ALFRED MERRITT SMITH
MINING ENGINEER
229 MAPLE ST., RENO, NEVADA

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REPORT ON THE

EAGLEVILLE MINE

Churchill County, Nevada

October 18, 1931

By:

ALFRED MERRITT SMITH

ALFRED MERRITT SMITH
MINING ENGINEER
229 MAPLE ST., RENO, NEVADA

April 9, 1934

To the owners of
The Eagleville Mine,
Sparks, Nevada

Dear Sirs:

The following is my report upon a preliminary examination of the Eagleville Mine, in Churchill County Nevada, made on August 22 and 23, 1931, revised and brought down to date because of the changes in the market prices of precious metals and other economic conditions.

GEOLOGY

The general formation of the country consists of flows and intrusions of both andesite and rhyolite lavas of Tertiary age. These porphyries are traversed by a series of fissures having strikes averaging about S. 35° E., but varying all the way from S. 15° E. to S. 65° E. The fissures contain veins of quartz and altered country rock. Most of the vein filling is soft, containing much friable and amorphous silica which has been colored brown by iron oxide. Portions of the vein also contain barite and calcite as gangue materials, The values are in gold and silver.

It is probable that the veims are of late Tertiary, probably of Pliocene age. Since their formation they have been much altered by hot springs and volcanic gases of Recent, or Pliestocene age. Post-mineralization fault movements have added their effect to crush and pulverize the vein material. The original mineralization by gold and silver was at the time of the formation of the veins and was extensive and uniform. Leaching and alteration by solfateric (hot spring) action has to a considerable extent redistributed the silver values and probably to some extent, due to small quantities

of manganic minerals present, leached and redistributed the gold. In this respect, quite noticeable is the good grade of the ore in the small vein located east of the top of the mountain from which Mr. Blundell is said to have mined some good ore and sledded it down the mountain to the road. Along this vein the formation is fairly hard and tight, and the vein itself is of hard dense quartz. It has escaped both the post faulting movement and the action of the volcanic waters and has not been leached. Assay No. 3, from ore in place on this vein returned 0.68 oz. gold and 0.8 ozs. in silver. This vein will justify vigorous development at depth.

Many thousands of years after the original veins had been slowly built up in gradually opening fissures, there came a period of volcanic activity. The hot waters and gases were forced up along the sides of the veins, for these places are usually the lines of least resistance. The hot mineral waters softened and changed the veins and adjacent wall rock, and deposited additional loose silica sinter, alunite, barite and calcite. They dissolved and re-arranged the silver in the veins, and to a much lesser extent, the gold also. Some of the precious metals was so distributed through the rock mass that it is lost so far as mining is concerned. Much of the silver was undoubtedly moved while in solutuion to other places in the veins and there redeposited by the cooling waters or by chemical precipitating agencies. In this mine, generally speaking, the values in the oxidized zone have been redistributed by the action of hot springs which are now dead. A well directed prospecting and development plan should reveal important and valuable bodies of ore.

MINING

The workings of the Eagleville mine extend through a vertical depth of about 400 feet from the surface above the No. 2 or northwest vein, and 200 feet, more or less, below the main tunnel level. No map or sketch of the mine workings was available, therefore the ramifications of the crooked mine workings could only be followed out in a general way in the alloted short time. The accompanying assay map was made from rapid note-book sketches, using a Brunton compass and paced distances.

It is evident that the mine has been worked at irregular intervals of time for many years. The tenor of much of the ore extracted was high enough to permit it to be shipped to smelters, although freight costs were certainly very great. Some of the lower grade ore was hauled about 6 miles south down a narrow canyon to the edge of a large playa or dry lake bed, which is about 1500 feet lower than the mine. It was milled near the edge of the lake bed, where water is obtainable from shallow wells. Some small deposits of tailings remain but the mill has long since vanished. Presumably amalgamation was the process used, which certainly gave a very poor extraction of the values, as shown by metallurgical tests made on the ore by the writer. At the mine, ore of still lower grade was piled up seprately at the dumps, apart from the main dumps. I roughly measured some 500 tons of this ore which I sampled and found to contain 0.42 ozs. gold and 0.7 ozs silver, At the time of examination this was not commercial ore in that remote locality, It is now worth $15.15 per ton, which creates a different picture.

In addition to this selected ore, I am of the opinion that much of the large waste dumps can now be milled at a profit, under $35.00 gold.

No. 1 Vein, the most southwesterly of the series of three or more veins, has in one ore shoot yielded ore from the surface to a depth of about 150 feet. This ore was undoubtedly of good grade, and was taken from a stope 50 to 75 feet wide and averaging 5 feet thick. All of the pay ore had been carefully worked out. Subsequent explorations to the northwest along this vein have not yielded ore in commercial amount, and at greater depths the vein becomes more narrow, and splits up into smaller veins which have not produced commercial ore in amount worthy of note. The evidence of solfateric action is paramount. The workings of this vein, however, should be carefully mapped and studied, and a complete and careful assay map made. This would prepare the way for much better development than that which has been done.

The oxidized zone is undoubtedly deep and may extend 500 or 1000 feet below the lowest present workings. In the open and pervious structure of this zone there may be some concentrations of high grade ore that would produce a great amount of money. The extensive and deep seated mineralization of the district is proven by a vein of almost pure barite or heavy spar (barium sulphate) a short distance north of the gold veins, and roughly parallel to them. This vein is from 6 to 10 feet wide and outcrops on the surface for about 1/4 mile.

Most of the ore in this oxidized zone and the vein filling is loose and friable. The walls, however, are firm and good, and the ore can be extracted with the use of little powder and a minimum of timber. The dust evil can be greatly reduced by spraying, once an economical water supply is obtained.

The nearest water to this mine is 1500 feet lower, and 5 miles distant, half of the way down a tortuous desert canyon, as previously described, to the edge of a large dry lake. It is hauled to the mine in a tank mounted on a truck. The present expense of obtaining an adequate supply is evident. In the event that development should prove sufficient ore to warrant the installation of a mill, probably the best location for the mill would be at the mouth of the canyon at the upper edge of the great alluvial terrace or fan that extends from the mouth of the canyon down to the dry lake. Water could then be pumped up to this point for the mill in one stage, and at the mill would be the most suitable location for another pump to lift it on up the mountain to the mine.

No. 2 Vein is intersected by the main tunnel about 520 ft. from the mouth, and has been drifted on 88 ft. northwest, from which drift is a 57 ft. crosscut to the southwest connecting with a 45 ft. drift along a small parallel vein. This small vein, parallel to the main No. 2 Vein, contains much barite, and low values in gold and silver. Further development is advised, for ore shoots are likely to be found.

Southeasterly from the main tunnel the workings are quite extensive. There is about 300 ft. of drifting on the main tunnel level as indicated on the attached sketch map, which also shows the approximate position and extent of some of the workings between this level and the surface. The most important of these is the Sorel Drift, 92 ft. below the surface. Because this drift is an immediate source of ore, it was carefully gone over and sampled.

In the main tunnel is a winze 35 ft. deep connecting with a level with about 20 ft. of drifting along the vein. Here is a stope about 20 ft. by 30 ft. by 3 ft., from which ore of unknown value was mined. From this level a second winze descends to another sub-level, along which are some 200 ft. of drifts. Two additional winzes descend to the lowest workings, probably a total of 120 ft. below the main tunnel level. With the exception of what ore may have been extracted from the stope mentioned, little or no ore of commercial tenor has been found or extracted below the main tunnel level on the No. 2 Vein. The southeasterly extension of the vein on the main tunnel level is displaced by a fault, and the last course was run N. 82° E. a distance of 43 ft. in barren country rock. If the fault is vertical, which was not determined at this time, a similar condition will presumably be found to exist on the lower levels.

Above the main tunnel a promising ore shoot on No. 2 Vein is partly developed, in what is named the Sorel Drift previously mentioned. Six assay samples carefully taken at intervals along a length of some 70 ft., in which the vein has an average width of 4 ft., returned an average of 0.248 oz. gold and 5.46 ozs. silver. Taking

silver at.645 cents an ounce and gold at $35. this equals a value of $12.20 per ton of ore.

This is commercial ore under present conditions, and the vein should have further investigation to the south, in which direction the ore shoot may extend some distance beyond the present end of the drift. At the south face of the drift the vein appears to be in the east wall, and not in the face. No ore has been stoped from this drift. Assuming that the ore shoot will develop to 150 ft. long (it is now over 70 ft.) and that it will extend to the surface, 75 ft., and also to a depth of 75 ft. below the floor of the drift, and have an average width of 4 ft., it would contain about 6000 tons of ore which my assay samples indicate would be worth $12.20 per ton, at the present price of silver and gold. None of the other samples taken from the underground workings by me returned a value equal to those from the Sorel Drift. Value of above ore at this date, gold $35.00 oz. and silver at 64½¢ will be $12.20 per ton, and value of the block $73,200.00.

CONCLUSIONS

There is no present ore in sight in the various mine workings to materially increase the total of the ore in the Sorel Drift and the ore now on the dumps. I think it is probable that a longer examination, and a detailed and careful sampling of the whole property, both underground and surface, would show places where there are better assay values than those which I obtained. Such work, would undoubtedly show places where more exploratory mining should be done, and furnish a worth-while picture of the property.

There is not enough ore of commercial tenor in sight in the mine and on the dumps to warrant the expense of constructing an efficient mill for the treatment of that ore at this time. A modern, fine-grinding all-cyanide mill is the only one that will answer, and the mine is not ready for it. The purchase and construction of such a mill before additional ore has been developed is too speculative to be justified, and besides, upon the probable tonnage of ore that will be shown by development will be based the size of the mill.

I will not try to make an accurate analysis of what operating costs would be, without a closer survey and study of local conditions. It is sufficient to state that in the absence of water, timber and fuel, and with underground mining, and having a long truck haul to Fallon on the railroad, costs will be high. Mining costs will range about $5. per ton; milling costs about $2. Capital and interest charges and amortization of plant will increase the ultimate cost per ton.

This preliminary examination shows the mine to be an interesting property, and a modest sum of money spent in proper development will very probably prove it to be very valuable. As it was worked from time to time at a profit under the old gold-silver prices, under the new high prices it becomes doubly important.

As was shown by tests made for your company by the writer about 4 years ago at Sacramento, the ore can best be treated by a fine grinding all-cyanide mill. My inspection of the ore in the mine indicates that an even better extraction may be expected in actual operation than that which was made on the dump samples submitted to me for testing.

Yours truly, Alfred Merritt Smith

Alfred Merritt Smith.

October 18, 1931

To the owners of the Eagleville Mine, Rawhide - Nev.
Sparks, Nevada.

Dear Sirs:

Following is my report of a preliminary examination of the Eagleville Mine made on August 22 and 23, 1931, in which I was assisted by one of your group, Mr. N. B. Epperson. Illness has prevented me from making a written report much earlier than this date, for which I am sorry. I hope that my verbal report made at the time of your joint visit to me at the Mackay School of Mines building, has been sufficient for your immediate need.

GEOLOGY

The general formation consists of flows and intrusions of both andesite and rhyolite lavas of Tertiary age. These porphyries are traversed by a series of fissures having courses averaging about S. 35° E., but varying from S. 15 E. to S. 65 E. The fissures contain veins of quartz and altered country rock. Most of the vein filling is soft, containing much friable and amorphous silica, colored brown by iron oxide. Portions of the veins also contain barite and calcite as gangue materials. The values are in gold and silver.

It is probable that the veins are of late Tertiary , probably Pliocene age. Since their formation, they have been much altered by hot springs and volcanic gases of Recent, or Pleistocene age. The original mineralization in gold and silver was at the time of their origin, and may have been quite extensive and uniform, at least moreso than it is today since the leaching and alteration by solfateric action. In this respect, quite noticeable is the fairly good grade of the ore in the small vein located just east of the top of the mountain, from which Mr. Blundell is said to have mined and sledded some ore down the mountain. At that point the formation was fairly hard and tight, and the vein is hard, dense quartz. It escaped the action of the volcanic waters, and the gold content had not been leached out. Assay No. 3, taken from ore in place at this point, returned 0.68 oz. in gold and 0.8 oz. in silver.

Many thousands of years after the original veins ~~were~~ had been slowly built up in the gradually opening fissures, there came a period of volcanic activity. The hot waters and gases forced themselves up along the sides of the veins, as these places were usually the lines of least resistance. They softened and changed both the veins and wall rocks where they came in contact with them, and deposited loose silica sinter, alunite, barite and calcite. They dissolved and re-arranged the gold and silver in the veins; some of it was widely ~~[illegible]~~ disseminated through the rocks and thus lost so far as mining is concerned. Other

portions of the gold and silver metals were moved to other places in the vein there to be re-deposited by the cooling waters, or by precipitating agencies. In this mine, generally speaking, the values were widely scattered by the solfateric action, and the concentrations are few.

MINING

The workings of the Eagleville Mine extend through a vertical depth of about 400 feet from the surface above the No. 2, or northwest vein, and 200 feet, more or less below the main tunnel level. As no map or sketch of the mine workings was available, the various ramifications of the crooked mine workings could be followed out only in a general way in the alloted short time, and the accompanying assay map was made from rapid notebook sketches, using Brunton compass bearings and paced distances.

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No. 1 Vein, the most southwesterly of the series of three or more veins, has in one ore shoot yielded ore from the surface to a depth of about 150 feet. This ore was undoubtedly of good grade, and was taken from a stope 50 to 75 feet wide and averaging 5 feet thick. All of the pay ore had been carefully worked out. Subsequent explorations to the northwest along this vein have not yielded ore in commercial amount, and at greater depths the vein becomes more narrow, and splits up into smaller veinswhich have not produced commercial ore in amount worthy of note. The evidence of solfateric action is paramount. The workings of this vein, however, should be carefully mapped and studied, and a complete and carefull assay map made. This would prepare the way for much better development than that which has been done.

The oxidized zone is undoubtedly deep and may extend 500 or 1000 feet below the lowest present workings. In the open and pervious structure of this zone there may be some concentrations of high grade ore that would produce a great amount of money.

Most of the ore and the vein filling is loose and friable. Clouds of siliceous dust fill the air during the process of sampling. The danger of silicosis will constantly menace the miners. On the other hand,the walls are firm and good, and the ore can be extracted with the use of little powder and a minimum of timber. The dust evil can be greatly reduced by spraying, once an economical water supply is obtained.

The nearest water to this mine is 1500 feet lower, and 5 miles distant, most of the way down a tortuous desert canyon, as previously described, on the edge of a large dry lake. It is hauled to the mine in a tank mounted on a truck. The expense of obtaining an adequate supply is evident. In the event that development should prove sufficient ore to warrant the installation of a mill, probably the best location for it would be at the mouth of the canyon at the upper edge of the great alluvial terrace or fan that extends down to the dry lake . Water could be pumped up to this point for the mill in one stage, and at the mill would be the most suitable place for another pump to lift it on up the mountain to the mine.

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Southeasterly from the main tunnel the workings are quite extensive. There is about 300 Ft. of drifting on the main tinnel level as indicated on the attached sketch map, which also shows the approximate position and extent of some of the workings between this level and the surface. The most important of these is the Sorel Drift, 92 ft. below the surface. Because this drift gives promise of being a source of ore, it was carefully sampled.

In the main tunnel is a winze 35 ft. deep connecting with a level with about 20 ft. of drifting along the vein, and a stope about 20 ft. by 30 ft. by 3 ft., from which ore of unknown value was mined. From this level a second winze descends to another sub-level, along which are some 200 ft. of drifts. Two additional winzes descend to the lowest workings, probably a total of 120 ft. below the main tunnel level. With the exception of what ore may have been extracted from the small stope mentioned, little or no ore of commercial tenor has been found or extracted below the main tunnel level on the No. 2 Vein. The southeasterly extension of the vein on the main tunnel level is displaced by a fault, and the last course was run N. 82° E. a distance of 43 ft. in barren country rock. If the fault is vertical, which was not determined at this time, a similar condition will presumably be found to exist on the lower levels.

Above the main tunnel a fairly promising ore shoot on No. 2 Vein is partly developed, in what is named the Sorel Drift. Six assay samples carefully taken at intervals along a length of some 70 ft., in which the vein has an average width of 4 ft., returned an average of 0.248 oz. gold and 5.46 ozs silver. Taking silver at 30 cents an ounce this equals a value of $6.75 per ton of ore. Although this value is too low to cover the cost of mining and milling in this locality and this mine under the

present conditions, it is well worth further investigation to the south, in which direction the ore shoot may extend some distance beyond the present end of the drift. At the south face of the drift the vein appears to be in the east wall, and not in the face. No ore has been stoped from this drift. Assuming that the ore shoot will develop to 150 ft. long (it is now over 70 ft.) and that it will extend to the surface, 75 ft., and also to a depth of 75 ft. below the floor of the drift, and have an average width of 4 ft., it would contain about 6000 tons of ore which my assay samples indicate would be worth $6.75 per ton, at the present price of silver. None of the other samples taken from the underground workings by me returned a value equal to those from the Sorel Drift, and most all of them were very low.

CONCLUSIONS

There is no ore in sight in the various mine workings to materially increase the total of the ore in the Sorel Drift and the ore now on the dumps. I think it is probable that a longer examination, and a detailed and careful sampling of the whole property, both underground and surface, would show some places where there are better assay values than those which I obtained, but such places would not contain tonnage enough to alter the conclusion I have reached . Such work, however, would probably show places where more exploratory mining should be done, and furnish a worth-while picture of the property.

There is not enough ore of commercial tenor in sight in the mine and on the dumps to warrant the expense of constructing a suitable mill for the treatment of that ore at this time. A modern, fine-grinding all-cyanide mill is the only one that will answer, and the mine is not ready for it. The purchase and construction of such a mill now will surely result in the loss of much money unless some new and better ore bodies are found without delay, which is too great a risk to take.

I will not try to make an accurate analysis of what operating costs would be, without first making a closer survey and study of local conditions. It is sufficient to state that in the absence of water, timber and fuel, and with underground mining, and a fairly long truck haul to Fallon on the railroad, costs will be high. Mining costs will range from $5. to $7. per ton; milling costs from $2. to $3. The transportation of ore to mill, the overhead, obsolescence of plant and equipment, depletion of mine, etc, will substantially increase the total cost.

It is not meant to convey the impression that the mine is of little value. On the contrary, it is an interesting property, and

a modest sum of money spent in proper development might prove it to be very valuable. As was shown by tests made for your company by the writer about a year ago at Sacramento, the ore can best be treated by a fine grinding all-cyanide mill. My inspection of the ore in the mine indicates that an even better extraction may be expected in actual operation than that which was made on the dump samples submitted to me for testing.

Yours truly,

Alfred Merritt Smith

Alfred Merritt Smith.

Reno, Nevada,
Aug. 26, 1931.

Mr. A. M. Smith,
Reno, Nevada.

Dear Mr. Smith:

Your Eagleville samples assayed as follows:

1. Gold 0.14 oz Silver 0.4 oz.
30 ft. tunnel at E. end No. 2 Vein. Across 2½ ft. on E. side and [illegible] ft. on W. side. Near the surface.

2. Gold 0.15 oz. Silver 0.3 oz.
A grab sample from the dump of ore, about 1 ton, at a 15 ft. shaft at the W. end of No. 2 Vein. Strike N 38° W., Dip 85° NE. About 325 ft. distance between Samps 1 and 2.

3. Gold 0.68 oz. Silver 0.8 oz.
Narrow hard quartz vein, on N. side of hill, near the summit, 6 in. to 10 in. wide, from which Mr. Blundell shipped ore. Strike N. 80° W., Dip 62° SW.

4. Gold 0.06 oz. Silver 0.2 oz.
Main Tunnel, End of West Drift on No. 2 Vein. Across 4½ ft., mostly hard, silicified rock.

5. gold 0.03 oz. Silver 0.2 oz.
4 ft. wide across roof of drift, soft ore, about 50 ft. SE of No. 4 Samp.

6. Gold 0.07 oz. Silver 2.3 oz.
Main Tunnel, at stope and ladder, about 37 ft. E. of No. 5. Across vein 6 ft. wide. Total length of West Drift about 88 ft., general course about N. 48° W.

7. Gold 0.06 oz. Silver 3.7 oz.
Main Tunnel, East Drift, 15 ft. from center winze, across 7½ ft. of quartz and barite on N. side of drift.

8. Gold 0.10 oz. Silver 2.2 oz.
Up in C Winze, 15 ft. straight up above drift, across 6 ft. of ore that looked good.

9. Gold 0.14 oz. Silver 6.5 Oz.
Across 4 ft., at C Winze, just above drift, and 12 ft. below Samp. No. 8.

10. Gold 0.05 oz. Silver 0.9 oz.
E. side of D Winze, across 7 ft.

11. Gold 0.07 oz. Silver 2.0 oz.
About 27 ft. W. of the bottom of D Winze, across 5 ft.

12. Gold 0.11 oz. Silver 2.2 oz.
D Winze. Half way out on the E. drift. Across top of drift. A lens of ore, 4 ft. wide at center, 20 ft. long, pinching at ends. About 42 ft. E. of D Winze.

13. Gold 0.16 oz. Silver 3.7 oz.
D Winze. Across 6 ft. vein on west side at the bottom of the winze.

14. Gold 0.29 oz. Silver 8.1 Oz.
D Winze. Across 4 ft. 4 in. half way up the winze. (15 ft up) Softened vein about 6 ft. wide, walls not definite.

15. Gold 0.13 oz. Silver 1.9 oz.
About 8 ft. above the top of D Winze, in a small irregular stopeabout 25 ft. wide and 30 ft high.

16. Gold 0.27 oz. Silver 5.7 oz.
Sorel Drift. Across 4 ft.top of drift, over a 10 ft. winze where ore was first found.

17. Gold 0.21 oz. Silver 5.7 oz.
Sorel Drift. 4 ft. wide across top at turn.

18. Gold 0.38 oz. Silver 9.6 oz.
Sorel Drift. Across softened ore body 10 ft. wide. Looks good.

19. Gold 0.30 oz. Silver 4.1 oz.
Sorel Drift. Across roof of drift, 4 ft. wide, at beginning of last compass course.

20. Gold 0.16 oz. Silver 1.4 oz.
Sorel Drift, S. extension. Across 2½ ft. of brown soft ore on the E. side of the vein. (The vein is in the wall here.)

21. Gold 0.17 oz. Silver 6.3 oz.
From the bottom of an 8 ft. winze in the Sorel Drift, where ore begins. (Epperson had obtained a selected high-grade sample here.)

22. Gold 0.02 oz. Silver 1.0 oz.
H Raise Stope. In a 10 ft. crosscut S. 29° E. of the raise along side of crosscut and across veinwhere it widens to 10 ft.

23. Gold 0.04 oz. Silver 2.0 oz.

H Raise Stope. End of S. 29° E. drift, across top drift, 5 ft. wide.

24. Gold 0.03 oz. Silver 2.0 oz.

Bottom of mine, 200 ft. more or less below the main tunnel level. Across 2 ft. 4 in. in SE drift, about 40 ft. NE of winze.

25. Gold 0.03 oz. Silver 0.7 oz.

No. 1 Vein. Across 2½ ft. near end of drift.

26. Gold 0.73 oz. Silver 0.5 oz.

Across 12 in. on hanging wall near end of W. lower drift, No. 1 Vein.

27. Gold trace Silver 0.2 oz.

No. 1 vein, E-W drift at bottom of workings on this vein. Across 2 ft. of dark brown crushed material. Vein strikes S. 30° W. at this point. (Epperson said this had no value.)

28. Gold 0.45 oz. Silver 0.7 oz.

Grab sample from about 8 tons of mill tailing at the millsite.

29. Gold 0.42 oz. Silver 3.0 oz.

Average sample from the ore dump at mouth of main tunnel, about 400 tons.

Very truly yours,

Wm. I. Smyth

Wm. I. Smyth.