

## A REPORT ON THE KLEANZA CO. LTD. MINERAL CLAIMS.

Uak, B.C., July 20, 1922.

To the Directors of the Kleanza Co. Ltd.,

Pursuant to your instructions, I have examined the mineral claims held by your Company, and report as follows:

I have spent seventeen days on the property and have made every effort to obtain all the information possible in that time. The work has been slow on account of the great area to be covered, the amount of timber, underbrush and overburden, on all the claims, and the steep and at times almost inaccessible slopes.

On account of the limited amount of underground workings and the few surface cuts, little knowledge of the nature of the ore shoots was to be obtained. It has been my object then first, to acquaint myself with the district as a whole by visiting other properties as well as the Kleanza holdings, ascertain the general geology and conditions of mining prevalent, and then to make a careful study of the Kleanza claims in their relation to the district.

There has been more or less prospecting for minerals in the Uak district for more than twentyfive years, and in a few instances considerable sums of ~~money~~ outside capital have been spent in the development of claims. The work has been impeded on account of the lack of transportation facilities, and only in the last three or four years has this been remedied. Now that transportation is available, and a period of business is at hand I predict an influx of capital and an exploitation of this district in the near future. It deserves it. So holdings of the Company have a speculative value far in excess of their cost and the cost of holding them.

To date, no mines have been operated at a profit. But no thorough development has been carried on, at least not enough to conclusively prove or disapprove any property. In most cases only surface cuts or short tunnels have been made. As for the Kleanza Co. claims, in my opinion they merit further development and Crown Granting. The taxes on Crown Granted claims are only a small fraction of the cost of assessment work, should the Company at any time see fit to defer development. Specific recommendations as to work to be done will follow later in my report.

The mineral holdings of the Company consist of fifteen claims including two recently staked on my recommendation, and five others held on an option known as the Golden Crown Group. The Cassiar Placer and three good dam sites are also held by these claims. All are in good standing and in most cases have a years assessment work done in advance. The Golden Crown Group are eligible for Crown Granting at any time. Beginning at Kleanza Creek they extend in a southerly direction up Kleanza Mountain covering outcrops of a system of quartz pyrite veins, the members of which are all approximately parallel in strike and dip. The two new claims, however, are an exception to this. They are one on either side of Kleanza Creek about  $\frac{3}{4}$  of a mile above

the dam, and cover an outcrop of an east-west vein of lead, silver and copper ore, and also a very excellent power site.

The Usk district lies on the eastern side of the great coast range batholithic uplift. This batholith has thrust up thru older rocks and with other subsequent intrusions, have caused a terrific dynamo-regional metamorphism accompanied by much fissuring and faulting. The sedimentaries where they exist and the older igneous rocks along the contact are all highly altered and in most cases turned to schists. The country rock on the Kleanza claims is grano-diorite cut thru in many instances by fine grained porphyritic diorites and a few felsitic dikes. These dikes are probably a little younger than the coast range batholith. On the Golden Crown claims older basic dikes cut thru the country rocks and have been faulted and metamorphosed to an extent to obscure their original character. They have been called locally mica lamprophyres.

The quartz infusions and probably the mineralizing solutions are simultaneous with and had their source in the batholith and just following the fissuring. The fissures are in some cases filled fissures as indicated by the banded structure in the ore and quartz, particularly higher up the mountain on the Kleanza claim. But generally the ores are primary replacements in quartz. The contact of the coast range granites with the older granites is indicated on the accompanying sketch. On the south-west side of Kleanza Mountain and again in the Creek bottom in Red Gulch red-brown andesites make their appearance. These evidently are junior to the ore deposition and had no effect on it. This appears to be true also with regard to the fine grained dikes mentioned above, except where they have intruded along the fissures, and in one case found on the Dakota claim where a diorite dike has somewhat faulted the # 2 fissure.

The ore bearing veins on the property with the possible exception of those on the Golden Crown claim are primary. Erosion has taken place on Kleanza Mountain more rapidly than oxidation due to its steep slopes and the abundant precipitation. Consequently surface showings are indicative of conditions to be found at depth. If surface or shallow workings can expose payable ore, such should be the case to great depth. For this reason I recommend that work be done on the surface rather than in driving tunnels as it is cheaper. This does not seem to hold true in the Crown tunnels. The presence of secondary bornite, limonite and the presence of free gold, indicate secondary agencies. Surface waters evidently worked thru the fissures after being ~~opened~~ reopened by a diorite dike. A little deeper prospecting is recommended here. This prospecting should be carried to or a little below ground water level at least.

The values carried in the veins are in gold, silver and copper, and on the new location in gold, silver, lead and copper. The values are all carried in the sulphides of the metals, the quartz gangue being barren. No careful sampling was done on the property as it was apparent that there was no minable ore in sight. Samples which I obtained before coming here gave me all the information I needed. The expense involved in sampling would not be compensated for by the added information they would give. Later samples from Mr. Willman and Mr. Wells and from Government reports have also been used.

On the Crown Group there are three distinct fissures. Three fissure

are again exposed on the Tenderfoot, Valhalla 3 and Dakota Claims. Again higher up on the mountain on Valhalla 1, again on Valhalla, and still higher up on Valhalla 6. These have all nearly the same strike S.35.E., and dip in the same direction to the N.E. at angles varying from 30 to 65 degrees. The position of the outcrops considering their different altitudes would indicate that the same three veins run thru the full length of the property. There are other veins exposed as indicated on my sketch which have similar strikes and dips. On Valhalla 6 there appear to be small cross fissures nearly at right angles to the first system, but apparently are barren. On the Crown there are local distortions and also cross fissures. Another fissure was found on Valhalla 7 which belongs to the main system. On Valhalla, Valhalla 1, and Valhalla 2, another fissure is exposed by cuts and a tunnel with strike and dip of the main system. These fissures which strike approximately S.35.E. and dipping to the N.E. appear to be mineralized in shoots. The cross fissures are apparently barren. However, the intersections of the two systems ought to be prospected as they are the most favorable loci for ore deposition and enrichments.

The ore on the Kleanza Claim was quite high grade. It appeared to be a local fissure filling or possibly an intersection of the two fissures shown on the sketch. More work ought to be done there to determine the nature of it, and in tracing the fissures. They are exposed now only a few feet. If nothing further was found it could well be dropped owing to its remoteness and inaccessibility.

Regarding the development of these mineral claims I recommend first, on the upper claims, that the remainder of the assessment work be done in stripping and tracing the veins and in trying to locate intersections with cross fissures. On Valhalla # 2, however, I recommend that the left hand heading in the tunnel already driven be continued a few feet further, at least until the intersection, seen on the sketch, of the two fissures be reached, which ought to be within 15 feet of the present face of the tunnel. On the Dakota Claim where a tunnel has been driven 18 feet the mineralization appears to be getting stronger as the tunnel has progressed. It would be well to continue there after work on the Valhalla # 2 has been done and eventually to crosscut from # 2 vein to # 3.

On the Crown Claims work ought soon to be done in order to determine whether they are worth the renewal of the option. There is little to be learned by continuing # 1 or # 2 tunnels as they are on the same vein as # 3. It would be well to expose the cross fissure in the winze with a 5 or 10 foot drift in order to get a true idea of its strike and dip so as to look for its intersection in # 3 tunnel. # 4 tunnel should have a drift driven on the cross fissure to intersect and go a little beyond the dikes. About 15 feet would determine whether more work would be justified.

The main work on the Crown Group ought to be concentrated in tunnel # 3. It appears to have improved in the last few feet driven, and if there are any secondary enrichments it could best be proved from this tunnel. It is on the same vein as # 1 and # 2 tunnels and lower down the hill and consequently would be a better working tunnel for mining purposes should ore be developed. In # 1 tunnel above, the best values appeared just beyond the intersection to the cross fissures and continued to a dike about 80 feet from the portal. If this ore shoot follows down the intersection it ought to be encountered about 400 feet further in # 3 tunnel. Should

this be the case an assured block of ore about 250 feet in depth and 75 feet along the strike would be blocked out on which to base figures for mining. If shoots should be uncovered in the veins further up the hill work could best be carried on to them from this tunnel. Dump room, mill and camp sites, roads, and power from the dam are of easy access from this point.

Generally speaking the conditions for mining are almost all favorable. Transportation facilities are excellent both as regards railroads and a wagon road to the camp. Little expense would be incurred to make the upper claims accessible for wagons, at least a comparatively cheap tramway would make the upper claims accessible from some point higher up should development work later be started from there. Timber for mining purposes would be an item of little consideration. Water supply is abundant. A very valuable asset to the Company is the dam site on Kleanza Creek. Power for mining and milling purposes may be had cheaply and will be adequate to the needs. The questions of climate and altitude do not affect you adversely. The labor market is somewhat remote at present, but will improve gradually as the country settles up. The Granby Smelter at Anyox is the one nearest and concentrates may be shipped there at a comparatively low cost.

The ore if found will be of milling grade and will be susceptible to concentration. The flow sheet will be simple: probably crushing, calcification, jigging, regrinding for tabling, and possibly later on a cyanide treatment for tailing. Amalgamation is not a good treatment for your ores.

A discussion of costs in this report is not in order, on account of the present stage of your mining operations. However, in my opinion, if an ore can be mined that will run around \$20.00 to the ton in quantities sufficient to keep a 50 or 100 ton mill running it will pay a good profit on the investment. A small mill with such a flow sheet as I have suggested above can be put up for about \$25,000.00.

The two new claims, the Olga and Trona, recently staked above the Cassiar Placer cover a lead-silver vein crossing Kleanza Creek. The outcrop shows 15 to 18 inches of good ore, assays not yet obtained. The Claims are somewhat apart from the other Claims and a little inaccessible, but the showings are very good and the strike of the vein would indicate that it was one of a system running from Bornite Mountain and through Red Gulch.

Regarding the veins on Kleanza Mountain, if ore should be developed in them it would be well to locate another tier of claims on the east side of those already held. The present claims are not located on the true strike of the veins, and with depth the strike and dip would soon carry them out of the property.

Regarding the Cassiar Placer I believe this can be made to pay if properly handled. It will not justify a big outlay of money, but if worked at low water periods by sluicing on about an 8 or 10 men basis it will make money. By ditching through the gravels on the north side of the Creek and building sluices at the lower end, diverting the creek thru

the gravels and wheeling into the sluices, a large quantity of gravel could be handled cheaply. When this is accomplished and the gravels worked out, the creek being permanently diverted, the present creek bottom could be worked and will yield payable quantities of coarse gold. The old Company could not handle the boulders, and did not have head enough from their nozzles to do the work required in hydraulicing. Their outfit was too expensive in operation for intermittent or seasonal work.

To summarize: The mineral holdings of the Kleanza Company must be considered as valuable assets. They certainly ~~merit~~ merit further development. They have, or will have, a speculative value at least many times their cost on the strength of the future development of the district. However, they do not merit any reckless expenditure of money. I believe at present the timber interests should supersede those of mining. And as money is available a careful systematic development of the claims along lines I have suggested should be inaugurated. The Company is in the most strategic position to profit by any other strike in the district. You have an excellent opportunity to pick up other claims of merit as they may come to notice. Such a one I have described to Mr. Willman which will cover an intersection of two ore bearing fissures on claims once held by the Great West and Ptarmigan Groups, but now reverted to the Crown.

Incidentally I suggest that this Company start a publicity campaign in the Usk district. By co-operating with other companies and prospectors here I believe that the Geological Survey could be persuaded to do some work here next season. It is badly needed. Too many interests here are working in the dark. The work I have done could have been accomplished in half the time with the aid of a map, even topographical, let alone geological.

I wish to acknowledge the assistance given me by Mr. Willman and Mr. Reid. They have accommodated me in every way possible in order to facilitate my work. I am also indebted to Mr. J.D. Wells for a great deal of information regarding the history and general geology of the district. I wish to recommend Mr. Willman's methods of handling the mining property. They seem to me proper in every way. His policy of conservative development and the acquisition of more property on a speculative basis I recommend be pursued at all times by the Company.

D.C. McKay, M.E.

Usk, B.C.  
July 20, 1922.