mining	\$74,080	\$4.63
Milling	35,360	2.21
Camp Operating	9,600	.60
General Overhead	12,000	.75
Service & Supply	<u>11,200</u>	<u>.70</u>
Total Direct Expense	\$142,240	\$8.89
Indirect Expense		
Slide Damage Repairs	\$1,000	.06
Vancouver Office		
Rent	\$500	
Secretary-Treasurer	1,200	
Telephone	300	
Legal & Audit	300	
Annual Meeting	200	
Miscellaneous	<u>200</u>	
	<u>\$2,700</u>	<u>.17</u>
	<u>\$145,940</u>	<u>\$9.12</u>

Note:- Present Copperline Labour Agreement provides for wage increase effective October 27th, 1972; increments to be as negotiated in Kimberley Agreement 1972.

January 1972

ESTIMATED CONCENTRATOR METAL BALANCE - POSITIVE ORE

	<u>Tons</u>	<u>Assay</u>			<u>Content</u>			<u>Recovery %</u>		
		<u>Ag oz./ton</u>	<u>Pb %</u>	<u>Zn %</u>	<u>Ag ozs.</u>	<u>Pb #</u>	<u>Zn #</u>	<u>Ag</u>	<u>Pb</u>	<u>Zn</u>
Feed	16,000	5.29	3.85	5.18	84,640	1,232,000	1,657,600	100.0	100.0	100.0
Pb Conc.	924	75.0	60.0	3.50	69,300	1,108,800	64,680	81.9	90.0	3.9
Zn Conc.	1,256	7.50	1.45	58.0	9,419	36,421	1,458,688	11.1	3.0	88.0
Tailings	13,820	.41	0.31	0.44	5,741	86,779	134,232	7.0	7.0	8.1

January 1972

ESTIMATED CONCENTRATOR METAL BALANCE - PROBABLE ORE

	<u>Tons</u>	<u>Assay</u>			<u>Content</u>			<u>Recovery %</u>		
		<u>Ag oz./ton</u>	<u>Pb %</u>	<u>Zn %</u>	<u>Ag ozs.</u>	<u>Pb #</u>	<u>Zn #</u>	<u>Ag</u>	<u>Pb</u>	<u>Zn</u>
Feed	16,000	5.10	3.70	4.70	81,600	1,184,000	1,504,000	100.0	100.0	100.0
Pb Conc.	888	75.0	60.0	3.50	66,600	1,065,600	62,160	81.6	90.0	4.1
Zn Conc.	1,141	7.5	1.45	58.0	8,558	33,089	1,323,560	10.5	2.8	88.0
Tailings	13,971	0.46	0.31	0.42	6,442	85,311	118,280	7.9	7.2	7.9

ESTIMATED RE-SALE VALUES - PLANT, MACHINERY & EQUIPMENT -
Present condition & values -(J.J. Crowhurst, M.R. Bertram)

References - Finning Tractor & Equipment - C. MacKay
Nelson Machinery - Des Jones
Grizzly Mine Mill - G. McCool
Northern Power - Sales Cat.
Various Mine est. reports

H.D. surface mobile equip. & service vehicles	\$96,850
Power plants & compressors	119,500
Underground mobile & drills	180,500
Concentrator, crushing, grinding, etc.	145,900
Shop, camp, office & comm.	7,000
Excess - Grizzly Mine-Mill sale	30,000
" Crusher at Nelson Mach.	9,000
Buildings - steel & Atco's mainly	<u>33,000</u>
Grand total	<u>\$621,750.00</u>