

24

Report of notes  
on Bullard Mine

DISTRICT: Congress Junction  
 NAME: Bullard Mine  
 LOCATION: 30 miles west of Congress Junction. Nine miles by very good desert road north of Aguila.  
 CLAIMS: 28. 10 patented.  
 OWNERS: J. C. Bullard, Congress Junction, Ariz. property recently sold to W. T. Abbott and Bryan. Address Aguila, Ariz.  
 ELEVATION: 2250 Feet.  
 DATE VISITED: September 29th and 30th, 1919. *by Dr. V. de Camp*

NOTES:

GEOLOGY

An andesite breccia overlaid by a later andesite. Fissure of movement filled by quartz and calcite with subsequent mineralization. Minerals consist of carbonates, silicates, copper glance and bornite. Probably all of secondary origin, altho the bornite may be primary. Some primary chalcopryite.

ORE EXPOSURES: The fissure lies in a hill at an angle of about ten to thirty five degrees and is in this position probably due to block faulting. Erosion has exposed the ore around the perimeter of this hill with the exception of one corner where the vein dips under the wash. Shaft on vein shows ore pinching out at water level.

Vein varies in thickness from one to eight feet and if faulted at numerous points altho not sufficiently to interfere withmining operations to any great extent. The lower side of the hill is of sufficient elevation that nearly all ore can be extracted by gravity and mining costs should be low, since no timbering is required.

DEVELOPMENT

Consists of numerous shallow inclines and raises. Area of ore exposed roughly three hundred by twelve hundred feet and thickness will average three to four feet.

Property shows other veins of similar character at various points but where development has reached the natural drainage level, both on the large ore exposure as well as on other veins mentioned, the mineralization ceases completely, indicating that depth would be shallow in most cases and that the estimated tonnage of 80,000 tons would be augmented but slightly by deeper work on outside stringers.

TONNAGE

Estimated that there is 80,000 tons of ore developed carrying four percent copper and four dollars in gold which estimate I consider conservative. Bullard claims \$8 in gold. Six samples were taken from cuts and raises while two were taken from stock piles of ore located in the vicinity of an old smelter which was operated in early days.

Bullard Mine (Cont'd)

Volatilization tests show a high extraction as indicated by results listed below.

ASSAY VALUES

Samples 3 to 8 inclusive.  
Dump samples 1 to 2 inclusive.

(See page following)

COSTS:

Mining	\$	1.75	
Haul		1.75	
Freight		3.12	To Hayden
Treatment		5.00	
Total	\$	11.62	

Property recently bonded to Abbott and Bryan of Aguila for sume of \$755,000.00. Nothing down, fifty thousand in six months, one hundred thousand in one year, two hundred fifty thousand in eighteen months and balance in two years. Royalty of twenty-five percent of net smelter returns to apply on purchase price. Agreement that work is to start in ten days and that thirty tons of ore per day is to be shipped after the first sixty days.

CONCLUSION

Property valuable and an ideal ore for volatilization. Price entirely too high, but believe present operators will ship sufficient ore to meet first payment and that they will make principal shipments after first and before second payment, and in this way they should net a considerable sum dependent on the amount of equipment installed which I do not think will be great.

Present operators have agreed to withhold a long term contract until hearing from the C.A.S.Co., and have also agreed to ship one car of ore for volatilization tests from stock pile represented by sample Number 2.

ASSAY VALUES ON BULLARD MINE

<u>No.</u>	<u>Location</u>	<u>Width</u>	<u>Gold Oz.</u>	<u>Silver Oz.</u>	<u>Copper %</u>
1	Bat Tunnel, basic ore, 50 ton pile at old smelter	-	.10	.10	2.34
2	At old smelter, 30 tons siliceous ore	-	.04	.75	5.53
3	Bottom 100' incline, main reef, first hole north of blacksmith shop	30"	.03	.55	4.39
4	Second incline north of blacksmith shop, top	30"	.08	.50	2.21
5	Tunnel near top of hill north of Blacksmith shop	48"	.28	.90	4.20
6	Shallow incline top of hill	36"	.07	.85	5.65
7	Cut S. side hill, 100' N. trestle	60"	.05	.55	1.70
8	Tunnel east of trestle, S. Side of hill	72"	.03	.55	2.57

7 Assays would indicate an ore carrying about 3.7% Cu. and  
\$2.50 in gold, as mined.

*Boyer*

ADDITIONS TO REPORTS

ON

BULLARD MINE

Recent option held by Abbott and Bryan forfeited after they had installed two small compressors; built a mile of road and shipping seven cars of ore.

Property now consists of 28 patented claims and 12 unpatented claims. Present price \$800,000 - Ten Percent cash and balance in 2 years.

Average of ore shipped as follows:

	An	Ag	Cu	Fe	Ins.
7 Cars -	.27 oz.	.66 oz.	4.21	7%	74%



Map of  
THE BULLARD MINES

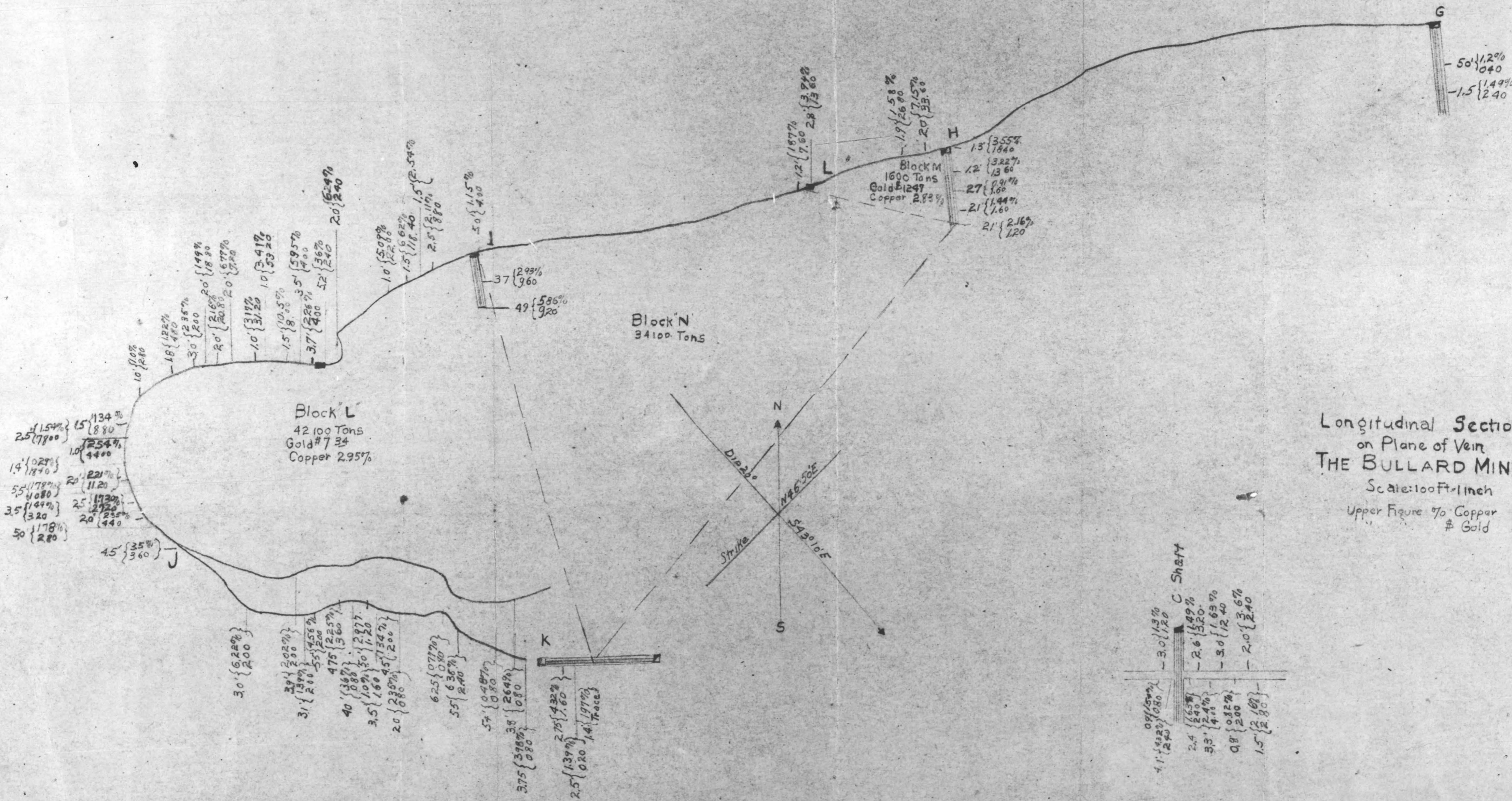
Yavapai County Arizona

By John Bullard and E.W. Durfee, E.M.

Scale 1" = 1200'

A. 2. 34

F 20 { 288% }  
 20 { 240 }



Longitudinal Section  
 on Plane of Vein  
**THE BULLARD MINES**  
 Scale: 100ft = 1inch  
 Upper Figure % Copper  
 # Gold

Bill Ex B.

Large map

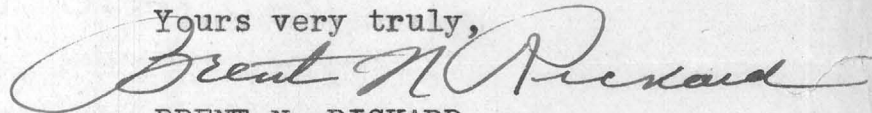
Mr. George M. Colvocoresses  
Page 2

October 10, 1939

I do not have a record of how much tonnage the present lessees have shipped to Hayden, but certainly not more than 2,000 or 3,000 tons have been taken from the mine since the Kruttschnitt-Stockder examination of August 1913.

I will advise you as soon as I receive any report in regard to this matter.

Yours very truly,

A handwritten signature in cursive script, reading "Brent N. Rickard". The signature is written in dark ink and is positioned above the printed name.

BRENT N. RICKARD



*Coffin*

October 18th, 1939

Notes re BULLARD MINE

Shipments and Smelter Contract and General Policy.

(a) Truck haulage to Railroad.

The present rate of \$1.00 per ton seems favorable when the truckmen have to load the trucks with ore hand-shovelled from a dump but when,--as is now the case at the C. tunnel,-- the trucks can be loaded from a chute or bin I think that a reduction of some 25¢ per ton would be in order and suggest that this be requested.

(b) Railway Freight.

The rate from Aguila to Hayden is fairly well in line with other rates for hauls of similar distances, but in view of the probability that a substantial tonnage will move at regular intervals some reduction may be secured and I think that you have done wisely to apply for same. Since this must be a joint rate of Santa Fe and Southern Pacific Railroads some little delay may be experienced in getting any action.

Under similar conditions I have found that the railroads are much more favorably disposed to grant such a request if the shipper will agree to raise the minimum weight of a carload to 40 or better yet to 50 tons and I believe that you should have a very good chance of securing a 25% reduction from present rates if the minimum carload were fixed at 50 tons (100,000#).

Except for the fact that this will delay the receipt of settlements to some extent it is a real advantage to the shipper and smelter as well as the railroads, for it means fewer lots to be sampled and perhaps umpired.

A freight saving of 60¢ per ton on ore valued at from \$10.00 to \$15.00 would mean a substantial reduction in your costs.

(c) Smelter Contract.

Now that the treatment charge has been reduced from \$2.50 to \$1.50 per ton you really have an exceptionally good contract and one of the best of which I have any knowledge. I do not believe that any further reduction in this toll charge can be expected or should be requested.

The payment for all gold contained is made at the rate of \$32.31825 per oz., which is equivalent to 92.338% of the government price of \$35.00 per oz. This is a usual arrangement but in some cases the smelters will pay to their regular shippers as much as 93% of the government price, i. e. \$32.55 per ounce.

On the average grade of your shipping ore this would only mean a gain of 10 to 12¢ per ton and therefore I suggest that any request for such a change should be deferred until later when you may perhaps be in a position to guarantee the smelter 500 tons or more per month.

The payment for silver provides for a deduction of 0.5 oz. from the assay and payment for 90% of the balance at government price now 71.1 ¢ per oz. Since most of your shipments carry less than 0.5 oz. of silver you have been getting very little payment for this metal.

Actually a smelter recovers<sup>s</sup> or should recover over 90% of all of the silver in the furnace charge, but it is always customary to make a minimum deduction which represents a part of the legitimate profit of the smelter. For steady shippers the minimum deduction should not be over 0.3 oz. and if this change could be made you would gain from 5 to 12¢ per ton. This concession might also be left for future discussion.

In paying for copper the smelter deducts 0.4% (8¢ per ton) and pays for 95% of the balance at the E. and M.J. Quotation, less 2.5725 per lb. The deduction from the market price represents the charge for converting, freight, and refining on the copper bullion.

Some years ago this deduction was usually only 2.5¢ but I presume that present conditions may justify the slightly higher figure.

The slag loss figured at 8¢ is fair, but I think that 100% instead of 95% of the balance of the copper should be paid for. On ore carrying 2% copper/<sup>this</sup>would mean a gain of some 15¢ per ton while on 5% ore the gain would be nearly 50¢ per ton and close to \$1.00 on 10% ore. Inasmuch as you will probably ship quite a lot of ore that will carry 3% copper or better this change might prove to be quite important and a concession in this regard should be requested either now or at a later date as may seem expedient.

To sum up- it seems to me that the possible and reasonably expected reductions on shipping and marketing charges are as follows:

PER TON OF ORE			
	Present charge	Reduced Charge	Gain to Shipper
Freight to Railroad	\$1.00	\$0.75	\$0.25
R. R. freight to smelter (on average grade ore)	2.40	1.80	0.60
Smelter toll charge	1.50	1.50	0.00
Deduction on payment for gold (0.40 oz. ore assumed)	1.07	0.98	0.09
Deduction on payment for silver 0.5 oz. ore assumed	0.35	0.23	0.12
Deduction on payment for copper excluding slag loss, 3.00% ore assumed, (5% of excess over 8¢)	0.26	0.00	0.26
TOTAL	8.58	5.26	3.32

On monthly shipments of 500 tons the total saving listed above would thus amount to over \$650.00, which is well worth working for and for comparison with previous costs one should add another \$500 to represent the reduction in smelter toll charge which you have already obtained.

I can see no reasonable expectation of further economy in shipping and marketing charges until you can erect and operate your own concentrator and even then it will probably pay to ship the higher grade ore,--with gross value of say over \$20.00 per ton--crude to the smelter.

In connection with all the above I think it well to mention that the Engineering and Mining Journal in accordance with which you are paid nearly always quotes the price of copper at from 1/4 to 1/2 cent below the price which is given in the daily papers and these last quotations are apt to be very misleading. Of course each one of your settlement sheets should be carefully checked against the contract for mistakes are sometimes made even in the best regulated offices and shippers should protect themselves by attention to all of these details including the payments of freight rate and royalty and in so far as possible by checking the moisture determinations on their shipments where there is a special chance for loss. A personal visit to the smelter is often well worth while.

#### Mining.

There are certain economies in your mining practice which suggest themselves to any experienced person visiting your property but most of these can only be accomplished after you have gone to some preliminary <sup>development</sup> expense and installed additional equipment. Until I have had an opportunity to make further studies in this matter I prefer not to attempt any detailed comment on the mining except

-5-

to say that I think it is of paramount importance not to break any ore until the same has been sampled and the assays made available to your Mine Superintendent so that he can judge for himself whether this particular ore will pay to mine and ship. Considering the present treatment and transportation charges and assuming a mining cost of \$4.00 per ton, the total cost<sup>s</sup>, deductions and charges including royalty to owner, overhead and taxes, haulage and freight on moisture, slag loss, etc., as well as those charges listed above must amount to very nearly \$14.00 per ton with ore assaying 0.4 oz. gold, 0.5 oz. silver, and 3.00% copper.

Therefore it is poor business practice to break and ship any ore which has a gross value of less than \$15.00 per ton and this value should be increased by at least \$2.00 or \$3.00 if an adequate profit is to be earned by the operating company.

For the present I think that your work should be concentrated and confined largely to those sections of the vein where <sup>you are now working or where</sup> the assay maps prepared by the engineers of the El Tigre Company, the A. S. & R., and your own men show that the higher grade of ore occurs.

The natural conditions at the Ballard Mine, where the ore is found in narrow veins with a comparatively flat angle of dip, will never permit really cheap mining but a carefully planned and efficiently executed program will certainly pay for itself in short order with a probable reduction from previous costs of this operation of from 50¢ to \$1.00 per ton.

Yours very truly,

Memo re Bullard Mine 1/8/43

J. P. Smith called to find out if I would help them to secure a Government Loan (Class B). Agreed to do this by making up to date report and revising maps etc. and preparing all the technical data required by the Application.

Fee to be \$250 of which \$100 to be paid in advance. Smith will see Pratt to determine if they will meet these terms and I am to phone him on my return from Swansea (about the 13th) to determine if the engagement is to be made firm.

Smith says that no operations are being conducted there at present and he does not know the total amount of ore shipped but mentions 150 cars--perhaps 6000 tons. (This figure will have to be checked from the smelter returns).

Van Buskirk ran an adit under the Home Vein and raised up into it where he claimed to have \$12.00 ore (width not stated) but none of this was mined or shipped. It is accessible and should be sampled.

From the Blacksmith Shaft some good ore was mined from a pocket that had a width of 5-6' and some of which ran \$30.00 per ton.

At the Quail's Nest the small showings of ore which I saw in 1939 were quickly mined out but some ore was found on west side of shaft and again beyond a fault in another old shaft some distance to the west.

The Government money should mostly be spent to equip, develop and operate in the Home Vein, but some funds should also be provided to develop at the Quail's Nest. Last smelter rate was \$1.75.

Bullard Mine cont - 2

Minimum rental now reduced to \$300 per month and no debts except to the insiders.

A. S. & R. Engineers who recently examined took no samples but made a geological and topographic survey on which they based their unfavorable conclusions.

Coupe! encouraged Smith to try to secure Government Loan.

Note Re Bullard Mine January 15, 1943

Notes re recent operations,--see pencil tracing of map.

Note Quail's Nest shaft and two shafts to west of it and also working in C tunnel on Quail's Nest vein from which some ore was mined.

Note Blacksmith Ship Shaft from which quite a lot of good ore was mined from a pocket on the west side of the shaft.

Most of the recent shipments came from cuts along the vein on the south west and north west edge of the hill.

Van Buskirk went into an old tunnel on the south side of the hill where a new ore-bin has been built and he ran up a raise to connect with another tunnel and continued this raise up into the main vein which should be sampled if possible. Smith says all workings now open for inspection.

Write Rickard of A. S. & R. for letter to say that Hayden smelter would be glad to purchase Bullard Ore.



13.  
BULLARD

Actual & Estimated Returns based on three Typical Shipments

	A. Lot 5 (Low grade)	B. Lot 16 (Med. grade)	<sup>40</sup> / <sub>30</sub> C. Lot 46. (High grade)
Gold	0.12	0.28	0.22
Silver	0.20	0.30	0.38
Copper	2.28	2.18	2.47
Gross value per ton	* 8.90	* 14.37	12.95 * 20.75
Total payments by smelter per ton	4.35 = 50%	8.55 = 60%	7.52
Deduct freight & royalty	2.50	3.35	3.25
Net payments to Company	1.85	5.20	4.27
Deduct estimated cost of mining, trucking & manage- ment.	<sup>5</sup> / <del>4</del> .00	<sup>5</sup> / <del>4</del> .00	5.00
Net profit to Company	-----	<sup>0</sup> / <del>2</del> .20	.27
Net loss to Company	<sup>3</sup> / <del>2</del> .15	-----	6.73
If same ore should be milled on ground and mined in a scientific manner at rate of 50 tons per day:			
Gross value	8.90	14.37	12.95
Recovered value, estimated @ 90%.	8.00	12.93	11.70
Deduct cost of milling & mar- keting, (estimated @ \$2.50) and royalty	<del>3.50</del> 2.00	3.80	2.00
Net payments to Company	4.70	9.13	14.30
Deduct cost of mining & management & transportation	3.00	3.00	3.00

	A. Lot 5. (Low grade)	B. Lot 16 (Med. grade)	C. Lot 46 (High grade)
Net profit to Company	1.70	6.13	11.30
Net gain to Company as compared with present practice.	3.85	4.93	4.70

Gold figured @ \$35.00 per oz.  
 Silver @ 71¢.  
 Copper @ 10¢.

Assuming B. to represent the average grade of ore in the mine the advantage of milling instead of shipping would be nearly \$5.00 per ton and the expected profit on this grade of ore would be \$6.00 per ton in round figures.

If the mine should first or later be sufficiently developed to permit operating a 100 ton mill, the mining and milling and other costs should be reduced by about \$1.00 per ton from the above estimate and the profit on this grade of ore would be about \$7.00 per ton.

BULLARD MINE

Sulphides picked from dump at deep inclined shaft on ~~Rettler~~ Claim of Bullard Mine.

Probably from 200' level and showing some primary ore.

Au.	.08 oz.	=	2.80
Ag.	.7 oz.	=	.50 @ 71
Cu.	6.62%		15.85 @ 124
			<hr/>
			19.15

Notes re Bullard Ore Shipments and Ore Contracts & Policy

The H<sub>2</sub>O in the ore runs from 2 to 5% average about 3.5%.

No lead or zinc or sulphur determined except in one shipment from Quails Nest which carried 5% Pb.

Other contents:

Insol.	60 - 80, <del>over</del> say,	73. %
SiO <sub>2</sub>	52 - 62, " "	60. %
Al <sub>2</sub> O <sub>3</sub>	8 - 12, " "	10. %
Fe.	6.5 - 10.5, " "	8.5%
CaO	0.8 - 3. " "	2.0%

Haulage from mine to Railroad at Aguila and loading \$1.00 per ton, good rate given by Elmer Price, contractor.

Freight Aguila to Hayden - \$2.00 per ton on less than \$10.00 value and \$2.40 over \$10.00.

Hayden smelter contract (A.S. & R.) provides for payment for all gold @ \$32.31825 per oz. (92.338% of \$35.00)

No pay for silver under 0.5 oz. and for balance payment at 90% of Gov't. price, now 71.1 ¢

Copper, deduct 0.4% (8#) and pay for 95% of balance at E. & M. J. quotation for week in which lot sampled less 2.5725¢ per lb. (Note: I think that some payment should be made for silver when over 0.3 oz. and that all copper should be paid for after the 8# have been deducted.)

Treatment charge:- Flat rate of \$2.50 per ton which is favorable but might possibly be reduced as the high silica

content should make this ore a fairly good converter flux. The true moisture should not exceed 2% except in wet weather.

Assuming a net value of \$10.00 per ton paid by smelter the freight and haulage = \$3.50 and royalty \$1.00, leaving only \$5.50 to cover cost of mining and management, etc. In line with present practice I do not believe that these can be less than \$4.00 per ton and the margin of profit is too small on this grade of ore.

The net smelter payment as shown in the last column represent about 60% of the gross value of low grade ore to 70% of the gross value of a higher grade. Therefore, to realize \$10.00 in net smelter payments the ore must run some \$15.00 in gross value which is higher than the average in the mine and to break even the gross value of the ore must be around \$13.00 which is also higher than the average.

The above confirms my previous conclusion that there is no chance for the Bullard to operate with profit while shipping crude ore and such procedure is merely a waste of assets and cannot be maintained for long.

The only sensible program would be to discontinue the present program entirely and either put in a small (50 ton) mill on the strength of the present ore reserves or far better, carry on a six months development campaign which would probably open up enough ore to justify a 100 ton mill.

BULLARD MINE NOTES 1939

(After trip to mine on Nov. 24th in company with J. P. Smith and Messrs. Pratt and Grossenor)

QUAILS NEST

One car of presumably good grade ore should be shipped at end of this week.

About one more car of ore left in stope to be mined and shipped as soon as possible.

Thereafter, I advise that the sinking of the shaft (#3) should be continued keeping the vein along the back of the shaft. If possible and assuming the vein to hold fairly strong and not to be badly dislocated by any faults, I think this shaft should be carried down on the incline for a distance of about 100',- the cost including rails and timber, etc., may be estimated at \$30 to \$40 per foot and about 2' to 2½' should be sunk per day working one shift. Some ore should be produced as the sinking proceeds but the amount and value of same will be dependent upon the width and value of the vein as depth is gained. This ore production is not likely to cover the cost of the shaft sinking but should help to do so.

I do not at present advise any further drifting to the west on first level as the showing in the old west shaft is not very attractive nor any sinking of the winze which is some 60 ft. west of the shaft although the ore showing there is rather attractive. Three men to be kept employed here on stoping and shaft sinking.

### C. Tunnel

The grade of ore so far produced from this stope has been disappointing but John Smith who claims to have carefully sampled the north-west face of the stope claims that the ore below a certain marker will run about \$18.00 per ton, the upper section being much lower grade.

I advise a resampling of the higher grade section and if Smith's statement is checked this stope should be continued below the marker and probably about 200 tons of ore can be mined here during the next 10 or 12 weeks.

I believe that this section of the property should be surveyed as quickly as possible and the direction for an extension of the tunnel plotted with a view to extending it to intersect the upper vein which is probably the extension of the Quails Nest vein and from which very good ore is said to have been mined from an open-cut on the hill. It seems likely that this vein would be cut at a distance of less than 100' from the end of the tunnel and if the width and values have persisted downwards, a good body of ore would then be available for drifting and stoping.

### Smelter Wash Shaft

The sample brought up by John Smith assayed 0.81 Au. and 2.24% copper, gross value over \$33.00 per ton.

This checks with the samples previously taken by

others and indicates that very excellent ore may be developed and mined at this point. I advise cleaning out this shaft without delay, sampling all exposures of the vein and starting mining and stoping if values as above and width of 2' to 3' are maintained.

Three men can be advantageously employed here after the equipment is installed and the crew increased by a second shift when and if the existence of the high grade ore is assured.

The western end of Bullard Hill (Home Group) seems to contain much the highest grade ore in the main vein possibly some 5000 tons of \$20.00 ore with shoots of higher grade.

From the standpoint of good mining practice, it would be better to leave this block of ore intact until the entire vein can be mined from below and the lower grade sent directly to a mill but should it be necessary for financial reasons to sooner work out this material, it can be done by extending the adit drift where Ross and Hussen worked last year and stoping out all of the higher grade material that lies above the level of that drift up to the north and west surface of the hill.

Very little expense will be involved in preparing for such work and the returns from shipments should leave a good margin over the operating expenses.

G. M. Colvocoresses



Surveyed Quail's Nest workings with Burnton as per sketch. Some ore in #4 shaft looks pretty good but fear that it will only represent a small pocket and in bottom of shaft (92' on incline from collar) the ore appears to pinch out or dip into the footwall. Smith plans to soon start stoping on the sides of the shaft.

Visited #13 shaft (Smelter Wash shaft) which is now pretty well cleaned out and the pocket of ore did not go down and had been largely worked out by the former operators. Present operation produced only about one car-load at heavy expense.

About 10 tons of ore now on dump at this shaft and Quail's Nest and another car may be shipped about Feb. 24th or 26th.

Visited main vein on Ballard Hill and noted the best block of ore at northwest end of hill which is difficult to get at or work in any proper manner. Persuaded Smith not to do any more work on north side but to start near west end of south slope moving compressor, etc., to end of road and using a cable if necessary to get down the ore.

A drift run in at this point should very soon reach the section from which Long mined much of his high-grade shipments and this ore can be mined from below rather than above, also the drift can be forked to work out ore further to the east.

Assays on maps do not show very good ore at point where this drift will start and if first two or three rounds should prove disappointing it may be well to go further east and attack the vein in the face of the steep cliff.

G.M.C.

Bullard Exhibits to accompany report of G. M. Colvocoresses  
October, 1939.

✓ Exhibit A. Copy of Report by E. C. Norris, January 10, 1901.

✓ Exhibit B. Copy of report by E. W. Durfee, no date, but probably prior to 1917; a copy of the assay map which accompanies the report is already in your possession.

✓ Exhibit C. Copy of report to me by L. F. S. Holland, October 14th, 1917.

○ Exhibit D. Copy of report made to me by W. F. DeCamp, September 30th, 1919.

○ Exhibit E. Copy of report by J. V. McConnell, made for El Tigre Co. April 18th, 1931, with description of samples taken.

✓ Exhibit F. Extracts from letters by J. V. McConnell to G. M. Colvocoresses.

✓ Exhibit G. Extract from letter by Brent N. Rickard, Manager of American Smelting, & Refining Co. in Tucson to G. M. C.

Exhibit H. Assay Maps of main workings (Home Group) prepared by Stockder and Kruttschmidt of A. S. & R., and confirmed by El Tigre Co. Engineers.

○ Exhibit I. Record of Shipments from Bullard Mine by George Long, Lassen. in 1937.

○ Exhibit J. Record of Shipments of Bullard Gold Mines. February to September 22nd, 1939.

RE BULLARD MINE

Note for J. P. Smith

2/16/40

As a result of my rough Brunton survey at the Quail's Nest workings, it seems that the breast of your drift from #3 Shaft is from 30 to 35' away from your #4 Shaft.

If you wish to make the connection from #3 drift you should turn this  $45^{\circ}$  (half of a right angle) to the left and then advance on this line (N.  $25^{\circ}$  W.) and you will cut into the shaft about 60' down the incline.

Since you are planning to start stoping or drifting on the right side of #4 shaft about 70' down this will be working toward the #3 drift and if you can follow in ore along the vein for some 30-35' you should then be nearly below the end of the drift from #3 and might make a connection with very little expense.

The roll of the vein may throw you off the line to some extent but I would not advise you to try to make any connection until you have drifted or stoped for some distance since I understand that you merely want to break through to improve the ventilation of the workings and don't care to have a haulageway between the two shafts.

J. P. C

No. 187 Co

Phoenix, Arizona,

CHAS. A. DIEHL

Jan. 18, 1943.

# ARIZONA ASSAY OFFICE

*Billard*  
*Sample*

Phone 3-4001

815 North First Street

P. O. Box 1148

This Certifies That samples submitted for assay by Mr. G. M. Colvocoreses. contain as follows per ton of 2000 lbs. Avoir.

MARKS	SILVER		VALUE (Oz.)	GOLD		VALUE (Oz.)	TOTAL VALUE Of Gold and Silver	PERCENTAGE		REMARKS
	Ounces	Tenths		Ounces	Hundths			%	COPPER	
B 1				.72		\$25.20		6.29		<i>Billard</i> 46.60
B 2				.06		\$2.10		3.41		13.66
B 3				.06		\$2.10		1.60		7.54
B 4				.12		\$4.20		2.20		11.68
B 5				.12		\$4.20		2.62		13.04
B 6				.11		\$3.85		6.00		24.25

Charges \$ 9.00

Assayer ARIZONA ASSAY OFFICE.

*CAD*

COPY OF SETTLEMENT  
for Hayden

Lot 129 <sup>from</sup> Bullard Mine (last shipment) Feb. 17, 1942

Net weight 78320#, H<sub>2</sub>O 3.5%, dry weight 75579# or 37.7895 tons

Gold payment @ \$32.31825 per oz.

Silver payment @ \$0.70625 less .015 is \$0.69125 per oz.

Copper Payment @ \$0.11650 less 0.025725 is 0.90775 per lb.

(Bonus price not yet effective)

Assay.

Gold 0.3725 oz. @ 32.31825	\$12.04 per ton
Silver 0.30 no pay as minimum deduction	
Copper 2.38% less 0.4% is 1.98% or 95#	
@ 0.090775	<u>3.41</u>

TOTAL PAYMENT \$15.45 per ton

Smelter toll base \$2.50 plus 10% of 0.45 excess value over \$15.00	<u>2.55</u>
---------------------------------------------------------------------	-------------

NET PAYMENT \$12.90 per ton

Less freight @ \$2.40 per ton wet	2.40
Hauling to Railroad	<u>1.00</u>
	\$3.40

10% Royalty to Bullard	<u>0.98</u>
	\$4.38

Paid to shipper.....	<u>4.38</u>
	\$ 8.52 per ton

NOTE

Analyses of other shipments generally show much higher insoluble and

silica e.g.

Lot No.	115	109	104	119	124	125
Insol	84.0	82.1	79.3	77.5	80.9	74.4
<hr/> SiO <sub>2</sub>	<hr/> 78.4	<hr/> 75.3	<hr/> 71.2	<hr/> 72.8	<hr/> 74.9	<hr/> 65.8
Al <sub>2</sub> O <sub>3</sub>	5.0	5.6	7.2	5.1	5.5	6.1
Fe	5.4	5.8	6.0	7.2	6.3	6.7
CaO			1.6			2.30

RE BULLARD MINE

(From Rickard 5/21/40)

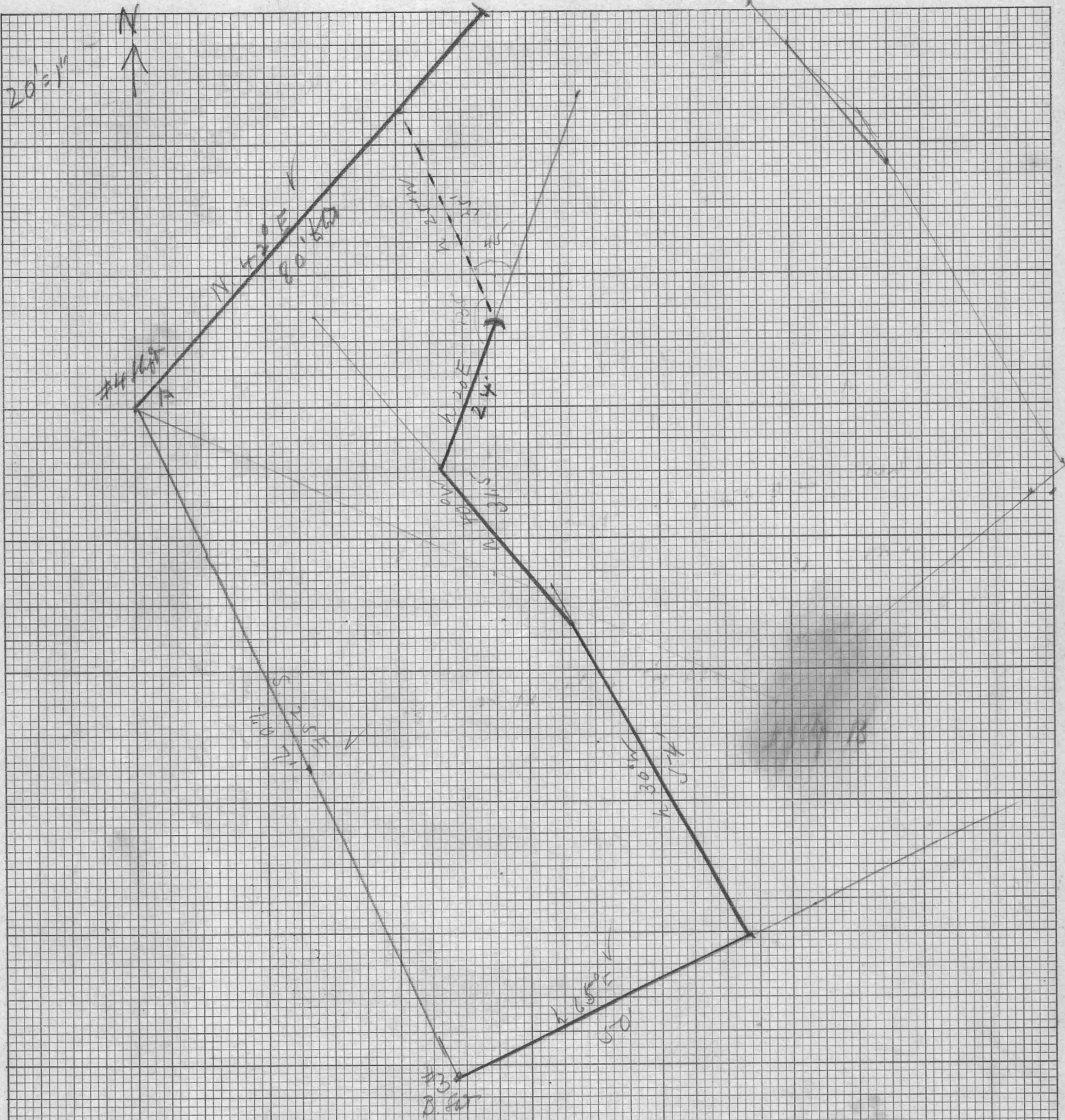
Has shipped 104 tons during last 16 days nearly one car per week. Rickard proposes to raise toll charge from \$1.50 to \$2.50 per ton probably by July 1st.

Value of last shipments before deductions, \$21.00; \$13.00; \$14.00; \$7.98; \$10.20; \$22.15; \$12.63; \$13.05; \$11.04; \$18.81; \$19.35. (No ore below \$13.00 really pays to ship).

Hayden margin on \$15.00 ore about \$3.16 but less on lower grade.

Rickard wrote to smelter on March 28 giving extracts from A. S. & R. reports on Bullard (try to get this letter and copy).





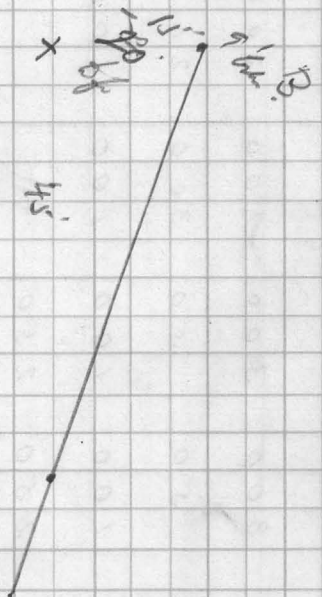
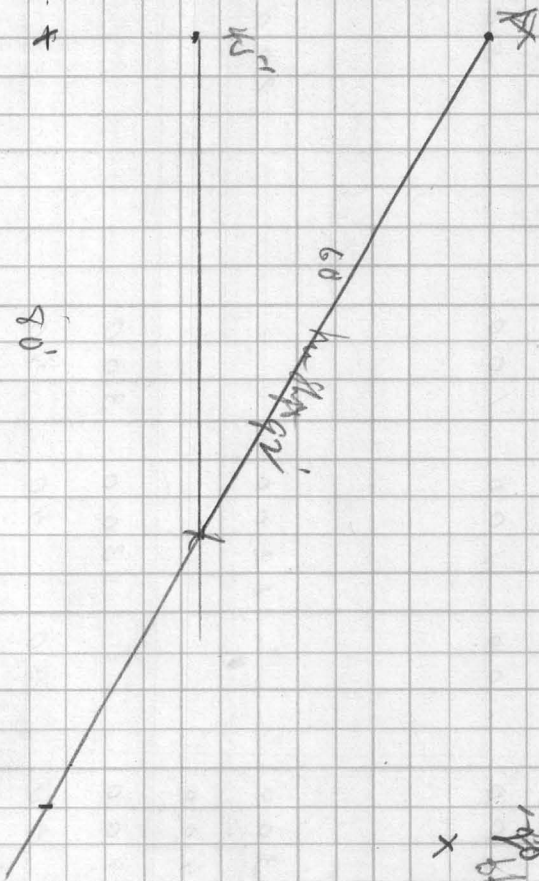
Traverse

Schedule B

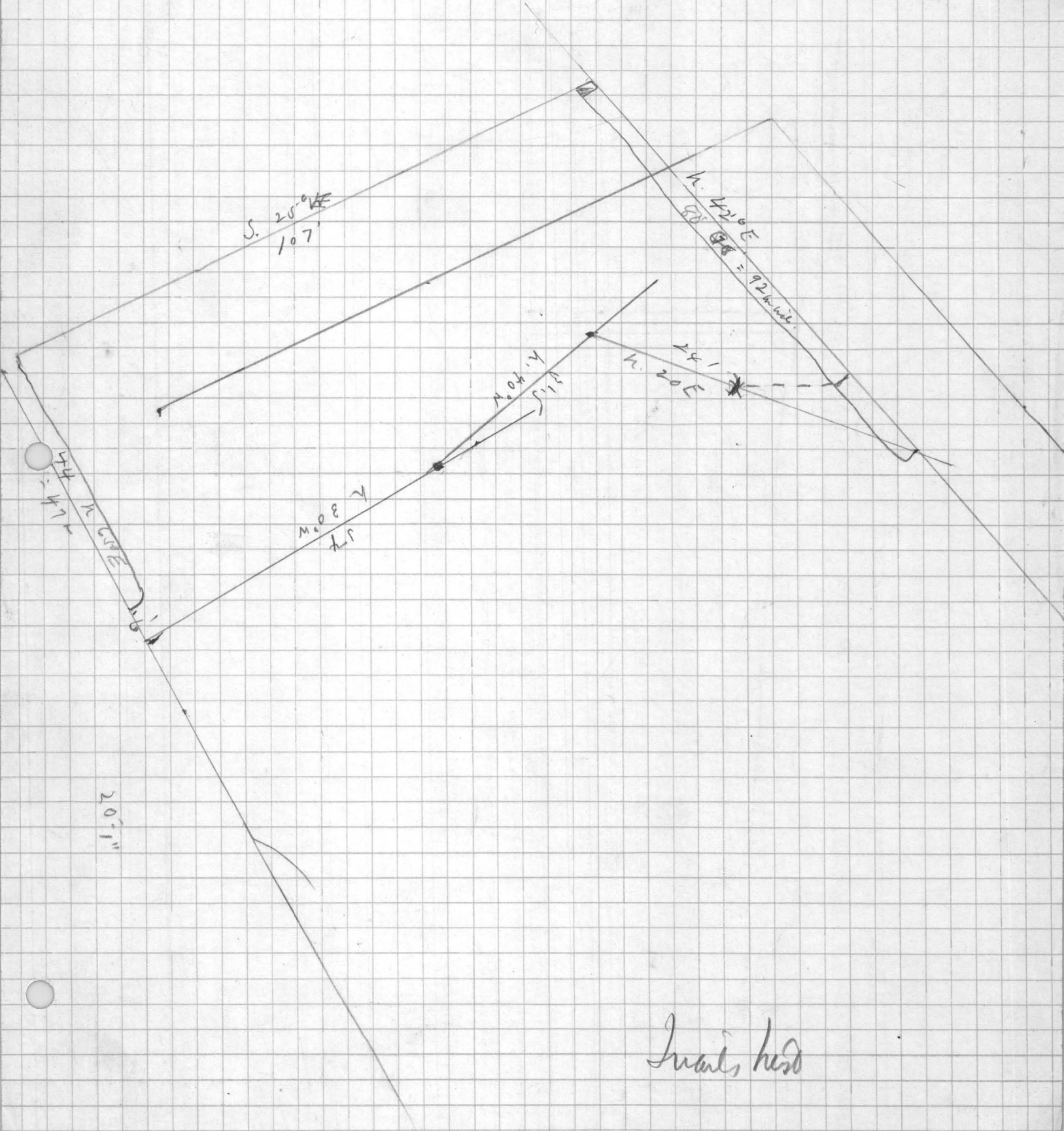
Debit income for '39

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec.
L.V. X.												
Q. Dividends	300	300	300	200	200	1000	500			500		200
Water board	50	50	50	300	200	100	300	100	100	100		10
Castle Pkwy		100	100	100	100	100	100					100
Capital Ledger												
Power Supply		250	250	—	—							50
General Misc				—	—							
Phillis			250	—	—							
Lawyer Johnson				—	—							
Water Meter Co			300	300	300							500
Trans. et al.												
Law Credit												
News Letts				400	400							
General Law firm				450	400							9500
Grasshopper milk					400							300
Mr. Hudson					40							40
Deane												40
W. H. Brown						100						800
Bullard												100
Optical												
Shred. et al.												
Measurement				400	60	410	160					6000
Mr. Day Inc	130	400	250	100	100		100			350		90
Call. and pay.												
Total	480	1100	1500	2250	2400	1750	3600			1200		16600
Less J. M. W. Co	40	100	150	250	300	250	600					
Profit	(12)	(11)	(10)	(9)	8	7	6	5	4	3	2	1

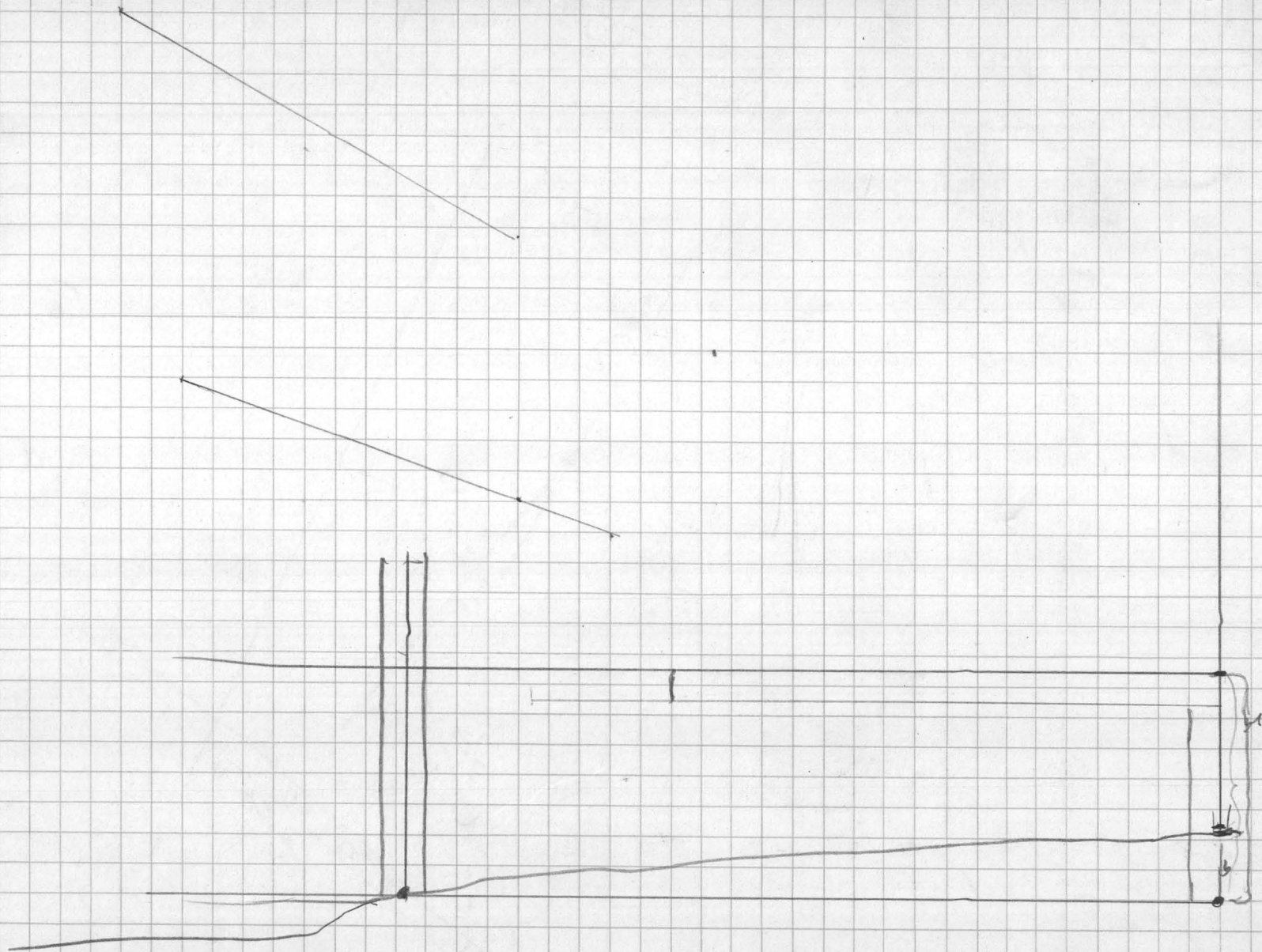
Point A



→ N



Invert, head



NOTES RE BULLARD MINE 1/26/43

from files of A. S. & R. in Tucson.

Examined in April, 1942 by J. Polluck, Geologist and Assistants.

Recognizes that the Home and the Quail Nest are the two main veins which occupy overlying thrust zones in which the wall rock was silicified, reopened and mineralized after which there were several post-mineral normal faults. Veins were filled with quartz, and fragments of wall rock as well as metallic minerals with primary ore as chalcopyrite and pyrite which were later oxidized to crysocola and hematite. Gold is closely associated with quartz and to some extent with copper. Country consists of series of lava flows (andesite) breccia, etc.

In Quail's Nest Vein which is in the smaller thrust zone no estimate tonnage is possible but in Home Vein, Polluck estimated 12,000 tons of probable shipping ore to which he assigned an average grade of Au. 0.32 ozs., Ag. 0.40 ozs., and Cu. 2.70%.

The Bullard (Home) Vein was formed at a split of the thrust zone and strikes N. 60 deg. E. and dips 20-25 deg. to south. Production from this vein over 5,700 tons.

Since the veins occupy thrust zones or faults they are likely to extend to a great depth but the Home Vein is faulted to the east of the Point or Blacksmith Shaft and the eastward extension has not been found. West of the fault it can be traced for about 1700'.

The work at the C Tunnell in the Last Bean Claim is in the hanging wall split of the Quail's Nest Vein. Production from Quail's Nest workings about 2000 tons and from Tunnel C about 1500 tons.

2-Notes re Bullard

In Home Vein the ore both pinches in width and falls off in grade beyond the limits of the workings and he figures the width of the pay ore at from 1 to 4.5' with average not much over 2' and of the vein width which is much wider not over 25% is shipping ore judging by the production from the Wooten workings.

Production samples taken in pay streaks assayed as follows:

	Au. ozs.	Cu. %
Blacksmith Shaft	0.085	4.28
	.225	1.92
	.010	3.94
	.035	2.31
Average	0.089	3.11
Wooten Workings	0.040	2.12
	0.28	1.97
	.035	3.00
	Average	.118
North Workings (new work near west end of hill)	0.310	1.33
	.455	2.71
	.005	0.44
	.140	10.00
	Average	.228
West workings at west end (top of vein)	.345	1.23
	1.255	2.41
	.020	1.18
	.085	0.49
	.065	0.34
	.240	2.31
	.255	0.69
	.055	0.10
	.046	1.43
	.025	1.72
	.090	1.38
	.025	1.18
	Average	.208
Average of all samples	.018	2.12

Re: BULLARD MINE



NOTE RE BULLARD MINE

*James file*

Property was recently thoroughly examined by Geologists and Engineers of A. S. & R. who would have been prepared to take over the lease if report had been more favorable as they are still in need of this siliceous ore for converter-flux at Hayden.

Their Engineers concluded that there was but little chance of finding more than 12,000 tons of high grade (say \$15.00) ore in the main vein and elsewhere, including the Quails West Vein, there was no indication of anything more than small pockets and stringers.

It was their conclusion that the higher grade of ore in the Bullard Mine was only suitable for operations by leasers while the lower grade \$8.00 ore probably does not exist in sufficient quantity to justify a mill (considering the metallurgical difficulties of concentration) and it will probably not pay to ship to a smelter even with a very favorable treatment charge of say \$2.50 per ton as is given to the Pacific Mine (Bagdad-Chase). Van Buskirk is at present investigating this last possibility.

-----July 15, 1942

NOTES RE BULLARD MINE

Visit January 17, 1943 with Walter Larsen and Matthews  
(part owner and care taker).

Get from Smith: Map of Claim up to date

Record of Shipments and any notes concerning  
location from which various lots of ore were mined.

No ore taken from shaft in wash near Stone Cabin (old smelter site)  
since 1939 nor any work done at old water shaft or in that vicinity.  
Look up maps or data showing the relative location of the Quail's  
Next and C (Bat) tunnel workings.

C tunnel is in same condition as when I last examined and  
sampled it except that practically all of the pay ore has now been  
mined from the stopes above the adit and track has been renewed.  
Workings should still be extended downward on the vein but grade  
of this ore is probably a little too low to pay for mining and ship-  
ment.

This work is probably on the Quail's Nest Vein or a branch of  
same or a nearby parallel vein although the Quail's Next lies some  
1500' to the east. Another vein of this series (or probably a branch  
from the Quail's Next Vein) is found in a shaft (Road Shaft) and  
opinent which lies some 500' south of the Tunnel C workings and shows  
good ore near the surface and down to a depth of about 30' but the  
lower section of this shaft which has a depth of about 100' does not  
seem to have been investigated.

Conditions at Quail's Nest are much the same as when last in-  
spected and the drift was never connected through with the shaft which  
lies about 80' to the north west along the strike of the vein which is

which is No. 50 deg. W and has a dip of 30 deg. to the northeast.

Some distance south east of the main Quail's Nest Shaft and near the end of the outcrop beyond the old shaft some ore had been recently mined near the surface and here I cut sample B#1 over width of 215'.

Au. 0.72 Cu. 6.29% Gross value \$46.60

Matthews told us that John Hayes Hammond had examined the Bullard Mine at some date prior to 1900 and had made a very favorable report for a man named Kelly on the strength of which Kelly offered John Bullard \$300,000 which Bullard refused. It was Hammond's theory according to Matthews, that all of the veins in this section, i.e. Home, Quail's Nest, Tunnel C and Road Shaft would come together with depth and to the east and should then form a very big ore body. (This is not in line with theories of other engineers and does not seem to be supported by the available evidence.).

At Home Vein a new bin was built at portal of adit #10, capacity about 50 tons but very flimsy.

From the end of this adit Van Buskirk ran up a raise at angle of 45 deg. to top near middle of upper adit #11 but he quit after going up 90 ft on incline and probably 10' before making connection. Did not climb to top of raise in which there are no ladders and air was hot and bad.

In raise they cut the main vein which is said to have had a width of 10' and with very good ore but three cars shipped from this work were badly mixed with waste and values were only \$10-\$12 which did not represent fair average of the vein.

Took sample B2 from ore in the chute which should be fairly representative.

Au. 0.06 Cu. 3.41% Gross Value \$13.66

Above the Van Buskirk adit (#10) and to west of it there is a cut in the vein from which some 15 to 20 tons of ore has been taken and it looks good. Above this cut about 50' and to east is found adit #11 toward which Van Buskirk was driving up his raise and at a point near the middle of this adit and just about above the top of the raise cut sample B3 over width of 4'.

Au. 0.06      Cu. 1.60%      Value \$7.54

This sample indicates the erratic nature of the values in the vein as compared with sample #2. On north side of hill the new work consists of an incline shaft about 125' from west end which was sunk 120' down the incline and ore mined out on both sides for about 50' total width. In breast of this working took sample from vein B#4 width 4'.

Au. 0.12      Cu. 2.20%      Value \$11.68

From upper part of these workings about 20' below surface on the incline there is a drift parallel to the surface and about 125' long running S. 50 deg. W. to opening on the north side of the hill and at the end of this there is an ore chute some 20' deep and then a short drift (all open) to bin at top of the incline railway which runs down along the slope of the hill to the bin at the bottom into which ore was recently dumped. At this point a lot of ore was recently mined from the vein both above the drift and to the surface and below it for from 10 to 20' down the incline of the vein which varies in width from two to six feet.

Sample B # was taken in this drift 40' northeast from the out-crop at the portal and thus had a width of 4'.

Au. 0.12      Cu. 2.62%      Value \$13.04

Other work on the north side of hill is represented by costs near shaft #3 on map which was deepened by Jack Wooten who also took

ore from two or three cuts nearby.

At the Blacksmith Shaft considerable stoping was done at a depth of about 60' and up toward surface on west side of shaft where a pocket of ore was mined out for a length of some 50' and from near the bottom these workings the vein was sampled for a width of about 4.5' . Sample B#6

Au. 0.11      Cu 6%      Value \$24.25

*Bullard Co has paid the owner to date  
\$ 17073.75 as royalty & rental  
leaving a balance of 182,926.25 still  
due in account of the revised purchase  
price*

October 7th, 1939

Mr. Brent N. Rickard  
American Smelting & Refining Company  
P. O. Box 2028  
Tucson, Arizona

Re: Bullard Mine

Dear Rickard:

In reference to the application of the Bullard Gold Mines Company for a loan or advance from the A. S. & R., I think that the following information may prove of interest.

I assume that in considering this matter, you have two requirements in mind:- First, the reasonable assurance that your loan will actually be repaid in full; and, Second, the advantage of obtaining a steady supply of desirable ore for your Hayden Smelter. I shall, therefore, confine this letter to those points, mentioning that I have personally been familiar with this property since 1917 and during the past 15 months have visited it on four separate occasions, most recently on October 4th, 1939, when I covered much the same ground that you had done a few days earlier.

As to the physical condition of the mine, I believe that there can be no substantial disagreement. The lack of a constructive development program has always made it impossible to calculate that any substantial tonnage is technically "blocked out" but the natural conditions plus such exploration and development as has actually been done prove the indisputable existence of a large tonnage of highly probable ore some of which is positive for all practical purposes. This statement will probably conform to your own conclusion and those of the field engineers who have examined for your company and I will append some statements from the reports of other engineers which are in my possession.

As to the value of this material, my own investigations and the reports of others lead me to conclude that by far the greater proportion is too low grade to stand crude shipment to a smelter with any profit to the operators. The ultimate success of the Bullard Gold Mines Company must therefore depend upon the construction and operation of an efficient mill and this they fully realize. However, such a program obviously involves the expenditure of a large amount of money and while I agree with the officials of the Bullard Company in believing that this capital can be obtained during the next few months, it is imperative that they arrange to pay their way in the meantime. In order to accomplish this, it seems

October 7th, 1939

necessary for them to temporarily mine and ship a higher than average grade of material.

The value of this high-grade ore may be inferred to some extent by noting the record of shipments made by George Long to Clarkdale in 1936 & '37. These amounted to 946 dry tons with approximate assay of 0.60 oz. gold, 0.70 oz. silver and 2.8% copper;- also by noting the values in a few of the shipments made to you since last February.

When the El Tigre Company very thoroughly sampled this mine in 1931 they found that the average gross value of the ore exposed for sampling was \$15.50 at present metal prices but they also noted that this included 5000 tons of high grade to which they assigned a value of over \$40.00 per ton.

Some of this high grade has since been shipped by Long and a very little by the present operators but I believe that I am fully justified in saying that careful selective mining during the next twelve months can serve to produce well over 5000 tons of ore that will average at least \$20.00 in gross value.

According to my preliminary and very tentative calculations the Mining Company will always gain by shipping rather than milling any ore which has a value of over \$20.00 per ton and therefore no real loss will ensue from the adoption of this policy but a certain amount of preparatory work must be done in order to put it into effect and the mining must then be confined to the higher grade sections of the veins.

The average composition of the entire tonnage of probable ore as determined by the El Tigre Company was Au. 0.25 oz. Ag. 0.50 oz., Cu. 2.67%; also

Insol.	73.2%
SiO <sub>2</sub>	73.0%
Al <sub>2</sub> O <sub>3</sub>	4.6%
CaO	0.6%
Fe.	6.8%
S.	trace

This seems to be somewhat more silicious than the recent shipments but even those represent a type of ore that I understand is much desired at Hayden.

Mr. Brent N. Rickard

-3-

October 7th, 1939

As to the present unfortunate financial situation of the company, I have considerable independent information. The former President and General Manager, (who is no longer an officer of the company), started off on the theory that practically no working capital was required and therefore provided none. The essential equipment was procured on credit and the proper preliminary work was not performed at all, thus handicapping his successors with a burden of debt and leaving the mine in a very poor condition for the production of any ore other than that which could be most quickly obtained and which generally was not of a satisfactory grade for shipment.

The present management deserve the greatest credit for the manner in which they have already met many of the obligations which they inherited, - (including the \$1000 which they have repaid to your company) and for the improvement of conditions at the mine made under very great difficulties. I have no doubt but that they will eventually struggle through and solve their problem in one way or another. These gentlemen have not had the advantages of engineering training or mining experience but they are capable and honest business men with high personal reputations and they are now disposed and anxious to secure the technical advice and assistance which they recognize as important to their success. They have recently placed a competent man in charge at the property and I have tentatively agreed to advise and assist them to the best of my ability which I should not have done except for my confidence in the actual value of the Bullard Mine and its possibilities for profitable and successful operation.

After fully discussing the financial situation with Mr. Smith and his two principal associates and personally examining the condition and requirements of the mine, it is my conclusion that the sum of \$5000 is essential to convert a long drawn out and up hill struggle into a straight-forward mining campaign.

Of this money \$3000 would be required to promptly meet their outstanding accounts and properly establish their credit, \$1000 is needed for urgent preparatory work in those sections of the mine from which their higher grade ore must be taken and another \$1000 should be held as a reserve against accidents, bad weather and unforeseen contingencies.

Given this help I am very confident that a vast improvement can be effected during the succeeding 30 days and



Mr. Brent N. Rickard

-4-

October 7th, 1939

that thereafter a monthly output of 400-500 tons could be maintained for many months with an average gross value closely approaching or exceeding \$20.00 per ton. This would permit a deduction of \$1.00 per ton from the net settlements for the repayment of the loan without endangering the future work at the mine; whereas, under existing conditions they are working from hand to mouth and any piece of bad luck might force discontinuance or long delay of subsequent shipments.

As an appendix I am giving you the gist of the Engineers reports which are in my possession and shall be most glad to furnish such additional data as I can supply.

Yours very truly,

*J. M. Colman*

GMC:MF

Appendix

(a) In 1901 the Bullard Mine was examined by E. C. Norris, an engineer of whom I personally know nothing.

His report is very brief and makes no estimates of tonnage but he quotes results of his own partial sampling also prior samplings by Burlingame, Kelly and others all of which averaged much higher than the samples taken by the El Tigre Co.

(b) E. W. Durfee reported on the mine at some date presumably prior to 1920 and made an assay map of the main ore body (Home Group) showing 71 cut samples from which he estimated that this ore body would contain 77,800 tons of ore averaging 0.367 oz. Au. and 2.95% copper. His estimates of both tonnage and value appear to me to be higher than justified by the facts.

(c) While I was manager of the smelter at Humboldt I had this mine casually examined by L. F. S. Holland in 1917 and W. Val DeCamp in 1919 and a test sample of low grade ore was brought to Humboldt which carried 75.5 Insol, 8% Fe., 1.8% CaO, and 3.74% copper. No detailed estimates were made by

Mr. Brent N. Rickard

-5-

October 7th, 1939

these engineers but both expressed tentatively favorable opinions and the matter would have been followed up except that I found it impossible to make any reasonable deal with John Bullard.

In 1919 Abbott and Bryan, lessees, shipped 7 cars of ore of which the average was given DeCamp as: Au. 0.27 oz.; Ag. 0.66 oz.; Cu. 4.21%; Fe. 7.00%; Insol. 74.00%.

(d) In 1931 the El Tigre Mining Company made a very thorough investigation cutting 287 samples beside many checks in seven different veins. This work was under the general charge of their Manager R. T. Mishler and the actual sampling was done by J. V. McConnell and his assistants who spent over six weeks on the property and would have continued if Bullard had been willing to revise his terms. I am sure that their work was careful and accurate and their conclusions very conservative.

In the main ore body they classed as probable or partly developed about 50,000 tons and that portion of same which they could thoroughly sample and measure was estimated to comprise 32,692 tons with average content Au. 0.25, Ag. 0.50, Cu. 2.67% thus having a gross value of \$15.50 at present prices. This estimate included the 5000 tons of high grade mentioned in the body of this letter.

To the best of my knowledge practically nothing has been done at the property since 1931 except the mining by George Long on the north side of the hill and the operations of the present company which you have personally had an opportunity to observe.

J. H. C.

Rickard suff. referred, matter & Mackenzie in  
El Paso & from then it will go to H. G. for final  
decision

MEMO RE BULLARD MINE AND FINANCING OF BULLARD GOLD MINES COMPANY

10/31/39

In my opinion the Bullard Mine is a valuable property and if properly financed and managed will unquestionably become a substantial producer of gold-copper ore and yield a handsome profit to its operators provided, as seems reasonably certain, the present price of gold maintains.

This opinion is based upon careful personal investigation and the reports of several very reliable engineers and I have prepared a complete report including the reports of others as well as the results of my own investigations which gives complete details and estimates in support of this statement.

While there is very little ore that can be technically classed as positive, I feel justified in estimating a substantial tonnage of highly probable material with an average grade of \$13.60 per ton at present metal prices and included in this estimate is about 10,000 tons of higher grade ore that will carry \$20.00 per ton but much of this higher grade material is not immediately available for mining.

The chances for developing large additional reserves of both higher and lower grade ore seem excellent and the bulk of the production will require treatment in a local concentrator.

The Bullard Gold Mines Company has an authorized capital of 500,000 shares of \$1.00 par value of which 100,000 shares are now issued and outstanding. Practically speaking, the company has never been provided with any working capital which is an absolute necessity for any mining enterprise. It started out owing money for most of the small and inadequate equipment which was secured and it has gone more deeply into debt so that its present condition is very critical.

The present officials of the Company, who inherited this situation from their predecessors, have made every possible effort to improve conditions and pull the Company out of the hole but being without technical or mining experience, they did not realize at the outset that this would be impossible under the circumstances.

In the operation of the mine itself they failed to grasp the fact that only ore with a gross value of \$14.00 or better per ton would even cover the costs of mining, shipping, royalty and smelter charges and many of their shipments have been made at a loss. They have also been handicapped by the fact that they did not know where most of their better grade ore was located and in any event did not have the means to mine the bulk of this material.

Since I am now given to understand that the three stockholders who have so far been using their personal funds and credit to carry the company are unwilling or unable to assume any further burden, it appears that the Company is now facing one of four alternatives.

(a) The Company may give up its lease and vacate the mining property, settling with its creditors as best it can.

(b) The Mine can be shut down and shipments discontinued, but even so the carrying charges will run to about \$400 per month which will increase to \$700 by June of 1940 and unless the monthly royalty is promptly paid, the owner will cancel the lease and evict the lessee. Meantime, the creditors, - to whom I understand some \$3000 is due, - will doubtless seize and remove the equipment and the chance of holding the property or refinancing the Company will greatly diminish as soon as active operations are discontinued and grow steadily less as time goes on.

(c) The Company must be very promptly supplied with a comparatively small sum of money to tide it over the present crisis and enable it to meet its most pressing obligations and equip the mine so as to make steady shipments of better grade ore which can and should thereafter be made to pay the operating and carrying charges. A definite program of adequate financing as outlined in my report should then be worked out and made effective as quickly as possible.

(d) The lease and property of the Company or its stock may be sold to an outside party.

Since the alternatives (a) and (b) will obviously render the stock of the Company entirely worthless and involve an additional loss to those stockholders who have advanced money to the Company, it is to the interest of all of the stockholders to cooperate toward alternatives (c) or (d) to which the balance of this statement is confined.

A strenuous <sup>of \$5000.</sup> effort has already been made by the management to secure a loan from the A. S. & R. which is treating the shipments at its Hayden smelter. The local Manager of this company who personally inspected the property and checked his investigation with the favorable reports of the A. S. & R. field engineers strongly recommended that this loan should be made and repaid through a deduction of \$1.00 per ton on payments for the future ore shipments. This recommendation was seconded by the

Superintendent of the Hayden Smelter but it was vetoed by higher officials of the Smelting Company and there seems to be little prospect that such a loan will be granted in the near future.

A loan of this nature is not attractive to any financial institution since no banking collateral can be provided and therefore it appears that only the present stockholders can be expected to consider such a proposition.

In my opinion the sum suggested, while wholly inadequate to permanently improve the position of the Bullard Company, should serve as an all important stop-gap and give the company a breathing spell during which it should be possible to work out the main financial program in a logical and advantageous manner.

In order to make the loan safe for the lender, I suggest that a substantial amount of the issued stock should be pledged as collateral until this loan is repaid. Aside from its repayment through the refinancing program the only way in which this money can be returned will be from the returns from shipments and while the bulk of the ore is too low grade to be mined and shipped crude to the smelter, one can be well assured that there is at least 10,000 tons of pay ore now developed or partially developed at the mine. However, a part of this ore could only be made accessible through the investment of an additional \$5000 in equipment and preparatory work and it would be more advantageous, - although not absolutely essential, - to secure a total of \$10,000 as a temporary loan and pay it back as above outlined.

I can state quite positively that a loan of either \$5000 or \$10,000 will be a safe investment provided no other prior or parity obligations are incurred by the Company and the financial and technical management is conducted with care and skill.

To make the loan attractive, I would suggest that the lender should be given a one year option on a sizable block of the treasury stock at a comparatively low figure. In this way the lenders might realize a very substantial profit if meantime the value of the property and the stock of the company should increase but the present accommodation is worth everything that the company can possibly afford to pay for it.

(d) If at the present time you offer the lease or the stock of your company for sale to an outsider you must recognize the fact that your company has failed to make good and that this is being done as a last resort. Any responsible purchaser will look at the matter from that viewpoint and only talk business to you on that basis.

The value of the mine and the expected profits from the lease will be given little consideration but merely the fact that the present stockholders of the company must take what they can get or lose their entire investment. On such a basis I do not believe that any cash could be obtained but that the purchaser would only agree to pay up your present debts and equip and operate the property with a return of their money plus interest from all of the first proceeds and leaving to the present stockholders a share of 10% or possibly 20% in subsequent profits.

*and* It is needless to say that no such deal would be desirable ~~as~~ Rickard and I have both pointed out that the stockholders of the company, - unless they are absolutely unable to remedy the situation, - will be very foolish and shortsighted if they do not make some effort to protect their interest. That effort means the prompt advance of at least \$5000 and preferably \$10,000 in line with alternative (c).

It must of course be recognized that the ultimate investment required for the proper development, equipment and operation of this mine will be in the order of \$150,000 which may well prove to be a larger sum than the present stockholders can conveniently provide but once you have gotten over your immediate difficulties and are paying your way from shipments of the higher grade material it should, - and I am confident that it will, - be possible to secure new money on reasonable terms that will preserve the equity of the present stockholders and eventually give them a fair share in the ultimate profits which in my judgment can reasonably be expected to amount to \$400,000 or possibly a much higher figure.

*G. M. Colvocoresses*  
G. M. Colvocoresses

GMC: MF

GEORGE M. COLVOCORESSSES  
MINING AND METALLURGICAL ENGINEER  
HUMBOLDT, ARIZONA  
Phoenix, Arizona

August 9th, 1938

MEMO RE BULLARD MINE

By G. M. Colvocoresses

- - - - -

Preliminary examinations with partial sampling of this property were made for me in 1917 by L. F. S. Holland and in 1919 by W. Val DeCamp. Both of their reports were favorable and as a result, the Company of which I was then Manager tried to do business with the owner but found this impossible on any reasonable terms. Therefore, we did not make any complete investigation nor thorough sampling.

Aside from the reports of the two engineers mentioned I have copies of older reports by E. C. Norris and E. W. Durfee and I have seen other reports all of which were favorable. The report by Durfee is accompanied by survey and assay maps showing location and values of 70 samples on which he based his estimate of tonnage and grade of ore.

I have personally visited this mine and gone over portions of the surface and accessible workings but have never taken any samples nor accurate measurements so that it must be understood that statements in this memo as to grade and tonnage of ore are based upon the work of others which I believe to have been accurate and reliable but these are submitted tentatively subject to a much more thorough examination.

## LOCATION AND HISTORY:

The mine is located near the southern boundary of Yavapai County, Arizona, 30 miles westerly from Congress and 9 miles north from Aguila, a small town on the Parker Branch of the Santa Fe Railway from which it is reached by a good desert road twelve miles in length. The elevation is 2600 to 3000'. There are 27 patented and one unpatented claim forming a contiguous group and including all of the local mineralized area excepting for one claim which I am told can be acquired at small cost if it is desired to do so. Certain water rights on other lands are included with the Bullard Property.

The claims were staked and developed many years ago by the late John C. Bullard and now belong to his brother R. W. Bullard of Congress Junction.

The developments consisted of a number of shafts, adit tunnels, open cuts, pits and stripping along the outcrops and from this work and a very little stoping a considerable tonnage of ore has been produced. In 1887, a small smelter was built near the mine and several years later a mill was erected but both have long since been scrapped and neither seems to have treated any substantial tonnage.

In 1919, Abbott and Bryan, Lessees shipped at least 7 cars of ore with average value of \$18.25 per ton at present prices of gold and copper.

Subsequently other lessees have produced at intervals and during 1937 several hundred tons of cobbled and sorted ore were shipped and according to the settlement sheets,- which I was only



able to glance over hurriedly,- the value of much of this material was in excess of \$50.00 per ton.

#### GEOLOGY:

The mine lies among foothills near the east end of the Harcuvar Mts. which are mainly Archean schist with some capping of limestone conglomerate and recent volcanics. Bullard Peak on which the mine is located seems to have been formed by an intrusion of andesite the lower portion being more or less brecciated and cemented with quartz and caliche.

The veins occur in contact or fault fissures filled from circulating solutions with quartz and calcite with which gold and copper are associated, the latter metal occurring mostly as carbonates and silicates. Apparently, the mineralization represents two or more distinct periods and types and there is little or no relation between the gold and copper content in various sections of the veins.

Samples and shipments show a relatively small percentage of silver averaging about one half oz. per ton of ore. The strike of the rock strata is northeast, corresponding roughly to the strike of the principal vein, which outcrops around the south, west and north slopes of Bullard Peak and dips 20° or more from the horizontal toward the south-east.

#### DEVELOPMENT AND ORE RESERVES:

The mine has never been systematically developed although some 2000 feet of shafts and tunnels have been driven, and taken in conjunction with the outcrops, these permit partial measurement of a very substantial tonnage of highly probable ore. This was estimated by DeCamp @ 80,000 tons with value about \$15.00 per ton

and by E. W. Durfee @ 78,000 tons @ \$19.00 per ton using \$35.00 per oz. for gold and 10¢ per lb. for copper.

ORE TREATMENT AND ESTIMATED COSTS:

Durfee and others have stated quite positively that the gold is free and that over 90% can be recovered by amalgamation. If this statement is substantiated the recovery of the gold will be cheap and efficient and the tailings can then be leached for the extraction of the copper.

Some water has been found in the deeper shafts and in wells sunk near the site of the old smelter and on neighboring ranches. I, therefore, believe it highly probable that enough water can be developed in this vicinity to properly supply a 100 ton mill and avoid running a long pipe line from Date Creek.

Mining, including sorting and current development, should be done for \$3.00 per ton, milling should not cost over \$1.80 and - assuming that the gold is amalgamated and the copper leached and precipitated,- the subsequent cost of refining and marketing the products should figure back to less than \$1.00 per ton of ore. With a royalty of \$1.20 per ton, (10% of net smelter or mint returns) and an overhead, including taxes and general expense of \$1.00, we have a total cost of \$8.00 per ton, which estimate I believe to be very liberal.

FINANCIAL:

On August 4th, 1938, a certain party took over this property on a twenty year lease with option to purchase at \$750,000.00. This party is now prepared to assign the contract for consideration.

This purchase price is out of all reason and need not be considered. The royalty under the terms of the lease is 10% of the

net smelter or mint returns with a minimum of \$200.00 per month after December 1938 and \$500.00 per month after June 1940,- payments of royalty will apply on the purchase price,- The terms of the lease are fair and usual in all respects. The consideration for which this lease and option agreement is offered through me but subject to prior sale to other parties is \$10,000 payable as follows:

Cash on delivery of assignment	\$300.00
On or before Sept. 7th, 1938	1000.00
" " " Nov. 7th, 1938	3000.00
" " " Feb. 7th, 1939	3500.00
" " " May 7th, 1939	<u>2200.00</u>
Total - - - - -	\$10,000.00

*These terms can be made the subject of negotiation & probably altered but some cash payment will be required*

These payments will not go to the owner of the mine nor apply on the purchase price of the property. The party taking the assignment of this contract of Lease and Option to Purchase could cancel the assignment and relinquish his rights and obligations to complete the payments at any time but otherwise is expected to complete his investigation and proceed with the installation of proper equipment before the end of this year.

A certain percentage of the above payments would go to me as commission and in addition I would expect to receive a 5% non-assessible interest in the operating profits of the Bullard Mine.

There is no serviceable equipment on the property and a tentative estimate of the total cost of proper mining and milling equipment, buildings, etc., may be set at \$120,000 with salvage value of say \$20,000 leaving net capital outlay at approximately \$100,000.00.

Assuming a recovery of \$13.00 per ton and total working costs including royalty of \$8.00, the operators should make a profit of \$5.00 per ton from which the said capital investment could first be repaid leaving a net gain of \$300,000 to be earned from the ore which is now fully or partially developed and over a period of 3 years or less.

Beyond that point the future of the mine is entirely speculative. The tonnage may prove to be limited to the figure mentioned but in my opinion there are fair chances that extensions of the known ore-shoots or new veins will be found and serve to increase the estimated profit which in itself is far more than can be reasonably expected from most ventures of a similar nature.

This property should first of all be made the subject of a thorough re-examination including a sampling of the exposed ore and metallurgical tests to determine the best method of treatment.

In my opinion the present showings and available data amply justify such a procedure involving the comparatively small payments required to secure the option & the lease and the cost of the investigation itself.

My own interest in this transaction is fully set forth above.

Yours very truly,

*S. H. Colverson*

Notes Re BULLARD MINE

8/6/38

Merrill says that pipe line to Date Creek has been surveyed and distance is actually 12 or 15 miles.

Merrill says that he holds all desirable water rights, says that water from Date Creek would run by gravity as intake would be 287' higher than the mine. Says that some water might be obtained from wells on nearby ranches and pumped up from depth of 300 ft.

Merrill says that new developments have been made to southwest of old workings and that good chalcocite ore is found in a new shaft from which some small shipments have been made.

Says that metallurgical tests have shown that the gold is free and can nearly all be recovered on Bendelari jigs (doubt this).

Walter Larsen tells me that he examined the Bullard Mine many years ago and tried to get option for the purpose of drilling an undeveloped portion of the claims under which he and others thought that they should find a faulted section of the vein and thus increase the developed ore reserves.

probably all secondary. Vein has a width of 4' but is not uniformly mineralized. Dip is 35° to south east and outcrops are on slope of a low hill.

Bullard claimed 100,000 tons of ore averaging 0.4 oz. gold, 4% copper and a little silver.

A small number of samples taken by DeCamp and Holland were not representative of entire showing but gave substantially lower values in gold.

Record of 7 cars shipped by Abbott and Bryan in 1919 or 1920 shows average of Au. = 0.27 oz., Ag. = 0.66 oz., Cu. = 4.21%, Fe. = 7%, and Insol. = 74%.

DeCamp estimated 80,000 tons of ore developed with average grade 0.2 oz. gold, 4% copper and about 0.5 oz. silver. Some sorting would be necessary to bring this ore up to grade. Holland, DeCamp and others agreed that there was little chance of developing any substantial quantity of additional ore and all calculations should therefore be based on a maximum of 80,000 tons.

No water on property but it was proposed to run a pipe line from Date Creek, which appears to be about <sup>12</sup>5-miles distant. The ore did not concentrate well by flotation although modern improvements in this process should make it work much better. At Humboldt we tested the ore for chloridizing-volatilization (a dry process) and obtained very good results with recovery of better than 90% but we could secure no reasonable terms from the owner and therefore made no complete examination of the mine.

? May be 12  
5H-2

Assuming the grade of sorted ore as estimated by DeCamp, then with gold @ \$35.00 per oz., silver @ 64¢ per oz., copper @ 10¢ per lb., and 90% recovery in concentrates, the value of the ore would be \$13.80 per ton. Working costs on basis of mining and milling 100 tons per day may be tentatively figured as follows:-

*Change to*

Mining and sorting	\$2.50
Milling (including pumping)	2.00
Haulage freight & treatment and sale of concentrates assumed to be produced in ratio of 5 to 1.	3.00
Taxes, insurance, overhead	.50

Total	\$8.00
-------	--------

Net operating profit	\$5.80 per Ton
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Operating profit on 80,000 tons	\$464,000
---------------------------------	-----------

**Estimate of Capital investment:**

*pipe*

Mining equipment	\$35,000.00
Power plant (Diesel Engine)	
Concentrator, pumping plant & power line	90,000.00
Camp & miscellaneous	15,000.00

Total	\$140,000.00
-------	--------------

Less salvage value at end of 2½ years (say)	20,000.00
---------------------------------------------	-----------

Net capital investment	\$120,000.00
------------------------	--------------

Allow for purchase price to be paid on basis of 10%  
royalty except for small down payment ----- \$30,000.00.

Net gain from purchase and operation of Bullard Mine in  
line with above tentative estimates \$314,000 to be earned within  
3 years from date of investment; income taxes to be deducted.

The above estimates and calculations are all made sub-  
ject to the result of a thorough sampling of the mine which was  
not made by either of my engineers and I have no record of any  
of the other sampling. It is also based on the assumption  
that the prices of gold, silver and copper will maintain approxi-  
mately at present levels and that 90% of these values can be  
recovered by flotation concentration in the ratio of about  
5 to 1. A complete sampling of the mine and thorough metallurgi-  
cal tests must be carried out before any accurate estimate can  
be attempted and this investigation appears to me to be fully  
justified provided there is reason to believe that the present  
owner will agree to a reasonable purchase price even though it  
may be somewhat more than \$30,000.00.

- - - - -

The Dick Bullard Mine was examined for me by L. F. S.  
Holland and E. S. Smith in 1918. It is located in Cunningham  
Pass about 11 miles north of Wenden and 20 miles west of  
The Bullard Mine.

It showed one quartz vein about a foot in width and  
high grade gold-copper ore was being successfully mined, sorted



and shipped by a lessee in 1918 at the rate of about 100 tons per month. The shaft had a depth of 250' and ore was persistent to that depth.

It seemed to be a good little mine suitable for a small crew of men to operate under lease but the ore-shoot may have pinched out as I have no record of more recent activity.

*S. H. Colverson*

Summary: To file

8/6/38

BULLARD MINE

See Mines file

28 Patented and (formerly) 12 unpatented claims. 30 miles west of Congress Junction *+ 10 to 12 miles north of Aguila by good road*  
Ore shipments prior to 1919.

7 cars averaging

Au--0.27 oz.	)	Gross value \$20.00 per ton at present price.
Ag--0.66 oz.	)	
Cu.-4.21%	)	

Ore occurs in a flat vein outcropping along slopes of a low hill of andesite breccia.

Developed by shaft and shallow pits which have proved about 80,000 tons of ore carrying (average) 4% copper and \$7.00 in gold, say around \$18.00 gross value.

Not much prospect of finding any large additions to this ore reserve, but if values are as good as reported it should pay to take over this mine and ship the proven ore.

Former owner asked ridiculous terms but since he is now dead it might be worth while to investigate present status. Portable equipment could be installed and removed after the mine was worked out.

75. 38.

Merrill says there are 27 patented & one unpatented claim now owned by Bullard & that there is one claim in this group which Bullard does not own.

No. 177 Bu

Phoenix, Arizona,

CHAS. A. DIEHL

Oct 2 39

# ARIZONA ASSAY OFFICE

Phone 3-4001

315 North First Street

P. O. Box 1148

This Certifies That samples submitted for assay by

**Bullard Gold Mines Inc.**

contain as follows per ton of 2000 lbs. Avoir.

MARKS	SILVER		VALUE (Oz.)	GOLD		VALUE (Oz.)	TOTAL VALUE Of Gold and Silver	PERCENTAGE		REMARKS	
	Ounces	Tenths		Ounces	Hundths						
						38.00				Copper	
Special				.36		12.60				29.20	
133				.26		8.10				2.78	#2 Stope C Tunnel
184				.33		13.30				1.80	#3 Stope C Tunnel
185				.32		11.20				14.83	\$5 Stope where you found free gold
186				.45		16.75				.92	#4 Stope
187				.19		6.60				3.00	Gob #3 Stope
188				.68		23.80				2.16	Ore face drift #3 Shaft
189				.01		3.55				.08	Above the Ore Drift #3 Shaft

Charges \$ 12.00

Assayer **Arizona Assay Office.**

Shaft  
*C.A.D.*

NOTES RE BULLARD MINE

by

G. M. Colvocoresses - after visit with Walter Larsen  
August 21st, 1938.

\* \* \* \* \*

North side of hill was visited and outcrop followed continuously around to the west and south workings. The showing is best on the northwest section of the hill and some stoping has been done in places. According to Durfee, the gold values are much higher here than on the south slope or near the lower eastern outcrops and it may be that the gold has been concentrated to some extent on the upper portions of the vein.

The values in gold cannot be judged by eye and the best looking copper ore is often confined to a width of one to two feet although the vein material is 3' to 6' in width and most of the stoping has been done over a width of 3 to 4 feet. The tonnage of pay ore will largely depend upon the width of the gold values and in actual mining it will probably be economy to break much of the ground to a width of 4' although stopes when necessary can be narrowed to some extent. Ore in the stopes will all have to be shovelled or scraped and it would not be safe to figure cost of mining and development at less than \$3.00 per ton which should include such sorting as might be necessary for the mill and transportation of ore to the mill; the ground will stand well with posts and occasional

pillars. Practically all of the ore which lies to the west and above the showing at C. Shaft on Durfee's map (a distance of over 1200' on the incline of the vein) could be trammed through adit tunnels and would require no hoisting, but a great deal of care should be used in laying out this work to insure the best economy in underground handling, tramping, etc.

Mine should probably be opened up from the southeast outcrops.

At the foot of the north slope there is a sizable dry wash running to the east and draining a considerable catchment basin between the Bullard Peaks and the Harcuvar Range and the old camp was located here, now consisting of a few tumble-down shacks which were last occupied by the leasers in 1937.

There is a very good well with a concrete collar and screen and the water stands some 15' below the surface and looks to be of good quality. Drill rods lying around the camp indicate that some deep well drilling has been done in this vicinity but the exact location was not determined. This camp is probably near the site of the old smelter where Durfee mentions that a 300' well had been sunk in the old days but we did not find any trace of either the well or smelter which may have been located some little distance away.

Inclined shaft (G) 150' or more in depth was visited but did not go down as there are no ladders although one could climb down on the timbers if the air is good. There is said to be water in this shaft. Sampling at this point by Durfee

indicates low gold and copper values,- no pay ore.

Near (H) on Durfee's map and to west of it quite a bit of recent stoping has been done and much of the high grade ore shipped from the mine in 1937 seems to have come from this section,- stopes average a little over 3' in width but some of the product may have been sorted out before shipment. The tonnages of ore estimated by Durfee, DeCamp and Kruttschnitt (who is said to have figured on 75,000 tons) are evidently all based on the assumption that the width and values will hold in the vein from the western or upper outcrops down to a depth (on the incline) of about 800' which would carry them to the line between H & K as drawn on Durfee's map. This assumption may perhaps be considered as a geological probability but is not sufficiently established to warrant any large capital investment until further proof is obtained.

In my opinion a logical procedure would be to confine the initial developments to the western portion of the hill where the best grade of ore seems to occur and to first make a check sampling of all the accessible showings of ore in Durfee's block (L) and if this work should confirm his figures to then install a portable compressor and small mining plant and drift on the vein right thru the hill from K to I (distance about 500') thus proving fairly definitely the tonnage and value of Durfee's Block L which he has estimated to represent a tonnage of 42,100 with gold content 0.367 oz. and 2.95% copper,- present gross value \$18.75 per ton.

In mining and milling 40,000 tons of this grade of ore the net working profit should be close to \$400,000 and the mining and milling equipment and further development of this mine would then be fully justified even assuming,- as seems probable,- that the balance of the ore (Durfee's Block N and further east) should have a much lower average value and should net only \$2.00 to \$3.00 per ton in working profits.

Cost of check sampling may be figured @ \$1,500,- mine equipment with rented portable equipment and camp facilities say \$3,500 and drift with a few short raises, etc. @ \$10,000 total say \$15,000.

The suggested development should be practically all in ore and would result in some production and be useful for the future operation of the mine.

The risk involved in this program seems well justified by the present showings but this statement is made tentatively on the basis of my own casual inspections and the reports by Holland, DeCamp, Durfee and Norris together with the records of shipments. It would seem very important to also obtain the mine report with assay map and the metallurgical report of J. V. McConnell who thoroughly investigated this property for the El Tigre Co. some 3 or 4 yrs. ago and whose findings and conclusions should be given great weight in either substantiating or refuting the opinions in the reports mentioned.

BULLARD NOTE

9/3/39

Visited Sept. 2nd with Diebold.

Two men working on north side of hill, \_\_\_\_\_ Moore in charge, Drilling in vein on surface and in trenches and sorting out high grade ore said to run \$35.00 per ton but doubt this. Mining only a very narrow seam and can't continue much longer at this location.

At Quail's Nest workings, Shafts #1 and # 2 are in the State Claim while #3 is on an unpatented claim known as the Turk. These workings lie about  $\frac{1}{2}$  mile or more north-west of the main workings, three men are working with Smith, foreman.

The outcrop is on the south side of a little hill and has been opened up for a length of some 300' east-west and there are three incline shafts on the vein dipping about 20° to Northeast. The deepest of these shafts is 115' on the incline and ore has been stoped on both sides of them and in places up to the surface. Men now working in #3 or west shaft.

Stoping width of ore 2 to 4' and goes down to fault but gets very narrow. Waste is sorted out and left for back-filling. Same character of ore and wall rock as at the main workings but deposit appears to be small and not susceptible of cheap mining. Only chance for any substantial tonnage would appear to lie in its possible extension to the west.



Three cars of ore last shipped have run \$18.00, but most of the ore runs \$12.00 altho one or two high grade cars were shipped from near the surface.

A little galena has been found in one section of the vein but I think that it is only a pocket.

Seems likely that this represents a faulted section of the main vein and if so there may be another segment lying between them but it might be hard to find or too deep or small to work.

Prospects for much additional tonnage in this part of the property seems poor.

Total shipments made since Ross and Bullard Mines *since they* took over the Merrill Lease about 50 cars, say 2000 tons. and don't think that they can continue much longer with any profit as expense increases and ore generally thins out as they work downward.

Moore says that there is very little water in the well at the camp and he has heard from old-timers that the supply in the smelter-well was very limited.

At his father's ranch some 8 miles south there is a big supply at 280' and he thinks that wells sunk about 4 or 5 miles south of the mine should tap the plentiful supply in the water-table under the valley between the mine and Aguila.

G.M.C.

NOTE RE BULLARD MINE AND SHIPMENTS

9/29/39

*Slide 287*  
The average of the 170 cut samples taken by the El Tigre Company and representing some 50,000 tons of developed and probable ore was almost exactly the same as your shipment #30 which carried:

Au.	0.22 oz. per ton
Ag.	0.38 oz. " "
Cu.	2.49%

Therefore, it may be interesting to make a comparison of the results which follow the shipment of this grade of ore to the smelter as compared with the results which could pretty certainly be obtained if this ore were held in the mine until an efficient equipment and concentrating mill were provided for production of gold bullion to be sold direct to the mint and copper precipitate (cement copper) to be shipped to a smelter.

COMPARATIVE ANALYSIS OF BULLARD MINE RETURNS ON ORE PRODUCTION  
AND COSTS.

(Based on Shipment Lot #30 which closely approximates the average analysis of ore as per sampling.)

Gold figured @ \$35.00 per oz., Silver @ 71¢ per oz., Copper @ 10¢ per pound.

Analysis of Ore (lot 30) H<sub>2</sub>O , Au. = 0.22 oz., Ag. = 0.38 Oz.  
Cu. = 2.49%.

Gross value of ore per ton = \$12.95

(Mill recovery estimated at 90% of all gross values.)

	Actual figures while shipping crude ore per ton.	Estimated figures with 50 ton mill operating at mine. Per ton
Net payments to Co. by smelter and/or mint	\$ 7.52	\$ 10.80 *
<b>DEDUCT:</b>		
Cost of mining & development (about)	3.50	2.75
Cost of haulage to Railroad	1.04	
Cost of freight to smelter & market- ing product.	2.46	0.20
Cost of milling ore	----	2.00
Royalty to owner	0.75	1.08
Management, taxes, overhead & inci- dentals (about)	.50	0.47
<b>Total cost</b>	<b>8.25</b>	<b>6.50</b>
Net profit to Co.	<u>Per ton</u> 0.73 (loss)	4.30
Net operating gain by installation of mill	5.03	
Less amortization of of capital	<u>1.03</u>	
Net gain to Co.	4.00	

\* The gold bullion will be sold to the mint at Gov't. price for gold & silver less a small charge for refining. The smelters would purchase the cement copper with a deduction 2 from market price of about 2¢ per lb.

Assuming that a total tonnage of 100,000 of similar grade should be shipped or milled, the total loss through shipment would be \$73,000 while the profit through milling would be \$330,000 after repaying the cost of the mill and accessory equipment.

Each 1¢ increase in the price of copper will add about 50¢ per ton to the net value of the ore.

*S. M. Colvocores*

# THE TIGRE MINING COMPANY, S. A.

R. T. MISHLER,  
GENERAL MANAGER  
W. A. WASLEY,  
ASST. GEN. MANAGER

THE LUCKY TIGER COMBINATION  
GOLD MINING COMPANY  
KANSAS CITY, MO., U. S. A.

EL TIGRE, SONORA, MEXICO  
VIA DOUGLAS, ARIZONA

July 23, 1931.

Mr. J. V. McConnell,  
Belmont Hotel,  
Wickenburg, Arizona.

Dear Sir:

With reference to the ores from the Bullard mine.  
A composite of the assay pulps turned over to me by  
Hawley & Hawley assayed as follows: Au .22 ozs., Ag 1.08  
ozs., Cu 2.68%.

The large sample you sent from the mine, which is  
supposed to be a representative sample, assayed as follows:  
Au .39 ozs., Ag 1.47 ozs., Cu 14.92%.

You will note there is a big discrepancy between  
the two representative samples.

If the composite from the assay pulps is more near-  
ly a representative sample, please send me as soon as  
possible about 25 or 50 lbs. of ore of this grade as I  
am entirely out.

Yours very truly,

*W. A. Wasley*

Ass't. General Manager.

WAW/ef

cc. R. T. Mishler.

*Rejects →*

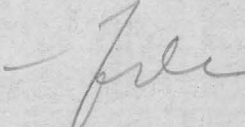
*This WAS  
FIRST SAMPLES  
AVERAGE  
about 67 sample*

*This Sample  
By Thompson  
Not Representative*

*Not Representative*

September 7th, 1938

Mr. J. V. McConnell  
1012 North Kansas Street  
El Paso, Texas.

Re: Bullard Mine 

Dear Mr. McConnell:

Many thanks for your two letters of the 6th received this morning.

Regarding the two mines which you mention in Washington and Nevada, I am afraid that these are somewhat out of my line and I am quite sure that Howard Fields and Fred Gibbs are in a better position than I am to help you in interesting capital. Personally, I very rarely attempt to follow up the financing and development of any mining properties unless I have made a personal investigation and formed a very favorable opinion. Fields has been very successful in raising money during the past few years and I hope you will be able to work something out with his assistance.

I note have you have in your files a very substantial amount of data regarding the Bullard Mine and I am quite sure that this should be valuable to anyone who decides to take over this property. Dick Bullard has already given a lease with option to purchase and the terms of the lease are very favorable so that the option is a matter of secondary importance. The party who originally held the lease has in turn assigned it to another man with whom I am in contact and it may be that my clients will take it over provided we can substantiate the favorable opinion which I have formed from two brief visits to the mine and from the reports which were made to me by two of my own engineers who made casual examinations several years ago.

I certainly appreciate your willingness to send me over the data in your possession but I cannot yet be sure that this would have a cash value and I do not think it right to request this information except on the basis of a reasonable payment.

However, if you are willing to take a chance and will send over the reports and assay maps together with any notes regarding the metallurgical investigations or other matters of importance, I will arrange to have these promptly copies in my office and the originals returned to you. I will not dispose of these copies or use them for the advantage of my clients or myself unless I am able to pay you let us say a minimum of \$100 but at the present moment I cannot guarantee that these will be used or that such a payment will be made.

Mr. J. V. McConnell

-2-

August 7th, 1938

To the best of my knowledge no work has been done at the Bullard Mine since you made the examination in 1931 except by certain leasers who operated on the north side of the hill in 1937 and shipped several carloads of high grade ore on which I have the returns. The old shaft on the Rattler claim is, in my opinion, not of any great importance and according to a report which was made several years ago the only pay ore in this shaft was found close to the surface.

I hope that we can work out something to mutual advantage in reference to this property and I shall also bear in mind the others which you mentioned in your letters.

Personal regards.

Yours very truly,

GMC:MF

NOTE RE BULLARD MINE

June 19, 1939

J. P. Smith, Vice-Pres. of Bullard Mine and representing the controlling stock interest called and may want copies of my reports and to have me make examination which would bring information up to date,- also history of past negotiations.

Offered to make this for \$500 fee which seemed to be satisfactory but he expects his Eastern associates to pay for it.

Smith may be found at Bullard Company office in Heard Bldg. and his home phone is 3-6276.

Says that their costs for freight and treatment are about \$6.00 per ton, i.e. hauling to R.R. \$1.00, freight \$2.40, smelting \$2.60 (in addition to which there must be smelter deductions.)

Says that they have done most of their mining at the Quail's Nest where they have sunk a shaft and at a point east of the Blacksmith shaft and further east across the road where they have started to sink another shaft and at depth of 30' have a 5' vein of \$20.00. Also they have started to tunnel thru the hill and he thinks that they are within 75' of making a connection and they have raised up to the location where George Long mined and are now mining some of this ore.

Six cars shipped from the C Shaft only paid freight and treatment charges but other 34 cars shipped to date have



yielded some profit but did not say whether this was enough to pay mining and overhead charges.

May call again after seeing or communicating with his associates in New York.

G.M.C.

January 13, 1943

Mr. J. P. Smith, President  
Bullard Gold Mines  
Hearst Building  
Phoenix, Arizona

Dear Mr. Smith:

Confirming our verbal and telephone conversation you have given me to understand that the physical conditions at the Bullard Mine have not greatly changed during the past four years and that the greater part of the ore reserve which then existed is still in place.

Under these conditions it is my opinion that the Bullard Mine should be entitled to secure a Government loan to permit the re-opening and additional development of the property and I think that you could expect to secure a Class B loan amounting to approximately \$20,000.00 and with the possibility that a similar amount might be obtained after the first \$20,000 had been expended.

In order to make application for such a loan it will be necessary to revise and bring up to date the maps of accessible underground workings and also to prepare a report respecting the present conditions.

I shall be glad to undertake the technical procedure involved and for this purpose to reexamine the physical condition of the property, revise the maps, and prepare a new report, and also fill out all of the technical information required by the Government and furnish copies of old maps and reports which will be used to advantage in making such application. The legal and financial data relative to your company will have to be furnished by you or your attorneys, also record of shipments made during the past few years.

My fee for services indicated above will be the sum of \$250.00 of which I shall request \$100.00 in advance and the balance upon completing my undertaking and turning over to you the application for loan with maps and other exhibits for execution by the proper officials of your company.

I understand that the above arrangement is satisfactory and to confirm the same will ask you to sign one copy of this letter under the word "accepted" and if you desire I can arrange to visit the property and start to prepare the reports within the course of the next few days. Needless to say I will do my best to assist you in securing the loan from the Government and in carrying out any similar procedure that may be desired.

ACCEPTED:

Yours very truly,

*John E.*

Billard

My personal note attached & letter  
Dear Mr Colvins —

2/4/43

I can't make a promise of 1.75<sup>\*</sup>  
rate today on something that may not  
materialize for 6 months or a year —  
All I can say it is that if at the  
time shipments are resumed and we  
are in need of silica (and we usually  
are) — I would gladly extend to Bullard  
for the tonnage we can handle — the same  
consideration we are giving others for similar  
ore —

Yours truly  
J. H. Rexford



3- J. G. Dickensen

the middle of that month I should be able to prepare a complete account of all extra expenses to date and if satisfactory to you I will apply the \$75.00 which I hope to collect from Prince around June 1st towards covering these expenses and also any cash that may be received for the supplies which the lessees will use and which at most are worth only a few dollars.

The weather conditions are now ideal and if things go well at the mine I believe that at least one shipment of ore may be made during June and other shipments should follow along pretty steadily after the first of July. I shall have to watch this situation pretty carefully for a time but will certainly give it my best care and attention.

I trust that the enclosures and suggestions here with will meet with your approval.

Yours very truly,

GMC:DF

*J. G. Dickensen*

C compares sample representing them in bag

Analysis for 75.2%

SiO<sub>2</sub> 73.0

Fe 6.8

CaO 0.6

Al<sub>2</sub>O<sub>3</sub> 4.6

S - trace

The 2 large pieces also analyzed

Any other run on the sample showing slightly

287 sample made many checks and they made

no estimate of losses in these analyses as

Index

ORIGINALLY CHARTERED 1812

# THE PENNSYLVANIA COMPANY

FOR INSURANCES ON LIVES AND GRANTING ANNUITIES

S. E. CORNER 15<sup>TH</sup> & CHESTNUT STREETS

BRANDON BARRINGER  
VICE PRESIDENT

PHILADELPHIA

MEMBER FEDERAL RESERVE SYSTEM  
CABLE ADDRESS "PENCO"

June 10th. 1935

*A 6/21  
35*

Mr. G. M. Colvocoresses  
1108 Luhrs Tower  
Phoenix, Arizona

Dear Mr. Colvo:

I have your letters of June 6th. and 7th. on the Crater. Needless to say, the Standard Iron Company will co-operate with the Exploration Company on any plan looking to the development of the property and also, needless to say, it would, under no circumstances, permit the mortgaging of its property or any arrangement whereby the Government might get control of the fee. In other words, anything done will have to be done through the Exploration Company or a successor thereof.

I am sorry to hear that you are not coming East and think that the next step should be a proposed letter from you to Mrs. Greenway setting forth the proposition. If you could draft such a letter and send it on to the Philadelphia directors for approval, we will discuss it promptly and let you know whether it has our approval.

With personal regards,  
Sincerely,

*Brandon Barringer*



Based on this survey & assay by the  
El Tzic Co engineers made the following cal-  
culation:

Area probed or sampled = 170 000 sq ft

Average thickness of vein 2.5'

Therefore this sampling represented 32692 tons

@ 13 cu ft to the ton, call it 33000 tons

The average grade of this ore (from samples  
# 6-49 and ~~others~~ and other samples  
taken by the El Tzic Co has figured at

Cu = 0.25% Ag 0.50% Cu 2.67%

having gross value at present market price of 15.50  
per ton.

C O P Y

4/10/31

HAWLEY & HAWLEY

W. E. Hawley, Manager  
Deming, New Mexico

We hereby certify that the following results were obtained from samples of  
The Tigre Mining Company - by J. V. McConnell.

Office No.	Marked	Gold Ozs.	Silver Ozs.	Copper Per Cent
91588	1-B	.08	0.3	1.12
91589	2-B	.01	0.2	1.62
91590	3-B	.08	0.3	1.20
91591	4-B			
	5-B	.32	0.3	2.06
91592	6-B	.11	0.4	2.96
91593	7-B	.01	trace	1.94
91594	8-B	.15	0.4	1.34
91595	9-B	.11	0.6	2.50
91596	10-B	.23	0.4	2.38
91597	11-B	.02	1.1	1.14
91598	12-B & 13-B			
	14-B	.02	0.3	0.54
91599	15-B	.46	0.2	0.94
91600	16-B	.56	0.6	2.00
91601	17-B	.10	0.6	5.79
91602	18-B	.67	0.7	6.28
91603	19-B	.10	1.3	7.62
91604	20-B	1.07	0.5	3.88
91605	21-B	.20	0.6	3.52
91606	22-B	1.65	2.3	3.56

Office No.	Marked	Gold Ozs.	Silver Ozs.	Copper Per Cent
91607	23-B	.70	0.9	2.18
91608	24-B	.01	0.5	1.42
91609	25-B	.01	0.5	1.70
91610	26-B	.26	0.5	2.18
91611	27-B	.02	0.6	1.86
91612	28-B	.02	0.5	3.02
91613	29-B	.07	0.4	1.54
91614	30-B	.01	0.3	1.60
91615	31-B	.02	0.2	1.56
91616	32-B	.07	0.5	3.10
91617	33-B	.02	0.7	3.14
91618	34-B	.01	0.5	2.40
91619	35-B	.15	0.5	2.60
91620	36-B	Trace	0.3	1.40
91621	37-B	.23	0.2	1.46
91622	38-B	.01	Trace	1.76
91623	39-B	.02	Trace	1.68
91624	44-B	.31	0.6	3.64
91625	45-B	.67	10.0	22.14
91626	46-B	.47	0.3	2.62
91627	47-B	.02	4.1	24.38
91628	1-BG	.12	0.7	
91629	200-BS	.35	0.3	2.12

Dump = 150 Ton Blk. Smith. Shaft

Date: 4/17/31

Hawley & Hawley

Per: (Signed) W. E. Hawley

Assayer

Office No.	Market	Silver Ounces	Copper Per Cent
41807	23-B	70.	2.18
41808	24-B	10.	1.48
41809	25-B	10.	1.70
41810	26-B	30.	2.18
41811	27-B	30.	1.80
41812	28-B	30.	2.08
41813	29-B	70.	1.34
41814	30-B	10.	1.80
41815	31-B	30.	1.88
41816	32-B	70.	2.10
41817	33-B	30.	2.14
41818	34-B	10.	2.40
41819	35-B	10.	2.80
41820	36-B	Trace	1.40
41821	37-B	30.	1.48
41822	38-B	10.	1.78
41823	39-B	30.	1.88
41824	40-B	31.	2.04
41825	41-B	70.	2.14
41826	42-B	40.	2.82
41827	43-B	30.	24.38
41828	44-B	12.	
41829	45-B	35.	2.12

Group = 100 Ton min. to 1000 lbs.

Hawley & Hawley

Date: 1/11/01

Port: (Signed) F. F. Hawley

Assayer

*Bullard mine file*

July 22nd, 1938

Mr. James S. Douglas  
Douglas, Arizona

Re: Bullard Mine

Dear Mr. Douglas:

As requested last evening, I have prepared a statement in reference to the Bullard Mine which I believe contains all of the essential information in my possession.

In 1919 or 1920 we tried to make a deal with John Bullard to take over this property under lease and bond after it was given up by Abbott and Bryan but he wanted \$750,000 with large cash payment, so we naturally did not pursue the matter further nor go to the expense of any thorough investigation.

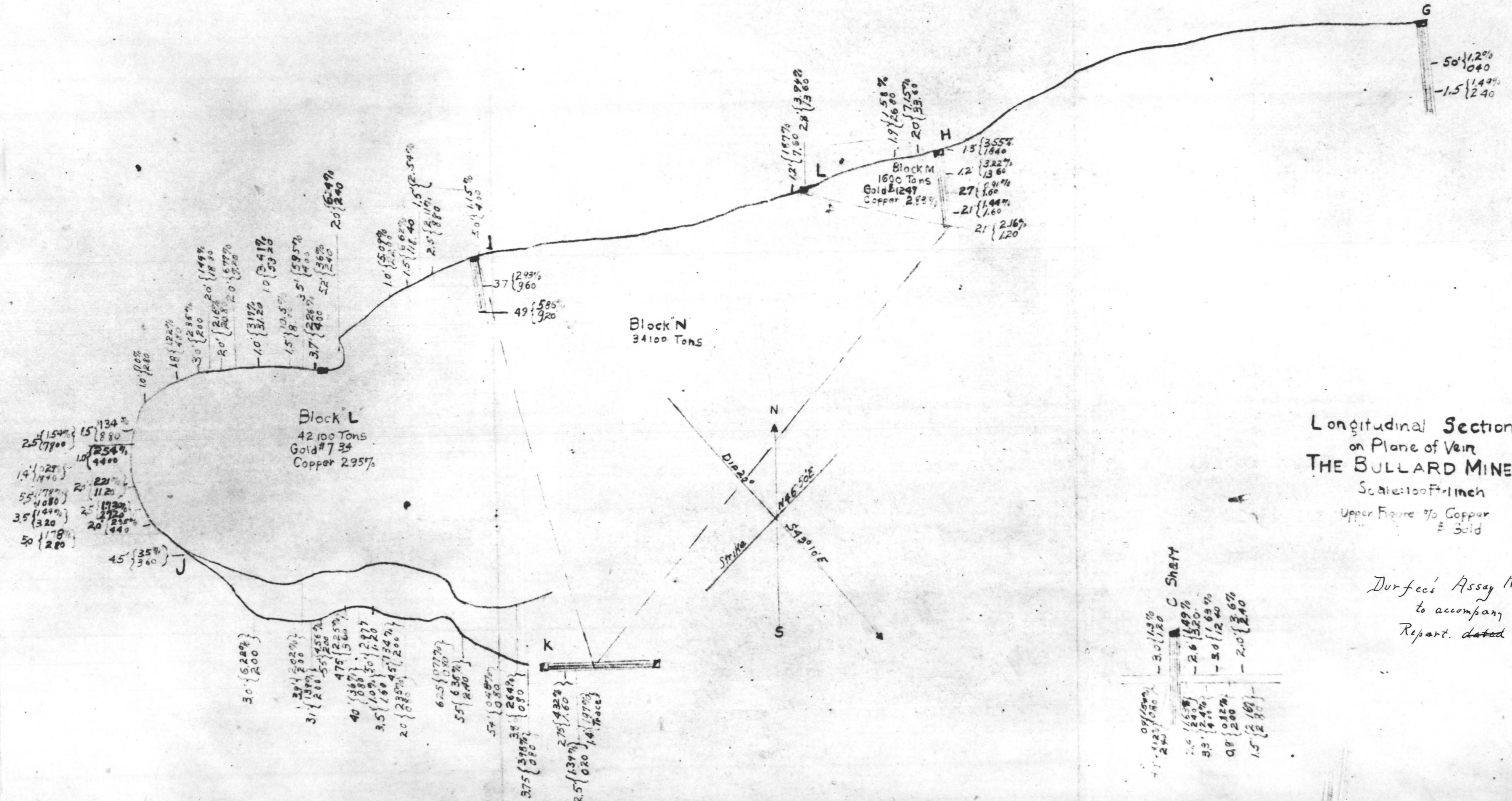
I believe that the mine has real merit although the tonnage is probably limited, as noted in the memo, but it should be a profitable investment if Dick Bullard can be dealt with on a reasonable basis and assuming that further investigation substantiates the essential data given herewith.

I will hold an extra copy of this memo in Phoenix assuming that this does not reach you in Douglas and I hope you will get in touch with me when you return here Sunday evening. I should like very much to be of some service to you in following this matter up if you decide to do so.

Yours very truly,

*I. M. C.*

GMC: MF  
Enc. 1



Longitudinal Section  
on Plane of Vein  
**THE BULLARD MINES**  
Scale: 100 Ft. = 1 inch  
Upper Figure % Copper  
# Gold

Durfee's Assay Map.  
to accompany  
Report. dated

AMERICAN SMELTING AND REFINING COMPANY

SOUTHWESTERN ORE PURCHASING DEPARTMENT

810 VALLEY BANK BUILDING

P. O. BOX 2028

TUCSON, ARIZONA

BRENT N. RICKARD

October 10, 1939

*A 10/12  
39*

Mr. George M. Colvocoresses  
Mining and Metallurgical Engineer  
1102 Luhrs Tower  
Phoenix, Arizona

BULLARD MINE

Dear Mr. Colvocoresses:

I acknowledge receipt of your letter of October and I am very glad to have the information you have given me on the Bullard Mine, as well as your suggestions and recommendations.

I am today forwarding a copy of your letter to El Paso with the recommendation that we grant the lessees an advance of \$5,000. Whether or not this will be acted upon favorably by our people in New York I do not know. However, I feel that in view of the need of Hayden for silicious ore we should be willing to help these operators to the extent asked for, and particularly as they now have engaged you to guide them in their work.

*Copy*

The Bullard Mine was examined for our company by Mr. M. Stockder September 30 to October 8, 1912. He did a very careful job of sampling, surveying and mapping, ~~(and apparently it is his figures that have been used in the report made by El Tigre.)~~ The property was again examined in August 1913 by Messrs. Stockder and Kruttschnitt. On Stockder's assay map I find the following: Area probable ore 17,000 square feet, average thickness of ore 2.5 feet, tons of probable ore 32,692 at 1 $\frac{1}{3}$  cubic feet per ton. The computed average of samples 6 to 49 inclusive taken at regular and fixed intervals over the entire length of the vein on both sides of the mountain is as follows: Au .25, Ag .50, Cu 2.67%. The analysis of this composite sample is: SiO<sub>2</sub> 73%, Fe 63%, CaO .6, Al<sub>2</sub>O<sub>3</sub> 4.6%. You will note that this is the exact tonnage and assay quoted by El Tigre. It is quite likely that they took 287 samples and checked the work of Stockder.

*6.8%*

July 22nd, 1938

MEMO RE BULLARD MINE

This property was examined for me in 1917 by L. F. S. Holland and in 1919 by W. V. DeCamp from whose reports I take most of the following notes.

Location 30 miles westerly from Congress Junction and 9 miles north of Aguila on Parker Branch of Santa Fe Railway from which it is reached by a fair desert road. Elevation 2250'.

In 1919 twenty eight claims were held of which ten were patented,- a later note mentions 28 patented and 12 unpatented claims.

Property was developed many years ago by the late J. C. Bullard with a number of shallow shafts, adit tunnels, open cuts and trenches. It has been examined and sampled by several engineers including Stockder and Julius Kruttschnitt for the A. S. & R. and Will L. Clark for the United Verde.

In 1919 it was bonded and leased to W. T. Abbott and Bryan who made a few shipments and then dropped it. In about 1935 it was held under option for a short time by Joe Walton and H. L. Williams of the Hillside Mine.

Formation is an andesite breccia overlain by augite-andesite of later age.

The vein is a contact fissure with filling of quartz and calcite carrying copper carbonates, silicates and sulphides



REPORT AND NOTES ON BULLARD MINE

DISTRICT: Congress Junction  
NAME: Bullard Mine  
LOCATION: 30 miles west of Congress Junction. Nine miles by very good desert road north of Aguila.  
CLAIMS: 28. 10 patented.  
OWNERS: J. C. Bullard, Congress Junction, Ariz. property recently sold to W. T. Abbott and Bryan. Address Aguila, Ariz.  
ELEVATION: 2250 feet.  
DATE VISITED: September 29th and 30th, 1919 by W. V. DeCamp.  
NOTES:

GEOLOGY

An andesite breccia overlaid by a later andesite. Fissure of movement filled by quartz and calcite with subsequent mineralization. Minerals consist of carbonates, silicates, copper glance and bornite. Probably all of secondary origin, altho the bornite may be primary. Some primary chalcopyrite.

ORE EXPOSURES: The fissure lies in a hill at an angle of about ten to thirty five degrees and is in this position probably due to block faulting, Erosion has exposed the ore around the perimeter of this hill with the exception of one corner where the vein dips under the wash. Shaft on vein shows ore pinching out at water level.

Vein varies in thickness from one to eight feet and if faulted at numerous points altho not sufficiently to interfere with mining operations to any great extent. The lower side of the hill is of sufficient elevation that nearly all ore can be extracted by gravity and mining costs should be low, since no timbering is required.

DEVELOPMENT

Consists of numerous shallow inclines and raises. Area of ore exposed roughly three hundred by twelve hundred feet and thickness will average three to four feet.

Property shows other veins of similar character at various points but where development has reached the natural drainage level, both on the large ore exposure as well as on other veins mentioned, the mineralization ceases completely, indicating that depth would be shallow in most cases and that the estimated tonnage of 80,000 tons would be augmented but slightly by deeper work on outside stringers.

TONNAGE

Estimated that there is 80,000 tons of ore developed carrying four per cent copper and four dollars in gold which estimate I consider conservative. Bullard claims \$8 in gold. Six samples were taken from cuts and raises while two were taken from stock piles of ore located in the vicinity of an old smelter which was operated in early days.

Volatilization tests show a high extraction as indicated by results listed below.

ASSAY VALUES

Samples 3 to 8 inclusive.  
Dump samples 1 to 2 inclusive.

(see page following)

COSTS

Mining	\$1.75	
Haul	1.75	
Freight	3.12	To Hayden
Treatment	5.00	
Total	\$11.62	

Property recently bonded to Abbott and Bryan of Aguila for sum of \$755,000.00. Nothing down, fifty thousand in six months, one hundred thousand in one year, two hundred fifty thousand in eighteen months and balance in two years. Royalty of twenty-five per cent of net smelter returns to apply on purchase price. Agreement that work is to start in ten days and that thirty tons of ore per day is to be shipped after the first sixty days.

CONCLUSION

Property valuable and an ideal ore for volatilization. Price entirely too high, but believe present operators will ship sufficient ore to meet first payment and that they will make principal shipments after first and before second payment, and in this way they should net a considerable sum dependent on the amount of equipment installed which I do not think will be great.

Present operators have agreed to withhold a long term contract until hearing from the C.A.S. Co., and have also agreed to ship one car of ore for volatilization tests from stock pile represented by sample Number 2.

ASSAY VALUES ON BULLARD MINE

No.	Location	Width	Gold Oz.	Ag. Oz.	Cu. %
1	Bat Tunnel, basic ore, 50 ton pile at old smelter	-	.10	.10	2.34
2	At old smelter, 30 tons siliceous ore	-	.04	.75	5.53
3	Bottom 100' incline, main reef, first hole north of blacksmith shop	30"	.03	.55	4.39
4	Second incline north of blacksmith shop, top	30"	.08	.50	2.21
5	Tunnel near top of hill north of blacksmith shop	48"	.28	.90	4.20
6	Shallow incline top of hill	36"	.07	.85	5.65
7	Out S. side hill, 100' N. trestle	60"	.05	.55	1.70
8	Tunnel east of trestle, S. side of hill	72"	.03	.55	2.57

Assays would indicate an ore carrying about 3.7% Cu. and \$2.50 in gold, as mined.

ADDITIONS TO REPORTS ON BULLARD MINE

Recent option held by Abbott and Bryan forfeited after they had installed two small compressors; built a mile of road and shipping seven cars of ore.

Property now consists of 28 patented claims and 12 unpatented claims. Present price \$800,000 - Ten Per cent cash and balance in 2 years.

Average of ore shipped as follows:

	Au.	Ag.	Cu.	Fe.	Ins.
7 cars -	.27 oz.	.66 oz.	4.21%	7%	74%

*Good description of existing workings*

NOTES FROM RECENT INSPECTION (10/4) AND FOR  
OPERATION OF BULLARD MINE .

10/12/39.

The old 20' shaft in the wash below the smelter is to be cleaned out and reopened by Moore under special temporary lease agreement. It is supposed that some \$35.00 ore can be mined from this shaft and should the grade of the first shipment prove satisfactory this will be a favorable point of attack, but the lease to Moore will have to be continued and proper equipment (including hoist and compressor) installed by the company.

A recent sample of the vein exposed in the old west shaft at the Quails Nest Workings assayed 1.1 oz. gold and 7% copper.

Should be promptly investigated and mined as soon as possible if the average grade will stand up to that assay.

In the main Quail's Nest Workings two sections of wall rock were sampled, one of which assayed \$13.00 gold and -0.5% cu., while the other was quite worthless. Even the better grade material will not pay to ship, but this shows the importance of sampling and assaying well in advance of mining.

All of the assay tags left at the mine by the El Tigre engineers are still in place and I should try to get a more complete list of samples from McConnell so that these could all be checked up and posted on a new assay map which should be made on a large scale and with contours, and should, if possible, <sup>show</sup> the assays of Durfee, Stockder and McConnell.

Such a map is very essential in order to determine the places from which the higher grade ore may be obtained for shipment and the approximate tonnage, also to determine the proper location for

the adits and other work required to properly develop the larger tonnage of low grade ore and permit this to be economically mined for a mill.

Try to get some data regarding the diamond drill holes mentioned by McConnell.

When considering the metallurgical treatment of the ore the C. V. process should be given due consideration, as this might prove more satisfactory and economical than the combined amalgamation and leaching treatment advocated by Mishler and no large water supply would be required.

Elevation at Quail's Nest camp is 2800', according to my aneroid.

From the Quail's Nest Shaft (#3) which is 60' deep, the drift has now (Oct. 4, 1939) been run west for a distance of 50', and it is all in ore which looks very good.

Three men working here in the stopes and produce about 5 tons of ore per day.

Going west the outcrop can be traced for a long distance and the vein appears to straighten up. The old shaft (referred to above) is located 220' north,  $45^{\circ}$  west from the #3 or working shaft and there is a good chance for a continuous ore shoot between there down to the fault which seems to cut off and throw the vein.

Going southeast from #3 shaft is #1 shaft sunk 140' at  $30^{\circ}$  incline, and the fault is here encountered striking north  $75^{\circ}$  W. and almost vertical. Down to the fault the ore looks good. Sixty-five feet further to the south-east is found the #2 shaft, where the vein looks fairly rich but is quite narrow.

Next for a distance of 1000' along the hillside there are several good outcrops but no development except for one opencut known as #5, from which eleven tons of \$33.00 ore is supposed to have been shipped by Long.

El Tigre sample #7 taken at this point assayed Au. 08, Cu. 1.44%, (low grade) and El Tigre #24 on east side assayed Au. -.40 Cu 10.5%, (Value \$35.00)

This vein continues beyond around the hill with strike S. 30° E and dip 40° to the East.

This point #5 opencut is located about 3000' S. 15° W from the south center of the Home Group Workings.

The portal of the C. tunnel is about 85' below #5 cut and is in the C. vein which appears to intersect the Quail's Nest Vein a short distance west of #5 cut.

Stoping from the drift in this tunnel has been done for a length of some 150' and then there is about 75' of virgin vein that looks good and should have backs of about 100' on the dip and average width of some 2', thus representing about 1200 tons of ore that can be mined fairly cheaply.

Heavier rails would improve the track in C. tunnel where four men are now working.

Under present conditions there seems to be a slight loss in mining and shipping \$15.00 ore and the grade should be kept up to \$20.00 to make the work really profitable.

Near the old smelter and the Bullard House there is a well which was dug for 60' and then sunk 900' with 8" casing, flow of

water very questionable and there are supposed to be two other deep wells in this vicinity.

An old shaft is located N 60° W from the Bullard House on a vein which strikes north and south and dips 50° to the East.

The so called Deep Shaft is said to be sunk 160' and some stoping was done. Near collar the vein is badly broken up but improves a little way down where some 2' of good looking silicate ore can be seen. Strike is N. 53° E and dip 40° to north, and to N. E. the Quail's Nest lies about 1800'.

Close by is located the old main shaft (incline) also called the "Water Shaft", which is said to be 270 or 300' deep, with water standing to within 100-200' of the collar.

On the dump there is some good looking sulphide ore which apparently came from depth and a picked sample which I took assayed Au. \$2.80 and 6.6% Cu. It is supposed that much of the ore which was smelted here in the 1880's was taken from this shaft.

On the water shaft vein some 200' southwest of the Water Shaft is located the oldest shaft supposed to have been sunk in the 70's to depth of about 150'. No timber and now caved, but vein near collar shows 3' of good looking ore. There is still another shaft on this vein 250' further southeast from which ore has been taken and a little remains on the dump. Vein looks fair but somewhat broken.

Another parallel or intersecting vein is to be noted near the water vein and all of these workings/ <sup>are</sup> on the \_\_\_\_\_ and Claims and it appears to me that they should be carefully examined as soon as possible for they seem to have good possibilities and it is very important to determine the character and value of the primary sulphide which can ~~apparently~~ be found in the water shaft.

Some 3000' of the north side of the Home Group workings is found the Treasure Hill Vein which strikes N 50° W and dips about 80° to the N. E. It is in andesite and shows stringers of ore with some chalcocite as well as silicate. It is a likely looking prospect and Larsen is supposed to have sampled here for a width of 10" and got \$20.00 gold and good copper values, but only work consists of shallow surface pits.

On another vein near by there is a 25' shaft where the vein strikes north west. This is almost due west of the camp on the north side of the Home Group Hill, which is some 700' distant.

Other veins are noted in this vicinity, some in the limestone.

The limestone vein at the east end of the Home Group Workings strikes N.W.-S.E. and dips 50° N. E. It shows low grade ore and broken wall rock. The shaft is about 1000' south east from the east slope of the Home Group Hill.

About 3500' south of the Home Group Workings is found another vein which may be an extension of the Quail's Nest vein and where there is another shaft said to be 150' deep. It strikes N.W.-S.E. and dips 40° to N. E. and shows 2' of good looking ore. There is a dump of about five tons.

In hanging wall of this vein and 40' distant is another nearly parallel vein but it does not look good.

About 3000feet east another vein strikes north and south and dips 70 degrees east. It is 1 to 4' in width and opened by surface pits in 8 or 9 places, value said to be \$6.00 per ton.

FOR PERMANENT WORK.

The old Bullard House must be reroofed and walls repaired to make it habitable in winter.



A surveyor-assayer should be employed to make a careful topographical survey as noted above and he should also assay all mine samples to determine if the ore will pay before it is broken and avoid shipping much low grade material as has been done in the past.

Ran Bone, the recently appointed Superintendent, seems to be a capable miner but is greatly handicapped by the financial difficulties of the company, which owes \$3000 in delinquent accounts, some of which are very pressing, and cannot hope to pull out of the hole without a substantial cash advance which should be at least \$5000.00. J. P. Smith, Joe Bacon and Dave Fountain now own 53000 shares of the 100,000 shares of issued stock, and control the board, but J. Ban Ross is still a large stockholder.

It is said that John Bullard staked these claims from 1868 on and his brother Dick came out in 1882 and a nephew, Matthews, came later and knows a lot about the property.

The Yuma Copper Co. operated the smelter in the 80's and did a lot of the development work. They were in litigation with the Bullards for a matter of seven years regarding the lease which they held on his property and when Bullard ran out the Yuma Copper quit.

Among the small stockholders in the Bullard Co. are Gray Madison, Al Loveland, Pratt (<sup>connected in law</sup> brother-in-law to Laura Loveland) Grovenor and others who have or could obtain money to finance the proper equipment and operation of the mine.

Matthews is in contact with a man named Driscoll in Chicago who has suggested that he would finance the venture, but he may be only a promoter.

On October 9th the stockholders at a special meeting authorized the Directors to issue additional stock.

Crane is auditor for the Company.

is attorney for the Co.

GEORGE M. COLVOCORESSES  
MINING AND METALLURGICAL ENGINEER  
1102 LUHRS TOWER  
PHOENIX, ARIZONA

*File re Bullard Mine*

July 26th, 1938

Mr. J. S. Douglas  
Douglas,  
Arizona

Re: Bullard Mine

Dear Mr. Douglas:

It was so noisy in the restaurant last evening that I could not very well carry on a telephone conversation but I understood that you had received the data on the Bullard Mine which I mailed to you in Douglas on the 22nd and also that you had yesterday seen Dick Bullard and been unable to reach any basis for further negotiation. This did not surprise me since I have always understood that Dick Bullard was only somewhat less unreasonable than his brother, John, and it is for this reason that the mine, which really appears to have merit, has lain idle for so many years.

Unless you have definitely decided to drop this matter for good and all, I would like to make a suggestion in reference to terms which may be worthy of your consideration.

I assume that Dick Bullard is, above all, anxious to secure a good income during the balance of his lifetime and also that in spite of what he may say, he really believes that he is going to live for a good many years, as do most men of his age. That is the reason why the insurance companies find the sale of annuities very profitable.

If a very thorough investigation of the Bullard Mine should check the tentative figures given in my statement in respect to probable profits of operation, I really feel that the property is worth somewhat more than \$30,000 on any reasonable basis of calculation and I would like to suggest that if Bullard were offered a firm purchase price of \$30,000 or perhaps somewhat more, payable during the next three years, and in addition an income during the balance of his life of say \$5000.00 per annum, that such a proposal might make an appeal to him.

If the net profit of operating after deducting the capital expenditure, including the \$30,000 purchase price, should actually prove to be in the order of \$300,000.00, the new owner could distribute \$200,000.00 and set aside the additional \$100,000.00 as a Trust Fund from which the interest at 5% would take care of Bullard as long as he might live and after that, this Trust Fund would also go to the purchaser.

Mr. James Douglas

-2-

July 26th, 1938

I believe that a plan of this kind might be very advantageous from a taxation standpoint as it would reduce the operating income of the purchaser during the three years or so that the mine was operating and the Trust Fund could probably not be considered as undistributed profits or taxed on that basis.

Of course, the above suggestion is entirely based on the supposition that a complete sampling of the mine and metallurgical tests should substantiate its value but you would naturally not wish to go to the expense of such an investigation unless and until you were assured that you could deal with the owner and I feel that there are possibilities in my suggestion which have not been sounded out to date.

Please let me know if you decide to do anything further on this matter.

Personal regards.

Yours very truly,

GMC:MF

7/27/38  
 B. H. Colver  
 Colver  
 The matter is dead  
 go for the papers  
 Regards  
 B. H. Colver

GEORGE M. COLVOCORESSES  
MINING AND METALLURGICAL ENGINEER  
1102 LUHRS TOWER  
PHOENIX, ARIZONA

July 22nd, 1938

Mr. James S. Douglas  
Douglas, Arizona

Re: Bullard Mine

Dear Mr. Douglas:

As requested last evening, I have prepared a statement in reference to the Bullard Mine which I believe contains all of the essential information in my possession.

In 1919 or 1920 we tried to make a deal with John Bullard to take over this property under lease and bond after it was given up by Abbott and Bryan but he wanted \$750,000 with large cash payment, so we naturally did not pursue the matter further nor go to the expense of any thorough investigation.

I believe that the mine has real merit although the tonnage is probably limited, as noted in the memo, but it should be a profitable investment if Dick Bullard can be dealt with on a reasonable basis and assuming that further investigation substantiates the essential data given herewith.

I will hold an extra copy of this memo in Phoenix assuming that this does not reach you in Douglas and I hope you will get in touch with me when you return here Sunday evening. I should like very much to be of some service to you in following this matter up if you decide to do so.

Yours very truly,

*G. M. Colvocoresses*

GMC:MF  
Enc. 1

GEORGE M. COLVOCORESSES  
MINING AND METALLURGICAL ENGINEER  
1102 LUHRS TOWER  
PHOENIX, ARIZONA

*N.Y. 8/18/38*  
*G.M.C.*  
*Nothing done*  
*W. H. Hanks*  
August 8th, 1938  
*W.H.*

Mr. J. S. Douglas, President  
United Verde Extension Mining Company  
233 Broadway  
New York, New York

Re: Bullard Mine

Dear Mr. Douglas:

On July 27th you wrote me quite positively that you would not consider this property but I think you may possibly be interested in the more recent developments as I then decided to follow the matter up on my own account.

On August 4th, R. W. Bullard executed a contract of Lease and Option to another party. I have a copy of this and have had it looked over by an attorney who seems to think that it is valid and binding. I have contacted the present holder of this Contract and yesterday spent a large part of the day going over the surface of the Bullard Mine.

The terms of the contract provide for a purchase price of \$750,000.00 but this really means nothing for the lessee can operate the mine for twenty years, paying only a 10% royalty on net smelter or mint returns with a minimum of \$200.00 per month after December 1938 and a minimum of \$500.00 after June, 1940.

The royalty will apply on the purchase price but if the lessee discontinues work or ceases operations and stops payment of royalty, his only loss will be the forfeiture of such permanent equipment as he may have placed on the claims and since the treatment plant could well be located elsewhere, the value of the buildings and structures involved could be kept at a very low figure.

Other provisions of the Lease Agreement are as usual and seem to be fair and equitable.

Unless the present owner of this contract should make a prior sale to other parties, I can secure an assignment of this Agreement and will convey it to a third party on the following terms:

Cash payment of not over \$200.00 to the lessee, plus \$100 to me.

Examination period until September 7th or perhaps a little later and then, if option is exercised or investigation continued, a cash payment of \$1000.00 must be made and on or

Mr. James S. Douglas

-2-

August 8th, 1938

about November 7th, an additional payment of \$3000.00 with a further and final payment of \$3500.00 by February 7th, 1939. These payments would not apply on the purchase price of the property but some adjustment of the dates might be made.

For myself I would receive a certain percentage of the cash payment mentioned, the balance of which will go to the present owner of the Leasing Contract and I would expect to be given a 5% non-assessible interest in the operating profits of the mine or some similar consideration. I would also like to be connected with the technical operation of the property but would not insist on this.

My personal investigation lead me to confirm in a general way the statements made in my letter to you of July 22nd although I realize that all conclusions would have to be made subject to a thorough examination and most of the ore exposed can only be classed as probable. I believe, however, that the chances of finding additional ore are somewhat better than figured by Holland and DeCamp.

I have been shown a report by another engineer who took 70 samples as a result of which he estimated 78,000 tons of \$19.00 ore which is a little higher than DeCamp's average grade but he used a narrower width of vein. This engineer stated that the gold was practically all free and a high recovery could be made by amalgamation but he believed that the copper would require leaching with which I agree after looking over various portions of the mine.

I have been shown smelter returns from several hundred tons of ore shipped during 1937 which show values in excess of \$50.00 per ton but I believe that this was all cobbled and sorted so that it is much higher than the average.

Personally, I believe that this property has real merit and that a very substantial profit could be earned during the next three or four years over and above the return of the invested capital and the payment of the royalty but I hardly assume that you will wish to change your mind and I am hoping to interest some friends in California.

If by any chance, you or your associates should want to take advantage of this opportunity and would be prepared to act promptly, you could send me a telegram and I will give you the first chance to take over the lease (provided I can get it) and I would immediately submit copy of the lease and other documents to Cornick or Kingdon as you might request and presume that you would arrange for a speedy examination of the Bullard Property.

Mr. J. S. Douglas

-3-

August 8th, 1938

*Handwritten signature/initials*

Unless I hear from you along these lines, I will go right ahead with some other people and fully understand that you are definitely and finally not interested on any basis.

Hope that you had a pleasant trip to the East and I also hope that the parties with whom I have been negotiating in regard to the smelter will visit Clemenceau with me this week and that some mutually satisfactory deal can be worked out.

Best personal regards.

Sincerely,

*S. M. Colvocozen*

GMC:MF

probably all secondary. Vein has a width of 4' but is not uniformly mineralized. Dip is 35° to south east and outcrops are on slope of a low hill.

Bullard claimed 100,000 tons of ore averaging 0.4 oz. gold, 4% copper and a little silver.

A small number of samples taken by DeCamp and Holland were not representative of entire showing but gave substantially lower values in gold.

Record of 7 cars shipped by Abbott and Bryan in 1919 or 1920 shows average of Au. = 0.27 oz., Ag. = 0.66 oz., Cu. = 4.21%, Fe. = 7%, and Insol. = 74%.

DeCamp estimated 80,000 tons of ore developed with average grade 0.2 oz. gold, 4% copper and about 0.5 oz. silver. Some sorting would be necessary to bring this ore up to grade. Holland, DeCamp and others agreed that there was little chance of developing any substantial quantity of additional ore and all calculations should therefore be based on a maximum of 80,000 tons.

No water on property but it was proposed to run a pipe line from Date Creek, which appears to be about 5 miles distant. The ore did not concentrate well by flotation although modern improvements in this process should make it work much better. At Humboldt we tested the ore for chloridizing-volatilization (a dry process) and obtained very good results with recovery of better than 90% but we could secure no reasonable terms from the owner and therefore made no complete examination of the mine.



Assuming the grade of sorted ore as estimated by DeCamp, then with gold @ \$35.00 per oz., silver @ 64¢ per oz., copper @ 10¢ per lb., and 90% recovery in concentrates, the value of the ore would be \$13.80 per ton. Working costs on basis of mining and milling 100 tons per day may be tentatively figured as follows:-

Mining and sorting	\$2.50	
Milling (including pumping)	2.00	
Haulage freight & treatment and sale of concentrates assumed to be produced in ratio of 5 to 1.	3.00	
Taxes, insurance, overhead	.50	
	<hr/>	
Total	\$8.00	
Net operating profit		\$5.80 per Ton
Operating profit on 80,000 tons		\$464,000

Estimate of Capital investment:

Mining equipment	\$35,000.00
Power plant (Diesel Engine)	
Concentrator, pumping plant & power line	90,000.00
Camp & miscellaneous	15,000.00
	<hr/>
	\$140,000.00
Less salvage value at end of 2½ years (say)	20,000.00
	<hr/>
Net capital investment	<u><u>\$120,000.00</u></u>

Allow for purchase price to be paid on basis of 10%  
royalty except for small down payment ----- \$30,000.00.

Net gain from purchase and operation of Bullard Mine in  
line with above tentative estimates \$314,000 to be earned within  
3 years from date of investment; income taxes to be deducted.

The above estimates and calculations are all made sub-  
ject to the result of a thorough sampling of the mine which was  
not made by either of my engineers and I have no record of any  
of the other sampling. It is also based on the assumption  
that the prices of gold, silver and copper will maintain approxi-  
mately at present levels and that 90% of these values can be  
recovered by flotation concentration in the ratio of about  
5 to 1. A complete sampling of the mine and thorough metallurgi-  
cal tests must be carried out before any accurate estimate can  
be attempted and this investigation appears to me to be fully  
justified provided there is reason to believe that the present  
owner will agree to a reasonable purchase price even though it  
may be somewhat more than \$30,000.00.

- - - - -

The Dick Bullard Mine was examined for me by L. F. S.  
Holland and E. S. Smith in 1918. It is located in Cunningham  
Pass about 11 miles north of Wenden and 20 miles west of  
The Bullard Mine.

It showed one quartz vein about a foot in width and  
high grade gold-copper ore was being successfully mined, sorted

and shipped by a lessee in 1918 at the rate of about 100 tons per month. The shaft had a depth of 250' and ore was persistent to that depth.

It seemed to be a good little mine suitable for a small crew of men to operate under lease but the ore-shoot may have pinched out as I have no record of more recent activity.

*L. M. Colverson*

Ex G

From Richard J. A. S. & R.

"The Bullard Mine was examined for our company by Mr. M. Stockder September 30th to October 8th, 1912. He did a very careful job of sampling, surveying and mapping. The property was again examined in August 1913 by Messrs. Stockder and Kruttschnitt. On Stockder's assay map I find the following: Area probable ore 17,000 square feet, average thickness of ore 2.5 feet, tons of probable ore 32,692 at 13 cubic feet per ton. The computed average of samples 6 to 49 inclusive taken at regular and fixed intervals over the entire length of the vein on both sides of the mountain is as follows: Au. .25, Ag. .5, Cu. 2.67%. The analysis of this composite sample is: SiO<sub>2</sub> 73%, Fe 68%, CaO .6, Al<sub>2</sub>O<sub>3</sub> 4.6%. You will note that this is the exact tonnage and assay quoted by El Tigre. It is quite likely that they took 287 samples and checked the work of Stockder.

BULLARD MINE

District: Harcuvar Mountains  
Location: 30 miles S. W. Congress Junction by fair road.  
9 miles north of Aguila by trail. Elevation  
2250 to 3200'. Pierce Mining District. 28  
claims, 10 patented.  
Owners &  
Operators: John C. Bullard, resident on ground. Idle.  
Date Visited: October 14th, 1917.

NOTES

Bullard Peak, on which mine is located, has andesitic breccia at base, overlain by angite andesite, with small seams of calcite. In the angite andesite is a fissure dipping about 35 degrees S. E., filled with brecciated silicified material carrying gold, and copper in form of chrysocolla, malachite and a little chalcocite. There are exposures of more or less ore all around the Peak. A line joining the exposures on the Homestake, Sweepstake, Washington, and Rattler Claims, would have the form of an ellipse about 2000 ft. long and 800 ft. wide. In the flat below the base of the Peak are other exposures of gold and copper ore, apparently separate from the main ore body. The main fissure has an average width of about 4', but probably not more than half of this width is good ore. A sample across 2' as an indicator, assayed (H278)\*. Bullard claims an average value of \$8.00

\* Cu. 2.62%, Insol. 70.6%, Fe. 4.1%, Au. 0.2 oz., Ag. Trace.

in gold and 3 to 6% copper for an estimated tonnage of 100,000 based on an average thickness of 4 feet. There are many open cuts, inclines and crosscuts on the property, the greatest depth of ore exposed being about 300 ft. The patent notes of 12 claims mention 19 shafts, 3 tunnels with approaches, 8 open cuts, 3 crosscuts and one level. The property has been sampled by Mr. Stockder and Julius Kruttschmitt for the A. S. & R. Co., Will L. Clark for the United Verde, and many other parties. According to Bullard, the average analysis shows about 70% Insol, 6% lime, and 9% iron, so it would not be very desirable for the Humboldt converters. The price asked for the property, (\$600,000.00) appears unreasonable.

(Signed) L. F. S. Holland

BULLARD

Actual & Estimated Returns based on three Typical Shipments

	A. Lot 5 (Low grade)	B. Lot 16 (Med. grade)	C. Lot 46. (High grade)
Gold	0.12	0.28	0.44
Silver	0.20	0.30	0.58
Copper	2.28	2.18	2.47
Gross value per ton	* 8.90	* 14.37	* 20.75
<hr/>			
Total payments by smelter per ton	4.35 = 50%	8.55 = 60%	14.56 = 70%
Deduct freight & royalty	2.50	3.35	3.96
Net payments to Company	1.85	5.20	10.60
Deduct estimated cost of mining, trucking & manage- ment.	4.00	4.00	4.00
Net profit to Company	-----	1.20	6.60
Net loss to Company	2.15	-----	-----

If same ore should be milled on ground and mined in a  
scientific manner at rate of 50 tons per day:

Gross value	8.90	14.37	20.75
<hr/>			
Recovered value, estimated @ 90%.	8.00	12.93	18.67
Deduct cost of milling & mar- keting, (estimated @ \$2.50) and royalty	3.30	3.80	4.37
Net payments to Company	4.70	9.13	14.30
Deduct cost of mining & management & transportation	3.00	3.00	3.00

Ex. A.

11/10/09

3 copies

REPORT

BULLARD GROUP OF MINES SITUATED IN YAVAPAI COUNTY, ARIZONA TERRITORY

By E. C. Norris

This property lies about twenty-five miles west from Congress Junction which is the nearest railroad point, and from which there is a good wagon road all the way to the property.

There are 27 claims, each 1500 feet long by 600 feet wide.

The formation is granite and porphyry, with veins of copper and gold quartz running through it. The general strike of the vein is east and west with a dip of  $35^{\circ}$  south and  $15^{\circ}$  east.

THE IMPROVEMENTS:

Consist of shafts, inclines, tunnels and open cuts.

No. 1., is an incline 150 ft. deep, showing  $3\frac{1}{2}$  ft. of ore.

No. 2, is an open cut 100' long, and extended by tunnel a further distance of 25', showing from  $2\frac{1}{2}$  to 7 ft. of solid ore.

No. 3, is an open cut at the point of the bluff, 25' long and shows 5' to over 6' of ore.

No. 4, is an open cut 50' long, showing 6' of ore.

No. 5, is a tunnel 50' long on the upper side of the vein, and shows 5 to 6' of ore.

Between Nos. 4 and 5, there are several open cuts, and the vein is stripped for about 250 ft., showing from  $4\frac{1}{2}$  to 6 ft. of ore.

No. 6 is bluff 400 ft. long, where the vein crops from 15 to about 30 ft. in height.

No. 7, vein stripped 25' shows ore body  $6\frac{1}{2}$  ft. wide.

No. 8, is a shaft 25' deep showing 6' of ore.

No. 9, is an incline shaft 85' deep showing an average of 5 ft. of ore.

No. 10, is an open cut 25' long showing 4 ft. of ore.

No. 11, is an open cut 25' long showing  $3\frac{1}{2}$  ft. of ore.

No. 12, is an incline shaft 90' deep, with an average of  $3\frac{1}{2}$  feet of ore.

No. 13, is an incline shaft 150' deep, showing ore from 4 ft.



to 15 feet in width. At a depth of 130 ft. in this incline there is a cross-cut 30 ft. long which shows ore the entire distance, thus proving that the deeper we go on these veins the larger and stronger the ore bodies become.

All of this work is done on one vein which embraces four claims. The other claims are opened up by shafts from 25' to 200' in depth. One claim in particular, the "International", shows a vein 40' wide, samples taken from clear across which assayed an average of \$7.00 per ton.

All the workings on these claims are in from 18 inches to 40 feet of ore.

#### WOOD AND WATER:

There is a good well on the property, and the experience of the previous operations shows that water sufficient for milling purposes may be secured as depth is attained. There is now water in two of the shafts at a depth of 150', in sufficient quantities to prevent an examination being made of them.

There is also a good supply of living water 18 miles distant which could be piped to the mines, the fall from the source of this water to the mines being 267 feet.

#### BUILDINGS:

Consist of two cabins, sheds and corral, and a good five-room, stone house. Also a sixty-ton water jacket smelter, which was operated at one time, but owing to the silicious character of the ore, the workings being so near the surface, it did not prove a success.

At present the ore would, in my opinion, give very satisfactory results under a leaching treatment, and with sufficient depth it ought to prove a good smelting proposition.

#### THE ORE:

Assays of samples of ore taken by me, as also those of various other persons, taken at different periods throughout the history of the property, are summarized on a separate sheet at the back of this report.

IN CONCLUSION:

I would say that this property has everything in its favor to make it a good paying proposition. I consider it one of the largest properties in Arizona. The ore bodies are large, and an opportunity is thus afforded to carry on mining in the most economical manner, and under the most favorable conditions. At the present time one hundred miners could be put to work, all working in ore. The climate is of the best, and there is therefore nothing to hinder the operation of this property during all seasons of the year.

I consider it a very conservative estimate to say that there are at least two hundred and forty thousand tons of ore now in sight. Allowing this to average only \$10.00 per ton, there would be \$2,400,000 in the body of ore now exposed.

Respectfully,

(Signed) E. C. Norris

Salt Lake City, Utah  
January 10, 1901

## A S S A Y S

From 26 samples taken and assayed by Burlingame, an average was obtained of \$27.50 Gold and Silver, and 8% copper.

In 1890 samples were taken from all along the vein which being assayed for copper, showed an average of 5.5% copper.

In 1894, samples from along the vein assayed by Hanks, gave the following results:

No. 1	- 3.7 oz. gold,	Value,	\$67.48
No. 2	- .7 " "	" "	14.00
No. 3	- 1.5 " "	" "	31.00

In 1896, samples from all along the vein taken and assayed for gold by Kelly, gave the following results:

No. 1,	Value in Gold,	\$	.62	) These assays were
" 2,	" " "	"	.61	) taken from the
" 3,	" " "	"	1.10	) waste in the
" 4,	" " "	"	1.20	) mine.
" 5,	" " "	"	1.44	)
" 6,	" " "	"	15.50	
" 6 $\frac{1}{2}$ ,	" " "	"	16.54	
" 7,	" " "	"	12.46	
" 8,	" " "	"	11.37	
" 9,	" " "	"	13.40	
" 10,	" " "	"	12.40	
" 11,	" " "	"	12.82	
" 12,	" " "	"	5.17	
" 13,	" " "	"	16.54	

Special samples taken by this same man, Kelly, disclosed the following values.

No. 1	Value in Gold,	\$81.60
" 2	" " "	35.14
" 3	" " "	28.11
" 4	" " "	61.50
" 5	" " "	59.64
" 6	" " "	972.32

These assays were all made at the mine where there were no facilities for making copper assays, & consequently none were made.

MY OWN SAMPLES; taken in bulk from all the different workings and outcrop, and "quartered down", assayed by R. H. Officer & Co., of

Salt Lake City, showed the following results:

No. 1,	.28 oz. gold,	11.1% copper,	Value in Au.	\$5.60
" 2,	2.20 " "	6.5 " "	" " "	44.00
" 3,	.32 " "	15.9 " "	" " "	6.40
" 4,	.76 " "	12.9 " "	" " "	15.20
" 5,	.10 " "	8.8 " "	" " "	2.00
" 6,	.52 " "	16.7 " "	" " "	10.40

Respectfully,  
(Signed) E. C. Norris

Ex. G.

EXTRACT FROM LETTER BY BRENT N. RICKARD, Manager of  
American Smelting and Refining Company, Tucson, to G. M.  
Colvocoresses dated October 10, 1939

"Dear Mr. Colvocoresses:

The Bullard Mine was examined for our company by Mr. M. Stockder September 30 to October 8, 1912. He did a very careful job of sampling, surveying and mapping. The property was again examined in August 1913 by Messrs. Stockder and Kruttschnitt. On Stockder's assay map I find the following: Area probable ore 17,000 square feet, average thickness of ore 2.5 feet, tons of probable ore 32,692 at 13 cubic feet per ton. The computed average of samples 6 to 49 inclusive taken at regular and fixed intervals over the entire length of the vein on both sides of the mountain is as follows: Au. .25, Ag. .50, Cu. 2.67%. The analysis of this composite sample is: SiO<sub>2</sub> 73%, Fe. 68%, CaO .6, Al<sub>2</sub>O<sub>3</sub> 4.6%. You will note that this is the exact tonnage and assay quoted by El Tigre. It is quite likely that they took 287 samples and checked the work of Stockder."

(Brent N. Rickard)

2 C  
BT

*copied M.F.  
4-23-40*

BULLARD MINE

District: Harcuvar Mountains

Location: 30 miles S. W. Congress Junction by fair road. 9 miles north of Aguila by trail. Elevation 2250 to 3200!--Pierce Mining District. 28 claims, 10 patented.

Owners & Operators: John C. Bullard, resident on ground. Idle.

Date visited: October 14th, 1917.

NOTES

Bullard Peak, on which mine is located, has andesitic breccia at base, overlain by angite andesite, with small seams of calcite. In the angite andesite is a fissure dipping about 35 degrees S. E., filled with brecciated silicified material carrying gold, and copper in form of chrysocolla, malachite and a little chalcocite. There are exposures of more or less ore all around the Peak. A line joining the exposures on the Homestake, Sweepstake, Washington, and Rattler Claims, would have the form of an ellipse about 2000 ft. long and 800 ft. wide. In the flat below the base of the Peak are other exposures of gold and copper ore, apparently separate from the main ore body. The main fissure has an average width of about 4', but probably not more than half of this width is good ore. A sample across 2' as an indicator, assayed (H278)\*. Bullard claims an average value of \$8.00 in gold and 3 to 6% copper for an estimated tonnage of 100,000, based on an average thickness of 4 feet. There are many open cuts, inclines and crosscuts on the property, the greatest depth of ore exposed being about 300 ft. The patent notes of 12 claims mention 19 shafts, 3 tunnels with approaches, 8 open cuts, 3 crosscuts and one level. The property

\*Cu. 2.62%, Insol. 70.6%, Fe 4.1%, Au 0.2 oz. Ag. Trace.

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-2-

has been sampled by Mr. Stockder and Julius Kruttschnitt for the A. S. & R. Co. , Will L. Clark, for the United Verde, and many other parties. According to Bullard, the average analysis shows about 70% Insol., 6% lime, and 9% iron, so it would not be very desirable for the Humboldt converters. The price asked for the property, (\$600,000.00) appears unreasonable.

(signed) L. F. S. HOLLAND

Ex. G.

EXTRACT FROM LETTER BY BRENT N. RICKARD, Manager of  
American Smelting and Refining Company, Tucson, to G. M.  
Colvocoresses dated October 10, 1939

"Dear Mr. Colvocoresses:

The Bullard Mine was examined for our company by Mr. M. Stockder September 30 to October 8, 1912. He did a very careful job of sampling, surveying and mapping. The property was again examined in August 1913 by Messrs. Stockder and Kruttschnitt. On Stockder's assay map I find the following: Area probable ore 17,000 square feet, average thickness of ore 2.5 feet, tons of probable ore 32,692 at 13 cubic feet per ton. The computed average of samples 6 to 49 inclusive taken at regular and fixed intervals over the entire length of the vein on both sides of the mountain is as follows: Au. .25, Ag. .50, Cu. 2.67%. The analysis of this composite sample is:  $\text{SiO}_2$  73%, Fe. 63%, CaO .6,  $\text{Al}_2\text{O}_3$  4.6%. You will note that this is the exact tonnage and assay quoted by El Tigre. It is quite likely that they took 287 samples and checked the work of Stockder."

(Brent N. Rickard)

RE BULLARD MINE

(Extracts from letters by J. V. McConnell to G. M. Colvocoresses)

September 6th, 1938.

"Dear Mr. Colvocoresses:

I have from time to time depleted this file but believe there is enough data to give you a very fair idea of the property. My sample work represented a total of 287 samples all told from all veins. The old maps will show positions where these samples were taken as far as the map goes which covers all openings at that time on the main Bullard workings. (1931)

My samples are all in ounces so the difference in gold prices then and now will make no difference. This sample job for Rigre Co, was made by R. T. Mishler, Mr. Thompson and I and sample was under my supervision all the way through. This work covered a period of over 6 weeks all told. Was quite thorough indeed as to values, tonnage and etc. everything was sampled except the incline shaft on the Rattler Claim which was full of water for considerable depth and after sampling to this point it was decided ill advised to unwater this at that time."

(J. V. McConnell)

September 14th, 1938

"Dear Sir:

I find from some notes I have that our final judgment on Bullard Mine we reduced the very probable ore to 20,000 tons and with an average value as follows: Au. 0.182 ozs. Ag. 0.58 ozs. and Cu. 2.23%. This was after the re-check, and after all of us had sampled more or less. The possible ore we left as 25,000, that being as good a guess as we could make.

Another item I find is a caution notice to carefully check gold values at greatest depths obtainable against the values obtained at or near the surface area. We found there was a variation of about 0.03 ozs. in favor of ore within say 5 ft. to



8 feet of the surface against the same openings at depth, which of course varied with different openings. This last item was taken into consideration in assuming the above averages and from all samples taken. This condition appeared to prevail in most openings. Another fact established was the higher the copper values the higher the gold values. And another point we were considering was selective mining, of the higher grade ores as a last resort in case a milling operation were not possible to work out. On the subject of Mill however Mr. Mishler finally decided that a mill would handle the situation by leaching the copper values and then extraction of the gold. This I believe he finally decided was by far the best recovery possible. Metallurgy tests were mostly made at the Tigre Mill at El Tigre, Mexico. Others, however, I believe were made by recognized laboratories and possibly I can find out who made these tests."

(J. V. McConnell)

September 21st, 1938

"Dear Sir:

I had expected to be able to get you the data I could gather up on the Bullard Mine last week. I attempted to place my assays on an old map and find this map did not contain all openings so therefore have made a list of the preliminary samples taken and have tried to locate them by description to where you can easily check them. I might say the samples as given here in this preliminary were fully substantiated with later samples and the results in the finished work was practically the same as I give them to you here.

About the only changes that were made was the lowering of estimated tonnage of the very probable ores from 25,000 tons to 20,000 tons. The reason for this was, it appeared that as the ore bodies were opened up further in the hill, there appeared to be a more crushed condition or broken up condition of the ore,

also where the ore is broken in nearly every case are considerably lower than when not broken or mixed up. Again the extent of the various local fault zones of the ore body could not be determined without more development work and we were unable to make satisfactory terms for such work.

The incline shaft at the East or Northeast was not unwatered for the same reason unfavorable terms. I do not have enough notes and data that I have been able to find to make you a new map which covers all ore at the Home group, this was a completed assay map and represented over 250 samples.

This list of samples I am sending you were in most cases the sections were cut at 10 foot intervals, and later on were filled in between making the assay map show 5 foot intervals both on outcroppings and openings.

The average value conclusions we came to for the more positive ores and the estimated 20,000 tons as per my letter of Sept. 14th, 1938. Of Au. 0.182 ozs., Ag. 0.58 ozs., and Cu. 2.23% was determined by a general average of all samples that were taken and was made after all sample work was completed. All composite samples were later on run individually for each cut, but the final results changed the picture very little as a whole. Again in arriving at this average conclusion for values, the fact was taken into consideration that with depth from surface exposures of the ore body there was a consistent falling off of values as depth was attained and this had to be taken into consideration. Whether this condition will prevail as greater depths are obtained of course only work can prove. It should however be considered.

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REPORT AND NOTES ON BULLARD MINE

DISTRICT: Congress Junction  
NAME: Bullard Mine  
LOCATION: 30 miles west of Congress Junction. Nine miles by very good desert road north of Aguila.  
CLAIMS: 28. 10 patented.  
OWNERS: J. C. Bullard, Congress Junction, Ariz. property recently sold to W. T. Abbott and Bryan. Address Aguila, Ariz.  
ELEVATION: 2250 feet.  
DATE VISITED: September 29th and 30th, 1919 by W. V. DeCamp.  
NOTES:

GEOLOGY

An andesite breccia overlaid by a later andesite. Fissure of movement filled by quartz and calcite with subsequent mineralization. Minerals consist of carbonates, silicates, copper glance and bornite. Probably all of secondary origin, altho the bornite may be primary. Some primary chalcopyrite.

ORE EXPOSURES: The fissure lies in a hill at an angle of about ten to thirty five degrees and is in this position probably due to block faulting. Erosion has exposed the ore around the perimeter of this hill with the exception of one corner where the vein dips under the wash. Shaft on vein shows ore pinching out at water level.

Vein varies in thickness from one to eight feet and if faulted at numerous points altho not sufficiently to interfere with mining operations to any great extent. The lower side of the hill is of sufficient elevation that nearly all ore can be extracted by gravity and mining costs should be low, since no timbering is required.

DEVELOPMENT

Consists of numerous shallow inclines and raises. Area of ore exposed roughly three hundred by twelve hundred feet and thickness will average three to four feet.

Property shows other veins of similar character at various points but where development has reached the natural drainage level, both on the large ore exposure as well as on other veins mentioned, the mineralization ceases completely, indicating that depth would be shallow in most cases and that the estimated tonnage of 80,000 tons would be augmented but slightly by deeper work on outside stringers.

TONNAGE

Estimated that there is 80,000 tons of ore developed carrying four per cent copper and four dollars in gold which estimate I consider conservative. Bullard claims \$8 in gold. Six samples were taken from cuts and raises while two were taken from stock piles of ore located in the vicinity of an old smelter which was operated in early days.

Volatilization tests show a high extraction as indicated by results listed below.

ASSAY VALUES

Samples 3 to 8 inclusive.  
Dump samples 1 to 2 inclusive.

(see page following)

COSTS

Mining	\$1.75	
Haul	1.75	
Freight	3.12	To Hayden
Treatment	5.00	
Total	\$11.62	

Property recently bonded to Abbott and Bryan of Aguila for sum of \$755,000.00. Nothing down, fifty thousand in six months, one hundred thousand in one year, two hundred fifty thousand in eighteen months and balance in two years. Royalty of twenty-five per cent of net smelter returns to apply on purchase price. Agreement that work is to start in ten days and that thirty tons of ore per day is to be shipped after the first sixty days.

CONCLUSION

Property valuable and an ideal ore for volatilization. Price entirely too high, but believe present operators will ship sufficient ore to meet first payment and that they will make principal shipments after first and before second payment, and in this way they should net a considerable sum dependent on the amount of equipment installed which I do not think will be great.

Present operators have agreed to withhold a long term contract until hearing from the C.A.S. Co., and have also agreed to ship one car of ore for volatilization tests from stock pile represented by sample Number 2.

ASSAY VALUES ON BULLARD MINE

No.	Location	Width	Gold Oz.	Ag. Oz.	Cu. %
1	Bat Tunnel, basic ore, 50 ton pile at old smelter	-	.10	.10	2.34
2	At old smelter, 30 tons siliceous ore	-	.04	.75	5.53
3	Bottom 100' incline, main reef, first hole north of blacksmith shop	30"	.03	.55	4.39
4	Second incline north of blacksmith shop, top	30"	.08	.50	2.21
5	Tunnel near top of hill north of blacksmith shop	48"	.28	.90	4.20
6	Shallow incline top of hill	36"	.07	.85	5.65
7	Out S. side hill, 100' N. trestle	60"	.05	.55	1.70
8	Tunnel east of trestle, S. side of hill	72"	.03	.55	2.57

Assays would indicate an ore carrying about 3.7% Cu. and \$2.50 in gold, as mined.

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Property now consists of 28 patented claims and 12 unpatented claims. Present price \$800,000 - Ten Per cent cash and balance in 2 years.

Average of ore shipped as follows:

	Au.	Ag.	Cu.	Fe.	Ins.
7 cars -	.27 oz.	.66 oz.	4.21%	7%	74%

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	Au.	Ag.	Cu.	Fe.	Ins.
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BULLARD MINE

District: Harcuvar Mountains  
Location: 30 miles S. W. Congress Junction by fair road.  
9 miles north of Aguila by trail. Elevation  
2250 to 3200'. Pierce Mining District. 28  
claims, 10 patented.  
Owners &  
Operators: John C. Bullard, resident on ground. Idle.  
Date Visited: October 14th, 1917.

NOTES

Bullard Peak, on which mine is located, has andesitic breccia at base, overlain by angite andesite, with small seams of calcite. In the angite andesite is a fissure dipping about 35 degrees S. E., filled with brecciated silicified material carrying gold, and copper in form of chrysocolla, malachite and a little chalcocite. There are exposures of more or less ore all around the Peak. A line joining the exposures on the Homestake, Sweepstake, Washington, and Rattler Claims, would have the form of an ellipse about 2000 ft. long and 800 ft. wide. In the flat below the base of the Peak are other exposures of gold and copper ore, apparently separate from the main ore body. The main fissure has an average width of about 4', but probably not more than half of this width is good ore. A sample across 2' as an indicator, assayed (H278)\*. Bullard claims an average value of \$8.00

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\* Cu. 2.62%, Insol. 70.6%, Fe. 4.1%, Au. 0.2 oz., Ag. Trace.

in gold and 3 to 6% copper for an estimated tonnage of 100,000 based on an average thickness of 4 feet. There are many open cuts, inclines and crosscuts on the property, the greatest depth of ore exposed being about 300 ft. The patent notes of 12 claims mention 19 shafts, 3 tunnels with approaches, 8 open cuts, 3 crosscuts and one level. The property has been sampled by Mr. Stockder and Julius Kruttschmitt for the A. S. & R. Co., Will L. Clark for the United Verde, and many other parties. According to Bullard, the average analysis shows about 70% Insol, 6% lime, and 9% iron, so it would not be very desirable for the Humboldt converters. The price asked for the property, (\$600,000.00) appears unreasonable.

(Signed) L. F. S. Holland



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M/E

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 Date Visited: October 14th, 1917.

NOTES

Bullard Peak, on which mine is located, has andesitic breccia at base, overlain by angite andesite, with small seams of calcite. In the angite andesite is a fissure dipping about 35 degrees S. E., filled with brecciated silicified material carrying gold, and copper in form of chrysocolla, malachite and a little chalcocite. There are exposures of more or less ore all around the Peak. A line joining the exposures on the Homestake, Sweepstake, Washington, and Rattler Claims, would have the form of an ellipse about 2000 ft. long and 800 ft. wide. In the flat below the base of the Peak are other exposures of gold and copper ore, apparently separate from the main ore body. The main fissure has an average width of about 4', but probably not more than half of this width is good ore. A sample across 2' as an indicator, assayed (H278)\*. Bullard claims an average value of \$8.00

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\* Cu. 2.62%, Insol. 70.6%, Fe. 4.1%, Au. 0.2 oz., Ag. Trace.

in gold and 3 to 6% copper for an estimated tonnage of 100,000 based on an average thickness of 4 feet. There are many open cuts, inclines and crosscuts on the property, the greatest depth of ore exposed being about 300 ft. The patent notes of 12 claims mention 19 shafts, 3 tunnels with approaches, 8 open cuts, 3 crosscuts and one level. The property has been sampled by Mr. Stockder and Julius Kruttschmitt for the A. S. & R. Co., Will L. Clark for the United Verde, and many other parties. According to Bullard, the average analysis shows about 70% Insol, 6% lime, and 9% iron, so it would not be very desirable for the Humboldt converters. The price asked for the property, (\$600,000.00) appears unreasonable.

(Signed) L. F. S. Holland

Ernest Smith 9/30/39

NOTE RE BULLARD MINE AND SHIPMENTS

9/29/39

The average of the <sup>287</sup>270 cut samples taken by the El Tigre Company and representing some 50,000 tons of developed and probable ore was almost exactly the same as your shipment #30 which carried:

Au.	0.22 oz. per ton
Ag.	0.38 oz. " "
Cu.	2.49%

Therefore, it may be interesting to make a comparison of the results which follow the shipment of this grade of ore to the smelter as compared with the results which could pretty certainly be obtained if this ore were held in the mine until an efficient equipment and concentrating mill were provided for production of gold bullion to be sold direct to the mint and copper precipitate (cement copper) to be shipped to a smelter.