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SUMMARIZED REPORT
on
MILL CANYON MINES
owned by
MAJESTIC MINES CORPORATION

LOCATION

The property of the Majestic Mines Corporation is situated in Mill Canyon in the Cortez Range of Mountain near the western border of Eureka County, Nevada.

Mill Canyon lies on the north slope of Mt. Tenabo about thirty two miles south of Beowawe. About two miles further south and lying on the southern slopes of Mt. Tenabo is located the Consolidated Cortez Silver Mines which started operations in 1836 and is still operating today, having a record production of over fifteen million dollars.

The altitude of the Majestic Mines ranges from around fifty five to seventy five hundred feet above sea level. The climate is mild and mining operations can be carried on throughout the year. There is a flow of water in Mill Canyon ample for all purposes.

GEOLOGY

Mill Canyon, on the north slopes, and Cortez, on the south slopes of Mt. Tenabo, are both part of the same general district and the geological formation in each place is of a similar nature, being composed of limestone and quartzite intruded by granite rocks and porphyries. In the Mill Canyon section there has been much movement and breaking up of the formation resulting in extensive mineralism in this part of the district. The work done in Mill Canyon Mines has been of a superficial character and the ore bodies so far found have not been so large or important as those found at Cortez. With properly directed exploration on it the chances are most favorable for the finding of large ore bodies perhaps of equal importance as those of Cortez.

There are two types of ore bodies:

- (1) Replacement in Limestone, and
- (2) Fissure Veins.

The economic minerals are Gold, Silver, Lead and Zinc with a little copper; these minerals being associated with iron sulphides.

MINES

The property consists of over eight hundred acres of mining claims, including the following groups:

Crescent Valley Mines	8 claims
Mt. Tenabo Mines	8 claims
Victory Group	4 claims
Bullion Hill Mine (pat)	9 claims

(1)

109
ITEM
37

Mahoney Gold Property 15 claims

These claims all adjoin and extend in a southerly direction up both sides of Mill Canyon with the southern boundaries almost adjoining the north end lines of the Cortez Consolidation which cross over into Mill Canyon.

CRESCENT VALLEY

This group of claims is located at the mouth of the canyon on the northeast side and in line with the Mt. Tenabo claims. To the south ore croppings have been developed on the Crescent Valley claims by tunnels and shallow shafts showing assay values ranging from Seventeen to Thirty-Four Dollars per ton in Gold, Silver and Lead. This ore zone is undoubtedly a continuation of the ore zone opened up and explored in the Mt. Tenabo ground. For a detail description of the property reference is made to W. A. Pray's report dated April 26th, 1919, and attached hereto.

MT. TENABO MINES GROUP

Coursing through the Crescent Valley group of claims and for forty-five hundred feet through Mt. Tenabo ground and then continuing in a southerly direction through the length of Mill Canyon on over into Cortez is a massive body of quartzite lying on top of the limestone. On the Mt. Tenabo property a porphyry dike is intruded between the quartzite and the lime. It is on this quartzite lime contact that the ore bodies of the Cortez Mines are formed and it is also along this formation in the Mt. Tenabo group that the most important ore bodies may be expected. The production from the property has exceeded Two Hundred and Fifty Thousand Dollars from two ore bodies in the limestone several hundred feet removed from the quartzite contact. Both of these ore-shoots dip into the mountains at an angle of about 30' toward the quartzite lime contact. The Falconer ore-shoot has been followed down five hundred and twenty feet of its dip and is still in good ore. Development of this shoot of ore on its downward extension will be continued.

In the Ervin working higher up the mountain two different ore deposits have been opened up.

(1) Large chamber like deposits of sulphide ores containing gold, silver, lead and zinc occurring as replacements in the limestone above and at some distance from the contact of the limestone with the underlying grano-diorite.

(2) Large lenses of highly oxidized and leached low grade ore, assaying from Two to Six Dollars per ton have been exposed at intervals along the lime-quartzite contact. In one instance the oxidized ore extends along the contact for two hundred and fifty feet and up to a fifty foot width. This oxidized ore is probably the capping of sulphide ore below and the extensive leaching indicates a possible enrichment at a lower horizon. Development of these ore exposures below the limit of oxidation is likely to encounter large tonnages of milling grade sulphide ore.

Old stopes in the Ervin workings, now accessible, indicate that between ten and fifteen thousand tons of sulphide ore have been mined and which is said to have averaged Seventeen Dollars per ton. The lower Ervin tunnel, driven to cut the ore about two hundred feet lessers cross-cut a short distance from the tunnel level and encountered the ore going down below the tunnel level. At this point the ore has been exposed for a length of forty feet and a width of from eight to twelve feet. A winze has been sunk from the footwall of the ore body to a depth of forty feet all in ore. Samples taken twenty feet down the winze on the northeast side assayed \$4.80 gold, \$8.70 silver, 5% lead and 6.5% zinc, or a total of \$24.00 at current metal prices. At the same depth the southwest side yielded \$8.00 gold, 18.2 ozs. silver and 3% lead, and on the opposite side \$8.68 gold, 11.58 ozs. silver and 3% lead. This ore exposure is impressive. The worked out portion immediately above shows that the ore-shoot tends towards a greater length as it goes down. Further development at the point will undoubtedly block out a large tonnage of ore of approximately the value as indicated by the assays quoted above.

The ore outcrops, consisting of broken iron oxides, lime and silica seen on the Ervin and Falconer workings, cross to the southwest side of the Canyon and are boldly exposed running through the center of the Eagle claim where, for a length of a hundred and fifty feet and a width of twenty to thirty feet, values of from three to six dollars per ton are obtained. Other similar exposures will probably show the same residual values. Underneath these leached outcrops there will, in all probability, be found equally large bodies of sulphide gold, silver and lead ores of commercial grade.

On the Eagle claim is also a well defined quartz vein two to five feet wide and carrying sulphide of silver, lead and iron. This vein runs from twenty to forty ounces in silver and three per cent lead. Some Hundred and Fifty Dollar ore has been shipped from this claim, which has produced over Forty Thousand Dollars.

VICTORY

This group joins the Eagle claim to the northeast and the Bullion Hill on the south. Eight parallel veins run into these claims, two of which have been exposed by open cuts two hundred and fifty feet

long, six to eight feet wide and fifty feet deep. All the ore between the walls of these cuts was shipped as treated in the old mill in the Canyon. A tunnel a thousand feet long driven from the Eagle claim would come under these claims to a depth of six hundred feet and allow of prospecting eight veins as well as providing a convenient means of opening up the north end of the Bullion Hill. The Victory group can be expected to produce considerable tonnages of milling ore.

BULLION HILL

Bullion Hill mines are an important unit in the Majestic Mines Corporation holdings. High grade ore to a value of Two Hundred Thousand Dollars had been shipped from this property. The ore occurs in well defined fissure veins in grano-diorite and in general is of a higher grade than found in other parts of the company's ground. These veins are of great persistence and can be traced for long distances by outcrops and surface cuts.

The three main veins from which ore has been shipped are Aurora, Rhoda and Harrison.

Development work done to date indicates that the Aurora is the most important of these veins.

The Aurora vein averages from two to eight feet wide and the ore mined averaged around Forty Dollars per ton with high grade shoots yielding a very much higher assay value. New development work in the water tunnel on the Aurora vein can start in ore assaying around Sixty Dollars per ton. By driving the Bullion tunnel ahead a hundred and fifty feet the Aurora vein will be reached at a point two hundred and fifty feet below the water tunnel.

The Rhoda vein occurs at the contact of a porphyry dike and grano-diorite. The porphyry dike is about four feet wide and is said to assay fifteen ounces of silver per ton. A shaft was sunk on the dip of the vein to a depth of two hundred forty feet in a short shoot and the ore stopped from the bottom to the grass roots. The shaft became dangerous and work continued at this point in favor of development through the Bullion tunnel. A crosscut from the Bullion tunnel- then a raise of about a hundred and twenty feet below the water tunnel, would open up this high grade Rhoda ore again.

The Harrison vein is a strong, persistent vein about six feet wide and carrying more lead than either the Aurora or Rhoda veins. It will also be developed through the Bullion tunnel.

Production from the Bullion Hill group can begin in a short space of time and at little expense. There is about eight hundred tons of ore on the dumps assaying between Seventeen and Twenty Dollars per ton, and a considerable tonnage of this grade of ore is indicated but not blocked out in the mine. Development work on this property would begin in ore with an excellent chance of encountering high grade shipping ore.

MAHONEY GOLD CLAIM

Strong outcrops of highly oxidized material traceable over four hundred feet in length and returning high assays in gold. At one point a shaft was sunk in the dip of the vein to a depth of a hundred and ten feet and this shaft is said to be all in ore. At the time of my visit the shaft was filled with water to within forty feet of the surface. At this point the vein was eight to twelve feet wide. A sample taken across eight feet on the west side of the shaft assayed \$18.38 gold. Another sample cut across twelve feet on the east side of the shaft assayed \$16.31 gold. In a short drift west of the shaft a fault displaced the vein but the ore outcrops beyond the fault for a distance of four hundred feet, as stated above.

The gold in the ore is extremely fine and cannot be recovered by amalgamation or concentration and requires treatment by cyanidation, for which process the ore is admirably adapted. The fact that the gold cannot be recovered by amalgamation probably explains why work was stopped and the vein beyond the fault not developed.

The vein runs through the property in a northwest and southeast direction. Ore is formed at a contact between a porphyry dike forming the footwall and limestone forming the hanging wall.

The conditions are all in favor of opening up a very important mine here.

CONCLUSIONS

The area covered by the mining claims owned by the Majestic Mines Corporation, in Mill Canyon, is extensively mineralized in both the sedimentary and crystalline rocks. The geological formations in Mill Canyon, however, is in evidence to a far greater degree than at Cortez.

Ore is available at many places on the Majestic Mines Corporation's property and several of the mines, particularly the Mt. Tenabo and Bullion Hill Group, can be placed upon a producing basis in short time and at comparatively little cost. Less than six months will be required to block out ore enough to warrant the erection of the first fifty-ton unit of a flotation mill. The Mahoney gold property can also be quickly developed to a point where a treatment plant could be erected.

The group of mines owned by the Majestic Mines Corporation offer a most favorable opportunity for development with an excellent chance of opening up several good producing properties.

In this report we have not attempted to cover the details of geology, mine workings and past history as these have been adequately covered in reports by Wilson, Pray and Bass, copies of which are submitted herewith. We have only attempted to present the salient feature of the proposition as related to the operation now in progress.

Respectfully submitted,

Hamilton, Beauchamp, and Woodworth
(Signed by) F. A. Beauchamp

San Francisco, California
October 6, 1928

(Maps referred to in the foregoing report are on file in the office of the Majestic Mines Corporation.)

RESERVE GOLD MINING COMPANY

EMMA E. GROUP

Fernley, Nevada
March 20, 1926

To Mr. M. J. Hough:

Dear Sir:

Pursuant to your instructions I examined the Emma E. Group of Claims of the Reserve Gold Mining Company property in Mill Canyon, Nevada, and now make the following report:

LOCATION AND HISTORY

The Reserve Gold Mining Company property is located in the Cortez Mountains near the western boundary line of Eureka County, Nevada. It lies in what is known as the Mill Canyon District. This district is about thirty miles southerly from Beowawe, Nevada. Beowawe is on the main line of the Southern Pacific Railroad and the wagon road from there to Mill Canyon runs up the level Cortez Valley. There are no grades until by an easy ascent from the valley, the mouth of Mill Canyon is reached. Up this canyon there is an excellent wagon road, and the grade is not difficult, automobiles easily making the climb.

Tenabo Peak is the highest point of the Cortez Range, and has an elevation of 9,200 feet, which is about 4,000 feet above the level of Cortez Valley.

On the southwest slope of this peak is Cortez and on the north slope is Mill Canyon. Cortez is one of the best and richest camps in Central Nevada. The mines in Cortez and Mill Canyon were discovered in 1863. At first the ore was hauled to Austin, but in 1864 a Ten Stamp Mill was built in Mill Canyon and for several years treated the ore of that district. In 1867 it was bought by Simon Wenbaum, owner of the Cortez Mines and used by him for treating the Cortez ores.

The production of the Cortez and Mill Canyon Districts since their discovery has been in the neighborhood of \$10,000,000.

The Reserve Gold Mining Company's Emma E. Group of claims lies towards the upper part of the Mill Canyon District, principally on the southwest side of Mill Canyon. To the west is the Bullion Hill Mining Company property of eight patented claims. Further down the canyon are a number of properties, among which are the Cortez Mining and Reduction Company, the Mt. Tenabo Mining Company, the Mill Canyon Reduction Company, and the Cortez Tunnel Company.

HOLDINGS.

This property consists of fifteen mining claims. The Emma E., Golden Age, Sunbeam, Lead Prince, Surprise, Nighthawk, April fool, Silver Knight, Silver Knight No. 2, Iron Queen, Pocatella, Hidden Treasure, Hidden Treasure Extension, Treasure Hill, and Silver Prince.

The Emma E. Claim has been patented and title received from the United States. The titles to the others are possessory, but all the requirements of the mining laws have been complied with, and the titles are not in dispute in any manner at all.

PHYSICAL CONDITIONS

The physical configuration of the Mill Canyon District consists roughly of long steep sided ridges, with a general northwest by southeast trend. The slopes are very steep, and the ridges cut between by deep ravines. Because of the steepness of the slopes, a maximum amount of depth for the distance driven, is nearly always obtained in tunnel work. The ridges slope from the Cortez Valley, which has an elevation of about 5,200 feet, to the mountain tops; at the summit of Tenabo Peak they reach an elevation of about 9,200 ft.

There is a fine stream of pure mountain water flowing down Mill Canhon, amply sufficient for all milling and domestic purposes. On the high mountains there is considerable scrub pine, juniper and mountain mahogany wood, but it is difficult of access and costly to procure.

GEOLOGY

The mountains in the Mill Canyon District consist of limestones and quartzites which have been intruded by many kinds of igneous rocks. The intrusives include grano-diorite, quartz monzonites, quartz-diorites, dacites and andesites. The greatest area of intrusion consists of granitic grano-diorites, which have been intruded into the older sedimentary carboniferous rocks.

The mouth of Mill Canyon is deeply cut into the limestone, which about one mile above is intruded by grano-diorite. To the northeast of the canyon are massive beds of quartzite and at the head limestones, similar to those which form Tenabo Peak.

There has been much movement, intrusion and breaking up of the formations. This is essential to and has resulted in a high mineralization of the district. There is a great variety of deposits, from which a large amount of ore has been taken. The ore bodies are fissure veins of silver ore in grano-diorite, silver-lead replacement deposits in limestone, and oxidized iron deposits of gold ore replacing limestone.

On our group of claims the development on the Emma E. is the most important, and it is of this development which I will treat. This ore body is a ferruginous deposit of gold ore replacing limestone and grano-diorite, so that it is now of a porphyritic nature.

DEVELOPMENT.

The bulk of the development on this group of claims is on the Emma E. Claim. The main workings are on the westerly part of the claim, just over a ridge from Mill Canyon and consist of two incline shafts known as the West Shaft and the East Shaft. They are about 175 feet apart. The West Shaft goes down at a dip of about 35' from the horizontal, for about 30 feet, then dips more steeply, around 60' for the last 60 ft. It is in ore all the way. The East Shaft is located at the end of a tunnel forty feet long. From the end of this tunnel it goes down at a dip of about 25' for 45 feet. From the bottom of the East Shaft a drift is driven on the vein, and connecting with the West Shaft, goes 40 feet beyond it. This drift is 210 feet long and is in ore all the way. About midway of this drift is an incline winze, down about 30 feet below the level of the drift. In addition, there are three other short winzes from this drift.

At the top of the East Shaft, a drift runs to the west on the vein for fifty feet, and then connects with the lower drift by an incline and then connects with the lower drift by an incline and shaft. All the workings are on the vein.

The ore occurs as a replacement in limestone, along the contact between the limestone and grano-diorite intrusion. The limestone is the hanging wall, and the intrusive the foot wall. The foot wall is changed by the chemical action of the heated underground waters circulating along the contact, to a soft, decomposed porphyritic substance. Like all ore bodies, which occur as a replacement in limestone, it varies in size, in some places it has a width of as much as twelve feet. I believe it will average ten feet in all these workings.

Fourteen samples were taken by me in these workings; they were taken across the vein and vary in width from nine to twelve feet. The average value of the fourteen is \$15.26. The lowest was \$6.12 and the highest \$24.92. That is, every sample taken showed good paying ore.

An average of fifty-three (53) samples taken by Mr. M.J. Hough and Mr. Don J. Tomlinson in these workings, said to be large samples carefully taken across ten feet, worked down and assayed by Mr. Tomlinson, gave an average of \$15.34.

On the dumps of the two shafts are about twenty-five hundred tons of ore which ran \$11.25 per ton.

From the development already done here, and the ground contiguous to it proven by the development, there are eighteen thousand (18,000) tons of ore which may be said to be blocked out and in sight.

The ore then which may be counted on is:

18,000 tons in the mine at \$15 per ton	\$270,000.00
2,500 tons on the dumps at \$11 per ton	<u>27,500.00</u>

Or a total of \$297,500.00

About two hundred feet to the southeast of these workings, are three open cuts and a shaft twenty-three feet deep, on the vein outcrop. Two samples taken across a width of twenty-five feet in these cuts gave values in gold of \$7.86 and \$7.33. One across a width of

ten feet ran \$13.86.

If it should prove that the ore extended from these cuts to the main workings, the amount of ore would be doubled, and if the ore goes down as it may very well do, it would prove to be a very good mine.

RECOMMENDATIONS

The proper way to develop this property is to drive a tunnel from Mill Canyon in under the ore. A tunnel will keep all the workings free of water, do away with all pumps and pumping costs, enable the ore to be mined cheaply and be transported by a gravity system to a mill suitably placed in Mill Canyon near the mouth of the tunnel.

Such a tunnel would have to be driven about 1200 feet to get under the ore, at this point it would be four hundred and forty feet (440) below the present workings. To drive this tunnel will cost around \$15.00 per foot.

Mr. J. Carpenter, Metallurgical Engineer of Tonopah, Nevada, made a very exhaustive test to determine the proper method of treating this ore. I quote from his report as follows:

"The general deductions to be drawn from these tests are:

- (1) The ore is easily crushed and ground.
- (2) The only process adapted to this ore is cyaniding, and cyaniding only.
- (3) Due to the purity of the ore in regard to cyanocides, the consumption of potassium cyanide would be very normal, varying in actual practice from one to one and a half pounds.
- (4) Due to the ore being an oxidized ore, it would require considerable lime, but not to exceed ten pounds to the ton.
- (5) The very high extraction of 95% can be made by extremely fine grinding.

- (6) A very good extraction of 90% can be made by grinding the ore only to 30 mesh. *****
- (7) An extraction of 80% can be obtained by crushing the ore only to $\frac{1}{4}$ in. size in rolls and then
1 leaching in leaching vats. *****

The low cyanide consumption is a very pleasing feature of this ore and is due to the absence of all other metals and their sulphides. It is a remarkably clean gold ore, the high consumption of alkali is due

to its oxidized state. An ordinary lime is used for the alkali, this is but a small expense in treatment."

A fifty ton cyanide plant was purchased to work this property several years ago. It was transported to a point across the ridge from Mill Canyon, below the present dumps, but was never erected. This plant should be moved into Mill Canyon to a place near the proposed tunnel mouth. It will need some repairs and alterations to bring it up to date, but much of it can be used.

There are two frame buildings in Mill Canyon belonging to this property which can be used for boarding house and accommodations for workmen.

There is also an assay office, not equipped, belonging to this property at Mill site.

The case then stands as follows:

18,000 tons of ore in sight @ \$15.00 per ton	\$270,000.00
2,500 tons of ore in dump @ \$11.00 per ton	\$27,500.00
	<u>\$297,500.00</u>

Less 10% loss in milling	17,850.00
Value of ore	<u>\$279,650.00</u>

Costs connected with mining and milling this ore:

1,200 feet tunnel @ \$15.00 per foot	\$18,000.00
600 feet of upraise and other works	
@ \$10.00 per foot	6,000.00
Mining equipment and buildings	4,000.00
Mill	<u>15,000.00</u>
Necessary outlay before any returns from the mine	\$43,000.00

Then there will be the further cost of mining and milling 18,000 tons at \$5.00 per ton	<u>\$90,000.00</u>
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Or a total expenditure of	\$133,000.00
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Value of ore in sight	\$ 279,650.00
Costs	<u>133,000.00</u>

Net profits on ore in sight\$146,650.00
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The eighteen thousand tons of ore on which the preceding figures are based only takes into account that ore which is blocked out and can be said to be in sight.

In all the workings the ore bodies were still going down, and were of undiminished size and value. If they continue downward, as it is quite reasonable to believe they do, the amounts returned by this property would be very large.

The running of the development tunnel recommended which would cut the ore bodies at a depth of about 440 feet below the present deepest workings, would not only serve as a method of mining the ore now in sight in the most economical manner, but would also directly determine and develop all continuations of the ore bodies now exposed.

I consider the Reserve Gold Mining Company's property to be the best I have seen in a long time. It is seldom you find a property which looks to be so certain of returning a profit above all costs, taking only into consideration the ore now exposed, and with an excellent chance of developing into a mine of very large size and returning a very large profit.

(Signed) W. A. Pray, E. M.

SAMPLES TAKEN BY W.A. PRAY IN THE WORKINGS ON
THE EMMA. E. CLAIM

Sample No.	Gold Oz. per ton	Silver Oz. per ton	Value
1	.40	1.20	9.79
2	.24	15 .60	15.09
3	.61	.20	12.33
4	.96	1.20	19.99
5	.76	1.00	15.86
6	1.00	.400	20.26
7	.64	.40	13.06
8	.80	.60	16.39
9	.46	.80	9.72
10	.28	.80	6.12
11	.64	.60	13.19
12	1.10	.80	22.52
13	1.22	.80	24.92
14	.76	.40	15.46

Average value of the 14 samples 15.27

On dump	.40	1.60	9.05
In cuts 200 feet below upper workings:			
1	.38	.40	7.86
2	.68	.40	13.86

3

.36

.20

7.33

Average of the three samples

9.68

SAMPLES TAKEN BY M. J. HOUGH AND DON J. TOMLINSON IN THEWORKINGS ON THE EMMA. E. CLAIM

SAMPLE NO.	VALUE \$
104	4.00
105	20.00
106	16.00
107	20.00
108	5.60
109	10.40
110	11.20
111	8.60
112	8.00
113	.40
114	Trace
115	.80
116	12.80
117	5.60
118	.80
119	4.80
120	4.00
121	4.80
122	25.60
123	3.20
124	19.20
125	30.40
126	9.60
127	3.20
128	6.40
129	12.80
130	50.40
131	8.80
132	26.40
133	7.20
134	3.20
135	4.80
136	20.00
137	67.30
138	10.40
139	11.20
140	31.20
141	21.60
142	17.60
143	48.80
144	32.00
145	25.60
146	28.00
147	25.60
148	27.20
149	16.80

150	9.60
151	12.80
152	20.80
153	6.40
154	77.20
155	10.20
156	9.60

Average value of 53 samples is \$15.36

Mill Canyon,
via Beowawa, Nevada

Description of Holdings of
Majestic Mines Corporation

General:

The corporation owns 31 claims, of which eight are patented and has 20 to 30 claims under option.

The general geology is outlined in my report dated Sept. 29, 1928, and need not be repeated here, except in bare outline.

A limestone-quartzite-limestone series, over 3000 feet thick, has been domed upward by a batholithic mass of granodiorite. The granodiorite and sedimentaries have been cut by later andesitic dikes. The dikes and sedimentaries have been replaced by large bodies of silver-lead ore in the Cortez Mine.

The sedimentary series is continuous from Cortez to Mill Canyon. Similar dikes are found in both places. On the Majestic ground there are numerous veins of gold and silver-lead ore, in both igneous and sedimentary series. These have been prospected from a shipping standpoint only, and have produced from \$250,000 to \$500,000.

The attempt of the Majestic to develop a mine in Mill Canyon is based on the following facts:

That the same, continuous, ore-bearing horizon is exposed in Mill Canyon and Cortez.

That andesitic dikes have an important bearing on the deposition of ore at Cortez, and exactly similar dikes exist in Mill Canyon.

That either shipping or milling ore outcrops, or has been found around shallow depth, in literally dozens of places on the Majestic ground.

That the surface showing on the Mill Canyon side is much better than that on the Cortez side, where an important mine has been developed.

The general situation at the Majestic is that it has a large number of ore showings, of greater or less merit, scattered over the several hundred acres which it owns or has optioned, and that the general geology is distinctly favorable. The problem is to develop tonnage of milling or shipping ore at one or more of these places, or at new places, applying as far as possible the principles that have been proven at Cortez.

The area in general is near the top of a batholith, which is a favorable horizon. See "Relations of Metalliferous Lode Systems to Igneous Intrusives", by W. H. Emmons, Mining and Metallurgy, June 1926; Pamphlet No. 1871-1, A.I.M.M.E.

Orebodies in granodiorite :

1. Aurora Vein.

This vein outcrops for about 2500 feet on surface, from the Water Tunnel northward, but has been productive only at its southerly end. The Water Tunnel follows the vein for about 400 feet. The vein is 0.5 to 5.0 feet wide in the tunnel, and consists of white quartz, with stringers and veins of rich sulphides, including galena, zincblend, argentite, stephanite, tetrahedrite and stibnite. It has been stopped for about 250 feet in length to a height of 60 or 70 feet above the tunnel level, but no work has been done below the tunnel. Mr. Hough, who directed all this work, informs me that shipments never ran lower than 240 ounces, and that the highest was about 550 ounces: also that he operated the mine continuously at a profit from 1898 to 1906, working 10 men.

In places in the tunnel, I have gotten 100 oz. assays over a few inches, and from 50 to 100 oz. assays over 6 to 12 inches. It seems to me decidedly worth while to sink winzes below the level on a few of the best showings. I think the chances of finding lenses of shipping ore are good. It does not seem reasonable that the high grade shoots stopped abruptly just above the level. Hough says that they did not sink years ago because of the quantity of water, which has since been drained by the Bullion tunnel.

2. Ben Harrison Veins.

These are a few hundred feet southeast of the Aurora Vein, the Harrison vein being persistent for over 1000 feet. It has produced a small amount of shipping ore, and offers some promise from a milling standpoint.

3. Rhoda Vein.

This vein was stoped continuously from surface to the 240 foot level, the stope being 35 to 50 feet long, and the vein 1.5 to 2.5 feet wide, but very high grade. The workings were flooded after cutting through a wall on the 240 foot level. The Bullion Tunnel was driven over 900 feet, 120 feet below the bottom of the Rhoda shaft, thus draining the Rhoda, which is now inaccessible. A raise was started from the Bullion Tunnel, but not completed. The vein at the bottom of the Rhoda is 1.0 foot wide and assays 105 oz. according to Hough. He also states that a 4.0 foot vein of 10 oz. ore was cut in the Rhoda workings.

4. Eastside Group.

This group is under option. See Map No. 6 for details of the tunnel from which shipping ore is being taken. This ore comes from a shear zone in granodiorite, and apparently strikes NE along a 27 foot wall. As the assays indicate, it is of excellent grade, though not over 3 feet wide. However, other assays show a 4 to 5 foot width in milling grade. This is a very good showing and should be developed. It is now being worked on two shifts.

Across the gulch from the Eastside Tunnel is a 500 foot tunnel along another vein, from which a number of shipments have been made, from stopes above the tunnel. No work has been done below the tunnel.

Further up the hill is a well defined vein with a 35 foot inaccessible shaft, said to have 4 feet of 40 oz. ore at the bottom.

I took two samples from the top of this shaft. The footwall ran \$6.40 gold, and 58.9 oz. silver over 1.3 feet, and the continuation over 1.2 feet ran \$5.20 gold, and 109.6 oz. silver.

Ore bodies in limestone:

1. Ervin Vein.

Maps 2, 3 and 5, together with the description on Page 3 of my report of Sept. 29, 1928, will give a good idea of the conditions here. The shoot is short at the end above the level (40 feet) but is of very good milling grade, as well as width. On the 50 foot level, a narrow width of ore was found going northeast, but it pinched at the face. A crosscut was started northwest, with ore showing along the very back, and today a 6 foot width of ore is exposed as shown on the map, with the hanging wall not yet exposed. No assays on this have yet been made, but it appears to be of about the same grade as the average of the winze, i.e., \$6. gold, 20 oz. silver, 3% lead. It now appears that the slip marked A at the tunnel level is the same as the one marked A at the 50 foot level, and that the orebody has warped and flattened somewhat, thus conforming to the distortion of the limestone beds by the intrusive. See photo.

A few thousand tons of \$20 ore have either been extracted or developed here, and there is a good chance of getting a large additional tonnage on this one shoot, as well as of finding other shoots in this vicinity.

There are numerous other showings of highgrade ore in this vicinity, within a few hundred feet of the granodiorite-limestone contact, but none is large, and we are attempting to find some controlling geologic feature, as at Cortez, along which larger deposits of lower grade ore might be formed. There are several andesite dikes in this vicinity, but, as at Cortez, they assay very little or nothing on the surface.

It is planned to trace the Ervin Vein downward to a point about 100 feet above the Mays Tunnel, and then to raise for a connection, or to crosscut to the projected position of the vein.

In Berlin Gulch, directly across Mill Canyon from the Ervin, there are several tunnels, which produced considerable ore 40 to 50 years ago. One small stope is said to have produced \$40,000 from a few hundred tons. There are several places which should be prospected. There is a good, but small showing on the claims belonging to John Scott (see map), while on the Crosscut Valley Group, several hundred feet of work has been done on a rather persistent vein, from which several shipments have been made.

Liberty Bell Region.

This is in many respects the most interesting area in the Canyon. The limestone on both sides of Mill Canyon dips, in general about 25' NE, while in the Liberty Bell Region, there is an irregular mass of gray, definitely bedded limestone, which stands almost on edge, dipping 80' to 90' East, and striking about N.10'E. Its complete unconformity to the Mill Canyon lime is clearly seen at the Liberty Bell Tunnel. (See Map No. 4)

Conforming closely to the bedding of the Liberty Bell limestone is a series of six or more veins which have been extensively worked at or near surface. The largest of these is an open cut being filled with debris. It is said that the original mill in Mill Canyon was built in 1863 to mill ore from this stope. There are several other large open cuts and many small ones, together with a few hundred feet of shallow tunnels. Narrow widths of 50 to 300 oz. ore remain in places, and wider widths of lesser grade ore.

This region must be prospected, and I am at present inclined to favor advancing the Liberty Bell Tunnel a few hundred feet, and crosscutting the entire vein system.

In addition to the above, there are certain gold showings on Majestic ground which are worthy of development.

At the Emma E., which is not owned by this company, there is developed a body of gold ore, concerning which I have received considerable information, but have never examined personally. One engineer states that there is not yet enough ore development to justify a mill, but that a fair tonnage of \$15 ore is developed and that further development is thoroughly justified. Another engineer states that

there is tonnage sufficient to justify the erection of a cyanide plant, with certainty of considerable profit. The vein is said to be 6 to 12 feet wide, and easily mined.

The continuation of the Emma E. Vein is said to enter the Silver Cloud Group, under option to the Majestic, and to assay \$2 to \$5 over several feet on surface. The Silver Cloud has a number of small, scattered showings of exceptionally highgrade ore.

Hough informed me yesterday that there is on the Crescent Valley Group a 5 foot vein assaying 9 to 14 oz. silver, from two samples which he took. I am planning to visit this within the next few days.

It will be understood that this description of Mill Canyon is in no sense complete. Many ore showings are not even mentioned while important details concerning the above described showings have been necessarily omitted.

J. O. Greenman

6 maps
1 page photo
1 report dated Sept 29, 1928

Since this interview and the attached reports (Save Hauselman's) the the Roberts Mining and Milling Company has installed power and a reduction plant on its property, and there remains to be added a cyanide unit, available at a cost estimated to be \$3500.00.

This company has acquired the Emma E. Lode mining claim.

B. M. Roberts

Nov. 13, 1935

Los Angeles, Calif.

Stenographic Notes taken from the lips of F. A. Beauchamp of the Firm of Hamilton, Beauchamp, and Woodworth, of San Francisco. Notes taken 2/15, 1930, in the office of James Knapp, San Francisco, by B. M. Roberts.

The formations in which the Emma E. Mine is located are limestones and quartzites intruded by igneous rocks. The intrusives are granodiorites, quartz, monzonites, quartz-diorites, dacites, and andecites. The largest intrusives are grano-diorites intruded into older sedimentary carboniferous rocks.

The mouth of Mill Canyon is deeply cut in limestone, which a mile above is intruded by granodiorite, Northeast of the Canyon are massive beds of quartzite, and at the head limestones similiar to those of Tenabo Peak.

Ore bodies are (1) Fissure veins of silver ore in Grano-diorite; (2) Silver-lead replacements, or deposits in limestone; and (3) Oxidized iron deposits of gold replacing limestone.

The EMMA E. is a ferruginous deposit of gold ore replacing limestone, and is silicified limestone along a contact of limestone and granodiorite; the hangar is limestone, the foot-wall a much-altered granodiorite of a porphyritic nature.

WORKINGS: In the Westerly part, over the ridge from Mill Canyon are two inclined shafts; the West Shaft, and the East Shaft, 175 feet apart: the West shaft is 10 feet, all in ore. The East Shaft, at the end of a tunnel 40 feet long, goes down at an angle of 25 degrees for 45 feet; From the bottom of the East Shaft, is a drift driven on the vein to connect with the West Shaft, and runs for 40 feet beyond it. This drift is 240 feet, all in ore. In the middle there is an incline winze 30 feet below the drift. At the end of the East shaft there is a drift of 50 feet on the vein and connects with the lower drift by incline and shaft-all on the vein.

Limestone forms the hanging wall; intrusives, the footwall. The foot is charged by the chemical action of heated underground waters circulating along the contact to form a decomposed, porphyritic substances.

AVERAGE WIDTH of the vein is 10 feet. AVERAGE VALUE of 14 samples is \$15.26.

ORE ON DUMPS @ \$11.25	\$27,500.00
ORE IN MINE BLOCKED OUT AND IN SIGHT 18,000 tons @ \$15.00	\$270,000.00
	<hr/>
	\$297,500.00

TWO HUNDRED FEET to the southeast are three open cuts, with an average value of \$10.00. If this ore continues, (as indications seem to show) the ore body tonnage is doubled; if it goes down, as it may well do, it is a good big mine.

On extraction of values, we got 90% grinding to 30 mesh; and 80% by grinding to 1/4 inch. (See sketch map dictated by Beauchamp)

NOTES TAKEN FROM THE LIPS OF F. A. BEAUCHAMP, by B.M. ROBERTS, 2/15, '30

My calculations show that it will do at least the following as it now stands:

ORE IN SIGHT AND BLOCKED- - - - -	\$297,500.00
Less 10% in milling - - - - -	\$17,850.00
	<hr/>
	\$279,650.00
COST OF MINING AND TRUCKING, and DRIVING A 1200' TUNNEL @	\$18,000.00
" " 600' UPRAISE @ \$10.00- - - - - @ \$10.00	\$ 6,000.00
" " MINE EQUIPMENT AND BUILDINGS - - - - -	\$ 4,000.00
" " MILL - - - - -	\$43,000.00
" " MINING AND MILLING 18,000 TONS @ \$5.00 - - - -	\$90,000.00
	<hr/>
UNDER THIS PLAN TOTAL COSTS - - - - -	\$133,000.00
VALUE OF ORE, (If no more than estimate) - - - - -	\$279,650.00
GOSTS (as outlined in this plan) - - - - -	\$133,000.00
	<hr/>
	\$146,650.00

This estimate applies to the EMMA E. alone and does not include the ore bodies in the MAJESTIC COMPANY'S HOLDINGS.

Done from the dictation of F. A. Beauchamp, at San Francisco, Calif.

Stenographic notes taken and transcribed by Belle McCord Roberts