MYRTLE MINE		GOLD	
NAME	OLD NAMES	PRINCIPAL ORE	MINOR MINERALS

10S	33E	1
T	R	S

PUBLISHED REFERENCES

GRANT .... COUNTY

SUSANVILLE .... AREA

.... ELEVATION

.... ROAD OR HIGHWAY

.... DISTANCE TO SHIPPING POINT

MISCELLANEOUS RECORDS

PRESENT LEGAL OWNER (S) J. R. BLACKWELL — Address BEND, ORE. (JULY 1936)

STANLEY SMITH — " "(DEED) (JUNE 2ND 1991)

OPERATOR ....

Name of claims	Area	Pat.	Unpat.
	20 A.		X

Name of claims	Area	Pat.	Unpat.

EQUIPMENT ON PROPERTY

MI-21

DEPARTMENTAL RECORDS on file in	P'land	G.P.	Baker
REPORTS			
MYRTLE MINE, BURTON J. WESTMAN 7/16/46	X	X	X
SHIPMENT AND ASSAY RECORDS			
MAPS			

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****
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R E P O R T

on the

M Y R T L E   M I N E

in the

Susanville Mining District
Grant County, Oregon

****

by

Burton J. Westman
ENGINEER & GEOLOGIST
Etna, California

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*****
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mineral surveys—exploration—development—mine examination—engineering

BURTON J. WESTMAN
MINING GEOLOGIST

Member: American Institute of Mining and Metallurgical Engineers---Western Mining Council

Etna, California

July 16, 1946

Mr. Stanley Smith
Post Office Box 62
Bend, Oregon

Dear Mr. Smith:

Pursuant to your request I have carefully examined the geology of the Myrtle property and surrounding area at the head of Myrtle Creek in Section 1, Township 10 South, Range 33 East, in the Susanville Mining District of Grant County, Oregon, and herewith submit my report thereon.

Respectfully yours,

Burton J. Westman

Burton J. Westman, B.S.
ENGINEER & GEOLOGIST

MYRTLE REPORT

The name of the property covered by this report is the Myrtle. It is located in the Whitman National Forest at the head of Myrtle Creek in Section 1, Township 10 South, Range 33 East, on the east flanks of the Greenhorn Mountain Range in the Susanville Mining District, Grant County, Oregon.

1 The Myrtle property consists of one unpatented mining claim on a 100 to 150-foot wide mineralized belt of replaced limestone between almost parallel quartz diorite contacts which has been traced for a known distance of 400 feet from Myrtle Creek northwest to the edge of a flat ridge where it passes beneath deep soil and lava capping. This claim was relocated last by Stanley Smith and J. R. Blackwell of Bend, Oregon, on July 5, 1936.

The original location of this claim was made in the 90's by J. R. Blackwell who held it until 1934 when it was relocated by D. N. Gibbs who was killed accidently shortly afterwards and the property came into the possession of his son, George Gibbs. In May, 1936, Stanley Smith purchased the property from Gibbs and relocated it for himself and Blackwell. On June 2, 1941, Mr. Smith acquired a deed to Blackwell's interest. All of this being on record at Canyon City, the county seat of Grant County.

Much of the exploration on the property was performed by Blackwell during his ownership. At one time he built an arrastra to mill oxidized ore from the lowest adit but no actual milling was done.

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Badger superintendent, E. P. Kennedy, in 1905 offered to drive a 1,500-foot prospecting adit into the Myrtle property for 51% of the ownership. Blackwell turned this offer down as he did with two others similar to it. Since then Blackwell continued to explore with his limited means until old age forced him to give up the claim in about 1933.

Transportation in the region is facilitated by both road and railroad. The narrow gauge Sumpter Valley Railroad terminates at Bates, a sawmill town of the Oregon Lumber Company, 20 miles southeast up the Middle Fork of the John Day River from Susanville and 3 miles downstream from the town of Austin which is situated about a mile from the John Day Highway--U.S. 28. 70 miles east of Austin, either by railroad or highway, is the city of Baker, Oregon, on the Portland to Ogden line of the Union Pacific Railroad.

A spur of the Sumpter Valley Railroad formerly extended half way to Susanville from Bates but it was abandoned upon the construction of a good truck haulage road during the past two years. This road replaces the torturous wagon trail that had served the lower valley for many decades.

From the mouth of Elk Creek, a U. S. Forest Service road winds northward to the top of the Greenhorn Mountain Range. 1½ miles up this road is the Susanville Post Office at the Badger mine. 6 miles further up, a private road leaves this Forest Service road and goes east and south over a low, flat ridge then down the east side to the Myrtle property (See PLATE I). Recently a new logging road of better width and grade than the Forest Service road was constructed in 1945 from a point up the valley connecting with the Forest Service road about 1½ miles below the entrance to the Myrtle property.

From the leveling done by the United States Geological Survey (See
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All of these roads are in good condition except during the winter months from December to April when wet weather hampers travel by auto and prohibits heavy trucking. On Greenhorn Mountain the snow blocks travel during the winter months although at other properties this is overcome with the use of tractors and sleds to haul ores, concentrates, and supplies. These roads are being improved for all-weather use, however, and in a few years the lower elevation roads will have been conditioned for all-year use. Even at present these roads have brought hauling costs to a bracket far below that the early operators had to contend with in using wagons over mere trails.

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On the property there is sufficient timber for extensive mining operations. Yellow and lodge pole pines predominate over Douglas fir and tamarack. Much of this timber is of a size most suitable for mining purposes and surface construction.

The climate of the area is typical of the mountain regions of northeastern Oregon. The long summers are dry with but a few thunder showers. The winters, however, are wet and bring most of the annual precipitation of 20 to 30 inches. From December to March snow is common above an elevation of 4,000 feet.

The topographic relief of the Susanville Mining District is moderate considering elevations of 3,400 feet at the mouth of Elk Creek and, seven miles northeast, 7,700 feet on Indian Rock, and, further to the east, Boulder Peak (misspelled "Bourne" on the accompanying map showing the Land Forms of Oregon) at 9,300 feet and Vinegar Hill at 8,120 feet. Save for bench-like areas of lava and agglomerate outcrops along Middle Fork valley, the region has a topography of rounded hills and ridges. Third order leveling by Homer Hadley in 1905 and by E. E. Harris in 1938 placed elevation bench marks throughout the region along the roads. The more important bench marks are given in Table 1.

Table 1(*)

STATION	ELEVATION
5 Austin, T11S, R35E, west side of Section 21, 30 feet west of store, 20 feet west of road, in top of boulder; aluminum tablet stamped "4074 A"........................	4,081.378'
1.9 miles southwest of the Susanville Guard Station, 20 feet south of center line of forks of road, 3 feet north of sign post marked "Bates 20 miles, Galena 3 miles, Susanville Guard Station 2 miles, Indian Rock 14 miles, Desolation Guard Station 19 miles", in top of concrete post; standard tablet stamped "1938 M 33 3483", fence post marked "U.S. 3482 PBM"................................	3,481.935'
150 feet south of the Susanville Guard Station, on east edge of road, in root on west side of ponderosa pine tree; copper nail and washer marked "U.S. 3975 BM".........	3,974.760'
4.7 miles northeast of the Susanville Guard Station, 16 feet east of center line of angle in road, at point where road crosses from west to east side of ridge and continues to climb, in top of concrete post; standard tablet stamped "1938 M 38 5603", 30-inch pine tree 30 feet southwest marked "U.S. 5603 PBM" (**)................	5,602.144'
5.7 miles northeast of the Susanville Guard Station, on east edge of angle in road, north edge of clearing to the east, in root on north side of leaning fir tree; copper nail and washer, tree marked "U.S. 5908 BM" (***)..	5,907.430'

(*) From U.S.G.S. notes of third order leveling in quadrangles #3 and #4 Susanville, Oregon.

(**) This point is 1.35 miles from road end at the Myrtle property.

(***) This bench mark is shown on Plate I.

At the elevation of the Myrtle property, all surface buildings must be constructed with sufficient strength to withstand the weight of snow in the event of a heavy fall occurring; this is easily prevented with corrigated steel roofing which causes snow to slide off readily. The temperatures will not be extreme enough to affect any operation. The range is from 30° to 85°.

6 Adequate drainage is afforded by the topography of the Myrtle Creek basin. But little subsurface water is expected and with most of the preliminary mining accomplished from adits this shall be no problem; less water should be encountered in shaft mining.

The regional geology of the Susanville Mining District is essentially that of an erosional feature having occurred in a region formerly covered by an extensive series of tuffs, lavas, and agglomerates of the Cenozoic age. Remnant outcrops of these volcanic rocks are found at higher elevations and along the Middle Fork valley. Erosion of this capping has exposed the underlying mineral formations; the uneroded volcanics surrounding form a natural boundary of this mining district.

Beneath these volcanic rocks are strata of sandstones, shales, and conglomerates deposited either in the Triassic or Jurassic periods of the Mesozoic age. The old land surface upon which these sediments and volcanics lie, is composed of late Paleozoic sediments which have been altered to schist. Within this old schist series are subordinate amounts of contemporary limestones, quartzite, and some greenstones. All formations older than the Jurassic were intruded by masses of basic rock(that has altered to serpentine) and later intruded by quartz diorite. All of these rocks are exposed by erosion in the Susanville Mining District and most of them are found in the erosional placer gravels of the Quaternary age in creek beds and in the valley.

Aside from the volcanics that ring the district, the most prominent rock is the quartz diorite which makes up the main core of the Greenhorn Mountains though at lower elevations on the eastern flanks of
7 this range a white to grey actinolite and talc schist predominates with minor amounts of carbonaceous slate, quartzite, and greenstone.

While no limestone has been previously reported from the district, the epidote-garnet rock and actinolite-marble which forms the main mineralized mass at the Myrtle property shows that limestone and limey slates were present before the mineralization stage.

The geology of the Myrtle property is essentially a wide belt of this mineralized limestone trending northwest between diorite contacts. Having been caught between intruding masses of this quartz diorite (12) (See Plate II), this limestone was altered to massive garnet with smaller amounts turning to actinolite and epidote. Into this favorable lime came an array of ore minerals of which pyrite and pyrrhotite are the most common.

All of the exploration on the Myrtle claim has been performed out in the center of this altered limestone mass which forms the backbone of a low rise between two draws. Here the bedrock is quite shallow between massive outcrops of massive garnet affording easy prospecting along numerous shear zones and fractures where invading mineral solutions last moved to deposit their metallic wealth as a base ore replacement. And where all of the exploration was confined to the central portion, little or no attempt has been made to explore the more deeply buried contacts (A) and (B) near both areas on each side of the mineralized central mass.

The ore encountered to date in this central portion was found in numerous, closely spaced fractures along mineralized zones parallel to the main mass of replaced limestone. The values are predominantly
8 associated with sulfides which, near the surface, have oxidized and decomposed causing the ore to have a distincly granular appearance much like ferruginous sandstone of red, brown, and yellow hues. Some is quite black due to manganese oxides. The gold values are fine as is common in base ores and oxidized base ores. Numerous assays have been taken over a period of years and those taken during the past ten years by Stanley Smith in his development work are shown in Table 2. These samples as assayed average $7.12 per ton but, having been shown much of the material sampled, it is almost certain that many could be classed as garnet wall rock which encloses the ore zones and would not be included in ore as would be practiced in selective base ore mining methods. It is reasonable to state that the Myrtle ore has a much higher tenor than the $7.12 per ton average stated above.

It is noteworthy that the massive pyrite carrys but very little gold and for reasons unknown remains undecomposed at or near the surface. This favorable sign shows that the values accompany some other metallic mineral undetected as yet because development on the valuable oxidized ore has not reached the depth of decomposition, or zone of oxidation, to permit study of the original ore. The best surface ore is the oxidized material caused by the decomposition of unknown agents and

Table 2

ASSAYS FROM MYRTLE PROPERTY

Table Number	Location	Material	Gold @$35	Silver @$0.71
1.	(3)	Sulfide-garnet	$00.30	......
2.	(5)	Black granular ore	65.80	$00.85
3.	(2)	Garnet rock	Trace	......
4.	(3)	Garnet rock	Trace	......
5.	(5)	Ochre-garnet	6.30	......
6.	(2)	Ochre-garnet	1.40	......
7.	(2)	Ochre-garnet	1.75	......
8.	(5)	Ochre-garnet	2.45	......
9.	(6)	Ochre	17.85	......
10.	(9)	Quartz-Ochre float	36.00	......
11.	(5)	Grab sample, dump	4.20	......
12.	(4)	Mineral complex	1.57	......
13.	(2)	Tremolite-marble	0.35	......
14.	(2)	Massive pyrite	0.52	......
15.	(5)	Crystaline quartz	6.65	......
16.	(5)	Grab sample, dump	2.45	......
17.	(5)	Grab sample, dump	2.80	2.40
18.	(2)	Garnet	0.35	......
19.	(5)	Ochre-garnet	7.00	......
20.	(3)	Garnet	0.70	......
21.	(5)	3' sample across shaft	9.10	......
22.	(3)	Massive pyrite	0.70	0.57
23.	(5)	"Long black crystals"	Trace	Trace
24.	(5)	Marble	2.80	......
25.	(5)	"Lime and iron" tested for tungsten, none found		

the highest values seem to accompany that ore which has a distinct black to dark brown coloration caused by graphite, manganese or both. The presence of free quartz and the hydrous aluminum silicate, analcite, seem to be especially good associate minerals of the ore that carries the highest values.

Development to date consists of a series of open cuts and short adits
following the central portion of the mineralized belt. These are
9 numbered on Plate II and are described as follows:

(1) A caved adit of unknown length driven along north-south mineralized shear zones. Wall rock is gray to buff massive garnet.

(2) A 15-foot northwest cut at the end of which is a 30-foot adit driven $N5^{\circ}W$. Wall rock massive garnet as in #1 plus much tremolite-marble. Some massive sulfides mostly pyrite. Ochre ore. Prominent joints in the wall rock: $N45^{\circ}E$ dipping 45° to 90° South.

(3) A 10-foot northwest cut in garnet and pyrite. Much decomposed red, brown, and black granular ore. Some analcite present.

(4) Long adit of unknown length now caved. Dump consists of garnet, sulfide-garnet, marble, fine slatey quartzite, and ochre.

(5) A 25-foot northwest open cut at the end of which is a 5'X5' vertical shaft about 15 feet deep. Mostly in garnet and dark brown granular ochre-garnet ore. Marble, twinned calcite, free quartz, chlorite, tremolite, and analcite noted here.

(6) A shallow cut to the southwest and a 25-foot adit in garnet, sulfides, and ochre. Adit is due west and situated 35 feet north of the open cut.

(7) A 11'X 6'X 5' pit in overburden. Some blocks of yellow to brown quartz and ochre float encountered. Bedrock not reached.

(8) Three small test pits which from the southwest to the northeast are: first in soil—no bedrock; second in soil possibly derived from decomposed diorite—much quartz-ochre float; third in decomposed diorite soil with quartz diorite bedrock—no float ore.

(9) Three test pits from southwest to northeast: first in soil—no bedrock; second in soil with some quartz-ochre float—no bedrock; third and largest pit in decomposed diorite soil with much quartz-ochre float—quartz diorite bedrock.

Geophysical exploration by the author with radio equipment brought

to light two large mineralized areas (shaded on Plate II) and one smaller zone which have not previously been explored. One test hole was put down about 100 feet northwest of pit (7) and heavily mineralized, decomposed quartz diorite was encountered. As yet the contact has not been uncovered but from this evidence
10 contact A must either swing sharply west from (9) or else there is an interformational intrusion of diorite. Somewhere near the uppermost (northwestern) indicated mineralized zone the vein from which all of the quartz float came will be found. This zone in all likelihood will continue to the northwest where no exploration has been done.

In 1936 one laboratory mill test was run by E. N. Kirk at San Francisco on a lot of ore taken from the shaft at (5) and the results were:

Heads: $6.30 per ton
Ore ground to 80 mesh with a recovery:
(a) by amalgamation: $1.26 gold per ton
(b) by concentration at 1.11%: $2.24 gold per ton. Value of concentrates: $176.40 gold per ton.
Tailings: $2.80 gold per ton

No reason was given for the high loss of values in the tailings but this would have to be determined and milling done accordingly. It was stated that amalgamation was hindered by manganese coating 3/5 of the free gold.

Other tests made of ores were spectrographic analyses of massive pyrite and a peculiar mass of minerals, encountered in adit (4) and now found in the dump. This rock consists of large twinned calcite having inclusions of pyrrhotite, garnet, hornblende, diopside?, epidote, and quartz. The spectrographic analyses are as follows:

SPECTROGRAPHIC ANALYSES

11

	Massive pyrite[1]	Massive pyrite[2]	Mineral complex[3]
Aluminum	1.0 to 10.0%	0.5 to 2.0%	Over 10%
Arsenic	....	....	0.1 to 0.01%
Barium	0.001%	....	....
Calcium	10.0%	5.0 to 15.0%	Over 10%
Chromium	0.1%	0.01 to 0.1%	0.01 to 0.1%
Copper	0.01%	0.1 to 0.2%	....
Iron	Over 10.0%	10.0 to 20.0%	Over 10%
Lead	0.01%	....	....
Magnesium	0.01%	1 to 5%	1 to 10%
Manganese	0.1 to 1.0%	0.1 to 0.5%	0.1 to 1.0%
Molybdenum	....	0.001%	....
Nickel	Trace	....	0.001 to 0.01%
Silicon	Over 10%	5.0 to 15.0%	Over 10%
Sodium	....	....	0.01 to 0.1%
Strontium	....	....	0.01 to 0.1%
Tin	....	....	0.01 to 0.1%
Titanium	0.001%	0.05 to 0.1%	0.01 to 0.1%
Vanadium	....	....	0.01 to 0.1%
Zinc	....	0.001 to 0.01%	....

1) From (2); analyzed by John Herman Laboratory in Los Angeles, December 4, 1939.
2) From (3); analyzed by Ragooland-Broy Laboratories, San Francisco, July 26, 1944.
3) From dump site (4); analyzed by Oregon State Department of Geology and Mineral Industries, June 26, 1946

Flanking the Myrtle property are two claims. On the one to the west, the only exploration was at (10). Here, at the northwestern end of a 40-foot cut in decomposed quartz diorite, is a 5'X7' shaft sunk about 15 feet vertically on one of the larger ochre filled joints that strike northeast. These seams carry some free gold. No attempt was made to determine what ore occurance there should be on contact (B) which, like (A) follows a shallow draw on the west side of the Myrtle diggings.

To the east on the "Mike" claim located by Joseph M. Braun on July 12, 1941, there has been no exploration although there seems to have had some placering done in the vicinity of (C) in slightly consolidated sandstones, shales, and conglomerates of either the Triassic or Jurassic age (John Day beds?). There is one outcrop of grey schist exposed at (11) which is similar to the main series of the district. Here again there has been no exploration to determine the extent of mineralization along the contacts between it and the quartz diorite.

RECOMMENDATIONS

The most important of these is to explore both contacts (A) and (B). Opening contact (A) is particularly advisable to determine the value of the large mineralized zones outlined by radio detection so as to uncover the source of the quartz-ochre float found in (7), (8), and (9). With so little quartz present in any of the openings from (1) to (7), the contacts, especially the northwestern end of contact (A), are the most likely locations for true fissue veins of great depth. It is entirely possible that both contacts come together and form the walls of a true fissure vein that continues northwest from the main mass of mineralized altered limestone. In any event, the area northwest of (7) beneath the deep soil of the flat ridge is definitely favorable ground to explore.

CONCLUSION

The evidence that was observed and recorded leads me to believe that the Myrtle property, because of its favorable geology, has the best of possibilities of being developed into a moderately large mine under
13 the competent guidance of trained management.

Respectfully submitted,

Burton J. Westman

Etna, California
July 16, 1946

Burton J. Westman, B.Sc.
ENGINEER & GEOLOGIST

STANDARD CODES | Cable Address: "ACCURACY"

269874

John Herman Laboratory

771 San Julian Street, Los Angeles 14, California

TELEPHONE: VAndike 6232 | U. S. A. | ORE TREATMENT TESTS

Report of - Spectrographic Qualitative Analysis

Made for Burton J. Westman *Date* October 10,1946

Element	Estimated Quantity
Iron	Over 10%
Silicon	Over 10%
Chromium	1 - 10%
Lead	1 - 10%
Zinc	1 - 10%
Tungsten	1 - 10%
Copper	1%
Aluminum	1%
Mercury	1%
Magnesium	0.1 - 1%
Nickel	0.1 - 1%
Coblat	0.1%
Arsenic	0.1%
Cadmium	0.1%
Manganese	0.1%
Vanadium	0.001 - 0.01%
Strontium	0.001 - 0.01%
Titanium	0.001 - 0.01%
Gallium	0.001 - 0.01%
Molybdenum	0.001%

High in Silver and possibly some gold

Pony Shoe Oregon

Analyses of concentrates of ore taken from the "PONY SHOE" prospect Althouse Creek in southwestern Grants Pass quadrangle. BJW

Estimated Quantities to the nearest Factor of Ten.

ALL VALID REPORTS BEAR THIS SEAL

John Herman

CHEMIST

(OVER)

REPORT ON THE MYRTLE MINE
IN THE SUSANVILLE MINING DISTRICT
GRANT COUNTY, OREGON
by

Burton J. Westman, Engineer & Geologist
Etna, California

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Austin, T 11 S, R 35 E, west side of Section 21, 30 feet west of store, 20 feet west of road, in top of boulder; aluminum tablet stamped "4074 A"	4,081.378'
1.9 miles southwest of the Susanville Guard Station, 20 feet south of center line of forks of road, 3 feet north of sign post marked "Bates 20 miles, Galena 3 miles, Susanville Guard Station 2 miles, Indian Rock 14 miles, Desolation Guard Station 19 miles", in top of concrete post; standard tablet stamped "1938 H 33 3483", fence post marked "U. S. 3482 PBM"	3,481.935'
150 feet south of the Susanville Guard Station, on east edge of road, in root on west side of ponderosa pine tree; copper nail and washer marked "U. S. 3975 BM" . . .	3,974.760'
4.7 miles northeast of the Susanville Guard Station, 16 feet east of center line of angle in road, at point where road crosses from west to east side of ridge and continues to climb, in top of concrete post; standard tablet stamped "1938 H 38 5603", 30-inch pine tree 30 feet southwest marked "U. S. 5603 PBM" (**)	5,602.144'
5.7 miles northeast of the Susanville Guard Station, on east edge of angle in road, north edge of clearing to the east, in root on north side of leaning fir tree; copper nail and washer, tree marked "U. S. 5908 BM" (***)	5,907.430'

(*) From U.S.G.S. notes of third order leveling in quadrangles #3 and #4 Susanville, Oregon.

(**) This point is 1.35 miles from road end at the Myrtle property.

(***) This bench mark is shown on Plate I.

At the elevation of the Myrtle property, all surface buildings must be constructed with sufficient strength to withstand the weight of snow in the event of a heavy fall occurring; this is easily prevented with corrugated steel roofing which causes snow to slide off readily. The temperatures will not be extreme enough to affect any operation. The range is from 30° to 85°.

Adequate drainage is afforded by the topography of the Myrtle Creek basin. But little subsurface water is expected and with most of the preliminary mining accomplished from adits this shall be no problem; less water should be encountered in shaft mining.

The regional geology of the Susanville Mining District is essentially that of an erosional feature having occurred in a region formerly covered by an extensive series of tuffs, lavas, and agglomerates of the Cenozoic age. Remnant outcrops of these volcanic rocks are found at higher elevations and along the Middle Fork valley. Erosion of this capping has exposed the underlying mineral formations; the uneroded volcanics surrounding form a natural boundary of this mining district.

Beneath these volcanic rocks are strata of sandstones, shales, and conglomerates deposited either in the Triassic or Jurassic periods of the Mesozoic age. The old land surface upon which these sediments and volcanics lie, is composed of late Paleozoic sediments which have been altered to schist. Within this old schist series are subordinate amounts of contemporary limestones, quartzite, and some greenstones. All formations older than the Jurassic were intruded by masses of basic rock (that has altered to serpentine) and later intruded by quartz diorite. All of these rocks are exposed by erosion in the Susanville Mining District and most of them are found in the erosional placer gravels of the Quaternary age in creek beds and in the valley.

Aside from the volcanics that ring the district, the most prominent rock is the quartz diorite which makes up the main core of the Greenhorn Mountains though at lower elevations on the eastern flanks of this range a white to gray actinolite and talc schist predominates with minor amounts of carbonaceous slate, quartzite, and greenstone.

While no limestone has been previously reported from the district, the epidote-garnet rock and actinolite-marble which forms the main mineralized mass at the Myrtle property shows that limestone and limey slates were present before the mineralization stage.

The geology of the Myrtle property is essentially a wide belt of this mineralized limestone trending northwest between diorite contacts. Having been caught between intruding masses of this quartz diorite (12) (See Plate II), this limestone was altered to massive garnet with smaller amounts turning to actinolite and epidote. Into this favorable lime came an array of ore minerals of which pyrite and pyrrhotite are the most common.

All of the exploration on the Myrtle claim has been performed out in the center of this altered limestone mass which forms the backbone of a low rise between two draws. Here the bedrock is quite shallow between massive outcrops of massive garnet affording easy prospecting along numerous shear zones and fractures where invading mineral solutions last moved to deposit their metallic wealth as a base ore replacement. And where all of the exploration was confined to the central portion, little or no attempt has been made to explore the more deeply buried contacts (A) and (B) near both draws on each side of the mineralized central mass.

The ore encountered to date in this central portion was found in numerous, closely spaced fractures along mineralized zones parallel to the main mass of replaced limestone. The values are predominantly associated with sulfides which, near the surface, have oxidized and decomposed causing the ore to have a distinctly granular appearance much like ferruginous sandstone of red, brown, and yellow hues. Some is quite black due to manganese oxides. The gold values are fine as is common in base ores and oxidized base ores. Numerous assays have been taken over a period of years and those taken during the past ten years by Stanley Smith in his development work are shown in Table 2. These samples as assayed average $7.12 per ton but, having been shown much of the material sampled, it is almost certain that many could be classed as garnet wall rock which encloses the ore zones and would not be included in ore as would be practiced in selective base ore mining methods. It is reasonable to state that the Myrtle ore has a much higher tenor than the $7.12 per ton average stated above.

It is noteworthy that the massive pyrite carries but very little gold and for reasons unknown remains undecomposed at or near the surface. This favorable sign shows that the values accompany some other metallic mineral undetected as yet because development on the valuable oxidized ore has not reached the depth of decomposition, or zone of oxidation, to permit study of the original ore. The best surface ore is the oxidized material caused by the decomposition of unknown agents and the highest values seem to accompany that ore which has a distinct black to dark brown coloration caused by graphite, manganese or both. The presence of free quartz and the hydrous aluminum silicate, analcite, seem to be especially good associate minerals of the ore that carries the highest values.

Development to date consists of a series of open cuts and short adits following the central portion of the mineralized belt. These are numbered on Plate II and are described as follows:

(1) A caved adit of unknown length driven along north-south mineralized shear zones. Wall rock is gray to buff massive garnet.

(2) A 15-foot northwest cut at the end of which is a 30-foot adit driven N 5° W. Wall rock massive garnet as in #1 plus much tremolite-marble. Some massive sulfides mostly pyrite. Ochre ore. Prominent joints in the wall rock: N 45° E dipping 45° to 90° south.

Table 2

ASSAYS FROM MYRTLE PROPERTY

Table Number	Location	Material	Gold @$35	Silver @$0.71
1.	(3)	Sulfide-garnet	$00.30	......
2.	(5)	Black granular ore	65.80	$00.85
3.	(2)	Garnet rock	Trace	......
4.	(3)	Garnet rock	Trace	......
5.	(5)	Ochre-garnet	6.30	......
6.	(2)	Ochre-garnet	1.40	......
7.	(2)	Ochre-garnet	1.75	......
8.	(5)	Ochre-garnet	2.45	......
9.	(6)	Ochre	17.85	......
10.	(9)	Quartz-Ochre float	36.00	......
11.	(5)	Grab sample, dump	4.20	......
12.	(4)	Mineral complex	1.57	......
13.	(2)	Tremolite-marble	0.35	......
14.	(2)	Massive pyrite	0.52	......
15.	(5)	Crystalline quartz	6.65	......
16.	(5)	Grab sample, dump	2.45	......
17.	(5)	Grab sample, dump	2.80	2.40
18.	(2)	Garnet	0.35	......
19.	(5)	Ochre-garnet	7.00	......
20.	(3)	Garnet	0.70	......
21.	(5)	3' sample across shaft	9.10	......
22.	(3)	Massive pyrite	0.70	0.57
23.	(5)	"Long black crystals"	Trace	Trace
24.	(5)	Marble	2.80	......
25.	(5)	"Lime and iron" tested for tungsten, none found.		

(3) A 10-foot northwest cut in garnet and pyrite. Much decomposed red, brown, and black granular ore. Some analcite present.

(4) Long adit of unknown length now caved. Dump consists of garnet, sulfide-garnet, marble, fine slaty quartzite, and ochre.

(5) A 25-foot northwest open cut at the end of which is a 5' x 5' vertical shaft about 15 feet deep. Mostly in garnet and dark brown granular ochre-garnet ore. Marble, twinned calcite, free quartz, chlorite, tremolite, and analcite noted here.

(6) A shallow cut to the southwest and a 25-foot adit in garnet, sulfides, and ochre. Adit is due west and situated 35 feet north of the open cut.

(7) A 11' x 6' x 5' pit in overburden. Some blocks of yellow to brown quartz and ochre float encountered. Bedrock not reached.

(8) Three small test pits which from the southwest to the northeast are: first in soil--no bedrock; second in soil possibly derived from decomposed diorite--much quartz-ochre float; third in decomposed diorite soil with quartz diorite bedrock--no float ore.

(9) Three test pits from southwest to northeast: first in soil--no bedrock; second in soil with some quartz-ochre float--no bedrock; third and largest pit in decomposed diorite soil with much quartz-ochre float--quartz diorite bedrock.

Geophysical exploration by the author with radio equipment brought to light two large mineralized areas (shaded on Plate II) and one smaller zone which have not previously been explored. One test hole was put down about 100 feet northwest of pit (7) and heavily mineralized, decomposed quartz diorite was encountered. As yet the contact has not been uncovered but from this evidence contact A must either swing sharply west from (9) or else there is an interformational intrusion of diorite. Somewhere near the uppermost (northwestern) indicated mineralized zone the vein from which all of the quartz float came will be found. This zone in all likelihood will continue to the northwest where no exploration has been done.

In 1936 one laboratory mill test was run by E. M. Kirk at San Francisco on a lot of ore taken from the shaft at (5) and the results were:

Heads: \$6.30 per ton
Ore ground to 80 mesh with a recovery:
  (a) by amalgamation: \$1.26 gold per ton
  (b) by concentration at 1.11%: \$2.24 gold per ton. Value of concentrates: \$176.40 gold per ton.
Tailings: \$2.80 gold per ton.

No reason was given for the high loss of values in the tailings but this would have to be determined and milling done accordingly. It was stated that amalgamation was hindered by manganese coating 3/5 of the free gold.

Other tests made of ores were spectrographic analyses of massive pyrite and a peculiar mass of minerals encountered in adit (4) and now found in the dump. This rock consists of large twinned calcite having inclusions of pyrrhotite, garnet, hornblende, diopside?, epidote, and quartz. The spectrographic analyses are as follows:

(See next page)

Flanking the Myrtle property are two claims. On the one to the west, the only exploration was at (10). Here, at the northwestern end of a 40-foot cut in decomposed quartz diorite, is a 5' x 7' shaft sunk about 15 feet vertically on one of the larger ochre filled joints that strike northeast. These seams carry some free gold. No attempt was made to determine what ore occurrence there should be on contact (B) which, like (A) follows a shallow draw on the west side of the Myrtle diggings.

To the east on the "Mike" claim located by Joseph M. Braun on July 12, 1941, there has been no exploration although there seems to have had some placering done in the vicinity of (C) in slightly consolidated sandstones, shales, and conglomerates of either the Triassic or Jurassic age (John Day beds?). There is one outcrop of gray schist exposed at (11) which is similar to the main series of the district. Here again there has been no exploration to determine the extent of mineralization along the contacts between it and the quartz diorite.

RECOMMENDATIONS

The most important of these is to explore both contacts (A) and (B). Opening contact (A) is particularly advisable to determine the value of the large mineralized zones outlined by radio detection so as to uncover the source of the quartz-ochre float found in (7), (8), and (9). With so little quartz present in any of the openings from (1) to (7), the contacts, especially the northwestern end of contact (A), are the most likely locations for true fissure veins of great depth. It is entirely possible that both contacts come together and form the walls of a true fissure vein that continues northwest from the main mass of mineralized altered limestone. In any event, the area northwest of (7) beneath the deep soil of the flat ridge is definitely favorable ground to explore.

CONCLUSIONS

The evidence that was observed and recorded leads me to believe that the Myrtle property, because of its favorable geology, has the best of possibilities of being developed into a moderately large mine under the competent guidance of trained management.

Respectfully submitted,

Etna, California
July 16, 1946

/s/ Burton J. Westman, B. Sc.
ENGINEER & GEOLOGIST

SPECTROGRAPHIC ANALYSES

	Massive pyrite[1]	Massive pyrite[2]	Mineral complex[3]
Aluminum	1.0 to 10.0%	0.5 to 2.0%	Over 10%
Arsenic	....	....	0.1 to 0.01%
Barium	0.001%	....	....
Calcium	10.0%	5.0 to 15.0%	Over 10%
Chromium	0.1%	0.01 to 0.1%	0.01 to 0.1%
Copper	0.01%	0.1 to 0.2%	....
Iron	Over 10.0%	10.0 to 20.0%	Over 10%
Lead	0.01%	....	....
Magnesium	0.01%	1 to 5%	1 to 10%
Manganese	0.1 to 1.0%	0.1 to 0.5%	0.1 to 1.0%
Molybdenum	....	0.001%	....
Nickel	Trace	....	0.001 to 0.01%
Silicon	Over 10%	5.0 to 15.0%	Over 10%
Sodium	....	....	0.01 to 0.1%
Strontium	....	....	0.01 to 0.1%
Tin	....	....	0.01 to 0.1%
Titanium	0.001%	0.05 to 0.1%	0.01 to 0.1%
Vanadium	....	....	0.01 to 0.1%
Zinc	....	0.001 to 0.01%	....

1) From (2); analyzed by John Herman Laboratory in Los Angeles, December 4, 1939.
2) From (3); analyzed by Ragooland-Broy Laboratories, San Francisco, July 26, 1944.
3) From dump at (4); analyzed by Oregon State Department of Geology and Mineral Industries, June 26, 1946.