

Socorro Canon

*SAME AS MOSUL
GROUP*

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A REPORT
on the
MONITOR GROUP OF MINES
WATER CANON, NEW MEXICO

By

C. T. BROWN

silvermine, which is Water Canon, New Mexico

LOCATION:

The Monitor Group, consisting of eighteen mining claims, each 600 x 1500 feet, as follows: - Minerva, Maud Muller, Maud, Ida Hall, and Monitor Nos. 1 to 14 inclusive, is located principally between Copper Canon and North Fork Canon, both tributaries of Water Canon, in the Silver Mountain Mining District, on the east side of the Magdalena Mountains, Socorro County, New Mexico, five miles from Water Canon Station, on the Magdalena Branch of the Santa Fe Railroad (see map). There is a good auto road from the railroad to the Ida Hall claim, and a nominal expense would place the road up North Fork Canon in good condition.

TITLE:

The title is vested in The Silver Mountain Mining Company by virtue of mining locations held by a full compliance with the United States and local mining laws.

GEOLOGY:

The property is located on the main mineral belt of the Magdalena Mountains, on which are located all of the producing mines of the district. The geology of the district is uniform its entire length and applies to the Monitor group in all details, as follows:

The underlying formation is pre-Cambrian quartzite, locally known as greenstone, which is nonconformable to 100 feet of crystalline limestone lying on it. The thickness of the limestone is very regular throughout the district. It is divided nearly in the center by a stratum of impure limestone, containing two to three per cent of carbonate of magnesia, locally known as the

silverpipe, which serves as a reliable marker, enabling the engineer to correlate the different horizons of the crystalline limestone. The upper half of that belt is known as the upper crystalline limestone, and differs from the portion below the silverpipe by being very silicious, frequently containing a large amount of chert, while the limestone below the "silverpipe" is free from chert, and is known as the lower crystalline limestone, twenty feet of it, lying next to the silverpipe, is very pure, and is burned into quicklime for building purposes. ("See Typical section, The Upper Crystalline Limestone, being marked "U.C.L.". The Silverpipe as "S.P.", the lower crystalline limestone as "L.C.L.", the lower shale as "L.S.", the lower quartzite as "L.Q.", the upper shale as "U.S." and the upper quartzite as "U.Q.")

Lying on the limestone is, what is termed, the lower shale, varying in width from one to thirty feet, but averaging about twenty feet, then the lower quartzite from six to thirty feet in thickness; then the upper shale, about twenty feet thick; then the upper quartzite about fifteen feet, - at places much thicker; then alternating series of limestone, shale, and quartzite, aggregating a total thickness of approximately 1000 feet. Owing to erosion the entire thickness of the sedimentaries is only exposed in two or three places in the Magdalena district. The strike of the sedimentaries is normally N. 30° W.; dip 35° to S.W.

FAULTS:

There are two systems of faults, known as the "North and South, and the East and West." As a matter of fact some of the N-S faults vary as much as 30° W. and 30° E., and some of the E-W faults vary as much as 45° E. of North, and 45° W. of South.

The N-S faults are the oldest, all having been displaced more or less by the E-W faults. Their displacement varies, but seldom exceeds 50 feet. The displacement of the E-W fault is sometimes only a few feet, but there are cases on both the east and west sides of the mountains where the displacement is over 500 feet.

DIKES:

Numerous dikes, some of them very acid, and others basic, cut the sedimentaries at various angles, the strike, as a rule, being northerly and southerly; a few of them, however, run nearly east and west.

PRODUCTION OF THE MAGDALENA DISTRICT:

The Magdalena Mining District is one of the oldest and is the largest lead-zinc-copper producing districts in the State. The production has been continuous since the first discovery of mineral in 1867 by U. S. Soldiers stationed at Pueblo Springs, one mile from the present town of Magdalena. The district is still active. The estimated production up to date is around fifty million dollars.

ORE OCCURRENCES OF THE DISTRICT:

There are three recognized ore horizons in the Magdalena district as follows: The upper, sometimes known as the West vein, near the top of the upper crystalline limestone, occasionally on the contact of that limestone and the shale, but as a rule from two to six feet below the shale. The middle or main ore horizon occurs immediately under the "silverpipe", replacing the lower crystalline limestone commercially sometimes for twenty feet below the silverpipe. The lower ore horizon is on or near the contact of the lower crystalline limestone and the greenstone (see Typical Section).

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The ore depositions can all be traced to the direct influence of faults and dikes, some places to one, and at others to the influence of both faults and dikes. It is safe to say that if there were no faults or dikes in the Magdalena district, there would never have been any commercial mining there. The ore occurrences and the geological factors controlling them are an open book. The causes governing the mineral deposition in every stope can be readily explained.

The faults displaced the original position of what is termed the ore horizons of the mineral-bearing limestone, forming benches which often acted as the bottom of a lake, or a trough between an ore horizon and a dike, in both cases, empounding the mineral laden solutions, causing them to precipitate their mineral content, replacing the crystalline limestone with mineral, in places from the lower side, on the greenstone up through all of the series, to the shale, a distance of 100 feet, all of which has been mined and shipped.

The above general geological conditions exist throughout the district, and in developing new ground the engineer profits by the results in the older mines of the district.

HISTORY:

The early mining in Water Canyon was for silver and gold. The ground now covered by the Maud Muller and Ida Hall was located in 1880 and worked to some extent, principally for gold. A small mill was built on the Jane Bowman, now known as the Ida Hall, in 1885, and the property worked for silver and gold for about a year.

Some prospecting was done on what is now known as the Monitor No. 11, in the fall of 1885, and a small shipment made to the Socorro Smelter, which, according to reports, contained over

\$26.00 silver and gold. A shipment of ore was made at the same time from what is now known as the Minerva, then known as the Mugwump.

A three-stamp mill was installed in North Fork Canon in 1894 to work gold ore from the Columbus and Gettysburg claims, now the Maud Muller and Minerva. Some gold bullion was recovered, but the gold content was too low to operate commercially for that mineral alone and work was suspended.

In 1909 two holes were drilled with a churn drill on the Monitor No. 11; Hole #1, on the north side of the canon, reached the greenstone at 237 feet, passing through 39 feet of sulphides, principally pyrite which assayed 3% lead, 1% zinc, 4 oz. silver and .03 gold. (In this connection it is well to mention that lenses of pyrite ore are common in the stopes of free ore in the district.) Hole #2, on the south side of the canon, 300 feet south of No. 1 reached the top of the crystalline limestone at 200 feet, and went through 12 feet of milling lead and zinc ore, when the hole became crooked and drilling was discontinued.

DEVELOPMENT:

There is approximately 2000 feet of work on the group, most of it done before the geology and conditions controlling the ore deposition had been worked out, consequently the best results were not obtained. The greater portion of the development is in two tunnels on the Ida Hall. The face of the upper one is approaching promising ground in the north end of that claim. There are several shallow shafts and cuts on the east end of the Maud.

The earliest work, aggregating 350 feet, in that portion of the district, was done on the Maud Muller.

There is about 300 feet of tunnel work on the Minerva, done during the past few years, which is of great benefit to the

property as a whole, as it demonstrates the best system of future development, which will be taken up later.

CHARACTER OF ORE & OCCURRENCES

The ores of the west side of the Magdalena Mountains (in the Kelly Camp) are principally zinc, lead, and copper, some of them thoroughly oxidized and others as a sulphide, with very little silver and practically no gold, except in the Stonewall claim, which has produced more gold than the entire west side of the Magdalena range. The gold occurring with the lead ore, near an acid dike, which no doubt accounts for its occurrence.

The geological conditions of Water Canon in general and the Monitor group in particular, are identical with those existing on the west side of the mountains except that there are more intrusions in Water Canon (see dikes on map) which, no doubt, accounts for the general occurrence of gold in the properties in Water Canon.

While the middle or silver pipe ore horizon is as a rule considered of the most commercial importance, the ore showing above the silverpipe on both sides of the canon on the Monitor No. 11 and the developments on the shale contact (west vein) in the tunnel on the Minerva, indicate that the largest ore production on the Monitor Group will be found in the west vein, on, or near the shale contact.

The five dikes, from 40 to 80 feet in width, that run the entire length of the group are, as is already demonstrated by the limited work on the property, favorable for ore deposition. The smaller dikes, of which there are many, no doubt also exert an important bearing on the ore depositions, as is shown by the work on the Maud Muller, and more particularly in the crosscut to the west from the Minerva tunnel where commercial ore was encountered in the upper crystalline limestone between a small dike and the shale.

The two large dikes, one running across the Ida Hall, Maud, Maud Muller, and Monitor No. 11, and the other across the Monitor Nos. 1, 2, 6, 7 and 12 are the only ones that interest us at present, as it will be a long time before the ore horizons of the crystalline limestone will be followed down to the intersection with the three upper dikes.

The ground embraced by the Minerva and Monitor No. 11, and a portion of Monitor No. 12, is particularly favorable for deposits of lead, zinc and copper ore, with commercial gold and silver values. The ore will probably be partially oxidized for the first 300 feet from the surface gradually running into a straight sulphide.

CONCLUSIONS:

Considering the ore already developed in the upper crystalline limestone on the Monitor No. 1 and Minerva, and the proximity of the contact of that limestone and shale with the dike on the Monitor Nos. 7 and 12, there is reason to expect several shoots of commercial ore on or near that contact between the North Fork Canon and the face of the crosscut from the Minerva tunnel.

RECOMMENDATIONS FOR DEVELOPMENT:

In view of the fact that the ore on the shale contact in the Minerva tunnel cannot be followed down on account of water, I recommend starting a tunnel in the canon on the Monitor No. 11 (see map) and drive it south 20° west to the contact of the upper crystalline limestone and shale, then follow that contact south to the NE-SW fault, something like 175 feet south of the ore on the contact, in the Minerva tunnel; also to drive crosscuts every 200 feet east to the silverpipe. Any ore developed in driving the tunnel or crosscuts to be followed in addition to the main work.

developed before the tunnel reaches the shale contact.

The proposed tunnel will be approximately 1200 feet in length. It has a vertical depth of 250 feet below the portal of the Minerva tunnel and would strike on the dip of the limestone strata about 450 feet below the tunnel, depending on changes in the dip of the strata, and would prospect the contact of the ore horizons with the dikes above mentioned - a most important factor.

In order to do the above work economically, it would be advisable to install a not less than 2-drill compressor.

I recommend the above work as a development proposition.

Respectfully,

C. T. BROWN

Mining Engineer

Socorro, N. M.,

Aug. 23, 1920.