



Pick & Shovel, caved  
area, #5 Tunnel  
9/1/98



Looking SW across Pick & Shand  
-Barren area in lower left is on claims



Looking NW from south  
end of Pick & Shovel, with the  
dump center left is #5 Tunnel dump



Old Tram tower, SE of  
Pic & Shaul



Pick & Shovel #5 Tunnel portal  
9/1/98

## ***GSN January 16, 1998 Membership Meeting***

**Date:** Friday, January 16, 1998  
**Time:** Social-6:00, Dinner-7:00, Meeting-8:00  
**Cost:** \$16.00 (dinner)  
**Reservations:** phn 702/323-3500; fax 323-3599  
or e-mail: gsn@mines.unr.edu  
**Deadline:** Reserve by noon Thursday, January 15  
**Location:** Elks Lodge, 597 Kumle Lane, Reno, Nevada

**Where:** Across (W) from the Reno-Sparks Convention Center (S Virginia St), just behind the Burger King  
**Speaker/topic:** John Burnt, *Volcanism, Tectonic Evolution and Gold-Silver Vein Formation in the Jarbidge Mountains, Elko County, Nevada.*  
See abstract below.

**If you make dinner reservations and then are unable to attend -  
please notify the GSN office (we have to pay for the number of dinners we order)!**  
*Non-members attending the social hour only will be charged a \$5.00 cover fee at the door.*

### ***Bar Hosted by Lang Exploratory Drilling***

## **VOLCANISM, TECTONIC EVOLUTION AND GOLD-SILVER VEIN FORMATION IN THE JARBIDGE MOUNTAINS, ELKO COUNTY, NEVADA**

**John D. Bernt**

### **ABSTRACT**

The Jarbidge Mountains form an isolated and rugged range in northern Elko County, Nevada that is transitional between the Snake River Plain and the Basin and Range Provinces. Gold-bearing veins were discovered in the Jarbidge River valley in 1909. This precipitated one of the latest gold rushes in the western States. Prospects of merit were consolidated, a successful mill was built and from 1918 through 1932 the mines were in steady production. Significant mining then ceased after having produced in excess of 355,000 ounces of gold and 1,600,000 of silver from approximately 800,000 tons of ore.

Cambrian quartzites and schists and Jurassic granodiorite underlie the north-central part of the range but are very poorly exposed. These lithologies are covered by varied Tertiary volcanic rocks and associated sedimentary deposits. Late Eocene felsic tuffs are overlain by widespread late Oligocene to early Miocene rhyolitic ash-flow tuffs. Fluvio-deltaic conglomerates, arkoses and shales with intercalated basalt flows fill a deep, steep-sided basin developed on or adjacent to the tuffs and older lithologies. The basinal sediments and older units were covered by extensive porphyritic rhyolite lava-flows, domes and ash-flow tuffs that comprise the Jarbidge Rhyolite. During the main period of rhyolitic volcanism active faulting and graben development resulted in highly variable local thickness and lateral extent of specific units. The total thickness of the Jarbidge Rhyolite is consequently quite variable as well. Mappable units are numerous and complex.

Quartz-adularia veins within the Jarbidge Rhyolite were the source of the gold-silver production in the district. Three discrete vein orientations are present. The earliest veins have a NW-SE trend and occur as parallel, opposing sets with moderately steep dip. They have a horst and graben configuration and limited vertical offset of wall rock. A later NNW-SSE trending vein set has very steep dips and typically has hundreds of feet of vertical and lateral offset of wall rocks. In the eastern part of the district adularia-dominant veins with a N-S trend and sub-vertical dips truncate the NW-SE veins but are spatially isolated from the NNW-SSE veins so the relationship to the latter is unknown. Only the earlier vein system produced economically viable amounts of gold but where fractures or veinlets with NNW-SSE orientation intersect the early veins the grade in the latter is typically enhanced. All the vein sets were extensively disrupted by NE-SW faults followed by N-S faults of large magnitude.

Hydrothermal alteration is intense and widespread in a north-south zone from the Jarbidge River to the range crest. Chlorite-epidote-carbonate alteration with associated veinlets of barren, typically clear quartz is pervasive within the lower part of the rhyolite and in the underlying conglomerate. Later adularia-sericite alteration is widespread in the middle portion of the Jarbidge Rhyolite and occurs as envelopes of veins deeper in the system where it overprints the earlier alteration minerals. High levels of the system have sporadic argillic alteration with chalcedonic veinlets or replacement of wall rock.

The veins can be mapped from near the higher parts of the volcanic pile downward through the section and into the conglomerates, a range of nearly 3,000 feet in the central part of the district. Of this vertical range only 650 feet was

*continued on following page*



**ABSTRACT**, continued from previous page

productive and these zones are on the northern margin of the sedimentary basin where it terminates against the buried quartzite and granodiorite highlands. Vein textures indicate that significant gold-silver deposition was due to boiling. Sulfide minerals are limited in the veins. Electrum is the dominant gold-bearing phase while silver typically occurs in argentite, electrum or silver selenides. Associated metals occur at low levels peripheral to the veins.

K-Ar dating of the early veins, Jarbidge Rhyolite and the underlying basalts indicate that basin development, rhyolitic volcanism and vein development spanned less than 500,000 years and occurred at approximately 14 ma. This rapid burial of a deep basin filled with unconsolidated elastic material by up to several thousand feet of rhyolite would have caused the development of a significant geothermal system. Subsequent tectonic activity evidently resulted in the focusing of fluids and faulting that caused the present vein distribution and fault configuration.

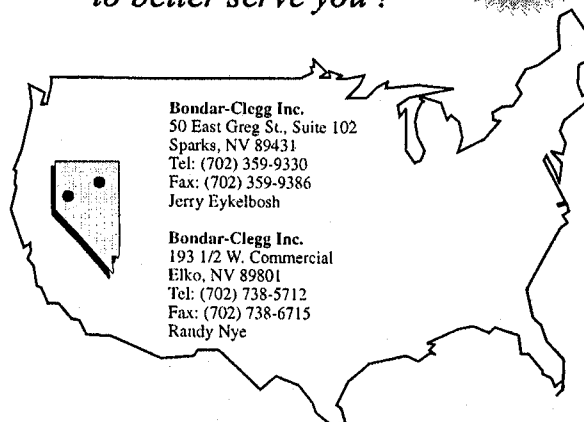
"There is one difference between a tax collector and a taxidermist — the taxidermist leaves the hide."

—Mortimer Caplin

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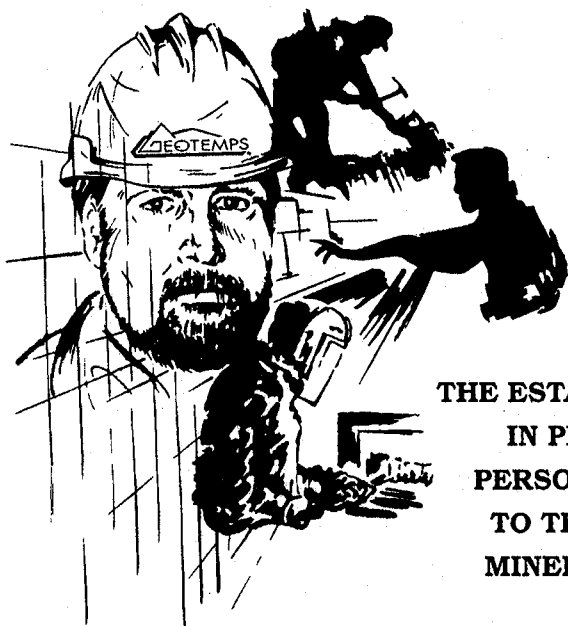
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**NOTICE OF PUBLIC SALE**

**MINING LEASE**

**PICK AND SHOVEL PATENTED MINING CLAIMS**

**JARBIDGE MINING DISTRICT**

**ELKO COUNTY, NEVADA**

**DATE/TIME OF BID OPENING:** September 8, 1998 at 2 p.m.

**LOCATION OF BID OPENING:** University of Nevada, Reno  
70 Artemesia Way, Room 1  
Reno, Nevada

**BIDS MAY BE MAILED TO:** University of Nevada, Reno  
Jim Jeffers, Jr.  
Director Emeritus, Real Estate  
Mail Stop 239  
Reno, NV 89557

As per "Notice of Public Sale - Mining Lease Agreement"  
and "Terms and Conditions of Sale"  
attached hereto and made a part hereof.



**NOTICE OF PUBLIC SALE**

**MINING LEASE**

**PICK AND SHOVEL PATENTED MINING CLAIMS**

**JARBIDGE MINING DISTRICT**

**ELKO COUNTY, NEVADA**

<b>DATE/TIME OF BID OPENING:</b>	September 8, 1998 at 2 p.m.
<b>LOCATION OF BID OPENING:</b>	University of Nevada, Reno 70 Artemesia Way, Room 1 Reno, Nevada
<b>DESCRIPTION OF PROPERTY:</b>	Subject property consists of three (3) patented mining claims: The Pick Lode, Shovel Lode, and Shovel Fraction, a portion of Mineral Survey #4076 comprising approximately 47.06 acres (A.P. #PM-540-76-2).
<b>LOCATION OF PROPERTY:</b>	Jarbridge Mining District, Elko County, Nevada (Sec. 27, 28, 33, and 34, T46N, R58E).
<b>MINIMUM TERMS OF MINING LEASE:</b>	The University of Nevada will enter into a mining lease with advance royalties of \$2,500 (minimum) commencing on the first anniversary date of the mining lease and on all subsequent anniversary dates. Advance payments shall be credited toward the purchase price until paid in full. The balance of the purchase price may be pre-paid at any time. Lessee will pay the sum of \$2,500 (minimum) upon execution of the mining lease, which shall be credited toward the purchase price.
<b>NET SMELTER RETURNS:</b>	The University will retain a 3% (minimum) net smelter return.

**PURCHASE PRICE:**

The purchase price shall be \$25,000 (minimum).

**OVERRIDING ROYALTIES:**

Upon final payment of the purchase price, the University shall retain an overriding royalty of 1% (minimum).

**BID PROPOSAL -- SUBMIT BIDS  
ON THE FOLLOWING:**

- (1) Purchase Price: \$ \_\_\_\_\_ (U.S.)
- (2) Percentage (%)  
Overriding Royalty: \_\_\_\_\_ %
- (3) Annual Advance Minimum  
Royalty Payment: \$ \_\_\_\_\_ (U.S.)
- (4) Amount of Payment Upon Execution  
of Mining Lease: \$ \_\_\_\_\_ (U.S.)

**SEALED BIDS:**

Sealed bids must be accompanied by a cashier's check, certified check, or money order, in U.S. currency, made payable to the "Board of Regents" for 10% of the amount bid.

The bid award is subject to the approval of the Board of Regents and the Governor, who reserve the right to reject any or all bids and to accept the bid deemed to be in the best interests of the University of Nevada, Reno.

For further information and a copy of the bid forms, contact Jim Jeffers, Jr., Director Emeritus, Real Estate, at (702) 784-6546.

## **PUBLIC SALE**

### **TERMS AND CONDITIONS OF SALE**

1. A deposit of 10% of bid price must accompany bid and must be in the form of a cashier's check, certified check, or money order.
2. The balance of the sale price or down payment will be due and payable within ten (10) days of notification of acceptance of bid by the Board of Regents.
3. If the successful bidder fails to deposit the balance due, successful bidder will forfeit all rights thereto, including any deposit, and thereupon property and improvements shall be retained by the Board of Regents to dispose of as it sees fit, without recourse to the purchaser.
4. In the event time does not allow a re-bid of the property, the University may offer the item to the second apparent bidder.
5. No guarantee is made as to the condition of the property/improvements. Property is leased/sold "as is, where is."
6. Sale is "subject to" the approval of the Board of Regents and the Governor. The Board of Regents reserves the right to reject any or all bids and to accept the bid deemed to be in the best interests of the University of Nevada, Reno.
7. Bids must be on an official University of Nevada, Reno bid form and submitted in a sealed envelope which is to be plainly marked "Sealed Bid for Pick and Shovel Patented Mining Claims."
8. Sealed bids will be opened at the time and place stated herein. No decision or award will be made until approved by the Board of Regents, after which the successful bidder will be notified.
9. All bids will be opened on September 8, 1998 at 2 p.m. at:

University of Nevada, Reno  
70 Artemesia Way, Room 1  
Reno, Nevada

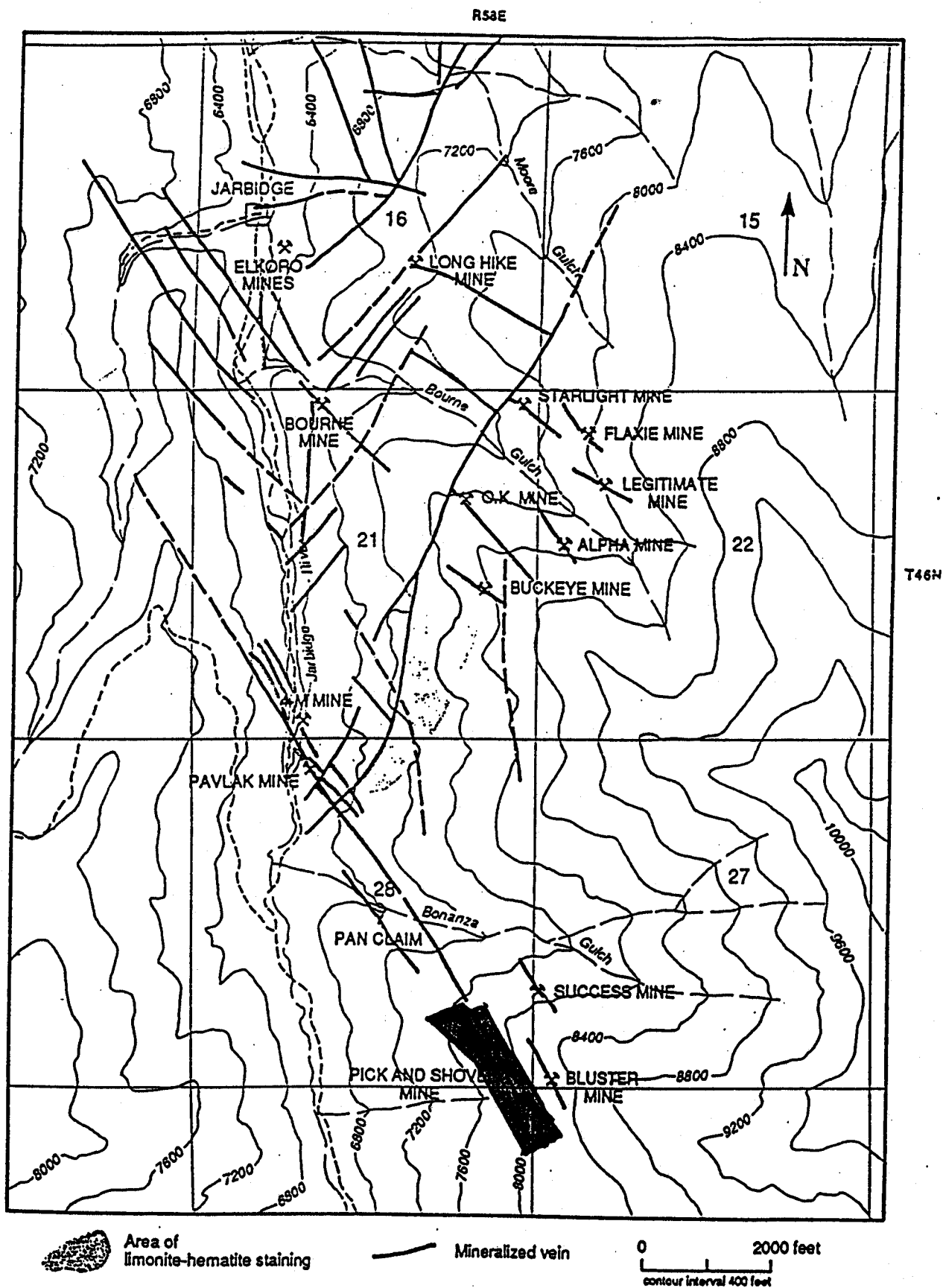


FIGURE 62.—Map of the central Jarbidge district showing major veins, faults, iron-oxide-stained areas, and some of the mines (modified from Freeport-McMoRan Co. maps and maps from NBMG file 63).



Return-Path: <jprice@comstock.nbmj.unr.edu>  
Date: Tue, 25 Aug 1998 14:36:16 -0700  
To: jtingley, scastor  
From: jprice@comstock.nbmj.unr.edu (Jon Price)  
Subject: Pick and Shovel mine  
Cc: chenry, jfaulds, jcslong@mines.unr.edu

Joe and Steve -

Thanks for agreeing to help the University with the Pick and Shovel mine.

Jane Long asked that someone from NBMG to go up to the Pick and Shovel mine (a small property that the University recently acquired through a donation from Stanford University) at the south end of the Jarbidge District and assess the land situation.

Specifically, Mary Beth Marks with the U.S. Forest Service has requested that the University allow a right of way for a road to come through the property. In fact, the University might have already granted the Forest Service the right of way, but now they actually want to put in the road itself. I don't know if this has anything to do with the controversy regarding the Forest Service trying to prohibit repair of one of the roads along the river, because of potential ecological damage.

Jim Jeffers with the University real estate office, to whom I had given advice on acquiring the property from Stanford and more recently have given advice regarding putting the property up for lease, expressed concern that putting the Forest Service road right through the property might hurt the University's ability to lease or develop the land.

I actually visited the property several years ago with John Bernt, then and possibly still a graduate student (coincidentally) at Stanford. As I recall, it is on a steep, west-facing slope on the east side of the Jarbidge River, and there may be a shaft or adit that should be secured to avoid someone hurting themselves. For all I know the shafts and adits have been secured since my visit there 8 years ago or so.

I suggest that you call both Jim Jeffers' office (6546) to get information on the exact property location.

I gather you will meet with Mary Beth Marks on Thursday of this week to find out where the Forest Service wants to put the road and any other information they have.

After your visit, please write a brief report for the files of the University property office (with copies to me and Jane Long) detailing your findings and recommendations. You should address (1) whether there are any unsafe sites on or near the University property (shafts, adits, pits, etc.) and what you recommend regarding their mitigation (we would probably either ask the Forest Service to do it or pay the Division of Minerals to do fence off the sites); (2) whether the location of the Forest Service's proposed road would hinder the University's ability to develop the property, either as a mining site or a long-term recreational site (I'm not sure what the right-of-way gives them, but it would make sense that the University reserve the right to take back the land should some development be likely, but in the meantime, a better road might stimulate development); and (3) any judgments you may have regarding the mineral-resource potential (e.g., should we advise the University to hold out for more in terms of royalties

or more in terms of bonus payments for exploration rights?)

Feel free to take photographs (using the Bureau's digital camera or regular film) and include them in your report.

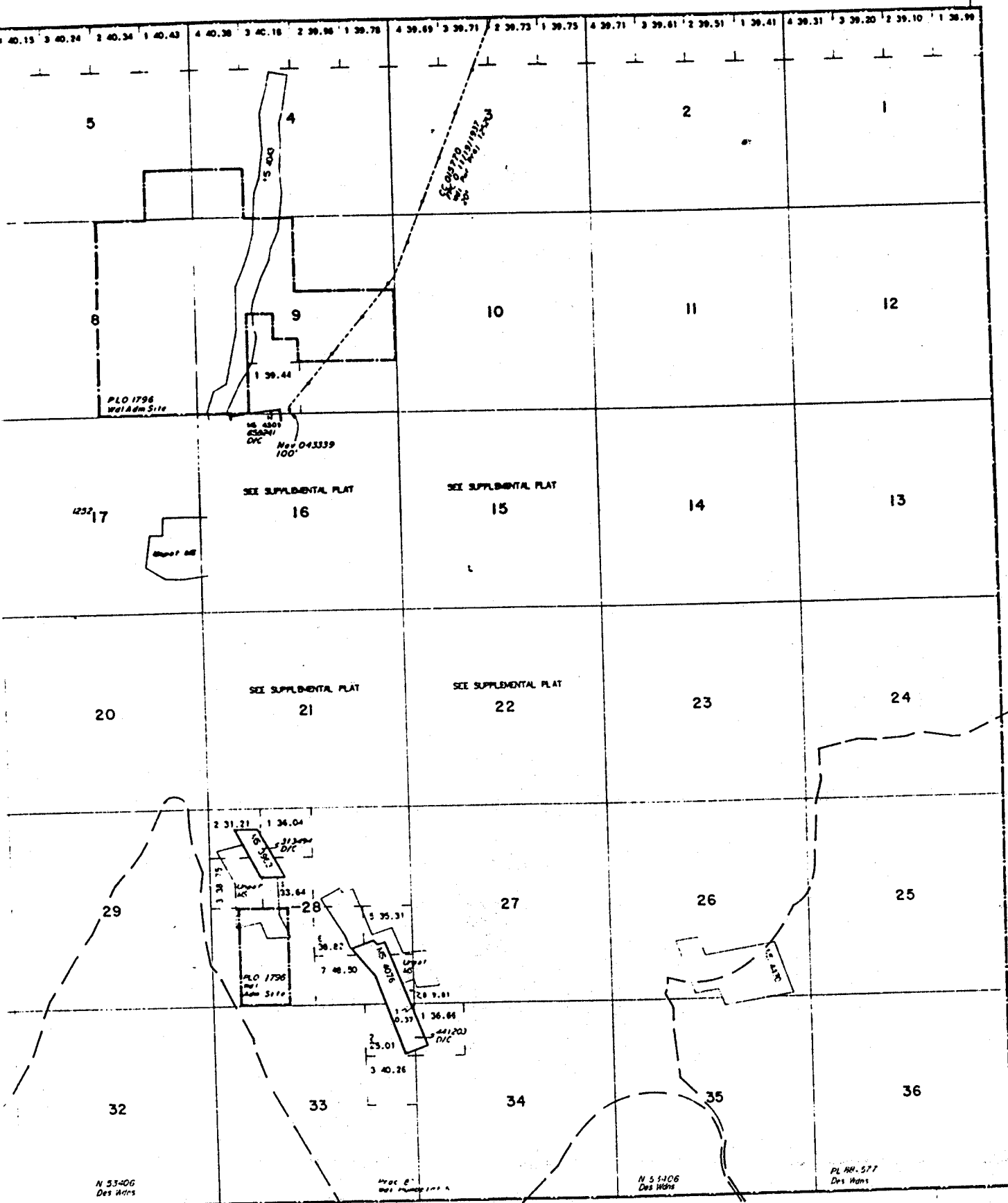
Thanks,

Jon

\*\*\*\*\*

Jonathan G. Price	Telephone: 702-784-6691 ext. 126
Director/State Geologist	Fax: 702-784-1709
Nevada Bureau of Mines and Geology	E-mail: jprice@nbmg.unr.edu
University of Nevada, Reno	Home telephone: 702-329-8011
Mail Stop 178	
Reno, NV 89557-0088	





SCALE  
10 20 30 40  
30 chains to the inch

**WARNING STATEMENT**  
This plat is the Bureau's Record of Title, and should be used only as a graphic display of the township survey data. Records hereon do not reflect title changes which may have been effected by local instruments or other copies of water. Refer to the original surveys for official survey information.

EXAMINED	
PLATTED ON SHEET	T. 1. P.
COMPUTED	C. B. P.
ORIGINAL PLAT	6172
REMARKS	F

MINERAL SURVEY No. 4076.

LOT No.

Carson City Land District.

## FIELD NOTES

OF THE SURVEY OF THE MINING CLAIM OF

The Twin Falls-Jarbidge Development Company.

KNOWN AS THE

Pick, Shovel and Shovel Fraction Lodes,

Jarbidge Mining District,

Elko County, Nevada.

Section unsurveyed, Township 49 N, Range 58 E, 20.

Surveyed under instructions dated April 27, 1912, 19

by Chas. A. Liddell,  
U. S. Mineral Surveyor.

Claim located (see reverse side) 19

Survey commenced June 15, 1912. 19

Survey completed June 20, 1912. 19

Address of attorney:

✓ Joseph F. O'Byrne,  
Jarbidge, Nevada.

Feet.

Survey No. 4076.

## Pick Lode.

Beginning at Cor.No.1,

A mahogany post, 4 ft. long, 4 ins. square, set 18 ins. in  
ground with mound of earth and stone, scribed P-1-4076.

Whence,

The S.W.Cor.Sec.34, T.46 N, R.56 E, M.D.M. bears  
S 5°17'30"W 3931.3 ft.

Thence N 20°46'W

1500. To Cor.No.2,

Identical with Cor.No.1, Shovel lode of this survey.

A pine post 4 ft. long, 4 ins. square, set 18 ins. in  
ground with mound of earth and stone, scribed P-2, S-1-4076.

Thence N 69°14'E

600. To Cor.No.3,

Identical with Cor.No.4, Shovel lode of this survey.

A pine tree cut off 4.5 ft. above ground, squared 4 ins.  
at top, 6 ins. in dia. at bottom, scribed P-3, S-4-4076.

Thence S 20°46'E

1500. To Cor.No.4,

A pine post 4 ft. long, 4 ins. square, set 18 ins. in  
ground with mound of earth and stone, scribed P-4-4076.

Thence S 69°14'W

600. To Cor.No.1, the place of beginning.

-----  
Shovel Lode.

Beginning at Cor.No.1,

Identical with Cor.No.2, Pick lode of this survey, whence

Whence,

The S.W.Cor.Sec.34, T.46 N, R.58 E, M.D.A. bears  
S 5°17'30"W 3931.3 ft.

Thence N 20°46'W

1500. To Cor.No.2,

Identical with Cor.No.1, Shovel lode of this survey.

A pine post 4 ft. long, 4 ins. square, set 18 ins. in  
ground with mound of earth and stone, scribed P-2, S-1-4076.

Thence N 69°14'E

600. To Cor.No.3,

Identical with Cor.No.4, Shovel lode of this survey.

A pine tree cut off 4.5 ft. above ground, squared 4 ins.  
at top, 6 ins. in dia. at bottom, scribed P-3, S-4-4076.

Thence S 20°46'E

1500. To Cor.No.4,

A pine post 4 ft. long, 4 ins. square, set 18 ins. in  
ground with mound of earth and stone, scribed P-4-4076.

Thence S 69°14'W

600. To Cor.No.1, the place of beginning.

-----  
Shovel Lode.

Beginning at Cor.No.1,

Identical with Cor.No.2, Pick lode of this survey, whence

✓ The S.W.Cor.Sec.34, T.46 N, R.58 E, M.D.A. bears  
S 1°49'20"E 5320.27 ft.

Thence N 20°46'W

750. Cor.No.4, Shovel Fraction lode of this survey.

2. Feet. Survey No. 4076.

1500. To Cor.No.2,

A pine post 4 ft. long, 4 ins. square, set 18 ins. in ground with mound of earth and stone, scribed S-2-4076.

Thence N  $69^{\circ}14'E$

✓ 360.89 Intersect line 2-3, Shovel Fraction lode, of this survey.

600. To Cor.No.3,

A pine post 4 ft. long, 4 ins. square, set 18 ins. in ground with mound of earth and stone, scribed S-3-4076.

Thence S  $20^{\circ}46'E$

✓ 750. Cor.No.3, Shovel Fraction lode, of this survey.

1500. To Cor.No.4,

Identical with Cor.No.3, Pick lode of this survey.

Thence S  $69^{\circ}14'W$

600. To Cor.No.1, the place of beginning.

---

Shovel Fraction Lode.

Beginning at Cor.No.1,

A pine post 4 ft. long, 4 ins. square, set 18 ins. in ground with mound of earth and stone, scribed S.F.-1-4076.

Whence,

The S.W.Cor.Sec.34, T.46 N, R.58 E, M.D.M. bears  
S  $8^{\circ}25'13"E$  6797.74 ft.

U.S.L.M. 230 bears N  $22^{\circ}52'30"W$  10,771.4 ft.

Cor.No.2, Sur.No.4005, Dutch Flat lode bears N  $69^{\circ}03'45"W$   
2481.92 ft.

Thence N  $69^{\circ}14'E$

600. To Cor.No.2.

Thence N  $69^{\circ}14'E$

✓ 363.89 Intersect line 2-3, Shovel Fraction lode, of this survey.

600. To Cor.No.3,

A pine post 4 ft. long, 4 ins. square, set 18 ins. in ground with mound of earth and stone, scribed S-3-4076.

Thence S  $23^{\circ}46'E$

✓ 753. Cor.No.3, Shovel Fraction lode, of this survey.

1500. To Cor.No.4,

Identical with Cor.No.3, Pick lode of this survey.

Thence S  $69^{\circ}14'W$

600. To Cor.No.1, the place of beginning.

---

Shovel Fraction Lode.

Beginning at Cor.No.1,

A pine post 4 ft. long, 4 ins. square, set 18 ins. in ground with mound of earth and stone, scribed S.F.-1-4076.

Whence,

The S.W.Cor.Sec.34, T.46 N, R.58 E, M.D.M. bears

S  $8^{\circ}25'13"E$  6797.74 ft.

U.S.L.M. 230 bears N  $22^{\circ}52'33"W$  10,771.4 ft.

Cor.No.2, Sur.No.4005, Dutch Flat lode bears N  $69^{\circ}03'45"W$

2481.92 ft.

Thence N  $69^{\circ}14'E$

600. To Cor.No.2,

A mahogany post 4 ft. long, 4 ins. square, set 18 ins. in ground with mound of earth and stone, scribed S.F.-2-4076.

Thence S  $38^{\circ}27'E$

✓ 113.8 Intersect line 2-3, Shovel lode of this survey.

901. To Cor.No.3,

Feet.

Survey No. 4076.

3.

On line 3-4, Shovel lode of this survey.

A pine post 4 ft. long, 4 ins. square, set 18 ins. in ground with mound of earth and stone, scribed S.F.3-4076.

Thence S  $69^{\circ}14'W$

600. To Cor.No.4,

On line 1-2, Shovel lode of this survey.

A pine post 4 ft. long, 4 ins. square, set 18 ins. in ground with mound of earth and stone, scribed S.F.4-4076.

Thence N  $36^{\circ}27'W$

901. To Cor.No.1, the place of beginning.

-----  
Variation at all corners is  $18^{\circ}30'E$ .  
-----

#### Lode Lines.

As near as can be determined from present developments the veins of the several locations embraced in this claim extend as follows from their respective discovery points:

PICK LODE: 13 ft. N  $20^{\circ}46'W$  and 1487 ft. S  $20^{\circ}46'E$  to a point on line 4-1, 300 ft. from Cor.No.1.

SHOVEL LODE: 1475 ft. N  $20^{\circ}46'W$  and 35 ft. S  $20^{\circ}46'E$  to a point on line 4-1, 300 ft. from Cor.No.1.

SHOVEL FRACTION LODE: 851 ft. S  $32^{\circ}27'E$  and 50 ft. N  $36^{\circ}27'W$  to a point on line 1-2, 300 ft. from Cor.No.1.

#### Area.

Total area Pick lode

Acres.  
20.661 ✓

Total area Shovel lode

20.661 ✓

Total area Shovel Fraction lode

11.824 ✓



ground with mound of earth and stone, scribed S.F.3-4076.

Thence S  $69^{\circ}14'W$

600. To Cor.No.4,

On line 1-2, Shovel lode of this survey.

A pine post 4 ft. long, 4 ins. square, set 18 ins. in  
ground with mound of earth and stone, scribed S.F.4-4076.

Thence N  $38^{\circ}27'W$

901. To Cor.No.1, the place of beginning.

---

Variation at all corners is  $18^{\circ}30'E$ .

---

#### Lode Lines.

As near as can be determined from present developments  
the veins of the several locations embraced in this claim  
extend as follows from their respective discovery points:

PICK LODE: 13 ft. N  $20^{\circ}46'W$  and 1487 ft. S  $20^{\circ}46'E$  to a  
point on line 4-1, 300 ft. from Cor.No.1.

SHOVEL LODE: 1475 ft. N  $20^{\circ}46'W$  and 25 ft. S  $20^{\circ}46'E$  to a  
point on line 4-1, 300 ft. from Cor.No.1.

SHOVEL FRACTION LODE: 851 ft. S  $32^{\circ}27'E$  and 50 ft. N  $38^{\circ}$   
 $27'W$  to a point on line 1-2, 300 ft. from Cor.No.1.

---

#### Area.

	Acres.
Total area Pick lode	20.661
Total area Shovel lode	20.661
Total area Shovel Fraction lode	11.824
Area in conflict with;	
Shovel lode of this survey	8.275

---

The survey of each lode of this location was identical

## Survey No. 4076.

with the respective locations and amended locations as staked upon the ground.

---

Location.

This claim is located in the unsurveyed T.46 N, R.55 E, M.D.M. and would be in Sections 27, 28, 33 and 34 if the public land surveys were extended.

---

Expenditure of Five Hundred Dollars.

I certify that the value of the labor and improvements made upon of for the benefit of each of the locations embraced in said mining claim by the claimant or its grantors is not less than five hundred dollars, and that said improvements consist of:

- No.1. The discovery shaft of the Pick lode, the center of which bears S 62°30'W 117 ft. from the discovery post of the Pick lode, 6 X 10 X 12 ft. deep, in solid rock. Course N 30°W. Value \$180.
- No.2. A shaft, the center of which bears east 20 ft. from the discovery post of the Pick lode, 4 X 5 X 100 ft. deep. Course N 20°W. Value \$2,000.
- No.3. The discovery cut and tunnel of the Shovel lode, the mouth of tunnel bears N 43°50'W 284 ft. from the discovery post of the Shovel lode, 4 X 6 ft., running N 60°20'E 100 ft. to face. <sup>S 60°20'W 16 ft. to face.</sup> The cut, 4 ft. wide, 5 ft. face, runs. Value \$1,000.
- No.4. A cut, the mouth of which bears N 24°25'W 247 ft. from the discovery post of the Shovel lode, 4 ft. wide, 5 ft. face running N 62°E 15 ft. to face.

-----

Location.

This claim is located in the unsurveyed  
T.46 N, R.58 E, M.D.M. and would be in Sections 27, 28,  
33 and 34 if the public land surveys were extended.

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Expenditure of Five Hundred Dollars.

I certify that the value of the labor and improvements  
made upon of for the benefit of each of the locations  
embraced in said mining claim by the claimant or its  
grantors is not less than five hundred dollars, and that  
said improvements consist of:

- No.1. The discovery shaft of the Pick lode, the center of which  
bears S 62°30'W 117 ft. from the discovery post of the  
Pick lode, 6 X 10 X 12 ft. deep, in solid rock. Course  
N 30°W. Value \$180.
- No.2. A shaft, the center of which bears east 20 ft. from the  
discovery post of the Pick lode, 4 X 5 X 100 ft. deep.  
Course N 20°W. Value \$2,000.
- No.3. The discovery cut and tunnel of the Shovel lode, the  
mouth of tunnel bears N 43°50'W 284 ft. from the discovery  
post of the Shovel lode, 4 X 6 ft., running N 60°20'E 100  
ft. to face. <sup>S 60°20'W 16 ft. to face.</sup> *The cut, 4 ft. wide, 5 ft. face, runs.* Value \$1,000.
- No.4. A cut, the mouth of which bears N 24°25'W 247 ft. from  
the discovery post of the Shovel lode, 4 ft. wide, 5 ft.  
face running N 62°E 15 ft. to face.  
Value \$50.00
- No.5. The discovery out of the Shovel Fraction lode the mouth  
of which bears S 80°W 19 ft. from the discovery post of  
the Shovel Fraction lode, 4 ft. wide, 8 ft. face, running

NEVADA BUREAU OF MINES AND GEOLOGY

September 8, 1998

MEMORANDUM

TO: Jane Long, Dean, Mackay School of Mines  
FROM: J. V. Tingley, S. B. Castor  
CC: Jonathan A. Price, Jim Jeffers, Robert L. Harmon  
SUBJECT: Pick and Shovel Mine, Jarbidge Mining District, Elko County, Nevada

On August 31 and September 1, 1998, we examined the University of Nevada's Pick and Shovel Mine in the Jarbidge Mining District of northern Elko County. The Pick and Shovel property consists of three patented mining claims (two full claims, the Pick and the Shovel; and one claim fraction, the Shovel Fraction) totaling about 47.06 acres. The University of Nevada accepted this property as a gift from Stanford University in 1993.

Our examination concentrated on two issues: a request by the U.S. Forest Service to rehabilitate a road across the property, and the status of any hazardous mine workings that might be present on the property. We were also asked to comment on the mineral potential of the property.

FOREST SERVICE ROAD REQUEST

Background

Historically, a steep, switch-back road across the Pick and Shovel property has provided access to the Bluster, Success, and other mines situated upslope and to the east of the Pick and Shovel claims. The first leg of the road within the Pick and Shovel property crosses above the main, lower adit. This adit, shown as Pick and Shovel Tunnel No. 5 on old property maps, was collared about 50 feet west of the west sideline of the Shovel Claim and crosscut some 390 feet northeast toward the Pick and Shovel vein. Over the years, the portal and much of the first section of the adit have caved. At some point, probably during the time Stanford University owned the claims, an attempt was made to reopen the portal using a backhoe or other equipment. The excavation resulted in a large, scallop-shaped cut into the hillside below the old road. The steep walls of this cut continue to fail, and have caused some of the road above to give way into the cut.

In early April 1998, the U.S. Forest Service requested permission to cross the University property to allow their personnel to perform reclamation work on a mining property on Forest land to the east. The Forest Service proposed to repair the road above the caved adit portal, use the road to access their job site, and then to restore the road back, not to its pre-repair, impassable status, but to a condition allowing all-terrain vehicle (ATV) travel only. As an alternate plan, the Forest Service suggested extending the present road from the adit level, uphill to the southeast on grade to intersect with an old drill road, then use the drill road as the northwest-trending road leg to the point it intersects the original road above the caved area.

On April 13, 1998, the University granted the U.S. Forest service a 3-year entry permit that allows them to enter the University property to perform whatever road work is necessary to accomplish their reclamation project.

Late this summer, the Forest Service brought a D-6 Caterpillar tractor onto the property. They chose to attempt to repair the caving area above the adit and began work.

According to Mary Beth Marks, the U.S. Forest Service geologist, no blade work was done, however, as the Cat developed problems with its hydraulic lines and was returned to Elko for repair.

#### Observations

We found that a minor amount of work has been done on the old road above the caving adit. The first switchback beyond the adit has been cleaned, and it appears that the road cut on the right at the caved point has been widened enough to again allow passage of ATV traffic. The road is not safe for 4-wheel drive vehicle travel, and large vehicles still cannot pass through.

The two options suggested by the Forest Service to restore road access through the University property are both plausible (see accompanying figure). We recommend Option Two.

Option One: A moderate amount of bulldozer work could cut away the bank on the right hand (uphill) side of the road to both widen the road and to obtain fill material to push into the unstable cut below the road. This cut would have to be made with two benches or the resulting face would be too steep for safety. This option would probably require less ground disturbance, would require less time, and would be less costly than option two. The road, however, would be repaired in its present location, directly above the steep-walled cut. Both the walls of the cut below the road and the steep uphill road cut would continue to fail over a few winters, and the road would eventually become dangerous or again impassable at this point.

Option Two: Extending the road at its present grade uphill to intersect the south end of an existing drill road would be more costly than option one (we estimate a full day of work versus maybe less than a half day for option one). A few hundred feet of new road would have to be cut across a brush-covered draw to connect with the old drill road. The drill road would then need to be bladed to remove an accumulation of brush and boulders. This new route, however, would remove traffic from the vicinity of the steep cut. A berm dozed across the old road above and below the caved area would close the old segment to traffic, effectively removing any hazard of ATV's or other traffic sliding into the cut from above. We recommend this option.

The restoration of access across University property can only enhance the University's ability to lease or develop this land. Without repairs to the road at the property boundary, none of the University land is accessible other than by foot. Since the road only extends about one mile to the east beyond University land, there should be little traffic across University land except by hunters and ATV enthusiasts. If the Forest Service wishes to limit traffic into the forest to ATV's, this restriction could be done at the eastern edge of the Pick and Shovel claims rather than at the western boundary. Since the Forest Service is proposing only to repair the one existing problem, no ground disturbance will occur anywhere else on the University property.

#### STATUS OF HAZARDOUS MINE WORKINGS

Old records indicate that there were six tunnels and four shafts on the Pick and Shovel property. In our reconnaissance of the property, we found only two hazardous workings. We found dumps at locations of the other workings, but the workings themselves are caved and grown over and present no hazard.

The two hazardous workings are a 100-foot shaft on the north end of the Pick Claim and the steep-walled cut that has formed above the caved No. 5 Tunnel on the southwest side of the Shovel Claim.

The shaft collar is fenced and posted with warning signs (the fencing was done by Mr. Robert Harmon, UNR). The fencing encloses three sides of the shaft, the fourth side is protected by a high ledge of vein outcrop. A cut leads to the vein from the downhill side, but

one would have to climb through the cut and up a 5-foot face to be able to fall into the shaft from the west. A warning sign could be posted at the entrance to the cut but, except for that, the shaft is adequately protected.

The steep cut formed above the caved No. 5 Tunnel is only accessible and dangerous on its east side where it is crossed by the present access road as discussed above. If the access road is repaired and left open, a high berm, along with warning signs, should be placed along the left (west) side of the road at this point. If the access road is re-established on the drill road above the present road, this caving area should be closed by high berms and posted with warning signs on the abandoned section of road both above and below the caving section (see accompanying figure).

## MINERAL POTENTIAL

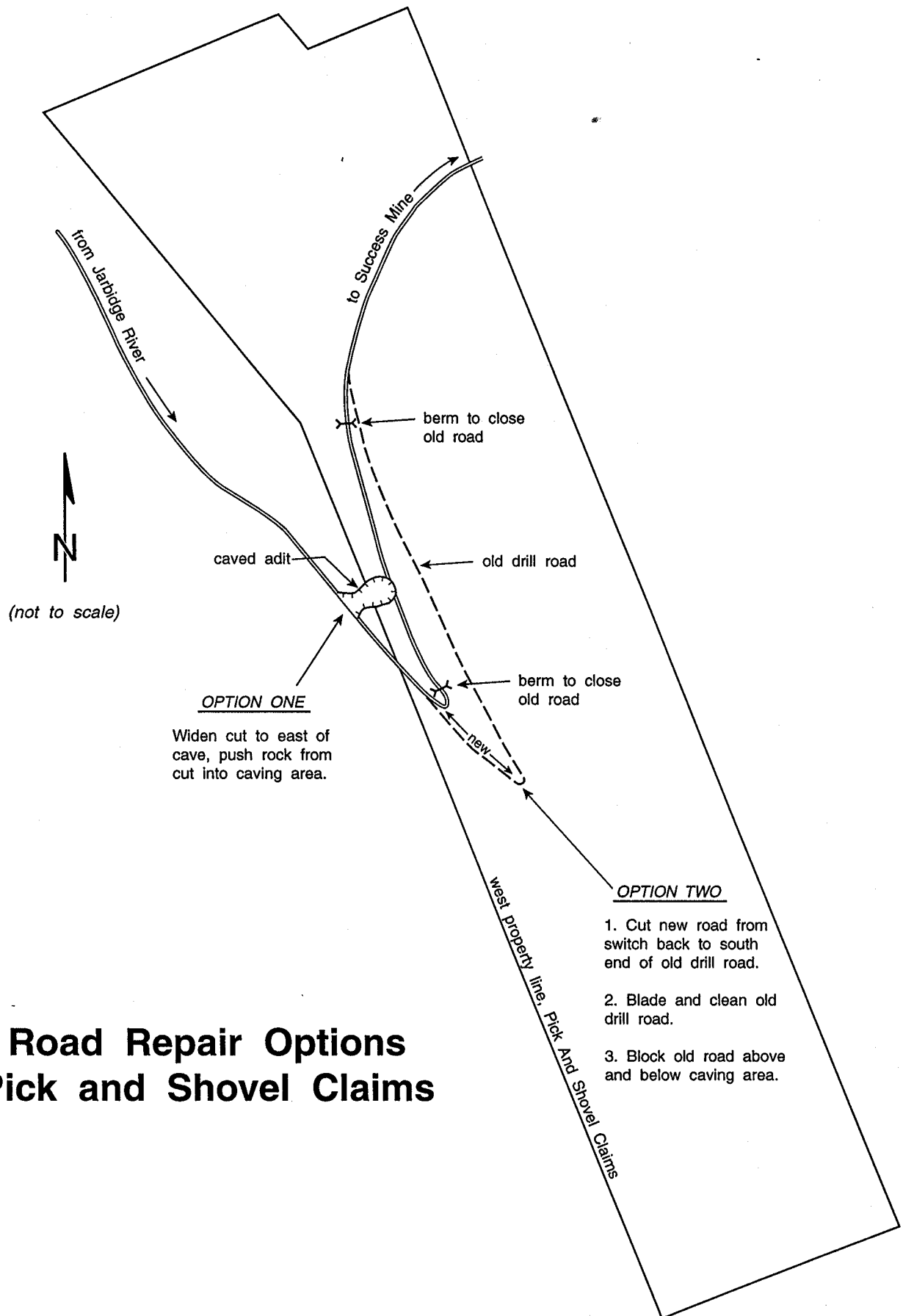
The prominent outcroppings of the Pick and Shovel vein were discovered in 1909 and the property was one of the first to be staked in the Jarbidge district. Records indicate that a few hundred tons of ore were mined in 1916, but nothing has been produced from the property since then.

Based on observed vein outcrops, and on mine workings shown on old property maps, the main Pick and Shovel vein may extend as much as 2,000 feet along strike within the property, and may be up to 10 feet in width. There is a second vein, 3- to 4-feet-wide, reported to be present some 50 feet west of the main vein, but it does not crop out and little is known about it. The ore shoots in the main vein were small and apparently controlled by ill-defined cross structures. Examination of vein material seen in outcrop and on old dumps did not reveal any obvious metallic minerals. The vein quartz is very weakly banded, and there are vugs containing clear quartz crystals. Rarely, we found fine-grained, disseminated black mineral specks, possibly of a silver sulfide mineral, within vein material on some of the dumps. Samples were collected at several sites for examination and analysis.

Considering the number of years that have passed since gold was discovered on the Pick and Shovel property, the vein has not been well explored. The 100-foot shaft on the Pick Claim was sunk on the vein. The No. 5 Tunnel intersects the vein 100 feet in elevation below the level of the shaft bottom but we found very little vein material on the tunnel dump. This may indicate that the tunnel did not reach the vein, or that the vein may not be well-formed at that level. Plans were obviously made in the 1980s (?) to drill the vein on several levels from drill sites on roads cut above the level of the No. 5 Tunnel. We found evidence that only three holes were actually drilled before the program ended. Drill cuttings remaining at the hole collars indicate only one hole intersected the vein.

Our examination indicated that large portions of the Pick and Shovel vein are barren. However, since the underground workings are not accessible and the property has not been extensively drilled, potential may remain for the discovery of small, high-grade shoots of gold ore within unexplored vein segments. The cost of exploring for, developing, and mining small ore bodies that may exist on the property would probably exceed the value of precious metal that might be found.

On the basis of existing data, we believe that the Pick and Shovel property itself (without extension onto adjoining land) has little potential for the discovery of precious metal deposits that could be economically mined, now or in the near future. However, mining companies are currently active in the surrounding area and, assuming that gold and silver prices eventually increase, exploration will probably continue in this part of the Jarbidge district. It is possible that the property would have value as part of a larger land package, and could be leased or sold to a company that is putting together an exploration program in the area.

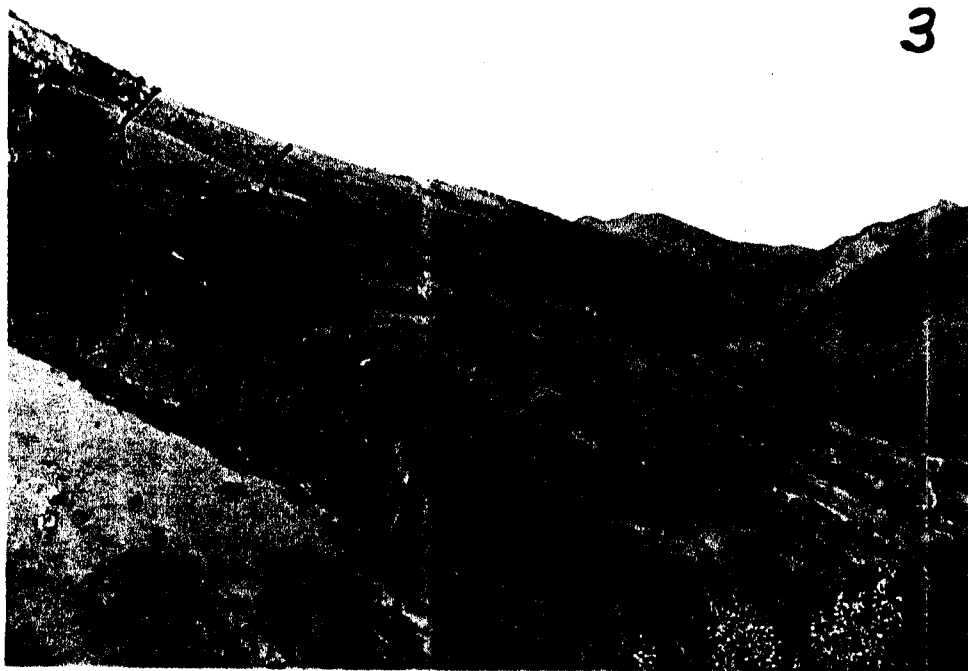


## Road Repair Options Pick and Shovel Claims





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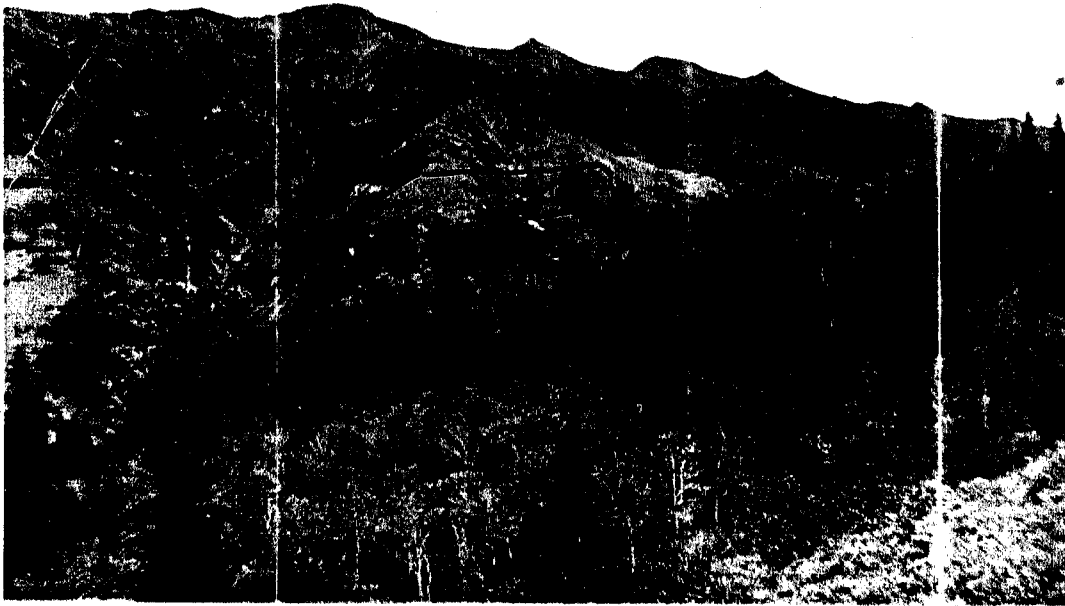


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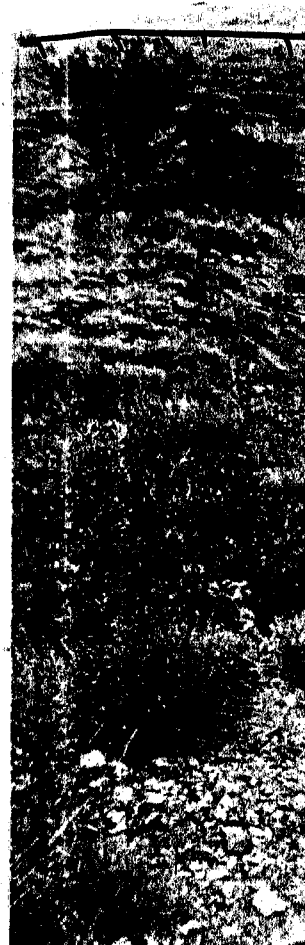
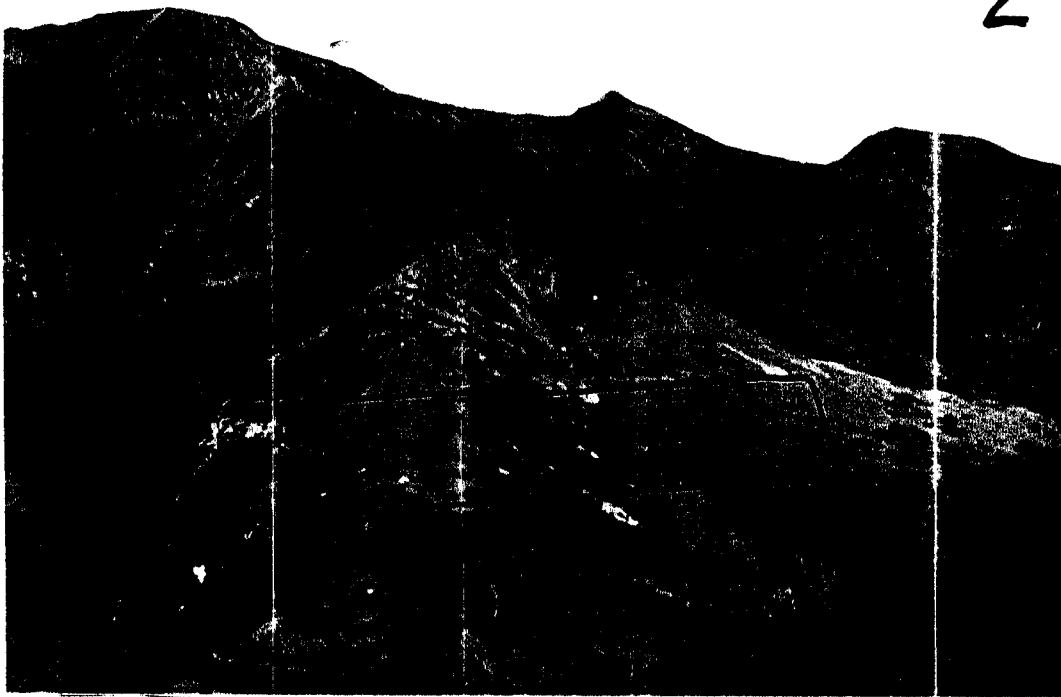


FIGURE 2: Photographs of the Pick and Shovel Mine area, Stanford Parcel 28-05-504. Positions of photo points are indicated by dots on the map. (1) Wide angle view of property, looking east. High peak in background is Jarbidge Peak, elevation lies between 7500 and 8100 feet. (2) Close up view of property from same point as photo 1. Dumps and talus splotches. (3) View of North end of property, looking southeast. (4) View of southern portion of property, looking north. Hachures point inward toward property. (5) Typical large quartz vein in the dumps. Visible gold was seen in the dumps, but this is often the case even in fairly high grade veins. (6) Typical collapsed adits on the property. The small cave-in depression in the center of the photo, marked by dots, is the tunnel entrance. Photo, looking east, stresses the collapsed nature of the work area. (7) View of the parcel and the magnitude of work necessary to re-open the mine to undertake adequate sampling. (8) View of the Bluster Mine, just up-slope from the Stanford claims. Illustrates the way the Stanford adit collapsed to look before collapse and burial by talus debris. This is the tunnel which Mike McDonnell of the Bluster Mining Company has repaired and which was claim-jumped by Robert Morris of Bullion Monarch. Mr. Morris spent approximately \$20,000 of his money over the last 8 years or so in prospecting the property, with

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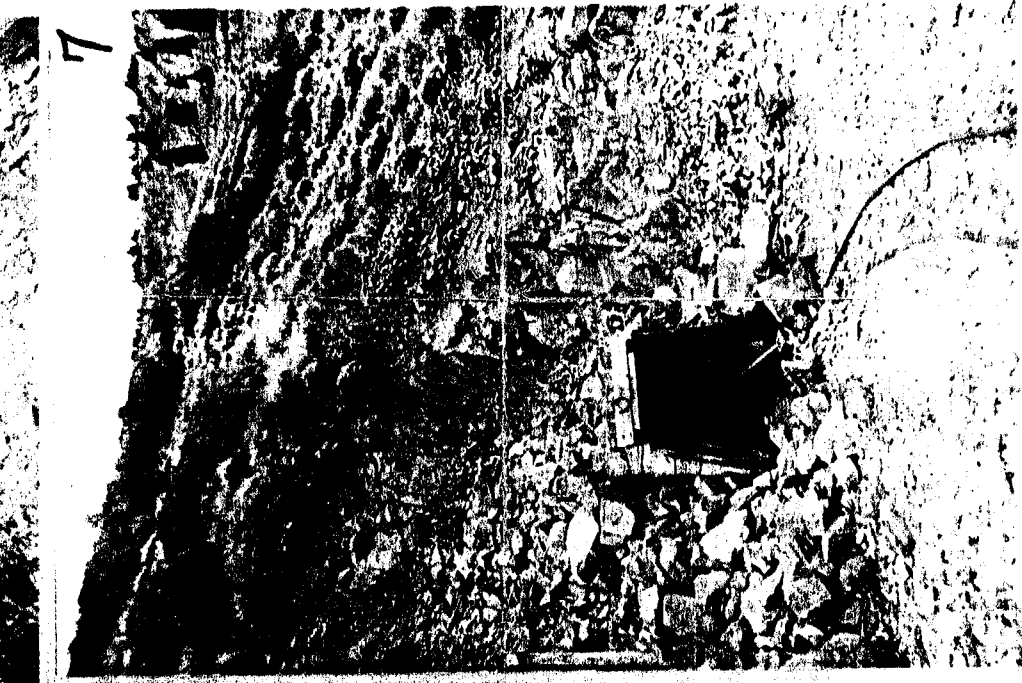
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Shovel Mine area, Stanford Parcel 28-05-504. Positions of photos are shown in figure 1. Property, looking east. High peak in background is Jarbidge Peak, elevation 10,800. Property (2) Close up view of property from same point as photo 1. Dumps are visible as white of property, looking southeast. (4) View of southern portion of property and several of machures point inward toward property. (5) Typical large quartz veins on the dumps. No ps, but this is often the case even in fairly high grade veins. (6) View of one of the property. The small cave-in depression in the center of the photo, highlighted by black photo, looking east, stresses the collapsed nature of of the workings on the Stanford necessary to re-open the mine to undertake adequate sampling. (7) Tunnel entrance to from the Stanford claims. Illustrates the way the Stanford adits of picture 6 used al by talus debris. This is the tunnel which Mike McDonnell of Jarbidge Gold and Silver which was claim-jumped by Robert Morris of Bullion Monarch. Mr. McDonnell has expended ey over the last 8 years or so in prospecting the property, with no return as yet.



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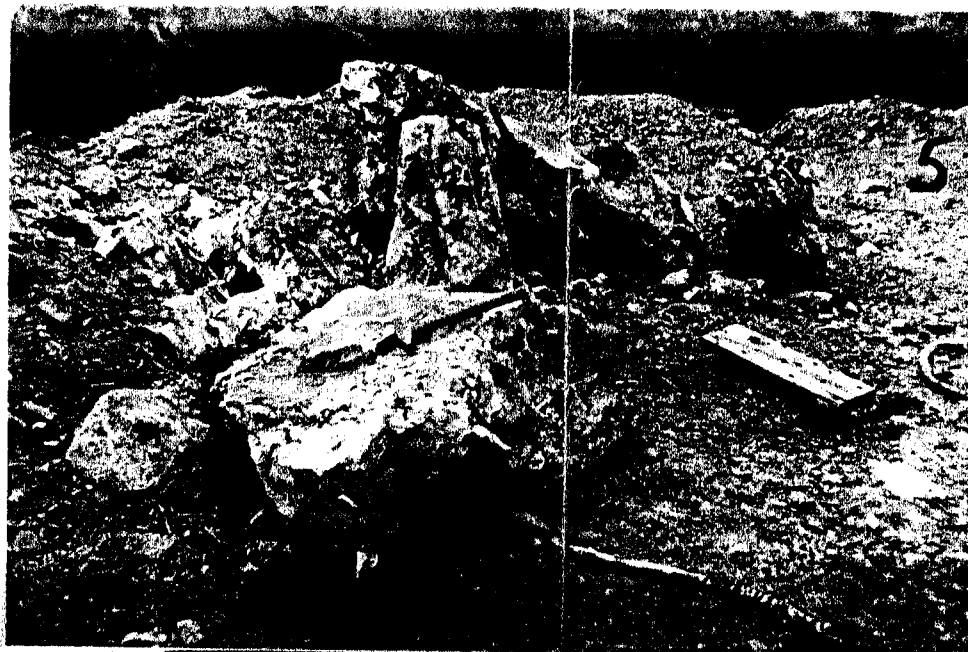


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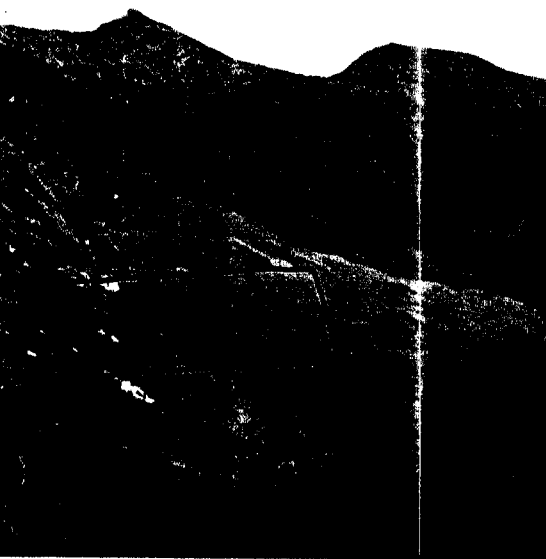
FIGURE 2: Photographs of the Pick and Shovel Mine area, Stanford Parcel 28-05-504. Positions of photos are shown in figure 1

(1) Wide angle view of property, looking east. High peak in background is Jarbidge Peak, elevation 10,800. Property lies between 7500 and 8100 feet. (2) Close up view of property from same point as photo 1. Dumps are visible as white splotches. (3) View of North end of property, looking southeast. (4) View of southern portion of property and several of the mine dumps, looking north. Hachures point inward toward property. (5) Typical large quartz veins on the dumps. No visible gold was seen in the dumps, but this is often the case even in fairly high grade veins. (6) View of one of the typical collapsed adits on the property. The small cave-in depression in the center of the photo, highlighted by black dots, is the tunnel entrance. Photo, looking east, stresses the collapsed nature of of the workings on the Stanford parcel and the magnitude of work necessary to re-open the mine to undertake adequate sampling. (7) Tunnel entrance to the Bluster Mine, just up-slope from the Stanford claims. Illustrates the way the Stanford adits of picture 6 used to look before collapse and burial by talus debris. This is the tunnel which Mike McDonnell of Jarbidge Gold and Silver Mining Company has repaired and which was claim-jumped by Robert Morris of Bullion Monarch. Mr. McDonnell has expended approximately \$20,000 of his money over the last 8 years or so in prospecting the property, with no return as yet.

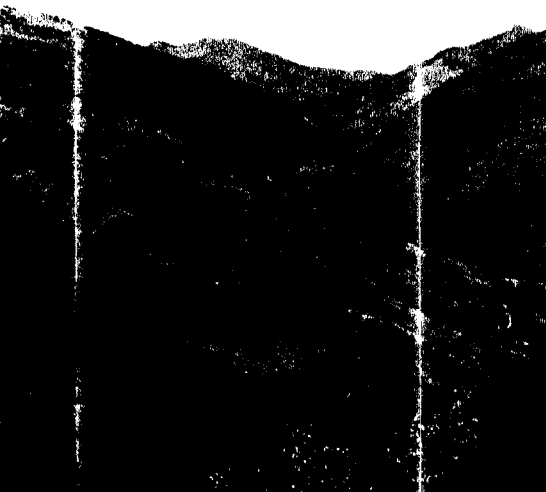
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## UNIVERSITY OF NEVADA-RENO


Jonathan G. Price  
Director/State Geologist

Nevada Bureau of Mines and Geology  
University of Nevada-Reno  
Reno, Nevada 89557-0088  
(702) 784-6691  
FAX: (702) 784-1709

24 August 1992

### MEMORANDUM

TO: Jim Jeffers, Director, Real Estate  
Mail Stop 242

FROM: Jon Price, Director/State Geologist 

SUBJECT: Pick and Shovel Mine  
Jarbidge Mining District  
Elko County, Nevada  
Stanford Property No. 28-005-504

According to the letter dated 5 July 1992 from A. J. Horn, Oil and Gas Advisor to the Board of Trustees of Stanford University, to Professor Jaak Daemen, Chairman of the UNR Department of Mining Engineering, Stanford is offering to donate the Pick and Shovel Claims to the University of Nevada. The original of this letter and accompanying enclosures (pages from U.S. Geological Survey Bulletin 741, letter dated 16 March 1993 from Fredrick C. Kruger to A. J. Horn, report dated 27 September 1983 by Stephen A. Shaver, Stanford University Oil & Gas Information Sheet, Elko County tax statement, color photocopies of photographs from the property, hand-colored topographic map showing the location of the Pick and Shovel Claims in blue) are attached.

I visited the Pick and Shovel Claims and Mine on Saturday, 15 August 1992. I was in Jarbidge that day working on our radon research project and, coincidentally, visiting with a geology graduate student, John Bernt, from Stanford University. John is doing some reconnaissance geologic mapping in the area as part of his Ph.D. dissertation. He knows the Jarbidge district quite well; he completed a master's thesis at the University of Idaho working on volcanic rocks nearby, and he worked for Freeport during their exploration for gold in the district several years ago. He accompanied me to the Pick and Shovel Claims and provided some additional information about the property.

We were able to drive directly to the property on a four-wheel drive, switchback road. Unfortunately, the road is now washed out on the

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property itself and there is no longer access to claims higher up the hill.

Please note that the size of the claims as indicated on the "Stanford University Oil & Gas Information Sheet" is probably wrong. Instead of two claims (1500 x 1600 feet each) plus one fraction of a claim, the two full claims are probably only 1500 x 600 feet each.

One concern that the University of Nevada might have in accepting a property of this sort would be any environmental or health-hazard liability. I do not believe that there is much to worry about in this regard, although it may be prudent to contact the Nevada Department of Minerals regarding their program of fencing off mine entrances. The documents that Stanford sent us indicate one shaft and several adits. The only open working that we saw was an adit, but its entrance is mostly collapsed. I would advise that the opening be closed or fenced off. None of the ore from the Pick and Shovel mine apparently was processed on the claims themselves. There was, however, a mercury amalgamation mill down the hill, closer to the river, where the ore was processed. It is possible, but unlikely, that the University of Nevada would assume some liability for this mill.

According to John Bernt, this adit was dug by Brad Stocks, who leased the property from Stanford in the middle to late 1980's. The adit goes into the hill toward the Pick and Shovel vein, but, judging from the material on the dump, does not appear to have intersected much of the vein. It was the digging of this adit that caused the road to be washed out. Stocks apparently also drilled several rotary holes in his exploration of the vein. We know of no production from his activities. An abandoned, empty metal building is located on the property near the entrance to the adit dug by Stocks.

It is difficult to assess the mineral potential of the property on such a short visit. The vein appears to extend along much of the property, but it is only a few feet wide. The vein is characteristic of many veins in the district. It contains mostly quartz, but also has classic textures of quartz pseudomorphic after calcite. Such veins can have isolated pockets of high-grade ore. Judging from the general lack of sulfide or iron oxide minerals indicative of oxidized sulfides, the Pick and Shovel vein was probably not a major gold-silver producer. Its recorded production is minimal. Several companies and prospectors have explored in the area in the last two decades. Major production and exploration activity were centered closer to the town of Jarbidge. According to John Bernt, the Pick and Shovel mine was probably mostly promotional. The resource estimates in the enclosures from Stanford therefore provide optimistic figures of the mineral potential.

If the University of Nevada accepts Stanford's donation, and if the University is then asked to lease the property for mineral exploration

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or mining, I would advise that the University ask for more money up front (as bonus payments or future payments on expected royalties) rather than anticipating large revenues from royalties on production.

The property may have more value to the University of Nevada as commercial or private residence real estate than as a mining property. Although quite isolated from population centers, Jarbidge has the possibility of becoming a tourist town. The Jarbidge Wilderness, which is located just to the east, attracts a few tourists each year. There has been some talk of a ski resort, but little has come of this, because access is almost strictly from Idaho during the winter. As the classic places for outdoor recreation become overcrowded in California and Utah, Jarbidge could become a favorite. There are already several relatively expensive summer homes in the town. It could take several decades for any real estate boom to reach the hill slope on which the Pick and Shovel claims are located.

I took several pictures of the property, in case you would like to see them after they have been developed. I also collected two samples of the vein, but see no need to assay them at this time.

Enclosed for your file is a copy of the pages on the Jarbidge district from Nevada Bureau of Mines and Geology Bulletin 106, *Mineral Resources of Elko County, Nevada*. This publication gives additional information on the Pick and Shovel mine and other properties in the district.

In summary, I advise that the University of Nevada accept Stanford's donation of this property. I further advise that upon receipt of the property, you contact the Nevada Department of Minerals to request their assistance in fencing off any open workings. I will be happy to assist in that contact.

Thanks for the opportunity to comment on this possible acquisition.

Enclosures

cc: Jaak Daemen  
Jim Hendrix

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[AUG 25 1992]

BCN - PURCH

APN: PM-540-76-2

GIFT DEED

THIS DEED, is made this Fifth day of January, 1993,  
between THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY,  
herein called the Donor, and THE BOARD OF REGENTS OF THE UNIVERSITY AND  
COMMUNITY COLLEGE SYSTEMS OF NEVADA, herein called the Donee.

W I T N E S S E T H:

That the Donor does hereby gift, grant and convey to the Donee, its  
successors and assigns, the following patented lode mining claims  
situate in the Jarbidge Mining District, Elko County, Nevada, known as  
and called:

Pick, Shovel and Shovel Fraction Patented Lodes, more fully  
described in U.S. Patent therefor recorded October 26, 1915, in  
Book 7 of Patents, Pages 71 and 72, in the Office of the County  
Recorder of Elko County, Nevada, Survey No. 4076, and being the  
mining locations recorded in Book 13, Mining Locations, at Pages  
358, 359, 360 and 408 in the Records of said County Recorder's  
Office.

TOGETHER WITH all the dips, spurs and angles and the metals, rock  
and earth therein, the rights, privileges and appurtenances thereunto  
pertaining and all dumps, plants, fixtures, improvements and  
appurtenances thereunto in anywise belonging.

TO HAVE AND TO HOLD the lands and tenements hereby conveyed unto  
the Donee, its successors and assigns forever.

IN WITNESS WHEREOF, the said Donor has caused this indenture to be  
executed the day and year first above written.

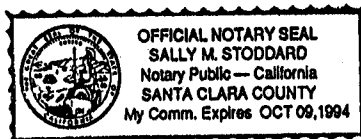
THE BOARD OF TRUSTEES OF THE LELAND  
STANFORD JUNIOR UNIVERSITY

By: H. A. Turner  
H. A. Turner, Acting Treasurer

STATE OF CALIFORNIA )  
COUNTY OF SAN MATEO ) ss

On January 5, 1993, personally appeared before me, a  
Notary Public, H. A. TURNER, personally  
known (or proved) to me to be the person(s) whose name(s) is/are  
subscribed to the above instrument who acknowledged that he/she/they  
executed the instrument.

Sally M. Stoddard  
Notary Public  
Sally M. Stoddard



It is understood by the acceptance of the above gift the Donee  
assumes full responsibility for, and agrees to indemnify, defend and  
hold Donor harmless from and against any loss, liability, claim, fine,  
expense, cost (including attorney's fees and expenses) or cause of  
action caused by or arising out of the violation of any federal, state  
or local laws, rules or regulations applicable to any waste material  
or any hazardous substances, or any other hazards on or included with  
the Premises or the presence, disposal, release or threatened release

of any waste materials or any hazardous substances from the Premises into the atmosphere or into or upon land or any water course or body of water, including ground water, whether or not attributable to Donor's activities, or the activities of Donor's officers, employees or agents, or to the activities of third parties (regardless of whether or not Donor was or is aware of such activities) prior to, during or after the period of Donor's ownership of the Asset.

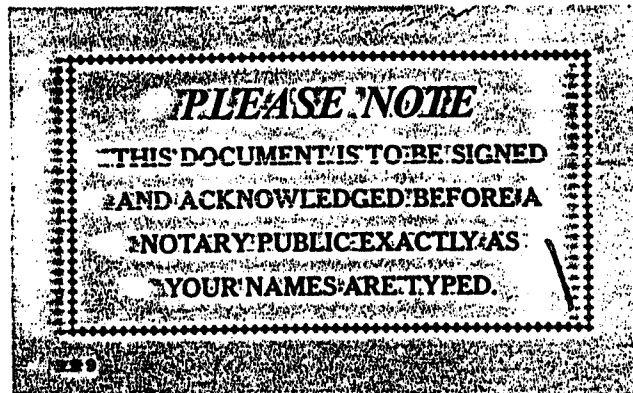
THE BOARD OF REGENTS OF THE UNIVERSITY  
AND COMMUNITY COLLEGE SYSTEMS OF NEVADA

By: Mark H. Dawson

STATE OF NEVADA )  
COUNTY OF WASHOE ) ss

On January 15, 1993, personally appeared before me, a Notary Public, Mark H. Dawson, personally known (or proved) to me to be the person(s) whose name(s) is/are subscribed to the above instrument who acknowledged that he/she/they executed the instrument.

Susan M. Baker  
Notary Public



INDEXED

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FILED FOR RECORD  
AT REQUEST OF  
University of Nevada  
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RECORDED BK 812 PC 237  
JERRY D. REYNOLDS  
ELKO CO. RECORDER

# REPORT

on the

PICK AND SHOVEL MINE, JARBIDGE, ELKO COUNTY, NEVADA (STANFORD PARCEL 28-05-504)

by

Stephen A. Shaver  
September 27, 1983

## SUMMARY AND RECOMMENDATIONS

The Stanford parcel has an estimated gross value of \$6- 52 million, but probably lies closer to the lower value. The recoverable gross value of the gold on the property might be only 25% of that amount. Stanford's share of \$6 million (at a 5% royalty) is \$300,000, but the share of the recoverable amount might be only \$75,000. The estimate of worth of the property depends mainly on the grade of the gold in the mine, but extensive sampling and rebuilding of the old mine workings would be necessary to accurately gauge the grade of the ore and such sampling and timbering would cost around \$10,000 to \$20,000. The life of the mine, and of any royalty payments to Stanford, might be as little as 2 years or as high as 9½ years.

✓ The offers to Stanford from Gintoff (of Minetek Sciences) and Morris (of Bullion Monarch/Gold Standard of Nevada) should be avoided unless large cash purchase payments in advance are received. Morris's letters and offers are clearly fraudulent; those of Gintoff are highly suspect. Neither of the gentlemen or their companies should be trusted to make any future payments or to provide accurate accounting of gold extracted and royalties due Stanford.

✓ Another company--Bourne Creek Mining Company--is currently working the mines in the area and trying to re-open some of them. They might be interested in negotiations with Stanford. I am not completely certain of their assets or viability, but I believe them much more credible than Morris or Gintoff.

Stanford should seriously consider hiring the Jarbidge postmaster, Mr. John Williams, to watch the property and report any unusual activities to Stanford.

✓ Without a caretaker on the Stanford property, other operators such as Morris or Gintoff could easily mine significant portions of the Stanford property without Stanford knowledge.

## ON-SITE INVESTIGATION OF PROPERTY AND ESTIMATES OF GROSS WORTH OF PARCEL

The property is located about 2 miles south of Jarbidge, Nevada and straddles Bluster Ridge between the elevations of 7500 and 8250 feet (see Figure 1). Access to the property is by approximately 1 mile of 4-wheel<sup>drive</sup> gravel road which connects the main road of Jarbidge at the Jarbidge River.

Jarbidge itself is very small (15-20 people in winter, 30-40 in summer) and isolated. Only two roads access the town; both are fair to poor gravel roads, 45-55 miles long, which connect ultimately with paved highway to Elko. In good weather, Jarbidge is 3½ hours drive along these roads from Elko. In bad weather or during the 6 months of snow cover in the area, the road is accessible only by 4-wheel drive vehicle. These data are important, for they corroborate that the mining season in the area is only 5-6 months long each year due to both difficulty of access and difficulty of maintaining supplies.

Presently there are 2 companies actively "mining" in the area. One is Bourne Creek Mining Company, headed by Mr. Clayton Stocks (address: Box 907, Moab Utah 84532; local address: Box 91, Jarbidge, Nevada 89826). They are presently using heavy equipment to try to re-open the Flaxie, Okay, and Starlight mines (see Fig. 1) not far from the Stanford parcel. They apparently bought their property last year from Envirotech Corporation, who had held the land for a considerable time before.

Another company, name unknown, is working (by placer methods) some of the old dumps near the Jarbidge River. They are apparently interested only in placer workings, and would not likely be interested in the Stanford parcel.

The Pick and Shovel mine claims which Stanford owns are approximately 3100 feet long and 600 feet wide. Roughly along strike of the claims are several gold-bearing quartz veins which run roughly parallel but apparently merge locally. These veins have a combined width of 5-20 feet and extend approximately for 1600 feet of the claim length.

There are 6 adits (tunnel entrances) and one shaft into the property, each with a small dump. All the adit entrances are completely collapsed or covered by talus debris. It was therefore not possible to examine the tunnels or sample the veins, and local information indicates that considerable sections of most of the old mine workings are collapsed. This is important because a truly accurate estimate of the gold content of the Stanford parcel can only come from extensive sampling of the veins underground and such sampling could only be undertaken after the tunnels are re-timbered and re-braced for support. I would estimate that the construction necessary for such re-timbering and safe sampling would cost \$10,000 to \$20,000 in time and materials. Proper sampling--several hundred pounds for assay, minimum--would probably cost \$1000 to \$2000.

The dumps range in size from approximately 200 tons to approximately 6000 tons of vein material. Total tonnage of the vein material in the dumps is estimated to be about 13,000 tons.

The gross value of the property can be estimated from the following formula:

$$\left[ \left( \begin{array}{c} \text{Tonnage} \\ \text{of vein} \end{array} \right) \times \left( \begin{array}{c} \text{grade of} \\ \text{vein (oz/ton)} \end{array} \right) \right] + \left[ \left( \begin{array}{c} \text{Tonnage} \\ \text{of dumps} \end{array} \right) \times \left( \begin{array}{c} \text{grade of} \\ \text{dumps} \end{array} \right) \right] \times \$400/\text{oz gold} = \text{GROSS WORTH}$$

The grade of the dumps can be estimated to be 0.0 to 0.4 oz/ton gold. The upper value of the range is based on the fact that USGS Bulletin 741 indicates that mining and milling costs for the period of the mine were \$7 per ton. This means, at \$20.67 per ounce gold at that time, that break-even gold grade was 0.3 oz/ton and to make a profit, anything less than about 0.4 oz/ton would go to the dumps. Therefore, even though I do not know how much 0.0 grade material went out to the dumps with 0.4 material, we can expect much more low grade material than higher grade. If we estimate 3 times as much low grade as high grade, the average dump grade will be roughly  $(3 \times 0.0 + 1 \times 0.4) \div 4 = 0.1 \text{ oz/ton average dump grade.}$

The tonnage of mineable material underground can be calculated by:

$$\text{Tonnage of vein} = \left[ \frac{1600' \text{ vein length} \times 10' \text{ vein width avg.} \times 300' \text{ known vein depth}}{13 \text{ cubic feet/ton of vein}} - (\text{Vein tonnage already mined}) \right] \times \% \text{ of vein containing mineable gold}$$

For both a maximum and minimum calculation, the tonnage of the vein already mined can be estimated to be at least twice the tonnage of the dumps--thus roughly 26,000 tons-- and the (length)(width)(depth) part of the above formula is 369,000 tons.

For a minimum gross value calculation, we should assume (as Fritz Kruger did before) that only 20% of the vein is mineable. For a maximum calculation, I believe a reasonable estimate would be 75%. (Kruger used 100% for his maximum calculation, but the presence of the dumps tells us that all the vein was not mineable.)

Grade of the mineable vein material, as pointed out by Kruger's estimate, probably varies from 0.2-2.0 oz/ton. Kruger felt that this was a guess based on the adjoining Bluster and Success Mine assays, but Bulletin 741 also indicates that these were indeed the grades for some of the ore shoots of the Pick and Shovel. It is reasonable, however, to assume that the old miners probably took out most or all the high grade material -- therefore, I consider it likely that most material in the mineable parts of the vein is probably much closer to 0.2 than to 2.0 oz/ton gold. and I will use the 0.2 oz/ton value as a more conservative and reasonable estimate of grade in both minimum and maximum calculations below. Thus for a minimum gross value estimate:

MAXIMUM GROSS VALUE =  $(369,000 - 26,000)(75\%)(0.2 \text{ oz/ton}) + (13,000 \text{ tons})(0.1 \text{ oz/ton}) \times \$400/\text{oz gold}$   
 = 257,250 tons @ 0.2 oz/ton + 13,000 tons @ 0.1 oz/ton x \$400/oz  
 = 51450 ounces gold + 1300 ounces gold  
 = \$21.1 million

Stanford's share of \$21.1 million @ 5% royalty, is 1.1 million.

If I were wrong in assuming that most higher grade material were already mined out, then we could use 0.5 oz/ton as the grade in the maximum case above, giving a maximum gross of \$ 52 million. Although I believe this grade unrealistically high, it serves for what I would consider to be an outside, extremely optimistic estimate. Stanford's share, at 5% royalty, would be \$2.6 million.

The above calculations do not vary the grade of the dump nor include the likely silver content of the ore. Both of these variables would not vary the above figures by more than 1-2% and have therefore been ignored. One can see from the above that it is the grade of the ore which most affects the estimates and without the extensive sampling previously mentioned, we can only now make these minimum/maximum calculations.

Moreover, these estimates, both minimum and maximum, do not attempt to consider how much of the gold in the veins might actually be economically recoverable. Depending upon the shape of the old workings, the grade of the ore, and the gambling spirit of the mining company, much of the gold (50 or even 75%) might not be economically recoverable. Thus the recoverable gross value of the gold might be as little as 25% of the above-- \$1.5 million minimum gross, with Stanford's share = \$75,000.

Production rates for the mining of the claims can also only be estimated, but since 2 men without machinery can block out 10-20 tons/day according to the old miners in Jarbidge, 100-200 tons/day with 5-6 men and machinery appears to be a reasonable estimate. Using a 100 ton/day production rate for the minimum tonnage and assuming that only 25% of the ore is economically recoverable, the minimum produced tonnage could be as low as 30,000 tons--approximately 2 years production for a 6-month work year and 6-day work week. Maximum production, assuming 100% recovery of 270,250 tons of ore at 200 tons/day and a 6-month work year and 6-day work week, would be approximately 9 1/2 years. Thus Stanford should expect royalty payments to come from the property for as little as 2 years or as much as 9 1/2. I would guess that the more likely time of operation would be much closer to 2 years, unless the developer deliberately stalled, because the maximum production estimate is both optimistic as regards the recovery and does not consider that production might reach much more than 200 tons/day by an efficient operator trying to quickly capitalize.

There is no mill in the area and any ore mined from any of the lode mines, such as the Pick and Shovel, would have to be trucked out for processing elsewhere. This need not be a prohibitive cost, since most of the ore could be selectively picked and the net amount of material to be trucked out would be small.

It would be possible to build a mill on the east side of the Jarbidge range to process the ore-- a mill on the town side of the range would probably be prohibited for environmental reasons since the Jarbidge river is the town's water supply. Hauling in that case would be as little as 5 miles and a road to connect such a mill with the Stanford or Bourne Creek Mining Company claims would require little work since half of that route already has a road. Building a mill, even a small one, would depend on whether sampling on Stanford claims or by Bourne Creek indicated sufficient gold to make the large capital investment for a mill. Such a mill would likely cost several million dollars as a minimum, and as the above calculations indicate, the mill might cost more than the expected gross of the Stanford property alone.

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415-369-4291  
415-497-2544

16 March 1983

Mr. A. J. Horn, Oil and Gas Advisor  
Board of Trustees, Stanford University  
34 Lloyd Drive  
Atherton, California 94025

Dear Al:

Upon receipt of your telephone call and letter of March 4, 1983, I reviewed the information you sent on the Pick and Shovel Mine, Jarbridge Mining District, Elko County, Nevada, which consisted of Mr. G. B. Gintoff's letter to you of February 7, 1983, your letter to Ms. Ann Werry of February 10, 1983, and the U. S. Geological Survey Bulletin 741 on the Jarbridge Mining District (1923).

We discussed the proposed Stanford Mineral Lease during our meeting on March 9, 1983, and so I will not comment on it in this memorandum.

The Pick, Shovel, and Shovel Fraction claims contain a vein of about 2000 feet in length (measured on Figure 2, Bulletin 741). The mine is incompletely developed by several crosscut adits totalling 630 feet in length (measured on Figure 14, Bulletin 741), a 60 foot shaft, and several drifts totalling about 300 feet "distributed interruptedly through the length of the claim". If the vein connects with the Good Luck vein to the south it could be as much as 3900 feet in length. Its vertical extent is at least 262 feet (Figure 14, Bulletin 741). The vein varies from 5 to 20 feet in thickness.

In 1916 about 242 ounces of gold (now worth \$101,000) were produced from a branch of the Pick and Shovel vein known as the Arizona Fraction to the northwest. Except for some exceptionally high-grade specimens the average grade is not mentioned, but assuming the Pick and Shovel vein to be similar to the nearly parallel Bluster and Success vein the grade probably varies from 0.25 ounce to 2 ounces, averaging 1 ounce of gold per ton with something less than 0.25 that amount of silver.

If we assume realistically that the mineable ore shoots occupy only 20% of the strike length of the 2000 foot vein, we may calculate the following tonnage:

$$\frac{2000' \text{ length} \times 0.2 \times 300' \text{ height} \times 10' \text{ thick}}{15 \text{ cubic feet/ton}} = 92,000 \text{ tons}$$

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Mr. A. J. Horn  
16 March 1983  
Page 2

At a production rate of 200 tons per day this would be about 1 year of operation with a total gross value of \$38,000,000. Stanford's share at 3.5% would be \$1,330,000.

If we assume that the entire length of the vein is mineable, and assume the maximum possible 3900 foot length of vein, we may calculate the following tonnage:

$$\frac{3900' \text{ length} \times 300' \text{ height} \times 10' \text{ thick}}{13 \text{ cubic feet/ton}} = 900,000 \text{ tons}$$

At a production rate of 400 tons per day this would be 6 years of operation, but at perhaps half the grade with a total gross value of \$188,000,000. Stanford's share at 5% would be \$9,400,000. This is of course unrealistically optimistic, but may give you an idea of the maximum possible scope of the project.

Very truly yours,

*Fritz*  
Frederick C. Kruger

FCR:hak



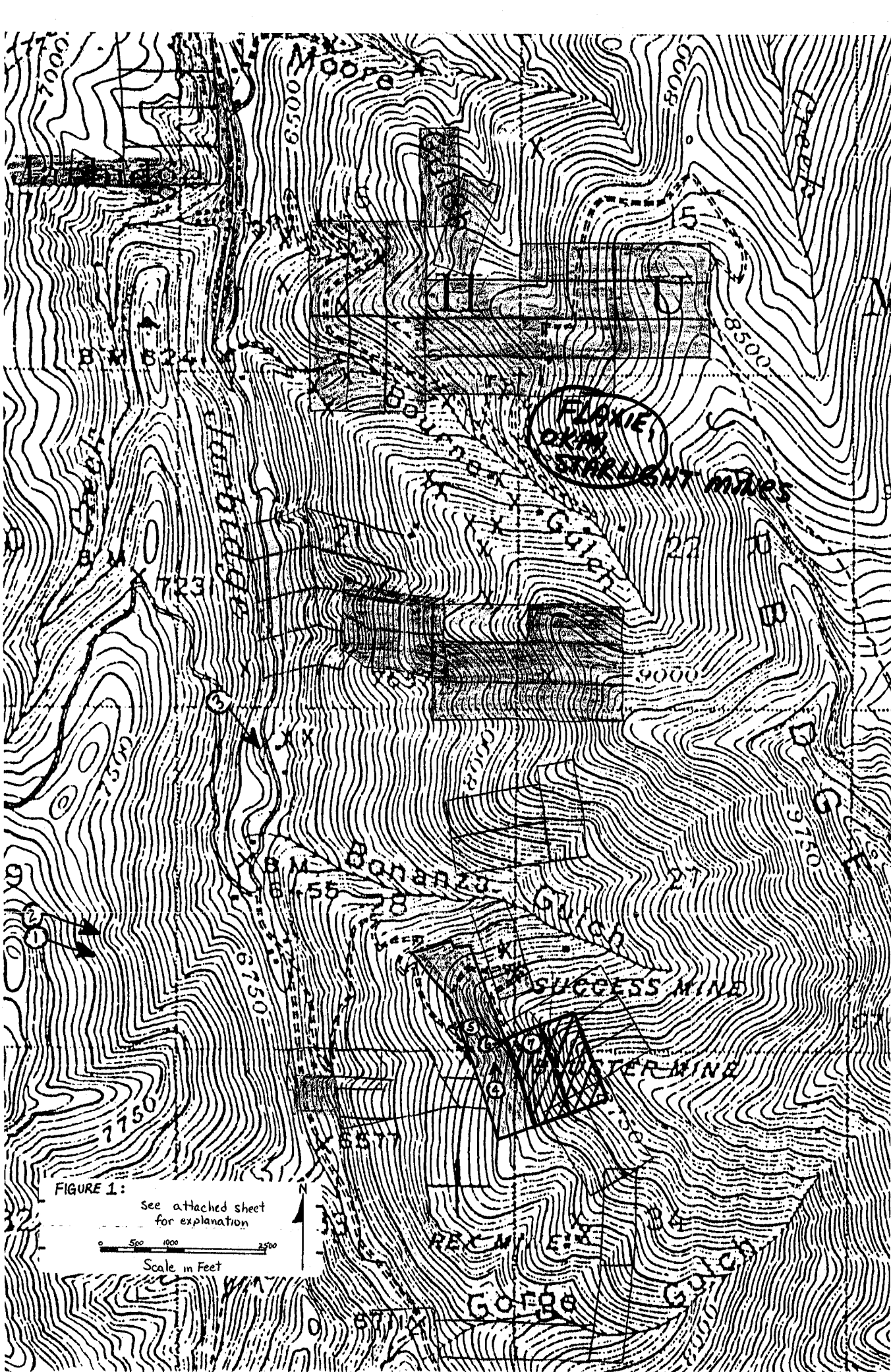
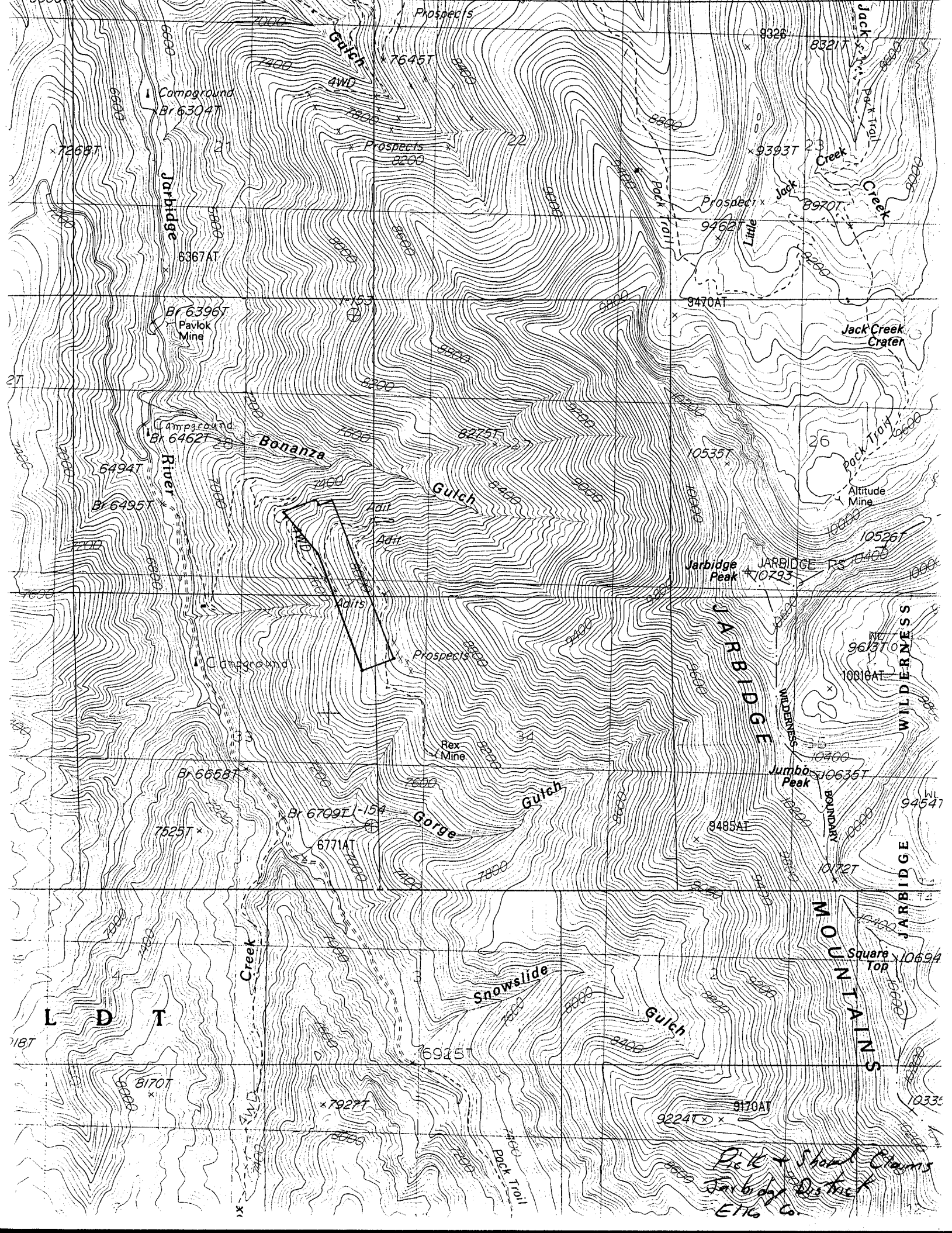


FIGURE 1:

See attached sheet  
for explanation

0 500 1000 2500  
Scale in Feet

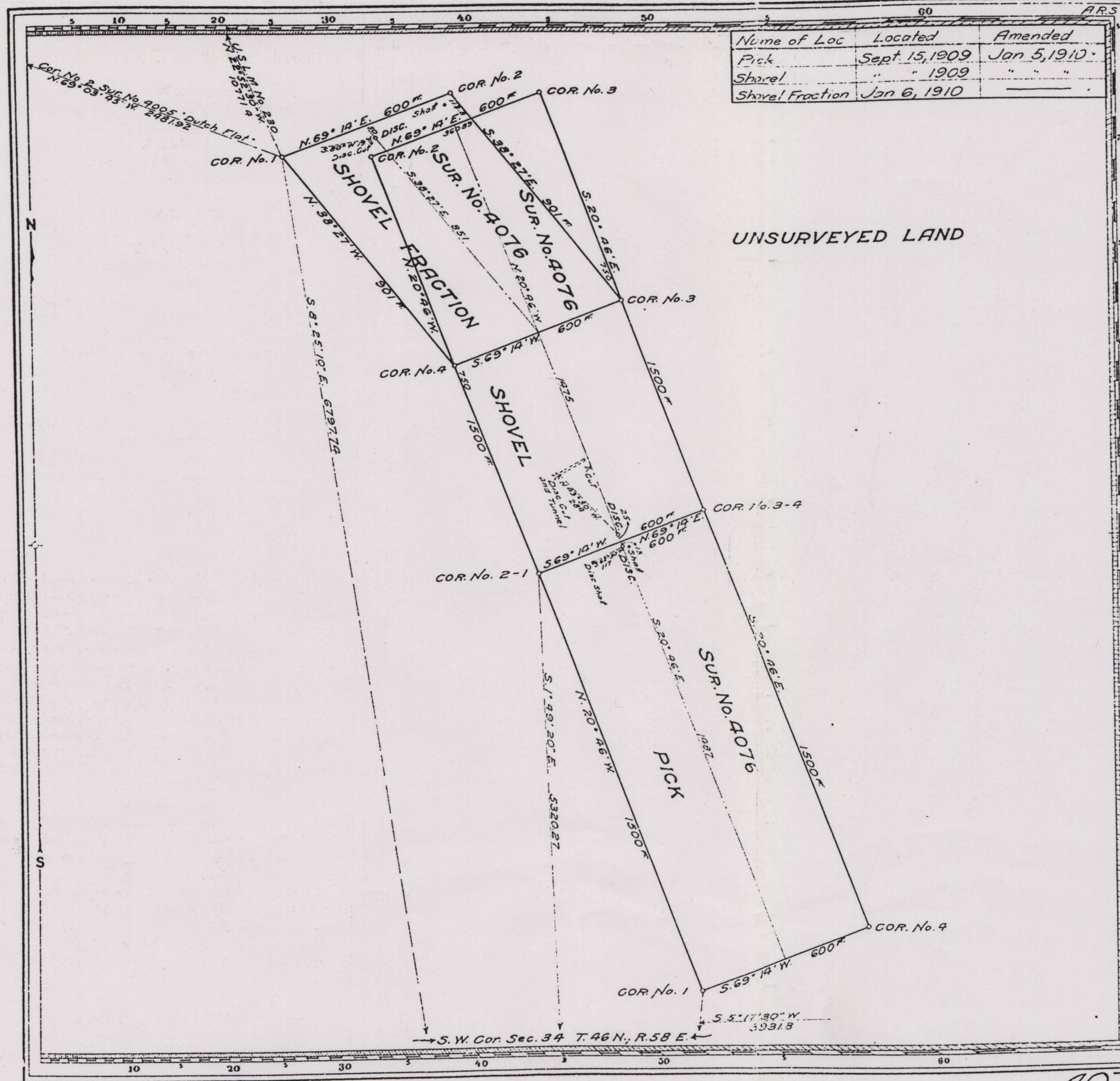


Pick & Shaw Claims  
Jarbidge District  
ETIC Co.









Name of Loc	Located	Amended
Pick	Sept. 15, 1909	Jan 5, 1910
Shovel	" " 1909	" " "
Shovel Fraction	Jan 6, 1910	" " "

H.S.P. Claim Located 191

Mineral Survey No. **4076**

**PLAT**

OF THE CLAIM OF  
The Twin Falls-Jarbridge Development Company

KNOWN AS THE  
**PICK, SHOVEL and SHOVEL FRACTION LODES**

IN Jarbridge MINING DISTRICT,  
Elko COUNTY, Nevada

Containing an Area of \_\_\_\_\_ Acres.  
Scale of 300 feet to the inch.  
Variation 18° 30' E.

ATTENDED June 15-20, 1912 BY  
Chas. A. Liddell U.S. Mineral Surveyor.

The Original Field Notes of the Survey of the Mining Claim of  
The Twin Falls-Jarbridge Development Company  
known as the  
"Pick, Shovel and Shovel Fraction" Lodes

from which this plat has been made under my direction have been examined and approved, and are on file in this office; and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if incorporated into a patent, serve fully to identify the premises, and that such reference is made therein to natural objects or permanent monuments as will perpetuate and fix the locus thereof.

I further certify that five hundred dollars worth of labor has been expended or improvements made upon said Mining Claim by claimant — or its grantors, and that said improvements consist of 3 shafts, 2 cuts and 1 cut and tunnel; Value, \$3770.22

that the location of said improvements is correctly shown upon this plat, and that no portion of said labor or improvements has been included in the estimate of expenditures upon any other claim.

And I further certify that this is a correct plat of said Mining Claim made in conformity with said original field notes of the survey thereof, and the same is hereby approved.

U.S. Surveyor General's Office.  
Reno, Nevada

December 21, 1912 Nevada

*Michael Ryle*  
U.S. Survey General for

25260000e (goes at end)

204132

4076



