

12 APRIL 1989

MEMORANDUM

To: Mine Manager
From: Engineering Supervisor
Re: SILVER QUEEN EVALUATION

INTRODUCTION

The Silver Queen property is located near Owen Lake approx. 40km SW of the town of Houston on the Morice River/Francois Lk. access road. The property contains similar mineralization to Equity Silver and the possibility exists that the material could be processed at the Equity millsite. This short memorandum provides a very brief analysis of the economic potential of processing Silver Queen mineralization at the Equity mill.

FINDINGS

Processing Silver Queen material at Equity minesite is not attractive at foreseeable metal prices and could present environmental consequences to Equity.

RESERVES

The Silver Queen feasibility report by CESL of Oct 1988 lists in place reserves of 436825 tons at .23% Cu, .92% Pb, 6.2% Zn, .09 oz/ton Au, 5.79 oz/ton Ag. In metric terms in place reserves are 396000t at .23% Cu, .92% Pb, 6.2% Zn, 3.09g/t Au, 198 g/t Ag.

Within this reserve only part of the south area below 2600 elev. offers significantly higher than average grades. At 25% dilution these reserves are approx. 109000t at .33% Cu, 1.11% Pb, 7.71% Zn, 5.6 g/t Au, 315 g/t Ag.

CAPITAL EXPENDITURE

Access to the higher grade area would likely be carried out by extending the 2590 decline to about the 2350 elev. with development funded with flowthrough money.

Assuming access is funded with flowthrough money, capital expenditures could be limited to establishing ventilation, air compressor and water handling including a water treatment plant.

Without preparing a detailed cost analysis an allowance of \$500000 is made.

Mining would be carried out using a contractor, therefore no allowance is made for mining equipment purchase. An allowance of \$50/t is made for mining costs.

ORE TRANSPORTATION

\$20/t was recently quoted to transport limestone 300km from Dahl Lk. to Equity minesite. Using this same rate to transport ore from Owen Lk. to Equity would cost 80km/300km x \$20 = \$5.33/t or \$581000 for 109000t.

METALLURGY

Metallurgy is difficult for Silver Queen material and a three stage milling process was proposed by CESL to obtain reasonable recoveries. This resulted in separate Cu/Pb, Zn and pyrite concentrates. Expected recoveries based on CESL work are:-

	<u>Au</u>	<u>Ag</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>
Cu/Pb con	15.6	50.5	65.5	78.2	4.4
Zn con	19.1	29.2	19.9	9.0	19.9
Pyrite con	28.7	10.4			

For this report Equity mill facilities are expected to produce the Cu/Pb concentrate and obtain additional gold and silver recovery from the scavenger plant similar to present experience with Equity ore (1%Ag, 22%Au of mill feed). However on Carl Gagnier's advice silver recovery is downgraded to approx. 46%.

Metal Recovered (kg)

	<u>Au</u>	<u>Ag</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>
Flot	104.8	15838	235413	944828	369222
Dore	149.1	378			
Total	253.9	16216	235413	944828	369222

CONCENTRATE

Concentrate grades including contaminants are estimated from testwork prepared for the CESL feasibility report, except silver in concentrate is downgraded (C.Gagnier advice). Cadmium is not included in Equity's current concentrate contract and is assumed to be below penalty levels. Mercury is within required limits for shipment. Contaminant metals could render concentrate from Silver Queen ore unsaleable, however this report assumes the concentrate will be marketable on similar terms to Equity concentrate.

Estimated concentrate production is:-

Tonnes Au g/t Ag g/t Cu% Pb% Zn% As% Bi% Cd% Hg% Sb%

Head

109000 5.6 315.4 .33 1.11 7.71

Concentrate

2700 38.8 5866 8.7 35.0 13.7 4.4 .4 .07 .004 1.7

Concentrate transportation cost is estimated at Can.\$73.83/DMT.

REVENUE

Utilizing Equity's mill only Cu, Ag, and Au values provide significant concentrate revenue with lead and zinc revenues partially offsetting lead and zinc penalties.

Dore revenues will be determined as per Equity's present contract.

Revenues in this report are determined using Placer Dome Inc Nov. 1988 optimistic and expected metal price (US \$'s) projections for gold silver and copper and recent lead/zinc prices.

	<u>Cu/lb</u>	<u>Ag/oz</u>	<u>Au/oz</u>	<u>Pb/lb</u>	<u>Zn/lb</u>
Optimistic	.96	7.82	402	.38	.84
Expected	.80	5.60	367	.38	.84

Exchange rate used is US\$1 = Can\$1.2

COSTS (Can\$'s)

	<u>Total</u>	<u>T.Milled</u>
Capital	500000	4.59
Mining	5450000	50.00
Owen Lk to Equity	581000	5.33
Equity on prop	818000	7.50
Flot trans	199000	1.83
Flot chgs, pen	1087000	9.97
Dore trans	2500	.02
Dore treat chge	<u>9400</u>	<u>.09</u>
Total	8647000	79.33

DISCUSSION

Presumably Equity's only involvement with the Silver Queen would be to process ore to produce and sell concentrate and dore. Therefore any costs associated with putting the property into production and ultimately reclaiming it would be to the owners account. Additional unknown costs such as reclamation, possibly water treatment into the future to be covered by some form of bonding, higher mining costs and higher capital costs are likely to be expected.

Recoveries may be less than testwork has indicated as was the experience with Equity ore.

Marketing the concentrate produced could be a problem. Cadmium will be present in concentrate, but the effect on saleability and possible penalties is not known. It is not present in other than trace quantities in Equity concentrate and is not covered under the current concentrate contract. Mercury is present and may be a problem if content is higher than expected. Arsenic is high and might not be acceptable to a smelter.

Environmentally cadmium is considered highly toxic at even low levels (.0002 ppm). Beside the obvious possible hazard to the Owen Lk. area adding additional hazardous elements to Equity tailing could be ill advised.

Cash flows were run out at optimistic and expected metal prices. At optimistic prices a positive cash flow of \$0.5 mill was generated. At expected prices a negative cash flow of \$1.2 mill. was generated. Because of the potential negative aspects of production from the Silver Queen a high potential profit would be required. Even at optimistic metal prices a \$0.5 mill. return to be shared between Equity and the owners would be far too low to make the project attractive.



R. Baase
Engineering Supervisor

OPERATING PROFIT C SILV QUEEN
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 METAL PRICE OPTIM EXPECT

INPUT DATA			
Tonnes milled		109000	109000
Feed grade	Ag g/t	315.4	315.4
	Au g/t	5.6	5.6
	Cu %	0.33	0.33
Conc. grade	Ag g/t	5866	5866
	Au g/t	44.6	44.6
	Cu %	10	10
	Pb %	40.2	40.2
	Z %	15.7	15.7
	As %	5	5
	Bi %	0.5	0.5
	Sb %	2	2
DMT conc. prod.		2350	2350
Prices	Ag US\$/oz	7.82	5.6
	Au US\$/oz	402	367
	Cu US\$/lb	0.96	0.8
	Pb US\$/lb	0.38	0.38
	Z US\$/lb	0.84	0.84
Exchange	US to Can \$'s	1.2	1.2
Flotation rec -	Ag kg	15838	15838
	Au kg	104.8	104.8
	Cu kg	235413	235413
Dore - kg produced	Ag kg	600	600
	Au kg	378	378
	Au kg	149.1	149.1
Overall % recovery -	Ag	47.17	47.17
	Au	41.60	41.60
	Cu	65.45	65.45
Concentr adj month end t		0	0
Trans ore to Equity C\$'s		581000	581000
Capital cost C\$'s		500000	500000
On prop. cst/t mill C\$'s		57.5	57.5
Gld plant cst/t mill C\$'s		2	2
Flot treat cst/t con US\$'s		62	62
Flot trnsp cst/t con C\$'s		73.83	73.83
Dore transp cost C\$'s		2500	2500

OUTPUT			
Dore treat & ref chg US\$'s		9376	9376
Con penalties/t con US\$'s			
	Pb+Z	129.75	129.75
	Sb	45.00	45.00
	As	134.75	134.75
	Bi	8.00	8.00
	Total US\$'s	317.50	317.50
Conc cost/DMT con C\$'s		529.23	529.23

Net smelter return %			
Gross flot val-Ag C\$000's		4778	3422
	Au C\$000's	1625	1484
	Cu C\$000's	598	498
	Total C\$000's	7002	5404
Flot rec val -Ag C\$000's		4411	3109
	Au C\$000's	1541	1405
	Cu C\$000's	491	401
	Sub-Total C\$000's	6443	4915
	Pb C\$000's	154	154
	Z C\$000's	115	115
	Flot total C\$000's	6712	5184
Flot NSR % - Silver		92.32	90.86
	Gold	94.80	94.69
	Copper	82.05	80.45
	Total	95.86	95.93
Dore gross val-Ag C\$000's		114	82
	Au C\$000's	2312	2111
	Total C\$000's	2427	2193
Dore rec val - Ag C\$000's		111	79
	Au C\$000's	2293	2092
	Total C\$000's	2404	2171
Dore NSR % - Silver		97.38	96.54
	Gold	99.14	99.10
	Total	99.05	99.01
	Flot+Dore NSR % - Silver		92.43
	Gold	97.35	97.28
	Copper	82.05	80.45
	Total	96.68	96.82

	OPTIM	EXPECT
Metal Equivalencies		
Au 1g to g Ag-eq	47.74	61.79
Cu 1% to g Ag-eq	103.68	120.18

Revenue C\$000's	9116	7355
Revenue/t milled	83.63	67.48
Cost C\$000's	8595	8595
Cost/t milled	78.85	78.85
Op prof C\$000's	521	-1239
Op prof/t milled	4.78	-11.37
Breakeven(g Ag-eq)0% dil	599.44	850.37
Feed grade (g Ag-eq)	616.98	701.08
