

3
LOUIS GARBRECHT
Mining Engineer & Geologist
1201 Robinson Boulevard
El Paso, Texas, U.S.A.

Bland, New Mexico
September 27, 1932

Dr. J. J. de Praslin
210 1st Nat'l. Bank Building
Albuquerque, N.M.

Dear Doctor de Praslin:

Pursuant to your request I am submitting herewith my conclusions and recommendations on the business of the mines at Bland, which are now under option to you. These conclusions are based in part upon assays and other data contained in the reports by Barbour, Wilnot, Lookhart, Jenks and assay maps by J. Gordon Hardy, but chiefly upon my own investigation and geological observation while engaged in the active operation of these mines for the last three months.

I make the following estimate of tonnage and grade on the developed or highly probable ore on the various properties, as far as their accessibility and state of development permits such an estimate to be made:

Name of Mine	Tonnage	Oz.Au.	Oz.AG	Present Value per Ton
Lone Star	5,000	0.25	14.0	\$8.50
Iron King	2,500	0.15	12.0	6.00
Washington	250	0.35	20.0	12.00
Crown Point 1st Class	500	0.70	8.0	16.00
" " 2d "	1,200	0.38	1.0	7.75 (Cannot be sorted)
Laura S	300	0.60	32.0	20.00
Dumps	2,000	0.25	12.0	8.00
TOTAL	11,750 Tons			11.18

In the above gold is taken at \$20 per oz. and silver at 25 cents per oz.

INDICATED OR SPECULATIVE ORE.

The amount of additional ore that may be found depends upon two main factors: 1st, proving the downward extension of known ore shoots below the present lowest level and 2d, the number of new ore shoots that can be discovered on known and developed veins or on new veins. It is my belief that a larger percentage of additional ore will be found through the discovery of new ore shoots on known or new veins than by following the downward extensions of known shoots, although several ore shoots are known to persist below the present lowest workings. Only detailed geological work can determine whether re-occurrences of ore shoots, either vertically or laterally along the veins, may be found in the undeveloped sectors as well as new ore shoots on new veins.

One such ore shoot was recently disclosed by prospecting and it is highly probable that systematic prospecting in favorable areas will disclose other shoots provided geologic knowledge is properly applied.

Taking into consideration only the present known veins and those shoots which are known to persist downwards, we have the following estimate of indicated or speculative ore with grades interpreted or assumed;

Name of Mine	Tonnage	Oz.Au.	Oz.Ag.	Value per Ton
Lone Star	1,000	0.25	14.0	\$8.50
Iron King	2,500	0.15	12.0	6.00
Washington	3,000	0.20	12.0	7.00
Laura S. No. 1	500	0.60	32.0	20.00
Laura S. No. 3 (New Vein)	700	0.60	10.0	14.50 (Silver at depth)
Sunny South	1,000	0.10	20.0	7.00
Free Trade	300	0.15	24.0	9.00
TOTAL	9,000 tons			10.30

Gold is taken at \$20 per oz., silver at 25 cents per ounce.

Combining the speculative with the assured ore we have a total of slightly over 21,000 tons with an average grade of 0.24 oz. gold, and 12.9 oz. silver per ton. This tonnage does not represent the ultimate tonnage possibility of the mines, but represents all that can be allowed in the present state of development, or state of exploitation, as based upon our present knowledge of geological conditions. Further detailed geological study may increase the speculative tonnage considerably by adding both additional ore shoots on known or new veins. Such studies are recommended to be made.

The opinion is expressed or inferred in some of the reports on this district that the vertical persistence of the ore bodies is not great and that ore bodies on the Albemarle, Lone Star, Washington and Crown Point are bottomed in their lowest workings. Whether this is the case can not be stated, because all these lower workings have caved. However, the fact that exploration and exploitation ceased there seems to indicate that pay-ore could not be found. Only an examination of the lower workings could positively prove this.

That near-surface enrichment of gold values took place is natural. Also, that secondary enrichment of silver values occurs is evidenced in a number of places. Hence a decrease in values in the shoots with depth is to be expected. But that actual bottoming has occurred is a mooted question. All ore shoots examined show distinctive evidence that they were the loci of primary ore deposition. High grade ore of both silver and gold content is now being mined that is distinctively of primary origin, carrying blende, galena, Chalcopyrite and probably tellurides. All of these are generally conceded to be primary in origin. Since the grade is good, this is proof that ore shoots of straight primary ore are profitable without secondary enrichment and that, if values do decrease with depth, as contended, then this is as much due to a decrease in primary ore deposition as it is to lack of secondary enrichment. Not sufficient geological evidence was collected to permit an assertion that the primary ore deposition is shallow. Certainly, the vertical range of both gold and silver is normally greater than the depth attained by any mine, including that in the Albemarle, which is 700 ft. However, camps of shallow deposition of primary mineralization are known, although I have not yet sufficient evidence to state that this one is of that type, even though the presumption of evidence makes it appear so.

From geological evidence so far observed we know that the existing ore bodies of primary deposition consist of ore high enough in grade to be profitably treated, without any secondary enrichment. Hence bottoming, if it has occurred, is due to failure in primary deposition, although such shoots should be of economic grade as far down as the

-3-
secondary enrichment persists, regardless of the decrease in primary values. We have no accurate data on the depth of the oxidized zone in the various mines. THE Crown Point has primary ores right on the surface, yet Lockhart reports complete oxidation of the vein on the lowest level with low values. That is, I infer from his non-technical description of the vein that it is oxidized and heavily iron stained. If such is the case, we can reasonably count on a zone of secondarily enriched silver ore which should occur above the permanent water level of the property.

No secondarily enriched zone is reported to have been found in deep development of the Lone Star vein, which is the only mine, except perhaps the Albemarle, that has reached the permanent water-level. However, in the case of the Lone Star development work, it is known that this work was undertaken far to the south of the known ore shoot in a sector where no ore exists anywhere above it. So, the evidence so far gathered does not prove the presence or absence of a horizon at depth where high-grade, secondarily enriched silver should occur.

The ore is of a type that should be readily amenable to flotation treatment as most of the ore enumerated in the reserves is of the sulphide type, in a gangue of quartz. However, it is necessary to have metallurgical tests made on a carefully selected composite sample of these ores to determine the mill flow-sheet and treatment, fineness of grinding required and other necessary data upon which the proper design of the milling plant is predicated.

There is a slight difference in the character of the various ores, particularly between Crown Point and other ores. Over 90% of the values of the Crown Point ore consist of gold, whereas in the case of ores from other veins silver content is considerable, up to a maximum of 50% and over, figuring silver at 25 cents per ounce. In addition, analysis reveals that the Crown Point carries a little copper, from 0.06 to 0.10%. During the last few days I have observed in the mining of ore here that chalcopyrite content is getting stronger in places. However, I doubt whether the difference in the various types of ores is great enough to necessitate any modification of the flow-sheet designed for the composite sample of all ores, except in case it was found that cyanidation of the flotation concentrates was desirable, instead of shipping flotation concentrates to the nearest smelter which is at El Paso, Texas.

The gangue consists of a rather clean quartz, which averages over 98% in silica, according to Barbour. The metallic mineralization consists, in order of their predominance, of pyrite, blende, galena, tellurides and chalcopyrite. Analysis shows that antimonides are also present, probably due to the presence sulpho-antimonides of silver. The mineralization occurs in bunches, globules apparently disconnected, and in bands. No dissemination of minerals is very prominent, although some, particularly pyrite occasionally occurs as a dissemination. This is a favorable condition for treatment for it seems probable, therefore, that fine grinding of the ore is not necessary for good extraction of values. If it should prove preferable to ship concentrates to the smelter, rather than treat them locally in order to convert the gold and silver content to bullion, El Paso is near enough for the smelter treatment required to have this done at a reasonable cost of freighting.

In their present state of development and with the present ore reserves, the advisability of installing a mill with the necessary power unit is doubted, even if only a fifty ton plant, daily capacity, is contemplated. Further development should be undertaken so that at least a two year's ore supply is available.

The cost of a flotation plant depends upon two main factors: type or types of ore to be treated and size of mill to be erected. The type of ore to be treated, naturally, governs the flow-sheet, which may be simple or complicated according to the amenability of the ore. To a smaller extent the cost is also influenced by the location of the

mill with reference to its water supply, time of construction and other minor factors, Construction costs are invariably lower in summer than in winter, particularly if heavy snows have to be contended with. Taking all factors into consideration the cost of a mill with a simple flow-sheet will be around \$450 to \$600 per ton-day, more or less depending on its size, whereas, if the kind of ore requires a combination treatment, that is, a treatment of amalgamation, flotation and cyanidation of the whole or of part, the cost per ton-day may go up as high as \$1,000 or even higher, depending upon the intricacy of the treatment required and also again on the size of the mill contemplated.

Complex treatment with a small tonnage treated will increase the cost to perhaps \$1.50 per ton or higher, whereas an easily treated ore may have a cost as low as \$1.00 to \$1.25 per ton even for a small capacity plant. In your case it seems likely that the type of ore will come under the heading of "readily treated" or "average" type and therefore, an intermediate cost factor per ton treated will likely be attained.

The cost of mining will not be very low owing to the fact that mines are scattered and ore bodies relatively small both in length and, in some cases the mining width which is too small to permit mining of the ore without mining some of the wallrock along with it. This latter condition will also affect the dilution factor, making it larger. However, some sorting will probably have to be done anyway and excessive dilution would be held down by sorting. I estimate that mining on a fifty ton per day basis the cost of mining will be around \$2.50. This figure includes development.

If conditions are such that the immediate construction of milling and power plants is not warranted and a long term lease can be obtained, then the alternative of putting up, a "rawhide" plant presents itself; that is, assembling second-hand machinery for a 25 ton plant or larger. Even a small capacity plant can be made to pay, if run economically and a correct flowsheet for the treatment of the ore has been determined and is actually being carried out. In "Rawhiding" high efficiency is a secondary consideration to low capital expenditure.

In order to secure the time required to properly develop the mines, it is advisable to have the present option extended for at least two years. If this can not be effected, then a straight lease should be obtained on a royalty basis of 10% or less of the net smelter liquidation or net mint returns.

In the present state of development and tonnage indicated, you are not warranted in taking over the properties at the stipulated price. But if an extension of the option is granted, or if a straight lease is granted, I consider the properties of sufficient merit for development. If and when the mines have responded favorably to a well-planned and executed development program to the point where a plant of 50 tons daily capacity or larger is justified, the exercise of the option at the present price is warranted.

The degree of success that a small operation of this type will attain depends upon two factors, namely; the capability of the man in charge and second upon the freedom from interference and availability of funds in order to carry out any well thought out plan, if and when needed.

Should no extension of the option nor lease be granted, I recommend the elimination of all development work except such that will produce ore almost immediately. All outside expense not essential to the mining and transfer of ore should be stopped and all our activities should be confined to ore extraction at the highest rate possible under the existing conditions until the expiration of the present option. This is now actually being done.

Respectfully submitted,

(Signed)

Louis Garbrecht.