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THE QUADMETALS PROPERTY

Beaver County, Utah

March 22, 1969

A report by Mr. Grant Snyder (1923) is the latest known report on the property to the present time and brings up to date the production and exploration activities.

#### HISTORY AND PRODUCTION

Quadmetals property was discovered in the Autumn of 1878. Via a series of shafts and drifts the mine was an active producer from 1879 to 1885. The mine remained inactive from 1885 to 1908. In 1908 a new shaft was started and developed to the 700 feet level. Since 1909 intermittent work has been done by leasers.

Production from the mine is estimated to be \$914,000 to the present time. Production records show the average grade to be as follows: 43.63%, lead; and, 94.09 ounces of silver per ton.

Apparently considerable lower grade material was left in the mine as only the higher grade material was economically mineable between 1879-1909.

Considerable low-grade material can be found in the mine dump of The Carbonate Shaft.

#### GEOLOGY

The Quadmetals property is situated in the Great Basin physiographic province that is characterized by tilted and eroded fault block Ranges and Valleys which have been locally covered with latitic, andesitic and rhyolitic volcanics, and intruded by granodiorite and quartz monzonite stocks of Tertiary Age.

In the immediate area of the Quadmetals Mine there is an excellent exposure of massive brecciated andesitic flows that are locally covered with a thin layer of soil and rocky alluvium. A few thousand feet west of the Carbonate Shaft is found a quartz monzonite stock that intrudes the thick volcanic sequence.

The volcanic rocks have been extensively altered to sericite, chlorite, various clays and carbonate along and adjacent to an east-west fault zone that contains the workings of The Rattler and Carbonate Shafts. There is little question but what this alteration zone is related to hydrothermal activity attendant to the volcanic and intrusive activity of the general region. The alteration channel is also highly brecciated. There, conditions of alteration and brecciation provided a favorable physical-chemical environment for mineral deposition. The underground workings are currently inaccessible due to water.

The ore bodies found on The Quadmetals property are reported to be of two types. Those found as open-space fillings have proved to be of a higher grade than the disseminated type. However, the larger tonnage potential of the disseminated type make them a prime target for proposed exploration activity.

Mineralization of the alteration channel and adjacent wallrock are reported to have attained widths of 15- feet, with an average of 40 feet suggested.

Throughout the several levels of development the ore "shoots" have been reported to be continuing downward. The favorable ore structure has not been fully explored to the east, to the west, or downward to the volcanic-intrusive-sedimentary contact. The presence of carbonate rocks at depth should provide a prime loci for replacement deposits where intercepted by the east-west alteration channel. All indications are that the alteration and mineralization strike from north 75 to 85 degrees west, and dips 80 degrees to the north.

The main ore minerals are argentiferous galena, minor chalcopyrite, and sphalerite. Pyrite, quartz and carbonate are the chief gangue minerals.

## LOCATION

The Quadmetals property, formerly known as The Rattler and Carbonate Mine, or Beaver Carbonate Mine, is located in Section 7, T. 27S., R. 12 W., Beaver County, Utah.

The property is situated on the eastern side of the San Francisco Mountains, in the San Francisco Mining District at an elevation of 6750 feet, 15 miles northwest of the town of Milford, Utah, and 2½ miles northeast of the highly productive Horn Silver Mine.

There is easy access to the property via hard surfaced Utah Highway 21 from Milford, and 2½ miles of improved dirt road.

Located in an area of low relief where juniper, pinyon and sagebrush provide sparse to moderate ground cover.

Power is presently at the property through Utah Power and Light Company lines.

Water is available through underground workings, and presently all workings below 100 feet contain water.

For general location refer to enclosed topographic and aeromagnetic maps.

## PROPERTY

Quadmetals property is as follows:

Frisco Mill Site, Lot #41a (5 acres)  
Rattler Mine, U.S. Lot #45 (20.66 acres)  
Carbonate Mine, U.S. Lot #52 (7.39 acres)  
Anchor 8-38, U. S. Lot #52  
Step Mother, U.S. Survey #5112 (60.019 acres)  
Home Stake 8-36, 8-37  
Morning Star, U.S. Lot #50 (not patented)  
E½ Anchor #2, Survey #5118 (10 acres)

## PREVIOUS REPORTS

There are a number of written reports covering the Quadmetals property and are located as follows.

A report by Professor Joshus E. Clayton (1882), in which he sets forth his interpretation of the geology of the property.

An affidavit by W. W. Clark (1906), in which he describes his firsthand knowledge of the workings and ore deposits.

Two reports by M. M. Johnson, a mining engineer (1906 and 1911), in which the latest workings are discussed, production is given, and future exploration is suggested.

The most authoritative and complete geological work in the area was undertaken by The U. S. Geological Survey, and culminated in Professional Paper 80 titled "Geology And Ore Deposits of the San Francisco And Adjacent Districts". Professional Paper 80 established the stratigraphic sections, structural features, alteration, and mineral deposit characteristics of the district.

Johnson (1911) suggests that the low-grade ore averaged 7% lead, and 7 ounces silver per ton.

#### CONCLUSIONS AND RECOMMENDATIONS

The San Francisco Mining District is one of excellent potential. Production from The Horn Silver Mine up to 1909 was more than \$20,000,000, and plans are currently underway to initiate an exploration program that will bring the mine into production again. Copper production has been very substantial in the district up to the present time, most recently from the American Mining Co. (Toledo Mines) operation north of Milford.

The Quadmetals Property and The Horn Silver have proved to be the two most important deposits in volcanic rocks that have thus far been developed in the district.

It is reasonable to expect additional discoveries in the area, and particularly in The Quadmetals property where the alteration channel should be explored to depth and along both east and west extensions.

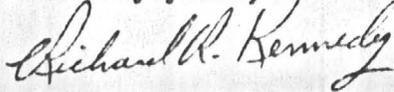
It is recommended that an exploration program be undertaken to test the proposed extension of the mineralized alteration channel and also to test for the existence of parallel structures of similar character.

The probability of discovering additional ore deposits is considered to be very good and the possibility of developing a large tonnage of mill grade mineralization is considered to be excellent.

#### PROPOSED EXPLORATION PROGRAM

1. De-water The Carbonate Shaft and workings, followed by examination, mapping and sampling of underground workings, and selective mining as necessary to explore ore extensions along hole drilling to block out ore. Cost \$70,000.
2. Detailed surface mapping and surface bulldozer cuts to determine the surface limits of the mineralized alteration channel. Magnetometer survey of property should greatly assist in this effort. Cost \$5,000
3. Drilling from surface and underground stations to specific targets as have been determined from the previous geological and geophysical work.
4. Consideration of a mill to handle dumps and developed mill grade material.
5. Mining, stockpiling and milling operations with necessary and supporting exploration activities.

Sincerely yours,



Richard R. Kennedy  
Geologist

January 29, 1906

Mr. Frank Harris  
Atlas Block  
Salt Lake, Utah

Dear Sir:

As requested by you, I herewith submit the result of my examination of the property known as the Carbonate and Rattler.

LOCATION.

About 225 miles south of Salt Lake City, near the town of Frisco, on the San Pedro Los Angeles and Salt Lake Railroad.

TOPOGRAPHY.

The property owned by the company lies on the east slope of the San Francisco Mountains, in the foothills. The slope of the surface is very slight to the west, the altitude about 6500 feet.

GEOLOGY.

The mining territory owned by the Company is covered with porphyry, in which is found an east and west fissure. The two ore bodies so far developed are found in this fissure.

ORE CHARACTERISTICS.

All of the ore so far developed is argentiferous galena in connection with a vein filling of conglomerate of the same character as the country rock. So far as can be learned, the fissure in which the ore is found is from a few feet to forty feet wide, the ore occurring in lenticular bodies.

PROPERTY.

Eight lode mining claims as follows: Carbonate, Rattler, Anchor, Anchor No. 2, Homestake, Stepmother, Advance, and Vanguard. The first six mentioned surveyed for patent in 1903; the remaining two are locations dated January 1, 1905.

AREA.

About 130 acres.

SURFACE IMPROVEMENTS.

One old dry concentrating mill, two or three small frame buildings. These should not be regarded as of any particular value.

EQUIPMENT.

One 75 H.P. hoisting engine in good condition, about 1000 feet of wire rope in fair condition. One 60 H.P. and one 40 H.P. boiler, the 60 H.P. in fair condition.

## DEVELOPMENT.

Three shafts, viz: Rattler, Carbonate, and New Shaft; several levels driven west from each of these shafts at distances of 75 and 100 feet apart.

Both the Rattler and Carbonate Shafts developed ore bodies from which the total output of the mine was taken.

### Rattler Shaft

On Rattler Claim, about 400 feet east from west end, sunk in the fissure to a depth of 815 feet, eight levels from 50 to 250 feet long to southwest along the fissure. Owing to the rake or pitch of the ore body (about 30°) to the west, each level was extended sufficient distance to intersect it and extended thru the ore to the west limit.

### Carbonate Shaft.

On Carbonate Claim, about 100 feet from east end line and about 600 feet west from Rattler Shaft, sunk in the fissure to a depth of 600 feet. The shaft in the ore body from its beginning to the 5th level. From the 5th to the 8th, the levels were extended sufficient distance to intersect the body and these levels all driven thru the ore to the west limit of the body.

### New Shaft

On Stepmother Claim, about 120 feet west and 80 feet north of the Carbonate Shaft, two compartments, vertical, sunk to a depth of 350 feet. This shaft was started in the hanging wall of the fissure and if it has not cut the fissure should do so with very little more depth. This shaft is in good condition and would no doubt be found ready for further operation after being unwatered.

## WATER.

No water on the property except what is found in the workings. In the Carbonate, Rattler, and New Shafts the water is standing within 125 feet of the top.

I have been informed that the water found in the mine is not of great quantity, sufficient however for all boiler purposes.

## PRODUCTION

The two bodies of ore developed produced between 20,000 and 30,000 tons of mill and first class ore. From 1879 to 1884 there was shipped to the Horn Silver Smelter for treatment, 4,500 tons containing an average of 47.7% lead, 97 oz. silver. These figures are obtained from papers issued by the Smelting Company.

I have been reliably informed a like amount was shipped to Salt Lake for treatment, showing the same average contents. In dollars and cents, my information is that over one half million of dollars has been the return for ore sold.

## GENERAL.

On the surface very little evidence of fissure or mineralization can be found, particularly west of the Carbonate Shaft. East of the Rattler Shaft I found good mineralization and I think some cross fissuring. Somewhere in this vicinity I believe a body of ore will be discovered.

The old Carbonate and Rattler Company made no development beyond the limit of

the two ore bodies which they worked. Between the 6th and 8th levels in the Rattler Shaft ore body a fault was encountered which apparently cut off the ore on the west. No fault or slip was found in the Carbonate Shaft ore body, and I understand the ore was full size and good grade in the bottom of the 8th level and in the shaft 50 feet below the 8th level, but was carrying between 6% and 10% zinc, which at that time made treatment prohibitory. In the two old stopes there is reputed to be a considerable tonnage of mill ore unmined and loose in the stopes. I cannot give you any value or quantity on this by reason of its inaccessibility.

A careful sampling of the tailings dump would probably disclose a profitable value here. Two points, however, would have to be considered in this connection:

First,-Whether the amount of water in the mine would be sufficient to reduce say 150 tons of this per day to make a product high enough to stand shipment, and

Second,-Whether there is value enough in the tailings to stand transportation to Milford where sufficient water could be obtained for their reduction.

#### SUMMARY.

In summing up, I would place the proposition in a somewhat better position than a prospect from the fact that ore bodies of commercial value and extent have been discovered and worked, with no prospecting beyond the limit of these; and ore left in the bottom; it is reasonable to expect a continuity for some distance at least. It would seem to me that the unprospected ground to the west with the fissure continuing in that direction, the chances for other ore bodies would be good.

If the proposition is considered, my advice would be:

The unwatering of the New Shaft, determine by examination whether the fissure was out by the shaft, if so, to drift west on the fissure perhaps to the west limit of the property about 1800 feet. (300 feet only to survey 5118 and end line to survey 5112 the claim owned lies 600' south.) At the same time drift and drill hole into the Carbonate shaft stope and unwater it so that examination could be made to determine the tonnage and value of mill ore left in the stoped.

If conditions were found favorably in this drifting and sampling, continue the sinking of the New Shaft to a depth of 350 feet below its present bottom, at this depth drift east to encounter the extension of the Rattler Shaft ore body.

If conditions were found favorable upon completion of this work, further work from new knowledge can be projected.

I believe the chances for discovery of additional ore bodies are good, and if properly managed could be made a profitable investment.

Respectfully yours,

M.M. Johnson, E. M.

4628 Citadel Street  
Salt Lake City, Utah  
84120  
November 9, 1966

GEOLOGIC REPORT-COPPER QUEEN PROSPECT  
Beaver County, Utah

INTRODUCTION

During the period October 18 through 27, 1966 mapping of the surface and underground was carried out at this property. A surface map on the scale of 1" to 50' was made and underground workings were mapped to the same scale. Also, logs were compiled on all drilling to that date. All shafts, pits, trenches, and drill holes were surveyed in at that time. Since the topography is rather smooth, no attempt was made to make a topographic map.

GEOLOGY

Most of the surface is covered by alluvium over the mapped area and only a few natural outcrops are present. The workings in the area afford the best exposures of the mineralized zone. The geology of the mapped area is rather simple and consists of contact metamorphosed limestones and marbles which dip gently, generally to the north and west. These metamorphosed and mineralized rocks lie adjacent to a coarse grained granite and the contact between the two rocks strikes generally SW-NE. Generally, the metamorphosed, calcareous rocks consist of a typical tactite made up of garnet, magnetite, epidote, tremolite, diopside?, with lesser amounts of copper carbonates, copper oxide (cuprite?), and scheelite. From present data there appears to be a definite zonation of the scheelite as the mineral weakens to the west within the tactite zone and occurs only in minor amounts in the area of the Main shaft. In the Tungsten shaft workings scheelite occurs throughout the tactite zone and the richer portions may be controlled in part by faulting. Below the 49' level the rock type gradually changes to impure quartzite in which scheelite occurs sparingly, marbles showing very sparse contact-metamorphic alteration and very limited, faulted portions of garnetized limestones showing strong scheelite. On this level faulting appears stronger and definitely controls the position of the tungsten mineralization. Generally speaking, quartzite rocks underlie the marbles and all of the area to the south of the workings consist of quartzite and the calcareous rocks have evidently been eroded away there.

Underground mapping of the levels which connect the Main shaft to the Granite shaft disclosed strongly sheared zones at or near the contact of granite to tactite zones. Along these NE striking shears were found very strong magnetite and, in places, copper oxide (cuprite?) and copper carbonates.

These levels are at 100 feet plus from the surface and appear to have been driven along the contact of the granite to the tactites. Since granite is found on both sides of these workings, the metamorphosed rocks in this area appear to be part of a roof pendant. Dr. Davie states that a 300' level extends south east about 450 feet from the granite shaft and is all in granite. This level was not mapped by the writer.

The mineralized zone as exposed by workings, drilling, and outcrops is 1200 feet long and at least 300 feet wide in places.

### Sampling

Fourteen grab samples were taken from dumps and sample No 8, which was taken from the ore pile near Tungsten shaft was gathered by taking about 300 pounds of material from around the pile, then reducing the sample by quartering and re-quartering to about 20 pounds.

Drilling samples for assay were selected where the predominant rock type was found to be tactite. Twenty five of these were sent in for assay making a total of 39 samples gathered. One sample (No 13) was lost, making a total of 38 samples sent in for assay.

### Ore Calculation

The writer is due to leave the country shortly and cannot wait for the results of assaying. Instead a rough calculation will be made of the amount of potential ground where the best tungsten is found by drilling and underground workings. By taking into account all drill holes which intersected tactite, plus the underground workings, a potential area may be calculated. Since the drill holes are irregularly spaced, triangles may be drawn to connect three holes. Then an average width of ore may be worked out for each triangle since these are fairly flat lying beds (see sheet # 3 of Principal Underground Workings). Total volume may then be calculated.

Since magnetite, garnet, etc. of tactite rocks are heavier than ordinary intrusives or sediments, an estimate of 10 cubic feet to the ton would not be too optimistic and the following calculations are based on this figure:

Area 1	5400 sq ft	X	average thickness 25'	=	$\frac{135000}{10}$	=	13,500 tons
Area 2	6300	X	20	=	$\frac{126000}{10}$	=	12600
Area 3	7220	X	20	=	$\frac{144400}{10}$	=	14440
Area 4	5435	X	23	=	$\frac{125000}{10}$	=	12500
Area 5	8320	X	23	=	$\frac{191360}{10}$	=	19136
Area 6	5210	X	33	=	$\frac{171930}{10}$	=	17193
Area 7	6620	X	25	=	$\frac{166500}{10}$	=	16650
Area 8	4550	X	33	=	$\frac{150000}{10}$	=	15000
Area 9	3750	X	33	=	$\frac{123750}{10}$	=	12375
Area 10	5300	X	15	=	$\frac{79500}{10}$	=	7950
Area 11	3612	X	25	=	$\frac{90400}{10}$	=	9040
							$\frac{150,000}{10}$ tons (approx)

The following was not taken into account in this rough calculation:

1. Dip of beds (calculation of true thickness).
2. The method of drilling and sampling precludes the possibility of every 5' interval as being entirely representative of the rock drilled at that interval since sluffing and contamination from up-hole must take place in holes that are not cased.

The above calculation is believed to be a conservative one and it is obvious from observation of the positions of the drill holes that more potential areas could be found to the east and west of the area calculated.

No attempt was made to calculate tonnage of the total tactite zone, since at the west end the geology is more complicated by faulting and granite dikes, bosses, etc. Sampling which was done on the dumps should give a rough estimate of the potential, however. **XX**

#### CONCLUSIONS AND RECOMMENDATIONS

At the eastern edge of the prospected area drill hole No 6 encountered mixed tactite and quartzite and ended in quartzite at 40 feet. However, more drilling is recommended in this direction since it was noted that in mapping of the 71' level of the workings, that intense post mineral faulting has occurred and the occurrence of quartzite in the drill hole does not preclude the possibility of the presence of tactite with tungsten-copper mineralization to the east. All of the ground extending for at least 3000 feet to the east is covered with alluvium.

More precise sampling of the underground workings may be desirable and this may be done by taking channel samples at 10 foot intervals in the drifts and also within the stopes.

Because of the presence of magnetite within the tactite zone and the pervasive cover in the area, a ground magnetic survey would be very useful in delineating possible mineralized areas.



CHARLES W. SMITH, GEOLOGIST

October 19, 1911

Beaver Carbonate Mining Company  
Salt Lake City, Utah

Gentlemen:-

By your request for an expression relative to the property owned by your company at Frisco, Utah, I herewith hand you a copy of my report dated Jan. 29, 1906, and submit the following as supplemental thereto. Since my examination of 1906 the New Shaft has been extended from a depth of 350 feet to a depth of 700 feet, and a drift driven east from the bottom along the strike of the fissure for a length of 700 feet. This drift exposes three separate bodies of ore, showing the following dimensions:

- No. 1 or West body, 100 feet long, 20 feet wide.
- No. 2 or Middle body, 250 feet long, 40 feet wide.
- No. 3 or East body, 125 feet long, 12 feet wide.

The face of the drift continues to show ore in the east body, so that this can no doubt be counted on for some greater length. In the No. 1 or west body an upraise in the ore has been extended to a connection with the old original stope bottom, showing that the ore does continue to a much greater depth than originally mined. As near as I can learn from samples taken as this work progressed, show the several bodies as exposed on the 700 level to contain the following average value per ton:

No.	% Lead	oz. Silver	oz. Gold
1	7.0	7.0	.015
2	5.0	6.0	.015
3	10.0	12.0	.015

The average value of the combined bodies will probably be around 7% lead, 8 oz. silver, 0.15 oz. Gold or a gross dollar value of \$10.66 per ton. (The No. 1 body should yield from the 700 level to the bottom of the old stope at least 50,000 tons.)

(The No. 2 and No. 3 are not sufficiently developed to base any tonnage estimate upon. I have every reason to expect that they will continue to the bottom of the old stopes above, in which event they should yield at least 175,000 tons.)

(The ores have been shown by numerous tests to be amenable to concentration at a high per centage of recovery, and to make a high grade concentrate.)

I understand you have obtained a freight rate of 40¢ per ton crude ore from the property to Milford, where sufficient water for a 200 ton per diam plant can be obtained. If this plan is carried out and such a plant erected that will be economical in its operation, the mining of the ores done by the lowest cost method, I see nothing to prevent the operation from being made a profitable one.

I have no doubt the further development of the ground will show additional ore bodies, and by reason of a fair per centage of "High Grade" having been met with in the original mining and assorted for direct shipment, I have good reason to expect the same condition will obtain in the future development of the mining. The mine has a good reserve of partly developed ores of a grade that will give a profit at present

market price, if the operations are conducted with ordinary business and technical ability.

Respectfully,

M M Johnson

## REPORT ON QUADMETALS MINE

The property now consists of six patented claims, also a mill site and smelter in the town of Frisco, amounting to about five acres.

The main smelting plant of the county occupied this site in the early days, and was operated by Hampton, Godbe and associates.

This property was first opened up about 1875. The first discovery, as I understand it, was made on the Little Morning Star claim, shown on the map, and considerable work was done and some ore shipped by the owners. Benjamin Hampton and his associate, Frank Godbe, bought this property, paying \$50,000.00, principally all cash down, he told me, for this one little claim, with the shaft down only 50 feet. It was afterwards discovered that the shaft and property that they bought was not on the claim at all, which necessitated making a re-location to protect themselves. After the purchase of the property by Mr. Hampton, he put a hoist on, which, by the way, was made out of a stationary engine off of a steam ship. This property was developed to a depth of five or six hundred feet, and they shipped considerable ore out of this part of the property.

The next discovery on the property, was the Rattler shaft, and was operated by the same people, and developed down to a greater depth than the Carbonate shaft. A dry concentrating mill was also built on the Rattler shaft, and operated for little time. Leasers are now working the tailings from this old mill with success.

The following is the production taken from the records of the Department of the Interior, United States Geological Survey, Division of Mineral Resources, up to 1884.

	Tons ore and Concentrates	Av. Pb%	Assay Ag. Oz.	Contents		Total Value
				Tons Lead	Oz. Silver	
1879-1880	130.759	41.9	95.24	54.774	12,421.66	\$18,046
1881	648.295	47.5	113.00	307.899	73,260.54	105,219
1882	1785.260	44.4	101.08	793.994	181,451.52	263,116
1883	961.874	39.0	66.48	375.924	63,925.87	100,392
Apr.1 1884	78.862	51.1	103.32	40.325	8,147.70	12,188
Apr.2 1884 to	2447.000	43.63	94.09	1020.201	214,703.00	309,273
Dec 31 1909	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<b>Total</b>	6052.050	267.53	573.21	2593.117	553,910.29	\$808,234

At which time the mine was closed down for quite a number of years, due, as I understand it, mostly on account of the shafts on both of these ore deposits being in poor condition.

We also include the amount of production during the operation of the mill of the Quadmetals Mines Company, amounting to approximately 1,000 tons, netting \$49,573.27.

Also the amount taken out by various leasers from the 80-foot winze, amounting to \$36,826.59

Also the amount taken out by other leasers on the property, amounting to \$19,597.82.

Making a total production of the mine up to the present time of \$914,231.66.

Quite a number of years later, a new Company was formed, called the Beaver Carbonate Mining Company, which included the Carbonate mine and the Rattler Company and all their holdings. They then started another shaft west of the Carbonate shaft, which is the present working shaft of the property. On account of lack of sufficient finances, the shaft was only put down a few hundred feet, when work was stopped for quite a period, and then taken up again later by some of the present owners, and continued on down to the 700 foot level, which is the depth of the mine at the

present time, excepting the winze that has been sunk from this level by leasers in the past year, or more, to a depth of 80 feet.

The mine was worked by the Beaver Carbonate Mining Company, and some ore opened up, and then the panic of 1907 came along and closed practically all the mines in the country down, this included.

It was not until 1917 that active opening up of the property began again, by the above named Company. At that time a first class hoisting plant and compressor was put on the property, and the shaft re-opened and timbered where necessary down to the 700 foot level, and the three ore shoots which were exposed on this level were all opened up and put in shape for production.

While this was going on, a first class oil flotation and concentrating plant, of a capacity of 100 tons a day, excepting the flotation part, which has a capacity of 250 tons, was erected right at the shaft.

Mill Construction commenced in 1917 and finished early in 1918.

This plant consists of a 16 x 24 Blake Rock crusher. After the ore is crushed, it passes through a 6-inch Hardinge Ball mill. From there, it is hoisted by elevator to two Dorr Classifiers. From there the ore passes through 6 Janney flotation machines. The concentrates from the machines are emptied into a 30-foot Dorr-thickener tank, and from this tank, the concentrates pass over a 6 x 6 foot Oliver Filter; the purpose of which is to eliminate quite a portion of the moisture to avoid the extra freight to the smelter. The tailings from the mill are run down into a 50-foot Dorr Thickener tank. From this tank they pass over a 12-foot Portland Filter. The object of these two last operations is to save water, which of course, is one of the essential things, as

along to the Company, is to get more depth. In fact we should have extended the shaft on down as soon as we got the 700 foot level partially opened. There is every reason to believe that bigger and better ore bodies are still below the present level. The evidence of this is based mainly on the fact the ore has continued strong all the way down from the surface.

One of the encouraging features about it is that the ore is much better grade than the ore mined and milled above the 700 level, which ran around 50 to 60 oz. per ton, while some of the shipments out of the lower part of the winze have been over 100 oz. in silver, and a high percentage in lead.

I believe as well as other mining men and geologists the main big future for the property would be to go down to the change in the formation, which would mean getting down to the lime and quartzite, which is shown on the U. S. Geological Report of San Francisco Mining District.

I would also strongly recommend that a Raise be extended up in the middle ore body. My reasons for this are according to a statement given to me by the old superintendent Mr. Clark, of the Carbonate mine (which is the old shaft near the mill) as follows: about the 350 level, a drift was started east to connect with the Rattler Shaft. This drift extended about 150 ft. east from Carbonate shaft and about 75 ft. of this drift was in good milling ore he claimed would assay about 8 to 10% lead along with other usual silver values, and they were still in this ore when they stopped this work. This ore would be directly over this big ore body exposed on the 700 level, and my belief is if a Raise was extended up in this ore above 700 level and a slope this development would open up a better grade of ore.

With a comparatively small amount of work I feel confident good results would be obtained.

There is considerable money in the Old Tailing Dump, as well as some of the Old Mine Dumps.

These dumps should bring in considerable revenue with the right kind of treatment and handling.

The Company's plans were to run these tailings and dumps through the mill some time, but nothing has been done so far in this connection.

As stated, I have urged our Company to sink the shaft to a greater depth, as well as other development work mentioned, but owing to so many other interests they have in the East, and lack of time to give this property much attention, they have not gotten around to give me such instructions.

Maps of the property showing claims and ore bodies and workings of 700 foot level can be furnished upon request.

Respectfully submitted

(signed) Grant Snyder