F O R E W O R D

The Elizabeth Gold Mine is situated in the Fort Frances Mining Division in Western Ontario. It lies five miles to the north-west of the Village of Atikokan which is on the south branch of the Canadian National Railway running from Port Arthur to Winnipeg.

The property holdings consist of two patented claims. These comprise F M 171 containing 333 Acres and F M 172 containing 40 acres.

A major contact of Keewatin Greenstones and Granite cuts diagonally through the property approximately from the south-west to the north-east, the east portion being chiefly Greenstones and the west portion chiefly Granite formation.

The vein structure of all veins in the two respective formations shows great similarity but there is a marked difference between the vein structure of the veins in the Greenstones as compared with the vein structure of the veins in the Granite.

No attempt will be made in this report to elaborate on the geological conditions as this subject will particularly have been dealt with in the report submitted by Mr. C.H.Miles, Mining Engineer and Geologist, who, during the past summer, visited our property in a professional capacity three times, and whose deductions geologically and otherwise, have proven of great value.

CLAIM F M 171

On this Claim, consisting of eight 40's and a 13 Acre lot at the southwest corner, has been done the most of the surface exploration and all of the underground development. Several attempts have been made to discover the original boundary lines but apparently the corner posts or other means of identification were destroyed in the forest fire that spread over the district in the summer of 1910. From reports on hand, however, it is indicated that the main or No.2 Shaft, is located about in the centre of the Claim from north to south and 250 yards to the east of the western boundary.

No.1 Shaft.

is located 480 feet to the south of No.2 Shaft. This is the point of the original discovery made thirty-five years ago and here has been sunk a shaft reported to be 110 feet in depth. The timbering around the collar of the shaft had rotted away permitting a considerable tonnage of rock filling to fall back into the opening and therefore we have only been able to reach a depth of 80 feet. The vein is in the Greenstone formation to the east of the major contact, is heavily mineralized with iron and copper pyrites, small amounts of galena and pans gold. The vein maintains an average width of six feet with smooth walls and a slight dip to the east. To the north of the shaft a trench has uncovered the vein over a length of 50 feet where it dips to the east into low ground and heavy overburden. Sampling of the vein in the shaft has given high average values. The better values appear to be running diagonally from the north-west to the south-east across the shaft and over 4-ft widths, toward the top of the shaft, the average assay gives $22.66 with better than $12 over an average width of 8 feet. At greater depth average values of $20.88 and $9.80 have been obtained. In the Trench north of the shaft channel samples across the vein have given results of $13.30, $15.75, $23.60, $154.00 and $37.10, the presence of free gold, though not visible, presumably accounting for the high results.

It would be possible, with a moderate expenditure, to provide means thereby a small tonnage mill could be supplied with ten tons per day from an open cut in the hillside and advancing towards the shaft and constructing a tram to No.2 shaft where the ore

[illegible] No.2 Shaft.

Some idea of what may be expected from such a mill operation might be gained from assay results obtained from recent bulk samplings.

From a 2000 lb shipment prepared for shipment to Toronto, we selected fragments from each 250-lb weight, the lowest result of which was $15.75 and the highest $33.60, with an average of $19.60 for eight samplings. This method of sampling, however, cannot be considered to be truly conclusive, although the average result is gratifying.

A further 150-lb shipment, divided between Ottawa and Milwaukee, consisted of vein matter taken both from the trench and at various points in the shaft. This was all crushed in the Assay Office crusher and systematically sampled and the result obtained gave $42.90 gold per ton.

<u>No. 2 Shaft.</u>

has a measured depth of 242 feet with levels at depths of 63 feet, 111 feet, 135 feet and 235 feet, with a sump 7 feet deep. On the first, or 63-ft. level, the workings extend to the north a distance of 95 feet and a Stope has been carried through to the surface at one point indicating that rich ore must have been procured here by former operators. The stope extends northerly to within 30 feet of the face of the workings. A Pillar remains between the shaft and the stope to a depth of 48 feet. Channel sampling of the Pillar has given assays of $28.70, $50.40 and $18.90 over vein widths of four to five feet. There remains, in the Pillar and on the margins of the stope, probably 500 tons of high grade ore. This is not recoverable, however, during such time as the present shaft is in use for mining operations, but can be mined out at some future date when a new shaft will have been provided.

While the shaft has been sunk on the vein in the contact between the Granite and Greenstone, the vein enrichment leaves the contact about thirty feet north of the shaft and extends into the granite on the west. It would appear, from a surface alignment of the 1st level, that this enrichment may have a connection with a strong quartz lead uncovered on the surface and striking west of north in the hillside back of the Office quarters. Diamond drilling from the surface to determine the quality of this vein would convey some valuable information.

No development has been done to the south at the 1st level as the vein, directly south of the shaft, enters an east-west Fold, clearly to be seen on the surface over a length of 35 feet, from the western extremity of which, the contact again strikes due south and a Pit sunk on the contact discloses a quartz vein six feet in width but beyond this shallow Pit no further surface exploration has been conducted until at a distance of about 800 feet to the south-west where stripping has uncovered the contact vein 15 feet between walls.

At 111 feet in depth a Sub-Level has been driven west and north to connect with the stope between the 1st and 2nd levels. It extends to the north for a distance of 60 feet, the open stope measuring twelve feet between walls. The only ore remaining between the 1st level and this depth consists of the pillar adjoining the shaft and will contain 100 tons of a very high grade as is evidenced by assays as high as $175.70 from samples taken on the south margins of the stope.

It was apparently thought that this vein would dip to the east as the shaft to the Sub-Level was put down at an angle of 81 deg. from the horizontal, whereas, the location of the vein at the Sub-Level pointed to the fact that the vein dip was nearly vertical. Therefore, from this level the shaft had been continued vertically to the present depth.

Twenty-four feet below the Sub-Level, at 135 feet depth, is located the 2nd level. A great amount of development, drifting, cross-cutting and winzing has been accomplished. The workings extend to the north a distance of 270 feet, measured in a straight line from the shaft, and 55 feet to the south. At a point 50 feet

of the shaft was left, to be seen south-east of the shaft at the surface, has caused a diversion of the vein and over a length of 40 feet it strikes south-westerly and then turns abruptly to the south again. The vein is narrow along the cross-cut and south drift but some interesting sampling values have been obtained. Continuing north from the cross-cut, and over a length of 50 feet, an open stope extends upwards through and above the 1st level. Immediately north of this point, the workings widen out to 22 feet from wall to wall and the roof has been mined out to a height of 20 feet. The main drift swings from the Greenstone on the east side to the granite on the west. A considerable amount of underhand-stoping has been done across a width of about 20 feet and northward along the granite wall, for a length of 35 feet. Ten feet beyond this point, in the roof of the drift adjoining the granite contact, channel sampling gave values of $23.10, $22.05 and $23.10, indicating that some rich ore must have been recovered at this point. 45 feet due south of this spot sampling gave values of $42.70, $11.20 and $35.70. The intervening space is filled with broken rock blasted down from the east side of the open stope. Along the southeast margin of the underhand stope, sampling gave values of $38.90, $4.20, $1.05 and $24.35. The presence of free gold in some of the samples accounts for the exceptionally high values obtained. From the point in the drift where high roof values were obtained, the vein continues along the granite wall for a length of 20 feet and then swings to the east 16 feet, and, 85 feet beyond is located a winze said to be 70 feet in depth. Twenty feet further north a right-angle Fault is encountered and the vein splits to the east and north-west. North of this Fault the formation is entirely granite. Sampling values over the last 141 feet of vein occurance, though interesting in certain spots, are, on the whole not of economic importance. Throughtout the entire sampling there were no blanks.

Any commercial ore that remained in this level following the earlier operation was removed by the subsequent operators during the years 1912 to 1914. The probable ore shoot, however, which in the upper level extends from the shaft for a distance of 65 feet, on the 2nd level extends from the cross-cut, 30 feet north of the shaft to a point 115 feet north, an increase of 20 feet in length. It appears logical to expect that there is a downward extension of the ore shoot and that the ground underneath the 2nd level floor over a length of a hundred or more feet will be found to be of commercial value down to the 3rd level.

At a vertical depth of 100 feet below the 2nd level is located the 3rd level. Midway in this shaft it is noticeable that the quartz vein to be seen in the 2nd level south drift, is dipping east through the shaft and has been located in a cross-cut south of the shaft at the 3rd level. The development to the south has reached a straight distance of 78 feet while to the north it is reported that the workings extend to 130 feet, but this cannot be verified due to the fact that the north drift, beyond the 65 ft. point, has been tightly filled with broken granite taken from a north-west cross-cut over a length of 43 feet. This latter cross-cut is, furthermore, of much larger size than ordinarily driven, averaging 7 ft in width by 9 ft in height. Over 250 tons of rock has been removed from the north-west crosscut and filled into the north drift and a cross-cut driven east at the junction of the three headings and the actual reason for such unproductive work can only be conjectured. North of the shaft and to the entrance to the north-west cross-cut measures 50 feet and within this distance there had been commenced a stope over a length of 24 feet and 15 feet in height. Channel sampling along this section gives an average of $11.77. The vein averages five feet in width along the drift but investigation also discloses that a much greater vein width remains undeveloped along the east side of the drift. For this reason the full vein width cannot be determined. It might be noted that the open stope above the 2nd level has a width of ten to fourteen feet over the greater portion and similer widths may be expected on the 3rd level horizon. The vein in the north drift looks particularly promising as far as it can be examined and though sampling values do not grade it as commercial ore, nevertheless the values are higher and more consistent than in the 2nd level above. Furthermore, due to leaching and oxidizing which has taken place over several years it is apparent that true values cannot be expected to be obtained from channel sampling the same as if the ore were broken into beyond the zone of oxidation.

In the last paragraph relating to No.1 Shaft on Page Two, reference is made to a 150 lb shipment prepared for Ottawa and [illegible]

A similar shipment for the same destinations was also prepared from vein matter taken from the 1st, Sub, 2nd and 3rd levels of No.2 Shaft. It was crushed and sampled in the same manner and the assay result gave the extraordinary value of $109.20 gold per ton. Presumably some free gold entered into the ore selected but if so, we have no idea, as to from which of the four points the free gold originated and a cursory examination of the ore before crushing did not reveal any. In the process of mining and milling this character of vein it is, therefore, not unreasonable to expect that milling results would indicate a higher grade than sampling indicated due to inclusions of free gold, erratic in occurrence, which are more often missed in the process of channel sampling.

Having in mind the past performance of the property, records of ore mined and milled and bullion produced, the assay results from the sampling along the margins of the open stope, assay values from ore in place at the second level and the satisfactory assay results from the roof along the 3rd level north--these favourable points indicate without a doubt that the earlier operators of the property encountered a rich lense of ore and our recent investigations point to a downward continuation of that lense. It is therefore safe to assume that no mistake would be made in deepening the workings with the expectation that lateral developments will get in sight additional ore occurrences of at least similar grade to what has hitherto been developed.

While an operation of this nature is underway I would recommend that the 2nd and 3rd levels be connected with a Raise at the point where we have determined commercial values and the breakages from mining methods of this kind, augmented by underhand stoping and using the Raise as an Ore-Pass to the 3rd level, would provide sufficient to keep a 25-ton per day Mill in operation. At the same time we could rely on at least 10 tons per day from No.1 shaft to make up for any hoisting delay that might occur from the3rd level during such time as shaft sinking would require the use of the hoisting equipment. (See first paragraph Page Two.).

SURFACE EXPLORATIONS

While the year's operations were intended, at the outset, to be limited to dewatering and sampling of No.2 shaft only, subsequent surface examinations prompted the conducting of considerable trenching and uncovering of quartz showings, especially along the line of the major contact and this work has resulted in most gratifying results. The major contact has been traced, and stripped in places, over a length of 1600 feet, about equal distances south-east and northeast of the No.2 shaft. Sampling of the quartz occurrences along this distance gave some very interestingresults. While channel sampling was employed in each case and the assay values were low on the whole, one point gave the high result of $19.25 over a width of 1 ft 4 in.and along the same vein further on gave $4.50. It is significant to mention that none of the samples gave Blank results. Considering that this sampling was done on the surface exposures of the veins, and which, due to decades of weathering, leaching and oxidizing could not represent a true value, warrants an extensive investigation of the various surface showings preferably with the aid of a diamond drill, with the use of which core samples can be extracted from any desired depth with less expense and more accuracy than any other method.

CLAIM F M 172

This consists of 40 Acres and lies immediately north of the north-east corner of F M 171. It has been the feeling that this acreage was acquired due to the vein occurrence known as the Tunnel Vein. However, in a report by Willet G. Miller, 13th Annual Report, The Ontario Bureau of Mines, 1903, we read the following:

> "Outside of the work in the main shaft the development done since the date of the last inspection consists of 20 feet of drifting on the north end of location F.M. 171...."

This can only refer to the Tunnel Vein as there is positively no mining evidence in the northern region of the property other than that can be seen at the Tunnel Vein site. If the foregoing quotation is correct, then F.M.172 was apparently acquired for the purpose of protecting the northern continuation of this vein [illegible] example acres

from the vein in the tunnel, across only a few inches, gave a return of $29.05. There is a net-work of veins on the hill and conditions for a diamond drilling test are ideal.

GENERAL

The property of the Elizabeth Gold Syndicate, as a whole, must be looked upon as a most valuable possession for mining purposes. That portion contiguous to the Contact is naturally the more interesting and, as the property includes nearly two miles of the Contact along its sinuous course, there remains a large area to be investigated. Should additional acreage be desired, it should be selected along the strike of the Granite contact as the fissures, fractures and cooling cracks formed by the granite when cooling after its eruption, have provided means of exit for rising magmas and solutions with their accompanying minerals. The adjoining greenstones would be similarly benefited but within a limited radius of the contact.

ORE RESERVES.

Strictly speaking, there is no tonnage of ore in either No.1 or No.2 shafts that can be termed Blocked Out Ore as it would require to be developed on four sides to come under that category. There is, however, a considerable tonnage of Indicated Ore, being that portion between the 2nd and 3rd levels. With an open stope fifty feet in length above the 2nd level and good values obtained for an additional distance of about fifty feet, and corresponding favourable values at the 3rd level, 100 feet below, common sense would allow for the intervening ground being classed as a definite Reserve. With the shaft deepened another 100 feet we may estimate a Probable Ore reserve of a like tonnage. These two blocks of ground, in my estimation, will contain 9,230 tons. Estimates of ore remaining above the 1st level and the Sub-level, have on Page three hereof, been placed at 600 tons. On the east wall of the entire open stope,a good width of likely looking vein matter was not mined by the former operators, probably being too low in grade at that time. Assays along the east wall on the 1st level, where the Contact turns easterly gave moderately good values, while along the east wall of the stope in the Sub-level the average values were impressive. A conservative estimate of Probable Ore in this section gives 3,000 tons. No. 1 shaft operations would provide 450 tons to a depth of 15 feet, being the elevation at which an open cut would be worked. It would be possible to extend mining operations to greater depth which would materially increase the ore estimates. The rock dump at No.2 shaft contains a recoverable 400 tons but the value is problematical. Some very rich gold specimens have been found in the dump and it can be taken for granted that there will be quite a bit of finely broken material deposited here as well, in addition to ore of low grade to the earlier operators. The indicated and Probable tonnage enumerated amounts to 13,680 tons. If means are provided whereby mining operations at No.1 shaft were projected to a depth of 60 feet, an additional 1900 tons would be obtainable. In estimating the probable gold content of the estimated tonnage, a downward revision must be made due to the exceptionally high values of some of the samplings which no doubt contained free gold and are therefore eliminated. This brings the average down to $12 per ton which should provide a comfortable margin of profit.

Requirements for 25- ton Mill Operation.

Assuming that a complete milling unit is provided in accordance with recent correspondence there is no need to dilate on the details of it. A WATER TANK of 10,000 gallons capacity will be required. CLEAN WATER must be provided and to do this the Dam controlling the outflow of the marshland below the old mill would have to be repaired. Mine water is not suitable for amalgamation due to oil, grease and other filth that enters into it. A gasolene pump and two pipe lines, water and heat against freezing, over a length of 400 feet. REPAIRS and BULLION melting equipment. Enclarged ORE BIN within shaft house. Installation of CRUSHER, BELT drive, BUCKET ELEVATOR and ORE STORAGE BIN ahead of Mill. TRAMWAY from No.1 Shaft to crusher. at No.1 Shaft ONE SINKER with spring handles, AIR AND WATER HOSE, FOUR-DRILL COMPRESSOR, DRILL SHARPENER, and OIL FURNACE. For use in No.2 shaft, one STOPER with AIR AND WATER HOSE. TWO SINKERS with spring handles and AIR AND WATER HOSES. TWO LONG 1-inch quarter- [illegible] and TOOLINGS for using Timbers

Summarized.

The mine is in a "live" area.
The underlying magma carried and deposited gold bearing solutions.
The mine has practically just been opened down to the 125 foot level and a considerable tonnage of fair grade ore was extracted by the previous operators above this level. This shoot should continue to considerable depth and other similar shoots are to be expected along the vein length.

Power, transportation, and labour conditions are very favourable.

Very truly yours,

William A. McClintock,

Resident Engineer.

Mc Clintock was Mine Manager in 1937