PRELIMINARY EVALUATION OF THE SIWASH NORTH DEPOSIT ELK PROPERTY, BRITISH COLUMBIA

Prepared by

CESL
Vancouver, British Columbia
Canada

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Project No.: BP9.1
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December 19, 1991

Fairfield Minerals Ltd.
1980 - 1055 West Hastings St.
Vancouver, B.C.
V6E 2E9

ATTENTION: J.W. Stollery, P.Eng.
President

Dear Mr. Stollery:

RE: SIWASH NORTH DEPOSIT

Please find attached our report which we have changed to incorporate your requests from our meeting on December 17th.

The report concludes the scope of the quick cost evaluation as laid out in our introductory letter and quick cost brochure.

We suggest that the next phase of the work on the property would be examination in more detail of what custom milling may be available, as well as laying out the mine for the exploration decline and related excavations.

As the decline should be placed, sized, etc. for eventual production and ventilation, careful consideration should be given to size and location, as well as the design of the exploration program itself. To achieve this goal, a conceptual layout of the entire mine and costs, and schedule of the development should be developed.

Itemized small studies, etc. that you may wish to consider in the immediate future include:

a. Custom milling options
b. Access, exploration and mine conceptual design
c. Quotations and negotiation of excavation contracts
d. Environmental development and production permits

CESL would be pleased to provide you with a detail scope and price for any aspect of your future activities.

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SS-749.1

Thank you for using CESL for this initial work. We look forward to being of service to you in the future.

Yours truly,

CESL

P.R. Jones, P.Eng.
Director, Mining Services

PRJ:djw
Ref:SS-775.1

Att.

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EXECUTIVE SUMMARY

The Elk Property of Fairfield Minerals Ltd. is favourably located in southern British Columbia between Kelowna and Merritt in the Okanagan Region. It is two miles from a major highway, close to an electrical power grid, and could draw from a local labour force.

The Siwash North Deposit of the Elk Property was evaluated in December, 1991, by Cominco Engineering Services Ltd. using a "quick costing " procedure. This procedure estimates capital and operating costs from empirical formulae which can be used with assumed milling recoveries, metal prices, and other parameters, for preliminary evaluations.

This method of project evaluation can be used for the study and comparison of alternatives for the economic exploration and development of a mineral property. Assumptions used in the analysis are often not supported by extensive metallurgical testwork or documentation.

For production from the Siwash North Deposit three milling scenarios were examined:

Case A: On-site milling using flotation and cyanidation to produce bullion.

Case B: On-site flotation processing only to produce a concentrate for sale to a smelter.

Case C: Ore trucked off-site for custom milling.

In all cases daily production was assumed to be 200 tons with underground access by decline, ore haulage by truck to surface, and shrinkage or open stoping by mining contractor. Reserve tonnages and grades diluted to a 6.6 ft. stoping width and other property data were provided by Fairfield Minerals Ltd.

Assumptions used during evaluation included, geological reserves of 340,000 tons at 0.647 oz gold and 0.72 oz silver per ton; metal prices of $US 350/oz gold and $US 4.00/oz silver; milling recoveries of 90% gold and 75% silver; surface ore trucking cost of $Can.15/ton; and, custom milling charge of $Can.20/ton of ore.

Case C provided the most attractive results:

Fixed capital	$Can.10.6 m
Operating cost	$Can.146/ton of ore
Payback period	1.8 years
Project DCFROR	29.7 % after 5 years

Current geological reserve production life at 200 tons/day is 4.6 years

For Case C, analysis indicates a relatively short payback period and attractive project rate of return. With contracted mining, custom milling, and the resulting low capital costs, production rates of less than 200 tons/day might well be attractive and further optimization of this case is suggested. This should include a specific study of custom milling opportunities as well as mine development alternatives to minimize capital expenditures in the initial years and to utilize exploration development for eventual production openings.

Cases A and B, which incur the capital cost of a mill, will likely require a production rate greater than 200 tons/day and for a longer mine life to be economically viable at a gold price of $US 350/oz.

It is recommended that the owner uses an economically attractive conceptual model for this project based on a 200 tons/day mining rate, with custom milling at a site within 100 miles.

Also recommended are preliminary investigation of potential locations and terms for eustom milling, and that the next project phase, excavation of an underground exploration decline, be planned.

Objectives of underground exploration development would include:

1. Exposure of the mineralized structure along strike and on dip.
2. Sampling of the structure to establish grade and width continuity.
3. Recovery of a bulk sample for metallurgical testwork.
4. Investigation of ground conditions and establishment of mining methods and costs.
5. Improvement of the categorization of the ore reserves.

Prefeasibility and full feasibility studies would follow a successful mine exploration development program.

1.0 INTRODUCTION

CESL has been engaged by Fairfield Minerals Ltd. (FML) to perform a preliminary evaluation of the Siwash North Deposit located on the Elk Property in southern British Columbia.

Various gold bearing vein systems have been identified on the property with recent exploration being focused on the Siwash North vein system. Work has included surface trenching, diamond drilling, soil sampling, and geophysical suveying. Potential ore shoots have been identified over a strike length of 2,600 ft.

CESL has performed this evaluation using geological and reserve data supplied by FML, and assumed metallurgical data. Conceptual capital and operating costs for a mining and milling operation conforming to some basic operating and location parameters have been estimated. Options considered include both on-site and off-site milling with contract underground mining.

Cost estimates have been incorporated into a financial model containing relevant Provincial and Federal taxes. Analysis includes calculation of Payback Periods and Discounted Cash Flow Rates of Return before and after Federal tax.

The reader is advised that this study is at a conceptual level and should only be used as preliminary guidance until more valid input data is available. CESL personneL have not visited the property or reviewed geological data leading to reserve estimations.

2.0 MINING

The Siwash North vein system has been exposed on surface by trenching and intersected to vertical depths of about 700 ft. by angled diamond drilling from surface. It strikes approximately east - west and dips to the south. The system has been identified over a 2,600 ft. strike length with indications of steeply plunging shoots of higher grade on lengths of up to 380 ft. along strike and down dip to 1,000 ft.

From surface outcrop the vein system dips at 20 to 25 degrees. West of the RB Fault, in the area with the best currently indicated reserves, this continues to a vertical depth of about 150 ft., is "hinged", and then dips at about 65 degrees to the present depth limits of exploration.

True widths average less than 2 ft. with only occasional intersections up to 3 ft. The gold is hosted by quartz veins and silicified granite within a granitic intrusive. The country rock appears to be quite competent outside of a narrow alteration envelope surrounding the vein.

Reserves have been estimated by FML diluted to an assumed mining width of 6.6 ft. About 65% of the currently identified reserves are above the "hinge" line, in a vein system dipping at a low angle. Efficient mining of this will be difficult. Stoping dilution additional to that incorporated into the 6.6 ft. width reserve estimate is possible. Open stoping may be practical if ground conditions are good.

The remaining reserve, dipping more steeply, would appear to be suited to an open stoping or shrinkage mining method. This would require the use of small equipment, typically jackleg drills or small single boom jumbos with 0.5 to 1.0 cu.yd. LHD's or scrapers or gravity feed to chutes/drawpoints. Production capability would be low and good stoping control necessary to minimize dilution. A cut and fill stoping method might be possible, but would require a source of suitable backfill. This option has not been considered in this study.

It is proposed to drive a decline for access to the vein. From this, sub-levels and raises for exploration, sampling, and test mining can be driven. Features to be investigated and which would influence the selection of stoping methods would include the extent and continuity of ore grade mineralization, competency of country rocks, and structural features of the vein such as faulting or localized folding.

The indicated limited reserve tonnage, probable low production rate, and limited mine life would suggest the use of contract mining. This would avoid the need to purchase mining equipment and plant and to hire and train employees.

3.0 MILLING

Preliminary testwork performed to date has been on samples from surface trenching and consisted of direct cyanidation and gravity concentration. The former showed rapid dissolution of gold with extraction of 90 to 98%. Gravity concentration alone resulted in low extraction. Sulphides, including pyrite and chalcopyrite, in the samples tested had been oxidized and hence test results are not necessarily representative of deeper vein material.

For the purpose of this preliminary evaluation it has been assumed that the ore would require conventional flotation followed by cyanidation for satisfactory gold recovery. It is possible that a significant proportion of high grade gravity concentrate could be produced in any case because of the presence of free gold in fresh core samples from exploratory drilling.

Given the location of the Elk Property there could be several possible milling scenarios, including:

A - complete milling on-site to produce bullion;
B - production of a flotation concentrate on-site with shipment to a smelter for gold recovery; and,
C - complete custom milling at an off-site facility.

These three scenarios form the cases considered in this evaluation.

4.0 INFRASTRUCTURE

The Elk Property is favourably located in southern British Columbia between Westbank and Merritt in the Okanagan Region. It is within two miles of a major highway. This location allows utilization of existing infrastructure such as electric power, community facilities, and a local labour force.

Capital cost estimates include allowances for extension of electric power lines to the property and for construction of an access road and normal surface buildings and facilities. For Case C only, which assumes off-site custom milling, power supplied by a diesel generator rather than the grid is used.

5.0 COST ESTIMATING

Preliminary capital and operating costs have been prepared for Cases A, B, and C, based on conceptual operating plans. Key parameters common to each of those plans are listed below:

- ahout 340,000 tons of trench and drill indicated reserve at 0.647 oz/ton gold and 0.72 oz/ton silver;
- underground mining by a contractor using narrow vein stoping methods with trackless access and ore haulage to surface;
- no camp or accomodation facilities required for employees.

Both capital and operating costs are estimated from empirical relationships between cost items, and, generally, production rates. These are modified to reflect various identifiable factors, such as location, power source, base lahour rate, mining and milling methods, primary access type and depth, etc.

The cost model can be used to estimate costs for various production rates. In this study a production rate of 200 tons/day was considered for each of the three Cases. Summaries of these estimates are shown in Tables 1 and 2.

The capital cost estimates exclude preproduction expenditures on geblogical exploration and studies, but do include costs for all underground access development. Allowances for working and sustaining capital have been included in the financial analyses.

For Case C, custom milling off-site, an ore trucking cost of $15 and milling cost of $20 per ton has been used. These costs assume that a reasonable size, i.e. plus 1,000 tons/day, operating mill is available within 100 miles of the property.

These estimates are considered suitable for the level of this conceptual study and reflect cost experience for other, similar, operations.

6.0 EVALUATION, ANALYSIS, AND DISCUSSION

Production data, operating costs, and net smelter return estimates are summarized in Table 3 for Cases A, B, and C.

Mill head grades are the indicated reserve grades of 0.647 oz/ton gold and 0.72 oz/ton silver. These grades include mining dilution resulting from a stoping width of 6.6 feet.

Milling recoveries, and, for Case B, concentrate grades, have been assumed for this type of ore. Processing testwork to date has been limited.

Current, typical smelting and refining terms have been used. The former assume that concentrate quality would not result in significant smelting penalties.

Annual operating profits before taxes have been calculated assuming metal prices of $350 US/oz for gold and $4.00 US/oz for silver, and are shown in Table 3. This data, together with capital cost estimates, has been incorporated into a financial model for analysis. Assumed production for a five year period has been analysed and a summary of the results is shown in Table 4.

For Cases A and B, both involving on-site milling, annual cash flows at a production rate of 200 tons/day and a gold price of $US 350/oz. are insufficient to generate DCFROR's after taxes. Payback periods are about five years, which, at 200 tons/day, requires production exceeding current geological reserves.

This suggests that an increased proven, mineable reserve, i.e. developed and/or close spacing drill indicated, would be required for the production scenarios assumed in Cases A and B and that a higher production rate would enhance their economics.

For Case C, assuming custom milling off-site, significant annual operating profits result from production at 200 tons/day. A relatively high rate of return after taxes and a short payback period result. These reflect the reduced capital costs compared to Cases A and B, and, the assumption of ore trucking and milling costs of $35 per ton.

It must be recognized that custom milling costs vary considerably depending on the nature of the ore and the capacity and normal operating costs of the mill. Costs can only be determined during negotiation with a potential mill.

There appears to be one suitable operating mill within about 100 miles of the Elk Property, at International Corona Corporation's Nickel Plate Mine.

TABLES

TABLE 1 CAPITAL COST ESTIMATES

($Can.)

	CASE A	CASE B	CASE C
MINE			
Decline development	3,871,000	3,871,000	3,871,000
Mine development	1,334,000	1,334,000	1,334,000
Stope preparation	701,000	701,000	701,000
Mining equipment	NA	NA	NA
Ventilation system	351,000	351,000	351,000
Drainage, water supply	127,000	127,000	127,000
Air and water piping	253,000	253,000	253,000
Shop and compressor facilities	597,000	597,000	597,000
SUB TOTAL	7,234,000	7,234,000	7,234,000
SURFACE PLANT AND FACILITIES			
Access roads and site clearing	300,000	300,000	300,000
General surface facilities	642,500	656,000	257,000
Power line extension	1,675,000	1,675,000	NA
Electrical sub-station	384,000	384,000	NA
Diesel generator set, fuel storage	NA	NA	500,000
Tailings storage	548,000	548,000	NA
Water supply	419,000	419,000	251,000
SUB TOTAL	3,968,500	3,982,000	1,308,000
MILL			
Fine crushing, conveyors	990,000	990,000	
Mill buildings	930,000	930,000	
Grinding, ore bins	918,000	918,000	
Processing	1,886,000	410,000	
SUB TOTAL	4,724,000	3,248,000	NA
PROJECT OVERHEAD (excluding working capital)	3,408,000	3,156,000	2,071,000
ESTIMATED TOTAL PROJECT COST	19,334,500	17,620,000	10,613,000

TABLE 2 OPERATING COST ESTIMATES

($Can./ton)

	CASE A	CASE B	CASE C
MINE			
Stoping	35.20	35.20	35.20
Stope preparation	14.55	14.55	14.55
Haulage	2.89	2.89	2.89
Mine services	30.78	30.78	30.78
Supervision	4.35	4.35	4.35
SUB TOTAL	87.77	87.77	87.77
MILL			
Crushing and conveying	3.10	3.10	
Ore storage and grinding	3.24	3.24	
Processing	20.79	17.27	
Tailings disposal	0.61	0.61	
Assaying	0.84	0.84	
Supervision, maintenance, and general	10.04	10.04	
SUB TOTAL	38.62	35.10	NA
GENERAL			
Power (mine and mill)	12.69	10.15	9.60
Maintenance, services	19.15	16.72	7.66
Administration and technical	15.90	13.88	6.36
SUB TOTAL	47.73	40.75	23.62
ESTIMATED TOTAL PROPERTY COST PER TON	174.00	164.00	111.00

TABLE 3 SUMMARY OF PRODUCTION, OPERATING COST, AND NET SMELTER RETURN ESTIMATES

		CASE A	CASE B	CASE C
PRODUCTION DATA				
MINE DAYS PER YEAR		350	350	350
TONS MINED PER DAY		200	200	200
TONS MILLED PER YEAR		70,000	70,000	70,000
MILL HEAD GRADE	oz/ton gold	0.647	0.647	0.647
	oz/ton silver	0.72	0.72	0.72
MILL RECOVERY	% gold	90.0	90.0	90.0
	% silver	75.0	75.0	75.0
CONCENTRATE GRADE	oz/ton gold	NA	10.00	NA
	oz/ton silver	NA	9.27	NA
OZ. OF GOLD RECOVERED PER YEAR		40,761	40,761	40,761
OZ. OF SILVER RECOVERED PER YEAR		37,800	37,800	37,800
TONS OF CONCENTRATE PER YEAR		NA	4,076.1	NA
OPERATING COSTS ($Can.)				
PROPERTY	per ton milled	174.00	164.00	111.00
ORE TRUCKING	per ton ore	NA	NA	15.00
CUSTOM MILLING	per ton ore	NA	NA	20.00
CONCENTRATE SHIPPING	per ton conc.	NA	60.00	NA
METAL PRICES		350 $US/oz Au & 4.00 $US/oz Ag		
EXCHANGE RATE		0.87 $US = $Can.		
SMELTING / REFINING TERMS				
	Pay for	97 % of contained precious metals		
	Smelting charge	160.00 $Can./ton concentrate		
	Refining charges of	6.00 $Can./oz Au & 0.50 $Can./oz Ag		
PAYMENT	per ton conc.	NA	3,880.96	NA
NSR	per ton conc.	NA	3,660.96	NA
NSR	per ton milled	232.98	213.18	232.98
SUMMARY ($Can.millions)				
TOTAL ANNUAL REVENUE (NSR)		16.308	14.922	16.308
TOTAL ANNUAL OPERATING COSTS		12.180	11.725	10.220
ANNUAL OPERATING PROFIT BEFORE TAXES		4.128	3.198	6.088

TABLE 4 SUMMARY OF FINANCIAL ANALYSES

($Can.millions)

	CASE A	CASE B	CASE C
FIXED CAPITAL	19.3	17.6	10.6
WORKING CAPITAL	3.0	2.9	2.6
SUSTAINING CAPITAL PER YEAR	0.1	0.1	0.1
ANNUAL OPERATING PROFIT	4.1	3.2	6.1
DCFROR BEFORE FEDERAL TAX	0.7	0.0	38.9
DCFROR AFTER FEDERAL TAX	0.7	0.0	29.7
PAYBACK YEARS	4.9	5.8 *	1.8
TONS MINED PER YEAR	70,000	70,000	70,000
TONS REQUIRED FOR PAYBACK	343,000	406,000	126,000

* Exceeds project life

CASE A	Mine and flotation / cyanidation mill; bullion produced and shipped to refinery.
CASE B	Mine and flotation mill; concentrate produced and shipped to smelter.
CASE C	Mine only; custom milling; bullion produced and shipped to refinery.