



CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

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District: Cerbat, Arizona.
Property: Highland Mining & Milling Co.
Location: In Cerbat Range, 6 miles East from Mineral Station,
9 Miles from Chloride, Mojave County.
Owners: Highland Mining & Milling Co., C.B. Bell, President
and General Manager, Kingman, Arizona.
Date Visited: October 25 - 28, 1922 by J. L. White.
Notes: Country rock, granite, gneiss, granite porphyry.

The property consists of some fourteen claims and fractions, all but three being patented. The property includes the Golconda Mine a zinc-gold-silver property which has been developed to 1400 feet on the incline and stoped continuously from 100 feet to 1200 feet.

The silver Group, upon which most of the more recent work has been done is owned by C.B. Bell and is held by the Highland Co. on an option.

The ore occurs in several more or less parallel veins in a granite porphyry and has a strike of N. 60° W. and dip 0 to 40° East of the vertical. These veins are very continuous and extend through the length of the property. The Golconda and Tub veins apparently being the Highland and Prosperity veins of the north end of the property.

The workings on the Silver Group were more closely examined than were other parts of the property and particular attention paid to the ore chute carrying some copper and but little zinc.

Silver Group: A series of five veins are partly developed by two cross-cut tunnels and about 4000 feet of drift. The upper or 100 foot tunnel, cuts two veins. The vein nearest the portal has been drifted on for 250 feet and some ore exposed. At 225 feet the second vein is cut and drifted upon for 1000 feet and a parallel vein cut south of the cross cut has been followed for 320 feet.

At the intersection of the vein by the cross cut a good copper-zinc-silver ore chute was found. This ore has been stoped for 140 feet in length and 25 feet in height. Near the south end of the working a stope 100 feet in length has been opened up and timbered and a little ore broken. A 50 lb. grab sample from this stope assayed .03 Au. 23.0 Ag. and .57% Cu. The ore was broken to about 4 feet in width. There is close to 300 feet of backs at this point.

The parallel vein shows a break in about the center of the drift, the north end having considerable zinc and south some chalcopryrite. It is possible that the break may be a junction of two veins and the copper streak may continue beyond in the foot wall.

Cut samples at the breast, 2 ft. width and for 50 ft. back, 2'8" - 3' - 3'6" - 5'6" wide combined in one sample assayed .02 oz. Au. 17.0 oz. Ag. .83% Cu.

Where the south cross cut intersected this vein a small stope has been cut out and it is said two carloads of 40 oz. silver ore were shipped. Two samples were cut, one at each end of this area; one sample appeared to be all waste; sample 4' wide assayed - 4.28 oz. Ag. .79% Cu. The back of the stope could not be reached.

At the break in the vein a winze has been sunk 40 feet. Two samples 5' wide assayed at 40 ft. .01 oz. Au. 6.35 oz. Ag. .59% Cu., at 20 feet .01 oz. Au. 7.93 oz. Ag. .50% Cu.

Recent car samples from 100 level are said to run -

Au. oz.	Ag. oz.	Cu. %
.02	12.2	-
.08	7.5	-
.08	13.04	1.94
.04	9.44	.90

The lower cross cut tunnel at 115 below the upper cuts the first vein and a raise on this vein connects with the 100 level. The second vein also is cut and a raise now used as an ore ~~sheet~~ chute connects with the stope above. Several cars of ore have been shipped from this point; one car of closely sorted ore is said to have run 300 ozl per ton. An indicator sample in the back of this stope assayed - .13 oz. Au. 39.93 oz. Ag. .37% Cu. At the south end of this level a showing of copper ore has been followed for about 225 feet. This is apparently the same ore found in the parallel vein on 100.

Two cuts taken at 20 and 30 feet south from the cross cut, 4' and 4'6" respectively and combined assayed, .03 oz. Au. 18.08 oz. Ag. .62% Cu. Grab sample from broken ore 0 to 20' south of cross cut, width 5 to 6' broken assayed, .01 oz. Au. 6.15 oz. Ag. .37% Cu. Car samples representing this drift are said to have assayed .06 oz. Au. 21.6 oz. Ag. 2.65% Cu. and .06 oz. Au., 23.44 oz. Ag. North from the cross cut samples were cut at 12' intervals and combined into samples representing about 50 feet -

			Au.	Ag.	Cu.
0 - 50'	No. from x-cut	5' 4" - 3' 6" - 2' 11"	Tr.	15.72	.91%
50 - 90'	No. "	5' 8" - 5' 6" - 4' 9"	.02	12.18	.66
50 - 90'	" "	" "	.02	10.74	.50
90 - 135'	" "	2' - 2' 10"	-	2.16	.41
135 - 155'	" "	2' - 2' 6"	.02	12.88	.46

All of the drifts on 100 and 215 levels appear to have ore of stoping width over 70% of their length but all ore not otherwise specifically designated is a zinc ore. Some 80 cars of this ore are said to have been shipped from the property by Mr. Bell and to have netted \$68,000 smelter returns.

The 215 crosscut continues beyond the second vein, 570 ft. to where it cuts what seems to be the Prosperity vein. About 100 feet from this point or 50 feet beyond the breast it is expected to cut the Highland vein 110 feet below a tunnel, 370 feet long on the vein. In addition to this tunnel on the vein there is a shaft said to be over 200 feet deep and now full of water. In the tunnel is a winze and a caved stope from which it is said leasers cleaned up some \$30,000. Mr. Bell claims to have sampled the shaft at 160 feet and found 4 feet of 29 oz. silver ore. A grab of the dumps here assayed, .02 Au. 7.26 Ag., .59% Cu.

The Prosperity tunnel is a drift on the Prosperity vein and has the same elevation as the 100 level cross cut. This tunnel connects with the Golconda workings on the 800 level. The tunnel is badly caved.

Although the samples taken underground were much lower than I had been given to understand by Mr. Bell, there seems to be a reasonable expectation of 10,000 tons of ore that will average much better than \$10.00 per ton in gold and silver and which can be called highly probable ore. The probabilities of developing more of this ore are very good. In addition, of course, there is a great tonnage of high zinc ore developed.

The mine is in very good condition and is being capably handled.

There is a dump of screening, 1500 tons (estimated) which

assayed .02 Au., 24.28 Ag. .59% Cu.

Surface Equipment: There are numerous small cottages and buildings sufficient to house a much larger crew than can be used for some time to come.

There is a 400 cu. ft. I.R. Imperial type compressor driven by an 80 H.P. Fairbanks-Morse gasoline engine; also a well equipped blacksmith shop and machine shop which should handle ordinary repairs.

There are a sufficient number of stoper drills and mounted jackhammers, also a 248 I.R. machine used in driving the 200 cross cut.

Miners are paid \$4.25 per shift. At present only 12 men are employed underground.

A new mill has been built to treat the ore. (See attached note by John Gray in this connection.)

The bin construction of the mill is entirely too frail in every particular and cannot be used to capacity. However, the bins are being reinforced as much as possible. The mill is ready to operate, although not 100% completed, and is only waiting for flotation reagents to start. The table end of the mill has been in operation until all slime and midling storage was filled.

Electric power is used entirely in the mill, power rate is said to be under 3¢ per K.W.H.

Mining should not be expensive and I believe that \$5.00 should cover the cost of mining and milling; concentration ratio should be about six to one.

Mining, milling, freight and smelter treatment should not exceed \$7.00 per ton, not including losses in mill and smelter.

With an assay office in operation and the mill under competent supervision, \$8.00 ore should break even.

Humboldt, Ariz.,
Nov. 6, 1922.

HIGHLAND MILL

- (1) General outline of treatment is -

Crush thru 16 mesh, hydraulic sizing followed by tabling; making finished concentrates and tails; middlings retabled without sizing or grinding. The secondary tabling of middlings from primary tables will produce concentrates which will be cleaned by further tabling, tails to waste and the middlings to ball mill then to flotation.

There will be two products - a copper-iron ^{lead?} bad silver concentrate and a zinc concentrate

- (2) Tonnage determined by the capacity of the second set of 30" x 14" rolls to crush thru 16 mesh screen.

Estimated capacity 100 tons per 24 hours.

- (3) Main weakness of system lies in discarding majority of feed after a single table treatment, but this can be remedied.

The ore calls for more refined work.

J.N.D.Gray.

Oct.26,1922

HIGHLAND MINING & MILLING COMPANY

DISTRICT: Cerbat, Arizona
LOCATION: 9 miles from Chloride, Arizona
OWNERS: HIGHLAND MINING & MILLING COMPANY: C. B. Bell, President and General Manager, Kingman, Arizona.
DATE VISITED: March 10th, 1923, by J. L. White.
NOTES: To Mr. G. M. Colvocoresses:

Acting upon your instruction I left Humboldt Saturday, March 10th and arrived in Kingman the same evening and met Mr. C. B. Bell, of the Highland Mining and Milling Company.

On Sunday we went out to the Company property and spent Sunday and Monday there. I returned to Humboldt on Tuesday.

On March 2nd, Mr. Rose, the Secretary of the Highland Mining and Milling Company, closed the property down as at that time he had only sufficient money to pay the men off.

On March 6th there was a meeting of the stock holders of the company, which lasted about three days and ended with nothing done.

The owner of the Middle Goloconda, Mr. C. B. Bell and Jas. Speed, served notice that the Highland Company must make a substantial payment or the lapsed option on the Middle Goloconda would not be extended. The Middle Goloconda property is necessary to the Highland Company. It contains all operating stopes.

On the part of the stockholders generally there appeared to be a general dissatisfaction, with the management of Mr. C. B. Bell.

The representative of the Eastern stockholders left for home March 9th and it is expected that some definite word will be had from them within a short time.

Mr. Bell left for Tucson to be gone two weeks or more.

Mr. Rose and three other men (stockholders) are left at the mine and they expect to clean up the mill and probably get out a small car of Concentrates. There is some high grade ore on the Dump which they expect to sort also.

Mr. Rose gave me to understand that local unpaid bills would amount to considerably less than two thousand dollars.

The bonds outstanding against the property with the unpaid interest amounts to over \$310,000. (There is little chance of bondholders forcing a foreclosure (Baker and Rose).

No effort was made to raise the \$30,000.00 promised by bondholders who visited Humboldt a short time ago. This was no doubt affected by the fact that the McCracken interests were sampling the Highland property in view of purchasing. This deal fell through, however.

The most prominent feature and greatest contributing cause for the present shut-down is the lack of sampling and assaying on the property during the past four months.

In the mine the ore was broken too wide, and waste was sent to the mill and only two sets of samples from the mill were assayed during its entire run.

In the Mine all of the backs which were sampled in October have been raised and stopes started. Timbering is in and everything is in fair shape for production. One drift was extended for 100 feet in ore and is also timbered for stoping.

The main cross-cut has been driven ahead and one vein cut. Evidently the Highland, where out found no commercial ore. The Highland vein was drifted on for 15 feet in either direction and looks much better in the faces.

After operating the mill for two days with the original flow sheet, the flow sheet was changed and a fairly simple one made. By changing the position of the flotation machines it can be further simplified and by increasing the ball-mill capacity the mill capacity will be increased in like proportion.

The capacity of the mill at present is sufficiently for probable production from the mine.

A little over 5,000 tons of ore were treated in the mill, altogether.

About 4.2 oz. of silver per ton were recovered. It is doubtful if the mill-heads could have averaged 6 ounces; concentration was about 10 into 1. 10 ounces of silver would be required to break even.

Without \$1.00 silver there is very little commercial ore in the mine.

During the last two weeks' run 65 tons per day were handled by the mill.

(Signed) J. L. White

HIGHLAND MINING & MILLING COMPANY

DISTRICT: Cerbat, Arizona
LOCATION: In Cerbat Range, 6 miles East from Mineral Station,
9 miles from Chloride, Mojave County.
OWNERS: Highland Mining & Milling Co., G. B. Bell, President
and General Manager, Kingman, Arizona
DATE VISITED: October 25 - 28, 1922 by J. L. White
NOTES: Country rock, granite, gneiss, granite porphyry.

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The silver Group, upon which most of the more recent work has been done is owned by G. B. Bell and is held by the Highland Co. on an option.

The ore occurs in several more or less parallel veins in a granite porphyry and has a strike of N. 60° W. and dip 0 to 40° East of the vertical. These veins are very continuous and extend through the length of the property. The Golconda and Tub veins apparently being the Highland and Prosperity veins of the north end of the property.

The workings on the Silver Group were more closely examined than were other parts of the property and particular attention paid to the ore chute carrying some copper and but little zinc.

SILVER GROUP:

A series of five veins are partly developed by two cross-cut tunnels and about 4000 feet of drift. The upper or 100 foot tunnel, cuts two veins. The vein nearest the portal has been drifted on for 250 feet and some ore exposed. At 225 feet the second vein is cut and drifted upon for 1000 feet and a parallel vein cut south of the cross cut has been followed for 320 feet.

At the intersection of the vein by the cross cut a good copper-zinc-silver ore chute was found. This ore has been stoped for 140 feet in length and 25 feet in height. Near the south end of

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Humboldt, Arizona,
Nov. 6, 1922.

HIGHLAND MILL

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Estimated capacity 100 tons per 24 hours.

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J.N.D. Gray.

Oct. 26, 1922.

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PROPERTY: HIGHLAND MINING & MILLING COMPANY

LOCATION: 9 miles from Chloride, Ariz.

OWNERS: HIGHLAND MINING & MILLING COMPANY; C.B. Bell, President and General Manager, Kingman, Arizona.

DATE VISITED: March 10th, 1923, by J. L. White.

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J. L. The D.