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Harley A. Sill Call

MINING
METALLURGY
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ORE TESTING
PLANT DESIGN
METALLURGICAL RESEARCH
ASSAYS & ANALYSES

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ITEM
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Mr. A. C. Jones,
1116 East 8th St.,
Los Angeles, Calif.

Dear Sir:

In accordance with your request, I herewith submit my impressions relative to the property of the Woodville-Justice Mining Company, which you and I have just visited.

Since the underground workings of the mine are not accessible, a consideration of the merits of the Woodville-Justice must be based on the records of the company during the time in which the mine was in operation, and the data available from the old workings of other properties on the Comstock Lode which are being re-opened by a number of operating companies.

As you have already studied the historical report on the properties of the Comstock Lode and one on the Woodville-Justice, it will, therefore, be unnecessary for me to go into the details of this famous gold and silver deposit.

In appraising the possibilities of the Woodville-Justice, consideration should be given to the recent development on some of the other properties of the Lode, the conditions of which are probably roughly analogous to those which we might expect in the Woodville-Justice.

The Arizona Comstock, situated to the north on the Lode, has been re-opened within the last year, as you are aware. You will remember that in the office of the company we were permitted to read the reports of four well known engineers on the tonnages available in that property. They showed an estimated tonnage of approximately one million tons of new ore and crushed stope filling with an average value of \$10.52 per ton on the basis of \$20.67 per ounce for the gold content.

We were extended the courtesies by the staff, of viewing these ore bodies and to see the development of new ore which was left in the former epoch of mining as non-commercial. You will recall that the mine superintendent stated that the values of the virgin ore which they are developing at the present time assays from \$29.00 to \$80.00 per ton over widths varying from 10 to 20 ft. Similar rehabilitation of other mines on the Lode is progressing but has not reached the advanced stage of the Arizona Comstock development although there are several mills in operation or under construction, having a capacity of from 50 to 200 tons per day.

The mining and milling costs of adjacent properties are important in determining the grade of ore that would be required in the Woodville-Justice to make it a profitable operation. In answer to my questions relative to this, the Mine Superintendent of the Arizona Comstock, Mr. Henry Foote, states that the mining costs approximate \$3.00 a ton. In answer to similar inquiries, Mr. McFarlane, the Mill Superintendent, gave the milling cost at \$1.00 a ton or a total of \$4.00 a ton for mining and milling. I later substantiated these statements in the mine office. The costs are based on the present tonnage of approximately 120 tons which are being milled on ore taken from development work and which I was given to understand assays about \$12.00 per ton. Based on this assay value and the stated costs, there should be an operating profit of more than \$20,000.00 per month on development work. It is my further understanding that a substantial increase is contemplated in the milling capacity upon completion of the development program.

The Woodville-Justice, according to the maps submitted by that company and verified by other maps found in a Virginia City mining office, show that the property is developed by two shafts, one the Woodville, and the other the Justice which in the early days of the Comstock Lode were separate properties but

later merged into one company called the Woodville-Justice. The records show approximately 15,000 feet of drifts and tunnels and that the Woodville shaft has been the source of the greatest production. It has been sunk to a depth of approximately 822 feet., while the Justice shaft some 1200 feet to the north has been sunk to a depth of slightly in excess of 1300 feet. The territory between these two shafts is developed by drifts on the 490, 622 and 822 ft. levels with additional levels driven to the south from the Justice shaft at the 952, 1100 and 1300 ft. levels.

The records show two filled stopes lying to the south of the Woodville shaft at a horizon between the 370 and 622 ft. levels with an estimated gross value of \$18.75 per ton or a total of \$2,812,500.00. This valuation was arrived at from 42 samples taken from stope fills on the 490 ft. level in the year 1899 and by the actual milling of a few thousand tons of the stope material which were treated locally.

In addition to this tonnage the old records of the company show an ore body of approximately 57,000 tons of developed ore with an assay value of \$20.18 per ton or a gross value of \$1,150,260.00. The valuation has been determined from 1,021 assays taken from the original Justice assay book and is based on \$20.67 gold. This assay book is reported to be in Virginia City in the

possession of Mr. W. J. Loring. As he was in San Francisco at the time of our visit it was impossible to personally examine the record of these assays.

At the Water Company's office I found a copy book showing daily Superintendent's reports from 1905 to 1911, many of which showed tunnels in \$12.00 to \$14.00 ore, with notation - "too low grade to mine".

I also interviewed Mr. Windish, who with his father operated this property as lessees for several years and during this time took out over \$150,000 in ore.

We were also able to examine one of the bullion record books of the Woodville-Justice Company which verifies the statements given in another part of the report and, therefore, gives some substantiation to the other statements relative to this mine. Only one of the bullion record books was available but it showed a production in excess of \$1,650,000.00 for approximately one and one half years' operation.

This is an indication of what was extracted from the mine during that period of time rather than what is left, however, sufficient work is in progress in the other mines on the Lode to verify the claims which have been made that only the higher grade ores were treated during the early epoch of mining and that the lower grade ore

bodies were left as non-commercial ore. The fact that this is being proven on other parts of the Lode, offers some basis for the belief that similar conditions exist in the Woodville-Justice.

In my opinion the value of the Woodville-Justice as a development project depends on the authenticity of the daily records which were kept by the staff of the company while its mine was in operation. As these records were more or less routine and were submitted by a number of different Superintendents who were successively in charge of the property and as they were made for the account of the company and not for public information or consumption I believe that we are justified in giving consideration to them as indicative of conditions as they existed.

From such data as I have been able to gather from the record books of the Woodville-Justice, from the operating conditions of adjacent mines on the Lode and from detailed questioning of men who worked in the Woodville-Justice, I believe that this property merits re-opening under what I term stage development. This mine, like all the others on the Comstock, had deteriorated due to long years of neglect and the Woodville shaft necessitated rehabilitation from the surface. The present Woodville-Justice Gold Mining Co. started the re-timbering of the shaft more than a year ago but I understand that thru the closing of a Nevada bank that their operating fund was lost and they were forced to stop

this work, after having completed the re-timbering with a three compartment shaft to a depth of 240 ft. In order to reach the top of the developed block of ore on the 490 ft. level, this shaft must be re-timbered an additional 250 ft. This would enable one to determine the accuracy of the daily reports which were kept by the staff of the old company. It would constitute the first stage in a development program and would probably cost approximately \$10,000.00. Various estimates have been given by local miners, varying from \$5,000.00 to \$7,500.00, however, due to the heavy ground encountered in other parts of the Lode I believe that the above factor of safety should be provided for.

With the completion of this first stage in the development, a decision could then be reached relative to the tonnages available and their values ascertained. There is an electric single drum hoist on the property with which to complete the re-timbering of the shaft.

Having determined the presence of the ore bodies and the fact that their values are commercial, the second stage of the development should be undertaken for the mining of the ore bodies. The cost of this development is dependent largely on the condition of the ground encountered in the ore body. It is certain that an air compressor will be required which will furnish sufficient air

for breaking a minimum of 150 tons of ore per day. A blower would also be required to furnish air to the underground workings. Timber for chutes and other mining purposes would be included together with cars, track and other underground mining accessories. Reconditioned equipment could be used for this work. A minimum of \$15,000.00 should be provided for equipment to mine the ore bodies proven in the first stage of the development program.

Having completed the first two stages preparatory to the operation of this mine, namely, the sampling and measuring of the ore bodies as the first step of the rehabilitation program, and the preparation of the ore bodies for extraction, the third and final stage would be justified.

This final stage would include a solution of the metallurgy and the erection of a milling plant adapted to the treatment of these ores. The cost of the milling plant is very elastic depending on the ability to purchase a used mill at a reasonable price. In no case should less than \$35,000.00 be provided for the erection of this mill. It is my opinion that at least \$50,000.00 should be provided for the erection of a treatment plant. The size of the mill naturally will have to be based on the amount of money available for its installation.

The foregoing development program is entirely provisional after the completion of its first stage and would not be undertaken unless the success of the preceding stages had assured a profitable handling of these ore bodies. Since there is no way of entering the mine to check the data gathered from the company records and the statements of men formerly employed in the mine, the first expenditure must be based on the acceptance of these records. Having kept similar records on many properties during my mining career I am inclined to give credence to the assay and bullion records and to recommend this investment provided it is carried on in a conservative stage development such as I have suggested.

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Yours very truly,

Harley A. Hill
Consulting Engineer.