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PRINTED: 03/05/2003

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: HACKBERRY

ALTERNATE NAMES:

HACKBERRY EXT
SILVER KING GROUP
OLD PHILLIPS PROPERTY
MIDDLE HACKBERRY
INDIAN QUEEN
SENATE SILVER MINE
OLD HACKBERRY
HACKBERRY CONSOLIDATED
HACKBERRY SILVER MINING CO.

MOHAVE COUNTY MILS NUMBER: 614A

LOCATION: TOWNSHIP 23 N RANGE 14 W SECTION 28 QUARTER NE
LATITUDE: N 35DEG 21MIN 01SEC LONGITUDE: W 113DEG 45MIN 57SEC
TOPO MAP NAME: PEACOCK PEAK - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

SILVER
GOLD LODE
LEAD SULFIDE
ZINC SULFIDE
COPPER
IRON SULFIDE
URANIUM
CADMIUM

BIBLIOGRAPHY:

ADMMR HACKBERRY FILE
ADMMR MOHAVE CUSTOM MILL PROJECT
EVAL. OF MIN. RES. OF HUALAPAI INDIANS, 1964,
VOL. I, P. 134-142
HEWETT, D.F. "MIN. RES. OF RGN ARND BLDR DAM"
USGS BULL 871, P. 16; 1936
BLM AMC FILE 47632
ADMMR MAPS (UPSTAIRS AZBM FILE BOXES)

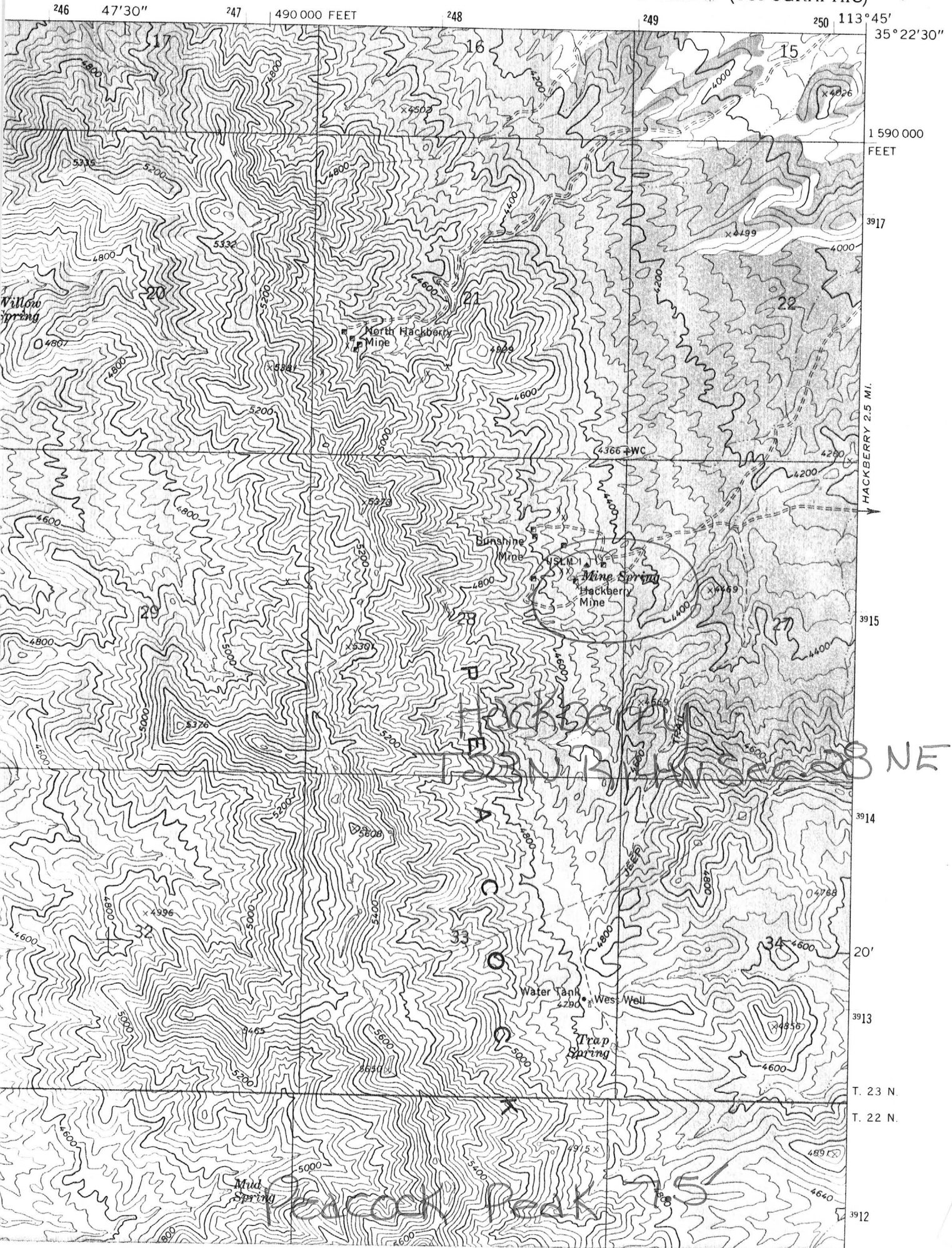
CONTINUED ON NEXT PAGE

CONTINUATION OF HACKBERRY

SCHRADER, F.C. "MIN. DPSTS OF CRBT RNGE, BLCK
MTNS, GRND WSH CLFS, AZ" USGS BULL 397,P 141
HINTON, R. "1000 OLD AZ MINES" P. 95; 1962
MOORE, R.T. "MIN. & WTR RES. OF AZ" AZBM BULL
180, P 193, 260
ELSING, M.J. "AZ METAL PRODUCTION" AZBM BULL
140, P. 96; 1936
ADDITIONAL WORKINGS SEC. 21-23N-R14W
MALACH, ROMAN "CERBAT MTN. CTRY" P. 40
MALACH, ROMAN "BIG SANDY CTRY" P. 27
MALACH, ROMAN "MOHAVE CO. PLACE NAMES" P. 25
RABB, D. "REC. OF METAL VALUES PRIOR TO RECLA
MATION OF MND AREAS IN SW" (ADMMR GEO FILE)
ADMMR HACKBERRY MINE & MILL COLVO FILE

PEACOCK PEAK QUADRANGLE
 ARIZONA - YAVAPAI CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)

3254 1 NW
 VALENTINE



Name of Mine or Prospect Hackberry Mine	Township 23N	Range 14W	Section 28 adc	Priority A
Principal Minerals: Silver, Gold, Galena, Pyrite, Argentite, Cerargyrite, Chalcopvrite, Bornite	1:250,000 Quad Williams	7.5' - 15' Quad. Peacock Peak		
Associated Minerals: Quartz, Calcite, Clay Minerals, Sericite, Chlorite, Epidote	District Hackberry	Principal Product Gold, Silver, Lead		
Type of Operation: Underground: Shafts, Adits, Drifts	County Mohave	State AZ	Type of Deposit Vein	

Ownership or Controlling Interest:

Consult tax assessment records.

Access: From Hackberry, AZ, proceed south on unimproved road for 1.5 miles, then proceed west on the same road for 2 miles to mine. The mine is located on the topographic quadrangle.

Structural Control or Geological Association: "The country rock is granite. It is intruded by "porphyry" which is also associated with the veins."¹
The Hackberry, North Hackberry, Sunshine and other mines in the northern part of the Peacock Mountains explore a series of long northwest-trending, generally southwest-dipping quartz veins. The vein system is approximately six miles in length and the vein occur in an area up to one mile wide. Quartz monzonite porphyry dikes occur along the mineralized veins and for this reason the mineralization is thought to be Laramide in age. The veins are typically two to ten feet in width with kaolinitic and sericitic haloes extending 10's to 100's of feet out into the country rock.

Age of Mineralization: Laramide (?)

Production History	Geochemical Analyses		
"It was for many years a heavy producer and is credited with a production of \$1,000,000." ¹ Patented claim Bk #313 Ms #145	(oz/ton)		
	Sample I.D. ³	Au	Ag
	80Cj218C	0.0003	2.24
	80Cj295	0.0003	0.015
	80Cj218F	0.0003	1.33
	80Cj218G	0.0003	0.02

References

- 1) Schrader (1909) p. 141.
- 2) ABM (1969) Bull. 180, p. 183-205.
- 3) Exploration Research Associates Incorporated, 1981, Proprietary report to Santa Fe Pacific Railroad Company, 16 April 1981, 11 p.

COMPLETE AND MAIL TO:
STATE MINE INSPECTOR
1616 WEST ADAMS, SUITE 411
PHOENIX, ARIZONA 85007-2627

HACKBERRY (F)

FOR OFFICE USE ONLY
START-UP NUMBER 94310067
STATE NUMBER 092056
DEPUTY NUMBER Hamm
NEW ☒ MOVE ☐

MAR 07 1989

NOTICE TO ARIZONA STATE MINE INSPECTOR

In compliance with the Arizona Revised Statute, we are submitting this written notice to the Arizona State Mine Inspector of our intent to start ☒, stop ☐, move ☐ an operation.

Please check the appropriate boxes: Contractor ☐, Owner ☐, Operator ☒, Open Pit Mine ☐, Underground Mine ☒, Mill ☐, Quarry ☐, Aggregate Plant ☐, Hot Plant ☐, Batch Plant ☐, Smelter ☐, Leach Plant ☐.

If this is a move, please show last location: _____

If you have not operated a previously in Arizona, please check here: ☒ If you want the Education and Training Division to assist with your mine safety training, please check here: ☐

If this operation will use Cyanide for leaching, please check here: ☐

COMPANY NAME: COMBINED METALS REDUCTION CO

DIVISION: _____

MINE OR PLANT NAME: HACKBERRY MINE TELEPHONE: 702-572-3282

CHIEF OFFICER: LARRY ATKINSON

COMPANY ADDRESS: FISH LAKE VALLEY

CITY: TONOPAH STATE: NV ZIP CODE: 89049

MINE OR PLANT LOCATION: (Include county and nearest town, as well as directions for locating property by vehicle: 4 MI. S.W. HACKBERRY AZ

MOHAVE CO

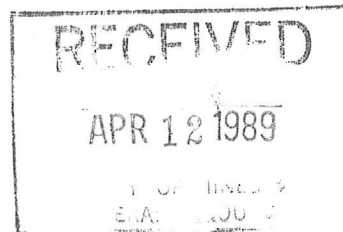
T 23 N. R. 14 W

TYPE OF OPERATION: SHAFT DEWATER PRINCIPAL PRODUCT: _____

STARTING DATE: JAN 28 CLOSING DATE: _____

PERSON COMPLETING NOTICE: ANDREW LOVESTEDT TITLE: MINE SUPER

602-757-3925



In the Matter of the Application for permit to sell
stock of the

HACKBERRY EXTENSION MINING CO.

DATED, JULY 18th, 1918.

Am. Co. No.

967

Sold July 19-1918

I. J. LIPSOHN
ATTORNEY AT LAW
PHOENIX, ARIZONA

By-Laws of

HACKBERRY EXTENSION MINING COMPANY.

Exhibit #

ARTICLE I. Stockholders.

1. Annual Meetings.

A meeting of the stockholders shall be held annually at the office of the company in
- - - - - Hackberry or Kingman, Arizona, - - - - - at
two - - - o'clock P. M., on the first day of June - - - - -
- - - - - of each year for the purpose of electing directors and for the transaction
of any other business that may properly come before it.

2. Notice.

Notice of the annual meeting shall be mailed to the last known address of each stockholder as
the same appears by the records of the company, at least - - - - - Thirty - - - - - days prior
to such meeting.

3. Organization.

The President, in his absence the Vice-President, and in the absence of both, a chairman appointed
by the stockholders present, shall call meetings of stockholders to order and shall act as chairman
thereof.

The secretary of the company shall act as secretary at all meetings of the stockholders. In his
absence, the presiding officer may appoint any person to act as secretary.

4. Quorum.

A majority of the stock issued and outstanding represented by the holders thereof, either in per-
son or by proxy appointed by an instrument in writing, subscribed by such stockholder, shall be a
quorum at all meetings of stockholders.

5. Adjournment.

If at any annual or special meeting a quorum shall fail to attend in person or by proxy, a major-
ity in interest of the stockholders attending in person or by proxy at the time of such meeting may, at
the end of an hour, adjourn the meeting from time to time without further notice until a quorum shall
attend, and thereupon any business may be transacted which might have been transacted at the meet-
ing as originally called had the same been then held.

6. Special Annual Meetings.

Whenever, from any cause, an annual meeting of stockholders be not held on the day provided,
a special annual meeting may be called by the directors in the manner and at such place as is pre-
scribed for the holding of annual meetings of stockholders, at which special annual meeting directors
shall be elected in accordance with such provisions, and shall hold office until the - - - - -
first day of June - - - - - in - - - - - next succeeding
and until others are elected and have qualified in their stead.

7. Voting.

At all annual and special meetings of stockholders every holder of stock issued to a bona fide
purchaser of the same, represented by the holder thereof, either in person or by proxy in writing,
shall have one vote for each share of stock so held and represented at such meetings. Voting for di-
rectors and, upon demand of any stockholder, upon any question at any meeting shall be by ballot.

In all elections for directors or managers of any corporation, each shareholder shall have the
right to cast as many votes in the aggregate as he should be entitled to vote under its charter,
multiplied by the number of directors or managers to be elected at such election, each shareholder
may cast the whole number of votes, either in person or by proxy, for one candidate or distribute
such votes among two or more of such candidates.

8. Special Meetings.

Special meetings of the stockholders for any purpose or purposes shall be held whenever called
by the board of directors, either by written instrument or by the vote of a majority, and shall be called
whenever stockholders owning one-fourth of the capital stock issued and outstanding shall in writing
make application therefor to the president, stating the object of such meeting.

9. **Notice of Special Meetings.**

Notice of each special meeting of stockholders, stating the time and in general terms the purpose or purposes thereof, shall be mailed to stockholders..... **ten**days prior to such meeting and in the same manner prescribed for giving notice of annual meetings.

10. **Order of Business.**

The order of business at all meetings of stockholders shall be as follows:—

- (1) Roll Call.
- A quorum being present:
- (2) Reading of minutes of preceding meeting and action thereon.
- (3) Reports of Officers.
- (4) Reports of Committees.
- (5) Election of Directors.
- (6) Unfinished Business.
- (7) New Business.

11. **List of Stockholders.**

At each meeting of stockholders a full, true and correct list, in alphabetical order, of all the stockholders entitled to vote at such meeting, with the number of shares held by each, certified to by the secretary, shall be furnished.

12. **Inspectors.**

At all elections of directors the polls shall be opened and closed, the proxies shall be received and be taken in charge, all questions touching the qualification of voters and the validity of proxies, and the acceptance or rejection of votes, shall be decided, and all ballots shall be received and counted by **two** inspectors, who shall be appointed by the presiding officer of the meeting and who shall, in writing, certify to the returns.

ARTICLE II.

Board of Directors.

1. **Number.**

The business and affairs of the company shall be managed and controlled by a board of..... **five**directors, who shall be stockholders of the company.

2. **Term.**

Each director shall serve for the term for which he shall have been elected and until his successor shall have been duly elected and have qualified, provided he remain a stockholder of the company during such time.

3. **First Meeting.**

Immediately after such annual election of directors, the newly elected directors shall meet for the purpose of organization, the election of officers and the transaction of other business.

4. **Regular Meetings.**

Regular meetings of the board of directors shall be held at.....o'clock.....M., on the..... of the months of.....in each year, if not a legal holiday, and, if a legal holiday, then on the next succeeding business day. No notice shall be required to be given of any regular meeting.

5. **Special Meetings.**

Special meetings of the board shall be held whenever regularly called. Unless otherwise specified in the notice thereof, any and all business may be transacted at a special meeting.

6. **Notice.**

The secretary shall give notice to each director of each special meeting by mailing the same at least..... **five**days before the time of meeting, or by telegraphing or telephoning

The directors shall hold their meetings and may have an office and keep the books of the company at such place or places in..... **Flagstaff or Kingman, Arizona**as the board from time to time may determine.

8. **Quorum.**

A majority of the board of directors at the time in office shall constitute a quorum for the transaction of business, but a majority of those present at the time and place of any regular or special

9. Notice of Special Meetings.

Notice of each special meeting of stockholders, stating the time and in general terms the purpose or purposes thereof, shall be mailed to stockholders ten days prior to such meeting and in the same manner prescribed for giving notice of annual meetings.

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Regular meetings of the board of directors shall be held at.....o'clock.....M.,
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5. Special Meetings.

Special meetings of the board shall be held whenever regularly called. Unless otherwise specified in the notice thereof, any and all business may be transacted at a special meeting.

6. Notice.

The secretary shall give notice to each director of each special meeting by mailing the same at least - five - days before the time of meeting, or by telegraphing or telephoning not less than - three - days before the time of meeting.

7. Place of Meeting.

The directors shall hold their meetings and may have an office and keep the books of the company at such place or places in Blackberry or Kingman, Arizona. as the board from time to time may determine.

8. Quorum.

A majority of the board of directors at the time in office shall constitute a quorum for the transaction of business, but a majority of those present at the time and place of any regular or special

meeting, although less than a quorum, may adjourn from time to time, without notice, until a quorum be had. The vote of a majority of the directors present at any meeting in favor of or against any proposition shall prevail, except as herein otherwise provided.

9. **Order of Business.**

The board of directors may from time to time determine the order of business at their meetings. The usual order of business at such meetings is as follows:—

(1) Roll Call.

A quorum being present:

(2) Reading of minutes of preceding meeting and action thereon.

(3) Reports of Officers.

(4) Reports of Committees.

(5) Unfinished Business.

(6) Miscellaneous Business.

(7) New Business.

10. **Chairman.**

At all meetings of the board of directors the president, or, in his absence, the vice-president, or, in his absence, a chairman chosen by the directors present, shall preside.

11. **Vacancies.**

In case of any vacancy among the directors through death, resignation, disqualification or other cause, the remaining directors, by affirmative vote of a majority thereof, whether or not constituting a quorum, may elect a successor to hold office for the unexpired portion of the term of the director whose place shall be vacant and until the election of and acceptance by his successor.

12. **Committees.**

From time to time the board may appoint committees for any purpose or purposes, who shall have such powers as shall be specified in the resolution of appointment.

13. **Compensation.**

The directors and officers of the company and all members of committees shall serve without salary, except as may be determined by the vote of a majority of all the directors.

14. **Action by Resolution.**

The board of directors shall, except as otherwise provided by law, have power to act in the following manner: A resolution in writing, signed by all the members of the board of directors, shall be deemed to be action by such board to the effect therein expressed, with the same force and effect as if the same had been duly passed by the same vote at a duly convened meeting, and it shall be the duty of the secretary of the company to record such resolution in the minute book of the company under its proper date.

ARTICLE III.

Officers.

1. **Executive.**

The executive officers of the company shall be a president, a vice-president, a treasurer and a secretary. The president, vice-president and treasurer shall be elected annually by the board. The secretary shall be appointed by resolution of the board, and shall hold office until his successor is appointed.

2. **Powers.**

The powers and duties of the treasurer may be exercised and performed by any one of the other officers.

3. **Subordinates.**

The board may appoint such other officers as it shall deem necessary, who shall have such authority and shall perform such duties as, from time to time, may be prescribed by the board.

4. **Tenure of Officers.**

All officers and agents shall be subject to removal at any time, with or without cause, by the af-

6. Vice-President.

In case of the absence or disability of the president, the duties of the office shall be performed by the vice-president.

7. Treasurer.

The treasurer shall have the custody of all the funds and securities of the company which may come into his hands; he shall endorse, on behalf of the company for collection, checks, notes and other obligations, and shall deposit the same to the credit of the company in such bank or banks, or depositories, as the board of directors may designate; he may sign receipts and vouchers for payment made to the company; and he shall sign checks made by the company and pay out and dispose of the same under the direction of the board; he shall sign, with the president, or such other person or persons as may be designated by the board, all authorized promissory notes and bills of exchange of the company; whenever required by the board he shall render a statement of his cash accounts; he shall enter regularly, in books of the company to be kept by him for that purpose, full and accurate accounts of all moneys received and paid by him on account of the company; and he shall perform all duties incident to the position of treasurer subject to the control of the board.

8. Secretary.

The secretary shall keep the minutes of all proceedings of the board and the minutes of all meetings of the stockholders; he shall attend to the giving and serving of all notices for the company when directed by either the president or the vice-president; he shall sign with the president or vice-president in the name of the company all contracts authorized by the board, and shall affix the seal of the company thereto; he shall have charge of the certificate books and such other books and papers as the board may direct; he shall sign with the president or vice-president, certificates of stock; and he shall in general perform all the duties incident to the office of secretary, subject to the control of the board.

ARTICLE IV.

Capital Stock.

1. Certificates.

The certificates of shares of stock of the company shall be in such form as shall be approved by the board. The certificates shall be signed by the president or vice-president and by the secretary.

2. To Be Entered.

All certificates shall be consecutively numbered, and the names of the owners, the number of shares and the date of issue shall be entered in the company's books.

3. Certificates Cancelled.

Except in case of lost or destroyed certificates, and in that case after the receipt of a satisfactory bond, unless the giving of a bond be waived, no new certificate shall be issued until the former certificate for the shares represented thereby shall have been surrendered and cancelled.

4. Transfer.

Shares shall be transferred only on the books of the company by the holder thereof in person or by his attorney, upon the surrender and cancellation of certificates for a like number of shares.

5. Regulations.

The board may make such rules and regulations as it may deem expedient concerning the issue, transfer and registration of certificates of stock of the company.

ARTICLE V.

Dividends.

1. Dividends.

The board, in its discretion, from time to time may declare dividends upon the capital stock from the surplus or net profits of the company, and, subject to the provisions of the certificate of incorporation, may fix and change the dates for the declaration and payment of dividends.

ARTICLE VI.

Seal.

1. Design.

The board shall provide a suitable seal, containing the name of the company and the words

also all the metals, ores, gold and silver-bearing quartz rock and earth therein; and all the rights, privileges, and franchises thereto incident, appendant and appurtenant, or therewith usually had and enjoyed; and also all and singular the tenements, hereditaments and appurtenances thereto belonging, or otherwise appertaining, and the rents, issues and profits thereof; and also all the estate, right, title, interest, property, possession, claim and demand whatsoever as well in law as in equity, of the said party of the first part, of, in or to the said premises and every part and parcel thereto, with the appurtenances.

TO HAVE AND TO HOLD, all and singular, the said premises, together with the appurtenances and privileges thereunto incident, unto the said party of the second part, its successors and assigns forever.

IN WITNESS WHEREOF, the said party of the first part has hereunto set his hand the day and year first above written.

Signed and delivered in
the presence of:

A. C. JONES

(Signed)

A. L. JOHNS

STATE OF ARIZONA,
County of Yavapai, ss.

Before me, A. C. Jones, a Notary Public in and for the County of Yavapai, State of Arizona, on this day personally appeared A. L. Johns, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and consideration therein expressed.

Given under my hand and seal of office, this 15th day of June, 1918.

(Notarial Seal)

(Signed)

A. C. JONES
Notary Public.

MINING DEED.

Exhibit #3

THIS INDENTURE, Made the 15th day of June, in the year of our Lord, One Thousand Nine Hundred and Eighteen, between A. E. JOHNS, of Prescott, Yavapai County, Arizona, the party of the first part, and THE HACKBERRY EXTENSION MINING COMPANY, the party of the second part,

WITNESSETH, that the said party of the first part for and in consideration of the sum of ONE and no/100 DOLLARS, lawful money of the United States of America, together with other valuable considerations, to him in hand paid by the said party of the second part, receipt whereof is hereby acknowledged, has granted, bargained, sold, remised, released and forever quitclaimed, and by these presents, does grant, bargain, sell, remise, release, and forever quit-claim, unto the said party of the second part, and to its successors and assigns forever, the following mining claims, situate in Peacock Mining District, Mohave County, Arizona, to-wit:

SILVER KING, the notice of location whereof is of record in Book J. J. of Mines at Page 192, Records of Mohave County, Arizona; and amended location whereof is of record in Book SS of Mines at Pages 384 and 385, said records.

BIG BEN, the notice of location whereof is of record in Book JJ of Mines, at Page 193, said records; and amended location whereof is of record in Book SS of Mines at pages 383 and 384, said records.

DIPPER, DIPPER NO. 2, PIN ON, PINON No. 2; and for a full and complete description of said Mining Claims, reference is hereby made and had to said location notices and the record thereof in the office of the County Recorder of said Mohave County, Arizona,

Together with all the dips, spurs, and angles, and

Exhibit #2.

List of stockholders to whom shares have been issued
in exchange for property; said stock constituting all of the out-
standing stock.

M A Pickett	1 share.
D A Foster	1 " ✓
I J Lipsohn,	1 " ✓
A L Johns, Trustee,	724,993 "
A L Johns	5,000 "
E Westmeyer	5,000 " ✓
O N Creswell	5,000 "
George W Shortley	5,000 "
T D Walsh	5,000 "
Total	<hr/> 749,996 "

Reference: USGS Bull. 397, p. 141

Hackberry Extension Mining Co *Exhibit #1*

REPORT

ON

SILVER KING GROUP

PEACOCK MINING DISTRICT,

HACKBERRY, MOHAVE COUNTY, ARIZONA.

BY

A. L. JOHNS

Prescott, Arizona,

May 27, 1918.

copy of "original"

I N D E X.

DATA ON HACKBERRY MINE:

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SILVER KING GROUP:

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REPORT ON
SILVER KING GROUP,
PEACOCK MINING DISTRICT,
HACKBERRY, MOHAVE COUNTY, ARIZONA

The Silver King group adjoins the property of the Hackberry Consolidated Mining Company, which bids fair to develop into the largest silver mine in the Southwest. On account of the highly favorable developments of the Hackberry Mine during the past year, some data from a personal inspection of this property is given. For this the writer is indebted to Mr. William Neagle, Superintendent of the Hackberry Mine, who succeeded in getting the present owners to take over the property, and under whose direction the recent ore developments have been obtained.

DATA ON HACKBERRY MINE

Location and History:

The Hackberry Mine lies three miles west of Hackberry, Arizona, which is on the main line of the Santa Fe Railway, and about thirty miles northeast of Kingman, Arizona. It was originally discovered about 1879, and is reported to have produced about \$3,000,000. in high grade silver ore from one ore shoot which outcropped on surface and was mined down to a depth of 600 feet. This ore shoot had a length of some 500 feet, and usually ranged from two to four feet in width. The property was active between 1879 and 1884, after which it was closed down for some thirty years.

In recent years several strong mining companies have attempted to re-open the mine, but never got further than unwatering and doing some prospective work in and around the old saved stopes on the lower levels. In the

fall of 1916 the United Eastern crowd abandoned the property after doing considerable work south of the old shaft.

Hackberry Ore Body:

In January, 1917, James Murray, a wealthy mining man of Butte, Montana, and associates, took over the property and started driving north of the shaft on the 600 ft. level. After following a narrow seam of ore for some distance it widened out into an ore body varying from 5 ft. to 22 ft. in width, and has so far shown a length of about 600 feet on this level and extends to within 200 feet of the surface. Previous companies had refrained from prospecting this portion of the vein on account of poor outcrop conditions. Between the 200 feet and 600 ft. levels the ore tonnage is estimated at 150,000 tons, with gross value in excess of \$4,000,000. The average value is about 25 ounces in silver, \$2.00 in gold, and 8 per cent lead, which on \$1.00 silver and 5 cent lead market shows a value of \$35.00 per ton. In the narrower portions of the vein silver contents often rise to above 100 ounces silver per ton.

Recently in crosscutting the vein from the main incline shaft at depth of 750 feet the ore body proved to be 22 ft. wide, three feet in width of which is reported to assay around 100 ounces per ton, and the balance of 19 feet about 25 ounces. The character of the ore on the 600 ft. level and the more recent developments on the 750 ft. level indicate that the present ore body has an excellent chance to continue to 1,000 feet in depth, which would double the present ore reserves. Also development southward under the old ore body may add an equal amount of additional ore so as to increase the ore reserves to around \$10,000,000.00. This is mentioned as a reasonable possibility.

The Hackberry Company is now preparing to build a 200 ton flotation plant, which they expect to have in operation by fall. With this size mill treating 25 oz. ore they should earn in the neighborhood of \$1,000,000 net a year, which is quite exceptional for any silver property.

Geology:

The country rock in the Hackberry section is an old granite porphyry which, as is shown by the attached map, has been intruded by two principal, hard, silicious porphyritic dykes, with strike of N. 40° W., and dip of about 40° to the southwest. One of these dykes, with which the principal ore showings of the district are associated, extends from the Hackberry Mine northward through the Silver King Group, and beyond for several miles. The intrusion of this dyke evidently crushed and fractured the softer adjoining country rock and made conditions favorable for ore deposition in the crushed zones. A good illustration is shown on the 600 ft. level where the hard dyke forms the foot wall of the ore body, and the hanging wall is soft, crushed, granite porphyry. (See cross section of the Hackberry Vein on attached map.) Because of this crushed and highly fractured zone in which the ore bodies formed alongside the dyke, there is less danger of the ore bodies pinching out from tight country rock conditions. The dyke itself is unmineralized except where the mineralizing solutions which formed the ore bodies penetrated into the dyke along narrow fracture seams.

A number of mines, in and around the Kingman-Chloride section produced high grade silver-gold ores near surface from tight fissure veins in granite. On reaching water level at around 100 feet to 200 feet in depth, these

ore bodies often pinch out or change to very low grade primary ores, carrying small amounts of copper and iron sulphides.

A notable exception to this is the Tennessee Mine at Chloride, which under operation by the U. S. Smelting and Refining Company has reached a depth of 1600 feet. This property is principally a lead producer though their ores carry good values in silver also.

The Hackberry ore occurs mainly as silver sulphide (Argentite) in a quartz gangue associated with some six to eight per cent lead sulphide. When lead contents increase the silver values usually increase correspondingly, consequently the association of the silver values with lead in the Hackberry ores is considered a good indication that the ore bodies will continue much deeper than the present workings at 750 feet. Also the present development work has disclosed a much better understanding of the occurrence of the ore bodies alongside the intrusive dyke.

It is very probable that prospecting along the dyke, where favorable outcrop conditions exist, will disclose new ore bodies, or other ore bodies, which do not show any surface indication of their existence, may be discovered by a thorough prospecting along the dyke. In the opinion of the writer, the Hackberry Mine has the large general conditions to develop into one of the really large silver mines of the country.

The Hackberry Company is a close corporation which has carried on its work with very little publicity, consequently the public has heard very little about it so far. However, a mine of this magnitude will lead to considerable new mining activity in that section, and may create quite a mining boom during the next year.

SILVER KING GROUP

(Now the property of the
Hackberry Extension Mining
Company)

LOCATION AND EXTENT:

The Silver King Group comprises the Silver King, Big Ben, Pinon, Pinon No.2, Dipper and Dipper No.2, unpatented lode mining claims, covering an area of about 120 acres, in Peacock Mining District, Mohave County, Arizona.

The property is three miles west of Hackberry, a station on the Santa Fe Railway, about thirty miles northeast of Kingman, Arizona. A serviceable wagon road extends from Hackberry to the property.

The group joins the Hackberry Consolidated ground and covers 3,000 feet in length of the north continuation of the porphyry dyke which forms the Hackberry ore bodies. The Hackberry ore bodies lie along this dyke about 3,500 feet southeastward. (See attached map.)

EARLY HISTORY:

The property was discovered about 1879 at the time of the Hackberry discovery, and was worked until 1884 by chloriders who prospected and hunted along the outcrop for rich surface ore. The methods of mining were crude and expensive and in most cases the work did not exceed 50 feet in depth, which is about the limit of windlass work. These old timers mined only the high grade ores around 200 ounces silver or better, and ~~packed it on burros over to the Hackberry Mill for~~

treatment. This mill was a small five stamp pan amalgamation mill. According to Mr. Ridenour, who is an old timer in that section and was in charge of the Hackberry Mill at the time, the production from the

Silver King and Big Ben Claims was about \$70,000.00 of 200 ounce ore. About \$30,000.00 of this was mined from surface stopes along a length of about 400 feet near the center of the Silver King Claim. The other \$40,000.00 was produced from similar shallow surface workings along a length of about 500 feet on the Big Ben Claim about 1200 feet distant. These two places present very favorable outcrop showings for ore bodies below. (See Map) In places along the vein between these two workings, some small favorable ore showings exist.

Along in the 90's Mr. Ridenour states that he cleaned out an old 60 ft. shaft near the south end of the workings on the Silver King Claim, and by sinking the shaft 20 feet deeper he took out one car of ore which shipped 196 ounces silver per ton. Directly after this the shaft which is in a gulch and made considerable water, caved in. About 1907, two prospectors sank a new shaft 100 feet deep near by and it is reported that they opened up 60 ounce ore, four feet wide along a length of 40 feet. The 60 ounce ore at that time, on fifty cent silver, was too low grade to ship, and they were trying to reach the 196 oz. ore reported left around the old shaft. This shaft, which was also in the gulch, was lost by similar shift ground and caving. However, the ore now on the dump bears out their statements of encountering 60 oz. ore.

The general conditions of the property now existing seem to confirm the above statements of the early production and ore values.

GEOLOGY:

General geological conditions are similar to those of the Hackberry Mine, namely an old granite porphyry country rock intruded by the silicious porphyry dyke, which extends through the Hackberry Mine northward,

traversing 3,000 feet along the length of the Silver King and Big Ben claims of this property, and beyond for several miles. As at the Hackberry Mines the ore bodies are formed in quartz veins lying between the softened country rock and the hard intrusive dyke which strikes North 40° W. and dips about 45° southwest. Usually the ore bodies follow the hanging wall of the dyke, but on the Silver King Claim the old ore bodies were mined both along the foot wall and hanging wall of the dyke for a length of about 400 feet. The dyke at this point is about 70 feet wide.

The surface ores are all oxidized, being mainly silver chloride and horn silver in a quartz gangue. The old timers mined principally this class of ore on account of easy treatment by amalgamation. The ores change to sulphides, associated with lead on reaching water level at around 50 feet in depth, and were difficult to treat by the old amalgamation methods. Also, encountering water at about 50 feet prevented deeper work by windlass. This work of the old timers was without any machinery equipment and was before the advent of the Santa Fe Railway.

The ore lenses near surface vary from 2 ft. to 4 ft. in width. Similar surface conditions obtain on the Hackberry, but at depth the ore bodies reach a width of 22 feet. The Silver King Vein shows a strong condition along its entire length with about two feet of gouge on the hanging wall. This is a favorable indication that the vein will continue downward.

SAMPLING:

The old surface workings are now largely caved and inaccessible for sampling. However, a very good idea of ore conditions was obtained by sampling pillars and walls around the surface workings, and ore left on

dumps. The two old shafts 80 ft. and 100 ft. deep on the Silver King Claim are filled with water to within 35 feet of surface, and caved below.

<u>Sample No.</u>		<u>Silver \$1.00 per ounce</u>
1	- Quartz on foot wall of stope at center of Big Ben Claim	\$ 83.40
2	- Talc on Hanging wall at #1 18" wide	5.40
3	- Re-check of sample #1	115.96
4	- Footwall above Sample #3	48.60
5	- " " " #4	32.70
6	- Red Material on outcrop 2 ft. under footwall at Sample #5	4.48
7	- 25 ft. South Sample #1 - Foot- wall of stope down 50 ft. Quartz 12" wide	17.04
8	- Near #7 -footwall quartz 6" wide	87.56
9	- 100 ft. North, Sample #1 18" wide	48.86
10	- 30 ft. North Sample #9 - 6" wide	31.20
11	- 200 ft. " " #10 - 18" wide	6.56
12	- Gouge Material on dump at Silver King Shaft. No quartz	5.80
13	- Quartz ore on dump at Silver King Shaft - Sulphides	44.60
14	- Re-check of sample #13	64.56
15	- Lead sulphide ore at Silver King Shaft	118.40
16	- Mill ore at #15	20.20
17	- 100 ft. south Silver King Shaft General Sample ore on dump	58.60

The above samples give a good idea of the ore left in pillars and on walls of the old workings, and represent the ore left by the old timers after cleaning out the high grade ore. Samples Nos. 13, 14, and 15 are sulphide samples from the dump of the Silver King shaft. These sulphide ores are associated with lead and represent probable ore values in the sulphide zone. The character of the ore is identical with that of the sulphide

ores in the Hackberry Mine - principally the association with lead. The fact that good silver values extend into the sulphide zone, as shown by the above samples is an excellent indication that there will be no sudden impoverishment of values in depth. The strong occurrence of the vein is another very favorable feature.

RECOMMENDATIONS:

RECOMMENDATIONS:

In the opinion of the writer, the old surface workings on the Silver King and Big Ben Claims represent the outcrops of two ore bodies which probably extend downward into the sulphide zone. (Marked possible ore bodies on Map). To determine these conditions well into the sulphide zone I recommend sinking an incline shaft on the vein near the center of the outcrop on the Silver King Claim to depth of about 300 feet, then lateral development along the length of the vein. The cost of this work, including the necessary mine plant and equipment, is estimated at \$20,000.00. However, it is possible that sufficient shipping ore above 30 ounces silver will be mined during course of this development to repay part or all the above outlay. Freight and treatment charges to San Francisco are about \$15.00 per ton.

The lower grade ores would have to await erection of a mill on the property. Tests on the Hackberry ores have shown excellent extraction by oil flotation methods. On basis of a 50 ton plant, all ores above 10 ozs. silver could be mined and milled at a profit.

CONCLUSION:

I have kept in close touch with developments at the Hackberry Mine during the past year. From comparison of conditions I consider the development of the Silver King Group as a highly attractive mining venture with reasonable possibilities of developing into a mine of similar magnitude to the Hackberry.

Respectfully submitted,

A. L. Jones

Mining Engineer.

Prescott, Arizona,

May 27, 1918.

HACKBERRY EXTENTION MINING CO.

MOHAVE CO.

CH/WR 4/25/79 - Dravo Corp. is interested in starting a small mines division and Mr. Love is going to look at the Hackberry Mine, Mohave Co. Cliff took him to Phoenix Blueprint to copy this file and maps. 5/3/79 a.p.

CJH WR 7/30/80: Field visit to the Hackberry Mine, Peacock Mining District, Mohave County, Arizona. A field engineer's report will be written.

CJH WR 5/16/80 - Drove to Hackberry, 27 miles east of Kingman. Started south to the Hackberry Mine but was stopped 1/4 mile out of town by a locked gate. A sign stated that this was a private road.

CJH WR 6/30/80: A telephone interview was conducted with Tom Roberts, Superintendent, Hackberry Mine, P.O. Box 4193, Kingman, Arizona 86401, phone 753-1479 (home) and 757-2326 (office). Three pads of 4,000 tons capacity each are being constructed to cyanide leach the Hackberry Mine dump. Work is being done by Fischer-Watts. An Escapule 300 tpd recovery unit will be employed. They will be doing their own smelting and refining of the silver. They have a bullion furnace, and they will be on stream in three to four weeks from this date. Additionally, a contract diamond drilling program from surface will be conducted. Present plans are to construct a mill and go back underground. (See correction below)

⁷
CJH WR 6/13/80: In a phone conversation with Perry Durning it was determined that a correction should be made in CJH WR June 3, 1980. The work at the Hackberry Mine is NOT being done by Fischer-Watts. Tom Roberts and men he has hired are doing it.

CJH WR 11/14/80: Visitor, Tom Roberts, P.O. Box 3371, Kingman AZ 86401, phone 757-3020. He has incorporated as Northern Arizona Minerals (same address). He owns the Hackberry Mine east of Kingman. They are dewatering and will be going underground for sampling. A custom mill is to be erected near Hackberry on the Santa Fe Railroad. Milling will be done on a contract basis. He has also purchased the Burro Creek Mine.

KAP WR 5/29/81: Charles Svec of Hannover, Pennsylvania, requested information regarding the Northern Az. Gold and Silver Milling and Mining Company. He explained that he is considering buying stock in the organization which is currently selling at \$1.50 per share. He had very little information about the company. What little he had indicated that the head of the firm is a Thomas Roberts, 713 W. Spring Street, Kingman, Az. Information from a Hannover stock broker reports that the company owns part of the Hackberry, Rosebud, Gold Bud and Burro Creek mines conceivably all in Mohave Co.

Searchlight West Inc.
4834 E Crystal Lane
Paradise Valley, AZ 85253
(602) 905-0414
FAX: (602) 905-0415

January 27, 1999

Mr. Nyal J. Niemuth
Senior Mining Engineer
State of Arizona
Department of Mines and Mineral Resources
1502 W. Washington
Phoenix, AZ 85007

Dear Mr. Niemuth:

As always I enjoyed our conversation today. Your help has really been indispensable to us in undertaking this project.

Searchlight West Inc. was incorporated in December 1998 and was seeded with most of the mining claims owned by Barbara McIntyre Bauman, President and myself. We envision adding one or more of the Nicholas Hughes mining properties, although this has not yet been formalized.

The properties are as follows:

1. **Treasure King** – These claims encompass the historic workings included in the former Royal Gold project. Present exploration plans focus on the central portion of the property, which has visible copper and iron staining. Royal does not appear to have done any drilling here, choosing instead to concentrate exploration in the northern portion of the property near an electric power line.
2. **Mockingbird** – We have acquired claims that cover the historic workings of the Mockingbird Mine, the Williamson Prospect, the Dandy Mine, the Great West Mine and the Pocahontas Mine. Anaconda previously believed that this entire area of several square miles was a detachment deposit with potential for large bulk tonnage gold resources. While we will be doing some informal grab sampling of dumps and obtaining chips from outcrops to confirm mineralization, we are not prepared to plan a drilling program until the Anaconda material is made available, which we plan to review in Laramie during the second quarter of 1999.
3. **Copper Cliff / McCracken** – The patented portions of the McCracken have been extensively mined by at least a half dozen companies on and off for over a hundred years. However, the unpatented portions of the major veins appear to have been scarcely touched, and we have acquired these by staking. Specifically, we have

acquired the silver / lead resources referred to by the prior operator, Arizona Silver, as the Lower Stonehouse Mine, the Afterthought Stonehouse vein and the Galena vein. We also have the Copper Cliff property, less than a mile to the east, which is believed to contain a gold resource in addition to the obvious copper resource. Water for milling has historically been a problem (at great expense the last operator hauled the crushed rock 40+ miles to Yucca for milling). While there may turn out to be a closer source of water, we have taken the precaution of acquiring the historic Signal City millsite 9 miles to the west on the banks of the Big Sandy River. Three early exploration targets are planned: (1) the Cruachan vein, which is a parallel vein in the northern portion of the property which appears to be almost virgin territory, (2) the lower (southern) portion of the Stonehouse vein, which was not mined by Arizona Silver and (3) the Copper Cliff property, on which Arizona Silver appears to have only done limited trenching.

4. **Hackberry** – This silver / lead property has long been owned by Nicholas Hughes of Las Vegas, and he has proposed to sell it to the company on lease purchase terms for a combination of cash and stock. While this agreement has not yet been finalized, we have assisted Mr. Hughes in his acquisition of claims covering the Hillside vein (historic Silver King and Big Ben mines) adjacent to his patented claims on the main Hackberry vein. Our initial assessment is that this property has the potential to be another McCracken, and it has been much less extensively mined (only \$1MM to \$3MM of recorded production).

Principals of the company are:

Barbara McIntyre Bauman – President. She has a general business background, and she has co-founded two other companies: (1) Varidyne, a Maryland data processing company and (2) Toymasters, a toy design, invention and consulting firm.

John McIntyre – Senior Geologist You met Mr. McIntyre and his wife, Betty, today. He is retired from the US Army. Past assignments included USGS, Army Corps of Engineers and the Manhattan Project (during World War II). Academics include Johns Hopkins.

Nicholas Hughes – While not presently an officer or director of the company, it is anticipated that he will become Chairman Emeritus of the company upon finalization of the Hackberry contract. Mr. Hughes is a Las Vegas real estate investor who has specialized in the buying, selling and trading of patented mining claims. He also has hands-on hard rock mining experience at the Golden Turkey, the Hillside and Bagdad mines in Arizona.

Sincerely yours,



Frederick C. Bauman

DEPARTMENT OF MINERAL RESOURCES

**STATE OF ARIZONA
FIELD ENGINEERS REPORT**

Mine HACKBERRY
District Peacock
Subject: Field Visit

Date July 30, 1980
Engineer Clifford J. Hicks

CJH

Note: Mine is shown on the Peacock Peak USGS 7½' Quadrangle. The Hackberry Mine in Sections 21 and 28, T23N, R14W, was visited in the company of George McDevitt, Consultant, 712 E. Beale, Kingman, Arizona 86401, phone 753-5754.

The Hackberry Mine is being operated under option and/or agreement dated March 24, 1980, by Northern Arizona Minerals, Inc. and Thomas A. Roberts. It is apparently owned by Nick Hughes, 6094 Carlsbad Avenue, Las Vegas, Nevada 89110.

Access is from the town of Hackberry via either a ranch road to the south or another tertiary road to the southwest (see Peacock Peak and Hackberry 7½' Quadrangles). The distance is about five miles on the former and four miles on the latter. Both roads have gates which are subject to being locked.

Two workmen were working on the leach pad sprinkler system. Their names are Kevin McCarthy and Don Weyh. They were not very communicative.

This is a silver leaching operation with a 50 ft X 30 ft leach pad carrying about 60 tons of crushed rock of varying size with PVC pipe carrying and plastic sprinkler heads distributing the caustic cyanide solution. Both the leach pad and a smaller pregnant solution are lined with a plastic membrane. The water source is an old inclined shaft further up the east flank of Peacock Mountain. A small pump in the shaft puts the water into a 3/4" plastic line and carries in to a mixing tank.

Oddly no recovery unit was noted. Apparently they have just started to leach.

The old Hackberry (5 ft X 5 ft) shaft above the aforementioned inclined shaft appears to be vertical and has been newly collared with concrete and is bulkheaded with wood seven or eight feet down. The two workmen said that they would be working the extensive dumps, however, for an extended period of time.

CJH:mw

HACKBERRY EXTENSION MINING CO.

MOHAVE CO.

KP/WR 7/13/78 - Mr. ^{Nick} Mac Hughes, reported that he owns the Hackberry Silver Mine, Hackberry District, Mohave Co., He brought in specimens from the mine to be checked for uranium. Only a trace could be detected. 12/19/78 a.p.

HACKBERRY EXTENSION MINING CO.

MOHAVE COUNTY

RRB WR 7/20/84: Mark Nydam, 17 Wall Street, Madison, Ct. 06443 was in for information on the Sheep Trail Mine and the Hackberry Mine, both in Mohave County. His company, which remained unnamed, is considering acquiring these two properties.

NAME: HACK BERRY

COUNTY: MOHAVE

Hackberry Ext., Silver King Group, Old Phillips Property

T23 N R 14 W SEC. 28 S. Cent. E1 4500

DISTRICT: HACK BERRY
(PEA COCK)

Peacock Peak 7 1/2 26 Mts. NE Kingman

Mineralization: Ag Pb 2 1/2' vein. 4-16' wide
AU Zn

Geology:

Type Operation: 500' incline shaft 900'

Production: 2,000,000 high grade Ag

References: *Enclosures*, *Mine Handbook 1918 p 369* *Mine Handbook 1926 p 274*
1926 - 274

Mohave Cty. Card File



MILLER CHEMICAL & FERTILIZER CORPORATION

CABLE ADDRESS - MICO
TELEPHONE: 717-632-8921

Charles H. Svec

Executive Vice President

AN ALCO STANDARD CORPORATE PARTNER



BOX 333

HANOVER, PENNSYLVANIA 17331 U.S.A.

June 1, 1981

Mr. Wes Pierce
Arizona Dept. of Mineral Resources
Mineral Building Fairgrounds
Phoenix, AZ 85007

Dear Mr. Pierce:

This is in reference to our telephone conversation on Friday regarding Northern Arizona Gold and Silver Milling and Mining Company. Enclosed please find the information I received from the Securities broker. Please give me a call collect when you have more information.

Thanking you again for your cooperation, I am

Sincerely,

MILLER CHEMICAL & FERTILIZER CORPORATION

Charles H. Svec
Executive Vice President

CHS:bk

Encl.

*Information sent
1/8/81 8-19-81*

*File
Mune All
See = Hackberry Ext (file)
Tom Roberts, Chief Executive Officer*

Incorporated Under the Laws of Arizona



Blackberry Extension Mining Company

SHARES 1,500,000

Capital \$125,000

PAR VALUE 25c

THIS CERTIFIES THAT

Blackberry Extension Mining Company, fully paid and non-assessable,

transferrable only on the books of the Corporation by the holder being in possession of this Certificate and receipt of this Certificate properly endorsed.

In Witness Whereof, the said Corporation has caused this Certificate to be signed by its duly authorized officers and to be sealed with the Seal of the Corporation this 10th day of May 1909

Secretary

President

Shares

250

Each.

SILVER MINE

HACKBERRY SILVER MINE
MOHAVE COUNTY, ARIZONA

RECEIVED

OCT 24 1978

DEPT. MINERAL RESOURCES
PHOENIX, ARIZONA

This mine is located 27 miles northeast of Kingman, Arizona 3 miles west of the village of Hackberry on the northeast slope of the Peacock mountains. It is 3 miles from the double track and main line of the Santa Fe Railroad and 3 miles from U.S. Highway #66 and 2 miles from electric power lines at an elevation of 4800 feet in juniper and pinion pines. Water is in abundance. The mine, presently, is about full of water, standing 90 feet below the collar of the vertical shaft. There are 5 shafts on the property, 4 are incline. Deepest shaft is 950 feet.

There are 12 patented claims covering approximately $1\frac{1}{2}$ miles of the Main Hackberry Vein and the Hillside Vein and our recent (1978) geological mapping shows several additional veins branching out in crows foot form with some "horse-tailing" in places.

According to reports written shortly before the closing of the mine in 1918 there are 450,000 tons of 32 ounce silver ore reserves partly blocked out. Thirty-two ounces was the average of 278 samples taken before the mine closed down in December of 1919. Litigation was the apparent reasons the mine shut down. Chief minerals are silver, gold, copper, lead, zinc, & cadmium. Silver runs 32 oz., gold $1/8$ th oz. (samples have run up to 2 oz.), copper 1%, lead 8%, zinc 5-6% and cadmium has run up to 8 pounds. The chief ore is argentite. The vein strikes northwest and southeast and dips 40 degrees to the southwest and runs from 16 feet to 60 feet wide (Hackberry Vein). The Hillside Vein dips about 70 degrees to the Southwest.

According to the 1918 report by Mr. A. L. Johns, "on the 600 and 700 foot levels the vein is 22 feet wide with 19 feet averaging 25 ounces and 3 feet averaging 100 ounces in silver".

The 450,000 tons estimated by Mr. Johns averaging 32 ounces per ton are within 2 ore bodies 11 to 1200 lineal feet along the vein. For silver alone: 450,000 tons plus the values of the balance in gold, copper, X 32 ounces lead, zinc and cadmium.

900,000
1,350,000
14,400,000 ozs. gross

The property is free and clear of debt, the taxes are paid.

The owners are interested in a small, medium to large mining company well financed which would enter into a "joint-venture".

We have a large file, 5 or 6 inches thick, on the property with surface and underground maps showing levels at the 200 foot, 325 foot, 450 foot, 500 foot, 600 foot, 700 foot, 800 foot and 900 foot levels.

As an after thought the 450,000 estimated tons of reserves within the working area of the mine is within 1200 feet along the south end of the vein, the Hackberry Vein, with several thousand feet of additional veins to explore by core drilling or trench work making this a very challenging and interesting property.

We live in Las Vegas and would be glad to visit with any one qualified to investigate this mining property;

The owner is: Nicholas M. Hughes
6094 Carlsbad Avenue
Las Vegas, Nevada 89110

Phone: 702- 452-2598

NOTE: I will be attending the Interenational Mining Congress at the Convention Center Monday, Tuesday, Wednesday and Thursday, Oct. 9-12th each day and several times each day (between sessions) I will call home and check with Mrs. Hughes to receive any calls. Please leave your name, title, phone number, name of company and address in case we are unable to meet at the convention center. Thank you, N.M.H.

TOMO ITO
CONSULTING MINING GEOLOGIST AND METALLURGIST
1902 HAVEMEYER LANE
REDONDO BEACH, CALIFORNIA 90278
TELEPHONE (213) 376-3635

A PRELIMINARY REPORT
HACKBERRY SILVER MINE
MOJAVE COUNTY, ARIZONA

Prepared for:

August 25, 1969

Mr. N. M. Hughes

NICK HUGHES
6094 CARLSBAD AVE.
LAS VEGAS, NEVADA 89110

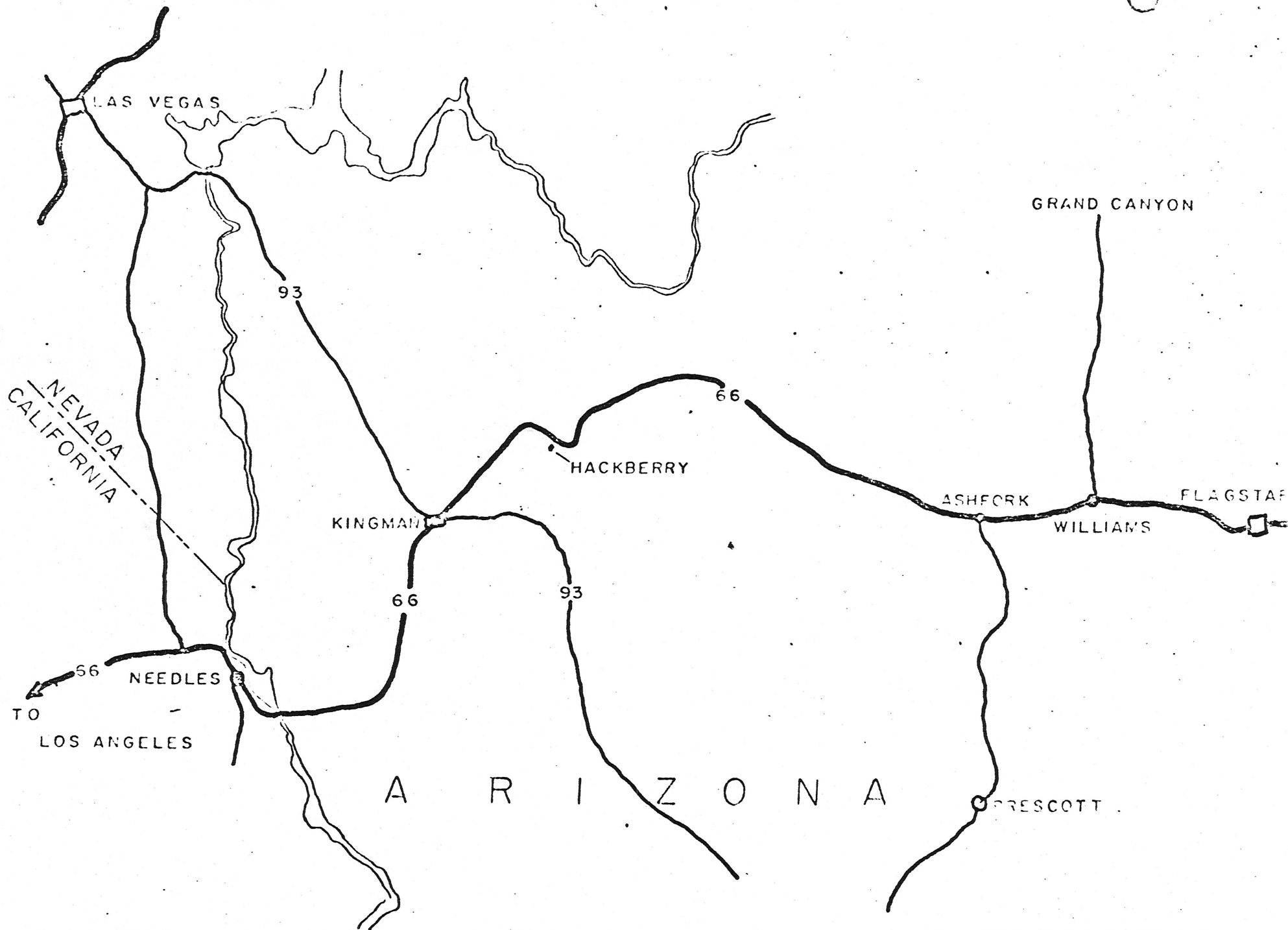


FIGURE A

TOMO ITO
CONSULTING MINING GEOLOGIST AND METALLURGIST
1902 HAVEMEYER LANE
REDONDO BEACH, CALIFORNIA 90278
TELEPHONE (213) 376-3635

A PRELIMINARY REPORT
HACKBERRY SILVER MINE

COPY

INTRODUCTION

The Hackberry Silver Mine is owned by The Eleven Western States Development Company, N. W. Hughes, President. The property comprises 12 patented claims, located principally in Sections 21 and 28, T. 23 N., R. 14 W., Peacock Mining District, Mojave County, Arizona (please refer to claim map, Appendix I).

The center of the property is less than 5 miles from a loading ramp on a siding in Hackberry, and water, power, and telephone is available in the area of the town and the ranch as shown in Figure B. Kingman is approximately 35 miles away where supplies, good accommodations, good truck-lines, and transportation including a commercial airline, are available. Industrial and mining supplies are available in Las Vegas, 135 miles distance(Figure A).

GRAND WASH CLIFFS

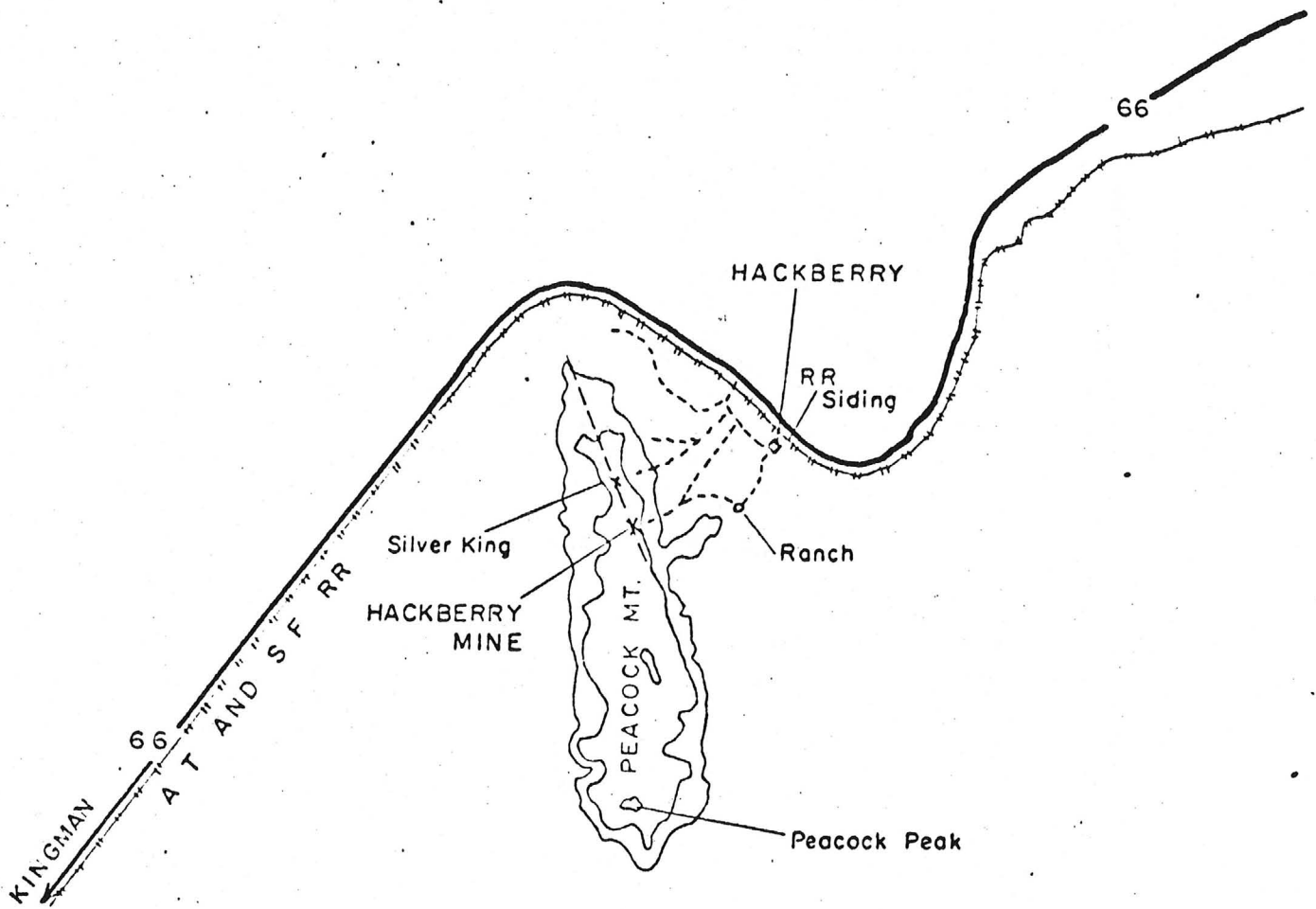


FIGURE B

HUALAPAI MTS.

The patented lode claims include most of the original claims of the old Hackberry Consolidated Mining Company, situated on the northeastern flank of the Peacock Mountains, about 3 airline miles west of Hackberry, which is on the main line of the Santa Fe Railway (please refer to Figure B). The center of the property is less than 4 miles from Highway 66.

Although past records are rather obscure, the Hackberry Mine was originally discovered about 1879, and it is reported to have produced about \$3,000,000, mostly in silver. Activity ceased from about 1884 until 1914, when there was a period of exploration and development, with some production. A tremendous amount of underground development was carried out very systematically, as attested by the excellent underground map (Appendix IV). All this work ceased in 1920-21, the workings became flooded, and have remained inactive to this day. Recently, there are signs of activity on the Silver King properties adjoining the Hackberry to the north (please refer to Appendix II, Location map of the Silver King Group). With the exception of the vertical shaft, all the workings of the Hackberry mine are flooded and inaccessible. The vertical shaft appears to be in reasonably good condition and might be rehabilitated.

GENERAL GEOLOGY

The rocks of the district consist principally of pre-Cambrian granitic rock, cut by large masses of geologically

later granite. The granite is mainly medium grained and porphyritic; weathered surfaces are usually light buff and occasionally reddish-brown. Dikes are prominent throughout the area; the larger ones are parallel to the predominant northwest-trending system of vein structures, but others of minor magnitude trend in various directions. Remnants of extrusive volcanic rocks of Tertiary or Quaternary age are found only along the northeastern margin of the area.

Outcrops of pre-Cambrian schists and gneiss are quite prominent near the northern tip of the Peacock Mountains; in the east central section, pegmatite dikes can be found in great numbers. There are numerous small stocks and irregular bodies of the dark gabbro and associated diabase dikes, which are most likely differentiation facies of the granite stock which forms the bulk of the range.

Faulting is well expressed by a well-defined system of northwest-trending shear zones in which the veins occur. Two shear zones join at a Y in the vicinity of the main inclined shaft near the center of the Sunshine claim (refer to Appendices II and III). The sheared layers formed the channels along which were introduced the bulk of the ore minerals. The attitudes of these shear zones are relatively flat with a dip to the southwest; brecciation is pronounced. The prominent structures display an en echelon pattern; others show branching and considerable horsetailing near the north end of the Peacock range.

The principal shear zone can be traced from the South Hackberry claim, into the Sunshine where it branches, and the two continue northwesterly for a total of some 3,000 feet or more. The Hackberry dips more gently, about 40 degrees, and the Hillside (Silver King) appears to be steeper at about 55 degrees in the vicinity of the Silver King mine workings. These two structures can be traced easily, because the soft gouge material on the hangingwall side forms the saddles in the ridges along the strike.

ORE DEPOSITS

The ore shoots occur in quartz veins filling the wide shear zones. From surface indications and from available underground information, the oreshoots vary in shape, size, and occurrence. The ore zones may shift from one wall to the other, but past records favor the footwall, against a porphyritic dike which is frozen to the granitic footwall. Where the richest oreshoots occurred near the surface, this dike is heavily stained with iron oxides. Localization of orebodies may occur at intersections of forkings of veins, or where the strike changes, but these are not definite criteria. It can be noted, however, that most of the underground activity centers around the forking of the Hackberry vein and the "Hillside vein". At this time it cannot be established for certain, but it appears that the upper, or the Hillside vein has more potential than the Hackberry as they branch and continue northward. If this holds true, Hillside claims 1 and 2 become highly desirable

extensions to the present claims; this may hold true for Dippers 3 and 4.

It is apparent also from surface indications and underground information that "Blind-lead" types of oreshoots do occur in the Hackberry. These had an only slight indication or perhaps none at the surface and orebodies opened up below. The writer feels that both the forking in the vein and blind leads are responsible for the vast workings in the Hackberry Mine(please refer to Figures C-1 and C-2).

The ore minerals fall within 3 general groups: (1) oxidation products, (2) products of downward sulfide enrichment, and (3) primary (hypogene) minerals. Minerals of most interest here, of course, are those of silver and lead which are usually closely related. Visible or remaining surface indications do not suggest a strong "iron cap" or gossan providing the key to rich pockets due to secondary enrichment. There are reports of the discovery of "horn silver"(cerargyrite) in the early days. This silver chloride is definitely a product of oxidation and would be found near the surface. Surface deposits of any consequence must have been found in the trench-like remnants of surface diggings, along the strike from the main inclined shaft to just south of the old original shaft. Past records show that the silver-lead ratio is exceptionally high and obviously places this deposit in the category of a silver mine.

The only ore minerals now available are those found in the mine dumps. Minerals which can be identified megascopic-

ally, or by use of a hand-lense, are galena, argentiferous (silver-bearing) galena, pyrite, chalcopyrite, sphalerite, magnetite, limonite, and hematite. Although old production records show copper, the dump material show copper minerals only in minor amounts; this also applies to sphalerite, the zinc sulfide. The latter and chalcopyrite (copper sulfide) usually show a tendency to increase with depth.

THE HACKBERRY MINE

The structure is strong, within which occur oreshoots which, although somewhat irregular, are of the deep-seated type and can persist to considerable depth. Because surface ore indications are no longer visible, and underground workings are inaccessible, other information and data must determine the potentials of this property. Favorable data are as follows:

1) Extremely strong structures - the Hackberry and Hillside are very strong and persistent. These shear zones (zones of weakness) within which the oreshoots were emplaced, can be traced for several thousands of feet. Some offshoots may warrant investigation.

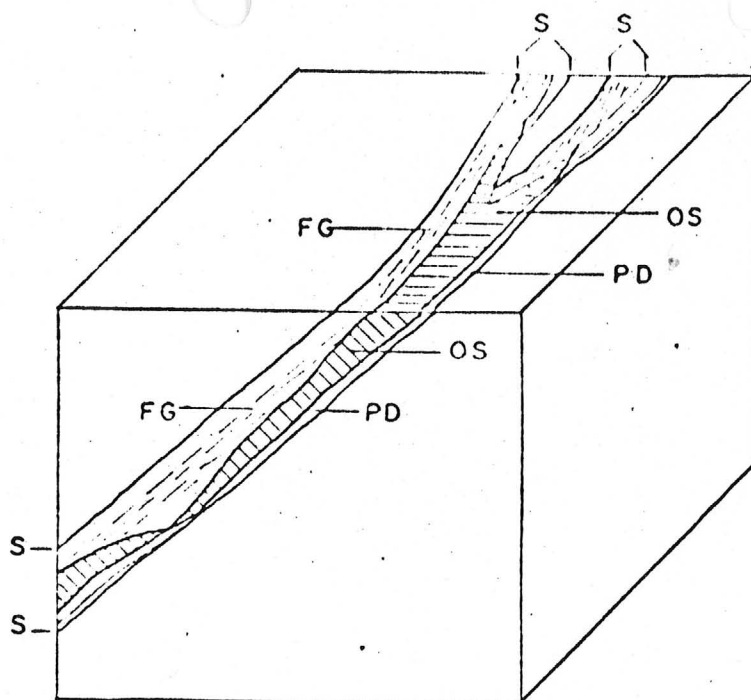
2) Ore samples on the dumps indicate deepseated type of ore minerals and should persist to depth.

3) Past production record of some \$3,000,000, principally silver, which was recovered from the stoped area around the "old original shaft" shown on large Map Appendix I and the stoped area shown on map Appendix II.

4) Favorable high ratio of silver to lead content of the ore - from old shipping and production records.

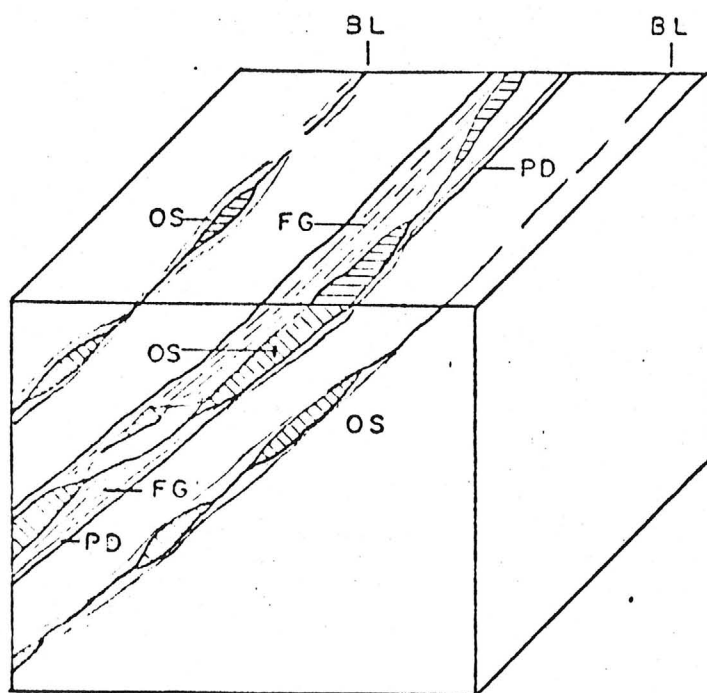
APPROXIMATE MAIN
HACKBERRY ORE SHOOT
AT FORKING OF SHEAR
ZONE.

(NOT TO SCALE)



S SHEAR ZONE
SS
OS ORE SHOOT
FG FAULT GOUGE, HIGHLY ALTERED
PD PORPHYRY DIKE
BL BLIND LEAD

FIGURE C-1



BLOCK DIAGRAM
ILLUSTRATING:
1) EMPLACEMENT OF
ORESHOOTS IN SHEAR
ZONE
2) POSSIBLE EN ECHELON
(PARALLEL) STRUCTURE
WITH ORE SHOOTS
3) POSSIBLE BLIND LEAD
ORE SHOOTS

FIGURE C-2

5) Old mine map of the Hackberry Consolidated Mining Company, with an inclined shaft reaching a depth in excess of 900 feet (Appendix IV) - subsequent interest in the Middle Hackberry and the Silver King to the north along the extension.

6) Many hundreds of feet of drifts, crosscuts, raises, and winzes in the target area with very little stoping. Manways and ore-chutes constructed for ore removal.

7) A second entry into the main workings - the vertical shaft which connects with the 600ft. level near the old original inclined shaft. This is the only shaft which may be rehabilitated.

Less favorable conditions:

1) Extremely flat incline of the other two shafts - difficult to rehabilitate due to caving of hangingwall.

2) Great volume of water flooding the old workings.

It might be added that complete submergence of workings and timbers might prevent collapse in the workings. Air-slack of the fault gouge can be a problem. It is doubtful that the mine makes excessive water - otherwise the shafts and underground workings to 900 feet would not have been possible. Available water can always be utilized.

OBSERVATIONS AND CONCLUSIONS

The favorable conditions outweigh the less favorable conditions by a large margin. There is every indication that there is an orebody almost 900 feet deep, lying between the two inclined shafts, from which little ore has been

stopped out. Although the structure is strong and wide, the width and the tenor (grade) of the ore is an unknown factor.

The ideal situation would be to inspect the underground workings and perform a thorough sampling job. To dewater and rehabilitate an old mine such as this is an expensive and tedious project. Although the main workings should be intact due to complete submergence, dewatering and the introduction of air may cause caving, due to the low incline and the altered clay-like gouge on the hangingwall.

The remaining solution is to plan a preliminary exploration by a core-drilling program. Many conditions and factors must be considered for this type of exploration such as:

- 1) Types and conditions of rocks to be drilled. Granitic rock should have no problems, but the shear zones will contain highly fractured material and the veins can be shattered. This can cause loss of circulation in drilling - even to the point of losing the hole. Core recovery can be very poor; however, structure can be determined by an experienced man, and this is most important.

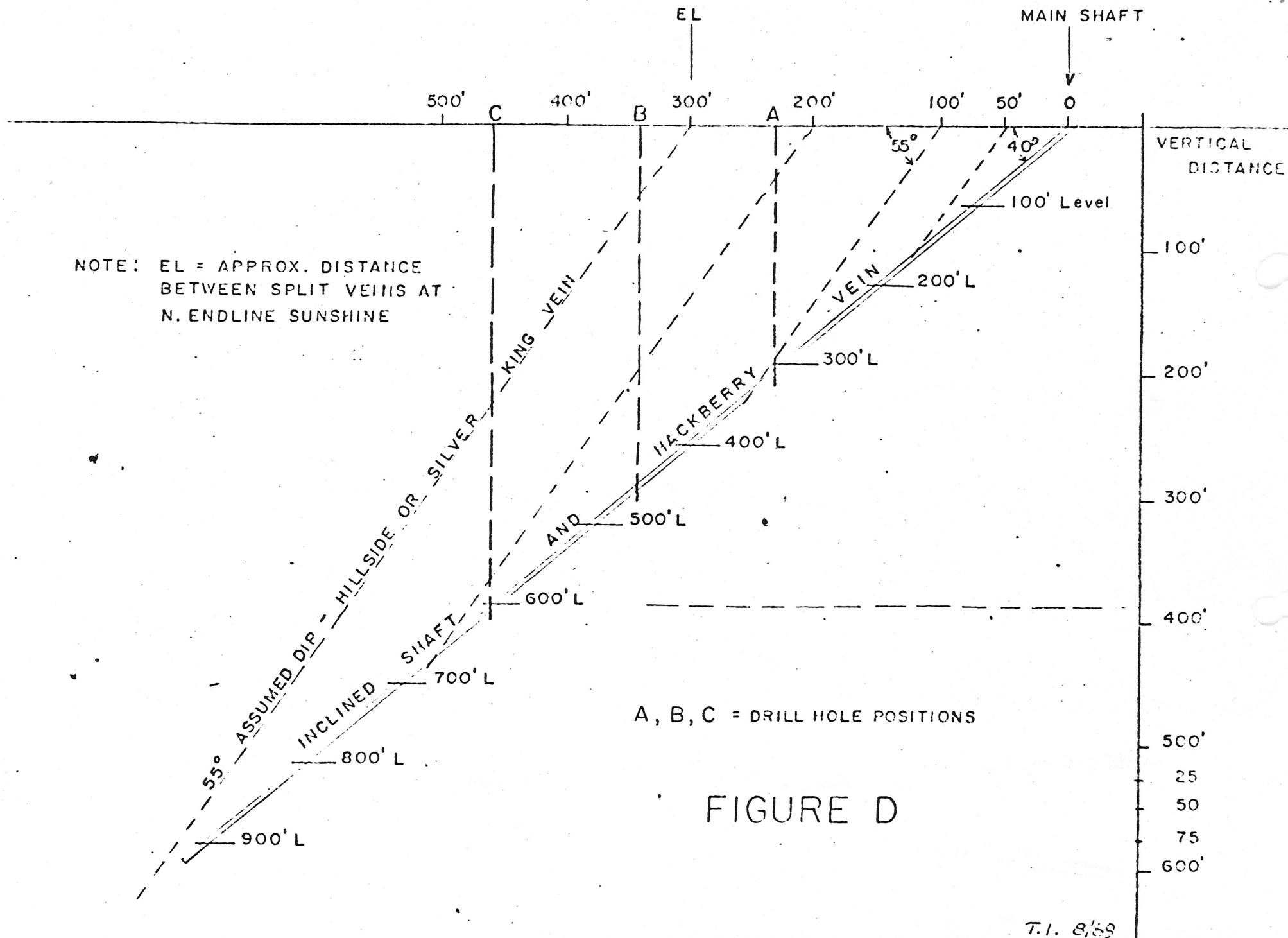
- 2) Placement and spacing of holes - this is important in this instance in order to avoid the underground workings. every advantage should be taken to intersect other possible structures (please refer to Figure C-2). Spacing of holes or a pattern is required to conform to a systematic program. This preliminary series of holes is primarily to determine if a complete program of this kind is warranted.

- 3) Depth of holes for maximum effectiveness. Depth of the

holes is determined by the location and the target or targets. If a hole were to be drilled north of the fork of the 2 main structures, it should be so placed that it will cut both structures (please refer to A, B, C - Figure D, or possibly the condition in Figure C-2). Spacing of holes is required to intersect certain targets. To intersect the Hackberry vein at the 600ft. level, a vertical hole of little less than 400' plus the difference in elevation of the collars is necessary because the holes be on the high side of the mountain.

Sufficient number of holes must be drilled in the initial project to satisfactorily delineate the orebodies where the underground preparations were made to remove the ore. This is roughly the area bounded by the main inclined shaft to the north and the intersection of the vertical shaft with the original inclined shaft to the south (refer to Appendix IV). The main target should be within these boundaries and from a depth of the 200ft. level to the 600ft. level. Dependent upon the results of these holes, the next stage of the program should be planned.

- 1) Preliminary drilling to confirm existence of ore in the main target area.
- 2) A complete surface survey with topographic mapping with close contours for accurate control of drilling sites.
- 3) Second stage drilling program to delineate this area with certainty and expansion of area to the south and north.
- 4) Dewatering and rehabilitation of vertical shaft to make accessible all possible underground workings.



- 5) Systematic sampling and correlation of underground findings with drilling results.
- 6) Blocking out of ore and determination of the average tenor of ore. It will then be possible to calculate the reserves and the value.
- 7) Metallurgical tests for beneficiation of the ore.
- 8) Consideration and planning of operation.

RECOMMENDATIONS

- 1) Posting of adequate signs on property for protection - notice of non-responsibility, no trespassing, etc. Enclose all open holes on the property.
- 2) Initial drilling program
 - a) Preliminary engineering - spotting of drill holes, etc.
 - b) access roads to drill sites
 - c) Storage facility for core samples
- 3) Drilling program
 - a) On site supervision
 - b) Outside Consultant-geologist

TENTATIVE PRELIMINARY BUDGET

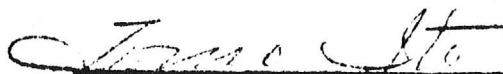
Drilling - 7 to 8 holes, total 4,000' @ \$10/ft	= \$40,000.00
Mobilization & Demobilization chgs.	= \$ 2,000.00
Time - approx. 8 mos.	
Preliminary engineering - site locations	
survey - 5 days max. + expenses	= \$ 1,000.00
Access roads - Dozer work (estimate)	= \$ 1,000.00
On-site supervision - 8 mos. @ \$600/mo.	= \$ 4,800.00
Consultant-geologist - 8 x \$800/mo.	= \$ 6,400.00
Samples - preparation and assays - 20 x \$10	= \$ 200.00
Core storage facility	= \$ 500.00
Miscellaneous	= \$ 1,000.00
Contingencies	= \$10,000.00
Total*	= \$66,650.00

*This can be trimmed to a more modest figure without reducing effectiveness too much.

The time element for the drilling may seem long, but most drillers estimate an average of 20ft. per day in unknown ground. This is also figured on the basis of one shift per day - they may elect to work 2 shifts, and 6 days per week. It can be seen that many of the estimates can be trimmed if the drilling time is reduced.

Respectfully submitted,

August 25, 1969


Tomo Ito

BRIEF TECHNICAL AND PROFESSIONAL BACKGROUND

Full Name: TOMO ITO
Address: 1902 Havemeyer Lane, Redondo Beach, CA 90278 (since '48)
Citizenship: U. S. A.
Birthdate: September 18, 1909
Birthplace: Oakland, California

Education: Pasadena High School & J.C. 1928
Stanford University - A.B. in Geology, 1932
Major - Ores and Ore Deposits
Graduate work in Ores and Mining & Metallurgy
1932-33 (two quarters)
U.C. Extension (night) - Petroleum Engineering, 1935

WORK EXPERIENCE

- 1928 & 1929 - Summers: Laboratory assistant, Assay Office, International Smelting Co., Inspiration, Arizona
- 1931 - Summer: Stanford Geological Survey - Intensive field course, 10 weeks - 15 units.
- 1933-34 - Consulting geologist for private party with large coal interests in the Price-Helper area, Utah
- 1934-40 - Metallurgist & assistant to the superintendent of Mills Alloys, Inc., Los Angeles, California. Manufacturers of tungsten metal, alloys, and chemicals.
Consulting geologist, Nevada-Scheelite, Inc., subsidiary of Mills Alloys (Mining division)
- 1940-42 - Chief metallurgist and superintendent, Mills Alloys, Inc.
Consulting geologist and metallurgist - Nevada-Scheelite, Inc. - Mine and mill near Randsburg, Nevada.
- 1942-43 - Administrative assistant to the Project Director, War Relocation Authority, Poston, Arizona
- 1943-45 - Consultant in various fields of metallurgy and mining: mining and milling of tungsten ores; mining and processing of gilsonite - in Utah. Confidential research work in powder metallurgy of tungsten, in Nevada.
- 1945-48 - U.S. Vanadium Corp. (Union Carbide), Agents for Metals Reserve Corp., Salt Lake City, Utah - Analyst in chemical control laboratory (tungsten processing for stockpile)
7/20/46 - Transferred, at end of Government program, to new company facilities at Henderson, Nevada. Advanced from Jr. Chemist to Chemist; to Sr. Chemist, and to research metallurgist.

- 1948-50 - Self-employed as geological and metallurgical consultant for individuals and small corporations.
- 1950-51 - Metallurgist in charge of production, Pacific Metallurgical Products, Azusa, California.
- 1951-57 - Metallurgist and superintendent, Sun Valley Tungsten Company (Custom Mill), Sun Valley, California. Field geologist for the company.
Outside consultant as geologist and metallurgist.
- 1957 Six months - independent mine operator and geologic consultant in Baja California, Sonora, Mexico, and Southern Arizona.
- 1957-59 - Metallurgist in charge of construction and subsequent operation of 1,000-ton capacity manganese mill, Ecuso, Arizona. Operated for Ore-Con, Inc., and Sunshine Mining Co. as a joint venture.
Field geologist - exploration and production for the operation.
- 1959 March-Sept. - Special consultant for Tungsten Refining Company, Phoenix, Arizona. Chemical plant construction and research work on new phases of metallurgy of tungsten, and liquid-liquid extraction of metals.
- 1959-Present - Independent mining geologist and metallurgist.

My principal work is in the inspection and evaluation of properties containing metallic and non-metallic minerals; metallurgical and beneficiation studies; market surveys; and feasibility studies. Experience in the following:

METALLICS

- A) Antimony - Kern County, California; Wall Canyon and Manhattan districts, Nevada
- B) Beryllium (Beryl) - Kingston Range, California; San Diego County, Calif; West central Arizona. Market survey on Beryllium and other "Exotics", for Western Rare Metals Corp.
- C) Chromium (Chromite) - Del Norte, Humboldt, and San Luis Obispo Counties, California
- D) Copper - Much of Arizona; California "Copper Belt"; Blythe-Parker area, Calif. Clinton, Montana. Baja California, Sonora, and Guerrero, Mexico. (Mine and mill evaluation for S.B. Mosher, Signal Oil & Gas - Ariz)

E) Gold -

- a) Placer - Tertiary auriferous gravels of Northern California - Counties of Plumas, Sierra, Allegheny, etc.; Imperial and Inyo Counties (alluvial); Wick-enburg (Rich Hill) and Big Bug areas, Arizona; Baja California (Tres Pinos), Mexico.
- b) Lode - Mother Lode District, California; Mojave Desert areas, Calif.; Southwest Nevada; Eastern Oregon (Eburne and Sumpter); Montana; Western and Southern Arizona; Baja California, Sonora, Durango, Zacatecas, and Guerrero, Mexico.

F) Iron

- a) Lode - Parker, Bouse, and Bill Williams River districts, Arizona; Riverside, San Bernardino, and Inyo Counties, California; Baja California, Mexico
- b) "Placer"- near Salida, Colorado (glacial); near Kelso, California. Beach sands, northern Luzon, Philippines.

- G) Lead-Zinc-Silver - Clinton, Montana (Hera Exploration); Neihart, Montana; Stockton, Utah; Kingston, New Mexico; Tybo, Nevada; Silver Lake, Shoshone, and Death Valley Districts, California; Santa Rita Mts. and Huachuacas, Arizona; Baja California, Chihuahua, Durango, Guerrero, and Sonora, Mexico

- H) Manganese - Western and southwest Arizona; Blythe-Palo Verde area.

- I) Mercury - Kern, Ventura, Santa Barbara, San Luis Obispo, Napa, and Sonoma Counties, California; Durango and Chihuahua, Mexico., Northern Spain.

- J) Molybdenum - Baja California and Sonora, Mexico.

- K) Tin - Kern County, California (Meek and Butler deposits) near Gorman.

- L) Thorium - Placer near Big Bear Lake, California.

- M) Titanium - "Black Sands" - Ilmenite and magnetite, Lang, California; Riverside and San Bernardino Cos.

- N) Tungsten -

- a) Wolframite & Hubnerite ("Brown ores") - near King-

- 4 -
- b) Scheelite - Rawhide district (Nevada-Scheelite), Nevada; northwest Utah. Inyo, San Bernardino, Riverside, Kern, Tulare, Madera, and Fresno Counties, California. Baja California & Sonora, Mexico.

NON-METALLICS

- A) Asbestos (chrysotile & amphibole) - Globe district, Arizona; Kern County, Calif. Baja California (amphibole), Mexico
- B) Barite - Riverside, San Bernardino, Kern, and Tulare Counties, California; western Arizona. Sonora, Mexico.
- C) Cinders, Volcanic - Inyo and Imperial Counties, Calif. Sonora and Baja California, Mexico
- D) Clays
a) Bentonitic
b) Ceramic
c) Industrial
d) Miscellaneous
- Los Angeles, Riverside, San Bernardino, San Diego, Kern, Ventura, and Inyo Counties, California
- E) Coal - Helper-Price and Bookcliffs districts, Utah
- F) Gems - Pegmatites in San Diego County, California, and in Baja California, Mexico
- G) Gilsonite - Myton-Roosevelt district, Utah
- H) Limestone, Dolomite, and Marble - Riverside, San Bernardino, Kern, Inyo, Ventura, Tulare, Madera, and Fresno Counties
- I) Perlite - near Kingman, Arizona
- J) Phosphate Rock - near Paso Robles, California
- K) Quartz - San Diego, Riverside, San Bernardino, Inyo, and Kern Counties, California. Baja California, Mexico
- L) Sand
a) Glass Sand - Los Angeles, Ventura, and Riverside Counties. Baja California, Mexico
b) Industrial Sand - Los Angeles, Ventura, Orange, and San Diego Counties
- M) Talc - Death Valley, Silver Lake, Kingston districts; Tulare County, California
- N) Sulfur - Baja California, Mexico, The Philippines

In compliance with the new State Law, I am a Registered Geologist, State of California, Certificate No. 1633.

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Report on the Property of the Hackberry Extension Mining Co. Peacock Mining District, Hackberry, Mohave County, Arizona.

The property of the Hackberry Extension Mining Company adjoins the Hackberry Consolidated Mining Company, which bids fair to develop into the largest silver mine in the Southwest. On account of the similarity of conditions and highly favorable developments of the Hackberry Mine during the past year, some data from a personal inspection of this property is given. For this the writer is indebted to Mr. William Neagle, Superintendent of the Hackberry Mine, who succeeded in getting the present owners to take over the property, and under whose direction the recent ore developments have been obtained.

DATA ON HACKBERRY MINE

Location and History: The Hackberry Mine lies three miles west of Hackberry, Arizona, which is on the main line of the Santa Fe Railway, and about thirty miles northeast of Kingman, Arizona. It was originally discovered about 1879, and is reported to have produced about \$3,000,000, in high grade silver ore from one ore shoot which outcropped on the surface and was mined down to a depth of 600 feet. This ore shoot had a length of some 500 feet, and usually ranged from two to four feet

in width. The property was active between 1879 and 1884, after which it was closed down for some thirty years.

In recent years several strong mining companies have attempted to re-open the mine, but never got further than unwatering and doing some prospecting work in and around the old stopes on the lower levels. In the fall of 1916 the United Eastern crowd abandoned the property after doing considerable work south of the old shaft.

Hackberry Ore Body: In January, 1917, James Murray, a wealthy mining man of Butte, Montana, and associates, took over the property and started driving north of the shaft on the 600 ft. level. After following a narrow seam of ore for some distance it widened out into an ore body varying from 5 ft. to 22 ft. in width, and has so far shown a length of about 600 feet on this level, and extends to within 200 feet of the surface. Previous companies had refrained from prospecting this portion of the vein on account of poor outcrop conditions. Between the 200 foot and 600 foot levels the ore tonnage is estimated at 150,000 tons, with gross value in excess of \$4,000,000. The average value is about 25 ounces in silver, \$2.00 in gold, and 8 per cent lead, which on \$1.00 silver and five cent lead market shows a value of \$35.00 per ton. In the narrower portions of the vein silver contents often rise to above 100 ounces silver per ton.

Recently in cross-cutting the vein from the main incline shaft at depth of 750 feet the ore body proved to be 22 ft. wide, three feet in width of which is reported to assay around 100 ounces per ton, and the balance of 19 feet about 25 ounces. The character of the ore on the 600 ft. level and the more recent developments on the 750 ft. level indicate that the present ore body has an excellent chance to continue to 1,000 feet in depth, which would double the present

ore reserves. Also development southward under the old ore body may add an equal amount of additional ore so as to increase the ore reserves to around \$10,000,000.00. This is mentioned as a reasonable possibility.

The Hackberry Company is now preparing to build a 200 ton flotation plant, which they expect to have in operation by fall. With this size mill, treating 25 oz. ore, they should earn in the neighborhood of \$1,000,000.00 net a year, which is quite exceptional for any silver property.

Geology: The country rock in the Hackberry section is an old granite porphyry which has been intruded by two principal, hard, silicious porphyritic dykes, with strike of N. 40 degrees, W., and dip of about 40 degrees to the southwest. One of these dykes, with which the principal ore showings of the district are associated, extends from the Hackberry Mine northwestward through the Hackberry Extension ground, and beyond for several miles. The intrusion of this dyke evidently crushed and fractured the softer adjoining country rock and made conditions favorable for ore deposition in the crushed zones. A good illustration is shown on the 600 ft. level where the hard dyke forms the foot wall of the ore body, and the hanging wall is soft, crushed, granite porphyry.

Because of this crushed and highly fractured zone in which the ore bodies formed alongside the dyke, there is less danger of the ore bodies pinching out from tight country rock conditions. The dyke itself is unmineralized except where the mineralizing solutions which formed the ore bodies penetrated into the dyke along narrow fracture seams.

A number of mines in and around the Kingman-Chloride section produced high

grade silver-gold ores near surface from tight fissure veins in granite. On reaching water level at around 100 feet to 200 feet in depth, these ore bodies often pinch out or change to very low grade primary ores, carrying small amounts of copper and iron sulphides.

A notable exception to this is the Tennessee Mine at Chloride, which under operation by the U. S. Smelting and Refining Company has reached a depth of 1600 feet. This property is principally a lead producer though their ores carry good values in silver also.

The Hackberry ore occurs mainly as silver sulphides (Argentite) in a quartz gangue associated with some six or eight per cent lead sulphide. When lead contents increase the silver values usually increase correspondingly. Consequently the association of the silver values with lead in the Hackberry ores is considered a good indication that the ore bodies will continue much deeper than the present workings at 750 feet. The present development work has also disclosed a much better understanding of the occurrence of the ore bodies alongside the intrusive dyke.

It is very probable that prospecting along the dyke, where favorable outcrop conditions exist, will disclose new ore bodies, or other ore bodies which do not show any surface indication of their existence, may be discovered by a thorough prospecting along the dyke. In the opinion of the writer, the Hackberry Mine has the large general conditions to develop into one of the really large silver mines of the country.

The Hackberry Company is a close corporation which has carried on its work with very little publicity, consequently the public has heard very little about it so far. However, a mine of this magnitude will lead to considerable new mining activity in that section, and may create quite a mining boom during the next year.

HACKBERRY EXTENSION PROPERTY.

Location and Extent: The Hackberry Extension property, comprises the Silver King, Big Ben, Pinon, Pinon No. 2, Dipper and Dipper No. 2, unpatented lode mining claims, covering an area of about 120 acres, situated in Peacock Mining District, Mohave County, Arizona.

The property is three miles west of Hackberry, a station on the Santa Fe Railway, about thirty miles northeast of Kingman, Arizona. A serviceable wagon road extends from Hackberry to the property.

The property joins the Hackberry Consolidated ground and covers 3,000 feet in length of the north continuation of the porphyry dyke which forms the Hackberry ore bodies. The Hackberry ore bodies lie along this dyke about 3,500 feet southeastward.

Early History: The property was discovered about 1879 at the time of the Hackberry discovery, and was worked until 1884 by chloriders who prospected and hunted along the outcrop for rich surface ore. The methods of mining were crude and expensive and in most cases the work did not exceed 50 feet in depth, which is about the limit of windlass work. These old timers mined only the high grade ores around 200 ounces silver or better, and packed it on burros over to the Hackberry Mill for treatment. This mill was a small five stamp pan amalgamation mill. According to Mr. Ridenour, who is an old timer in that section and was in charge of the Hackberry Mill at the time, the production from the Silver King and Big Ben Claims was about \$70,000.00 of 200 ounce ore. About \$30,000.00 of this was mined from surface stopes along a length of about 400 feet near the center of the Silver King Claim. The other \$40,000.00 was produced from similar shallow surface workings along a length of

about 500 feet on the Big Ben Claim about 1200 feet distart. These two places present very favorable outcrop showings for ore bodies below. In places along the vein between these two workings some small favorable ore showings exist.

Along in the 90's Mr. Ridenour states that he cleaned out an old 60 ft. shaft near the south end of the workings on the Silver King Claim, and by sinking the shaft 20 feet deeper he took out one car of ore which shipped 196 ounces silver per ton. Directly after this the shaft which is in a gulch and made considerable water, caved in. About 1907, two prospectors sank a new shaft 100 feet deep near by and it is reported that they opened up 60 ounce ore, four feet wide along a length of 40 feet. The 60 ounce ore at that time, on fifty cent silver, was too low grade to ship, and they were trying to reach the 196 ounce ore reported left around the old shaft. This shaft which was also in the gulch, was lost by similar soft ground and caving. However, the ore now on the dump bears out their statements of encountering 60 ounce ore.

The general conditions of the property now existing seem to confirm the above statements of the early production and ore values.

Geology: General geological conditions are similar to those of the Hackberry Mine, namely an old granite porphyry country rock intruded by the silicious porphyry dyke, which extends through the Hackberry Mine northward, traversing 3,000 feet along the length of the Silver King and Big Ben Claims of this property, and beyond for several miles. As at the Hackberry Mines the ore bodies are formed in quartz veins, lying between the softened country rock and the hard intrusive dyke which strikes North 40 degrees W. and dips about 45 degrees southwest. Usually the ore bodies follow the hanging wall of the dyke, but on the

Silver King Claim the old ore bodies were mined both along the foot wall and hanging wall of the dyke for a length of about 400 feet. The dyke at this point is about 70 feet wide.

The surface ores are all oxidized, being mainly silver chloride and horn silver in a quartz gangue. The old timers mined principally this class of ore on account of easy treatment by amalgamation. The ores change to sulphides, associated with lead on reaching water level at around 50 ft. in depth, and were difficult to treat by the old amalgamation methods. Also, encountering water at about 50 feet prevented deeper work by windlass. This work of the old timers was without any machinery equipment, and was before the advent of the Santa Fe Railway.

The ore lenses near surface vary from 2 ft. to 4 ft. in width. Similar surface conditions obtain on the Hackberry Mine, but at depth the ore bodies reach a width of 22 feet. The Silver King Vein shows a strong condition along its entire length with about two feet of gouge on the hanging wall. This is a favorable indication that the vein will continue downward.

Sampling: The old surface workings are now largely caved and inaccessible for sampling. However, a very good idea of ore conditions was obtained by sampling pillars and walls around the surface workings, and ore left on dumps. The two old shafts 80 ft. and 100 ft. deep on the Silver King Claim are filled with water to within 35 ft. of the surface and caved below.

Sample No.	Value per Ton Silver at \$1.00 per ounce	
1 Quartz on foot wall of stope at center of Big Ben Claim.....	\$	83.40
2 Talc on hanging wall at No. 1 18 inches wide,		5.40
3 Re-check of sample No. 1.....		115.96

4	Footwall above Sample No. 3.....	48.60
5	Footwall above Sample No. 4.....	32.70
6	Red Material on outcrop 2 ft. under footwall at Sample No. 5.....	4.48
7	25 ft. South Sample No. 1— Footwall of stope down 50 ft. Quartz 12 inches wide	17.04
8	Near No. 7—footwall quartz 6 inches wide	87.56
9	100 ft. North, Sample No. 1, 18 inches wide	48.86
10	30 ft. North Sample No. 9, 6 in. wide	31.20
11	200 ft. North Sample No. 10, 18 inches wide	6.56
12	Gouge Material on dump at Sil- ver King Shaft. No quartz.....	5.80
13	Quartz ore on dump at Silver King Shaft—Sulphides	44.60
14	Re-check of Sample No. 13.....	64.56
15	Lead sulphide ore at Silver King Shaft	118.40
16	Mill ore at No. 15.....	20.20
17	100 ft. south Silver King Shaft General sample ore on dump.....	58.60

The above samples give a good idea of the ore left in pillars and on walls of the old workings, and represent the ore left by the old timers after cleaning out the high grade ore. Samples Nos. 13, 14, and 15 are sulphide samples from the dump of the Silver King Shaft. These sulphide ores are associated with lead and represent probable ore values in the sulphide zone. The character of the ore is identical with that of the sulphide ores in the Hackberry Mine—principally the association with lead. The fact that good silver values extend into the sulphide zone, as shown by the above samples, is an excellent indication that there will be no sudden impoverishment of values in depth. The strong occurrence of the vein is another very favorable feature, that the ore bodies will continue downward.

Recommendations: In the opinion of the writer, the old surface workings on the Silver King and Big Ben Claims represent the outcrops of two ore bodies which probably extend downward into the sulphide zone. To determine these conditions well into the sulphide zone, I recommend sinking an incline shaft on the vein, near the center of the outcrop on the Silver King Claim to depth of about 300 feet, then lateral development along the length of the vein. The cost of this work, including the necessary mine plant and equipment, is estimated at \$20,000.00. However, it is possible that sufficient shipping ore above 30 ounces silver will be mined during the course of this development to repay part or all the above outlay. Freight and treatment charges to San Francisco are about \$15.00 per ton.

The lower grade ores would have to await erection of a mill on the property. Tests on the Hackberry ores have shown excellent extraction by oil flotation methods. On basis of a 50 ton plant, all ores above 10 ounces silver could be mined and milled at a profit.

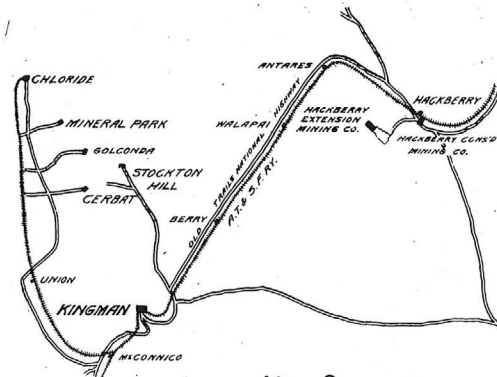
Conclusion: I have kept in close touch with developments at the Hackberry Mine during the past year. From comparison of conditions I consider the development of the Hackberry Extension property as a highly promising mining venture, with reasonable possibilities of developing into a mine of similar magnitude to the Hackberry.

Respectfully submitted,
A. L. JOHNS,
Mining Engineer.

Prescott, Arizona,
May 27, 1918.

ASSAY LEGEND SILVER @ \$100 PER OZ.			
SAMPLE No.	VALUE	SAMPLE No.	VALUE
1	83.40	10	31.20
2	5.40	11	6.56
3	115.96	12	5.80
4	48.60	13	44.60
5	32.70	14	64.56
6	4.48	15	118.40
7	17.04	16	20.20
8	87.56	17	58.60
9	48.86		

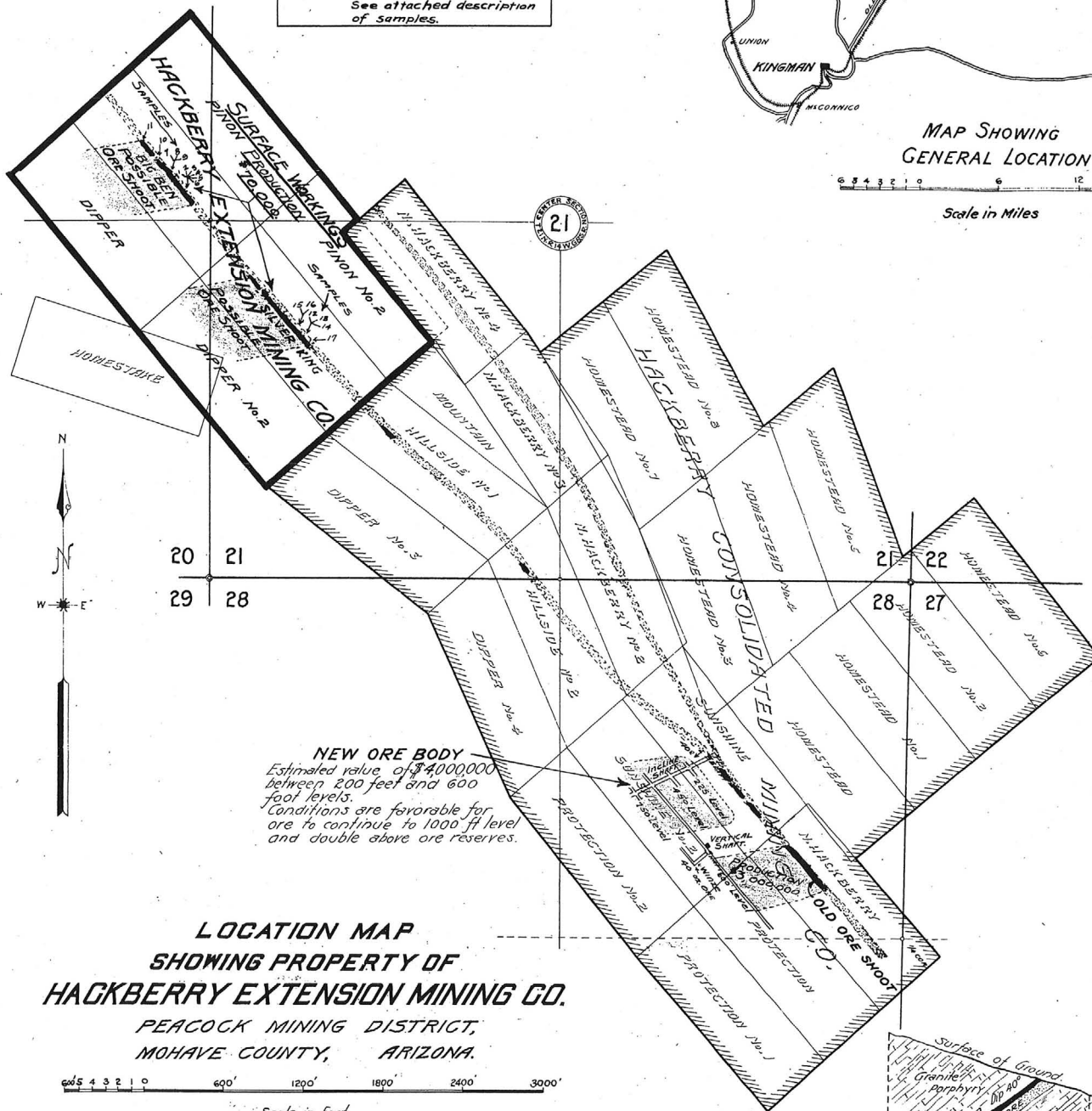
See attached description
of samples.



MAP SHOWING
GENERAL LOCATION

6 5 4 3 2 1 0 6 12 18

Scale in Miles



**LOCATION MAP
SHOWING PROPERTY OF
HACKBERRY EXTENSION MINING CO.**

PEACOCK MINING DISTRICT,
MOHAVE COUNTY, ARIZONA.

600' 1200' 1800' 2400' 3000'

Scale in Feet

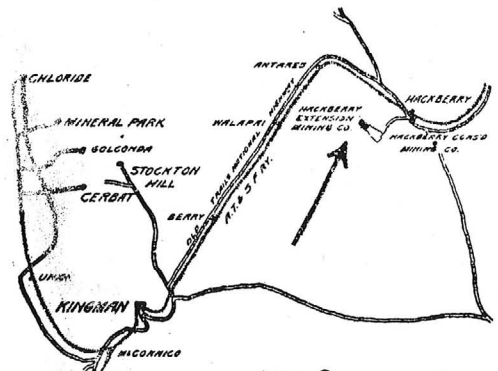
L. H. Foster,
U.S. Mineral Surveyor.

Geology by
A. L. JOHNS.

To accompany Report of
A. L. Johns.

ASSAY LEGEND			
SILVER @ \$100 PER OZ.			
SAMPLE NO.	VALUE	SAMPLE NO.	VALUE
1	88.40	10	31.20
2	5.40	11	6.56
3	115.96	12	5.80
4	48.60	13	44.60
5	32.70	14	64.56
6	4.40	15	118.40
7	17.00	16	20.20
8	37.56	17	58.60
9	40.06		

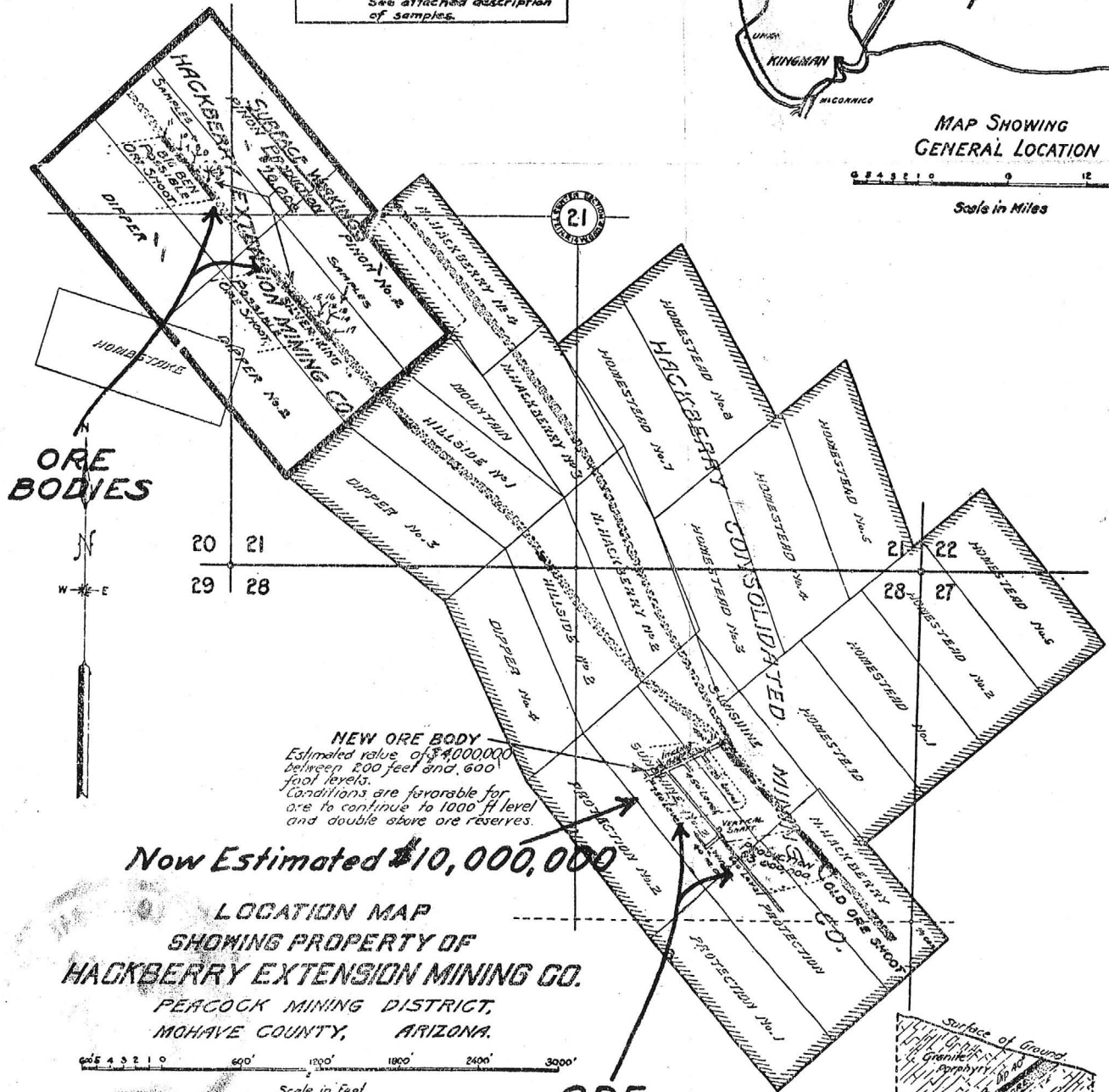
See attached description of samples.



MAP SHOWING
GENERAL LOCATION

0 2 4 6 8 10 12

Scale in Miles



NEW ORE BODY
Estimated value of \$4,000,000
between 200 feet and 600
foot levels.
Conditions are favorable for
ore to continue to 1000 ft level
and double above ore reserves.

Now Estimated \$10,000,000

**LOCATION MAP
SHOWING PROPERTY OF
HACKBERRY EXTENSION MINING CO.
PEACOCK MINING DISTRICT,
MOHAVE COUNTY, ARIZONA.**

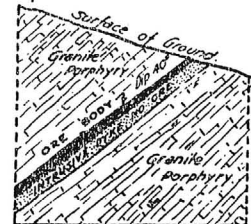
0 600 1200 1800 2400 3000

Scale in feet

L. H. Foster,
U.S. Mineral Surveyor.

Geology by
A. L. Johns.

**ORE
BODIES**



**CROSS-SECTION
OF
HACKBERRY VEIN**

Wm R R
Molitor Co
Arizona

REPORT ON "HACKBERRY PROPERTY"

by
JAMES BREEN, M. E.

FROM
Wm. H. CRITCHFIELD, Jr.
A. B. CARPENTER FILES

January 23, 1918.

Mr. James Murray,
Butte, Montana.

for Estimation Gus Holmes

Gus Holmes, Salt Lake City
& James Murray, Butte
Principal owners of this
mine - WRC

Dear Sir:

In compliance with your request, I proceeded to the Hackberry Mine and spent Thursday, Friday and Saturday of last week inspecting same. Sunday was spent in Kingman going over plans for a concentrating plant prepared by Mr. Sherman. A list of material entering into this plant with prices will be found at the end of this report. Also a list of mine samples taken over a period from early April until the beginning of September, 1917. These samples were taken from day to day as the work progressed and form a fair average of the mine content in gold and silver. In addition to these samples there was shipped to the Selbey Smelting Works 377 tons and also to a concentrating works at Needles, Cal., 434 tons, the latter being passed through a wet concentrator; the results of these shipments are appended.

Your mine is developed to a depth of 700 ft. by a perpendicular shaft reaching the 600 foot level and an incline 100 ft. from that level to the 700. The 700 is opened by a drift 70 ft. north, at which point there is a good face of ore assays from this level, taken in the course of development, showing an average of 34.6 oz. silver and will average approximately 1.60 in gold. The 600 ft. level has been driven north a distance of 700 ft. from the bottom of the vertical shaft. Ore is visible practically all the way. There is a good showing of ore in the face and various upraises have been made, all of which show pay ore. An incline has been sunk from the surface in the hanging wall to the 600 ft. level, connecting with same about 525 ft. north of the perpendicular shaft. A drift south from this incline shaft 250 ft. from the surface shows a fine body of ore. Drillings made in the course of the sinking of this shaft show high assays, the average of 12 samples being 60.4 ounces. The average of 278 samples taken from the entire mine gives an average of 32.9 ounces.

There is ore showing in every opening in the mine that I inspected, except to the extreme end of the 600 ft. level south. The narrowest ore showing observed was one foot; the widest was 9 feet in G. Stope, and I was informed by the foreman that there was 3 or 4 feet of concentrating ore below the stulls on this floor. I think the average of the entire ore body will be from $3\frac{1}{2}$ to 4 ft. in thickness and I conservatively estimate the assay value of the ore as mined for milling purposes to be 20 oz. silver, .08 oz gold, $2\frac{1}{2}\%$ lead and $3\frac{1}{2}\%$ zinc.

Flotation tests made by Mr. Sherman would indicate that a saving of 85% of the silver, 90% of the gold, 90% of the lead and from 50% to 60% of the zinc can be recovered. The proper mill in good working order should give higher results than can be obtained in a test run, and I have no doubt that ultimately you will save 90% of the gold, silver and lead values and possibly 60% of the zinc as merchantable products.

Taking Mr. Sherman's test runs as a basis, I have figured that an ore carrying 20 ounces of silver, .06 gold, $2\frac{1}{2}\%$ lead, $3\frac{1}{2}\%$ zinc, saving the above percentages, would give the following smelter returns: 95% of the silver at 85¢ an oz. will return \$13.73; 95% of the gold at \$20 an oz. will return \$1.37; 90% of the lead at 5¢ a pound will return \$2.03; 60% of the zinc at $2\frac{1}{2}\%$ per lb. will return \$1.05, making a smelter value of \$18.18 a ton of ore. To be deducted from that I have allowed \$4.00 for mining and development purposes and \$2.00 for concentrating and \$1.70 for freight and treatment on the concentrates contained in one ton of ore, and I have arrived at the \$1.70 by charging \$15 freight and treatment made by the smelter, \$1.50 a ton haulage and loading the concentrate on the car at Hackberry, and allowed 50¢ per ton freight on water contained in the concentrates, making a total of \$17.00 a ton. Your ore will concentrate 10 tons of ore into one ton of concentrates, consequently the charge against a ton of ore would be \$1.70 or 1/10th of \$17.00. This makes your total cost of mining, milling and

A Stope	B. Stope	B. Stope (cont.)	E. Stope	Incline Shaft
14.80	49.70	6.40	20.00	60.00
70.90	3.60	11.20	10.20	16.20
155.20	77.40	24.00	12.00	42.00
97.10	11.00	36.00	21.10	66.90
58.20	29.00	14.00	31.00	66.00
98.20	38.20	56.80	20.00	40.00
31.90	25.20	50.00	38.20	180.00
998.20	28.20	68.80	44.30	34.10
20.60	68.80	20.80	22.00	90.20
206.60	5.90	21.00	10.00	99.30
10:851.70	5.60	98.30	24.00	19.10
85.17	8.60	50.00	5.00	11.50
	5.00	54.00	8.00	12 : 725.30
	15.10	21.00	20.4	60.4
	13.40	90.20		
	8.80	21.10		
	11.50	30.90		
	86.40	39.00		
	5.80			
	13.90			
	11.20	3905.60		
	22.70	640.00		
	39.20	87:3265.60		
	17.10	37.50		
	37.70			
	67.10			
	9.70			
	3.40			
	9.80			
	28.00			
	18.80			
	3.10			
	47.10			
	5.60			
	27.50			
	6.50			
	34.80			
	12.60			
	30.20			
	30.20			
	40.10			
	38.50			
	13.00			
	10.00			
	16.00			
	28.00			
	50.00			
	51.00			
	90.20			
	142.10			
	80.40			
	70.60			
	30.00			
	43.00			
	71.60			
	96.10			
	21.90			
	132.80			
	23.40			
	77.40			
	58.80			
	54.10			
	25.40			
	60.10			
	61.00			
	7.20			
	22.00			
	42.00			
	122.00			
	640.00			

Incline Shaft

60.00
16.20
42.00
66.90
66.00
40.00
180.00
34.10
90.20
99.30
19.10
11.50
12 : 725.30
60.4

G. Stope

20.00
22.20
16.80
20.00
20.70
34.90
42.30
40.90
37.20
39.70
34.20
52.20
48.20
25.10
33.80
31.60
14.10
40.40
80.90
32.80
53.20
19.00
120.00
24.00
33.60
13.90
28.60
23.00
19.60
18.00
48.00
13.20
36.20
48.50
12.00
79.00
92.00
32.50
43.10
32.40

GRAND TOTAL

No. Samples

52	905.40
15	430.40
10	851.70
87	3,265.60
7	178.70
23	987.10
13	265.80
40	1,477.80
19	657.10
12	725.30
:	
278	: 9,744.90
	32.9

40 : 1477.80
36.9

23 : 987.10
42.9

Report on "Hackberry Property"---page 2

High prices

Note: Ag did not pass 1919 price of \$1.12 until 1962 when it reached \$1.18

1916 6.58/02
1917 324/07
1918 0/07
1919 1.12/07
1920 1.09/07
1921 1.00/07
1922 1.00/07
1923 \$0.82
1924 0.67
1925 0.67
1926 0.62
1927 0.587
200 tons = 60,000 tons

treatment \$7.70, deducted from \$18.18, leaving a net profit of \$10.48 per ton.

The ore in your mine is not blocked out so that it can be measured with certainty and the claim put forth that it is actually in sight, but it is developed to such a point that a fairly close calculation can be made of the tonnage, and I have no hesitancy in saying that you have sufficient ore in the mine at this time to supply a 200 ton per day concentrating plant with ore for one year.

The regularity of the ore body exposed above the 600 ft. level leaves little doubt that it will continue far below that level and this is partially proven by the vein showing on the 700 ft. level, and the permanency of the vein at the face of the 600 ft. level north about 700 ft. from the perpendicular shaft. The new incline shaft should be continued, in my opinion, to the 900 or 1000 ft. level and the 600 ft. north level should be extended 700 or 800 ft. beyond its present face to demonstrate the continuity of the vein to the north.

If this development work shows a continuation of the ore body, as I have no doubt it will, you will add 200% to the present tonnage and would give you sufficient ore to run a 200 ton mill for three years.

I am strongly in favor of 200 tons per day as the initial mill unit. A plant of this size will cost probably \$15,000 more than a 100 ton plant would, but will cost no more to operate, and should further developments in the mine justify a larger plant, this unit can be doubled for probably 50% of the first cost. I estimate that a 200 ton mill grinding to 80 or 100 mesh with flotation, and with tables for separating the zinc concentrates, and proper de-watering appliances, as specified in the estimate attached hereto, will cost \$75,000. On account of scarcity of water in the mine, it will be necessary to de-water the tailings and pump the water back for further use.

The mine is now making about 15,000 gallons of water in 24 hours.

I am sending 200 pounds of your ore to San Francisco for flotation tests by the Minerals Separation Co., and will forward results to you.

Very truly yours,

(Signed) James Breen.

600 Ft. Level North		600 Ft. Level South	700 Ft. Level North
33.90	17.00	7.80	51.40
11.80	6.20	2.80	65.00
186.60	4.80	6.90	135.00
2.20	9.60	9.80	25.00
2.90	7.00	128.20	54.00
3.50	3.40	48.60	25.80
74.50	3.10	19.80	30.00
8.40	12.50	26.00	26.70
19.20	10.10	29.00	21.10
13.90	2.10	14.00	53.60
4.00	1.80	8.00	11.90
4.00	1.60	40.20	9.20
8.20	1.90	6.60	75.60
3.10	2.10	21.50	7.00
10.20	2.50	61.20	9.60
21.30	13.40		5.00
6.10	11.10	15:430.40	27.20
15.90	10.00	28.7	16.20
21.20	24.80		7.80
6.10	10.40		
4.20	39.20		19 :657.10
4.00	11.20		34.6
6.50	79.00		
8.00	32.50		
17.00	15.90		
	43.10		
	32.40		
521	905.40		
	17.4		

SHIPMENTS TO SELBEY SMELTING & LEAD CO., SAN FRANCISCO.

<u>Date</u>	<u>Weight</u>	<u>Ounces Silver per ton</u>	<u>Ounces Gold per ton</u>
1916	Lbs.		
Nov. 13	62,429	48.95	.05
" 16	51,302	49.66	.16
" 22	48,233	53.64	Tc
" 29	74,191	49.49	"
Dec. 5	60,133	51.36	.19
" 14	46,034	32.24	.06
" 23	46,837	47.43	.19
" 23	21,374	11.05	.05
" 23	21,047	30.17	Tc
1917			
Jan. 1	64,845	36.82	.13
" 9	53,084	15.16	Tc
" 11	72,288	31.21	.08
" 22	61,425	44.84	.11
" 24	71,169	40.94	.11
	2 : 754,391	14 : 542.96	10 : 1.13
	377,195	38.78	.113

SHIPMENTS TO NEEDLES CONCENTRATING WORKS -- JULY 16 to 20, 1917

<u>Tons</u>	<u>Oz. Ag.</u>	<u>Oz. Au</u>	<u>% Pb.</u>	<u>% Zn.</u>
434.15	25.2	.081	2.99	3.34
	\$ 0.524/oz	\$ 20.67/oz		

Concentrates Produced:

50.10	116.0	.389	18.64	25.37
-------	-------	------	-------	-------

Tailings

384.54	12.96	.04	.80	.50
--------	-------	-----	-----	-----

Ratio of concentration 8.67 tons ore to one ton concentrates.

Recovery percentage
in concentrates:

53.12%	55.50%	71.95%	87.64%
--------	--------	--------	--------

Incorporated Under the Laws of Arizona



SHARES 1500,000

PAR VALUE 250

THIS CERTIFICATE

of the Arizona Extension Mining Company, fully paid and non-assessable,

is the ownership of the Capital Stock of

of the Arizona Extension Mining Company, fully paid and non-assessable, and the same is hereby acknowledged by the holder of this certificate.

Secretary

President

Shares

250

Each.

NOTICE: THE SIGNATURE OF THIS ASSIGNMENT
MUST CORRESPOND WITH THE NAME AS WRITTEN UPON THE
FACE OF THE CERTIFICATE, IN EVERY PARTICULAR, WITHOUT
ALTERATION OR ENLARGEMENT OF ANY CHANGE WHATSOEVER.

For Value Received — hereby sell, assign and transfer
into
Shares of the Capital Stock represented by the within
Certificate, and do hereby irrevocably constitute and appoint
to transfer the said Stock on the books of the within named
Corporation, with full power of substitution, in the premises:
Dated _____
In presence of _____

PAY TO THE ORDER OF

FOR

SHARES

Capital Stock

Bartherry Extension

Mining Company

ISSUED TO

PAID

THE NEW YORK COMPANY, PRINTERS, NEW YORK

Report on the Property

OF THE

*Hackberry Extension
Mining Company*

Peacock Mining District.

Hackberry, Mohave Co.,
Arizona.

May 27, 1918

By

A. L. JOHNS

grade silver-gold ores near surface from tight fissure veins in granite. On reaching water level at around 100 feet to 200 feet in depth, these ore bodies often pinch out or change to very low grade primary ores, carrying small amounts of copper and iron sulphides.

A notable exception to this is the Tennessee Mine at Chloride, which under operation by the U. S. Smelting and Refining Company has reached a depth of 1600 feet. This property is principally a lead producer though their ores carry good values in silver also.

The Hackberry ore occurs mainly as silver sulphides (Argentite) in a quartz gangue associated with some six or eight per cent lead sulphide. When lead contents increase the silver values usually increase correspondingly. Consequently the association of the silver values with lead in the Hackberry ores is considered a good indication that the ore bodies will continue much deeper than the present workings at 750 feet. The present development work has also disclosed a much better understanding of the occurrence of the ore bodies alongside the intrusive dyke.

It is very probable that prospecting along the dyke, where favorable outcrop conditions exist, will disclose new ore bodies, or other ore bodies which do not show any surface indication of their existence, may be discovered by a thorough prospecting along the dyke. In the opinion of the writer, the Hackberry Mine has the large general conditions to develop into one of the really large silver mines of the country.

The Hackberry Company is a close corporation which has carried on its work with very little publicity, consequently the public has heard very little about it so far. However, a mine of this magnitude will lead to considerable new mining activity in that section, and may create quite a mining boom during the next year.

HACKBERRY EXTENSION PROPERTY.

Location and Extent: The Hackberry Extension property, comprises the Silver King, Big Ben, Pinon, Pinon No. 2, Dipper and Dipper No. 2, unpatented lode mining claims, covering an area of about 120 acres, situated in Peacock Mining District, Mohave County, Arizona.

The property is three miles west of Hackberry, a station on the Santa Fe Railway, about thirty miles northeast of Kingman, Arizona. A serviceable wagon road extends from Hackberry to the property.

The property joins the Hackberry Consolidated ground and covers 3,000 feet in length of the north continuation of the porphyry dyke which forms the Hackberry ore bodies. The Hackberry ore bodies lie along this dyke about 3,500 feet southeastward.

Early History: The property was discovered about 1879 at the time of the Hackberry discovery, and was worked until 1884 by chloriders who prospected and hunted along the outcrop for rich surface ore. The methods of mining were crude and expensive and in most cases the work did not exceed 50 feet in depth, which is about the limit of windlass work. These old timers mined only the high grade ores around 200 ounces silver or better, and packed it on burros over to the Hackberry Mill for treatment. This mill was a small five stamp pan amalgamation mill. According to Mr. Ridenour, who is an old timer in that section and was in charge of the Hackberry Mill at the time, the production from the Silver King and Big Ben Claims was about \$70,000.00 of 200 ounce ore. About \$30,000.00 of this was mined from surface stopes along a length of about 400 feet near the center of the Silver King Claim. The other \$40,000.00 was produced from similar shallow surface workings along a length of

about 500 feet on the Big Ben Claim about 1200 feet distant. These two places present very favorable outcrop showings for ore bodies below. In places along the vein between these two workings some small favorable ore showings exist.

Along in the 90's Mr. Ridenour states that he cleaned out an old 60 ft. shaft near the south end of the workings on the Silver King Claim, and by sinking the shaft 20 feet deeper he took out one car of ore which shipped 196 ounces silver per ton. Directly after this the shaft which is in a gulch and made considerable water, caved in. About 1907, two prospectors sank a new shaft 100 feet deep near by and it is reported that they opened up 60 ounce ore, four feet wide along a length of 40 feet. The 60 ounce ore at that time, on fifty cent silver, was too low grade to ship, and they were trying to reach the 196 ounce ore reported left around the old shaft. This shaft which was also in the gulch, was lost by similar soft ground and caving. However, the ore now on the dump bears out their statements of encountering 60 ounce ore.

The general conditions of the property now existing seem to confirm the above statements of the early production and ore values.

Geology: General geological conditions are similar to those of the Hackberry Mine, namely an old granite porphyry country rock intruded by the silicious porphyry dyke, which extends through the Hackberry Mine northward, traversing 3,000 feet along the length of the Silver King and Big Ben Claims of this property, and beyond for several miles. As at the Hackberry Mines the ore bodies are formed in quartz veins, lying between the softened country rock and the hard intrusive dyke which strikes North 40 degrees W. and dips about 45 degrees southwest. Usually the ore bodies follow the hanging wall of the dyke, but on the

Silver King Claim the old ore bodies were mined both along the foot wall and hanging wall of the dyke for a length of about 400 feet. The dyke at this point is about 70 feet wide.

The surface ores are all oxidized, being mainly silver chloride and horn silver in a quartz gangue. The old timers mined principally this class of ore on account of easy treatment by amalgamation. The ores change to sulphides, associated with lead on reaching water level at around 50 ft. in depth, and were difficult to treat by the old amalgamation methods. Also, encountering water at about 50 feet prevented deeper work by windlass. This work of the old timers was without any machinery equipment, and was before the advent of the Santa Fe Railway.

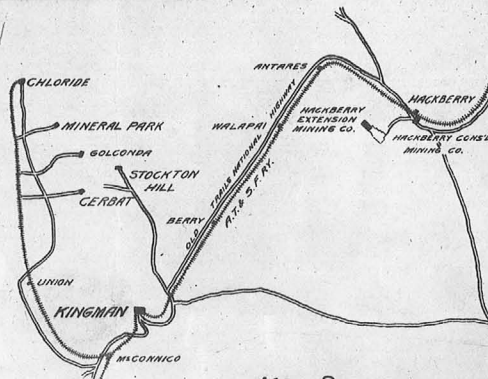
The ore lenses near surface vary from 2 ft. to 4 ft. in width. Similar surface conditions obtain on the Hackberry Mine, but at depth the ore bodies reach a width of 22 feet. The Silver King Vein shows a strong condition along its entire length with about two feet of gouge on the hanging wall. This is a favorable indication that the vein will continue downward.

Sampling: The old surface workings are now largely caved and inaccessible for sampling. However, a very good idea of ore conditions was obtained by sampling pillars and walls around the surface workings, and ore left on dumps. The two old shafts 80 ft. and 100 ft. deep on the Silver King Claim are filled with water to within 35 ft. of the surface and caved below.

Sample No.	Value per Ton	
	Silver at \$1.00 per ounce	
1 Quartz on foot wall of stope at center of Big Ben Claim.....	\$	83.40
2 Talc on hanging wall at No. 1 18 inches wide.....		5.40
3 Re-check of sample No. 1.....		115.96

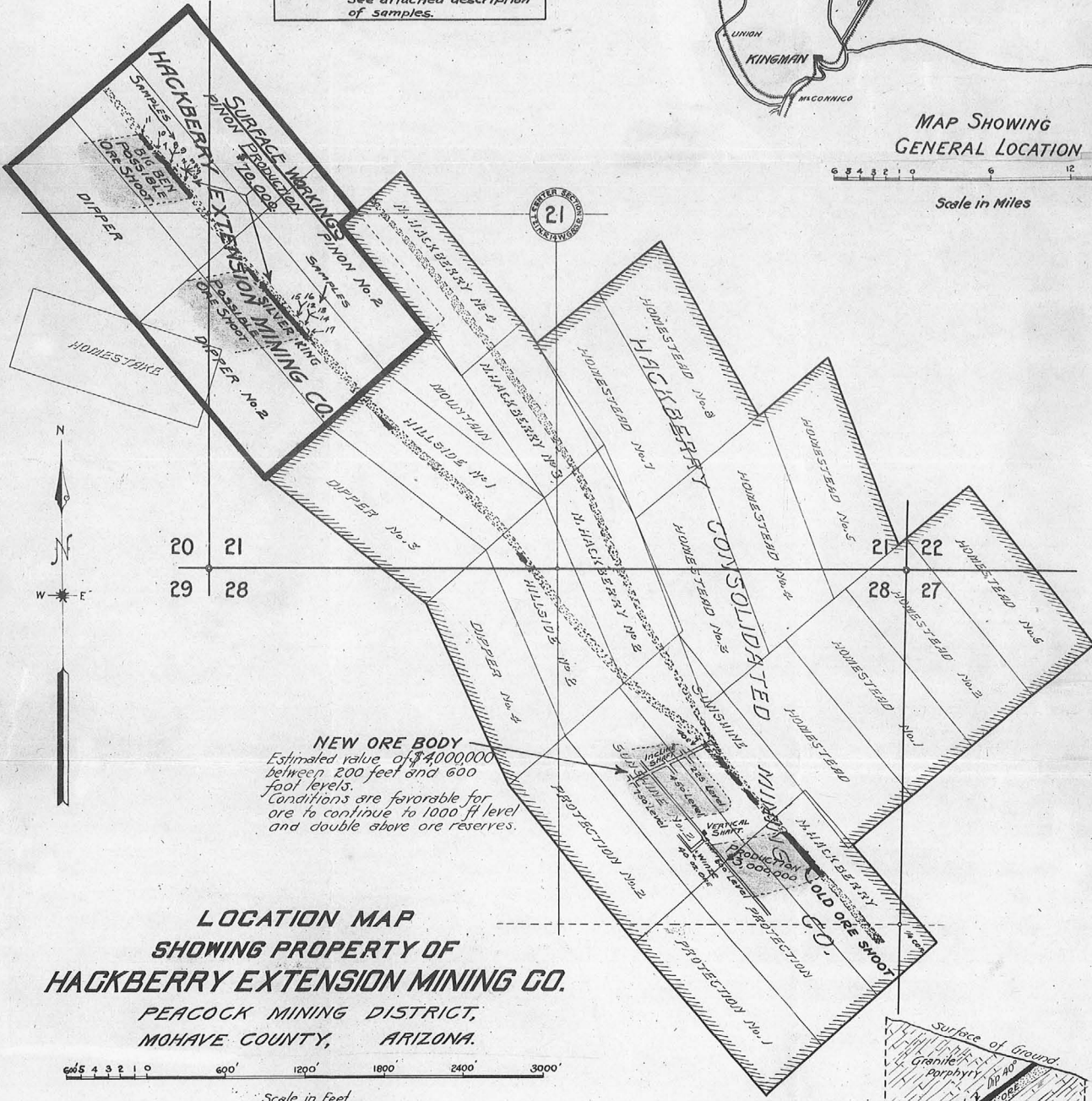
ASSAY LEGEND			
SILVER @ 100 PER OZ.			
SAMPLE No.	VALUE	SAMPLE No.	VALUE
1	\$83.40	10	\$31.20
2	5.40	11	6.56
3	115.96	12	5.80
4	48.60	13	44.60
5	32.70	14	64.56
6	4.48	15	118.40
7	17.04	16	20.20
8	87.56	17	58.60
9	48.86		

See attached description
of samples.



MAP SHOWING
GENERAL LOCATION

Scale in Miles



NEW ORE BODY
Estimated value of \$400,000
between 200 feet and 600
foot levels.
Conditions are favorable for
ore to continue to 1000 ft level
and double above ore reserves.

**LOCATION MAP
SHOWING PROPERTY OF
HACKBERRY EXTENSION MINING CO.**

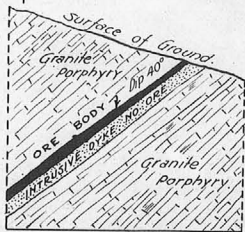
PEACOCK MINING DISTRICT,
MOHAVE COUNTY, ARIZONA.

Scale in feet

L. H. Foster,
U.S. Mineral Surveyor.

Geology by
A. L. Johns.

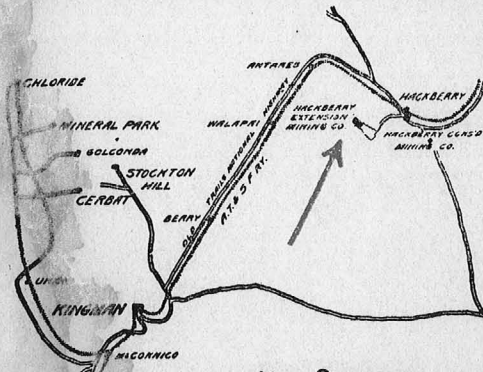
To accompany Report of
A. L. Johns.



CROSS-SECTION
OF
HACKBERRY VEIN

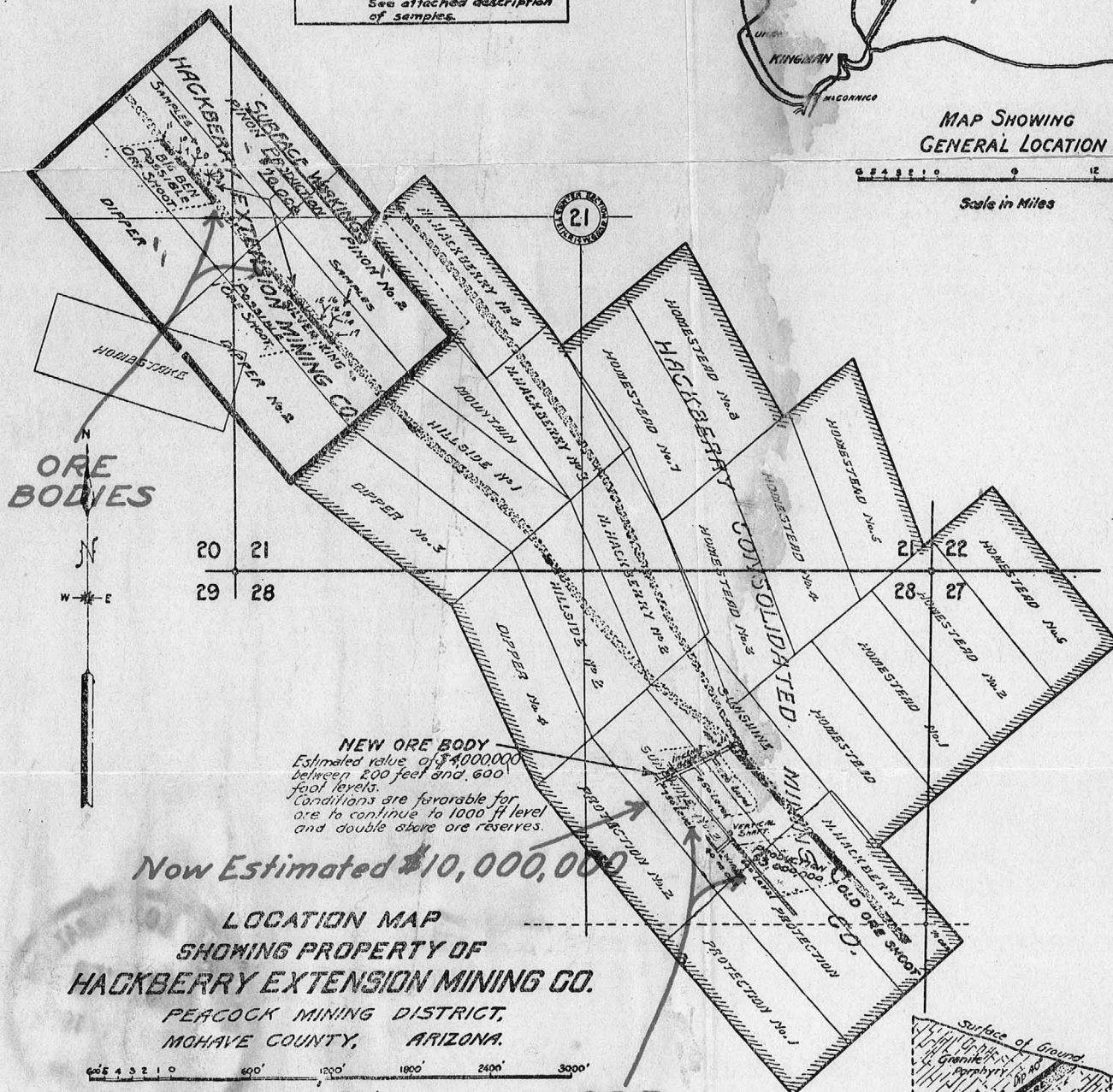
ASSAY LEGEND			
SILVER @ \$100 PER OZ.			
SAMPLE NO.	VALUE	SAMPLE NO.	VALUE
1	\$83.40	10	\$31.20
2	5.40	11	6.56
3	115.96	12	5.80
4	48.60	13	44.60
5	32.70	14	64.56
6	4.43	15	118.40
7	17.04	16	20.20
8	87.56	17	58.60
9	18.06		

See attached description of samples.



MAP SHOWING
GENERAL LOCATION

Scale in Miles



NEW ORE BODY
Estimated value of \$4,000,000
between 200 feet and 600
feet levels.
Conditions are favorable for
ore to continue to 1000 ft level
and double store ore reserves.

Now Estimated \$10,000,000

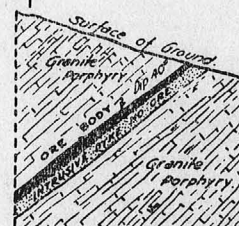
**LOCATION MAP
SHOWING PROPERTY OF
HACKBERRY EXTENSION MINING CO.**
PEACOCK MINING DISTRICT,
MOHAVE COUNTY, ARIZONA.

Scale in Feet

L. H. Foster,
U.S. Mineral Surveyor.

Geology by
A. L. Johns.

**ORE
BODIES**



**CROSS-SECTION
OF
HACKBERRY VEIN**

HACKBERRY EXTENSION MINING CO.

MOHAVE CO.

KP/WR 7/13/78 - Mr. ^{Nick} Mac Hughes, reported that he owns the Hackberry Silver Mine, Hackberry District, Mohave Co., He brought in specimens from the mine to be checked for uranium. Only a trace could be detected. 12/19/78 a. p.

HACKBERRY EXTENSION MINING CO.

MOHAVE COUNTY

RRB WR 7/20/84: Mark Nydam, 17 Wall Street, Madison, Ct. 06443 was in for information on the Sheep Trail Mine and the Hackberry Mine, both in Mohave County. His company, which remained unnamed, is considering acquiring these two properties.

Just R R
Molitor Co
Arizona

REPORT ON "HACKBERRY PROPERTY"

by
JAMES BREEN, M. E.

FROM
Wm. H. CRUTCHFIELD, Jr.'s.
A. B. CARPENTER FILES

January 23, 1918.

Mr. James Murray,
Butte, Montana.

for Estimates Gus Holmes

Gus Holmes, Salt Lake City
& James Murray, Butte
Principal miners at this
mine. WHEJ

Dear Sir:

In compliance with your request, I proceeded to the Hackberry Mine and spent Thursday, Friday and Saturday of last week inspecting same. Sunday was spent in Kingman going over plans for a concentrating plant prepared by Mr. Sherman. A list of material entering into this plant with prices will be found at the end of this report. Also a list of mine samples taken over a period from early April until the beginning of September, 1917. These samples were taken from day to day as the work progressed and form a fair average of the mine content in gold and silver. In addition to these samples there was shipped to the Selbey Smelting Works 377 tons and also to a concentrating works at Needles, Cal., 434 tons, the latter being passed through a wet concentrator; the results of these shipments are appended.

Your mine is developed to a depth of 700 ft. by a perpendicular shaft reaching the 600 foot level and an incline 100 ft. from that level to the 700. The 700 is opened by a drift 70 ft. north, at which point there is a good face of ore assays from this level, taken in the course of development, showing an average of 34.6 oz. silver and will average approximately 1.60 in gold. The 600 ft. level has been driven north a distance of 700 ft. from the bottom of the vertical shaft. Ore is visible practically all the way. There is a good showing of ore in the face and various upraises have been made, all of which show pay ore. An incline has been sunk from the surface in the hanging wall to the 600 ft. level, connecting with same about 525 ft. north of the perpendicular shaft. A drift south from this incline shaft 250 ft. from the surface shows a fine body of ore. Drillings made in the course of the sinking of this shaft show high assays, the average of 12 samples being 60.4 ounces. The average of 278 samples taken from the entire mine gives an average of 32.9 ounces.

There is ore showing in every opening in the mine that I inspected, except to the extreme end of the 600 ft. level south. The narrowest ore showing observed was one foot; the widest was 9 feet in G. Stope, and I was informed by the foreman that there was 3 or 4 feet of concentrating ore below the stulls on this floor. I think the average of the entire ore body will be from $3\frac{1}{2}$ to 4 ft. in thickness and I conservatively estimate the assay value of the ore as mined for milling purposes to be 20 oz. silver, .08 oz gold, $2\frac{1}{2}\%$ lead and $3\frac{1}{2}\%$ zinc.

Flotation tests made by Mr. Sherman would indicate that a saving of 85% of the silver, 90% of the gold, 90% of the lead and from 50% to 60% of the zinc can be recovered. The proper mill in good working order should give higher results than can be obtained in a test run, and I have no doubt that ultimately you will save 90% of the gold, silver and lead values and possibly 60% of the zinc as merchantable products.

It is to be noted that the above figures are based on the assumption that the concentrate will be sold at the current market price of \$1.00 per ton. If the concentrate is sold at a higher price, the saving in the cost of the concentrate will be proportionately increased. The above figures are based on the assumption that the concentrate will be sold at the current market price of \$1.00 per ton. If the concentrate is sold at a higher price, the saving in the cost of the concentrate will be proportionately increased.

Ag prices

NOTE: Ag did not go over 1919 price of \$1.12 until 1962 when it reached \$1.18

1917 0.824/03
1918 1.00/03
1919 1.12/03
1920 1.09/03
1921 1.00/03
1922 1.00/03
1923 \$0.82
1924 0.67
1925 0.674
1926 0.624
1927 0.587

treatment \$7.70, deducted from \$18.18, leaving a net profit of \$10.48 per ton.

The ore in your mine is not blocked out so that it can be measured with certainty and the claim put forth that it is actually in sight, but it is developed to such a point that a fairly close calculation can be made of the tonnage, and I have no hesitancy in saying that you have sufficient ore in the mine at this time to supply a 200 ton per day concentrating plant with ore for one year. $[200 \text{ tpd} \times 300 = 60,000 \text{ TONS}]$

The regularity of the ore body exposed above the 600 ft. level leaves little doubt that it will continue far below that level and this is partially proven by the vein showing on the 700 ft. level, and the permanency of the vein at the face of the 600 ft. level north about 700 ft. from the perpendicular shaft. The new incline shaft should be continued, in my opinion, to the 900 or 1000 ft. level and the 600 ft. north level should be extended 700 or 800 ft. beyond its present face to demonstrate the continuity of the vein to the north.

If this development work shows a continuation of the ore body, as I have no doubt it will, you will add 200% to the present tonnage and would give you sufficient ore to run a 200 ton mill for three years. $[180,000 \text{ tons}]$

I am strongly in favor of 200 tons per day as the initial mill unit. A plant of this size will cost probably \$15,000 more than a 100 ton plant would, but will cost no more to operate, and should further developments in the mine justify a larger plant, this unit can be doubled for probably 50% of the first cost. I estimate that a 200 ton mill grinding to 80 or 100 mesh with flotation, and with tables for separating the zinc concentrates, and proper de-watering appliances, as specified in the estimate attached hereto, will cost \$75,000. On account of scarcity of water in the mine, it will be necessary to de-water the tailings and pump the water back for further use.

The mine is now making about 15,000 gallons of water in 24 hours.

I am sending 200 pounds of your ore to San Francisco for flotation tests by the Minerals Separation Co., and will forward results to you.

Very truly yours,

(Signed) James Breen.

600 Ft. Level North

33.90 17.00
11.80 6.20
186.60 4.80
2.20 9.60
2.90 7.00
3.50 3.40
74.50 3.10
8.40 12.50
19.20 10.10

600 Ft. Level South

7.80
2.80
6.90
9.80
128.20
48.60
19.80
26.00
29.00

700 Ft. Level North

51.40
65.00
135.00
25.00
54.00
25.80
30.00
26.70
21.10
52.60

13.90 11.80
4.00 25.00
4.00 35.00
8.20 43.00
11.00 12.80
18.00 35.20
28.20 11.00
4.00 11.50
4.50 32.50

14.00 8.00
40.20 6.60
21.50 61.20
15.40 28.7

11.90 9.20
75.80 7.00
9.60 5.00
27.20 34.2
12.00 12.00

Incline Shaft

14.80	49.70	6.40	20.00		60.00
70.90	3.60	11.20	10.20		16.20
155.20	77.40	24.00	12.00		42.00
97.10	11.00	36.00	21.10		66.90
58.20	29.00	14.00	31.00		66.00
98.20	38.20	56.80	20.00		40.00
31.90	25.20	50.00	38.20		180.00
998.20	28.20	68.80	44.30		34.10
20.60	68.80	20.80	22.00		90.20
206.60	5.90	21.00	10.00		99.30
<u>10:851.70</u>	5.60	98.30	24.00		19.10
85.17	8.60	50.00	5.00		11.50
	5.00	54.00	8.00		12 : 725.30
	15.10	21.00	13 : 265.80		60.4
	13.40	90.20	20.4		
	8.80	21.10			
	11.50	30.90	G. Stope		
	86.40	39.00	20.00		
	5.80		22.20		
	13.90		16.80		
	11.20	<u>3905.60</u>	20.00		
	22.70	640.00	20.70		
	39.20	87:3265.60	34.90		
	17.10	37.50	42.30		
	37.70		40.90		
	67.10		37.20		
	9.70	C. Stope	39.70		
	3.40	11.90	34.20		
	9.80	13.60	52.20		
	28.00	4.00	48.20		
	18.80	60.00	25.10		
	3.10	38.00	33.80		
	47.10	30.10	31.60		
	5.60	21.10	14.10		
	27.50	7 : 178.70	40.40		
	6.50	25.5	80.90		
	34.80		32.80		
	12.60		53.20		
	30.20	D. Stope	19.00		
	30.20	34.80	120.00		
	40.10	19.50	24.00		
	38.50	43.50	33.60		
	13.00	47.70	13.90		
	10.00	49.90	28.60		
	16.00	41.50	23.00		
	28.00	20.00	19.60		
	50.00	45.80	18.00		
	51.00	40.80	48.00		
	90.20	22.70	13.20		
	142.10	17.00	36.20		
	80.40				

SHIPMENTS TO SELBEY SMELTING & LEAD CO., SAN FRANCISCO.

<u>Date</u>	<u>Weight</u>	<u>Ounces Silver per ton</u>	<u>Ounces Gold per ton</u>
	Lbs.		
1916			
Nov. 13	62,429	48.95	.05
" 16	51,302	49.66	.16
" 22	48,233	53.64	Tc
" 29	74,191	49.49	"
Dec. 5	60,133	51.36	.19
" 14	46,034	32.24	.06
" 23	46,837	47.43	.19
" 23	21,374	11.05	.05
" 23	21,047	30.17	Tc
1917			
Jan. 1	64,845	36.82	.13
" 9	53,084	15.16	Tc
" 11	72,288	31.21	.08
" 22	61,425	44.84	.11
" 24	71,169	40.94	.11
	2 <u>754,391</u>	14: <u>542.96</u>	10: <u>1.13</u>
	377,195	38.78	.113

SHIPMENTS TO NEEDLES CONCENTRATING WORKS -- JULY 16 to 20, 1917

<u>Tons</u>	<u>Oz Ag.</u>	<u>Oz. Au</u>	<u>% Pb.</u>	<u>% Zn.</u>
434.15	25.2	.081	2.99	3.34
	\$0.824/oz	\$20.67/oz		
<u>Concentrates Produced:</u>				
50.10	116.0	.389	18.64	25.37
<u>Tailings</u>				
384.54	12.96	.04	.80	.50

Ratio of concentration 8.67 tons ore to one ton concentrates.

Recovery percentage
in concentrates:

53.12%

55.50%

71.95%

87.64%

Incorporated Under the Laws of Arizona



Wackberry Extension Mining Company

SHARES 1,500,000

PAR VALUE 25C

THIS CERTIFICATE THAT

is the owner of

Shares of the Capital Stock of

Wackberry Extension Mining Company, fully paid and non-assessable,

Amounted to the number of the Shares of the Corporation by the holder hereof, and the same are in full payment of the purchase money of this Certificate, and are not subject to any lien or claim of any person.

In Witness Whereof, the Board of Directors has caused this Certificate to be signed by its duly authorized officers and to be sealed with the Seal of the Corporation.

President

Secretary

250 Shares

Each.

NOTICE: THE SIGNATURE OF THIS ASSIGNMENT
MUST CORRESPOND WITH THE NAME AS WRITTEN UPON THE
FACE OF THE CERTIFICATE, IN EVERY PARTICULAR, WITHOUT
ALLEGATION OR ENGAGEMENT OR ANY CHANGE WHATSOEVER.

For Value Received hereby sell, assign, and transfer
into
Shares of the Capital Stock represented by the within
Certificate, and do hereby irrevocably constitute and appoint
to transfer the said Stock on the books of the within named
Corporation, with full power of substitution in the premises.
Dated _____
In presence of _____

CERTIFICATE

FOR

SHARES

Capital Stock

Marberry Extension

Mining Company

ISSUED TO

D. N. FIELD

THE MARBERRY MINING COMPANY, INCORPORATED, MINNESOTA

FIRST JERSEY SECURITIES, INC.

50 BROADWAY

NEW YORK, N. Y. 10004

INFORMATION MEMORANDUM :

TELEPHONE
(212) 269-5500

NORTHERN ARIZONA GOLD AND SILVER
MILLING AND MINING CO.

Home Office: 713 West Spring St.
Kingman, Arizona

50,000,000 shares authorized
10,500,000 shares outstanding
6,000,000 (approx.) public

Trading Range: 50¢ to \$2.00

NASDAQ Symbol NAGM

Chief Executive Officer: Thomas Roberts

Mr. Roberts has been since 1979 the President and controlling stockholder of Northern Arizona Minerals, Inc. which owns the Hackberry Gold and Silver Mine, Kingman, Arizona. From 1978 to 1979, he was the owner-operator of the Sandia Steel Company, Albuquerque, New Mexico, a steel warehousing and fabricating plant. From 1976 to 1978, he was a designer with Kerr McGee Corp., Nuclear Division. Mr. Roberts holds a Bachelor of Science Degree in Electrical Engineering from the University of Wyoming and a Master's Degree in Business Management from the University of Northern Colorado.

Northern Arizona Gold and Silver Milling and Mining Co. was incorporated in October of 1979. The company went public in January 1981 at 50¢ a share. There are 10,500,000 shares outstanding.

The company is acquiring rights to previously productive gold and silver mining claims in and around Mohave County, Arizona. Improved mining processes and increased precious metal prices have created an exciting new opportunity for today's modern miner. Many properties that were abandoned when silver was 80¢ an ounce and gold was \$30 an ounce are very rich in ore and hold enormous profit potential even at today's relatively modest gold and silver prices.

Northern Arizona increased their stockholders equity and cash on hand by \$2.5 million as a result of their \$3 million public offering. The company is not spending their money on high rents,

MINES INCLUDED
HACKBERRY w/ SILVER KING, BIG BEN & SILVER DOLLAR
BURRO CREEK
GOLD BUG
ROSEBUD

Lode Mining Claim - a rectangular area, staked or located by persons according to federal law, from which metallic minerals may be extracted by the locator or claimholder.

Mineralized Material/Metal Bearing Material - rock containing gold, silver, copper, lead and/or other metals. If such rock contains sufficient quantities of metals to have a commercial value, it is known as ore.

Non-Ferrous - metals other than iron and its alloys in steel.

Ore Concentrate - the valuable mineral ^{CONCENTRATED} ~~extracted~~ from the host rock which has been subjected to one or more metallurgical processes to cause the ores to separate from the worthless host rock.

Patented Claim - a lode or placer mining claim for which the federal government has granted the claimholder fee, title or ownership.

Tailings - waste materials that remain from earlier milling processings which usually had no commercial value at the time of milling.

Unpatented Claim - a lode or placer mining claim for which the federal government has not granted the claimholder fee, title or ownership, but the claimholder has the rights to extract metal bearing materials and to do all work necessary to mine.

In a custom mill operation, metal bearing material is initially reduced to small particles by crushing and grinding. The next step requires that the valuable metallic minerals be extracted from the gangue, ^{MINERALS} ~~or waste rock~~. This is done by either a flotation or gravity process. The company proposes to employ a flotation process in its custom mill. In this process, organic compounds, known as xanthates, are added to the crushed ~~metal~~ material. The material is agitated in a ball mill and subsequently aerated in conditioning tanks. During these steps, the reagents adhere to valuable metallic particles. When transferred to a conditioning tank for aeration, the freed metallic particles cling to bubbles caused by the aeration. The bubbles, with particles attached, rise to the top of the conditioning tank and are skimmed into the launders and saved. The waste or gangue material sinks to the bottom of the conditioning tank and is pumped into a tailings or storage pond. Several stages of recycling and cleaning of the resultant material follow before a concentrate suitable for shipment to a smelter is produced.

At present the company owns working interests in four formerly active mines with approximately 182 patented and unpatented claims covering a total work area of over 3,500 acres.

HACKBERRY

The company presently owns a 1/3 working interest in the Hackberry Mine which includes the Silver King, Big Ben and Silver Dollar mines. This property includes 12 patented and 113 unpatented claims. Roberts estimates an average ore grade of 10 oz. silver per ton with high grade ore containing as much as 60 oz. per ton. In addition to the silver, conservative estimates point to approximately 7% combined lead and zinc per ton - that equals 140 lbs. per ton.

There are three known major ore veins covering six miles of structure. The reserves are 50,000 tons proven, 300,000 tons probable and 5,000,000 tons possible. Hauling, loading and extrusion costs will vary on the life of this property. The most accessible ore can be worked or heap leached for \$12 to \$15 per ton. Other ore may cost over \$100 a ton to mine, mill and extrude. Heap leaching feasibilities have already been commenced.

GOLD BUG

The company owns a 50% working interest in the Gold Bug mine. This is a 95 acre property. There are seven patented claims and the company is negotiating to acquire an additional 77 unpatented claims.

Conservative ore grade estimates at Gold Bug are: .4 oz/ton gold, 2 oz/ton silver, with high grade gold reaching 40 oz/ton. Reserves are 10,000 tons proven, 200,000 tons probable and well over 2,000,000 tons possible. One recent surface test bore yielded 5.7 oz. gold per ton. Next month the company will perform a 50 ton test.

BURRO CREEK

Burro Creek includes two patented and 30 unpatented claims on 650 acres. The company has a 75% working interest. Ore grade estimates are .07 oz. gold per ton; .75 oz. silver per ton; high grade gold 2 oz. per ton, silver 200 oz. per ton. Proven reserves are 100,000 tons possible. Most recent core samples showed .146 oz. of gold, 1 oz. of silver per ton. Extrusion costs at Burro Creek should be \$12 per ton.

Hackberry Extension Mining Co *Ex Libris #1*

REPORT

CN

SILVER KING GROUP

PEACOCK MINING DISTRICT.

HACKBERRY, MOHAVE COUNTY, ARIZONA.

BY

A. L. JOHNS

Prescott, Arizona,

May 27, 1918.

I N D E X.

DATA ON HACKBERRY MINE:

Location and History

Hackberry Ore Body

Geology

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SILVER KING GROUP:

Location and Extent

Early History

Geology

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Recommendations

Conclusion

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REPORT ON
SILVER KING GROUP,
PEACOCK MINING DISTRICT,
HACKBERRY, MOHAVE COUNTY, ARIZONA

The Silver King group adjoins the property of the Hackberry Consolidated Mining Company, which bids fair to develop into the largest silver mine in the Southwest. On account of the highly favorable developments of the Hackberry Mine during the past year, some data from a personal inspection of this property is given. For this the writer is indebted to Mr. William Neagle, Superintendent of the Hackberry Mine, who succeeded in getting the present owners to take over the property, and under whose direction the recent ore developments have been obtained.

DATA ON HACKBERRY MINE

Location and History:

The Hackberry Mine lies three miles west of Hackberry, Arizona, which is on the main line of the Santa Fe Railway, and about thirty miles northeast of Kingman, Arizona. It was originally discovered about 1879, and is reported to have produced about \$3,000,000. in high grade silver ore from one ore shoot which outcropped on surface and was mined down to a depth of 600 feet. This ore shoot had a length of some 500 feet, and usually ranged from two to four feet in width. The property was active between 1879 and 1884, after which it was closed down for some thirty years.

In recent years several strong mining companies have attempted to re-open the mine, but never got further than unwatering and doing some prospective work in and around the old caved stopes on the lower levels. In the

fall of 1916 the United Eastern crowd abandoned the property after doing considerable work south of the old shaft.

Hackberry Ore Body:

In January, 1917, James Murray, a wealthy mining man of Butte, Montana, and associates, took over the property and started driving north of the shaft on the 600 ft. level. After following a narrow seam of ore for some distance it widened out into an ore body varying from 5 ft. to 22 ft. in width, and has so far shown a length of about 600 feet on this level and extends to within 200 feet of the surface. Previous companies had refrained from prospecting this portion of the vein on account of poor outcrop conditions. Between the 200 feet and 600 ft. levels the ore tonnage is estimated at 150,000 tons, with gross value in excess of \$4,000,000. The average value is about 25 ounces in silver, \$2.00 in gold, and 8 per cent lead, which on \$1.00 silver and 5 cent lead market shows a value of \$35.00 per ton. In the narrower portions of the vein silver contents often rise to above 100 ounces silver per ton.

Recently in crosscutting the vein from the main incline shaft at depth of 750 feet the ore body proved to be 22 ft. wide, three feet in width of which is reported to assay around 100 ounces per ton, and the balance of 19 feet about 25 ounces. The character of the ore on the 600 ft. level and the more recent ~~developments on the 750 ft. level indicate that the~~ present ore body has an excellent chance to continue to 1,000 feet in depth, which would double the present ore reserves. Also development southward under the old ore body may add an equal amount of additional ore so as to increase the ore reserves to around \$10,000,000.00. This is mentioned as a reasonable possibility.

The Hackberry Company is now preparing to build a 200 ton flotation plant, which they expect to have in operation by fall. With this size mill treating 25 oz. ore they should earn in the neighborhood of \$1,000,000 net a year, which is quite exceptional for any silver property.

Geology:

The country rock in the Hackberry section is an old granite porphyry which, as is shown by the attached map, has been intruded by two principal, hard, silicious porphyritic dykes, with strike of N. 40° W., and dip of about 40° to the southwest. One of these dykes, with which the principal ore showings of the district are associated, extends from the Hackberry Mine northward through the Silver King Group, and beyond for several miles. The intrusion of this dyke evidently crushed and fractured the softer adjoining country rock and made conditions favorable for ore deposition in the crushed zones. A good illustration is shown on the 600 ft. level where the hard dyke forms the foot wall of the ore body, and the hanging wall is soft, crushed, granite porphyry. (See cross section of the Hackberry Vein on attached map.) Because of this crushed and highly fractured zone in which the ore bodies formed alongside the dyke, there is less danger of the ore bodies pinching out from tight country rock conditions. The dyke itself is unmineralized except where the mineralizing solutions which formed the ore bodies penetrated into the dyke along narrow fracture seams.

A number of mines, in and around the Kingman-Chloride section produced high grade silver-gold ores near surface from tight fissure veins in granite. On reaching water level at around 100 feet to 200 feet in depth, these

ore bodies often pinch out or change to very low grade primary ores, carrying small amounts of copper and iron sulphides.

A notable exception to this is the Tennessee Mine at Chloride, which under operation by the U. S. Smelting and Refining Company has reached a depth of 1600 feet. This property is principally a lead producer though their ores carry good values in silver also.

The Hackberry ore occurs mainly as silver sulphide (Argentite) in a quartz gangue associated with some six to eight per cent lead sulphide. When lead contents increase the silver values usually increase correspondingly, consequently the association of the silver values with lead in the Hackberry ores is considered a good indication that the ore bodies will continue much deeper than the present workings at 750 feet. Also the present development work has disclosed a much better understanding of the occurrence of the ore bodies alongside the intrusive dyke.

It is very probable that prospecting along the dyke, where favorable outcrop conditions exist, will disclose new ore bodies, or other ore bodies, which do not show any surface indication of their existence, may be discovered by a thorough prospecting along the dyke. In the opinion of the writer, the Hackberry Mine has the large general conditions to develop into one of the really large silver mines of the country.

The Hackberry Company is a close corporation which has carried on its work with very little publicity, consequently the public has heard very little about it so far. However, a mine of this magnitude will lead to considerable new mining activity in that section, and may create quite a mining boom during the next year.

SILVER KING GROUP

(Now the property of the
Hackberry Extension Mining
Company)

LOCATION AND EXTENT:

The Silver King Group comprises the Silver King, Big Ben, Pinon, Pinon No.2, Dipper and Dipper No.2, unpatented lode mining claims, covering an area of about 120 acres, in Peacock Mining District, Mohave County, Arizona.

The property is three miles west of Hackberry, a station on the Santa Fe Railway, about thirty miles northeast of Kingman, Arizona. A serviceable wagon road extends from Hackberry to the property.

The group joins the Hackberry Consolidated ground and covers 3,000 feet in length of the north continuation of the porphyry dyke which forms the Hackberry ore bodies. The Hackberry ore bodies lie along this dyke about 3,500 feet southeastward. (See attached map.)

EARLY HISTORY:

The property was discovered about 1879 at the time of the Hackberry discovery, and was worked until 1884 by chloriders who prospected and hunted along the outcrop for rich surface ore. The methods of mining were crude and expensive and in most cases the work did not exceed 50 feet in depth, which is about the limit of windlass work. These old timers mined only the high grade ores around 200 ounces silver or better, and packed it on burros over to the Hackberry Mill for

treatment. This mill was a small five stamp pan amalgamation mill. According to Mr. Ridenour, who is an old timer in that section and was in charge of the Hackberry Mill at the time, the production from the

Silver King and Big Ben Claims was about \$70,000.00 of 200 ounce ore. About \$30,000.00 of this was mined from surface stops along a length of about 400 feet near the center of the Silver King Claim. The other \$40,000.00 was produced from similar shallow surface workings along a length of about 500 feet on the Big Ben Claim about 1200 feet distant. These two places present very favorable outcrop showings for ore bodies below. (See Map) In places along the vein between these two workings, some small favorable ore showings exist.

Along in the 90's Mr. Ridenour states that he cleaned out an old 60 ft. shaft near the south end of the workings on the Silver King Claim, and by sinking the shaft 20 feet deeper he took out one car of ore which shipped 196 ounces silver per ton. Directly after this the shaft which is in a gulch and made considerable water, caved in. About 1907, two prospectors sank a new shaft 100 feet deep near by and it is reported that they opened up 60 ounce ore, four feet wide along a length of 40 feet. The 60 ounce ore at that time, on fifty cent silver, was too low grade to ship, and they were trying to reach the 196 oz. ore reported left around the old shaft. This shaft, which was also in the gulch, was lost by similar shift ground and caving. However, the ore now on the dump bears out their statements of encountering 60 oz. ore.

The general conditions of the property now existing seem to confirm the above statements of the early production and ore values.

GEOLOGY:

General geological conditions are similar to those of the Hackberry Mine, namely an old granite porphyry country rock intruded by the silicious porphyry dyke, which extends through the Hackberry Mine northward,

traversing 3,000 feet along the length of the Silver King and Big Ben claims of this property, and beyond for several miles. As at the Hackberry Mines the ore bodies are formed in quartz veins lying between the softened country rock and the hard intrusive dyke which strikes North 40° W. and dips about 45° southwest. Usually the ore bodies follow the hanging wall of the dyke, but on the Silver King Claim the old ore bodies were mined both along the foot wall and hanging wall of the dyke for a length of about 400 feet. The dyke at this point is about 70 feet wide.

The surface ores are all oxidized, being mainly silver chloride and horn silver in a quartz gangue. The old timers mined principally this class of ore on account of easy treatment by amalgamation. The ores change to sulphides, associated with lead on reaching water level at around 50 feet in depth, and were difficult to treat by the old amalgamation methods. Also, encountering water at about 50 feet prevented deeper work by windlass. This work of the old timers was without any machinery equipment and was before the advent of the Santa Fe Railway.

The ore lenses near surface vary from 2 ft. to 4 ft. in width. Similar surface conditions obtain on the Hackberry, but at depth the ore bodies reach a width of 22 feet. The Silver King Vein shows a strong condition along its entire length with about two feet of gouge on the hanging wall. This is a favorable indication that the vein will continue downward.

SAMPLING:

The old surface workings are now largely caved and inaccessible for sampling. However, a very good idea of ore conditions was obtained by sampling pillars and walls around the surface workings, and ore left on

dumps. The two old shafts 80 ft. and 100 ft. deep on the Silver King Claim are filled with water to within 35 feet of surface, and caved below.

<u>Sample No.</u>		<u>Silver \$1.00 per ounce</u>
1	Quartz on foot wall of stope at center of Big Ben Claim	\$ 83.40
2	Talc on Hanging wall at #1 18" wide	5.40
3	Re-check of sample #1	115.96
4	Footwall above Sample #3	48.60
5	" " " #4	32.70
6	Red Material on outcrop 2 ft. under footwall at Sample #5	4.48
7	25 ft. South Sample #1 - Footwall of stope down 50 ft. Quartz 12" wide	17.04
8	Near #7 - footwall quartz 6" wide	87.56
9	100 ft. North, Sample #1 18" wide	48.86
10	30 ft. North Sample #9 - 6" wide	31.20
11	200 ft. " " #10 - 18" wide	6.56
12	Gouge Material on dump at Silver King Shaft. No quartz	5.80
13	Quartz ore on dump at Silver King Shaft - Sulphides	44.60
14	Re-check of sample #13	64.56
15	Lead sulphide ore at Silver King Shaft	118.40
16	Mill ore at #15	20.20
17	100 ft. south Silver King Shaft General Sample ore on dump	58.60

The above samples give a good idea of the ore left in pillars and on walls of the old workings, and represent the ore left by the old timers after cleaning out the high grade ore. Samples Nos. 13, 14, and 15 are sulphide samples from the dump of the Silver King shaft. These sulphide ores are associated with lead and represent probable ore values in the sulphide zone. The character of the ore is identical with that of the sulphide

ores in the Hackberry Mine - principally the association with lead. The fact that good silver values extend into the sulphide zone, as shown by the above samples is an excellent indication that there will be no sudden impoverishment of values in depth. The strong occurrence of the vein is another very favorable feature.

RECOMMENDATIONS:

RECOMMENDATIONS:

In the opinion of the writer, the old surface workings on the Silver King and Big Ben Claims represent the outcrops of two ore bodies which probably extend downward into the sulphide zone. (Marked possible ore bodies on Map). To determine these conditions well into the sulphide zone I recommend sinking an incline shaft on the vein near the center of the outcrop on the Silver King Claim to depth of about 300 feet, then lateral development along the length of the vein. The cost of this work, including the necessary mine plant and equipment, is estimated at \$20,000.00. However, it is possible that sufficient shipping ore above 30 ounces silver will be mined during course of this development to repay part or all the above outlay. Freight and treatment charges to San Francisco are about \$15.00 per ton.

The lower grade ores would have to await erection of a mill on the property. Tests on the Hackberry ores have shown excellent extraction by oil flotation methods. On basis of a 50 ton plant, all ores above 10 ozs. silver could be mined and milled at a profit.

CONCLUSION:

I have kept in close touch with developments at the Hackberry Mine during the past year. From comparison of conditions I consider the development of the Silver King Group as a highly attractive mining venture with reasonable possibilities of developing into a mine of similar magnitude to the Hackberry.

Respectfully submitted,

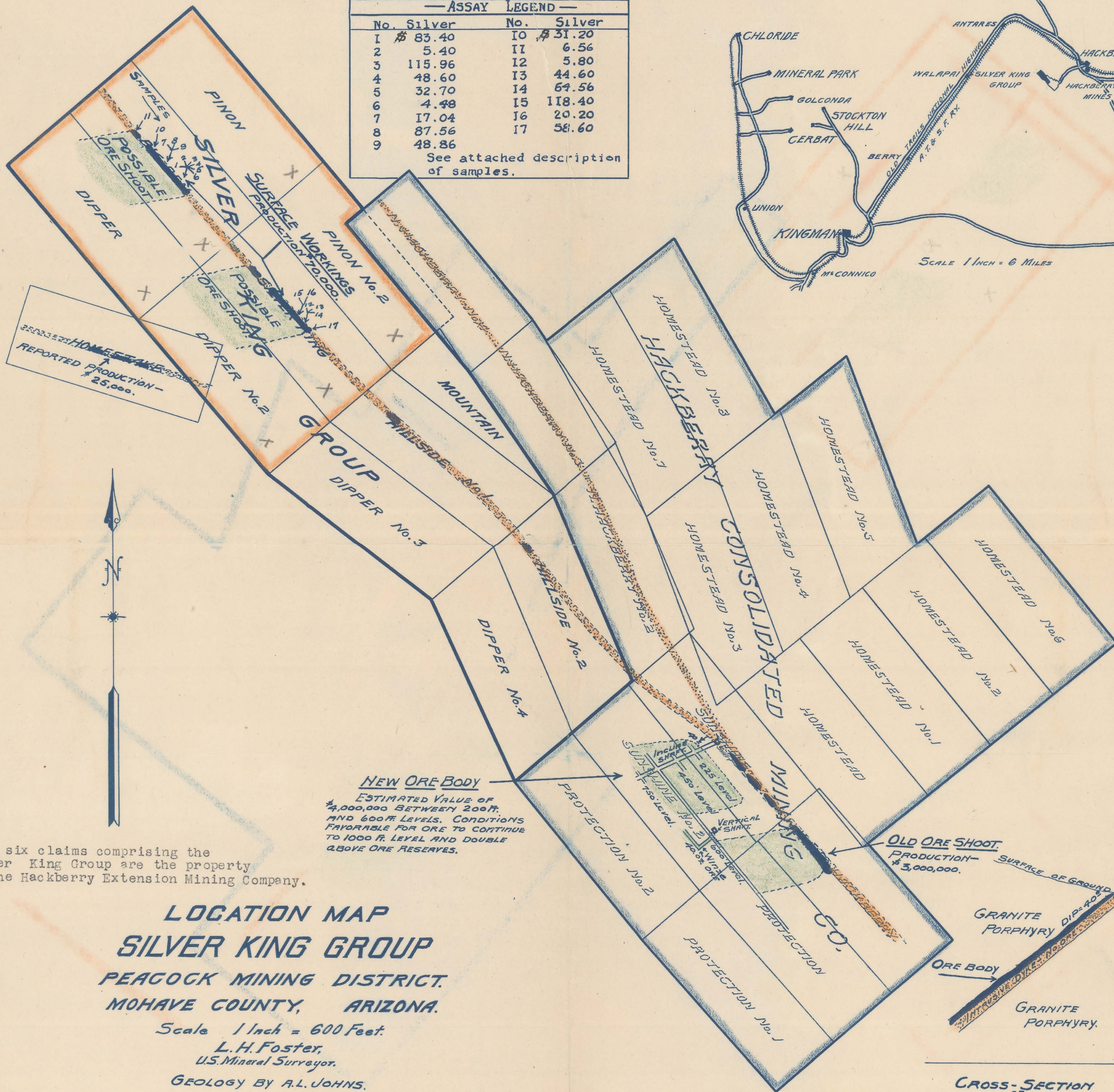
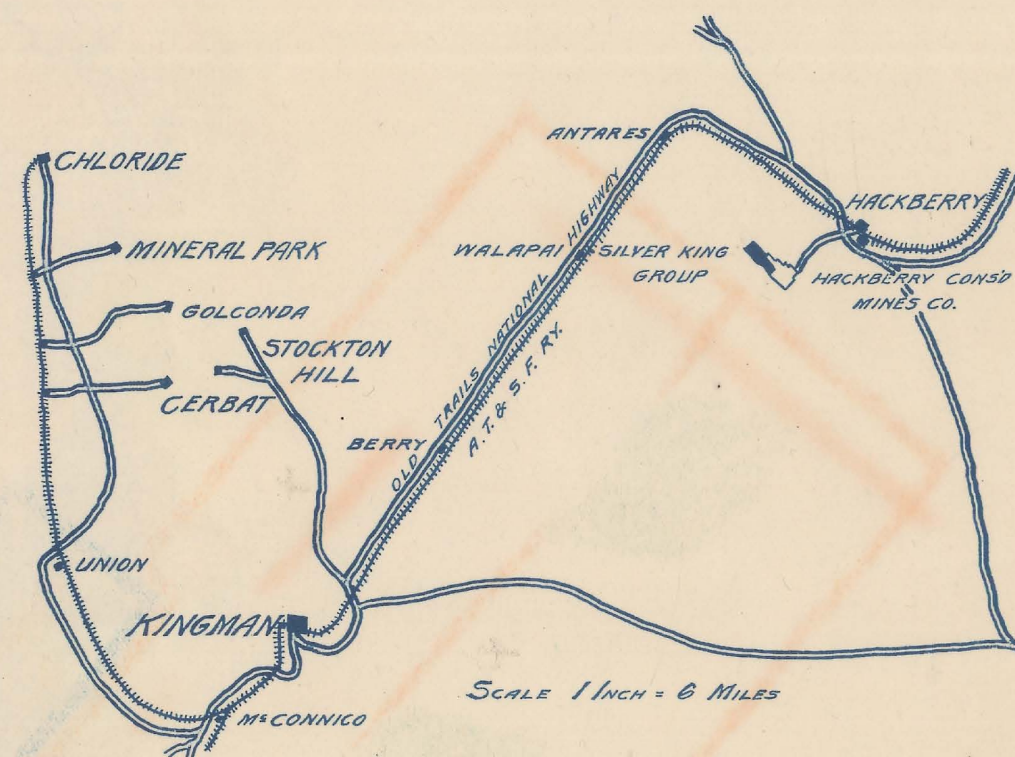
A. L. Jones
Mining Engineer.

Prescott, Arizona,

May 27, 1918.

— ASSAY LEGEND —			
No.	Silver	No.	Silver
1	\$ 83.40	10	\$ 31.20
2	5.40	11	6.56
3	115.96	12	5.80
4	48.60	13	44.60
5	32.70	14	64.56
6	4.48	15	118.40
7	17.04	16	20.20
8	87.56	17	58.60
9	48.86		

See attached description of samples.



The six claims comprising the Silver King Group are the property of the Hackberry Extension Mining Company.

LOCATION MAP SILVER KING GROUP PEACOCK MINING DISTRICT, MOHAVE COUNTY, ARIZONA.

Scale 1 Inch = 600 Feet.

L. H. Foster,
U.S. Mineral Surveyor.

GEOLOGY BY A. L. JOHNS.

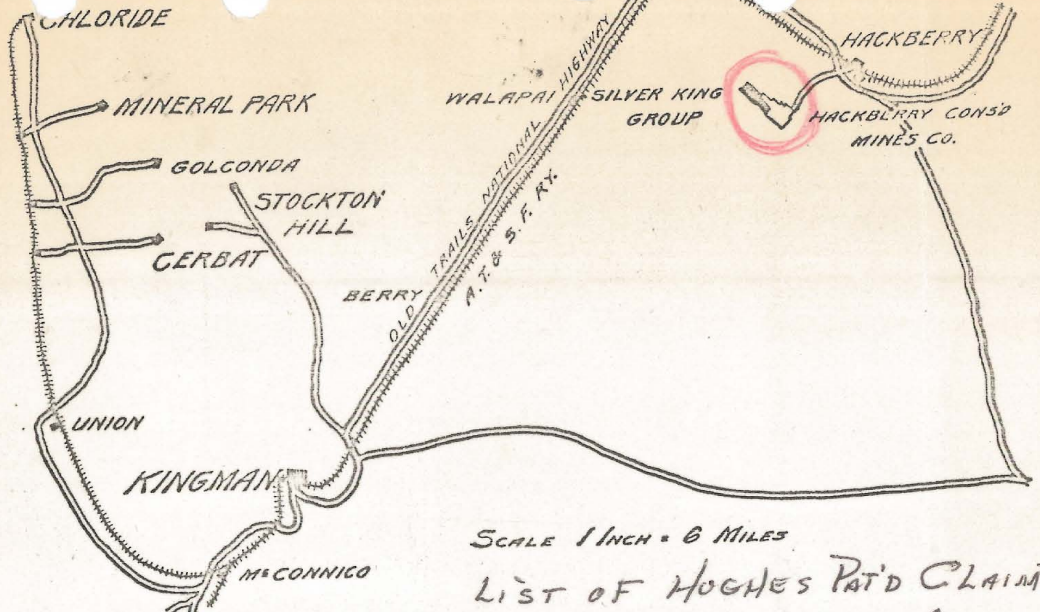
TO ACCOMPANY REPORT
OF A. L. JOHNS.

**CROSS-SECTION
HACKBERRY VEIN**

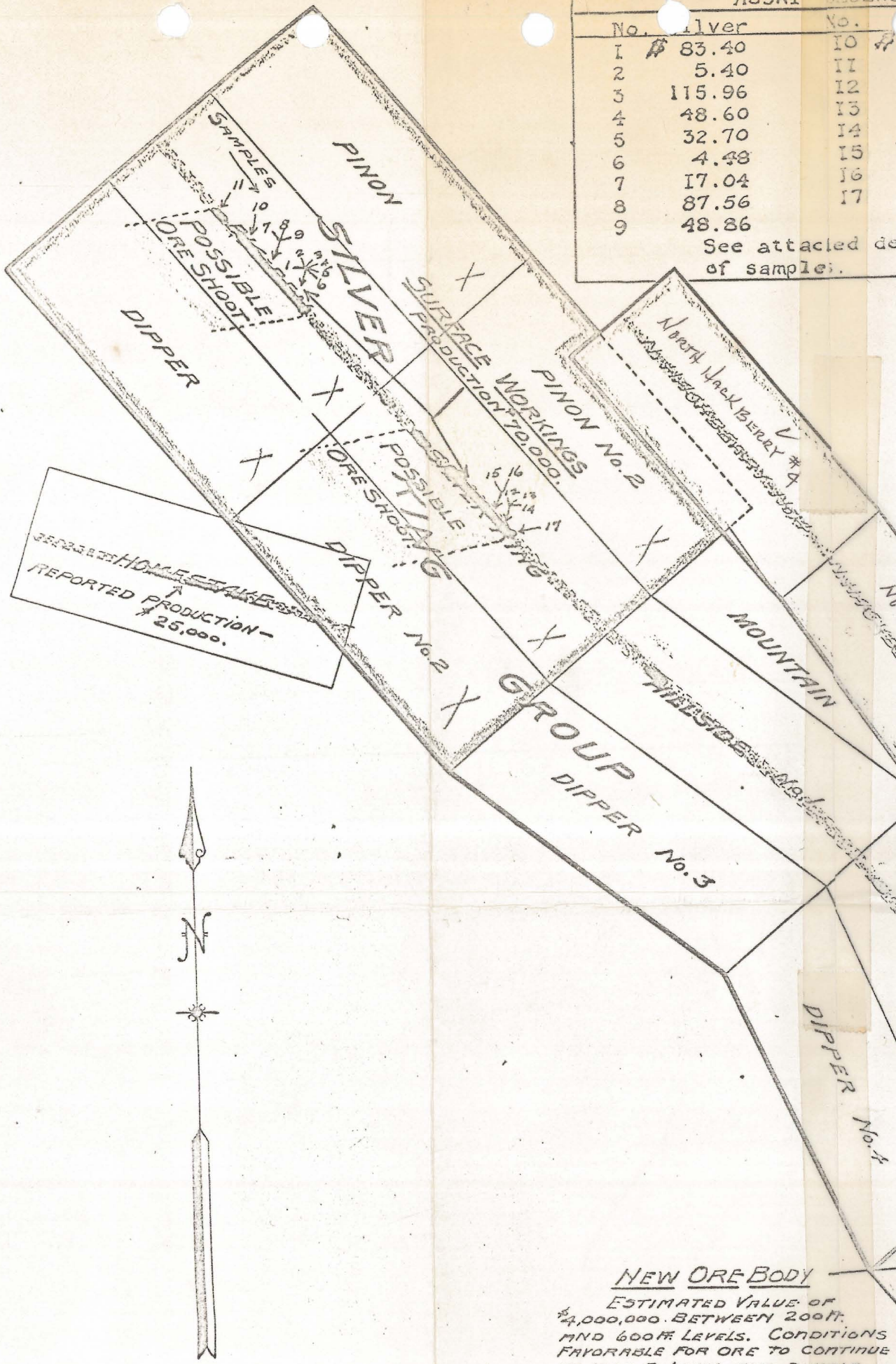
Hackberry Extension Mining Co. (file)

— ASSAY LEGEND —			
No.	Silver	No.	Silver
1	83.40	10	51.20
2	5.40	11	6.56
3	115.96	12	5.80
4	48.60	13	44.60
5	32.70	14	54.56
6	4.48	15	118.40
7	17.04	16	20.20
8	87.56	17	58.60
9	48.86		

See attached description of samples.



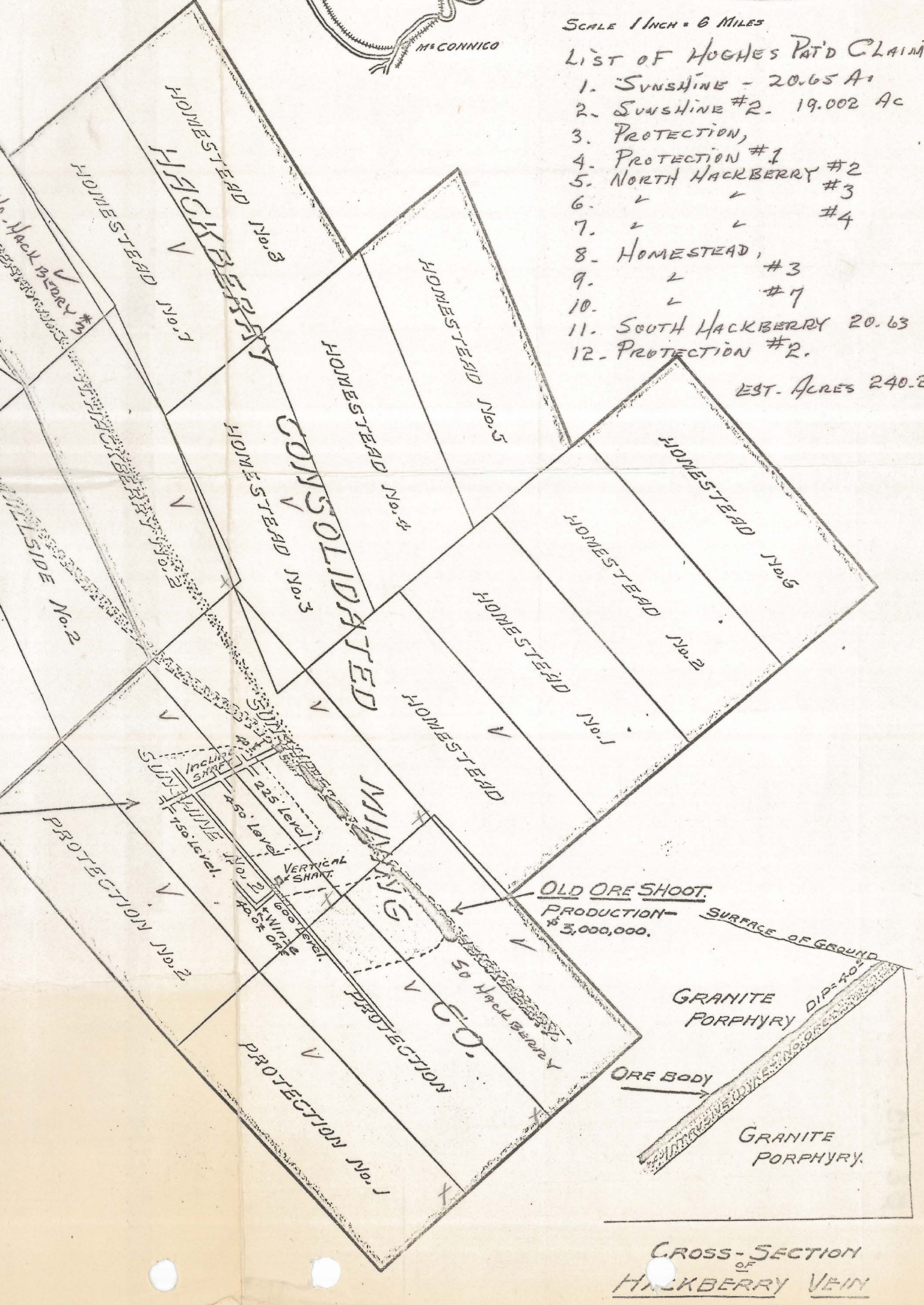
- SCALE 1 INCH = 6 MILES
- LIST OF HUGHES PAT'D CLAIMS**
1. SUNSHINE - 20.65 A.
 2. SUNSHINE #2. 19.002 AC
 3. PROTECTION,
 4. PROTECTION #1
 5. NORTH HACKBERRY #2
 6. " " #3
 7. " " #4
 8. HOMESTEAD, #3
 9. " " #7
 10. " " #1
 11. SOUTH HACKBERRY 20.63
 12. PROTECTION #2.
- EST. ACRES 240.28



NEW ORE BODY
ESTIMATED VALUE OF \$4,000,000. BETWEEN 200 FT. AND 600 FT. LEVELS. CONDITIONS FAVORABLE FOR ORE TO CONTINUE TO 1000 FT. LEVEL AND DOUBLE ABOVE ORE RESERVES.

The six claims comprising the Silver King Group are the property of the Hackberry Extension Mining Company.

LOCATION MAP
SILVER KING GROUP
PEACOCK MINING DISTRICT.
MOHAVE COUNTY, ARIZONA.
Scale 1 Inch = 600 Feet.
L.H. Foster,
U.S. Mineral Surveyor.
GEOLOGY BY A.L. JOHNS.



CROSS-SECTION
HACKBERRY VEIN