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Halley Resources Ltd.

PRELIMINARY
APPRAISAL OF THE GEOLOGICAL
AND ECONOMIC POTENTIAL OF THE
SURF INLET GOLD PROPERTY

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1.0 SUMMARY

The adjacent Surf and Pugsley gold properties are located on Princess Royal Island near Prince Rupert, British Columbia. The properties produced a total of approximately 420,000 oz. of gold, 196,000 oz. of silver and 6 million lbs. of copper during operations from 1917 to 1926 and 1936 to 1942, mainly from the Surf deposit. The overall recovered gold grade was 0.385 o.p.t.

The veins occur along a north-trending shear zone which dips 45° west. Ore occurs at S-shaped deflections of the shears which provided a tensional environment during pulses of mineralization. The ore consists of auriferous pyrite plus chalcopyrite in a dominantly quartz gangue.

The exploration potential appears to be very good, particularly northward beneath the Surf deposit. Underground drilling done in the early 1940's intersected gold values in this area. The probability of discovering more ore therefore seems high, given the known erratic distribution of gold within oreshoots.

An economic appraisal was carried out on a hypothetical orebody at the Surf Mine using a series of stated assumptions which are believed to be realistic. Based on these assumptions, the total net present value* could vary from 8 to 39 million dollars, depending on the mining rate and the treatment of the ore. The properties therefore appear to constitute an extremely attractive exploration target.

* Subject to constraints page 6.

2.0 INTRODUCTION

2.1 GENERAL

On instructions from Mr. Bruce Youngman of Halley Resources Ltd., the writers proceeded with a study of the geological and economic potential of the Surf Inlet property. It was understood that there were severe time constraints on the work. The resulting analysis draws heavily on the writers' previous experience with similar properties, and many economic assumptions were based on analogies with other projects. No site examination was conducted.

2.2 LOCATION

The Surf property is located at the head of Surf Inlet, Princess Royal Island, in the Skeena M.D. at 53°05N, 128°53W.

2.3 MINERAL CLAIMS

No claim or Crown Grant records were examined in the course of the present study.

2.4 HISTORY

The first gold claims were recorded at Surf Inlet in 1898.

A 400 t.p.d. capacity mill was installed in 1917 and production continued to mid 1926. Total production amounted to 848,883 tons of ore of which 57,632 tons came from the nearby Pugsley Mine. Paid dividends totalled \$1,437,500 at an average gold price of \$20.67 per oz.

The mine closed from 1926 to 1934. An attempt to revive it in 1935 with the new \$35.00 gold price failed but a second attempt in 1936 continued production through 1942 at which time total production was 1,091,131 tons of which 169,886 was derived from the Pugsley Mine. Total average recovered grades were 0.385 o.p.t. gold, 0.18 o.p.t. silver and 0.29% copper.

In 1981 Cominco, Placer Development and Matachewan Consolidated completed a joint venture on the Surf and Pugsley properties under the name COM PLAC Joint Venture. The program consisted of diamond drilling 10 holes totalling 1526.4 m over a strike length of 1950 m plus underground sampling. Results were summarized in a "Termination Report" dated December 14, 1981.

2.5 REFERENCES

Burton, R.K., et al, 1987, Report on the Volume Surveys and Testing of Tailings and Mine Dumps, Surf Inlet Property, B.C.

Freeze, A.C., 1981, Com Plac Joint Venture Termination Report.

Honsberger, J.C., 1973 Report on the Former Surf Inlet Consolidated Gold Mines Ltd. Property Skeena M.D., B.C.

Prospectus, 1987, Surf Inlet Mines Ltd.

Report of Minister of Mines of B.C., 1918.

TVW Engineering Ltd., Undated Report on Surf Inlet Mines Ltd.

3.0 GEOLOGY

3.1 GENERAL

Two rock types predominate in the Surf Mine area: diorite and a probable foliated equivalent commonly termed quartz biotite gneiss. The contact between the two units is generally gradational over 5 to 100 m and trends north-south parallel to both the gneissosity and the principal faulting in the area.

3.2 MINERALIZATION

Veins dip approximately 45° west and are controlled by a complex shear zone which follows in a general way the gneiss-diorite contact. The veins consist of quartz with ankerite, sericite and sulphide and are up to 12 m in width. Gold occurs almost exclusively in pyrite and is seldom visible.

Oreshoots within the vein system are best developed where S-shaped warps occur in the shear zone. These sigmoidal features are observed on old plans and sections drawn up during mining of the main vein. During movement on the faults, these zones have apparently been the locus of a tensional environment favouring vein deposition with associated gold values. However, it is important to note that, even within oreshoots, gold values exhibit an erratic distribution. Gold values also exhibit a sharp cut-off at the walls of the veins. There is therefore little likelihood of a bulk mining operation being feasible now or in the future.

3.3 EXPLORATION POTENTIAL

A report by TVW Engineering Ltd. (see Section 2.5) indicates that a new ore shoot may be present below the 900 Level. Drilling done in 1941-42 gave indications of a new orebody below and to the north of the mined out Surf orebody. Several pierce points of this new zone intersected values up to 1.16 o.p.t. gold (DDH S81). Given the erratic distribution of gold generally, these intercepts would indicate that there is a high probability that another oreshoot exists in this area.

Other exploration possibilities exist along the main structure (a) between the Surf and Pugsley mines, (b) south the Pugsley Mine and (c) down dip in the Pugsley Mine. These targets were not considered in any detail in the present study.

4. ECONOMICS

4.1 GENERAL ASSUMPTIONS

In assessing the economics of a hypothetical orebody, the number of assumptions that must be made is obviously very large. The present case is no exception. Two basic cases are envisaged: (1) sufficient ore is delineated to support a 300 tpd operation (375,000 tons) and (2) sufficient ore is delineated to support a 500 tpd operation (750,000 tons).

The general assumptions made are as follows:

1. The potential recovery of gold from the low grade mine dumps and tailings has not been considered in the cash flow projection. A first pass at the stand-alone economics of this mined material does not appear to be favourable.

2. The geological data indicate there is a reasonable possibility of discovering new ore down dip or beneath the mined out Surf orebody. It is also reasonable to assume that the new orebody will be of equal grade and of equal or somewhat smaller size than the known orebody.

3. Due to possible metallurgical problems with the fineness of the gold in the pyrite it is not known if Dore bar can be economically produced at the site. Therefore two scenarios have been examined for the treatment of the ore. The first scenario examines the costs to produce Dore bars whereas the second examines the costs to produce concentrates which would then be shipped off site and treated by a smelter (not necessarily Trail).

4. The new ore dips 45° west, similar to the mined out bodies. This is an awkward dip to mine. If the new ore is steeper or significantly flatter, mining costs would be reduced.

5. Capital and operating costs are based partly on consideration of site factors such as the probability of having to mine below the 1000 Level, but mainly on comparative costs of similar mines operating in Canada.

6. The cash flow projections are pre-tax.

7. The cash flow projections are based on 100% ownership of the project.

8. Exploration costs have not been capitalized or included in the cash flow projections. These costs are likely to be on the order of \$0.8 million in 1988 and \$1.5 million in 1989.

4.2.1 Dore Bar - Specific Assumptions

	300 IPD	500 IPD
Minesite operating costs	\$110.00/ton	\$80.00/ton
Production	100,000 ton/yr	170,000 ton/yr
Recovery (to sulphide conc.)	92%	92%
Recovery from Concentrate to Dore bar	93%	93%
Grade to mill (ounces /ton)	0.40	0.40
Working capital	\$1.5 million	\$2.5 million
Gold price	\$450.00 U.S.	\$450.00 U.S.
Exchange rate	\$0.80 U.S.	\$0.80 U.S.
Salvage value	\$1.0 million	\$1.5 million
Capital cost	\$14.0 million	\$18.5 million
Discount rate (no inflation)	10% real	10% real
Construction year	1990	
Start-up	1991	

4.2.2 Dore Bar - Cash Flow: 300 IPD of Operation (in Millions of Canadian Dollars)

	375,000 Tons		300 Tons/day		
	1990	1991	1992	1993	1994
Capital Cost	14.00				
Working Capital		1.500			(1.50)
Salvage Value					(1.00)
Replacement Capital			0.20	0.20	
Revenue					
(100,000 × 0.40 × 92% × 93% × $\frac{450}{.80}$)					
		19.25	19.25	19.25	14.44
Operating Costs (\$110/ton)		11.00	11.00	11.00	8.25
Operating Margin		8.25	8.25	8.25	6.19
Capital Items	14.00	1.50	0.20	0.20	(2.50)
Cash Flow	(14.00)	6.75	8.05	8.05	8.69
10% Factor	0.826	0.751	0.683	0.621	0.564
Net Present Value	(11.56)	5.07	5.50	5.00	4.90

Total Net Present Value* = \$8.91 million

* Subject to constraints page 6.

4.2.3 Dore Bar - Cash Flow: 500 TPD of Operation (in Millions of Canadian Dollars)

	750,000 Tons		500 Tons/day			
	1990	1991	1992	1993	1994	1995
Capital Cost	18.50					
Working Capital		2.50				(2.50)
Salvage Value						(1.50)
Replacement Capital			0.30	0.30	0.20	
Revenue (170,000 × 40 × 92% × 93% × $\frac{450}{.80}$)						
Operating Costs (\$80/ton)		32.73	32.73	32.73	32.73	13.48
Operating Margin		13.60	13.60	13.60	13.60	5.60
Operating Margin		19.13	19.13	19.13	19.13	7.88
Capital Items	18.50	2.50	0.30	0.30	0.20	(4.00)
Cash Flow	(18.50)	16.63	18.83	18.83	18.73	11.88
10% Factor	0.826	0.751	0.683	0.621	0.564	0.513
Net Present Value	(15.28)	12.49	12.86	11.69	10.68	6.09

Total Net Present Value* = \$38.53 million

* Subject to constraints page 6.

4.3.1 Concentrate - Specific Assumptions for Production of a Concrete Rate

SPECIFIC ASSUMPTIONS

	300 TPD	500 TPD
Minesite operating costs	\$100.00/ton	\$70.00/ton
Smelting/refining/transport	\$30.00/ton	\$30.00/ton
340 days/year	100,000 tons/year	170,000 tons/year
Recovery (to sulphide conc.)	92%	92%
Grade to mill	0.40 ounces/ton	0.40 ounces/ton
Working capital	\$2.0 million	\$3.0 million
Gold price	\$450.00 U.S.	\$450.00 U.S.
Exchange rate	\$0.80 U.S.	\$0.80 U.S.
Salvage value	\$1.0 million	\$1.5 million
Capital cost	\$13.0 million	\$17.0 million
Discount rate (no inflation)	10% real	10% real
Construction year	1990	
Start-up	1991	

4.3.2 Concentrate - Cash Flow: 300 Tpd Operation (in millions of Canadian Dollars)

	375,000 tons		300 tons/day		
	1990	1991	1992	1993	1994
Capital cost	13.00				
Working capital		2.00			(2.00)
Salvage value					(1.00)
Replacement capital			0.20	0.20	
Revenue (100,000x.40x92%x\$450/.80)		20.70	20.70	20.70	15.53
Operating costs (\$130 total)		13.00	13.00	13.00	9.75
Operating margin		7.70	7.70	7.70	5.78
Capital items	13.00	2.00	0.20	0.20	(3.00)
Cash flow	(13.00)	5.70	7.50	7.50	8.78
10% factors	0.826	0.751	0.683	0.621	0.564
Net Present Value	(10.74)	4.28	5.12	4.66	4.95

Total Net Present Value* = \$8.27 million.

* Subject to constraints page 6.

4.3.3 Concentrate - Cash Flow: 500 lpd Operation (in millions of Canadian Dollars)

	750,000 tons			500 tons/day		
	1990	1991	1992	1993	1994	1995
Capital cost	17.00					
Working capital		3.00				(3.00)
Salvage value						(1.50)
Replacement capital			0.30	0.30	0.20	
Revenue (170,000x.40x92%x\$450.80)		35.19	35.19	35.19	35.19	14.49
Operating costs (\$100 total)		17.00	17.00	17.00	17.00	7.00
Operating margin		18.19	18.19	18.19	18.19	7.49
Capital items	17.00	3.00	0.30	0.30	0.20	(4.50)
Cash flow	(17.00)	15.19	17.89	17.89	17.99	11.99
10% factors	0.826	0.751	0.683	0.621	0.564	0.513
Net Present Value	(14.04)	11.41	12.22	11.11	10.15	6.15

Total Net Present Value* = \$37 million.*

* Subject to constraints page 6.

5.0 CONCLUSIONS

Using the assumptions and constraints as stated, the total net present value* of the property is projected to be in the 8 to 39 million dollar range. With reasonable probabilities of say 10 to 30 percent that the assumptions are true, the project appears to be an extremely attractive exploration bet.

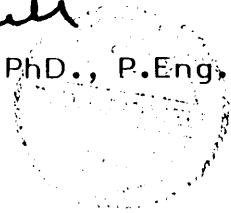
Respectfully submitted,
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* Subject to constraints page 6.