



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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*adjust
mining*

AW

Winkelman, Arizona.
August 1st, 1921.

The Board of Directors,
Adjust Mining Company,
Globe, Arizona.

Gentlemen:

Pursuant to the request of your President, Mr. O. R. McDowell, I have examined the property of the Adjust Mining Company and submit the following report thereon:

LOCATION.

The property is situated on Deer Creek, in the Saddle Mountain mining district, Pinal County, Arizona, about three miles from the Christmas station of the Arizona Eastern Railroad.

GENERAL DESCRIPTION.

This group of claims embraces an area of approximately two hundred and fifty-eight acres of lode claim locations, consisting of twelve full claims and one fraction. The names of the locations are: Silver Dollar Nos. 1, 2 and 3; New York; Manhattan; Midway, Silver League, 96; Adjust Nos. 1, 2 and 3 and Blue Bird Fraction. The accompanying sketch illustrates the general shape of the group, relative position of the claims to each other, and the position of the more important veins.

The camp of the company lies about a mile and a quarter south of the property on Ash Creek. It consists of the General Manager's and Mine Foreman's houses, an office and book-keeper's quarters.

A road extends from Gold Gulch, one half mile south of the property, through the company's camp to Winkelman, about seven miles. Here it connects with State and County highways to Phoenix, Tucson, Globe and Ray.. An old road, now badly in need of repair, extends from the highway near Christmas, up Deer Creek to the property, about two and one-half miles

Although in a region of deep canyons, good mill sites are available. Deer Creek flows through the property and runs about three months in the year. A shaft, located in this creek, some three hundred yards east of the property, has shown a permanent water supply, even during very dry seasons. This seems to indicate that there will be little trouble in developing an adequate water supply for a mill. However, it may prove desirable to locate a concentrator on the Gila River near the railroad, because of the excellent opportunity offered for cheap transportation by aerial tramway from the mine to this point, an airline distance of 8000 feet, with a drop of 700 feet in elevation.

HISTORY.

Considerable ore is said to have been shipped in the early eighties from the No. 1 shaft on the Blue Bird vein, and from the old workings on the north side of Deer Creek. Old miners of the district state that this was packed to the Dripping Springs valley, and from there hauled in wagons to one of the little mills in the basin north of Globe.

The table below shows the smelter returns from 641 tons of ore

shipped from the Blue Bird vein during the last twelve months. This ore contained 31,635 ounces of silver and 99.5 ounces gold. The smelter returns from 555 tons shipped to the Hayden plant of the American Smelting & Refining Company show a net value of \$23,328.00, an average of \$42.02 per ton. The total cost, shown in the table of estimated costs, averages \$19.20 per ton, leaving a net profit of \$22.82 per ton. The ore from your property has generally been treated at the copper smelter at Hayden, which is ten miles by railroad from the loading station at Christmas. Freight charges are forty cents per ton on the minimum lot of thirty tons. The ore is packed by burros down Deer Creek three and one half miles to the Christmas station.

Since the closing of the smelter at Hayden; your company has shipped two cars to the lead smelter at El Paso. Although this contained higher grade ore than the average shipped to Hayden, less profit per ton was obtained from them. This is due to the difference in smelter rates and the increased cost for freight.

- TOPOGRAPHY AND GENERAL GEOLOGY -

The topography of this district is very rugged, and affords an excellent opportunity for inexpensive development at depth. The prevailing country rock is a fine grained andesite tuff or tuffbreccia. It varies in color from dark greenish to reddish gray, and is cut by many porphyry dikes. Some of these are light colored; coarsely crystalline quartz monzonite or quartz diorite-porphyrries, many of which show considerable decomposition at the surface. Others are dark gray andesite porphyrries, containing hornblende phenocrysts of varied sizes. F.D.Ransome describes this district as an area of somber-colored hills, composed of andesite tuff, which may consist in part of lava flows, but in the main is an indurated more or less decomposed tuff or tubbreccia, traversed by many dikes of andesite to dioritic or monzonitic character. According to him, the quartz monzonite and quartz diorite-porphyrries occur extensively over this area as well as the Ray Quadrangle, as dikes, sills and small intrusive masses, and the ore deposits on the quartz diorite-porphyry, while the hornblende andesite porphyrries are restricted to the andesitic areas and belong to the same epoch of eruptive activity as the tuffs.

M.R.Campbell in his report on the Deer Creek Coal Fields which lie several miles east of the Adjust property, assigns the andesitic rocks to the later Cretaceous or early Tertiary periods, and describes them as overlying Cretaceous sediments which thin rapidly to the westward, while in the Ray Quadrangle they lie directly on the Carboniferous limestone. Both Ransome and Campbell estimate that this andesite has a probable thickness of 1000 feet.

- ORE DEPOSITS -

The ore deposits occur in well defined fault-fissure veins in the andesite. They roughly parallel the dikes and dip steeply to the North. Mineralization extends only a short distance into the walls which show a clayey gouge and slicken sides.

The main values are gold and silver, silver being the more important. Below the oxidized zone these are found closely associated with pyrite (iron sulfide), sphalerite (zinc sulfide) and galena (lead sulfide). Of these, the pyrite and sphalerite will undoubtedly be found the more persistent with depth.

The veins contain a large amount of quartz with considerable heavy spar and calcite. They vary from two to fifteen feet in width with a general average of about four feet, and are filled with a soft low grade material of altered andesite, and with highgrade quartz lenses which average eighteen inches in width. These high grade lenses vary from narrow stringers, in some places, to the entire width of the vein in others.

Oxidation has reached a depth of from 25 to 50 feet. The oxidized zone contains much limonite and gipsum, with which quartz and calcite which show many cavities due to leaching out of the sulfides. Native wire silver is found deposited on the sulfides in the Blue Bird vein. This vein shows considerable post-mineral fracturing which combined with the fact that the water level must be fairly low here, may make for an enriched zone of considerable depth.

Assays of the galena show silver values of from twenty-five to two hundred ounces, of the sphalerite twenty-seven to eighty-nine ounces and of the pyrite seventeen to fifty ounces.

- DEVELOPMENT -

The most important development work is on the Blue Bird claim and consists of:

- (1) 1500 feet of tunnels, winzes and raises.
- (2) Smaller amount of stoping and open cuts.

Ore produced from these workings during the past year is as follows:

Tons	Oz. Silver Per ton	Oz. Gold Per ton
750 tons (shipping ore	49.5	0.16
2000 " (#2 tunnel dump)	5.0	0.02
350 " (1 " ")	12.0	0.08
50 " (#4 " ")	12.0	0.06
200 " (#5 " ")	7.0	0.04

This is a very favorable showing, in view of the amount of work done by your company, and the question naturally arises as to whether the values will continue with depth and along the veins.

The Blue Bird vein outcrops in a gentle curve, readily traceable along the entire length of the two claims. Assays taken from the outcrops west of the present workings show values of from \$7.00 to \$30.00 per ton in gold and silver.

A number of cuts and tunnels driven on the other veins throw considerable light on the extent of mineralization. The veins on your property and many of the veins on nearby claims show long and persistent ore shoots, and some of them like the Blue Bird vein contain relatively high grade ore on or near the surface. In the ore shoots there will undoubtedly be a secondary enriched zone which may be some considerable depth, and it is probable that the primary sulfides below will be of workable grade. Assays show that the ore shoots carry higher silver values in the lowest workings than in those above. From this evidence it is reasonably certain that the ore will continue both along the Blue Bird vein and with depth; also that there can be opened up another veins that will add materially to your ore reserves.

The low cost at which this property may be developed at depth is one of its strong points. It is possible to obtain a depth of several hundred feet below the present workings by means of tunnels and cross-cuts. Another thing bearing on mining costs is the fact that the higher grade ore occurs in shoots which can be mined separately from the rest of the vein.

In discussing the finding of new ore bodies at depth, it should be mentioned that the quartz diorite-porphyrries, which are responsible for the more important deposits in the Carboniferous limestone at Christmas, the London-Arizona and 79 mines, cut the same favorable formations beneath the andesite on this property;

In the development of your property a large tonnage of low grade ore will be opened up, which cannot be handled profitably

except by some method of concentration.

While it is true that every mine must determine the flowsheet best adapted to its own particular ore, still, in general it may be said that the treatment of all similar ores is somewhat the same.

Many of the small mines in Idaho are successfully milling galena-spalerite ores containing silver, and are producing a clean lead-silver concentrate and a separate zinc concentrate. The Broken Hill mines in Australia have also successfully treated the same type of ore, I cite these cases merely to show that the lead-zinc ores can be profitably milled.

At present development should be carried out as outlined below to determine the size and nature of any such reduction works.

- ORE RESERVES -

In your present workings, you have developed approximately 18,000 tons of ore which will average 14 ounces silver and 0.05 ounces gold. By sorting and mining only the high grade lenses, you could produce about 3,000 tons as good as the average which you have shipped.

- RECOMMENDATIONS -

1. Development work.

(a) Blue Bird vein. The proposed development of this vein is graphically represented on the enclosed longitudinal section.

1. Continue #2 tunnel, connecting by raise and #1 winze, until under west end of #4 tunnel and as much farther as the proposed upper tunnels show presence of suitable ore shoots.
 2. Connect #2 raise to surface at #2 open cut
 3. Continue #3 raise to the surface.
 4. Continue #4 tunnel east to connect with LW raise and west until under #3 open cut, connecting to the surface by a short cross-cut at C.
 5. Continue #5 tunnel to the surface below open cut #4.
 6. Sink at least four winzes on #2 tunnel at suitable intervals on the best ore shoots. Should these ore shoots be found satisfactory, drive proposed #6 tunnel at 100 feet lower elevation.
 7. West of present workings, start #3 tunnel at #3 open cut and continue westward until near the surface on the west end of the claim, driving raises and winzes at suitable intervals on the best ore.
- (b) Other veins. The other veins are less extensively developed but show the same general characteristics and are worthy of further exploration.

An assay on a small ore shoot in the discovery shaft of the Silver League showed 47.6 ozs. silver and 0.24 ozs. gold. At another point about 400 feet from the east end of the claim an assay of the best ore from the outcroppings contained 8.7 ozs. silver. Other assays indicate that nearly all the leached croppings show smaller amounts of gold and silver.

Prospect shafts or open cuts should be used to develop the ore at such favorable points and should good ore shoots be encountered, considerable depth can be reached by tunnel from the west end of the claims.

The shaft on the New York claim is down 50 feet and shows values its entire depth over an average width of eighteen inches.

This ore can be cheaply developed by connecting the tunnel which has been driven from the west, with the bottom of the shaft.

Assays taken from the New York and Manhattan claims are as follows:

1. Best grade of ore from 50 foot shaft on New York claim 30.3 ozs. silver, 0.04 ozs. gold.
2. Across twenty eight inches eighteen feet down the 50 foot shaft on New York claim, 9.4 ozs. silver, 0.06 ozs. gold.
3. At bottom of 59 foot shaft on New York claim, west end, ten inches wide, 6.0 ozs. silver, 0.03 ozs. gold.
4. Across ten inches on hanging wall of 30 foot tunnel near discovery shaft on Manhattan claim, 18.4 ozs. silver.
5. Across eight inches in discovery shaft of the Manhattan claim, 74.8 ozs. silver, 0.96 ozs. gold.

The topography of both of these claims admits of several hundred feet depth by means of tunnels and this method should be used to explore these veins.

General.

1. Installation of a small compressor near #1 shaft, to operate power drills on all faces.
2. Tracks laid in the tunnels as they are driven, and ore chutes and manways constructed where stopes are situated.
3. As soon as sufficient ore has been proven by development, accurate mill tests should be run to determine the type of mill required.

Operation.

1. Accurate records, based on careful sampling, assaying, and detailed assay maps, should be kept of all development work.
2. In carrying the development work westward on the Blue Bird vein, the face of each tunnel should be kept well in advance of the next one below.
3. Ore sorting should be done in the stopes, when practical, and the waste used as filling.
4. When completed, this work will have opened up, at the most favorable places on the Blue Bird vein, ten times the amount of ground that the present workings do.

- CONCLUSIONS -

This examination of your property has given me a favorable impression of its mineral possibilities. We well defined veins and persistent ore shoots, with the possibilities of low development and transportation costs, are some of its especially strong features. The carrying out of the above recommendations under a competent and conservative management, should result in the development of a large additional tonnage that will be very profitable to your company.

Respectfully submitted

Winkelman Assay & Engineering Co.
Examining Engineer.
(Signed) C.L.Orem.