

R E P O R T

ELIZABETH GOLD MINING CO. LIMITED.

BY

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Jan. 27, 1937.

REPORT ON THE ELIZABETH GOLD MINE.

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Introduction:

The property consists of patented claims F.M.171 F.M.172 containing approximately 373 acres and the mining claims F.F.2626-27-28-29-30-31. F.F.2838-39-40-41-42-43 containing approximately 480 acres.

The holdings are readily accessible being about 3 miles north of mile 4 of the Atikokan - Rainy River division of the Canadian National Railways. An excellent winter road allows ready approach to the mine area and at a little further expenditure an all season road can be made.

A contract has been let with the Seine River Improvement Company to furnish electrical power at \$21.00 per horse power year and a 13,200 volt transmission almost completed will lead this power to the mine substation.

Rice Lake, 3000 feet from the mine area offers a more than ample water supply. Timber, suitable for mining use is available nearby. We would say that mining costs and operating conditions will closely approximate those being obtained in the more accessible mining areas of Ontario.

The mine has been the subject of reports and examinations by C.H. Miles, C.N. Thompson, W.E. Segsworth, the Mining Research Corporation, and various Provincial and Federal geologists and engineers. The vein system was discovered in 1900 and since then has been under intermittent development by several organizations. Considerable development --270 feet of sinking and over 1000 feet of laterals - work was accomplished by the

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first operators who erected a 10 stamp mill and extracted considerable ore. Succeeding operators appear to have limited themselves to extracting the remaining developed ore above the 120 foot horizon.

Extent of 1936 operations.

During the past year the work was confined to the construction of the winter road, the erection of the transmission line, and to the further exploration of ore bearing structures both on the patented and unpatented claims. A stable and an ice house were built.

Geology:

The prominent structural feature is a granite greenstone ~~contact~~ that almost diagonally traverses the property. The physio-chemical accompaniments of such a major intrusion as: the alteration of the greenstone to diabasic and amphibolitic material, the granite to granite-gneiss and protogene, extensive folding, faulting, and shearing; are much in evidence. The later results of differentiation, the quartz veins, the dykes of feldspar-quartz-porphyry, and lamprophyre, the mineralization--pyrite-chalcopyrite-galena, gold- break through and appear in most of the structures. In particular the area around the shafts displays the above features of a "live" area and in favouring structures gold bearing bodies have been found.

Sampling Results and Ore Possibilities.

Two types of deposits have been discovered.

1. The shear zone quartz vein type in the greenstone.

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2. The chimney type along the granite-greenstone contacts.

No.1 shaft was sunk on one of the shear zone type of structures, and on the 80 foot level approximately 70 feet of drifting was completed by the old operators. From the date of Mr.Miles and Mr.Thompson we gather that the walls of the shaft to a depth of 30 feet averaged \$13.20 over  $36\frac{1}{2}$  inches and that their underground average of 6 samples was \$14.30 over 34 inches.

This zone was stripped by the writer for a length of 200 feet and sampled. Three samples taken in the shaft averaged \$11.90 over 47 inches and the surface sampling revealed two ore zones averaging:

\$15.60 over 38 inches for 70 feet.

\$22.60 over 56 inches for 20 feet.

Another exposure of this type-possibly a section of the other vein faulted off the strike--lying 130 feet east of No. 2 shaft gave an average of \$20.60 over 30 inches for 35 feet.

The main workings are on the chimney type of deposit where No.2 shaft was sunk. Sampling these workings by Mr. Miles and Mr. Thompson showed that all available ore had been extracted above the 120 foot level. The third level was only partially sampled and they report a zone 24 feet long averaging \$11.77 over 60 inches. The writer does not think that this value is representative of the tenor of the ore for where the projected rake of the ore shoot occurred back filling had been placed and this material was not removed to permit sampling the back.

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From old diamond drill data, stope plans, and general report - see below - we gather that the former operators were mining a high grade body of ore that in places was as wide as 12 feet and had been shown to be about 100 feet long on the 120 foot level.

Preliminary prospecting over the rest of the property was of just sufficient nature to comply with assessment work since it was evident that sufficient scope for much investigation existed around the shaft areas.

Plant and Equipment.

Buildings of corrugated iron-felt sheathing house the steam plant, the straight line compressor and the hoist. On the whole this plant is obsolete. Other buildings house an assay plant and offer accommodation to a crew of 15 men. They are in good repair but are only temporary structures built to house the dewatering crew.

Summary:

It appears reasonable to assume that the former operators were hampered by difficult transportation problems, lack of understanding of the true possibilities of the deposit and general high operating costs. The present appreciation in the value of gold and lower operating costs offer a new attractive aspect to the exploitation of the deposit.

The geology is favourable for the persistence and continuance of the ore zone exposed by the number 2 shaft workings and high grade ore should be expected from this deposit.

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The work of 1935 showed that all available ore had been removed, from above the 120 foot level. From old records the average of 4 diamond drill holes across the zone was \$26.80 over 53 inches and the average of 13 samples in the old stope outline plan is \$28.80 over 47 inches. So in the absence of more recent data it appears that the grade of ore worked by the old operators was about \$27.00 per ton (Gold at \$35.00).

Due to the considerable folding and faulting the correlation of the ore sections exposed in the shear zone systems is difficult, but ore of good grade is present and the solution of this problem --by diamond drilling--might coalesce the various exposures of ore into one homogeneous mining unit.

A considerable capital outlay will be required to complete the modernization of the plant and equipment by electricity; and the development required to block out ore so as to place the property on a self sustaining basis will be a considerable sum.

CONCLUSIONS AND RECOMMENDATIONS:

1. The workings should be dewatered and resampled, the third level in particular is being given careful investigation.
2. No. 2 shaft should be sunk another level and the ore zone exposed by lateral work.
3. A series of diamond drill holes should be placed along the strike of the shear veins.
4. About \$40,000 should cover this work and the purchase of suitable underground mining equipment to carry it out effectively. We suggest that the heavy machinery installations be

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delayed until the completion of this work for we feel that the above exploration should disclose intervening ore shoots. The sum total of all of them should permit the coalescence of the structures into a single mining unit rather than the separate exploitation of these dissociated ore zones.

5. It is evident that your property has only been developed in the most preliminary way and what ore has been extracted is probably only superficial to the amount that might be revealed by the above program. In the parlance, you have "just scratched the surface."

You are referred to the enclosed maps:

1. General surface plan of the Mine Area.
2. Plan, section, and values of Diamond Drilling and old stopes outline.
3. Generalized plan of the mining region, which will elucidate my statements.

Respectfully submitted,

(Sgd.) William N. McClintock, M.E.