

City's \$110-million plan: B.C.'s biggest gold mine

103F034

by Gillian Cobban

VANCOUVER — Proving it has what it takes to make a mine, City Resources Canada plans to bring what will be British Columbia's largest gold producing mine on stream by October, 1989. The aggressive Australian-controlled company has turned things around for the once problem-plagued Cinola gold project in the Queen Charlotte Islands.

On-site construction will begin in June or July next year at a cost of \$110 million. The operation will process 6,600 tons per day of ore to produce 175,000 oz gold in the first year, increasing to 192,000 oz in the second year and averaging out at 114,600 oz for the remaining 10 years of mine life.

A feasibility report just completed by Wright Engineers says operating costs will vary from \$207(US) per oz for the first two years of production to \$322 per oz in the following years.

"We are currently working on completing government permitting, detailed engineering and financing for the project," says Ron Longstaffe, president and chief executive officer.

The company plans to raise about \$90 million by way of a gold loan. The after-tax cash flow rate of return for the project is 19.18% at a gold price of \$450 per oz and an exchange rate of \$1(C) to 76¢(US). Under these conditions, if the project is financed on a 20% equity-80% debt basis, the debt can be repaid within two years.

Open pit mineable reserves are 27.3 million tons averaging 0.062 oz gold per ton, using a 0.032-oz cutoff grade. An additional 220,000 tons grading 0.055 oz have been classified as possible reserves. Overall waste-to-ore stripping ratio will be 2.08:1.

The average grade of ore milled during the initial three years will be 0.08 oz. Lower grade ore averaging 0.048 oz will be stockpiled and fed to the plant in the following four years.

New treatment process

The metallurgical characteristics of Cinola ore are difficult and detailed studies have been done to find the most efficient treatment process.

Graham Balderson, City Resources' executive vice-president (technical) explains that the ore treatment will utilize a new proprietary Arseno process which uses nitric acid to catalyse the oxidation of the sulphide minerals which otherwise render the gold refractory to conventional cyanidation.

The process, developed and tested by Bacon, Donaldson Associates and Hazen Research in Colorado, has not previously been used commercially but has proven to be the most cost-effective way of treating Cinola ore because of the pyrite and marcasite content on the ore. Essentially it is a low temperature, low pressure oxidation process as opposed to pressure oxidation, Balderson explains.

The ore also has minor concentrations of arsenic and about 10 ppm mercury but only a small portion of the gold is tied up in the arsenic and the mercury is said to occur in a halo adjacent to the deposit, which will not be disturbed. Many other epithermal deposits have the same refractory problems as Cinola and the new Arseno process will generate much interest, Balderson says.

Gold recovery is anticipated to be 90%, for total gold production over the mine life of 1.5 million oz.

Balderson notes that recent drilling has indicated that there is higher grade mineralization below the bottom of the pit which could be mined by bulk underground methods, thereby extending the life of the mine. There is also potential for similar mineralized zones within the claim group and the company will be investigating both possibilities by drilling next year.

Control of potential acid mine drainage, control of water quality and protection of the fish habitats of the Yakoun River are key environmental issues in project design.

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Test program completed on City's Cinola deposit

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VANCOUVER — Bench-scale metallurgical test work on various ore types from City Resources' Cinola gold deposit in the Queen Charlotte Islands yielded a recovery rate greater than 90, says the company. The test program was completed by Bacon, Donaldson and Associates of Vancouver.

Further testing is planned at Hazen Research in the U.S. where continuous pilot plant operation will be established to confirm the results and generate design data for metallurgical and environmental engineering purposes.

At the annual meeting, John Bailey, president, said the cutoff grade for the Cinola deposit had been lowered to 0.035 oz gold per ton thereby increasing the mining reserve to 28 million tons averaging 0.061 oz gold. The decision to lower the cutoff from 0.05 oz was prompted mostly by the favorable metallurgical test results and higher gold prices.

Mr Bailey said that Wright Engineers would have the final feasibility study completed by September. Production is anticipated in the first half of 1989 at two million tons per year initially from head grades averaging 0.1 oz. This would yield 50,000 to 200,000 oz gold per annum at a cash cost of \$200(US) per oz. The \$75-\$100-million project will be funded with a gold loan, he added.

Shareholders approved the allotment of five million common shares at \$6 each for a 50% interest in a group of eight mineral properties in Papua New Guinea. The Wild Dog prospect is the most advanced of the group with reserves of 1.25 million oz gold at a grade of 0.2 oz.

Five diamond drills are testing the half-mile central portion of the deposit where a multiple quartz vein structure has been outlined along one mile of strike. Pre-feasibility development studies will be directed towards an open pit mining operation with a target production rate of 60,000 oz gold per year in late 1988, he pointed out.

Approval was given for the distribution of bonus warrants to shareholders which are exercisable at \$7 per share until July 31, 1989. In early June, City announced it had reached an agreement with T.C. Coombs & Co. of London for a

share placement with institutional investors of 1.5 million special warrants at a price of \$10 per warrant. Each of the warrant holders will be entitled to one common share of City and one warrant having the same terms as the bonus warrants. The closing date for this issue is July 8.

Mr Bailey said that City Resources (Asia) would probably exercise its right shortly to purchase 2.5 million shares of the company at \$3.27 per share. This would add some \$8.2 million to City Resources' (Canada) treasury, he noted.

GOLD III
CITY RESOURCES (CANADA) LIMITED (CIZ-V;CCIMF-Nasdaq) JUNE 10, '87

GOLD-SILVER RECOVERIES EXCEED 90%. EXPECT - Graham
PRODUCTION COST LESS THAN \$200 US P/OUNCE Balderson,

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executive vice president of City Resources (Canada) Limited, reports that bench scale metallurgical testing of various ore types from their Graham Island gold deposit on B.C.'s Queen Charlotte Islands resulted in gold and silver recoveries in excess of 90%. Test results from individual samples showed gold recoveries as high as 97%.

Test work was completed at Bacon, Donaldson and Associates' laboratories in Vancouver. Recoveries from individual samples were achieved by cyanidation of the ore after a pre-oxidation step. Two flowsheets have been tested with similar results. A continuous pilot plant operation will be established to confirm these bench scale results and generate design data for metallurgical and environmental engineering purposes.

Mr. Balderson says preliminary capital and production costs using either process are within pre-feasibility study estimates, and initial gold production is expected to cost less than \$200 U.S. per ounce recovered.

Geological reserves of the gold project are 44,000,000 tons averaging 0.058 oz/ton, including 7,000,000 tons grading 0.10 oz/ton.

A feasibility study by Wright Engineers Limited should be completed by 31Aug87; production is currently scheduled to start by May 1989. Annual production is expected to be within the range of 110,000 to 170,000 ounces of gold per year depending on the capacity of the production plant.

Prospectors and
Developers Bulletin

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input? yes ✓

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As a parting note Lefebure says he expects to see some consolidation of land holdings in the Toodoggone area over the next two to three years. "That would make it a more attractive place to explore," he says.

"Some of the players who have experience in the area and knowledgeable personnel may be able to combine a couple of properties and make them economic." Lefebure thinks that may be what is going on under the surface and says it takes away from the typical 'rush' connotation.

"What makes news in exploration is an exciting new discovery," he says, "but the Toodoggone is perhaps becoming a little more mature than that.

"If you like to play the high-risk end of the market you go for real grassroots plays in exciting new areas, but if you're looking at something with good potential, infrastructure, and a demonstrated, attractive deposit you find there isn't as much risk and it doesn't seem to attract the same amount of attention."

City Resources:

Graham Island Project Preparing For Production

A final feasibility study for City Resources (Canada) Ltd.'s Graham Island Project, located in British Columbia's Queen Charlotte Islands, has been completed. But while the numbers look good, the project still has several hurdles to hop before production can begin.

The Graham Island deposit, originally known as the Cinola Deposit, was discovered in 1970 and bought by Consolidated Cinola, now City Resources (Canada), in 1978. It has all the hallmarks of a classic epithermal deposit with a mercury geochemical signature. It is found in intrusive sub-volcanic felsic rocks and tertiary volcanistic sediments that have been intensely brecciated and silicified. Two types of gold mineralization are present: thick moderate grade disseminations and thin, high-grade veins.

Snowfall here is light and the area can be worked year round. The entire pit area has been logged, stripped of all trees and vegetation, and road access is in place.

City Resources (Canada), a subsidiary of Australian-based City Resources Ltd., reports mineable reserves of 23.8 million tonnes averaging 0.072 oz/ton gold and claims gold recoveries should average 92%. At an annual production rate of 2.1 million tonnes per year, City expects it could recover 1.7 million oz of gold

Cash operating costs for the first two years of open pit gold mining should be about US \$189 per oz, and costs over an expected mine life of 12 years are projected at US \$230 per oz. Capital costs are estimated to be about Cdn \$100 million, with payback in 2.2 years given that gold stays above US \$300 per oz.

Mine financing can be covered by a 60% Gold Loan repayable over a six year period and 40% bank financing. City has already received full financing proposals from Canadian banks.

That's the upside.

The downside, however, is chock full of Indians, environmentalists, and politicians.

The environmentalists have plenty of experience in the Charlottes. Last year they had a chunk transformed into permanent parkland. And the provincial government, with its recent decision banning further mineral exploration in Strathcona Park, has shown it is unwilling to be tagged as environmentally insensitive.

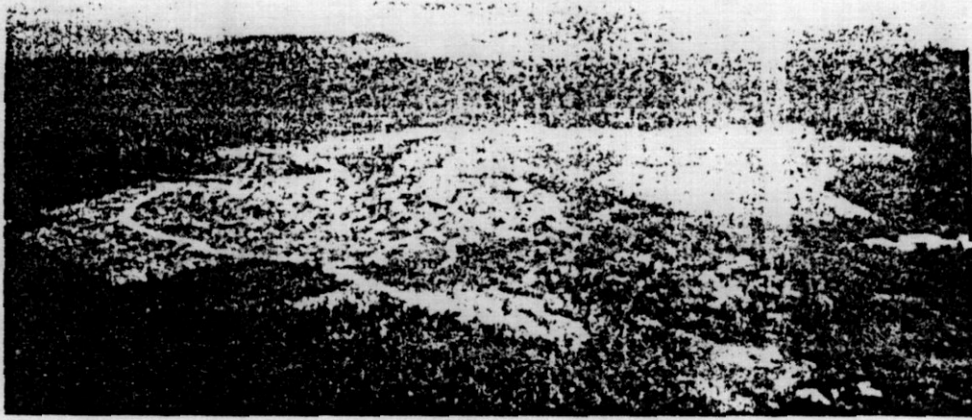
Last, but definitely not least, there are Haida Indian land claims to consider. There is no easy way round the fact that the Haida have occupied the mine site for over 9,000 years.

The Graham Island mine is located 18 km south of Port Clements and one km from the Yakoun River, the largest watershed in the Queen Charlottes, and a major producer of salmon and trout.

The project "poses a serious risk to the environment," according to Frank Colison, vice president of the Haida Nation. Among the Haida's environmental concerns is the toxic effect sulphuric acid, a by-product of the road building and mining process, will have on the watershed area. The project's mineralization contains acid generating sulphur as well as arsenic and mercury.

City, however, has proposed a "state of the art" environmental plan, which includes treating rock with limestone to

neutralize acid production. Company president John Bailey says it is City's philosophy and practice to protect the environment surrounding its mining projects. "That sentiment aside," he says, "our position is also one of practical realism: the Government of British Columbia will simply not let us proceed with mine development unless we satisfy their appropriately stringent environmental protection guidelines."



The Graham Island Project: a sensitive situation waiting for a tough decision.

The company has also hired newspaper editor Archie Patrick, a prominent B.C. native Indian, to handle public relations with the Haida.

At present the Graham Island Project is being reviewed by a steering committee of the engineering and inspection branch of the British Columbia Ministry of Energy Mines and Petroleum Resources, and approval in principal, despite what company press releases have been saying, is not expected in the near future.

"It's a very sensitive situation up there, politically and environmentally, so it's going to be a very tough decision," a source within the Ministry said. "Aside from the Haida concerns there are a lot of people living in the Charlottes who are not certain this sort of development should go ahead."

He suspects there will have to be an extended period of public discussion before a decision — a political decision — is finally made by the provincial cabinet.

Graham Island Project Preparing For Production

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PROPERTY FILE

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CITY RESOURCES (CANADA) LIMITED (CIZ-V;CCIMF-Nasdaq/HMS) HIGHLIGHTS OF CINOLA GOLD - Ron Longstaffe, president of FEASIBILITY STUDY REPORTED City Resources (Canada)

103F034 Limited, reports that Wright Engineers Limited have released a summary of the feasibility study on the Cinola gold project which shows the deposit can be mined profitably. The deposit is near the center of Graham Island, one of the Queen Charlotte Islands, B.C.

Highlights of the study are:

- Open pit mine, 6,600 short tons per day. Overall waste to ore stripping ratio 2.08:1. *GCNL*
- Capital costs of \$110,000,000 including working capital of \$5,400,000 and contingencies of \$14,400,000.
- After tax, discounted, cash flow rate of return for the project is 19.18% at a gold price of US\$450 per oz. and an exchange rate of \$1Cdn. = 76¢U.S.
- If financed on a 20% equity, 80% debt basis, the debt can be repaid within 2 years.
- At 90% recovery, total gold production will exceed 1,500,000 ounces. *DEC 7 / 87 # 234*
- Production is scheduled to start on October 1989.
- The mineable ore reserves are 27,300,000 short tons of gold at an average grade of 0.062 oz/st using a 0.032 oz/st cut-off grade.
- Operating costs vary from US\$207 per oz. for year 1 and 2 of production at designed capacity to US\$322 per oz. for years 3 to 12.

- Further refinements to the metallurgical process which are being tested in a pilot plant may reduce the indicated capital and operating costs.
- Ore treatment will use the proprietary Arseno process which uses nitric acid to catalyse oxidation of the sulphide minerals which otherwise render the gold refractory to conventional cyanidation.
- Gold recovery is expected to be 90%.
- The cash flow summaries allow for 6-month start-up period when production will be lower and operating costs higher than when operations are at its design capacity. From April 1990, the operation is assumed to have reached its design capacity.
- Environmental work has been performed by Morescol Environmental Consultants Ltd. of Vancouver whose Stage II report will be submitted to the Mine Development Steering Committee of the B.C. government early in 1988.
- Control of potential acid mine drainage, control of water quality impacts and protection of the high fish habitats of the Yakoun River system are the key environmental issues. The proposed mining and reclamation plans the mill process selection, the location and layout of the plant site, and water and waste management plans all reflect this priority.
- The total mine labor force is estimated at 188 persons, of whom 120 to 130 will likely be current Queen Charlotte Islands residents.
- Royalties and taxes payable directly to the Province of B.C. during the 12 years of operation total about \$51,000,000.

Mr. Longstaffe comments, "City Canada's management has reviewed the Wright study and believe there is scope for significant improvements in capital and operating costs. For example, the feasibility study is based on one manual pit design and mineable ore reserve calculation. Further geostatistical work will make it possible to optimize the pit design and increase mining selectivity. This will improve both operating costs and revenues." He notes also that there is economically attractive ore at the bottom of the pit which could be mined by bulk underground methods thereby extending the mine's life beyond 12 years.

City Resources (Canada) plans to raise a substantial portion of the project financing by way of a gold loan.