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REPORT

on the

HUMBOLDT KING MINE

Pershing County, Nev.

also called The Bonanza King Mine
Pat #1799

PATENTED MINING CLAIM #1799
BONANZA KING located in SPRING VALLEY
DISTRICT, PERSHING COUNTY, NEVADA
UNDER NAME OF, MADISON M. MAKEEVER

by

Lawrence A. Woodworth
Mining Engineer

1934

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Prospectus, Humboldt King Mining Co.
Report by J. T. Lilly
Extracts from U. S. Geological Survey
Bulletin #114
Copy of report by J. T. Lilly, May 1, 1910
" " letter " " " " Feb. 7, 1920

SUMMARY

The Humboldt King mine is located on the eastern side of the Humboldt Range south of Spring Valley, near the ghost town of Fitting, Pershing County, Nevada. Although formerly equipped with a 15 stamp mill, the property now has no usable buildings or equipment. The shaft is now caved.

It was developed to a depth of 300 feet by a two compartment vertical shaft with levels at 150, 175, 225, and 300 feet below the surface. An ore-body 200 feet long on the 225 level dipping to the east was developed in these workings and most of the ore removed, but ore reserves remain worth $76,000.00 at the present prices 1934 Silver - .25 oz. Gold $20.00 oz. of gold and silver. Further development will, no doubt, expose ore worth $210,000.00. The new development would cost $33,000.00. *

The vein follows a fissure at or near the north contact of a dioritic dike 45 feet wide N 60° W 82° E, with a porphyritic rhyolite belonging to the Koipato formation.

The cost of equipping the property, using all new machinery would be between $36,000.00 and $59,000.00.

* Today - Silver 1.29 oz.
Gold $32.00 - oz.

Good used machinery could be obtained for probably one half the cost of the new machinery prices.

The capital required for this property would be $60,000.00 (overhead not included) and the ore available would pay the cost of the new development.

The profit from the property would be between $100,000.00 and $150,000.00. The life of the property would be 3 or 4 years. The property can be recommended as a small producer, providing a small royalty is charged.

REPORT ON HUMBOLDT KING MINE

Pershing County, Nevada

LOCATION AND EXTENT

The Humboldt King Mine, formerly known as the Eagle Mine and also as the Bonanza King Mine, is located on the eastern side of the Humboldt Range in Section 36, Township 29 N, Range 34 E, and Section 1, Township 28 N, Range 34 E, Mount Diablo base meridian, Pershing County, Nevada. It is between Spring Valley and Dry Gulch at an elevation of 5,000 feet. The ghost town of Fitting is located near the mine in Spring Valley. The property is reached either from Oreana on the Southern Pacific Railway by the way of Limerick Canon across Spring Valley Pass and down Spring Valley, a distance of twelve miles, or from Mill City, also on the Southern Pacific Railway by the way of Unionville, a distance of thirty miles. In the winter, snow and ice block the road from Oreana and all supplies have to come from Mill City. In 1920 the property consisted of six mining claims and a mill site. (See map of property at end of this report.) The claims are ---

Bonanza King claim, patented #1799	20 acres
McCurdy claim, located October 3, 1904	20 "
Lafayette " " " " "	20 "

Ruby claim, located October 3, 1904	20	acres
Conclusion claim	20	"
Gold Leaf "	18	"
Eagle Mill site	5	"
	123	"

These claims covered about 4,000 feet along the vein.

HISTORY OF THE REGION

Gold and silver were discovered in the Humboldt Range in 1860. Supplies and machinery were hauled to the properties by ox team from Marysville and Sacramento, California, as the Southern Pacific Railway had not yet been built. Typical of Nevada gold and silver strikes, the Range became the scene of great activity. Many mines were located and a smelter was built at Oreana to handle the ores of this new district. Among the mines which came into prominence were the Big Four Mine, the Queen of Sheba, Star Peak Mine, Arizona Mine, Rysgatch Mine, Wheeler Mine, Humboldt Queen, Plainview Mine, De Soto Mine, Nevada Union Mine, Pflinger Mine, Moonlight Mine, Latoska Mine, Humboldt Consolidated Mine, Federal Mine, Humboldt King Mine, Rochester Mines, Silver State Mine, Buck & Charlie Mine, Nevada Packard Mine, and many others. (See map at end of report.) One by one these mines ceased to operate and in 1920 only the Arizona, Buck & Charlie, Rochester Mines, and Nevada Packard were flourishing. Today all of these mines are idle. Many of them produced considerable

ore. Rochester district alone produced over seven million dollars, while the placers of American Canon are credited with ten million dollars. In Spring Valley placer mines were worked, first by American miners and then by Chinese, and finally a portion of the ground was dredged. Just how much gold was recovered will never be known, but it was probably in the neighborhood of several million dollars.

HISTORY OF MINE

The mine was located in 1868 as the Eagle Mine, and relocated in 1871. In 1873 it was sold to the Oakland Mill and Mining Company and later sold to the Bonanza King Mining Company who changed the name of the mine to the Bonanza King Mine. Work was carried on intermittently until it was purchased by the Humboldt King Mining Company who changed the name of the property to the Humboldt King Mine. (See Prospectus at the end of the report.)

Mr. J. T. Lilly was placed in charge but was hampered by lack of capital and supplies. Shortage of coal caused the mine to close down in 1908 and the workings flooded. In March of the same year, Mr. Lilly wrote a report on the mine, a copy of which will be found at the end of this report.

Under the same management the mine was reopened in 1909 and the 300 level was developed. After considerable drifting was done west of the shaft, attention was

turned to the east and ore was discovered 126 feet from the shaft. It was followed to a point 250 feet east of the shaft where the ore stopped against a fault.

The mine was leased in 1914 but before the lessees could get started the World War broke out and the lease was abandoned.

The Reorganized United Mines Company secured an eight year lease in November 1919 and started to unwater the workings. Numerous delays were caused by poor equipment and in 1920 the writer went to the property. The boiler was overhauled and an oil burner installed. Finally the 225 level was reached and it was covered about one foot deep in mud. The steel rails would crumble under foot like so much dry snow. A cave-in was found 85 feet east of the shaft. A station pump was installed at this level and pumping continued below the 225 level.

On the 24th of February the lagging about 50 feet below the surface gave way and loose filled material ran into the shaft breaking the steam pipe. After catching up the cave-in work was abandoned.

In 1921 Mr. Henry Tuohy of San Francisco took over the lease but gave it up before getting started.

No mining has been done since Mr. Lilly closed down the mine in 1910, and the ore is just as he left it.

Based on $20.00 - Gold

PRODUCTION

No record of output before 1905 is available, and since that time only a few notes have been found. These fragments of information may give some idea regarding the operation.

#72 Tails 40¢
#88 Bullion $665.58, Concentrates $349.54, Total $1015.07
#109 $12.00 per ton, $30.00 per ton
#116 70 tons, Bullion $300.00

October 15, 1905

Mill run, 3 days, 70 tons milled

Bullion 25.53 oz. Troy

Heads $9.82
Tails $0.20

Assay Gold	599.8 fine			
Silver	211.0 fine			
Base	189.2			
	1000.0			

Bullion Gold	$507.00	Value of ore $9.82 x 70=$687.00	
Silver	2.70	Extraction	621.70
	509.70	Tailing loss	$65.30
Concentrates	312.00		
Total	$821.70	Recovery 90.7%	

Tails 93¢

#142 173 tons, 5½ days
#170 December 8, 1905
Mill run 9 days, 215 tons Heads $5.36, Tails 47¢

Bullion $81.49 3000 lbs. of concentrates
$75.00 per ton. 87% recovery
#185 72 sacks of concentrates 8350 lbs. selby

From these notations we may conclude:

1. That the ore was of medium or low grade representing spots left by former operators;

2. That the mill would handle 23 tons per day;

3. That the recovery ranged from 87 to 91%;

4. That the mill was operated intermittently during the fall of 1905; and

5. That the production was not great, probably not over $4,000.00.

Estimating the production on the basis of excavation, a conservative figure would be $125,000.00, a maximum would be $300,000.00.

DEVELOPMENT

The mine was developed by open cut methods and later the ore was hoisted from shafts. In this manner most of the ore to a depth of 175 feet, where water was encountered, was removed.

The present working shaft is a vertical, two compartment, shaft 325 feet deep and is timbered from top to bottom. Each compartment is square and is 4 feet 4 inches in the clear, one compartment being used for hoisting, the other as a manway and for steam and water pipes. There are levels at 150, 175, 225, and 300 feet from the surface, and a 25 foot sump under the bottom level. (See maps of the levels.)

150 LEVEL

On this level a drift to the east follows the north side of the dike, disclosing fault No. 2. About sixty feet east of the shaft a south crosscut crosses the

dike which is 45 feet wide and drifts to the west and the east explore the south contact. No ore was found above this level east of the shaft, although at the shaft and a little east of it the stopes from the level below broke through into the level. Stringers were sampled as indicated on the map of the level made from a survey in 1920.

175 LEVEL

This level extends a short distance east of the shaft following the north side of the dike. It was caved at the shaft but was entered through a stope open on the level above. The water normally stands 3 feet in this level. At fault No. 2 a winze connects with the 225 level. East of this winze is a small ore body which contains good ore according to samples taken in 1920.

225 LEVEL

This level was drawn from a survey made by Mr. Lilly between the shaft and the winze from above, from a sketch found at the mine made in 1907, and from a recent conversation had with him. The three main faults are shown and also three minor ones, each of which throws the ore to the north. It is on this level that the "North Ledge" was found and developed a distance of 80 feet. It extends upward 35 feet and contains high grade ore. Fault No. 3 cut off the ore and none has been found to the

east. Most of the ore above this level has been stoped.

300 LEVEL

The solid lines represent accurate data, while the dash lines indicate the probable position of drifts and crosscuts described by Mr. Lilly. Futile attempts were made to find ore to the west of fault No. 1 and east of fault No. 3. A series of assays found at the mine furnish data regarding the ore of this level. The "North Ledge" was not found on the 300 level.

EQUIPMENT

In 1920 (see photographs) at the shaft was a 35 foot gallows frame, ore bins, and so forth. To the west was a wooden building which housed the hoist and sixty horse power steam boiler. The boiler supplied steam for the pumps and steam hoist. This hoist was made in a Scotland shipyard for use on a boat. Oil was used instead of coal for fuel in 1920.

The gallows frame was of poor construction and was so wobbly, even when built, that guy wires were necessary to steady it. The rotten shaft timbers upon which it stands make it entirely useless. Two Cameron sinker pumps and a duplex station pump complete the equipment. The station pump and the small sinker pump were left in the shaft. The mill, housed in a wooden building, is 1,725

feet away from the shaft. Two steam boilers and an antiquated steam engine furnish the power for the mill. The mill has fifteen 850 lb. stamps, amalgamating plates, and four 4 foot frue vanners. Adjoining the mill was a blacksmith's shop and assay office, and a house for the superintendent. Further to the west were other small buildings used as bunk houses. According to Mr. Lilly, who visited Fitting recently, nothing remains of the mill or adjoining buildings. He stated that a prospector living in one of the buildings started a fire which burned all of these buildings, so that at the present time no usable buildings or equipment remain upon the property. It is probable that the shaft has caved in as the timbers between the surface and the water level (175 feet) were rotten even in 1920.

GEOLOGY

The Humboldt range consists of a series of Triassic and Jurassic beds that have been folded, faulted, and intruded by granodiorite. Most of the upper beds have been stripped off, exposing the Koipato formation, lower Triassic, over large areas. This formation, according to Ransome of the U.S.G.S., consists of volcanic lava flows, mostly rhyolitic but including andesitic lavas, associated with tuffs, conglomerates, grits and limestones. Upon the eroded surface of these beds flows of basalt were pour-

ed, possibly as late as the Pliocene. Only remnants of this flow may be seen on the tops of ridges and small hills. One of these lava capped hills may be seen near the mill.

In the vicinity of the mine the Koipato formation is represented by a porphyritic rhyolite and limestone. The limestone outcrops east of the shaft but has not been found in the workings. The rhyolite has been cut by a diioritic dike which is much altered and which strikes N 80° W and dips 82° S. The dike is referred to by the miners as a blue or brown porphyry.

The vein which is found at or near the north side of the dike, is from 1 to 5 feet wide, with an average of 3 feet. The principal values are in gold, although the quantity of the silver is greater than the gold. With the gold and silver are found pyrite, galena, malachite, azurite, and tetrahedrite.

Post mineral faults have broken the ore-body. These faults have normal throws and displace the ore to the north. Fault No. 1 bounds the ore on the west. It dips 49° to the east and crosses the shaft between the 225 and 300 levels. The fault designated as No. 2 divides the ore-body into two sections, moving the eastern section 20 feet to the north of the western section. It dips 60° to 75° to the east. Fault No. 3 terminates the ore on the

east. Attempts to locate the ore to the west of fault No. 1 and east of fault No. 3 have met with failure.

Diagrammatic Section Figure 1 is a longitudinal section of the workings and suggests a reason why no ore has been found to the west and also the source of the placer gold of Spring Valley. It also shows the stoped area, the positive ore, probable ore and the possible ore east of fault No. 3. Greater depth would probably connect with this section of the ore-body.

Diagrammatic Section Figure 2 is a cross section of the ore-body between faults 1 and 2 showing the "North Ledge" as described by Mr. Lilly. It consists of richly mineralized, well rounded boulders weighing 5 tons or more in a brecciated rhyolite. The "North Ledge" is lenticular in form, lying in the footwall of the vein. It extends 80 feet along the 225 level and reaches 35 feet above that level. It has not been found on the 300 level so it probably does not descend more than 30 or 40 feet below the 225 level.

CHARACTER OF ORE

The ore occurs in a well defined fissure and consists of free gold, pyrite, galena, and minor amounts of sphalerite and tetrahedrite in a gangue of quartz and calcite. Some malachite and azurite can be seen in specimens

of the ore. From a smelter return, a copy of which is included in the report, is taken the following analysis of the ore.

Gold	2.37 ozs. a ton @ 20.00	Silica	50.9%
Silver	74.45 " " " @ .25 - oz.	Zinc	21.0%
		Sulfur	5.0%
		Iron	17.8%
		Lead	11.2%

The ore was classed as a lead ore and no mention was made either of copper or antimony.

ASSAY RECORDS

150 LEVEL

L. A. Woodworth - 1920

No.		Width of Vein	Gold ozs. a ton	Silver ozs. a ton	Old Value	Present Value
1.	Sta. J.	4"	0	0	0	0
2.	5' W. of Sta. J.	4"	tr.	0	0.10	0.15
3.	5' " " " A.	24"	---	---	---	---
4.	10' " " " "	12"	---	---	---	---
5.	15' " " " "	10"	0.50	0	10.33	17.50

Only small stringers representing the top of the ore-body were sampled.

175 LEVEL

L. A. Woodworth - 1920

No.	Width of Vein	Gold ozs. a ton	Silver ozs. a ton	Old Value	Present Value
1. E. end of ore 10' below H_2O level	77"	tr.	2.64	3.50	1.87
2. 10' W. of No. 1, 12' below H_2O level	64"	0.12	1.30	4.17	5.18
3. 20' W. of No. 1, 6' below H_2O level	48"	0.34	7.88	17.16	17.01
4. 30' W. of No. 1, 1' below H_2O level	13"	3.32	4.31	75.30	118.80
5. 40' W. of No. 1, H_2O level	14"	Lost	---	---	---
6. 50' W. of No. 1, 1' above H_2O level	22"	4.60	5.76	102.59	164.74

Sampling shows a small ore body left hanging on this level. It does not reach the level above (25 feet).

225 LEVEL

Lilly and Tyler

No.	Width of Vein	Gold ozs. a ton	Silver ozs. a ton	Old Value	Present Value
1. 40' E. of shaft		0.44	0.96	9.76	16.02
2. 50' " " "		1.32	1.24	27.64	47.11
3. 60' " " " winze		0.30	1.06	7.08	11.19
4. 80' " " "		0.20	tr.	4.00	7.00
5. 100' " " "		0.64	14.68	27.48	31.95
6. 120' " " "		1.88	15.00	52.80	75.78
7. 140' " " "		1.52	10.68	41.08	60.10
8. 150' " " " big "		1.68	11.64	45.24	66.39
9. 170' " " "		1.48	5.12	34.72	55.12
10. 180' " " "					
N.L. 180'-30' E. of winze		2.44	4.20	53.00	88.23
11. 190' E. of shaft		1.00	14.00	34.00	44.10
12. 200' " " "		0.86	15.20	26.40	31.70
13. 220' " " "		0.68	8.20	21.80	29.12
14. 230' " " "		1.12	6.64	28.84	43.40
15. 240' " " "		0.16	30.12	33.32	58.75
16. 245' " " "		0.16	29.80	33.00	25.01

No.	Width of Vein	Gold ozs. a ton	Silver ozs. a ton	Old Value	Present Value
17. 250' E. of shaft		0.40	34.32	42.32	36.30
18. 175' " " " bunch		9.08	414.72	456.32	342.00
19. 225' " " " sulphides Pb.23.5%		12.24	210.56	458.56	573.00
20. 245' E. of shaft blue, green and black		0.88	329.04	346.84	244.80
21. 150'-250' E. of shaft north wall		5.04	25.84	133.84	193.10
22. Quartz between vein and north ledge spots		0.84	18.52	31.32	34.45
23. Free and base ore North Ledge		7.40	38.12	186.00	283.80
24. Free and pyrite ore North Ledge		0.84	9.12	21.92	28.35
25. All base ore		19.00	86.08	488.08	721.90

Lilly and Tyler - 5-17-09

	Width of Vein	Gold ozs. a ton	Silver ozs. a ton	Old Value	Present Value
North Ledge		4.04	132.04	146.32	226.80
" "		1.56	179.72	121.06	171.40
Oxide main ledge		40.76	72.08	851.24	1471.85
Sulphide Lead ore		22.28	308.00	599.60	981.00
4-21-09 Tailings below Mill					
Upper pile		0.10	1.84	2.92	4.70
Lower pile		0.07	1.87	2.34	3.67
5-21-09 Concentrates		4.10	215.00	189.50	267.00

L. A. Woodworth - 1920

No.		Width of Vein	Gold ozs. a ton	Silver ozs. a ton	Old Value	Present Value
1.	28' E. of shaft S. side of drift	30"	Lost	---	---	---
2.	33' E. of shaft N. side of drift	12"	tr.	0	0.10	0.15
3.	38' E. of shaft Center	14"	Lost	---	---	---
4.	45' E. of shaft Center	4"	---	---	---	---
5.	51' E. of shaft Center	16"	0.36	0.0	7.44	12.60
6.	68' E. of shaft S. side of drift	36"	tr.	0.0	0.10	0.15
7.	74' E. of shaft S. side of drift	18"	tr.	0.0	0.10	0.15
8.	82' E. of shaft S. side of drift	14"	Lost	---	---	---

Samples taken in 1920 were on stringers and not on the main ore-body. Samples 18-25 are of specimens.

300 LEVEL

J. T. Lilly 8-6-09

No.		Width of Vein	Gold ozs. a ton	Silver ozs. a ton	Old Value	Present Value
1.	Gen. bromide ore		3.48	5.80	72.40	125.65
2.	Pyrite ore (iron)		4.48	9.12	94.16	182.95
3.	Gen. ave. S/S) 806' E.		0.72	4.08	16.44	27.85
4.	" " ")of		0.80	5.20	18.60	31.38
5.	" " ")shaft (?)		0.48	3.20	11.20	18.88
6.	Black quartz		0.12	0.72	2.76	4.67
7.	Blue mud		0.12	0.36	2.58	4.45

J. T. Lilly 8-15-09

1.	Bromide ore 300 level		4.28	3.12	87.16	152.03
2.	Lead ore 300 level		0.10	7.70	5.85	8.56
3.	Sulphurets 300 level		0.36	16.34	15.35	23.20
4.	Gen. ave.) 248' E. of		1.12	3.28	24.04	41.23
5.	" ") shaft (?)		1.00	1.80	20.90	36.17
6.	Hanging wall blue		0.14	0.80	2.95	5.10

J. T. Lilly 9-18-09

No.		Width of Vein	Gold ozs. a ton	Silver ozs. a ton	Old Value	Present Value
1.	Blue porphyry S. wall E.		0.04	0.16	0.88	1.50
2.	Brown iron specimen E.		0.12	8.20	6.46	9.52
3.	Por. S. wall W.		0	0.12	0.06	0.08
4.	Iron streak in ore E.		0.80	0.98	12.49	21.64
5.	S. crosscut E. porphyry		0.12	0.62	3.02	4.60
6.	Very dark green Cu. 11.675%					
7.	Best ore in E.		11.86	55.50	260.95	442.50
8.	Blue wall cube iron		0	0.20	0.10	0.13
9.	Ore at crosscut		0.10	0.40	2.20	3.76
10.	Vein " "		0.10	0.10	2.05	3.57
11.	Ore 10' E. of crosscut		0.10	---	2.00	3.50
12.	Vein " " " "		0.08	0.62	1.91	3.20

J. T. Lilly 9-25-09

1.	E. of crosscut ore 140' E. of shaft	24"	0.10	0.26	2.13	3.62
2.	E. of crosscut vein 140' E. of shaft	37"	0.08	0.48	1.44	2.41
3.	10' E. of crosscut ore 150' E. of shaft	35"	Lost	---	---	---
4.	10' E. of crosscut vein 150' E. of shaft	60"	0.10	0.10	2.05	3.57
5.	20' E. of crosscut ore 160' E. of shaft	40"	0.50	0.70	10.35	17.96
6.	20' E. of crosscut vein 160' E. of shaft	50"	0.12	0.40	2.60	4.46
7.	30' E. of crosscut ore 170' E. of shaft	27"	0.10	0.46	2.23	3.80
8.	30' E. of crosscut vein 170' E. of shaft	52"	Lost	---	---	---
9.	40' E. of crosscut ore 180' E. of shaft	20"	0.30	0.06	6.03	10.54
10.	40' E. of crosscut vein 180' E. of shaft	49"	0.10	0.16	2.09	3.62
11.	50' E. of crosscut ore 190' E. of shaft	12"	0.10	0.18	2.09	3.62
12.	50' E. of crosscut vein 190' E. of shaft	54"	0.10	0.16	2.09	3.62

J. T. Lilly 9-30-09

No.	Width of Vein	Gold ozs. a ton	Silver ozs. a ton	Old Value	Present Value
13. 60' E. of crosscut ore 200' E. of shaft	14"	Lost	0.24	0.12	0.16
14. 60' E. of crosscut vein 200' E. of shaft	47"	0.10	0.60	2.30	3.89
15. 70' E. of crosscut ore 210' E. of shaft	44"	0.04	0.66	1.13	1.93
16. 70' E. of crosscut vein 210' E. of shaft	60"	0.18	0.08	3.63	6.34
17. 80' E. of crosscut ore 220' E. of shaft	32"	0.08	0.08	1.64	2.85
18. 80' E. of crosscut vein 220' E. of shaft	42"	0.04	0.22	0.91	1.54
19. 90' E. of crosscut ore 230' E. of shaft	35"	0.64	20.76	23.18	35.90
20. 90' E. of crosscut vein 230' E. of shaft	45"	0.40	18.94	17.47	28.30
21. 100' E. of crosscut ore 240' E. of shaft	28"	0.16	5.66	6.03	9.27
22. 100' E. of crosscut vein 240' E. of shaft	35"	2.20	0.22	44.11	77.14
23. W. of crosscut vein & ore 140' E. of shaft	34"	0.10	0	2.00	3.50
24. 10' W. of crosscut ore 130' E. of shaft	12"	0.10	0	2.00	3.50

From Mr. Lilly's Diary

120' E. of shaft 2' vein --- $7.46, $14.48, $14.96
145' " " " 29' " --- $22.90, $35.72, $8.34, $31.62
Between 175' and 189' E. of shaft --- $104.24, $71.94, $48.90, $87.20, $77.40

The assays in Mr. Lilly's diary must represent rich bunches because they are way out of line with the series of samples. All the samples that can be located have been plotted on the map of this level. At 240 feet

east of the shaft, the ore goes only $9.27, while the vein runs $77.14.

Mr. Lilly claims that this level assays better than the 225 level, but the sampling does not bear this out. Only four tongues of ore reach down to this level from the 225 level. It suggests that the ore has been bottomed. However, this may represent only a barren region in the ore-body and good ore may be found below the level.

ORE RESERVES

Block (A) This is a small triangular body of ore on the 175 level. It is 40 feet long, 2.5 feet wide at the bottom, and 20 feet high. It is assumed that this block narrows as it goes up so that it is only 1 foot wide at the top. Therefore, using these figures we have

$$\frac{40 \times 20 \times 3.5}{2 \times 2 \times 13} = 54 \text{ tons}$$

The value of this ore is $43.00 a ton, so the total value of the block is

$$54 \times \$43.00 = \$1,840.00$$

Block (B) 100 tons of ore in the chutes above the 225 level, 50 tons of which is very good ore. Bearing in mind that the widths of the vein are not given,

twice as much weight should be given to the lower assays so that all quantities represented by assays under $30.00 have been doubled.

10	x 16.02	=	$160.
10	x 47.11	=	471.
30	x 11.19	=	336.
40	x 7.00	=	280.
20	x 31.95	=	640.
20	x 75.58	=	1520.
15	x 60.10	=	905.
15	x 66.38	=	991.
20	x 55.12	=	1105.
15	x 44.00	=	660.
15	x 31.70	=	474.
30	x 29.12	=	870.
10	x 43.41	=	434.
7.5	x 58.75	=	440.
10	x 25.01	=	250.
2.5	x 36.30	=	90.
270			$9625.

$\frac{\$9625}{270}$ = $35.60

thence 100 x $35.60 = $3560.00

Block (C) Ore between the 225 and 300 levels, the main ledge. On the 225 level the ore is 210 feet long, 3 feet wide, and averages $35.60 a ton. On the 300 level the ore is in four spots, making a total length of but 40 feet. The average width is 3.5 feet. The average value of the ore on this level is determined as follows:

40	x 17.96	=	$718.
20	x 10.54	=	202.
60	x 6.34	=	381.
45	x 26.30	=	1185.
35	x 77.14	=	2700.
200			$5186.

$\frac{\$5186}{200}$ = $25.90 average value

The average value of the ore in the whole block is:

210	x 35.60	-	$7480.
2 x 40	x 25.90	-	2075.
290			$9555.

$\frac{\$9555.}{290}$ = $33.00

The tonnage in the block may be computed thus:

$$\frac{(210 - 40)(68)(3)}{2 \times 13} = 1960 \text{ tons}$$

Therefore 1960 x \$33.00 = \$64,800.00

Block (D) The "North Ledge" which is in the form of a lens 80 feet long, 40 feet deep, and 4 feet wide at the center. It is assumed that this block tapers to nothing laterally and downward, also that only 50% is ore.

Then $\frac{2 \times 40^2 \times 3.1416}{3 \times 13} = 257$ tons

The total value of this block =

257 x 0.5 x \$45.00 = \$5,800.00

Summary of Ore Reserves

Block	Tons	Value per ton	Value of Block
A	54	\$43.00	\$1,840.00
B	100	\$35.60	3,560.00
C	1960	\$33.00	64,800.00
D	128	\$45.00	5,800.00
	2242		\$76,000.00

PROBABLE ORE

Above the 225 level in the back of some of the stopes more ore can be found, but figures are lacking with which to compute either its tonnage or value. Also below the 300 level ore may be found, but neither the quality nor quantity can be determined.

POSSIBLE ORE

East of fault No. 3 to the property line, a distance of 300 feet, an ore body should be found by deeper workings. Possibly the ore-body will be 3 feet wide and contain about 7,000 tons of ore equal to that already mined. If we assume that this ore will average $30.00 a ton, then this section would contain $210,000 worth of ore at the present prices of gold and silver.

ESTIMATES

As the property now stands, the shaft caved, the equipment removed or destroyed, and the buildings useless, an entire new set of buildings and equipment will be necessary to examine, develop, and operate this property. It is advisable to abandon steam power and use electric power. The cost of securing the power is estimated below.

POWER

1. Assuming that power can be brought over from Rochester,

a.	4 miles of transmission line at $2,000.00 per mile	$8,000.00
b.	3 Transformers 37½ K.V.A. at $496.00	1,500.00
c.	Extras	200.00
		$9,700.00

2. Power from Greene 12 miles away.

a.	12 miles of transmission line at $2,000.00 per mile	$24,000.00
b.	3 Transformers 37½ K.V.A. at $498.00	1,500.00
c.	Extras	200.00
		$25,700.00

3. If power is not available, a power plant can be placed on the property. The cost is: ---

a.	210 Hp. Fairbanks - Morse diesel engine 5 cylinders direct connected to an alternating current generator 440 volts 3 phase 60 cycles complete with switch board	$20,000.00
b.	House frame building covered with corrugated iron	4,000.00
c.	Extras	500.00
		$24,500.00

EQUIPMENT

1.	Electric hoist with 900 feet rope capacity, complete with starting box switches, etc.	$2,000.00
2.	Electric sinker pump 300 g.p.m. under a 300 feet head complete with suction hose	1,250.00
3.	Misc. tools, rope, etc.	500.00
		$3,750.00

RETIMBERING SHAFT AND NEW GALLOWS FRAME

1.	Timber, 20 M. feet at $50.00 per M.	$1,000.00
2.	Wedges, hardware, etc.	100.00
3.	Labor	2,500.00
4.	Misc. costs	500.00
		$4,100.00

PUMPING OUT MINE

1.	Pumping out shaft, labor and power	$4,000.00
2.	Mucking out drifts and catching up cave-ins.	1,000.00
3.	Sampling and assaying	1,000.00
		$6,000.00

MILL

Before any money can be produced from the property, a mill will have to be built. This should be placed near the shaft and should not be over 25 tons capacity. Probably flotation could be used. Such a mill would not cost over $10,000 or $12,000 installed. Water could be obtained from the workings and perhaps be supplemented by water pumped from Spring Valley.

Summarizing the Expense

Power	$10,000.00	to	$25,000.00
Equipment	3,750.00		3,750.00
Opening Shaft	4,100.00		4,100.00
Pumping, etc.	3,000.00		6,000.00
Mill	12,000.00		12,000.00
	$35,850.00		$50,850.00

The total value of the positive ore now developed is $77,300.00. From this must be deducted losses due to milling and the cost of mining and milling. Estimating the milling loss at 10% and the mining and milling cost at $5.00 a ton, we have

Total value of ore in mine		$76,000.00
Milling loss	$7,600.	
Mining & milling cost, 3242 @ $5.	11,210.	18,810.00
		$57,190.00

From these figures we can see a small profit from the ore now in sight. This profit can be increased by the amount of the scrap value of the equipment. All equipment was figured as new, so the cost could be materially lessened by the selection of used machinery.

The cost of developing the ore east of fault No. 3 can be estimated as follows:

1.	Raise to the surface from the 300 level, 450 feet at $15. a foot	$6,450.00
2.	Sinking 320 feet below on the incline, 320 feet at $50.	16,000.00
3.	Drifting and crosscutting 1,000 feet at $10. a foot	10,000.00
		$32,450.00

CAPITAL REQUIREMENT

The total captial requirement would be $60,000.00 as the new development could be taken care of by the production from the known ore-body. The total profit probably would be $125,000.00 and the life of the mine would be 3 or 4 years. Overhead and taxes have not been included in the estimate, but would not reduce the net below $100,000.00.

RECOMMENDATIONS

From the foregoing data the following recommendations can be made. Power should be secured either from Rochester or from a plant installed upon the property. The shaft must be retimbered from the surface down 175 feet. A suitable gallows frame should be built to handle ore now developed and waste from the proposed new raise which will be used as a new working shaft.

The shaft can then be pumped out and the levels cleared of muck and cave-ins. This should be followed by a thorough resampling of the mine. A small assay office should be built and equipped for this purpose.

Following this, a small mill of not over 25 tons capacity should be so placed as to receive ore from either the old or new shaft. Stoping and new development work should be carried on simultaneously so that cost of this work can be offset by returns from mill operation.

No good purpose would be served at the present time by detailing the costs and specifications of the machinery and supplies necessary for this property.

Surface trenching to the west of the shaft might disclose another chimney of ore similar to the one now known, but this work should be under the direction of an experienced geologist, otherwise too much money might be wasted.

CONCLUSIONS

As the property now stands without equipment, the shaft caved, the workings flooded, and only small ore reserves, it should be classed as a prospect. Every inducement should be offered to individuals or companies who might undertake an examination and the development of the property.

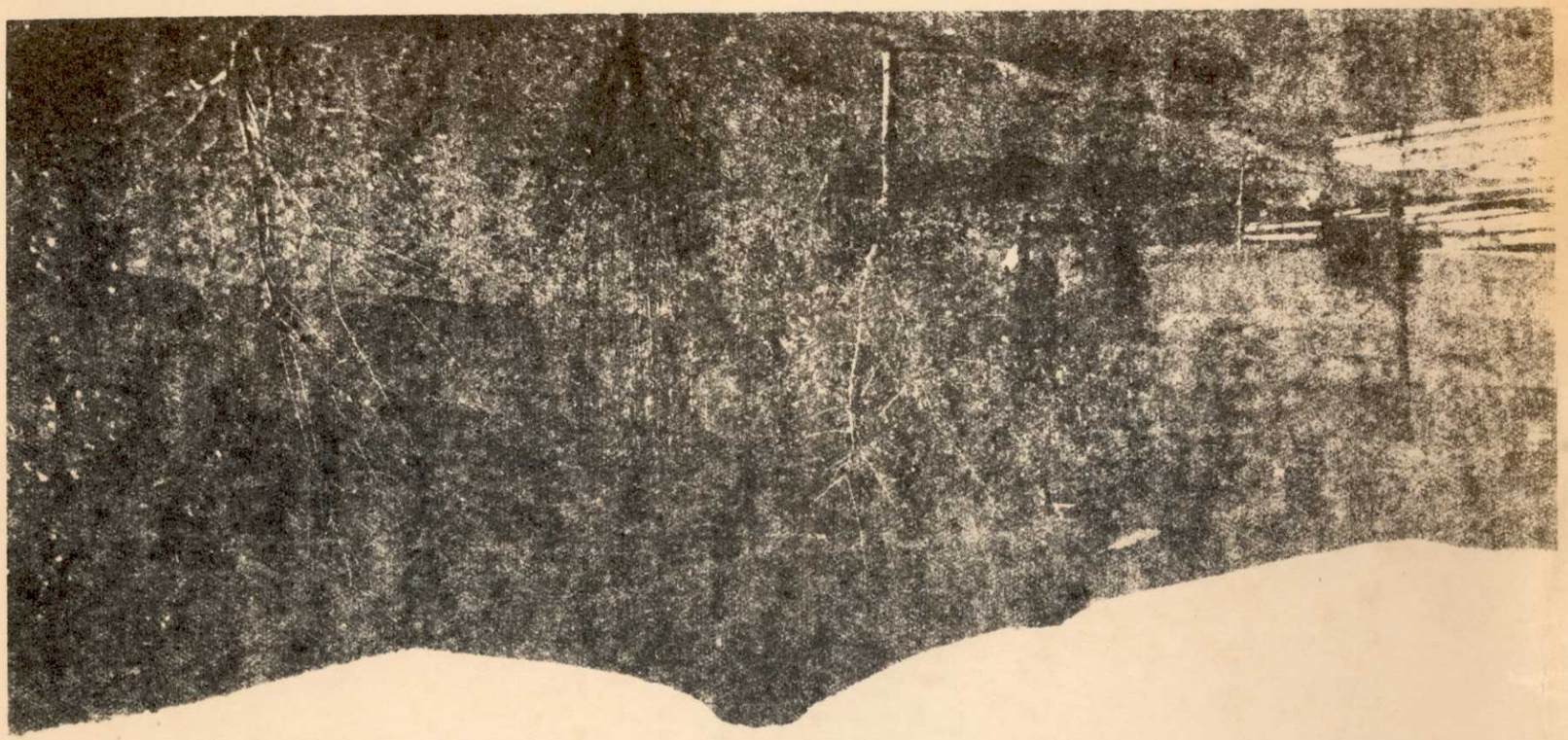
It is evident, that, on the basis of the sampling shown herein, no money would be lost by experienced zinc operators having the necessary capital, in opening up this mine and milling the ore in sight. A little further development will without doubt open up sufficient ore to realize a good profit on the required investment.

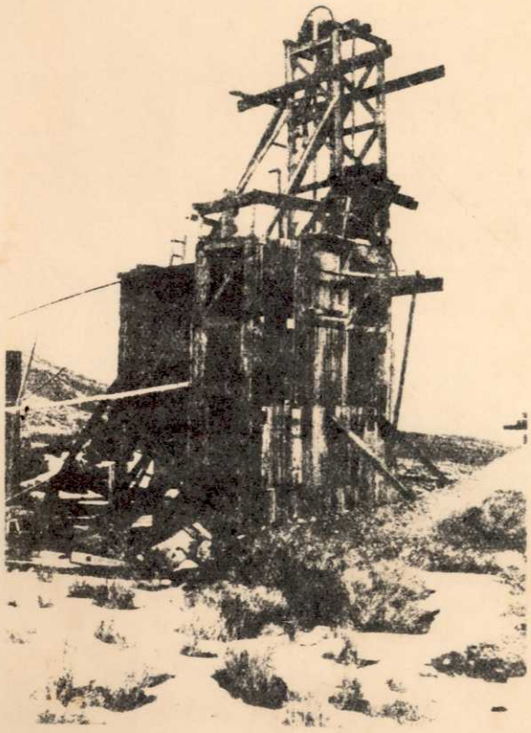
Respectfully submitted,

Lawrence A. Woodworth

Mining Engineer

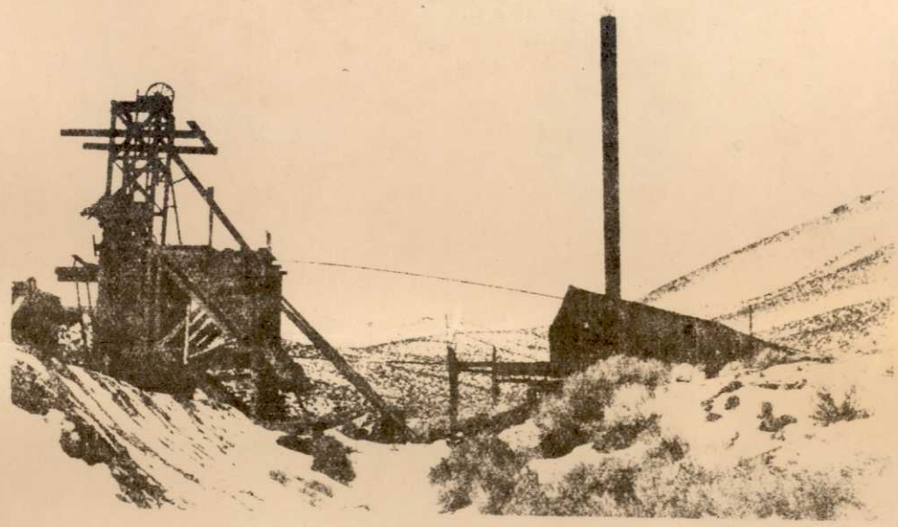
Berkeley, California
February 1954

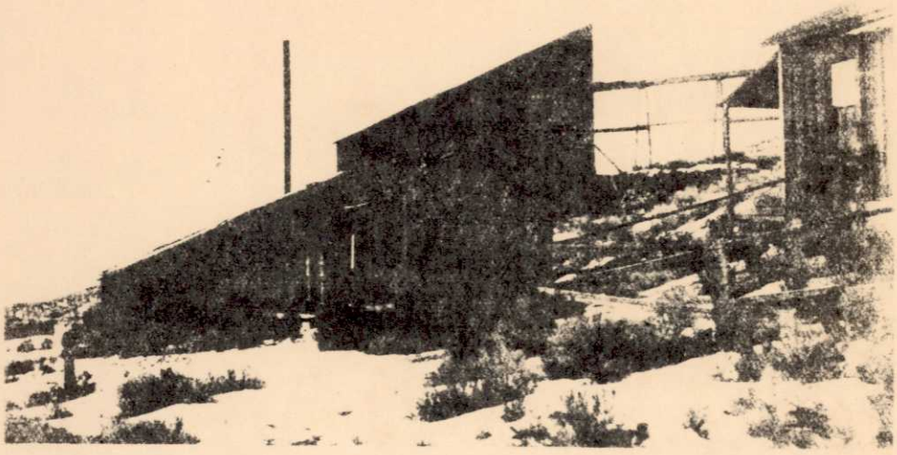




BUILDINGS AT SHAFT

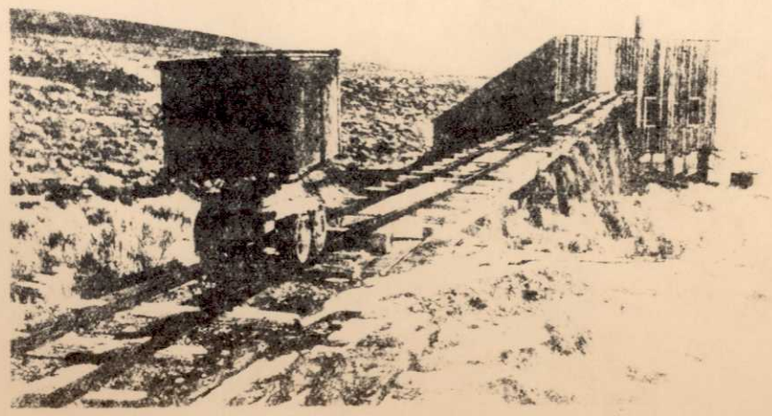
Left: Gallows frame [illegible] elev. looking north. Right: [illegible] shaft [illegible] power plant. [illegible]





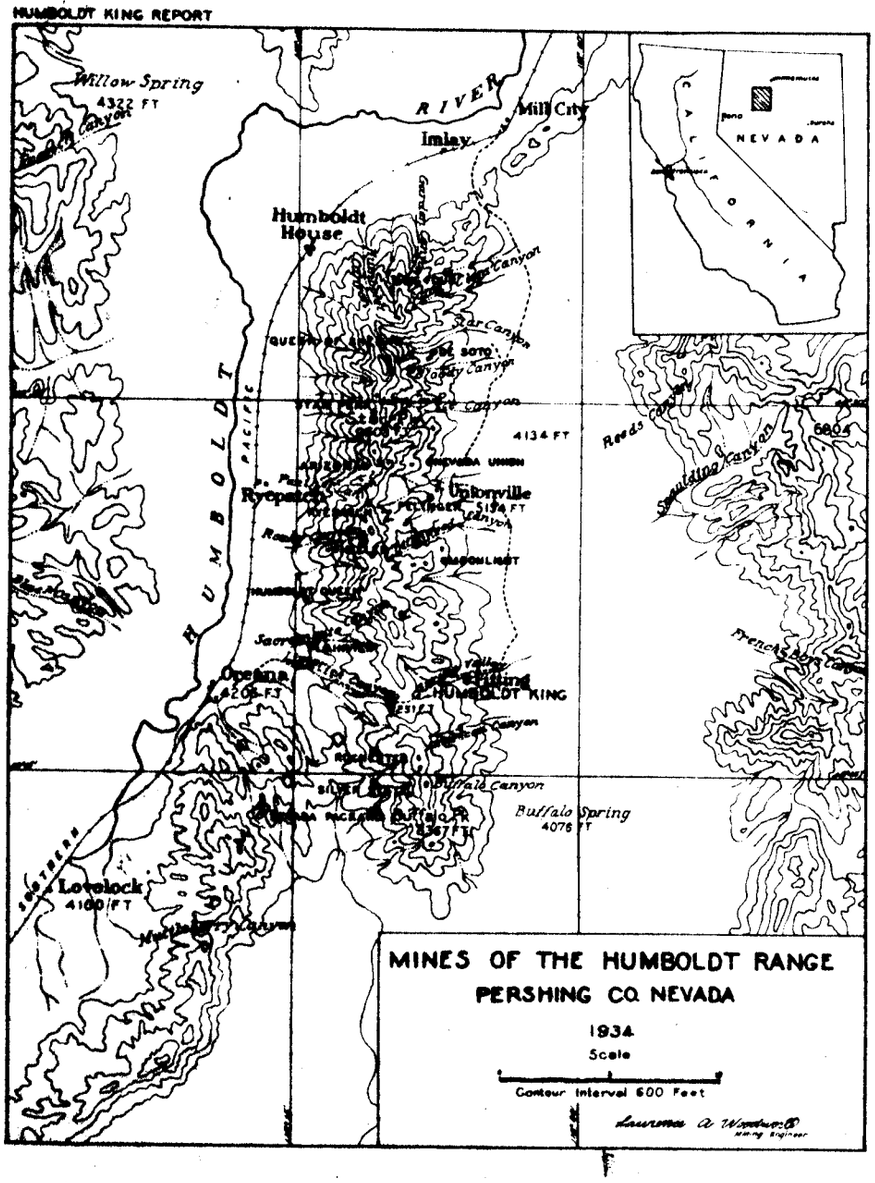
MILL AND ADJACENT BUILDINGS

Above: Assay office, blacksmith shop, and [illegible] have been destroyed. Below: Mill looking north, showing [illegible] of transporting ore to and from [illegible]

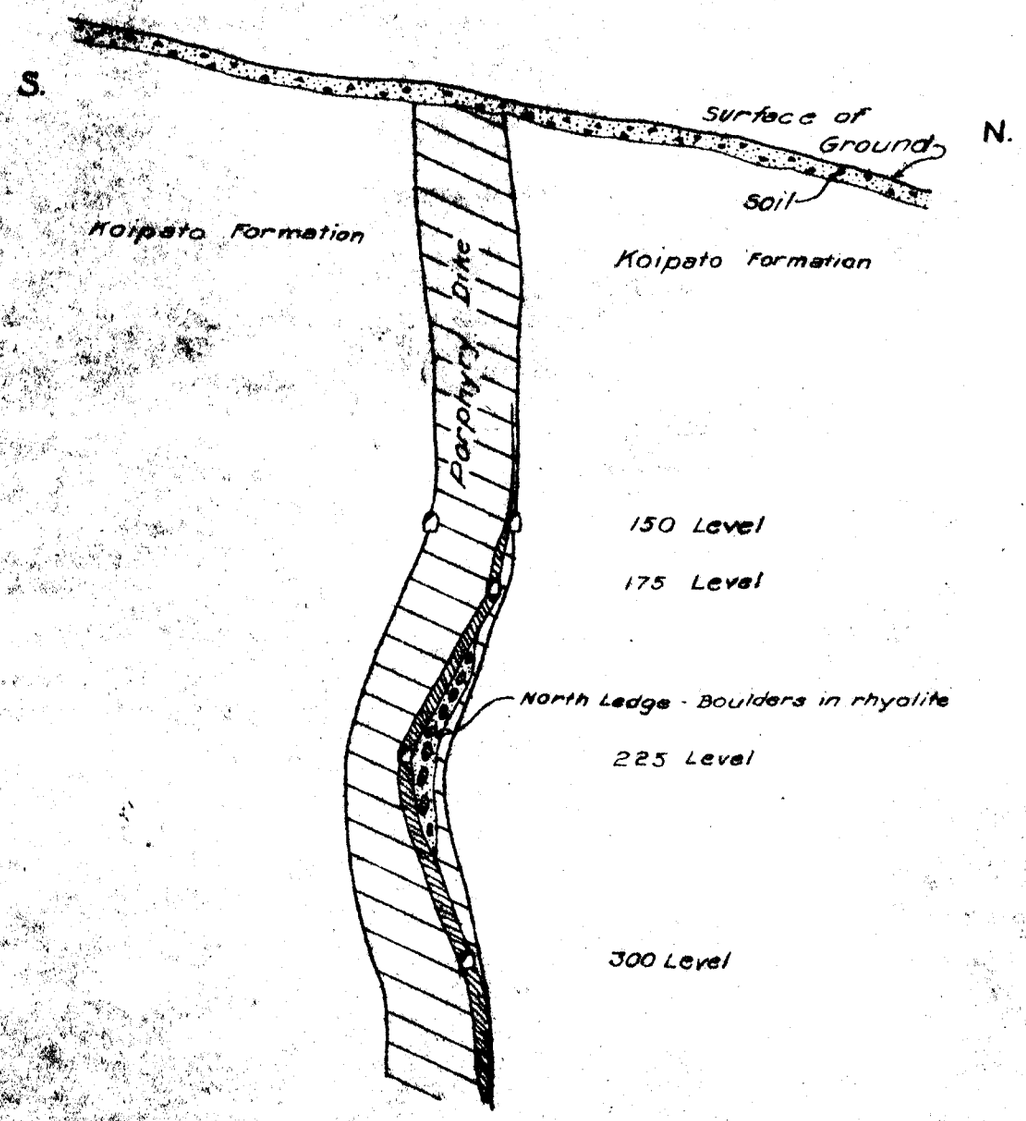


VIEWS OF BUNK HOUSES ON THE PROPERTY

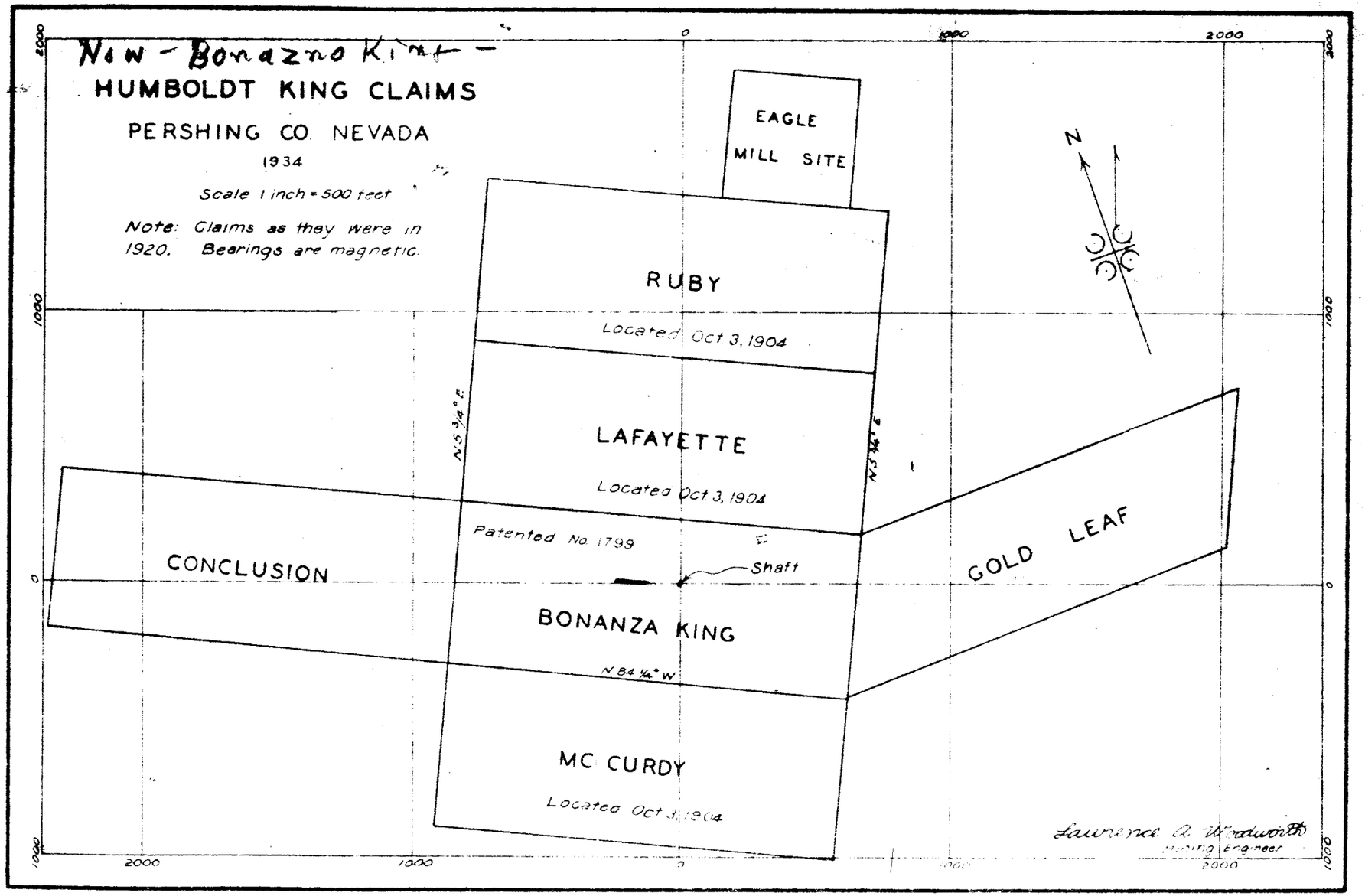
Above: Looking up Spring Valley. Old town of Fitting in the distance.
Below: Other bunk house.


Willow Spring
4322 FT
RIVER
Mill City
Imley
Humboldt House
HUMBOLDT
PACIFIC
4134 FT
Reeds Canyon
Spaulding Canyon
6805
Ryepatch
Unionville
5134 FT
Opalina
4206 FT
HUMBOLDT KING
French Bars Canyon
Buffalo Canyon
Buffalo Spring
4076 FT
Buffalo Pk
5367 FT
SOUTHERN
Lovelock
4100 FT
NEVADA
CALIFORNIA
MINES OF THE HUMBOLDT RANGE
PERSHING CO. NEVADA
1934
Scale
Contour Interval 600 Feet

HUMBOLDT KING MINE
DIAGRAMMATIC SECTION
Figure No. 2.



Laurence A. Woodworth
Mining Engineer


New - Bonanza King -
HUMBOLDT KING CLAIMS
PERSHING CO. NEVADA
1934
Scale 1 inch = 500 feet
Note: Claims as they were in 1920. Bearings are magnetic.
EAGLE MILL SITE
RUBY
Located Oct 3, 1904
LAFAYETTE
Located Oct 3, 1904
Patented No. 1799
Shaft
CONCLUSION
BONANZA KING
N 84 1/4° W
GOLD LEAF
MC CURDY
Located Oct 3, 1904
N 5 3/4° E
N
Lawrence A. Woodworth
Mining Engineer

UNITED STATES SMELTING CO.
BOB DOOLY BLOCK

SALT LAKE CITY, UTAH, July 11, 190[illegible]

BOUGHT OF Bonanza [illegible] Gold [illegible] Co.

Lot No. 1 Class Lead

	Per Cent Silica	Per Cent Zinc	Per Cent Sulphur	Per Cent Arsenic	Per Cent Speiss	Per Cent Iron	Ozs. Gold Per Ton	Ozs. Silver Per Ton	Per Cent Lead	
Sampled by U.S.S.Co.										
Assay by										
"										
"										
Settlement Assay, U.S.S.Co.	10	2 1	5 0			2[illegible] 2	2 77	74 [illegible]	11 2	

Weight of entire lot, [illegible] Lbs.
Less weight of sacks, "
Net weight of ore, "
Less Moisture [illegible] "

Gold,	@ [illegible]	$ [illegible]	
Silver, 95%	@ [illegible]	$ [illegible]	
Lead, 90%	@ 4.[illegible]	$ 7.[illegible]6	
Copper, dry assay,	@	$	
Gross value,		$ 2[illegible].53	
Less working charge,		$ 7.[illegible]	

Base,	4.00
Silica,	5.0[illegible]
Zinc,	
Sulphur,	.60
	9.6[illegible]
Iron,	1.[illegible]
Working Charge,	7.[illegible]

Dry weight of ore, Lbs. @ $ 86.63 per ton $ 165.33

Freight Advanced [illegible]
Sampling
Assays

[illegible] 170.5[illegible]

Approved, [illegible]