CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

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REPORT ON THE DIAMOND JOE GROUP OF CLAIMS

WICKENBURG, ARIZONA

The Diamond Joe Group of Claims is situated in the White Picacho Mining District, Yavapai County, Arizona, eight miles east northeast of Wickenburg, Maricopa County, Arizona, a station on the Phoenix branch of the Santa Fe Railroad.

The country slopes gently towards the Hassayampa River eight miles to the south and is cut by deep gullies and washes characteristic of arid regions.

The main desert road from Wickenburg to Phoenix passes within three miles of the claims. From this road a fair desert road with no steep grades runs to the property. The roads are in good condition for trucking and loaded trucks can be run right up to the mill site.

The property is considerably higher than Wickenburg so that the haul to the railroad will be down grade for the loaded trucks

The road from the main highway to the mine is being repaired by a mining company which holds property beyond these claims.

DESCRIPTION

The group consists of five claims held by right of location. Each claim is 600 feet wide by 1500 feet long. The names of the claims are given below with book and page of record as recorded in the mining records of Yavapai County, Arizona.

Diamond Joe No. 1, Book 113 page 620
Diamond Joe No. 2, Book 113 page 621
Diamond Joe No. 3, Book 116 page 129
Diamond Joe No. 4, Book 116 page 130
Diamond Joe No. 5, Book 116 page 131

The apex of the vein follows approximately the center line of the Diamond Joe Nos. 1, 2, and 3. Diamond Joe No. 4 and No. 5 adjoin Diamond Joe No. 2 and No. 1 respectively on the west providing room for mill or camp site. Two claims, Diamond Joe No. 6 and No. 7 have been located by George R. Koyk, but are not included in the group

under consideration. Diamond Joe No. 7 is a continuation of Diamond Joe No. 1, and the apex of the vein, if projected, would cut the center of Diamond Joe no. 7. The Diamond Joe No. 6 is contiguous to the end line of Diamond Joe. no. 5 and the side line of Diamond Joe No. 7. The value of Diamond Joe Nos. 6 and 7 is problematic. No outcrops were observed on these claims, and if the vein continues through either it is concealed by the alluvium. The accompanying plan shows the relative location of all the claims. The Diamond Joe No. 3 and Diamond Joe. No 4 are not full claims as a prior location overlaps a portion of them. It is reported that the assessment work has not been done on either of the overlapping claims so that full sized claims can be acquired. The portion of the two claims overlapped by the conflicting claims is of no particular value, because there is no mineral indicated in that portion.

The claims were located by John Boetto of Wickenburg and an undivided one-fourth interest assigned to George R. Koyk of Wickenburg and A. L. Garford of Pasadena, and L. N. Butler of Phoenix, Arizona.

HISTORY

About twenty years ago, the claims were located by A. B. Lavell. He sank a vertical and an inclined shaft on the vein 65 feet deep and shipped some ore. The records of these shipments are not available.

The property then passed to Etter Brothers who leased it to a Mr. Bannister. Bannister sank the vertical shaft to a depth of 82 feet and crosscut to the inclined shaft. After reaching the ore he raised on the vein to a point 65' below the collar of the inclined shaft, carrying up a small stope. It is said that he stopped mining at this point because the values in the ore were decreasing. He stopped just above the present water level where excellent values are now found according to the assay sheet below. If it be true that he stopped here because of lower ore values, he must have had excellent values in his lower workings. These workings are caved and filled with water.

Bannister worked the ore in crude hand jigs and shipped

some concentrates from his jigs to the smelter. These smelter reports are not available.

Bannister failed to take up his bond and the property reverted to Etter Brothers . They sorted and shipped some of the ore to the concentrating plant at Wickenburg which, according to the records as reported by McLeod who recently examined the property, assayed as follows:

Tons	Gold Ozs.	Silver Ozs.	Lead %
23.1	0.03	11.60	6.50
3.4	0.03	9.20	12.00
14.3	0.02	7.70	12.80
2.6	0.02	5.20	4.30
25.6	0.02	9.00	13.50
69.	Av. 0.0238	Av. 9.467	Av. 10.589

It appears that during the war work was stopped at the mine and no assessment work was done or papers filed asking for exemption from assessment. Therefore, January 1st, 1920, the claims were re-located by John Boetto who assigned a one-fourth interest each to George R. Koyk, A. L. Garford, and L. N. Butler.

No abstract of title has been made, but an abstract should be obtained before purchasing the mine in order to ascertain whether or not the title be clear.

ECONOMIC FEATURES.

CLIMATE

The claims are about 3500' above sea level. At this elevation the desert climate is very mild with but three warm months during the year. During these months the weather is not hot enough to interfere with work and the nights are usually cool. There is no snow in winter. The average rainfall during the year is about three inches.

The climatic conditions are exceptionally favorable and the work need never be interrupted by unfavorable weather. Cloudbursts occasionally occur in this district which may wash out sections of the road. This might delay shipments a day or two, but would not interfere with the work at the mine.

TIMBER:

Native timber is not available. Lumber would have to

be purchased at Wickenburg and hauled to the mine. Good pine lumber costs $40.00 per M at Wickenburg and about $55.00 per M laid down at the mine.

WATER:

There is no surface water on the property or in the immediate vicinity. Water has been obtained for domestic purposes in shallow wells in nearby gulches. The main shaft has 50' of water in it and now stands at a point approximately 75' below the collar of the shaft. This water rises and falls through the seasons and the supply would probably increase with depth.

Water for milling and domestic purposes must be developed, and conserved by a dewatering apparatus in the mill to prevent mill waste. By the use of dewatering machinery sufficient water to run a 50 ton mill will probably be developed in themine. Water for domestic use will have to be developed in one of the hearby gulches and brought to the camp.

The cost of developing water and the success of such development work are problematic. The inhabitants do not consider the water situation serious. They state that water can be found close to the surface in the gulches. The presence of water in the mine seems to confirm this statement. It may be a serious problem and should be carefully investigated.

TRANSPORTATION TO THE RAILROAD

It will cost thirty cents a ton-mil to haul ore or concentrates from the mine to the railroad. To this there should be added the cost of loading and unloading and the cost of storage facilities at the railroad. Based on a ten mile haul from the plant to the site at Wickenburg, the actual haul should cost $3.00 per ton. For loading and unloading and storage facilities there will be considerable margin of safety if fifty cents were added, making the total cost $3.50 per ton.

LABOR:

The wages for miners have been reduced in some districts often resulting in strikes and delays, thereby increasing the net

price of labor considerably. Good miners can be obtained and kept satisfied on $5.00 per day. This price will be used as a basis for estimates of mining costs.

After the camp is well established, it might be possible to reduce labor costs, but in a new camp good wages will have to be paid in order to get competent miners. Muckers can be obtained for $4.50 a day; car-men and mine laborers will receive the same amount. Surface laborers a little less.

Some provision must be made to house and feed employees For this purpose rent and board can be charged so that the boarding house will pay for itself and not be a liability to the company.

GEOLOGIC RELATIONS.

The claims are located on the southeasterly slope of a batholith which, in the vicinity of the mine, has been eroded so that no sedimentary rocks are present. The uplift of the batholith has produced numerous fissures as channels for ore deposition. The main fissures run N. N. W. and S. S. E. with laterals radiating at right angles but in no case were they observed to cross the main fissure.

The later fissures are the latest phase of the intrusion and are represented by dykes of andesite often metamorphosed at the contacts into schists.

The texture of the rock is granitoid. It contains chiefly quartz, soda-lime feldspare, orthoclase, hornblende and some biotite. The quartz predominates over the feldspare. The soda-lime feldspar slightly predominates over the orthoclase. This determines the country rock as quartz diorite, shading into grano-diorite, or, perhaps, it might be classified as alaskite because of the small amount of biotite. The percentage of biotite increases towards the fissures, due to the increasing metamorphism of the feldspar and quartz and of the hornblende. At the contacts, where the rock is metamorphosed into schists, there is sufficient biotite to classify it as mica schists.

The main fissure bears north 27 degrees west and dips to the southwest at an angle of 38 degrees from the horizontal(?). It is a true fissure vein, widened by replacement of the wall rock, and can

be traced for a distance with nearly 3000 ' on the surface. For a distance of nearly 1000 feet the vein forms the easterly bank of a gulch. The erosion of the bank exposes the vein nearly the entire distance. Throughout this distance both walls are well marked, the hanging wall being slightly metamorphosed at the contact while the foot wall is usually schistose for a short distance into the country rock. Near the shaft there is an intrusion of porphyry along the foot wall.

The metamorphism along the walls by heat and pressure, intrusion of porphyry along the foot wall, the movemente along the walls indicated by slickensides, and the later intrusions of andesite abutting the vein indicate considerable depth to the fissure.

ORE DEPOSIT

Outcrops traced for nearly 3000 feet are leached at the surface and are composed mainly of calcite, siderite, hematite, quartz cerrusite, galena and occasionally wulfenite and fluorite. The outcrops vary in width from four to ten feet, the average width being about seven feet. Oxidization has altered a portion of the galena to cerrusite and the siderite to hematite which stains the calcite filling red. Seams of galena run through the outcrops parallel to the strike in the vein and some high grade ore has been shipped off the surface.

The remains of an old roasting furnace indicate that at one time the surface galena has been smelted for its lead-silver content.

Gouge or selvage is found upon both walls of the vein. The gouge may have been produced by differential movement of the walls, powdering the walls' constituents and depositing them, or, it may indicate replacement of the wall rock depositing the clay upon the wall

The country rock contains considerable lime and soda feldspar from which lime can be extracted and deposited in the vein as calcite. Such a replacement of the lime should leave selvage on the walls. These facts indicate that the width of the vein is due to replacement of the country rock.

The country rock carries some iron in the form of hornblende which might alter to siderite during the process of replacement. The ascending solutions carried galena, molybdenum, fluorite,

iron and other minerals, some of which in the oxidized zone would react with the calcite filling of the vein to form the carbonate minerals found, such as cerrusite and siderite. The formation of cerrusite would liberate sulphur to form anglesite. It is well understood that galena is a very stable mineral and that during the process of alteration from the sulphide to the carbonate the galena grains are coated before alteration is complete preserving the inner portion as galena. In this manner the lead sulphideis preserved throughout the calcite filling. These conditions account for the minerals on the outcrops and in the oxidized zone of the vein.

The values seem to be uniformly disseminated throughout the vein. Occasionally there is a streakalong the hanging wall which runs a little higher than the rest of the vein, but it would be difficult to pick out any enriched portion of the vein unless located by a previous assay.

Zinc and barium are usually associated with lead ores in veins of this kind. Here we find some barium but almost no zinc. The relative absence of zinc near the surface is probably due to the solubility of the zinc blende in solutions carrying sulphur trioxide. These solutions would carry the zinc to the lower levels where it would be transformed to a silicate or carbonate of zinc and later to zinc blende. Below the oxidized zone it is possible that considerable quantities of zinc blende will be found.

It is difficult to estimate the extent of the oxidized zone. At the 75 foot level there is no indication of a change in the character of the ore. In arid districts, such as this locality, the oxidized zone is liable to be very deep, because the permanent water level is deep. To accentuate this, the Diamond Joe Group lies at an elevation considerable below the surface of the claim and an extensive oxidized zone may be expected.

The history of a number of lead and silver mines shows that the values are often lost when the permanent water level is reached. Several cases are on record where the lead values have given way to zinc below the permanent water level, the lead values becoming subordinate In a few cases, however, lead values have been found to continue below

the permanent water level as galena. In any case, the character of the ore at water level cannot be predicted until it is exposed. The character of the ore above the water level is known and since a deep oxidized zone is indicated a considerable tonnage may be expected.

MINING METHODS

The dip and width of the vein are favorable for shrinkage stoping. The ore is not hard but stands well and stulls only would be needed to support the stopes.

In extracting the ore it would be advisable to run drifts every hundred feet of incline on both sides of the shaft and raise every hundred feet to the level above. Pillars 15 feet thick should be left as protection over the drifts and chutes run through the pillars every 20 feet to facilitate drawing off the ore.

The inclined shaft should be sunk to the 200' level and drifts run on both sides of the shaft as indicated above.

A sump and loading pockets should be excavated at the bottom of the shaft so that cars could be dumped directly into the skip.

The shafts should be retimbered and iron rails laid for a skipway. Ore pockets should be provided at eadh level so that a skip can be loaded directly at the level from the pocket and eliminate the delay caused by car men waiting for the skip.

A self-dumping skip should be installed with a small bin in the head frame of sufficient size to hold a few cars of ore so that the car men on the surface would not have to wait for the skip.

A 500 foot gasoline hoist should be installed for raising the ore. There is no equipment at the mine which could be utilized to advantage.

CONCENTRATING PLANT

A natural gravity flow mill site is available by framing the ore about 200 feet from the bin in the head frame.

The ore would be dumped over a grizzly so that the fines up to 1½ inch mesh would go directly into the bin beneath the crusher. The coarse ore should go over the grizzly to a feeding platform, from which it would be shoveled into a jaw crusher and broken to 1 inch or 1¼ inch size. The broken ore from the grizzly and the crusher would be

collected in the bin and run by automatic feed to a Marcy mill, where the ore would be ground wet to 30 mesh. The discharge from the Marcy mill would run over two Wilfley tables, set to make three products, tails, middlings and concentrates. From these tables the tailings would be carried by launders directly to the tailing pile. Middlings should be run through a cone classifier from which the fines should be run over to a slime table and the coarse product from the classifier reground to 80 mesh and run over a second slime table.

The slime tables will make but two products; tails and concentrates. The concentrates from all four tables will be combined as a shipping product.

This flow sheet is suggested because it conforms very closely to the machinery available in the mill at Wickenburg. It is understood that one of the conditions of the purchase of this mine is that the mill at Wickenburg must be bought at the same time. The flow sheet suggested will require but two additional slime tables and one small grinding mill, all the rest of the equipment mentioned being included in the inventory of the mill at Wickenburg.

Tests indicate that a flow sheet of this kind will save nearly eighty percent of the values and make a concentration of approximately 6½ to 1. Later, when an opportunity has been given to study the ore more closely and when funds are available a more elaborate flow sheet should be installed to make a higher saving.

On account of the uncertainty of commercial work compared with laboratory tests, all estimates of profits on the mine have been based on a loss of 25% in the mill.

A higher extraction might be obtained by first breaking the ore down to 10 mesh, classifying it and passing it through compartment jigs. The tails and the middlings should then be slimed and concentrated on separate slime tables of the values recovered by flotation.

Such a process should recover 85 to 90 % of the values but would require a considerable greater initial expense.

A simple, inexpensive flow sheet should be installed in the beginning, such as the one first mentioned, so that the machinery available at Wickenburg could be utilized to the best advantage and could be used as a basis for tests for further improvements in the reduction process.

All tail launders in the mill should be led through a dewatering machine to recover as much water as possible. Water recovered from the dewatering machine should be pumped to a storage tank and used again in the mill.

Estimates indicate that it will cost $10,000.00 to build a head frame, move the machinery required from Wickenbur g and buy and install the additional machinery mentioned and roof the mill but not enclose it. The machinery to be moved from Wickenburg consists of the following:

1-35 H. P. Van Severance Semi-Diesel Engine
1-16 H. P. " " " " "
1-Lighting Set
1-12 x 14 Jaw Crusher
1-4 Ft. Marcy Mill
2- Wilfley Concentrators
3-Ore Cars
500 Feet 20 lb. rails.
Assaying outfit and supplies.
Belting, shafting, pulleys, boxes, elevators, screens, pipe and pipe fitting sufficient to install the machinery mentioned.

ORE VALUES

The mine is opened to a vertical depth of 100 feet by an inclined shaft 135 feet long on the incline. The bottom 50 feet of the inclined shaft is under water and could not be explored. Ninety feet below the inclined shaft and just at the water level drifts have been run on both sides of the shaft. The drift on the south side of the shaft is 30 feet long and on the north side of the shaft about 80 feet long. The north drift is inaccessible, due to water and caving.

At the water level in the shaft, the vein was 8 feet wide and showed no sign of changing character. On the south side of the shaft, a stope has been carried up 15 feet and connected by a short drift to the shaft, leaving a small pillar between the stope and shaft.

Samples were taken from the south vein of the stope and in the south breast of the drift above the stope. On the opposite side

of the shaft and on a level with the upper drift, a drift had been run north from the shaft 25 ' along the vein and a sample was taken across the vein at the breast and at the junction of this drift and the shaft. Samples were also taken at intervals along the shaft. All samples were cut across the vein, the whole sample being brought in for assay. The assay plan attached to this report shows the location from which the samples were taken.

Sample No. 1 was taken on the south side of the lower stope just above the water level. Sample was taken over a width of 4 feet 6 inches beginning 2 feet below the hanging wall.of the vein.

The last two feet of the vein were not sampled because at this point 2 feet of the ore had been left on the hanging wall. Sample did not extend to the foot wall because the bottom of the stope was still in ore and not down to the foot wall. The vein was about 8 feet wide at this place from wall to wall. This portion of the mine has been alternately wet and dry since 1911, when the stope was opened, the water level fluctuating according to the season.

Sample No. 2 is taken from the south face of the south drift. This drift is about 15' above sample No. 1. The sample was taken across 6' of the vein, the foot wall being exposed in the drift. This drift was opened in 1917 and has been alternately wet and dry since that time.

Sample No. 3 was taken in the north breast on the north drift, this drift being opposite the drift from which sample No. 2 was taken. The sample was cut across 4 feet 8 inches of the vein, the inner vein being exposed. This drift was opened in 1917 and has been alternately wet and dry since that time.

Sample No. 4 was taken from the west wall of the shaft at the intersection of the drift just mentioned and was cut across 6 feet 8 inches of the vein. The sample was cut across the vein from the hanging wall to within two feet of the foot wall. The last two feet of the vein were not exposed. / stop

Sample No. 5 was cut from the north wall of the inclined shaft at a point 15 feet above sample No. 4. The sample was cut across

6 feet of the vein, neither wall being exposed. This sample has not been under water.

Sample No. 6. This sample was cut at a point 25' below the top of the shaft, from the south wall across three feet of the vein. The values on the hanging wall side from this point to the collar of the shaft have been partially leached out.

In an examination by Mr. L. M. Kellogg, preliminary to this one, samples taken gave an average value of $15.67 per ton.

The mine had been sampled previously by Mr. J. M. McLeod a mining engineer, and by Mr. L. N. Butler, who now owns an undivided one fourth interest in the mine.

The results of these assays are tabulated below disregarding the gold content which averages 0.02 ozs. per ton.

No.	Silver Ozs.	Silver Value	Lead %	Lead Value	Total	Average	Sampled by
1	4.00	$ 4.00	10.10	$ 8.08	$12.08)		L. M. Kellogg
2	20.00	20.00	9.10	7.28	27.58)		"
3	6.50	6.50	8.60	6.86	13.38)		"
4	3.80	3.80	3.70	2.96	6.76)		"
5	6.00	6.00	15.70	12.56	18.56)		"
	40.30	40.60	47.20		73.36	$15.67	
	8.06		9.45				
1	0.02	$ 0.20	6.50	5.20	5.22)		Sampled by L. N. Butler
2	19.92	19.92	7.90	6.32	26.24)		
3	49.08	49.08	16.08	12.86	61.94)		
4	28.00	28.00	10.30	8.24	36.24)		
5	7.92	7.92	7.80	6.24	14.16)		
6	2.50	2.50	12.00	9.60	12.10)		
7	14.18	14.18	3.20	2.56	16.74)		
8	17.36	17.36	5.60	4.48	21.84)		
9	12.70	12.70	4.90	3.92	16.62)	$23.46	
		151.68	74.28		211.10		
			8.25				
							Sampled by J. N. McLeod
1	28.00	28.00	12.00	9.60	37.60)		
2	16.20	16.20	7.60	6.08	22.80)		
3	17.40	17.40	7.50	6.00	23.40)		
4	4.40	4.40	6.50	5.20	9.60)		
		66.00	33.60		92.88	$23.22	
							A. E. Sedgwick
1	26.50	26.50	2.40	1.92	28.42)		
2	18.80	18.80	14.00	11.20	30.00)		
3	17.00	17.00	9.10	7.28	24.28)		
4	17.00	17.00	3.50	2.80	19.80)		
5	4.80	4.80	10.80	8.64	13.44)	$23.19	
		84.10	39.80		115.94		

AVERAGES

Silver Ozs.	Value	Lead %	Value	Total
14.89	$14.89	8.47	$6.77	$21.66

Computations are based on:

Silver at	$1.00 per oz.
Lead at	.04 per lb.
Gold values average	.40 per ton

and are omitted in estimates given above because it is questionable whether concentrates will contain sufficient value to be recognized at settlement.

The actual value of the ore is reflected in the market quotation but must be based on the smelter returns.

The assays tabluated above show the average contents of the ore to be:

Gold Ozs.	Silver Ozs.	Lead %
0.02	14.89	8.47

The mill test on this ore gave concentration of 6-3/4 to 1. Assuming an average concentration of 6 into 1 under working conditions, the concentrates should run

Gold Ozs.	Silver Ozs.	Lead %
0.12	89.34	50.82

The mill test, however, shows but 78% extraction. Assuming 75% extraction under workind conditions, the shipping concentrates will run:

Gold Ozs.	Silver Ozs.	Lead %
0.12	67.00	38.12

the gold average not being lowered according to the test.

An analysis of the concentrates from the mill tests gave the following results:

Iron %	Lime %	Insoluble %
4.40	7.50	14.00

Assuming these analyses to represent shipments the smelter returns would be approximately as follows:

0.12 Ozs. gold at $20.00	$2.40
67.00 ozs. Silver, less 5% = 63.65 Ozs.@99-5/8¢	63.41
3812 # lead, less 2% = 36.12% = 722.4# less 10% = 650.16# @ 2.25	14.63
4.40% Fe & 7.50% CaO = 11.9% @ 8¢	.95
Gross values concentrates	81.39

Less Smelting charge	6.00	
Briquetting	1.00	
14% Insolubles at 12¢	1.68	
Freight Wickenburg to El Paso	13.25	
War Tax 3%	.40	
Total Smelter Charges	22.33	22.33
Net value concentrates f. o. b. Wickenburg		59.06
Cost hauling concentrates from mine to Wickenburg		3.50
		55.56
Net value concentrates f. o. b. mine		9.
Net value ore f. o. b. mine		9.26

From this the mining and milling costs, interest, taxes and depreciation charges must be deducted.

The above outcome is based on Government price of 99 5/8 ¢ per ounce for silver (that is $1.00 delivered at Mine less 3/8¢ deduction for delivery charges and adjustment to 999 fine) and New York selling price of $4.00 per 100 pounds for lead, charging 1-¾¢ per pound for refining and freight on bullion to New York. The net lead payment on this basis will be $2.25 per 100 pounds.

Should the value of silver fall to pre war prices of 53¢ per ounce, the value of the silver in the concentrates would be reduced to 33.83 resulting in a loss of 39.68 per ton of concentrates which is equivalent to a loss of 4.95 per ton of ore. This would give a net value of $4.31 per ton of ore f. o. b. mine instead of 9.26 as shown above.

When a 50 ton mill is designed and installed, experience shows that it seldom has the capacity expected.

Assuming such an installation to be 10% under capacity and assuming 10% time lost, the net capacity of the mill will be 40 tons per day. Based on 40 tons per day 300 days per year, the mining costs will be as follows:

Superintendent (1/2 mill, 1/2 mine) @ $10.00	$.125
Foreman 1 at $6.00	.15
Hoistment 2 at 6.00	.30
Blacksmith 1 at 5.00	.125
Timberman 1 at 5.00	.125
Helper 1 at 4.00	.10
Miners 8 at 5.00	1.00
Shovelers 3 at 4.50	.34

Carmen 1 at 4.00	.10
Explosives	.20
Illuminants	.05
Lubricants	.01
Iron and steel	.02
Timber and lagging	.035
Power	.10
Miscellaneous	& .02
Total cost of ton of ore into mill	2.80

Based on the net production of 40 tons per day the milling costs will be as follows

Superintendent (½ mill, ½ mine) @ $10.00	0.125
Crusher men 3 at 4.50	.34
Mill men 3 at 5.00	.375
Assayer 1 at 8.00	.20
Power	.15
Light	.02
Supplies	.07
Repairs	.10
Miscellaneous	.05
	1.43

2.80
1.43
4.23

To the mining and milling costs must be added the depletion cost of the mine, the amortization of the cost of the mill and interest and taxes on investment.

The cost of the mine is:

To Koyk	$12,000.00	
Garford	10,000.00	
TOTAL		$22,000.00

The cost of the mill

To Garford	25,000.00	
New equipment	10,000.00	
		$35,000.00
Total cost of mine and mill		$57,000.00

From the surface indications and indications in the mine, it is fair to assume the deposit will be 400 feet long, 150 deep, and 7' wide.

In such a deposit there will be 35,000 tons of ore.

To these 35,000 tons of ore must be charged amortization of the $57,000 which is equivalent to 1.63 per ton.

Interest on $57,000 at 8%	$4,460.00
Taxes at 1½%	855.00
Total	$5,315.00

40 tons per day for 300 days equals 12,000 tons per ~~day~~ year.

There must be added therefore to defray taxes and

interest 45¢ per ton.

Average value of ore at mine after deducting transportation and smelter charges		$9.26 per ton
Estimated cost of mining	$2.80	
Estimated cost of milling	1.43	
Amortization	1.63	
Taxes and interest	.45	
Net Profit per ton of ore	2.95	
	$9.26	$9.26

The amortization and interest charges begin to reduce just as soon as production commences and will soon be written off. When the amortization is completed the net profit will be increased to $4.95 per ton of ore.

The increment gained by the general reduction of these charges will more than take care of any overhead charges, therefore none has been included.

A net profit of $2.95 per ton of ore will give a daily profit of $118.00 and a yearly profit of $35,400.00

When the amortization is completed the daily profit will be $198.00 or a yearly profit of $59,400.00.

The charges against the mining and milling of this ore are based on the high current prices, and undoubtedly can be reduced. It is also very probable that a higher extraction can be made than that indicated. For these reasons the net profit might be materially increased even with a plant of but 40 tons per day output.

Bearing in mind that with but little additional outlay the capacity of the mill can be increased to 100 tons per day with practically the same overhead charges, it would be advisable to increase the capacity of the mill at least to this output as soon as the mine and the income justify it.

CONCLUSION

The prospects of developing a large deposit are very favorable. The surface indications, the character of the vein and its geological relations indicate a deep oxidized zone several hundred feet in length.

Very little change in the character of the ore need be feared until the limits of the oxidized zone are approached.

The ore presents no complicated metallurgical problems

and a higher extraction/that indicated should be easily obtained after becoming acquainted with the ore.

A profit of $3.00 per ton may be expected after all charges have been made, including amortization of the capital invested. After the capital has been repaid, a profit of $5.00 per ton will be realized.

The ore which reasonably may be assumed to be available together with the 600 or 700 tons now on the dump, will more than pay for the mine and the mill and leave a substantial profit.

The price asked for the mine and mill is small considering the extent of the deposit, the uniform value of the ore, and the probability of developing a large mine.

It is unusual to find a mining property that will return profits from the beginning. A large investment ordinarily is required to prospect/under consideration to determine whether or not the vein is continuous and contains sufficient values to justify exploitation. In this case these problems are already solved and profits may be expected just as soon as milling operations are started.

For the reasons just given the Diamond Joe Group of claims recommend themselves as worthy of the investment required.

(signed) A. E. Sedgwick, Mining Engineer

March, 1921

A. E. S.:EMR

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Copy

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by G. McC.

Memo regarding the title to the mining claims of Diamond Joe Co.

Charles No. 1, staked by Roy Richards

Charles No. 2, staked by Diamond Joe Mining Company, Roy Richards, Agent

Charles No. 3, staked by Diamond Joe Mining Company, Roy Richards, Agent.

Charles No. 4, staked by Roy Richards.

Charles No. 5, staked by Roy Richards

Charles No. 6, staked by Roy Richards

Diamond Joe Nos. 7 and 8.--No location notices, included in documents but apparently staked by a man named Neuchanwaker and Clark holds a deed from him to Koyk dated in '29.

Number 9, Staked by Diamond Joe Mining Co., Earl Patton, Agent.

Number 10, Staked by Diamond Joe Mining Company, Earl Patton, Agent.

Clark holds deed from Roy Richards to Koyk conveying Charles No. 1, 4, 5, and 6, also the deed mentioned above conveying Number 7 and 8. Clark holds a deed dated August, 1930 conveying to Diamond Joe Mining Company all of the ten claims listed. This presumably perfects the chain of title assuming all deeds to be valid.

DESCRIPTION OF DIAMOND JOE CLAIMS
FROM LOCATION NOTICES.

CHARLES #1. Lines run northwesterly.--Stone monument at Discovery Shaft, then 750' northwesterly to corner. Stone monuments at corners and center points. Full size claim 1500' x 600'. Two miles north from the Monarch Mine.

******** *********

CHARLES #2. Same as above except that lines run northeast-southwest ? and from discovery shaft and monument line runs 200' northeast to center of end line and 1300' southwest to center of south end line.

******* **********

CHARLES #3. Same as above except that discovery shaft and monument are located 1400' southwest of the center of the north end line and only 100' from the south end line.

******** **********

CHARLES #4. Same as above except that discovery shaft and monument is located (as in Charles #1) in the center of the claim and lines run northwest and southeast.

********* ***********

CHARLES #5. Lines run northwest and southeast and discovery shaft and monument is 500' southeast of center of north end line and 1000' from south end line.

******** *********

CHARLES #6. Lines run northwest and southeast and discovery shaft is about 600' southeast of center of north end line and 900' (given as 800') northwest of south end line.

******* *********

DIAMOND JOE #7 Staked March 11th, 1929. Lines run from discovery shaft 500' north westerly to center of north end line and 1000' south easterly to center of south end line.

DIAMOND JOE #8 Staked March 11th, 1929, Lines run 500' north westerly and 100' south easterly from discovery shaft to centers of north and south end line.

NUMBER 9-Lines run southerly and northerly and Discovery shaft and monument is in center of claim.

******** **********

NUMBER 10 Lines run easterly and westerly and discovery monument is 1238 feet west of the center of the east end line and 262 ft. east of the west end line.

********** *********

These descriptions do not agree at all with the claim map prepared by Gohring which shows that all of the claims (except #9 and #10 which are not included) are contiguous and have parallel lines, the side-lines all pointing N 10° W and S 10° E.

On Gohring's map a U. S. Section Corner is shown 100' south of the north end line, 200' west of the east side line and 200' south-east from the mill building which appears to be misplaced nearly 200' too far east on the map..

It should be possible to pick up this section corner and run a proper survey from which a correct map can be made, but it appears probable that all the claims will have to be relocated and staked before patent can be applied for.

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For Diamond Joe File

GALENITE--Galena

COMPOSITION--Pb (Pb 86.6%) usually with some silver and frequently sulphide of antimony, bismuth, cadmium, etc.

GENERAL DESCRIPTION A soft, heavy, lead-gray mineral, with metallic lustre and easy cubical cleavage. Sometimes in crystals. Rarely fine-grained or fibrous.

PHYSICAL CHARACTERS H., 2.5. Sp. gr., 7.4 to 7.6

Lustre, metallic	Opaque
Streak, lead-gray	Tenacity, brittle
Color, lead-gray	Cleavage, cubic, very easy

****

ANGLESITE

Composition $PbSO_4$, (Pb 0 73.6, SO_3, 26.4 per cent).

general description--A very brittle, colorless or white mineral of adamantine lustre, sometimes colored by impurities. Usually massive, frequently in concentric layers around a core of unaltered galenite.

Physical Characters H. 3. Sp. gr. 6.12 to 6.39

Lustre, adamantine to vitreous	Transparent to Opaque
Streak, white,	Tenacity, very brittle

Color, colorless, white, gray, rarely yellow, blue or green.
Cleavage, basal and prismatic (90° and 103° 43')

Similar Species--It differs from the carbonate, cerussite, in absence of twinned crystals and of effervescense in acids. It is heavier than barite and celestite and yields lead.

Remarks*- Anglesite is formed by the oxidation of galenite. It alters to the carbonate, cerussite, by interchange with calcium carbonate in solution. It is found throughout the U. S. wherever exposed deposits of galenite occur. The lead mines of Missouri, Wisconsin, Colorado, etc., all contain this mineral. It occurs in large quantities in Mexico and Australia.

CERUSSITE - White Lead Ore

Composition----$PbCO_3$, (PbO, 83.5; CO_2, 16.5%) Often carries silver.

GENERAL DESCRIPTION Very brittle, white or colorless orthorhombic crystals, silky, milk-white masses of interlaced fibres; granular translucent, gray masses and compact or earthy, opaque masses of yellow, brown, etc., colors.

PHYSICAL CHARACTERS; H., 3 to 3.5. Sp. gr., 6.46 to 6.51

Lustre, adamantine, silky — Transparent, or translucent
Streak, white — Tenacity, very brittle
Color, white, gray, colorless or colored by impurities,
Cleavages, parallel to prism and brachy dome.

SIMILAR SPECIES Distinguished from anglesite by effervescence in acids and by frequent occurrence of twinned crystals. Has higher specific gravity than most carbonates.

Remarks-- Cerussite is derived from galenite by the action of water containing carbon dioxide. It also may be produced from anglesite b y action of a solution of calcium carbonate.

FLUORITE --Fluor Spar (Colored to some extent by manganese oxide)

Composition--CaF_2 (Ca 51.1, F 48.9%)

General Description--Usually found in glassy transparent cubes or cleavable masses of some decided yellow, green, purple, or violet color. Less frequently granular or fibrous. Massive varities are often banded in zigzag strips of different colors.

PHYSICAL CHARACTERS H., 4, Sp. gr., 3.01 to 3.25

LUSTRE, vitreous — TRANSPARENT to nearly opaque
STREAK, white — TENACITY, brittle
COLOR, wine yellow, green violet, blue , colorless, brown, black.
CLEAVAGE, octahedral.

REMARKS Fluorite may have been deposited from solution in carbonated

waters. It is usually found in veins as the gangue of metallic ores, especially lead, silver, copper, and tin. Sometimes found in beds. This mineral is mined in large quantities at Rosiclare, Illinois Found in smaller amounts in Jefferson and Boulder counties, Colo. at McComb and other places in western New York. In many localities throughout New England, also in New Jersey, Arizona, Virginia, California and other States,

WULFENITE

Wulfenite is a molybdate of lead ($PbMoO_4$) and theoretically contains 26.15 per cent of molybdenum and 56.42 per cent of lead. It is a heavy, brittle, subtransparent to subtranslucent mineral with a resinous or adamantine luster and is generally of a wax or orange-yellow color. It may, however, be siskin and olive green, yellowish-gray, brown, grayish-white to nearly colorless, or orange to bright red. Its hardness is 2.75 to 3 and its specifid gravity is 6.7 to 7. It has a subconchoidal fracture and a white streak. In planes parallel with its crystal pyramid faces it has a smooth cleavage, but in other directions the cleavage is less distinct. It crystallizes in the tetragonal system with pyramidal hemihedrism. The crystals are commonly square and tabular and are sometimes extremely thin, with a vicinal pyramid replacing the basal plane. Less frequently the crystals are octahedral or prismatic, the prismatic faces showing the hemihedrism characteristic of the mineral.

Wulfenite generally occurs in well-crystallized forms, but it is also found in coarse-grained or fine-grained masses. Small percentages of calcium, chromium, vanadium, copper, iron, or aluminum are generally present in wulfenite as impurities.

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OCCURRENCE AND ACCOMPANYING MINERALS.

Deposits of wulfenite are confined almost wholly to veins, in which it occurs associated with other lead minerals. Localities in the United States where wulfenite has been reported are named in part 2 and detailed descriptions of several characteristic occurrences are also given.

Outside of the gangue-forming minerals, wulfenite has been found associated with gold and various silver minerals, with galena, cerusite, pyromorphite, vanadinite, anglesite, and other descloizite. In connection with the occurrence of gold with wulfenite, it may be of interest to note that the native gold is sometimes contained directly in the wulfenite crystals themselves.

CONCENTRATION OF WULFENITE ORES

Unlike the concentration of molybdenite, the treatment of wulfenite ores presents few difficulties. Not only are the ordinary wet processes of concentration by jigs, tables, vanners, slimers, etc., such as are usually employed in the treatment of ores of lead, copper, and zinc, adapted to the concentration of wulfenite, but, when properly applied, they result in a high extraction of the mineral. Moreover, even the finest particles of wulfenite are readily wetted; hence sliming of the ore does not occasion the considerable losses that would occur under similar circumstances in the treatment of most metallic sulphides, such as galena, and chalcopyrite, as these minerals float readily when finely divided. On account of the high specific gravity of wulfenite (6.7 to 7) it is readily separated from all of the gangue minerals with which it occurs. It is, however, frequently associated with vanadinite (specific gravity, 6.66 to 7.23) from which it cannot be separated by wet methods, also with cerussite (specific gravity 6.46 to 6.57) and anglesite (specific gravity 6.12 to 6.39)

from which it can only be partly separated. Occasionally small quantities of other lead minerals of high specific gravity, such as galena (specific gravity 7.4 to 7.6), pyromorphite (specific gravity 6.5 to 7.1) and mimetite (specific gravity 7.0 to 7.25) occur with wulfenite and are then recivered in the wulfenite concentrate. The presence or absence of these other heavy minerals in the ore determines largely the grade of wulfenite concentrates that can be made. Theoretically, a concentrate consisting entirely of pure wulfenite contains 39.23% of molybdic trioxide (MoO_3) and with many ores a product with 34 to 36% molybdic trioxide is easily obtained, whereas with others a concentrate containing even 20% molybdic trioxide is obtained with difficulty owing to the presence of considerable percentages of vanadinite, cerussite, etc. The costs of concentrating wulfenite ores by wet processes are in general comparable to those of treating ores of galena, sphalerite, chalcopyrite, etc., by similar methos.

Many deposits of wulfenite ore are situated at considerable distances from water supplies of sufficient magnitude to furnish the quantities requisite for wet concentration. It is, therefore, of interest to note that wulfenite can be concentrated successfully by pneumatic processes, and that there are pneumatic separators of various types, such as tables and jigs, now on the market that without doubt can effect nearly as high an extraction and make as good grade of concentrates as can be obtained by wet methods. The cost of separation by pneumatic processes is, of course, greater than wet methods

ARGENTITE Ag_2S Ag_2S.

DISTINGUISHING FEATURES: The crystals are isometric , the only common form being the cube. Crystals are often arranged in parallel position. Conchoidal fracture, not very distinct, malleable, sectile, takes

impression. Hardness 2 to 2.5. Sp. Gr., 7.2 to 7.4. Color is dark lead gray, almost black. Fresh surfaces show high metallic lustre, but on exposure soon becomes dull and black. Shiny streak

OCCURRENCE. As a vein mineral associated with other silver minerals; also associated with cobalt and nickel minerals.

USES; Argentite is an important ore of silver.

CERARGYRITE (Horn Silver) AgCl

DISTINGUISHING FEATURES; Crystals are rare and poorly developed. Usually massive and disseminated, as a crust or coating, stalactitic, dendritic. No cleavage, conchoidal fracture. Highly sectile, waxy, Hardness, 1.5. Sp. Gr. 5.5. Pearly gray, yellowish, greenish, or white in color; on exposure to light turns violet, brown or black. Resinous adamantine lustre. Transparent to Translucent. When rubbed becomes shiny.

OCCURRENCE; A Secondary mineral in the upper part of silver deposits. It is formed by the action of chloride-bearing waters on other silver minerals, and therefore is prominent in arid regions.

USES: Important ore of silver.

NOTES RE MOLYBDENUM

Molybdenite ($Mo S_2$) contains 59.95% Mo and 40.05% S

Molybdenite metal C. P. Sells @ $9.50 per lb. and 97% pure at @ $4.10 per lb.

Molybdenum ore (sulphide) and concentrate with 90% $Mo S_2$ sells @ $.42 per lb. of $Mo S_2$ contained. As calcium molybdate the value is 85¢ per lb.

Since the wulfenite is an oxide ($Pb Mo O_4$) containing 26.15% Mo and 56.42 Pb and is said to concentrate well by gravity or flotation there seems to be a possibility of reducing the molybdenum oxide to the metal and it ought to be possible to value the metal content of the ore at about $1.00 per pound.

26 units of MO = 39 units of MO_3 i. e. MO equals 66 2/3 % of the trioxide.

2/21/36

A K. and K. flotation machine which should probably be replaced and an Oliver filter 4'6" x 5' diameter.

Two tables have been taken out. Mill is well designed and built and all buildings of frame and corrugated galvanized iron are in excellent shape.

Another showing on vein is located some 1200' south of #1 shaft and ore shows here in pit and tunnel, it is about 12' wide.

Mine is said to make 15 gals of water per minute = say 20,000 g. p. dy.

Mill (without return circulation) would require some 60,000 g. per dy for 100 tons, - but with return ~~might get along with~~ three filtering the tailings might get along with 30,000 & thus if the Great Southern shaft makes as much water as the Diamond for it might be possible to operate without additional water supply but this is very doubtful The ? is whether it would cost more to filter the tails w/o adding additional water.

ADDITIONAL NOTES 2/21/36

The cage used in #3 shaft can pretty surely be adopted to #2 shaft by taking out the shims on the dogs and setting in the shoes which will run on the guides to bring the space down from 52" to 46" which is the clearance between the guides in #2 shaft.

Cost of change say $50.00

There are three good ore cars (½ ton) which would be enough as long as operating on only a 50 ton basis.

At the mill and power plant there are four good tanks as follows:

One of wood, capacity about 50,000 gal.

One of iron, " " 20,000 ".

" " " , " " 6000 with cooling tower above

" " " , " " 1000 for oil.

The bins at the mill are as follows:

Coarse ore bin, capacity about 30 tons with about 15 tons of ore contained.

Fine ore bin (after crusher) with capacity about 100 tons and 30 tons of ore contained. Grizzly above this ton has ½" openings.

A new crusher of right size would probably cost about $1000 and should if possible fit on the stringers which supported the former crusher. May be possible to trace this and repurchase.

The Door duplex classifier is 20' x 9'.

The K & K flotation machine should probably be scrapped and replaced by a more up to date machine. The present calls are badly shrunk and warped and repairs would be expensive. A new machine might cost up to $2000.

Two tables should probably be installed to replace the old Wifleys unless these can be repurchased. Cost might be about $800.00

A new cover for the filter is in stock, also a lot of extra rods for the mill.

The question of dewatering the tailings by filtering them and stacking dry must be considered, the tailings will be apt to pile up in the creek bed between rains and cause some trouble, also the necessity of impounding them behind a dam must be considered.

At least three stoper drills with hose, etc. will have to be bought, also steel--Cost say $1000 (if new)

Best to leave the hoist for #3 shaft in place and purchase a smaller one for #2 shaft. Hoist from Silver Flag or Happy Days might be suitable.

An air line will have to be run from the power plant to #2 shaft (400' of 2 or 2½" pipe) Could be run along the trestle which must be built to hoist the ore cars.

In assay office only a new muffle furnace seems to be required, there is a good Braun crusher also grinder.

Obtain schedule of wages at mine and mill from Octave Mine.

Caretaker is Clarence O'Hara. Truckman in Wickenburg is Nick Oberon.

Cost of hauling 9½ miles should not exceed $2.00 per ton and might be less--to include loading and unloading into box cars. The bins and platform at this mill would easily hold load for a 30 ton car.

In the tunnel and shaft at the Great Southern Mine there are a lot of rails which might be sufficient for the trestle from #2 shaft to the mill. Also there is some timber which might be utilized. To get water from this shaft would need a good electric pump with 300' lift or more and would have to run power line and 2" pipe line for ½ mile, could connect with 3½ pipe which is still there.

In a portion of the main vein or a split from the vein which is found in a cut on the north side of the boarding house there is a width of about 2' of ore which shows yellow crystals of wulfemite (molybdate of lead) and also a lot of purplish or amethyst quartz which is probably stained with manganese or may be fluorite calcium fluoride or a vanadium mineral.

If any substantial quantity of wulfemite occurs in the vein the molybdenum may have commercial value if a proper separation can be made.

My grab samples of coarse and fine ore taken from the mill bins and presumably mined from the lowest level gave respectively Ag. 9.6 oz. and 9.9 oz. and Pb. 0.1 and 0.1%. Appears to bear out statement that lead content practically disappears in depth but silver holds its own pretty well. A small profit per ton might be made on this grade of ore considering the high ration of concentration.

From conference on March 14th with Louie Neuenchwander, Box 381, Phoenix, who was mawter mechanic at the mine in '28 and '29.

The main shaft went down to 500' depth and considerable crosscutting and drifting was done on that level. The vein should have been intersected, if it held its dip to that depth, but no vein was found and it is probable that it had punched out above altho it might have been faulted. The ground in this shaft was very heavy and it is probable that it has caved badly around the 290 station and below as well as at the collar, so that it may never pay to recondition the #3 shaft if, as I assume, the ore from the 180' to the 225' level is much lower in grade and will hardly pay to work. This condition would be altered if good ore is found in the south ore shoot and this shoot has actually been reached on the 225' level and the said level is not too badly caved.

There was very little water flowing in the Great Southern shaft, and it may not pay to put in a pipe line from that shaft to the mill. The Diamond Joe Workings made nearly as much water above the 225 level as below and this was sufficient to run the mill 8 hours per day and treat say 30 tons. Some of the water was returned by putting the tailings through the dewatering tank outside the mill. It seems probable that by also filtering the tailings thru an Oliver filter sufficient additional water could be saved and returned to permit operating at 50 tons per day and this would probably be the limit unless it would pay to bring in water from a considerable distance. One table should be enough to start with in the mill and also a 50 ton flotation unit, the capacity of which could later be increased by adding more cells

The flow sheet suggested by Genl. Engineering Co., i. e. table, regrind and float, was tried but did not prove as good as the present method which gave excellent recovery of the lead but only about 60- 70% of the silver. This should be much improved by a new and modern flotation machine.

Louie thought that the returns from production while the mill was running had more than covered the operating expense.

3/21/36

NOTES RE DIAMOND JOE

Found section corner in gulch to east of mill. This mill will serve as datum point for survey.

Joe Bodiroga says that Paddison and assistant sampled the entire mine but he knew nothing of their results. He thinks that it would be very difficult to unwater the 180' level with the pump jack on #2 shaft as this only throws a little more water than the mine actually makes so that we might run this pump jack for a month or more to no good purpose. Engine on pump uses about 5 gallons of gasoline per 8 hour shift.

To unwater it may be necessary to start the compressor and secure (by renting if possible) a Cameron or other type of sinker that would pump 40 or more gals. per minute. This would mean a pretty heavy expense and there is a chance that the 180' level or crosscut might be badly caved, so it will be preferable to get a copy of Paddison's report and assay map if this can be done without too great an expense.

In Prescott found that no judgments or liens have been filed against Diamond Joe Co. or property, but the company still owes the taxes of 1935, i. e. $149.00 plus penalty and will owe a similar amount for 1936 taxes. Previous taxes since 1930 have been paid by W. L. Richards. The Co. or Neal Clark also owes $122.00 to the Prescott Title & Trust Co. for abstract of title made on November 30th, 1934.

Richards says that he will not press his claim nor file any lien if we go ahead with the operation but will make some arrangement with Mrs. Koyk to get his money, which I understand now. amounts to some $3500.00

ESSENTIAL FACTS RE DIAMOND JOE MINE

11/6/36

The claims as staked cover all the good showings and also the Great Southern shaft, valuable as a water supply.

The developed ore which can be sampled and measured above the present water level is limited to about 10,000 tons. The grade of this ore as judged by previous sampling and records is about 12 oz. ag and 6% Pb. This ore could be mined and milled with a profit of over $3.00 per ton on the basis of present metal prices and provided better than 80% recovery of values could be made in the mill.

It is probable that the 180' level could be unwatered in two or three weeks time with the pump-jack but the crosscut or drift might be caved. If this level were open it should be possible to sample and measure at least 10,000 tons of additional ore which we have good grounds to believe will carry 12 oz. ag and between 3 and 4% Pb.

It is reported that the last mill run gave an 85% recovery and if 80% recovery of silver values could be made this ore should also be mined and milled with a profit of $3.00 per ton considering the high ratio of concentration.

I have reliable information to the effect that practically all the ore found on the 225' level is too low grade to be commercial and I do not now believe that it will pay to consider working anywhere below the 180' level or fixing up the #3 shaft.

However, it does appear that there should be good chances of developing considerable additional pay ore above the 180' which might probably amount to another 20,000 tons of similar grade and could be worked with a similar profit of $3.00 per ton.

There is also a possibility of developing some molybdenum ore to the north of the main shoot which might carry as per my samples over 6% Pb and over 2% MO and could be worked with substantial profit but the present molybdenum showing is merely a prospect and the quantity of such ore may prove too little to have any value. The south ore shoot should also be sampled and developed

and might substantially add to the tonnage of pay ore in the mine.

To complete the check sampling of the ore above the water level and carry out thorough metallurgical tests which are most important would cost about $1000.00 and require two or three weeks time. To unwater and sample the 180' level would involved a further expense of say $500.00 (assuming that the pump jack will pull down the water and that there has been no substantial amount of caving) and require another two to three weeks. I do not personally feel that this last work is essential just at present.

To fix up the mining equipment and mill to operate at the rate of 40 tons per day and prepare the mine for such a production from the #2 shaft would cost about $12,000 and a working capital of $10,000 to $12,000 should be provided so that the total money available for this investment should be $25,000 and the time required to get things in shape for regular operations would be about 2 months.

The water supply from the Diamond Joe and Great Southern shafts should be sufficient to permit the mill to run steadily at this rate and if the recovery of over 80% of silver and lead values can be made the profit to the operators would be $30,000 on the developed ore above the water level with every reasonable prospect that an additional profit of $30,000 would be made from treating the ore now under water but above the 180' level and a good chance that an additional profit of $50,000---$60,000 might accrue from developing and mining extensions of the present known ore body between the 180' level and the surface with a fair prospect that something more might be earned by opening up and working the molybdenum ore and such pay ore as may be found to exist in the south ore shoot.

Considering the terms of my lease and option I believe that this is an attractive speculative mining investment even though the quantity of positive and probable pay ore is much less than had been represented in the Engineers' reports furnished by the owners of which more or less complete copies are available for inspection and as per statement attached.

J. M.

COMPARATIVE RESULTS OF SAMPLING DIAMOND JOE MINE

Name of Engineer	Date	Tons sampled	Aver. width vein	# sample	Av. oz. ag.	Av.% Pb
A. L. Beals	Feb. '26	Entire mine	About 9'	168	9.70	6.60
A. L. Beals	Feb. '26	Partial	About 8'6"	68	11.50	5.60
D. R. Findlay-son	July '29 Feb. '34	135,000 135,000	8' 8'	? ?	14.00	6.00
L. M. Kellogg	before '21	Upper levels (35,000)	8'	5	8.06	9.45
W. B. Gohring	'33	154,000	8'	checks	12.00	9.00
L. M. Butler	before '21	Upper level	8'	9	15.17	8.25
A. E. Sedgwick	'21	" "	7'	9	16.68	8.16
				7 /	87.11	53.06
					12.44	7.58

One of the field engineers of the U. S. Mining Co. thoroughly sampled this mine in 1928 and could find no pay ore below the 180' level but his average value on that level and above was about in line with those which I have assumed below and for the limited tonnage.

ASSUMED AVERAGE

(Ore in upper level)	At least 15,000 tons positive and additional 25,000 tons probable.	8'		12.00	6.00

Ore also contains Au---0.02 oz. value $0.70
Cu, less than 1%, value doubtful
Zn, trace, no value

The gross value of the assumed average ore in the upper levels at present prices, $15.50 per ton.

Duplicate

1/21/37

Revised calculation re Diamond Joe operations on very small scale to clean out the developed ore in the upper levels which Murphy estimates @ 2000 tons and with average value Ag--14 oz. and Pb--7%, neglect gold for the present.

Assume ratio of concentration 7:1
" recovery of values 80%, which should be checked by metallurgical tests.

One ton of concentrates should assay

Ag---98 oz. x 80% = 78 oz.

Pb---49 x 80% = 40% = 800#

Smelter will pay for 95% of ag (74 oz.) @ 75.5¢ =		55.87
" " deduct 30# lead leaving 770# & pay for 90% of balance = 693# @		
market 6¢ less 1.425 = 4.575¢---------- =		31.70
		87.57
Sale value one ton concentrates =		87.57
Less charges:		
Hauling to Wickenburg 1.50)		
Freight to El Paso 7.88) with allowance for moisture		
Treatment charge 6.34		
	15.72	15.72
Net value to shipper		71.85
" " " " per ton ore		.10.26
Allow for mining 2.50		
" " milling 2.50		
" " extras .26		
	5.26	5.26
Net profit per ton		5.00

(might be increased by 50¢ if gold can be recovered and paid for.)

Net profit on 2000 tons of this ore----$10,000 which will be increased to about $11,000 if gold can be recovered and by an indefinite amount if the tonnage of pay ore proves to be larger than estimated.

My own figures of positive tonnage based on Beal's sampling indicate a considerably larger tonnage which should run as per estimated average and it might be possible to sort out and ship a few tons of the wulfenite ore. Also there is a good chance that the price of lead will advance.

The preliminary expenses involved in this operation may be roughly estimated as follows, assuming that all of the larger items of equipment can be rented:

(For rental try Keller, Pratt Gilbert, Richards of Wickenburg, Vermeersch, Various small mines, outfits in Prescott.)

Installing hoist and bueckt and headframe at #2 shaft, say	$300.00
Installing portable compressor	50.00
" small mill with tanks and piping at #2 shaft	500.00
Drills, steel, blacksmith equipment, etc.	250.00
Camp building and incidentals and pick-up truck	400.00
Underground preparation and operating supplies and	600.00
small equipment.	700.00
	$2800.00
Working capital	1200.00
TOTAL	$4000.00

****

Total minimum returns after deducting operating expenses	$10,000	
Return of working capital	1,200	
Salvage on equipment etc.	800	
	$12,000	
Deduct investment as above	4,000	
Net profit	$ 8,000	

(It will be safer to have $5000 available even if it is not all required.)

It is to be assumed that the operations would be conducted on the basis of nearly 20 tons per day, say 500 tons per month which will work out the 2000 tons maximum in four months (starting say April 1st)

Expenses for this period might be:

Rental of compressor @ $150.00	$600.00
" of Hoist @ $30.00	120.00
" of mill etc. @ $200	800.00
" of small equipment	80.00
	$1600.00

Men to be employed 1000 days

L

1 Foreman @ $8.00 (also to keeptime and do assaying)		$800.00
4 Miners @ $5.00		2000.00
1 topman	@ $50.00	500.00
1 roustabout and truck driver @ $5.		500.00
2 millmen @ $6		1200.00
9 men		$6600.00

(Boarding house should be self supporting.

Supplies etc.	2000.00
Engineering, accounting, compensation insurance and security taxes.	1900.00
	$10500.00

Equals $5.25 per ton of ore

Plenty of water for the mill should be obtained from the present pump jack in #2 shaft which could be left in place if hoisting were done with a bucket and crosshead.

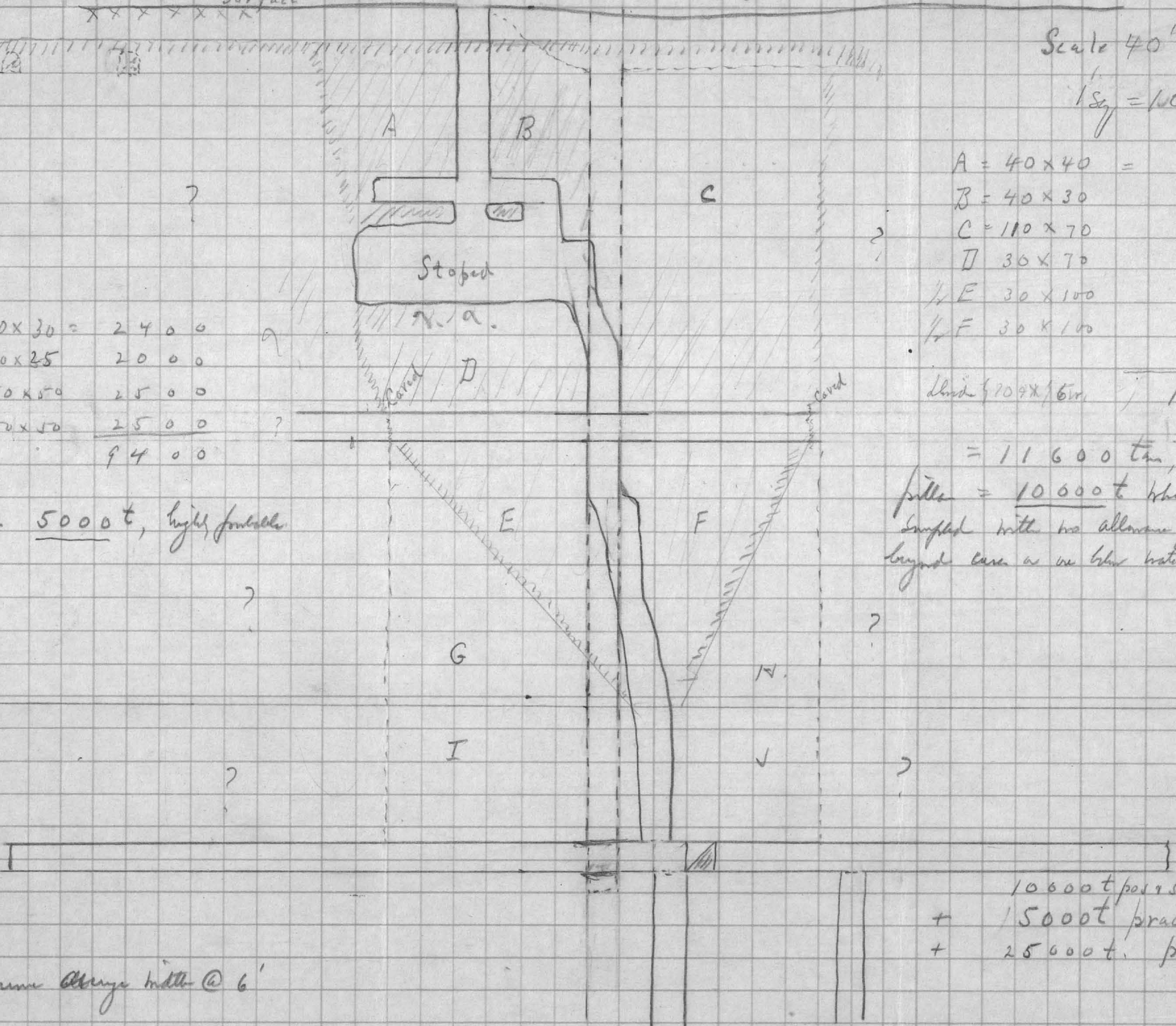
The mill could be located close to the present office building and millman or topman or roustabout would run the engine and compressor and hoist and do the steel sharpening.

J. M. Colvocoresses

Diamond Joe. Projected Section on Dip.

Scale 40' = 1"

1 Sq = 10'



A	= 40 × 40	=	1600
B	= 40 × 30		1200
C	= 110 × 70		7700
D	30 × 70		2100
½ E	30 × 100		3000
½ F	30 × 100		3000
			18600

Divide (10 ÷ 16) ÷ 16 tons

= 11600 tons, & allow for pillars = 10600 t which can be sampled with no allowance for extension beyond cave or ore below water level.

½ G	= 80 × 30	=	2400
½ H	= 80 × 25		2000
I	= 50 × 50		2500
J	= 50 × 50		2500
			9400

Add 5000 t, highly probable

10600 t pos & sampled
+ 5000 t pract pos.
+ 25000 t. prob. E N & S.

Assume average width @ 6'

GENERAL STATEMENT RE DIAMOND JOE.

by G. M. Colvocoresses
October, 1937.

The old reports on the Diamond Joe appear to have been far too optimistic and the mine had not proved attractive to any of the several companies including the U. S. Mining and the U.V.X. whose engineers had made careful examinationswhen it was open for inspection.

My investigation in 1936 was made to determine the chances of reopening the mine and operating on a small scale considering that most of the mining and mill equipment were then on the property and in good condition. This equipment has since been sold, but I believe that much of it is still in place.

The first examination gave rather favorable results but later work followed by the work of Arthur Murphy indicated that the proven ore was too limited or too low grade to make the project attractive and water supply was likely to be very limited.

On a very small scale mining and milling operations might be carried on with profit until the better grade of ore in the upper levels was exhausted and the tonnage of this material may be from 2000 to 5000 tons. There is also a fair chance that this tonnage might be considerably increased by subsequent development but the very low grade of ore in the lower workings and limited extent of the pay shoot above seem to make the proposition entirely unattractive except for a lessee or small scale operator.

Rem f Fund

Note Re Diamond Joe Mine

February 2nd, 1938

This is a lead-silver property located 9½ miles by good road from the Santa Fe Railway and main highway (U. S. 89) at Wickenburg, Arizona.

The mine has been partially opened up to a depth of 225 feet but no pay ore was found below 180' and the tonnage of positively developed ore is now limited to about 5000 tons but with good prospects that further development will prove at least 10,000 tons additional and very likely a much larger quantity.

The average width of the vein is about 8' and the positive ore may be taken to average 12 oz. per ton in silver and 6% lead, gross value about $13.00 per ton.

There are good camp buildings but the mine equipment and ~~a 100 ton~~ mill and power plant, ~~although still on the ground~~, have all been sold. Some of this equipment might be leased or repurchased but the old mill is far too large for practical purposes and the local water supply will not permit milling on a larger scale than 25 tons per day.

The mine belongs to a widow who will lease with option to purchase on favorable terms and an expenditure of about $10,000 should be sufficient to prove or disprove the existence of the additional 10,000 tons of ore mentioned above.

The greater portion of the ore is fairly suitable for flotation concentration and if at least 15,000 tons of ore should be developed it would seem proper to erect a 30 ton mill which would be supplied with water from the mine. Considering the existing facilities and buildings the cost of this mill might be kept down to $15,000.

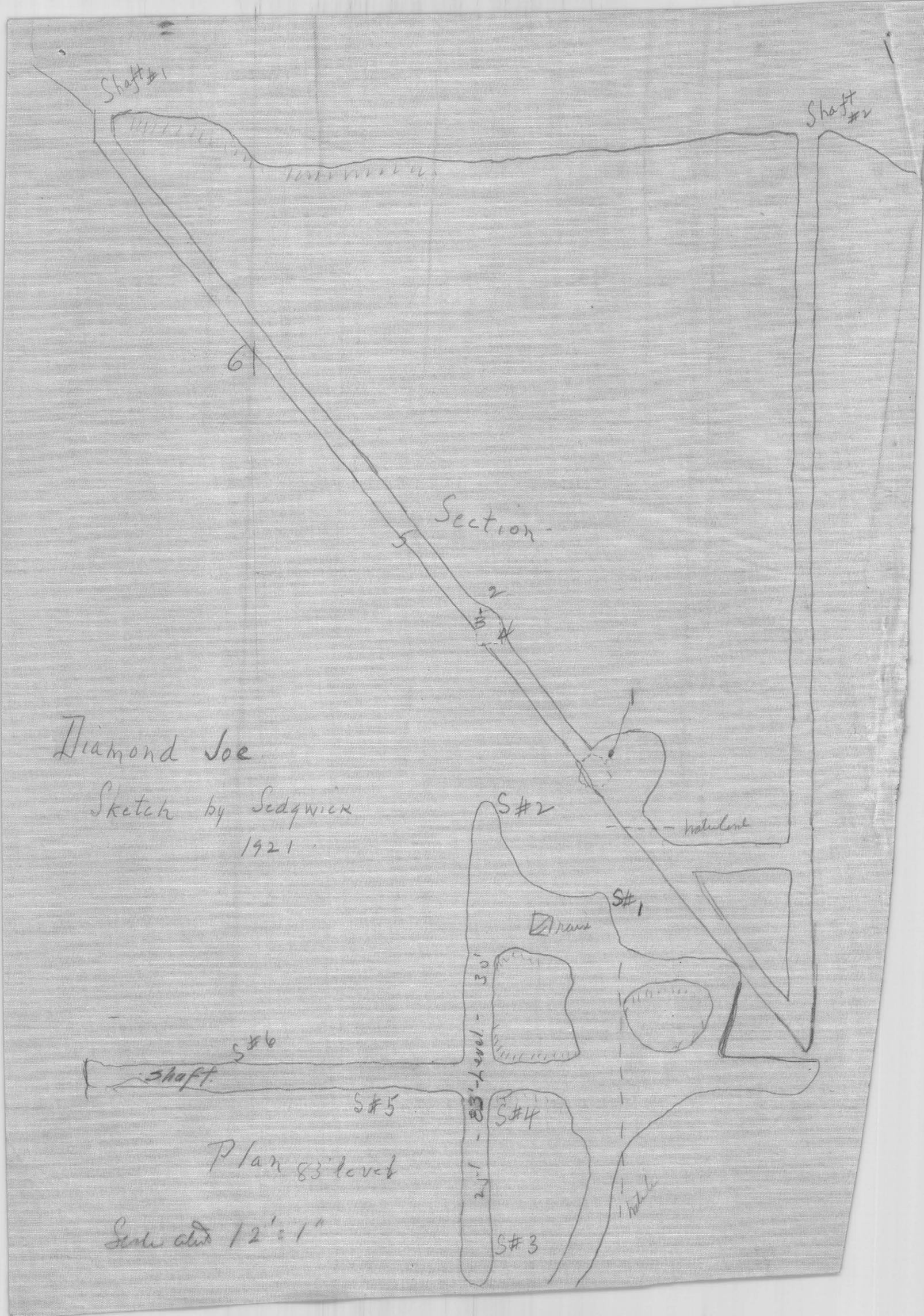
The net operating profit to be derived from mining and treating this ore can be estimated at about $4.00 per ton if prices of silver and lead remain at present levels. Since I believe that these prices are likely to be maintained or rather improved in the case

of lead and since I also believe that there are excellent chances of proving up at least 15,000 tons of ore, I consider that the development and operation of this mine would be an attractive mining,- which always means speculative,- investment and I can recommend it on that basis to those who have a limited capital and would be satisfied with a small operation.

I have several maps and reports of other engineers all of which are considerably more optomistic than the above statement. I have no personal interest whatever in this property but have spent a few hundred dollars of my own money in an investigation and sampling as a result of which I concluded that it was not large enough to interest any of my regular clients.

I should hope to get this money back in one way or another if the property were taken over by any parties who might follow the above recommendation.

John


Shaft #1
Shaft #2
61
Section
5
2
3
4
1
Diamond Joe
Sketch by Sedgwick
1921
S#2
water line
S#1
Drain
S#6
Shaft
S#5
S#4
S#3
Plan 83' level
Scale abt 12' : 1"

September 1939.

STATEMENT RE DIAMOND JOE MINE

(Prepared for Mr. Robert L. Frost)

The Diamond Joe lead silver property consists of ten unpatented mining claims (about 200 acres) located near the southern edge of Yavapai County, Arizona, and connected by nine and one-half miles of good road with the town of Wickenburg and the Prescott-Phoenix branch of the Santa Fe Railway.

The elevation at the mine is 3200' above sea level, the climate warm and dry and the land semi-desert with no trees and scant vegetation.

The formations are mainly granite and granodiorite with intrusive dykes of diorite and similar rocks. The principal vein, which has a northerly strike and dips about forty degrees to the west, is classed as a fault fissure between granite and diorite with a filling of calcite and lead minerals; sulphide, sulphate, and carbonate carrying silver as sulphide and chloride. The metallic minerals were probably deposited from solutions ascending and circulating laterally.

The mine has been developed gradually during the past twenty years and quite extensively from 1926 to 1928 when a substantial equipment and 100 tons concentrating mill were installed and about 5000 tons of ore were treated before a

shortage of water necessitated a temporary shut-down which was made permanent by the subsequent drop in the metal markets.

During the depression the owner died and his widow is unable to finance any resumption of activity and has been forced to sell the mining and milling equipment which must be replaced before production can be resumed.

The ore in the main vein occurs in two shoots termed the North and South, and judging by surface indications these are of about equal size and value.

The North shoot has been developed by shaft and drifts to a vertical depth of 290 feet representing about 450' on the dip of the vein. No pay ore has yet been found below a depth of 180' on the incline although it may exist in undeveloped portions of the property.

The ore in the upper levels has been sampled and measured by several reliable engineers whose reports are in my file and while they did not cover exactly the same ground here is a general agreement between their results which I interpret to indicate an average vein width of eight feet and average content of about 12 ounces in silver per ton, .02 ounces gold and 6% lead. Pratt uses an average of 11 oz. silver and 7% lead which makes little difference in the net value. This ore has a gross value of over $15.00 per ton at present metal prices and the mill is said to have recovered 85% of the values in gravity and flotation concentrates with a ratio of concentration of seven to one. A metallurgical

test made by the General Engineering Company of Salt Lake showed a recovery of better than 90%.

Based on the present prices of the metals contained and the payment schedule of the El Paso Smelter of the A.S. & R. and after making a careful estimate of all costs of mining, milling, transportation, royalty to owner, and marketing I estimate that the net profit per ton of ore should be $4.00. The exact tonnage of developed ore represented by the thorough sampling is hard to determine and estimates of various engineers show a wide variation but M. E. Pratt who has made the most thorough recent investigation (1938) places this at a minimum of 18,000 tons on which basis my estimate of the expected profit is $72,000 from this block of ore only.

The chances for developing additional ore with depth seem poor but lateral development above the water level may prove up a very much larger tonnage of pay ore especially under the South Shoot where surface indications appear favorable. A little molybdenum as wulfenite is found in the northern portion of the vein but no commercial value can yet be assigned to this occurrence which is probably a pocket of limited extent.

My personal examination in 1935 and 1936 substantiated all statements made above in reference to the general situation and ore-occurrence as far down as the present water level. I am personally acquainted with four of the Engineers whose estimates of ore reserves are contained in my file and

believe them to be conservative and reliable men although I cannot agree with some of their opinions. My own conclusion was that this property gave promise of forming the basis for a small but profitable mining operation but that it would not supply a mill of larger capacity than 30 tons per day and therefore was too small an operation to be interesting to any of my regular clients.

Pratt estimates that it will cost $25,000 to equip the Diamond Joe for operations on the above scale with proper mining and milling equipment and the reconditioning of the underground workings down to the 180' level.

My own estimate of these costs was somewhat lower in 1936 but the condition of the mine may have changed during the past three years and I know that some of the equipment has since been removed. Therefore, I should not wish to make an independent estimate until I had made a brief inspection to bring my information strictly up to date.

I have no personal interest in this property and would not expect or accept any commission from the owner. Previous investigations were made at my own expense but for the benefit of any interested party I feel that I should now pay another visit to the mine as a basis for an up to date revision of my technical notes and estimates and comment on the reports of others.

For this work as well as for the copies of the complete reports, maps, assay records and other data noted below, I should expect to be compensated on a professional basis and in a similar manner for any future services that might be desired.

The attorney for the owner has just (September 2nd, 1939) informed me that the mine is open for a deal and the title clear and valid.

I am also advised that favorable terms of lease or purchase can be obtained and now that the price of silver seems pretty certain to hold at 71¢ or better for some time to come, I am of the opinion that this mine presents a very attractive opportunity for a modest speculative investment with a comparatively small element of risk and an excellent prospect for substantial profit.

Aside from ~~my~~ this Summary Statement ~~to which this is attached~~ and the Report by M. E. Pratt of A.S. & R. enclosed;- my file on the Diamond Joe includes the following:

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Yours very truly,

G. M. Colcord

GMC:MF

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Yours very truly,

G. M. Colvocoresses

GMC:MF

PAN-AMERICAN ENGINEERING CORPORATION LTD.

MANUFACTURERS *and* ENGINEERS

OFFICE, LABORATORY *and* FACTORY
820 PARKER STREET
BERKELEY, CALIFORNIA

SALES OFFICE
MILLS BUILDING
SAN FRANCISCO, U.S.A.
CABLE ADDRESS "PANCO"

NEW YORK OFFICE
GENERAL MOTORS BLDG.
1775 BROADWAY

February 27,1936

Diamond John C 3/2. 36

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

Dear Sir:

Your letter of the 24th has just been received. It is very difficult to generalize on the flotation behavior of oxidized silver and lead minerals, as a good deal of variation in the results is possible.

The determining factor is the mineralogical content of the ore. Lead carbonate can be floated very successfully. Lead sulphate is a little more difficult to recover, but still satisfactory results can be obtained by a combination of gravity and flotation methods.

Silver chloride floats quite readily and we would not anticipate any difficulty in securing a fairly high recovery of it. There are, however, some oxidized lead and silver minerals that are very difficult to float. The best example of these refractory minerals are jarosites of both lead and silver. Silver intimately associated with manganese or silica also presents a difficult concentration problem. At the present time, we are doing some work with special reagents for the flotation of oxidized minerals and have indications that through their use better work can be done on oxidized oresthan has been done to date in actual milling operations. This point, however, still has to be verified in large scale operations.

Referring to your particular problem, if silver in the ore occurs as cerargyrite and lead as cerussite and anglesite, it is our opinion that a recovery of 85% of both silver and lead could be secured by a combination of gravity and flotation methods.

Before making any final statements, however, we would like to make tests on your ore to be sure. The sample need not be very large; a 20 lb. sample well representative of the ore would be sufficient to make the necessary preliminary tests.

Colvocoresses, Geo.M. 2/27/36.

Under separate cover we are sending you a copy of our catalogue illustrating and describing our flotation machines and auxiliary equipment.

We shall be glad to be of assistance to you in working out your metallurgical problem.

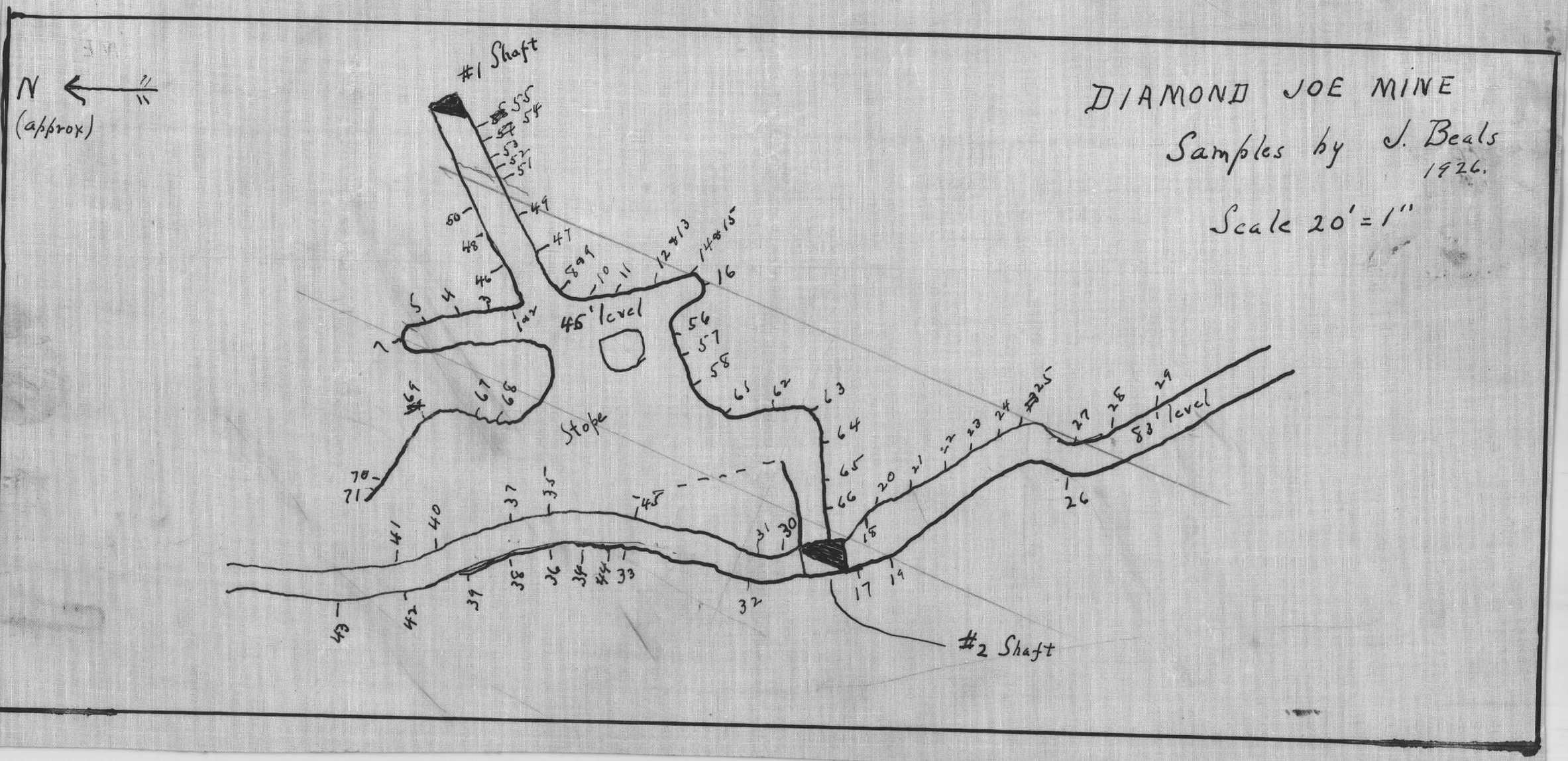
Yours very truly,

PAN-AMERICAN ENGINEERING CORPORATION, Ltd.

D. N. Vedensky

D. N. Vedensky
Chief Metallurgist

DNV:jls


N
(approx)
DIAMOND JOE MINE
Samples by J. Beals
1926.
Scale 20' = 1"
#1 Shaft
46' level
Stope
83' level
#2 Shaft

The Attorney for the owners has given positive assurance that the titles and rights are valid and ~~subject to checking this statement~~ that a formal contract ~~the~~ Lease and Option ~~Contract has been approved by my own attorney~~ with 10% royalty & purchase can be obtained.

The titles, grade of ore in the upper levels, and mill recovery can all be carefully checked during the sixty day option period and if this investigation confirms the statements herein made there would appear to be no reasonable possibility of financial loss to the Lessee except in the unlikely contingency that the prices of domestic silver and lead should both take a big drop during the balance of the current year during which it can be expected that the net earnings will serve to at least repay the original investment with some small profit to the operator.

I am ~~therefore~~ of the opinion that this mine presents ~~is a very~~ an attractive opportunity for a mining investment offering an excellent prospect of substantial profit on a moderate investment with an unusually small element of risk.

S. M. Colvocoresses.

March 13th, 1936.

EXHIBITS ATTACHED

(a) Estimated expenses of investigation during option period.
(b) Estimated expenses to recondition mine and plant for operation.
(c) Calculations of estimated operating costs and profit.
(d) Estimated return from Diamond Joe Mine--Present metal prices.
(e) Alternate estimated return from Diamond Joe Mine with silver @ 50¢ per oz.
(f) Comparative results of sampling Diamond Joe Vein.

(a)

ESTIMATED COST OF INVESTIGATION OF DIAMOND JOE MINE DURING SIXTY DAY OPTION PERIOD.

(Not including Engineering Supervision)

Metallurgical tests (two separate investigations)	$300.00
Unwatering to below 180' (vertical) level and cleaning out drifts for sampling.	350.00
Cutting samples, say 150 sections in two parts, i. e. 300 samples, tools, sax, etc.	600.00
Assaying samples	400.00
Legal expense and checking titles	100.00
Survey of claims and surface work	100.00
Miscellaneous expenses, including insurance on men engaged in sampling.	150.00
	$2000.00

Assumed that samples will be taken across the vein (about 8') in two parts, each representing a 4' width and at intervals of 5'.

Propose to sample vein in inclined shaft for some	200 lineal ft.
45' (vertical) level	60 " "
83' " "	260 " "
180' " "	170 " "
Surface of vein and surface pits and adits.	60 " "
TOTAL	750 " "

Number of 5' Sections 150

Total number of samples (about) 300

Total tonnage of ore represented by samples with allowance for reasonable extension,----about 60,000 tons

(b) -

APPROXIMATE ESTIMATE OF EXPENSE PRELIMINARY TO OPERATING DIAMOND JOE MINE AND MILL AT FIFTY TONS PER DAY.

Assuming that preliminary investigation gives satisfactory results.

Headframe for #2 shaft	$300.00
Cage for #2 shaft (present cage to be fixed)	100.00
Hoist for #2 shaft	600.00
Track and trestle from #2 shaft to head of mill	1000.00
Hoist at mill for ore cars.	200.00
Changing pipe, etc. in #2 shaft.	200.00
Crusher at mill	400.00
New flotation machine at mill	1700.00
Tables in mill (2)	800.00
General repairs and additions at mill and camp.	500.00
Muffle furnace, etc. for assay office.	200.00
Bunk house (floor and tent roof)	800.00
Pick up truck and small car	1200.00
3 air drills, hose, and steel etc.	1000.00
Preparing mine for stoping.	3000.00
	$12,000.00

In addition to the above a working capital of $15,000 should be provided to purchase necessary mine and mill supplies, including explosives, fuel, reagents, etc., and to cover workmen's compensation insurance premium and payroll and other operating expense until regular returns are obtained from shipments of concentrates. Under the terms of the contract the working capital may be as much as $20,000.

(C)

CALCULATIONS RE ESTIMATED OPERATING COST AND PROFIT ON DIAMOND JOE AVERAGE ORE FROM UPPER LEVELS.

(Based on latest El Paso Smelter Quotations and prices of metals on February 27th, 1936)

Assume run of mine ore:-

Au--- 0.02	gross	value	$0.70
Ag---11.00	"	"	8.52
Pb--- 8%	"	"	7.20
	TOTAL		$16.42

Assume Concentration at ratio of 7: 1 with recovery of 85% of value.

Then 1 ton of concentrates will assay:-

Au-- 0.12 oz.
Ag--65.00 oz.
Pb--47.6% = 952#

Smelter will pay for Au @ $32.81825		$3.94
95% Ag @ 75.5¢		46.62
Pb. less 30# = 922# and pay for 90%= 830# @ 4.55 less 1.425 = 3.125		25.94
Value of one ton concentrate		$76.50

Less Charges

Hauling to Wickenburg	$3.00 (allow for moisture)	
Freight to El Paso, $50 value.	7.88 " " "	
Treatment charge	6.34	
	$17.22	17.22
Net return per ton concentrates		$ 59.28
Net return per ton ore.		8.47

Less cost of mining developed ore	$2.20	
Less cost of milling	2.00	
Taxes, overhead, etc.	.27	
Total operating costs	$4.47	4.47
Net profit per ton		$4.00

Net profit perday $200.00

The El Paso Smelter will give substantially better terms on a long term contract, also the Railway freight rate is in line for a reduction before the end of this year. If the prices of silver should drop there would be a decrease in the freight rates & treatment charge and the net profit would work out at almost exactly $2.00 per ton.

(d)

ESTIMATE RETURN FROM DIAMOND JOE MINE

(schedule based on present market prices of metals, gold @ $35.00 per oz. silver @ 77¢ per oz., lead @ 4.55¢ per lb.)

(A) In working out only the 60,000 tons of ore now developed and sampled in the upper levels.

Net profits on 60,000 tons @ $4.00 $240,000

To be divided as follows:

	TO OPERATORS	TO OWNERS
First $30,000 profit, 90% to operators, 10% to owners.	$27,000.00	$ 3,000.00
Additional $210,000 profit, 50% to operators, 50% to owners.	105,000.00	105,000.00
	$132,000.00	$108,000.00
Less initial investment, including investigation.	30,000.00	
Net profit to operator after repayment of capital.	$102,000.00	

(B) On assumption that an additional 100,000 tons of similar ore now partly classed as probable should be mined, the additional net profits should be $400,000 to be divided as follows:

	TO OPERATORS	TO OWNERS
For repayment additional capital investment.	$27,000.00	$ 3,000.00
Division of other profits.	328,000.00	
To complete purchase price.		39,000.00
	$ 355,000.00	$42,000.00
Less additional capital investment	27,000.00	
	$ 328,000.00	
Add for A	102,000.00	108,000.00
	$ 430,000.00	$150,000.00

(In the above schedule the interest and return of G. M. C. is included with the operators')

(Plus return of all Capital investment and salvage value of equipment etc.)

(e)

ALTERNATE ESTIMATED RETURN FROM DIAMOND JOE MINE

(Schedule based on present prices of gold and lead, but with silver at 50¢ per oz.)

(A) In working out only the 60,000 tons of ore now developed in the upper levels.

Net profits on 60,000 tons @ $2.00 $120,000

To be divided as follows:

	To Operator	To Owners
First $30,000 profit, 90% to operators, 10% to owners.	$27,000.00	$ 3,000.00
Additional $90,000 profit, 50% to operators, 50% to owners.	45,000.00	45,000.00
	$ 72,000.00	$48,000.00
Less initial investment	27,000.00	
Net profit to operator after repayment of capital.	$45,000.00	

(B) On assumption that an additional 100,000 tons of similar ore now classed as probable should be developed and mined. The additional net profits should be $200,000 to be divided as follows:

	To Operator	To Owners
For repayment additional capital investment	$27,000.00	$ 3,000.00
Division of other profits ($170,000)	85,000.00	85,000.00
	$112,000.00	$ 88,000.00
Add for A	45,000.00	48,000.00
	$157,000.00	$136,000.00
Less additional capital investment	27,000.00	
Total net return	$130,000.00	$136,000.00

(In the above schedule the interest and return of G. M. C. is included with the operators)

(81

COMPARATIVE RESULTS OF SAMPLING DIAMOND JOE VEIN

NAME	Date	Tons sampled	Av. width vein.	# samples	Av. oz. ag.	Av. % Pb.
A. L. Beals	Feb.'26	Entire Mine.	About 9'	168	9.70	6.60
A. L. Beals	Feb.'26	Partial	About 8' 6"	68	11.50	5.60
D. R. Findlayson	(July '29)	135,000	8'	Not stated		
	(Feb. '34)	135,000	8'	" "	14.00	6.00
L. M. Kellogg-before	'21	Upper levels	8'	" "	8.06	9.45
W. B. Gohring	'33		8'	Several checks	12.00	9.00
L. M. Butler -before	'21	Upper levels	8'	Not stated	15.17	8.25
A. E. Sedgwick	'21	" "	7'	" "	16.68	8.16
				7 /	87.11	53.06
					12.44	7.58

Assumed Average

Ore in upper levels (at least 60,000 tons.			8'		11.00	8.00

The ore on the lower level appears to be of somewhat lower grade especially in lead content.

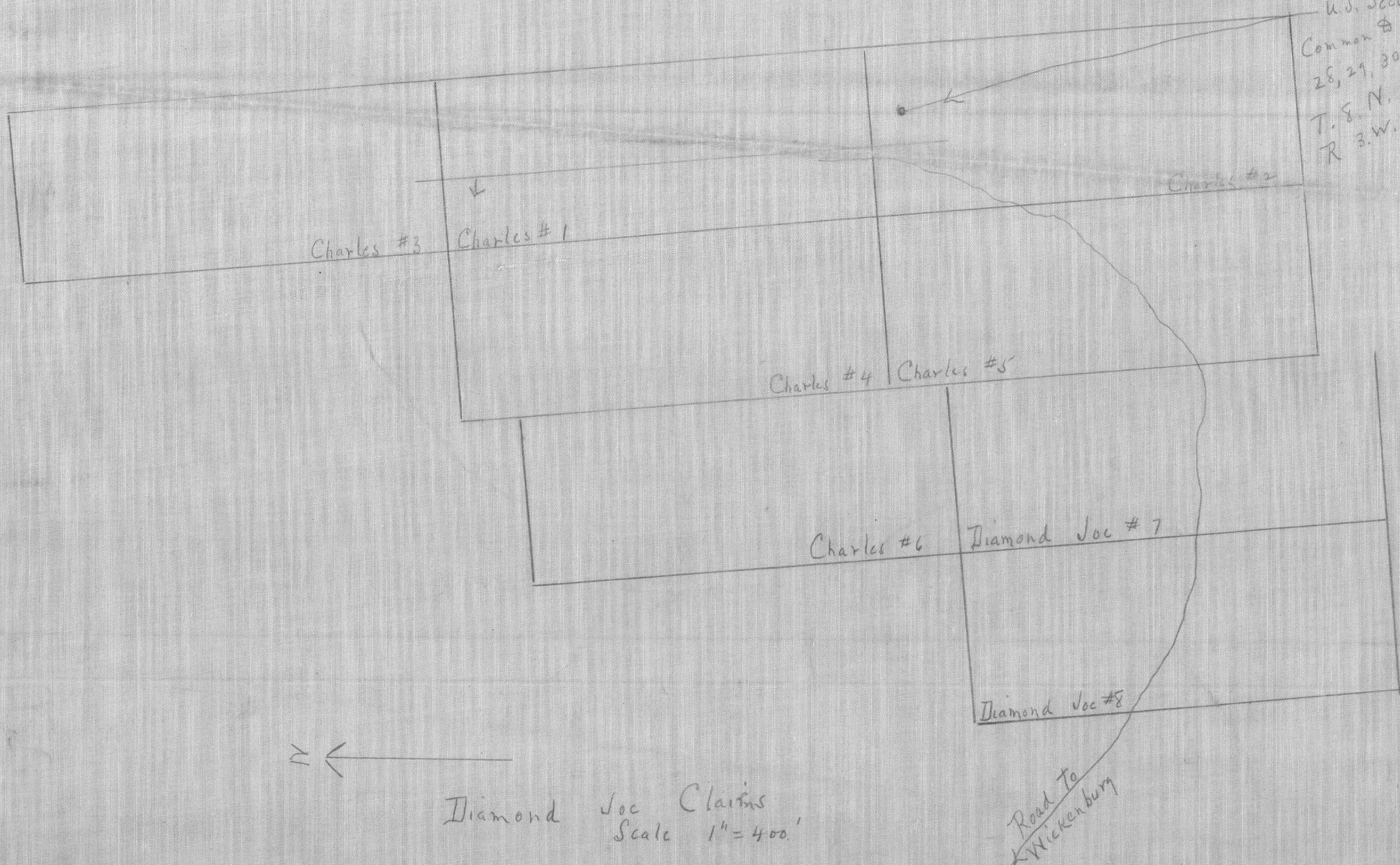
Ore also contains-- Au. 0.02 oz. value 0.70
Cu. less than 1%, value doubtful and not considered.
Zn. Trace no value
mo. Found in spots as wulfenite, probably no value

The gross value of the assumed average ore in the upper levels at present prices (silver 0.7757 per oz., Pb @ 4.55¢ per lb., and au. @ $35.00 per oz.) = $16.42 per ton.

FREIGHT RATES ON SANTA FE, WICKENBURG TO EL PASO

ORES AND CONCENTRATES (Allow about 15% H_2O.

VALUE		
$20.00,	$4.50 & 7% =	$4.82
30.00	5.15 & 7% =	5.51
40.00	5.70 & 7% =	6.10
50.00	6.30 & 40¢ =	6.70
60.00	6.95 & 40¢ =	7.35
70.00	7.60 & 40¢ =	8.00
80.00 to 100.00	8.75 & 40¢ =	9.15



Diamond Joe Claims
Scale 1" = 400'

Memo Joe

Sulfate on 2 in 2 for

Ag = 1.4 g 1.10

Pt = 6.27 g 5.70

Mo = 2.21 52.80

59.60

nearly 60.00 p. ton

Sample of ore from cutting [illegible]

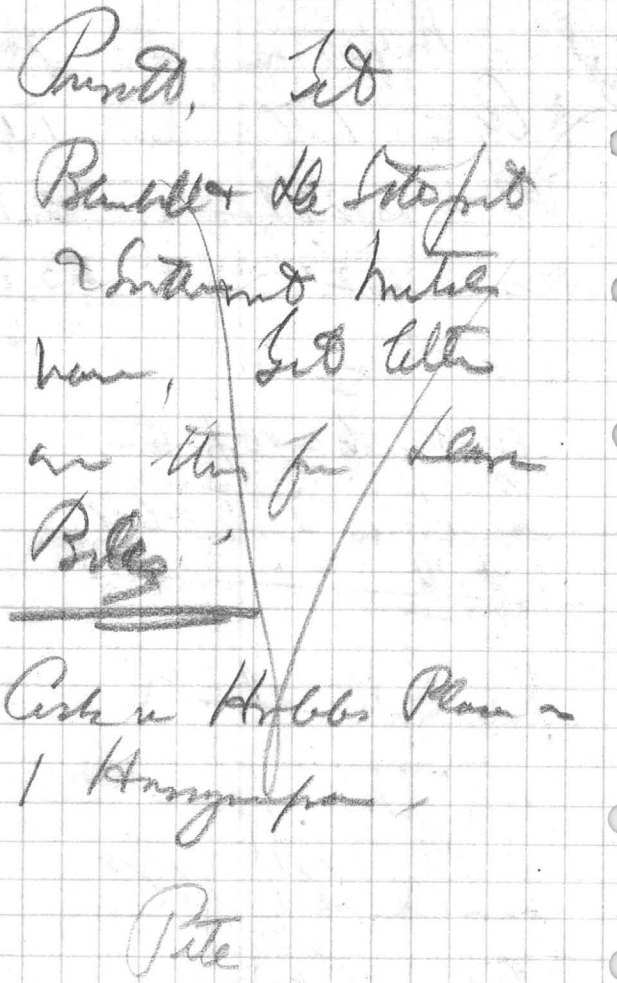
[illegible]

No [illegible]

[illegible]

[illegible] Clerk of County

Card



Gen
Taxes, for 1935
$145.58 (all
to
Fed Tax, about 145.
other taxes paid by
Richards ~~~~ for
some years past

League of Com Art
Bd. of Dir. I C
6 335
Sept 30

Molly test (unsupported)

Heron Eng. Co. on

use of Amj.

Market not be

for Cyanamid Co.

pay ad 35 $ for

unit of MoS_2 w

i [illegible] y v hq for

molybd.

~~Stavich - Br of~~ [illegible]

Coord & Impco at

Copper Circle Hu / Molybdenum

2 mo

Rodney J. 3/24.

Corn 29, 30, 31 & 32

Thence S. 37 W, 117'

to line of [illegible]

Chain #2,

[illegible] 155

[illegible] Cherry

& #10 [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] 300' [illegible]

[illegible] 60 [illegible]

+ 1000 [illegible]

Baron at home 3380'

~~[illegible]~~ 83 [illegible]

= 60' [illegible]

838 [illegible] = 67'

[illegible] 127 +16 143

" to 180' [illegible] - [illegible] 160

Elev of [illegible] is 16' higher

than #2 [illegible]

100' of ~~[illegible]~~ [illegible] ~~to #2~~ [illegible]

& [illegible] 67' [illegible]

[illegible] x [illegible]

~~Shaft #~~ 1, & landing/brows

East 2nd tube = 100'

& 38' [illegible] & [illegible]

#2 - 40' [illegible]

~~#~~ 1,

1860
6
11160

180 line of [illegible]

[illegible] 24' & [illegible]

S. 20' & [illegible]

[illegible] of 25' [illegible]

[illegible] & 40' [illegible]

[illegible] 20'

to [illegible] [illegible] [illegible]

20 + in offset

another 10' to South

#2X - 8' wide

N drift of W edge of

stope caved @ 60' to

cave cut & goes beyond 70

S drift beyond stope

caved @ 56' & goes

beyond 60.

No stoping to be

seen in stope chute

for stope ~~10~~ 13'

below 83' level &

L 10' wide &

runs dow & 180
line. Sd one
let it . The
dip of v cd & ofst of
DB rock Shafer

The hulfourt Shaw
just north of the
boarding house. (138 f
#1840) Shaw lies on
both sides of cut, huge
lies uplifted on 1 granite
foot wall + L closed
2' wide, same + flanked
of granite

Con cl north of north

Camp on high ridge o—

a small mount & fed

~ x a [illegible] ✓ ~ [illegible]

+ slab E. W. ~ dip 70°

to shore [illegible] [illegible]

of width of 6 - 8'

[illegible] [illegible] a large slab &

of no [illegible] & not [illegible]

do a lot more [illegible] [illegible]

56 m

2 old drifty [illegible] [illegible]

[illegible] [illegible] slope [illegible]

[illegible]

Small Shane [illegible]

Rig Shear [illegible] & [illegible] bright

[illegible]

Mill [illegible] 15000 g p d

(50 t x 300) & [illegible]

Cap. [illegible] 6000 g

= 4 day. Pump [illegible]

8 hrs @ ~~50 x 60~~ 120 g.p.

~~[illegible]~~ [illegible] every 2 days or @ 60-70

g.p. [illegible] every day.

Tops dress [illegible]

Crude, [illegible]

[illegible]

Complete [illegible] [illegible] [illegible]

Excel [illegible] [illegible]

[illegible]

Forge can be run by
hand or if comp.

These charge can be
built

Forging foundation ~~[illegible]~~ OX
5' / Western Gas Eng Co
40 HP.
Not run at [illegible]
has set at 50 for shop
has a lot [illegible]
Plenty of 9 3/4' cable
Bottom from [illegible] 8 1 V

[illegible] early a couple of fundamentals

ability to be convertible

Bldg to be 20 x 12 x 10' hi. to be steel

[illegible]

A new charge [illegible] to be built at small expense

Ice plant near 1 # 1 bldg o- a kind of agglomerate along + 1 [illegible] for [illegible] [illegible]

[illegible]

Branch of [illegible] @ 3200' x to be [illegible]

Stuff & sell 4/2.36

~~Saddles etc~~ – to sell

Books – to ask

Guns, etc – I to ask Alden

Furniture – R. ...

~~Guest frame~~

C. Club stocks

Y. C. Stock & ...

Farm offices etc

... ...

Buy typewriter, (Lloyd) 5 ...

6 J. stocks, Bonds etc.

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DIAMOND JOE MINE SAMPLES BY BEALS IN 1926

SAMPLE	WIDTH CUT	VEIN	OZ. AG.	% Pb	OZ. AG.	% LEAD
1	5'6"	F	11.69	23.9	11.00	
2	4'6"	H	16.79	4.3	17.50	
3	6'9"	F	7.40	10.7	8.00	
4	6'6"	F	5.50	11.3	5.20	
5	6'9"	F	8.10	11.1	7.50	
6	6'	F	7.30	8.9	6.60	
7	4'8"	F	5.00	8.0	5.70	
8	6'	F	12.68	15.2	12.20	17.2
9	3'	H			25.40	4.80
10	4'4"	F	6.09	8.0	5.50	8.8
11	2'3"	H	18.18	6.0	17.40	5.8
12	3'10"	F	6.58	9.9	6.50	10.4
13	3'	H			9.00	7.0
14	4'	F			7.00	12.4
15	3'4"	H	19.78	8.9	18.00	7.5
16	4'8"	F	1.20	6.2	10.80	5.7
17	4'6"	H			2.50	0.6
18	7'8"	F	11.68	5.2	1.50	5.6
19	6'8"	H	5.10	3.1	5.00	3.7
20	2'6"	F	1.20	2.3	1.70	1.1
21	4'10"	F	2.20	6.4	2.80	5.2
22	4'10"	F	2.00	1.1	2.20	1.1
23	5'8"	F	5.60	5.0	5.40	3.8
24	5'6"	F	8.19	2.5	7.60	2.3
25	4'6"	F	lost	1.		
26	4'6"	H	28.57	1.7	32.00	1.1
27	6'4"	F			19.80	1.1
28	6'9"	FH			10.20	0.4
29	6'6"	FH	6.39	1.0	5.00	0
30	5'	F	3.50	1.7	3.00	1.3
31	5'	F	5.79	1.9	6.50	2.1
32	5'	FH	lost			
33	5'	F	10.56	1.2	3.00	3.7
34	6'2"	FH	6.69	3.1	7.00	2.5
35	5'3"	F	3.69	1.7	3.70	1.5
36	4'8"	H	7.88	13.1	8.00	15.9
37	5'4"	H	1.59	0.4	0.50	0
38	3'6"	H	Trace	3.5	1.50	1.3
39	5'	H	0.30	0.4	1.70	0
40	5'6"	F			1.40	0
41	2'9"	F			1.00	0
42	3'	H			6.50	9.4
43	3'6"	H			19.50	7.1
44	3'8"	H			13.20	8.3
45	4'	FH	13.8	9.4	11.50	8.6
46	3'2"	H			35.60	16.2
47	3'	F			3.40	9.6
48	3'6"	H			30.80	5.4
49	3'6"	F	18.77	15.2	15.00	18.7
50	4'10"	FH	26.47	15.0	24.50	15.0
51	4'8"	FH	11.50	15.9		
52	4'10"	F	0.90	5.2	1.90	4.7
53	3'1"	F	1.80	7.7	2.30	6.3
54	3'8"	F	4.39	11.6	4.80	12.4
55	3'8"	F	Trace	5.000	1.40	1.6
56	4'4"	HF	14.48	8.3	14.00	16.9
57	4'9"	H	16.88	4.0	15.10	1.0
58						
59						

SAMPLE	WIDTH CUT	VEIN	OZ. AG.	%Pb	OZ. AG	% Pb
60	4'6"	H			13.20	13.2
61	5'	FH	12.08	16.4	11.00	5.8
62	5'	FH	5.75	7.1	6.00	0.8
63	4'3"	FH	8.80	1.9	9.00	0.2
64	4'	FH	4.65	1.5	4.40	5.8
65	4'6"	H	5.89	7.3	5.50	2.3
66	4'10"	H	2.20	0.8	2.50	.0
67	2'6"	H	19.78	3.8	19.50	0.8
68	3'4"	F	9.29	17.6	8.70	17.6
69	3'4"	F	10.08	11.2	9.00	11.2
70	2'3"	H	8.88	8.3	10.00	8.8
71	2'5"	F	4.09	5.4	3.50	1.3
72	5'2"	290	4.10	1.5	4.50	.0
73	5'3"	"			5.70	0.0
74	4'3"	"	3.15	1.4	3.40	.0
75	4'3"	"			4.60	0
76	3'	"	3.00	2.76		
77	4'	"			2.80	0
78	4'	"			4.20	0
79	4'6"	"			3.40	0
80	5'	"			2.50	0
81	4'	"			5.00	0
82	4'6"	"			2.00	0
83	8'	Surface Cut	3.10	2.5		
84	10'	" "	3.05	2.3		

HANGING WALL VEIN H
FOOT WALL VEIN F
SURFACE CUTS ON SOUTH SHOOT

WEIGHTED AV. OF MINE INCLUDING SURFACE AND 290' LEVEL ---WIDTH 4'5
AG. 9.7 oz.
Pb. 6.6%

WEIGHTED AV. OF 34 SAMPLES MARKED F-H or H
is 4'3" Wide, Silver 11.5 oz. Pb. 5.6%

Copied for Southwest Metals Co.

EXCERPT FROM REPORTS ON DIAMOND JOE ~~BY H. S. MCKNIGHT~~

By H. S. McKnight, - Field Engineer, in 1923

DIAMOND JOE: Lead Silver property. Ten Miles north of Wickenburg Vertical shaft cutting a vein of lead ore about three feet wide and said to run about 15 oz. Ag. and 5% Pb.

The vein is a mineralized fissure in granite and dips to the west at about 20 degrees. Shaft 200 ft. deep. Expect to construct a concentrator when mine is more developed. No ore has as yet been shipped.

FROM NOTE BY D. M. BARRINGER, JR. Field Engineer 1926

Formerly owned by the Etter Brothers, it is now owned and being developed by the Tindale Mining Co. George Koyk is in charge.

The vein is on the contact of a diabase (FW) with an igneous rock of granitic structure carrying some 30% of calcite. The vein is in two almost equal parts, the hanging-wall part being a clayey material high in iron oxides, with "eyes"of galena , while the lower part is composed of massive calcite crystals interspersed with galena. Very little Cu and Zn. The heads of a milling sample submitted to the Gen. Eng. Co. ran about: Au, nil; Ag, 19oz; Pb, 9%, Cu, 1%; Zn, 2%. The silver seems to follow the iron more than the lead. At the present depth (300' vertically) the Fe is still largely oxidized, while the Pb is mainly sulphide right to surface.

The old development, consisting of drifts from an inclined shaft 250' deep on the vein and a vertical shaft crossing the vein near it, blocked out some 60,000 tons of milling grade ore (see above analysis. At present water is too scarce to start milling, but the new shaft is developing some, and the Hassayampa River is 6 miles distant. The new shaft, which is a vertical one in the hanging wall, is 320' deep, with one level at 300 feet. This encounters the vein some 100 feet from the shaft, and has developed about 160' of the same ore-shoot found in the old workings, with an average width of 4½ feet. At present the N. and S. drifts on the vein are being extended, but the manager expects to resume sinking soon; as much with the hope of finding additional water as anything else.

No prospect of ore or concentrates for selective flotation

As a prospect of lead concentrates for a stack here, future developments should be watched, as there seems to be a good chance for 10 to 15 Tons daily of lead concentrates when the mill which the company contemplates is built.

9 miles of fair road connect the property with Wickenburg/

ORE SETTLEMENT PHELPS DODGE CORPORATION

Reduction Works, Douglas, Arizona August 13, 1928

Bought of Tindale Mining Co., Inc.
Box T, Wickenburg, Arizona

Material--Lead Conct.

Weight		
Wet	Moisture	Dry
46980	14.8	40026

Quotations (E & M Journal) Lead

N. Y. Silver 58.90
N. Y. Lead 6.20
Deduction 1.4

Per Ton of 2000 Lbs.	Assay	Deduct	Pay for	Payments	Amounts Per ton	Amounts Total
Gold						
Silver	92.05 oz	5% &	% = 87.447	oz. @58.90	51.51	
Lead	38. %	1.5 units & 5% of balance	34.77% =695.40	lbs. 4.80	33.38	
						84.89

Charges	Analysis	Deduct	Charge for	Treatment base Max.	
					7.50
Sintering					1.00
Insol.	24.5%			12 c per unit	3.05
Sb.	.3	.25	.05	130	.06
			Total Treatment		11.61
Less Credits					
Fe	4.3			8	.34
CaO	6.6			8	.53

2- Continued

				Total
		Net Treatment		10.74
		f.o.b. Douglas		74.15
Gross Proceeds	20.013	Dry Tons @ $74.15 per ton.		1483.96
Less Freight from Wickenburg	On 30.00 Minc. C/L	Gross Tons @ $5.90	177.00	1483.96
Less		Sampling	5.00	182.00
Balance due Tindale Mining Co., Inc.				1301.96

Office.

SHIPMENTS OF CONCENTRATES FROM DIAMOND JOE MILL TO P. D. Co. AT DOUGLAS

1928	Dry Weight	Oz. Ag.	%Pb.	Insol.	S.	Sb.	Fe	CaO
(3) 9/24	25042	90.58 (1132)	32.70 (#8175)	30.0	1.3	0.3	4.3	8.6
(4) 11/2	32324	139.60 (2261)	14.40 (4654)	41.0			4.4	15.1
(1) 6/27	48698	69.58 (1704)	32.3 (15730)	32.6		.3	4.5	8.5
(2) 8/6	40026	92.05 (1840)	38.1 (15240)	25.4		0.3	4.3	6.6
TOTAL	146090	6937oz.	43799#					

Note by G. M. C.

73 tons concentrates which should only have represented 600 tons of ore but assume that it represented 1000, then recovered ag. was only 7 oz. which might have indicated a mill head containing 9 oz. per ton, and the recovered lead was 44# representing perhaps a mill head of 50# that is 2½% lead. There could be no profit in treating ore of this grade.

The mill ran apparently five months from June to November in 1928, but I am informed that it was shut down or in trouble during a large part of the time.

If it actually required five months to treat 1000 tons of ore this would represent only 200 tons per month or say eight tons per day and if we assume that 500 gallons of water were used per ton (which is double what should have been necessary) then the mill could only have used 100,000 gallons of water per month or say 3,000 gallons per day which should have been supplied from the mine even if the flow was as little as 2 gallons per minute. Therefore, the statement that operations were discontinued because the water supply had failed appears very fishy to me and it seems probable that work was discontinued because they were actually losing money and used the water situation as an excuse.

The crew employed consisted of four men in the mine, or sometimes only two men and using one air drill. There were two men

at the collar of the shaft, one of whom was a top man and the other and engineer in the power plant and there were three men in the mill until the last when they tried to get along with only two men in the mill. The payroll, seemed to have amounted to about $35.00 per day, and the cost of supplies, fuel, etc., must have been at least $15.00, making total cost about $50.00 per day (probably more) and if only an average of 8 tons per day were treated this means $6.25 per ton, which is obviously a prohibitive cost. Koyk told certain people that his operating costs, including mining and milling, was $3.50 per ton, but again this statement does not appear to have been in accordance with the facts.

The prices of lead and silver which covered the settlement for the lots of concentrates shipped as above were as follows:

Silver @ (1) 59.94¢, (2) 58.90, (3) 57.21, (4) 58.12

Lead @ (1) 6.30 (2) 6.20 (3) 6.45 (4) 6.50 - Average value recovered equals $6.00 per ton.

DIAMOND JOE MINE

LEAD -- SILVER

The Diamond Joe Mining property, consisting of a group of ten unpatented mining claims in the White Picacho Mining District, Yavapai County, Arizona, approximately nine miles east of the Town of Wickenburg, and situated in Sections 28 and 29, Township 8 North, Range 3 West, Gila & Salt River Base & Meridian.

The title to the mining claims is held by a corporation organized under the laws of Arizona. All of the stock of the corporation is held by Mrs. Geo. R. Koyk and the estate of her deceased husband, Geo. R. Koyk, of which estate Mrs. Koyk is administratrix.

In a straight line the Diamond Joe property is approximately twelve miles south of the Octave Mine, now being operated by the American Smelting & Refining Company, and the writer's acquaintance with it extends over the period of his residence at Octave, which commenced in 192 , and extends to the present time.

The purpose of this survey is to outline the present physical conditions and economic possibilities of the property. It is based on the writer's personal examination of the upper workings of the property, supplemented by comprehensive reports of reliable mining engineers, whose reports are herein later referred to, and excerpts from said reports are hereto appended.

DEVELOPMENT:

The mine openings, consisting of shafts, drifts, and raises, total 2,550 feet, and are as follows:

No. 3 Shaft (Vertical) . . . . . 500 feet;
No. 2 Shaft (Vertical) . . . . . 180 feet;
No. 1 Shaft (Incline) . . . . . 75 feet;
Cross-cuts from the vertical shafts
to the vein . . . . . 240 feet.

The drifts and raises on the vein to the north of the No. 3 shaft, and of primary interest in connection with the plan herein outlined, are as follows:

225 level: a drift 430 feet in length;
180 level: 200 feet of drifts. The water level at the present time stands above the 180 level but below the 83 level;
83 level: 160 feet of drifts, now open and accessible. Both north and south ends are now closed by small caves, due apparently to some ore having been mined from above the drift level.
45 level: 70 feet of drifts total about 175 feet.

To the south of the No. 3 shaft, the drift on the 225 level extends 460 feet, with a cross-cut of 55 feet.

The No. 3 shaft was put down in 1927-28 as the principal entry and work-way for this property. It was located apparently with little consideration of the character of the ground to be penetrated. It is in a fault where the formation is broken and the ground is very heavy, and as a consequence the shaft is now in a badly-caved condition. The cost of repair would be so high that it has been dropped from consideration, and this part of the work is held of no value.

The remaining 1900 feet of development work is well-located to facilitate mining, and is of importance and value. At least 1000 feet of this work would be of immediate or early value in extraction of the developed ore. It could not be duplicated at a cost of $7500.00, and in operating the mine would be an asset of that value. The rest would be of proportionate value in further exploration and development, particularly of the south ore body and some 300 feet of vein intervening.

ORE:

The No. 2 shaft cuts and crosses the vein at the 83 level, and the water now stands at about 85 feet on the slope of the vein below this point. There is no connection between the 83 and the 180 levels other than the shaft and the cross-cut, so nothing of the vein between these two levels and down to the water level, can be seen.

The 83 level is accessible through the No. 2 shaft or the No. 1 shaft. The slope distance on the vein from the surface or out-crop to the 83 level, is 130 feet. This level is now open and accessible for 160 feet. The 45 level penetrates the vein for 75 feet. The average width of the vein is 8 feet plus. This block of the vein, 130 x 200 x 8, would contain 16,000 tons. About 700 tons have been stoped (removed), leaving at least 15,000 tons above the 83 level. This is ore well exposed on two sides, and immediately available for production.

The 180 level is a slope distance on the vein of 133 feet below the 83 level, with a lateral development of 200 feet, in which section of the vein there would be more than 16,000 tons of ore.

The 225 level is a slope distance on the vein of 50 feet below the 180 level. Lateral development is considered at 200 feet -- the same as the 180 level -- and an average width of 6 feet. This block of the vein would contain about 5,000 tons of ore.

The 83 level is caved at both ends, apparently due to some stoping, as previously mentioned. The size of the vein and dissemination of ore minerals is indicative of commercial ore through a considerably greater lateral extent than now exposed on this level. I consider it entirely safe

to say that the ore will extend downward below the 83 level at least 20 feet, and figure 18,000 tons of ore are available at a very small preparatory cost. That would be above the 225 level and within a length of 200 feet along the strike of the vein. Two Hundred feet is a short strike length for an ore shoot in a vein of the known length and width of this one, and inasmuch as development has shown no limits either north or south, it is entirely reasonable to believe that considerably more ore exists than has herein been estimated.

The vein is broken and slightly displaced by faulting at about 350 feet to the south and 200 feet to the north of the No. 1, or incline, shaft. Other than as exposed by this shaft, little or no surface exploration has been done to determine anything of the ore possibilities along this 550 feet of vein out-crop.

Maps show the drift on the 225 level to be in the vein for over 350 feet south of the incline shaft, and continuing unbroken, but with nothing to indicate the character or mineral content. That leaves 350 feet -- 200 feet explored -- of unbroken vein adjoining this ore shoot, offering exceptional possibilities for ore. The vein is again broken, with short displacement, 800 feet south of the incline shaft. This fault marks the northerly limit of another but undeveloped ore body known as the South Ore Shoot. It has a strong and well-mineralized out-crop extending 400 feet farther to the south. The out-crop has been opened by three surface cuts, and the south drift on the 225 level must now be nearing the vein on its downward extension. (See Plan Map appended) The surface exposures on the South Ore Shoot indicate potential possibilities of a large ore body. Of the section of vein between the

two faults (about 450 feet), practically nothing is known. In all, there are 1,000 feet of the vein that can be considered as entirely unexplored that will more than probably produce some ore from above the 225 level, and that affords the possibility of a large volume of profitable ore.

VALUES:

The vein as exposed on the 83 level and above, has been well-sampled. Mr. A. E. Sedgwick, in a report based upon a complete examination of the property in 1923, cites sampling by L. H. Kellogg giving an average of 8.12 oz. Ag. and 9.44% Pb; by L. N. Buttler giving an average of 16.50 oz. Ag. and 8.40% Pb., and his own sampling an average of 12.82 oz. Ag. and 7.96% Pb. D. R. Finlayson, who probably has the best knowledge of the entire development of the mine, in his report estimates an average value for the ore of 14.00 oz. Ag. and 6.0% Pb.

The sampling made by A. L. Beals in 1926 was carefully and consistently done, and checked in the greater part as shown by duplicate samples and assays. A print of his sample map is appended. I have personally checked this sampling, and find it to be reliable. It seems more than probable that the assaying of Mr. Beals' samples was by the fire method for lead. My samples have been determined by the wet method, as used at the smelter, and show a higher lead content, which is doubtless the more reliable and more nearly correct. The fire assay for lead is commonly considered to average about 10% low. In this instance I am using Mr. Beals' values as safe and conservative. Mr. Beals recognized two distinct periods of mineralization in this vein, and sectionalized most of his samples as foot-wall and hanging-

wall vein. That is the right way to sample this vein, but might be confusing. The widths as given by Mr. Beals are the widths from which the samples were cut but do not indicate clearly that ore wall or the other was not exposed. His weighted average and widths on the whole cannot be used in estimating average tonnage and value. His samples represent sections of the vein. This could not be improved without first exposing the vein for its full width at the points sampled. I have therefore carefully checked these samples underground and made a compilation as shown below. Fourteen of these samples represent the full width of the vein, and nine additional included in the first list, while not representing the full width, afford a good comparison in consideration of a calculated average.

No.	Width	Ag. Oz.	Pb. %	Ag.	Pb.
1 & 2	10.0	11.54	23.90	113.40	239.00
8 & 9	9.0	19.92	10.50	170.28	94.50
10 & 11	6.6	11.78	7.65	77.75	50.49
12 & 13	6.8	7.77	8.55	52.84	58.14
14 & 15	7.3	13.00	10.40	94.90	75.92
18 & 19	14.30	5.82	4.40	83.23	66.92
26 & 27	10.8	25.00	1.20	270.00	12.96
28 *	6.75 *	10.20 *	.40	68.85	2.71
29 *	6.5 *	5.69 *	1.00	36.98	6.50
34 *	6.1 *	6.84 *	2.80	41.72	17.08
35 & 36	9.9	7.94	14.50	78.61	143.55
39 & 40 *	10.5 *	1.20 *	.20	12.60	2.10
45	4.0	12.64	9.00		
41 & 42 *	5.75 *	3.75 *	4.70		
46 & 47	6.1	19.50	12.90	118.95	78.69
48 & 49	7.0	23.84	11.22	166.88	78.54
50	4.8	25.48	15.00		
51	4.7	11.50	15.90		
56	4.25	14.24	12.60		
61	5.00	16.54	11.60		
62 *	5.00 *	5.87 *	4.00		
63 *	4.25 *	8.90 *	1.00		
64	4.00	4.52	3.65		
67 & 68	5.9	14.32	9.95		
69 & 70	5.6	9.50	9.87		
25 Samples:		296.10	206.89		
Average:		11.84	8.27		
14 Samples	117.65 (Col's 5 and 6)			1386.99	932.10
Average:	8.4			11.79	7.92
Excluding the samples that are starred; (7)					
Average:	8.8	14.92	10.81	13.57	10.20

Nineteen samples of the foot-wall vein only.

No.		Width	Ag. Oz.	Pb. %
3		6.75	7.70	10.70
4		6.50	5.35	11.30
5		6.65	7.80	11.10
6		6.	6.95	8.90
7		4.65	5.35	8.00
16		4.65	6.00	6.00
20	*	2.5	1.45	1.70
21		4.8	2.50	5.80
22	*	4.8	2.10	1.10
23		5.75	5.50	4.40
24		5.5	7.80	2.40
30	*	5.	3.25	1.50
31	*	5.	6.15	2.00
33		5.	6.78	2.45
52		4.9	1.45	5.00
53		3.1	2.05	7.00
54		3.7	4.60	7.00
55		3.6	.70	3.30
71		2.4	3.80	3.35
19 Samples:			87.28	103.00
Average:			4.59	5.42
Excluding the samples that are starred; (4)				
15 Samples:			74.33	96.70
Average:			4.95	6.45

Eight Samples of the hanging-wall vein only.

No.		Width	Ag. Oz.	Pb. %
37	*	5.25	1.05	.40
38	*	3.5	.80	2.40
43		3.5	19.50	7.10
44		3.7	13.20	8.30
57		4.75	15.99	2.50
60		4.5	13.20	13.20
65		4.5	5.70	4.80
66	*	4.8	2.35	.40
8 Samples:			71.79	39.10
Average:			8.97	4.89
Excluding the samples that are starred; (3)			67.59	35.90
Average:			13.32	7.18

	Ag. Oz.	Pb. %
Arithmatical average of all samples taken by Mr. Beals	8.47	6.17
Arithmatical average of 30 samples that are not the full width of the vein	11.77	8.73
Weighted average of 14 samples that are the full width of the vein	11.79	7.92

In the foregoing tabulation, some samples of the vein that would be of little or no profit in mining, especially where they are together, have been eliminated in calculation of ore values. Such places in the vein can be left as pillars and serve a more profitable purpose in supporting the mine openings. The amount of the vein that would be left in this way is indicated as five to ten per cent. In the practical consideration of mining, dilution or the entry of waste rock other than vein also enters. With a hanging-wall as broken as is found along this vein, that would amount to about as much as would be left in pillars, so that calculated area and volume of the vein should be close to actual production.

METALLURGY:

Laboratory test work recently conducted has demonstrated quite conclusively that an extraction of 75% of the silver and 85% of the lead can be made by proven and fairly simple metallurgical methods, also that this extraction may prove to be about the most economical. Extraction as high as 85% of the silver and 93% of the lead has been made on samples of the foot-wall section of the vein, lead predominating, and at a coarse grind -- 20 mesh. The ore from the hanging-wall section of the vein, silver predominating, will require considerably finer grinding. Extraction, within reasonable limits, is in direct proportion to the fineness of the product. Economical balance between crushing, grinding, and extraction will be a detail of importance in the design of a treatment plant.

COSTS:

For the cost of mining, milling, marketing, etc., the following round figures are used, which, with proper equipment,

competent supervision and low overhead, can be reduced ten to fifteen per cent.

Mining	$3.00
Milling	2.00
Concentrate Marketing	2.75
Taxes, Insurance, Etc.	.75
Total -- per Ton Ore	$8.50

The average of as reliable sampling of exposed ore as is possible, gives a minimum mineral content of 8.5 oz. Ag. and 6% Pb. The weighted average that I have calculated from Beals' sampling, less 10% for dilution, is approximately 11 oz. Ag. and 7% Pb., and should by very close to actual production down to permanent water level on this ore vein (assumedly about the 225 level). Figuring silver at 64¢ per ounce and lead at 5¢ per pound, on 8.5 oz. Ag., 6.0% Pb. ore, profit would be slightly under $3.00 per ton; on 11.0 oz. Ag., 7.0% Pb. ore, profit would be about $5.50 per ton. These figures are fairly balanced, reasonable limits to be anticipated, with, in my opinion, the more fair analysis approaching the higher figure. I can foresee nothing within reason to go appreciably under or over these limits, other than change in the price of the two metals. To the best of my information, the outlook for lead is an increase in price, based principally on the fact that our largest fields and producing mines are being rather rapidly depleted with no known fields, districts, or mines of any large potential possibility, either in this country or abroad. Based on possible production and the fact that the market was 6¢ to 6½¢ but three months since, it would seem that the price for lead might reasonably be expected to go higher in the near future. On this ore that would mean an increase of from one to two dollars a ton. The price of silver in this country is in the hands of our government, and it seems the

price for the next year will be that lately established, i.e. 64.4¢ per ounce. With forethought in the design of a mill, a decrease in the price of silver could be met with but little decrease in profit. That is possible principally because of the character of this ore. Recovery of the silver values requires a considerably finer grind than does the lead values. Less grinding, increased tonnage at the same cost or a reduced unit cost can well be accommodated through the price range for silver.

Without going into detailed cost estimates, adequate mine and mill equipment to put the property on a thirty-ton daily production, will cost erected and ready for operation about $25,000.00. That would be a capacity of about 10,000 tons a year. With a practically assured tonnage of 36,000, the mine would have a life of at least three and one-half years. This would be increased materially by additional development, and could be doubled or tripled at a comparatively small expenditure for mine development. The cost of water would be pumping from the mine, which is covered in operating and equipment costs.

Mr. Finlayson reports, in 1929, sufficient water from the mine for the operation of a mill of one hundred tons daily capacity for a few months. Further development would be required for steady operation. Mr. Gohring reports the mine as making an average of fifteen gallons of water per minute. Less than one-half of that amount would be sufficient for a treatment plant of thirty tons daily capacity. With the water now in the mine, a volume ample to treat the total tonnage of ore estimated is assured. Sufficient water for domestic purposes is avilable from a shaft on one of the smaller veins on the property.

The equipment cost, if amortized during the life of the assured ore reserves (18,000 tons), would cover a period of twenty to twenty-four months, and with interest at eight per cent. would amount to approximately $1.50 per ton of ore. At a profit of $3.00 per ton, it would take about 8,700 tons of ore and ten months of operation to pay the equipment cost from production. At a profit of $5.50 per ton, it would take about 4,700 tons of ore and less than six months of operating time to pay the equipment cost from production. I consider repayment of the capital required to put the Diamond Joe Mine into production, together with a very good profit, is assured.

Respectfully,

M. E. Pratt,
Mining Engineer.

Octave, Arizona,
February, 1938.

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REPORT ON DIAMOND JOE MINING CO.

This property, consisting of eight unpatented lode claims, namely Diamond Joe, and numbered one to eight consecutively, is located in Sections 29 and 30, Township 8 North, Range 3 West, White Picacho Mining District, Yavapai County, Arizona, and nine miles Northeast from the Town of Wickenburg. These claims are contiguous and form a group containing about 160 acres.

VEIN SYSTEM AND DEVELOPMENT

As shown in the accompanying map, the main vein continues through the center of three claims, viz: Diamond Joe, 1, 2, and 3. This vein is well defined and except for two small cross faults is continuous. The throw of these faults is small and of no particular detriment to the development of the property. There is a well-defined vein on the Diamond Joe No. 7, and another on Diamond Joe No. 8. Also a smaller vein carrying gold, silver, and copper on Diamond Joe No. 3. This last intersects the main vein of the property.

The Diamond Joe vein is developed to the 290 foot vertical level. Levels 1, 2, and 3 are connected with raises, and ore blocked out in the North shoot. The vein, where developed, has an average width of eight feet, and the walls are well defined and regular, with a dip of 55 degrees to the West.

South of this developed shoot is the cropping of a larger shoot of ore which is undeveloped, except for a short cross-cut tunnel and an open cut. This shoot has not been penetrated by any of the mine levels, though the 290 foot level, when extended a few feet further, should reach it. The tonnage in this South shoot should be very much greater than that in the North shoot, and there is no reason why the values should not be as good. This shoot is in harder formation, and should continue to hold its size, about12 feet for sufficient depth to make a very large ore body. This also applies to the developed North shoot, though this shoot is not so regular.

The vertical shaft has a depth of 500 feet but, except for a short cross-cut and two short drifts on this level, there is no development below the 290 foot level. As shown on the map drawn by Mr. A. B. Caldwell, the North shoot is developed on its strike for about 400 feet. There should be more of this ore to the North of present development, and another shoot still further North in Diamond Joe No. 3 claim.

TONNAGE AND VALUES

The developed tonnage in the North shoot is approximately 135,000 tons, with an average value in silver and lead of $11.00 at present market prices for these metals. A total gross value of $1,491,000. This is the actual developed ore, until such time as the South shoot is developed, or greater depth attained on both ore bodies.

EQUIPMENT

The property is well equipped with hoist, compressor, shop, power plant and mill. The power plant consists of a 240 H.P. Diesel engine directly connected to generator. This electric power is at present connected into the mill only, the hoist being a gasoline unit and the compressor a Chicago Pneumatic Hot Head. The mill is a complete table and flotation concentration plant of 100 tons daily capacity, modern and in excellent condition, as is the case with other equipment.

FUTURE DEVELOPMENT

As there is a very great shortage of water for mill purposes, in fact, impossible to mill at present, the shaft should be extended to the 800 foot level upon resuming operations. This should furnish sufficient water to last for a long time, or until the surrounding country has been drained to that level, when sinking can be resumed. The alternative to furnish water would be to lay a seven mile pipeline to the river with a pumping plant there. This would be expensive while shaft sinking would furnish water and development at the same time.

The South ore shoot should be developed from the third

level as soon as convenient after developing water, or, in fact, at any convenient time during early operation. This would add very greatly to the known tonnage of ore and provide reserves for a long time.

The indications point very strongly to primary minerals at little additional depth. Silver sulphides are now appearing on the third level and should increase as the ore is developed to greater depth. This is particularly true of the South shoot where the formation is harder and oxidation less.

It may be advisable to follow the flotation system with a continuous cyanide treatment, in order to get a higher extraction on the silver chloride. The lead extraction is good, but there is always some trouble in getting a high extraction on silver chloride by the flotation system, though it has been fair at this plant. Cyaniding should be installed, however, only after detailed tests are completed.

CONCLUSION

The above described property should be further developed and placed upon a production basis as soon as water is available. There is sufficient ore blocked out to start milling, and mill operation would not interfere materially with development of the South shoot or at depth. This is a very promising property, and should be conscientiously operated.

July 16, 1929

D. R. FINLAYSON

Mining Engineer

SUPPLEMENTAL REPORT ON DIAMOND JOE MINING CO.

February 12, 1934

My acquaintance and connection with the Diamond Joe property began in 1928, and extended intermittently over a period of several months. While there I had charge of the milling plant, and cooperated in the development and mining. During this period I became familiar with the ore occurrences and determined the

treatement that seemed best adapted to this ore. I also had occasion to study the ground and form conclusions as to the results to be obtained by further development. The following statements are based upon a close study during the above mentioned period, and at various times since.

VEIN SYSTEM

The strike of main vein is about due North and South, with a dip of 55 degrees to the West. The ore shoots have a rake to the South at an angle of about 35 degrees from the vertical. In the main vein there are two main shoots; one to the North, developed to the 300 foot level, and the South shoot, undeveloped. There is the cropping of a smaller shoot further North that is also undeveloped. The two main shoots mentioned in the former report, and designated as "North Shoot," and "South Shoot," are traceable on the surface to within 150 feet of each other. This 150 feet is composed mostly of fault material due to a cross fault that dislocated the North section of the vein. This dislocation is not great, and will not affect development to any great extent. The North Shoot is developed to the 300 feet vertical depth, and ore blocked out on the first, second, and third levels. The tonnage, as formerly stated, is about 135,000 tons in this shoot down to the third level, and is ready for extraction when desired. The South shoot can be developed from the third level, or from the surface, with a shaft starting on the ore and ore produced as shaft is continued. This undeveloped shoot is larger on the surface than the North, or developed, shoot, and should produce a large tonnageof mill grade ore. The other veins, as mentioned in the former report, are worth investigation and development later during operating period. The ore developed in the North shoot consists of lead and silver mineralization; the lead occurring as sulphide (Galena) and carbonate; the silver, down to the third level, as chloride. The lead mineralization is practically gone at the third level, but silver mineralization continues and there are indications of primary silver minerals at this level. The same mineralization exists in the croppings of the South shoot. There

should be a continuation of the North shoot to greater depth, and the primary mineralization should appear before much greater depth and continue. Same should apply to the South shoot from below the third level.

SUGGESTED DEVELOPMENT

I would suggest that the third level be driven to the North, also to the South; to the north to tap ore further to the North and to the south to connect with the downward extension of the South shoot. Further sinking of the shaft can be carried out in the future as ore tonnage demands.

MINE EQUIPMENT

This consists of 40 H. P. Western gas hoist, 50 H.P. Chicago Pneumatic Hot head compressor, Blacksmith shop with drill sharpener and necessary tools and equipment; shaft cage, cars, trac, etc. Hoist and Compressor buildings are in good condition.

MILL EQUIPMENT.

The mill consists of jaw crushed; 4 x 8 foot Marcy Rod Mill, Duplex Classifier; Two Wilfley Tables; Flotation Machines; Filter; Thickener, Vacuum Pump and Compressor, also sand pump and other minor mill equipment. The mill is well constructed and the machinery is good. In addition to the mill equipment, we might add the Diesel Engine Generating Plant, which furnishes the power for mill operation. This is a very fine installation, consisting of a 240 H. P. Bentz Engine direct connected to generator. Volt regulator controls current to the mill motors at 440 Volts. Cost of direct and indirect mill equipment is about $65,000. The following should be added in order to perfect extraction.

Two Tables
10 or 12 more flotation cells
Concentrate thickener and
More concentrate filter capacity

This plant could be built up to a capacity of 130 tons per day by means of the above additions, plus an intermediate crusher between the jaw crusher and rod mill.

WATER SUPPLY

At present the water stands at a point just above the

third level. For a few months, there would be sufficient water for mill purposes, but a more permanent water supply would need to be developed soon. This could be done by sinking the main shaft, drilling a well to 800 or 1,000 feet, or by means of pipeline and pump from the Hassayampa River, a distance of about seven miles with the greatest lift of about 400 feet. I am inclined to think that a large churn drilled well would be the more feasible for early operation, perhaps to a depth of 800 feet. Drilling, casing, and pump equipment would cost about $6500.00

CONDITION OF MINE OPENINGS.

At the present time the main shaft is closed in near the collar and for perhaps sixty feet down. Also the cross cut from the shaft at the 300 foot point to the vein may be caved. This was rather heavy ground, and I think will be closed, since the water came up. In order to hoist through the main shaft, these repairs would be necessary, also necessary in order to pumpt below the third level for mill water. The openings into the mine are in good condition. The condition of the openings will not interfere in any way with a complete examination of the mine down to the water just above the third level. Approximately 90% of the developed ore is above the present water level.

DEVELOPED ORE

All ore so far developed is in the North shoot. This ore contains about 14 ozs. silver and 6% lead per ton. At the present price of these metals, 64½¢ per oz. for silver and 4¢ per lb. for lead, there is a gross value of $13.83 per ton. An 85% mill extraction less freight, smelter charges, and deductions on concentrates, would give a net production of $8.90 per ton. Subtract mining and milling costs of approximately $4.50 per ton and we have a net of $4.40 per ton on 135,000 tons blocked out in the North shoot. Other tonnages to be developed at depth and in the South shoot. This tonnage should be very material for further operation, as I look for the South shoot to be the main producer at a later date when developed.

ACCESSIBILITY

Good railroad service over the Santa Fe system to Wickenburg, Arizona, thence by good graded road to the mine, a distance of mine miles. Grades are easy and down hill from mine to railroad.

CONCLUSION

In closing I wish to add that I have not gone into the history of the property, but rather have confined statements to physical conditions and operation. All records as to location, title, etc., are available.

Very truly yours,

D. R. FINLAYSON

Mining Engineer

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DIAMOND JOE

The Diamond Joe Mine is in the White Picacho Mining District, in the extreme southern part of Yavapai County, Arizona. It is nine miles northeast of Wickenburg which is in Maricopa County on the Santa Fe Railroad.

The group consists of eight full claims, not patented. They belong to the Diamond Joe Mining Co., Inc., an Arizona corporation but the entire stock of this is owned by Mr. George R. Koyk, of Wickenburg. The claims are shown on a map marked A-5 accompanying this report. They are on record in the county seat and the company has available a full certified abstract of title.

The claims were located about 1890 and minor work done intermittently until 1926-27 when Mr. Koyk and associates equipped the mine with machinery and developed extensively, built a fine mill and barely started operations when they were forced to shut down, not having enough water to operate steadily. The mine and mill have not been operated since.

GEOLOGY

The claims lie on a granite igneous rock, which we may call grano-diorite. This is intruded extensively by dikes of various kinds, ranging from basic andesites to very acid rocks. There is considerable faulting and the vein or orebody is in the main fault, a north-south fissure dipping about fifty (50) degrees West. None of the intrusive dikes cut across this and although we have at least two known faults crossing the vein they dislocate it hardly any and are therefore not of economic importance. All of the above disturbance is in the hanging wall, the footwall area being a relatively undisturbed area of diorite (?), solid and little altered. The highly intruded condition of the hanging wall has resulted in extensive kaolinization, with schistocity, and the general result is a badly broken, distorted, kaolinized area over the ore.

THE VEIN:

The ore outcrop is plainly seen and can be traced continuously allowing for short stretches where it disappears under washes, for about

1200 feet, and, from sporadic indications of the same fissure, for a probable total length up to 3000 feet. The mineralization is principally a calcite gangue carrying lead and silver minerals, with considerable iron stain in places, and evidence of an intrusion of porphyry along the fissures.

THE MINE

Early work followed the vein down on an incline (shaft no.1) which eventually connected at the 83 ft. level with a later vertical shaft (no. 2). Later a new working shaft was sunk 500 ft. and connected with Nos. 1 and 2 by drifts and raises. The deepest working level is 225 ft., all elevations starting at the collar of shaft No. 1. This 225 ft. vertical represents 325 ft. on the incline of the vein.

The relations of all the above are shown on attached general map marked B-C-3 and on cross section map F-2-6, the latter being from my own observations and surveys, and the former adapted from former surveys and amplified by me.

At present the mine is full of water to the 157 ft. level. Shaft No. 3 is caved in near the surface. The other shafts are open and in good condition, and all drifts and raises are open as indicated on the maps and may be inspected down to water level.

EQUIPMENT AND PLANT

Attached prints No. B-G-6-7-a, and B-G-6-7-b show the arrangement of the plant buildings and attached also is a photograph showing the same. The buildings are all of timber frame covered with galvanized iron. They all have concrete floors and retaining walls, with rock or concrete foundations, and are all in perfect condition. There is an office and garage 16 ft. square, 2 stories, and a staff mess house 16 by 30 ft. not shown on the prints.

The main equipment on the ground is:

Power House

Benz 240 H. P. full diesel engine with 175 K.V.A., 440 volt generator and 9 K-W, 175 Volt excitor, with switchboard, tools and fittings complete, and one power drill press with motor.

Shop

Complete blacksmith forge with blower and tools; pipe

cutting equipment to take up to 8" pipe; one No. 5 Ingersoll Leyner drill sharpener; one small drillpress.

Hoist House

One direct drive Diesel compressor--C. P. Hot Head 309 cu. ft. air per minute; one gas driven 40 H. P. Western Hoist, small motor driven priming compressor with air tank and gauge, two steel air receivers 3½ by 9 ft., and 3 by 5½ ft.

One wood gallows frame 27 ft. high.

Assay Office

Complete equipment except muffle furnace includes, Braun crusher and pulverizer, motor drive; pulp balance, button balance, and scales; full line of chemicals and glassware.

Tanks

1000 gals. fuel oil tank

4300 gal. cooling tank with slat cooler on top.

10000 gal. water storage tank--steel

50000 gal. water storage tank--wood stave.

Mill

9" by 16" Universal jaw crusher

Automatic feeder to rod mill

4' by 8' Marcy rod mill

22' Doer classifier--drag type

3-K-K flotation machines

1 Wilfley table

1 Doak vaccum pump

1 6' by 4' Oliver filter.

1-28' wood stave tank with Doer thickener for tails

Sand and circulating pumps, motors, belting, shafting and piping.

Miscellaneous

Surveyors transit, rod, tapes; adding machine; typewriter 5 mines cars.

The buildings cost $13,000.00 and the equipment $65,000. The machinery has been well taken care of and is in perfect condition.

The mill is rated at 100 tons daily capacity. By installing an intermediate Symonds cone or other crusher it could be

readily enlarged to 130 or 140 tons. Attached is a print marked B-H-2-a showing flow sheet.

TONNAGE OF ORE

In estimating tonnage there is not enough systematic development to measure blocked out ore accurately. The outcrop to the north is continuous on the surface for 800 ft. and the vein is developed continuously on the 225 ft. level for over 600 ft. with the limits not yet reached. The only continuous cross section of the ore from top to bottom that can be studied is that shown on Map Exhibit F-2-b. This shows a minimum thickness of ore above the water level of over 9 ft. The ore on the bottom level, 68' under water is shown by their records, as 5 ft. thick. I therefore find 8' as a conservative estimate of the ore width.

Therefore, I feel that, as everywhere we have found the ore continuing on the bottom level, I should take the length of the surface outcrop as the length of developed ore or 800' in the north end (where all the mine workings are driven.) The incline depth to the bottom level is 325 fv; and I allow nothing below that. The width is 8' and the ore weighs in place 13.5 cu. ft. to the ton. I thus arrive at 154,000 tons of developed ore.

To the south is a similar outcrop of the same vein, easily traced for 400' and this had just been struck on the 225 or bottom level when the mine was closed in 1928. It was found but no development done. Open cuts on the surface show it stronger and wider even than the outcrop further north, with the same lead silver mineralization.

I see nothing to indicate that this portion of the vein will not be at least as good as the developed portion and, using the same figures, I arrive at a tonnage of 77,000 tons, called probable ore.

As the outcrop is identical throughout its length, I mean in character and type, and as everywhere so far developed the ore proves to go down, I think the above indicated tonnage is proven far beyond any doubt. Furthermore, I find the same vein outcropping intermittently for over twice the length used in estimating (sand washes and dikes conceal most of its extensions)

We know that there are sure to be some horses of waste in this vein and also some ore destroyed where the faults cross, but we also know of two other veins which show lead and silver that should eventually produce ore, and we also have reason to expect development on the main vein beyond the 1200 ft. in length used.

I therefore, am not making any allowances and believe that for present purposes I can safely assume the tonnage shown as 231,000 tons.

Value of Ore

As far down as can now be reached both the lead and silver minerals are mostly in oxidized forms. There is some galena but most of the lead is in cerrusite (carbonate) and anglesite (Sulphate) On the 225 ft. level the silver is said to begin to appear as a sulphide but above one finds very little silver sulphide.

The vein has a banded structure and generally shows crystalline calcite towards the foot wall, with from 2 to 4 feet of iron stained, leached, calcareous materials towards the hanging wall. Commonly the parting banding between these formations carries heavy lead over a width of from an inch or two to over a foot in width, and also the values are commonly better near the hanging wall, but in general one finds the lead or silver minerals anywhere across the vein The bottom part of the present workings shows only patches of the syrstalline calcite and the entire vein width for fifty feet above the present water level is a red, oxidized, porous matrix carrying considerable chert. See cross sections F-2-b for 50 ft. above water level.

There is not enough data available to make any accurate estimate of metal value for the total estimated tonnage, owing to the flooded condition of the two bottom levels and the absence of any but hearsay records. There can be no question that they found the vein on the bottom level and that it had good silver values and some lead. Also there is plenty of evidence that the lead values are much lower on the 180 and 225 (290 ft) levels than above. I took three samples,

1-2-& 3G, as shown on the attached section D-2-b, that indicate this. They were taken here primarily to find how the values varied with the vein width, as this location is the only available place in the mine with a good exposure all the way from foot to hanging wall. The values could not be taken as average, however, for the other side of this 20 ft. wide stope contains much more visible mineral than the side sampled.

The samples ran:

No.	Width of Sample	Oz. Silver -	% Lead
1-G	6 ft. 7 in.	13.58	1.4
2-G	9 ft. 6 in.	9.04	0.4
3-G	12 ft. 0 in.	6.96	1.5
Average	9 ft. 4 in.	9.25	1.1

However, we have a good sampling record above the 83 ft. level about 125 ft. on the incline. This sampling was done by A. L. Beale, a competent engineer. I took samples 4-G, 5G-F and 5-G-h, shown on attaches Section F-2-b, to check some of his samples and got a fair check. I have made a careful study of his sampling and assays underground. I estimate from his results and my own checking and estimating that the red oxidized material near the hanging wall runs 23.6 oz. silver and 7.25% lead over a width of 3 to 4 ft. The white calcite towards the footwall runs 7 oz. silver and 11.6% lead over a width of 5 to 6 ft. The weighted average ore therefore above the 83 ft. level (125) is 12.5 oz. silver and 10.15% lead. For purposes of estimating I will call this 12 oz. silver and 9% lead.

There should be enough of this ore to run a 100 ton mill 2½ years with profits as indicated later.

SUGGESTING OPERATING PLAN

It would seem to me that the sensible plan of operation for this mine would be to start to mine the ore from the 83 ft. level up, through No. 2 shaft, When the mill was in steady operation, No. 3 shaft would be repaired and hoisting would be transferred eventually to that shaft, but at leisure. One strong reason for doing this is the necessity of conserving the water now in the mine, which should carry the mill for several months. It will be necessary to get other

water as explained later but before going into that and equipment expenses, I present here estimated costs and profits on the above basis.

OPERATING COSTS

I estimate the probable costs to operate as below:

	Cost per ton concentrates		Cost per ton wet Ore	
	Wet	Dry		
Mining			2.12	3.00
Milling			.96	1.50
Supervision			.47	30
Haul to R. R.	1.00	1.18	.20	25
R. F. Frt	7.60	8.94	1.49	1.25
Silver deduction		2.87	.48	48
Smelter treatment & deductions		6.20	1.03	1.03
Lead deductions		13.56	2.26	1.50
		Total.....	9.01	9.31

The cost is based on 100 tons per day. Tests made in 1927 indicate that 6 tons of ore will make 1 dry ton of concentrates and that concentrates as shipped run 15% moisture.

Mining and milling costs were arrived at by setting up in detail the labor cost to operate, and calling that 60% of the total for mining, and 40% of the total for milling, these percentages being based on the experience figures of similar operations. Allowance was made for two crews on development.

The silver and lead deductions shown represent the difference between the gross value of these metals delivered to the smelter, ahd the amount they actually pay. These items theoretically cover metallurgical losses, and refining and marketing costs.

PROFITS:

Deducting the cost per ton, $9.01 from the gross value per ton $12.32 (after 15% mill loss) leaves anoperating profit of $3.31 per ton. From this taxes will eventually bededucted and these will probably amount to from 20% to 25%. Present metal prices are used--that is, 64.5¢ silver, and 3.75¢ lead.

GENERAL

There are no apparent complications about this operation and I am quite sure that the above estimates can easily be attained and profits exceeded in practice. The mining of the ore will have to be carefully planned and intelligently supervised owing to the

bad hanging wall, but I see no reason why a system cannot be developed that will take care of this cheaply.

Mill tests have been made on the ore and beyond a doubt recoveries of 85% to 90 % OF the values can be recovered.

The principal obstacle now is the water supply. The mine itself when it was being operated made an average of 15 gals. per minute, which is about half the requirements. It will be necessary to install a 4 inch pipe line about 3 miles long to insure water. A well at that distance is available and probably adequate, according to Mr. Koyk.

Before operations can start certain preparations must be made. The mill requires minor remodelling and equipment. The main or No. 3 shaft is caved near the surface and probably will have to be reblocked and repaired to the 290 (225) level. Shaft No. 2 is open, but is only one compartment, cribbed, down to the 83 ft. level. From there to the bottom, at the 180 level it is regularly timbered, one and one-half compartments.

I estimate initial expense to start operations on the above schedule to be:

Repairing No. 2 shaft and enlarging to surface (one and one-half compartments)	$2500.00
Equipment at No. 2 shaft; 35 H. P. gas hoist, 2 cooling tanks; air and water pipes, head frame and bin; gage, areal tram to mill, installing;	6500.00
Drifting and preparing stopes	5000.00
Mill remodelling:	
1 Whilfley table; 1 concentrate thickener; 6 flotation machines; 1 concentrate dryer; installing	7135.00
Newchange room; with office room.	1500.00
One light truck	1000.00
Supplies at mine:	
2 cars timber; fuel oil; 4 stoper drills; 4 jackhammer drills; bars and mountings; steel; air and water hose; rails; 6 mine cars; powder; fuse; caps; carbide; oil; small tools;	7500.00
Supplies at Mill;	

1 car flotation reagents and chemicals	3300.00
Accident insurance payment	2500.00
Water development, pump, and three miles 4" line.	15000.00
	$52825.00 *

*(Correct total appears to be %51935.00)

Nothing has been allowed for repairing the main shaft, No. 3. It is impossible to estimate this and if it is desired to put in a figure in the initial estimate, it cannot be based on information. As we know that it is caved in several places, and that probably the 290 ft. level (225) ft. is also caved, I do not think it safe to allow less than $10,000.00 additional for this work.

I do not think there is the least doubt but that the ore is there and that the above program and operations can be carried out within the estimate given. Preparing the mine for stoping 1000 tons of ore per day will be the job requiring most time and I think that at least three months will be required before the mill can start.

The mill eventually will be fed through the main or No. 3 shaft, and the ores now under water treated. There can be little questions that these ores will be profitable and greatly extend the life of the mine, but they will, under the above program, come into the picture normally and naturally without being essential to steady operation for a year or two.

It seems likely that an enlargement of the power plant will some day be advisable, so that the mine as well as the mill can be operated electrically, but these changes will come along after operations are proceeding profitably.

In figuring values in this report nothing has been allowed for gold. The ore averages something better than 0.01 oz. per ton which is below the limits customarily paid for at custom smelters, and nothing was, in the past, received for it. However, the amount of gold would be of importance of a term of months and doubtless the smelter contract, when based on steady regular shipments, would be drawn to provide for gold payments.

In Mr. Sedgwick's report, attached, the mine is described as of a period when development had reached only to the 83 ft. level. His figures, therefore, cover the same ore extent that I have used. Hefinds the average value of the ore to be 14.89 oz. silver and 8.47% lead.

It will be noted that the claim lines as shown on the claim map, attached, Exhibit No. A-5, are not consistent with those shown on the general map, Exhibit No. B-C-3. I find that Mr. Koyk's locations and monuments actually cover the entire vein outcrop continuously, but the side and end lines have not been accurately surveyed. The ground is fully covered and protected, but when a survey for a patent is made it will be found necessary to establish the exact end and side lines accurately by amending the present locations. Exhibit No. A-5 is therefore an idealized picture of what the eight claims actually and in fact cover.

With this mine equipped and developed as it is, there is no possibility of its failure to make substantial profits under even the conditions now existing. Present opinion seems to be general that silver will soon be forced to the legal limit of $1.29 per ounce. I estimate that this would increase the profit from $3.31 to $9.20 per ton. Wage increases and cost of supplies would presumably be higher under this condition, but in any event, and with full realization of the uncertainty of economic forecasts at this time, it seems to me extremely probable that profits from the Diamond Joe Mine will, in the near future, considerably exceed the $3.31 per ton basis I have used.

(signed) W. B. GOHRING

Mining Engineer, Phoenix

Diamond Joe

March 18th, 1936

Mr. R. T. Walker
426 L Street
Salt Lake City, Utah

Dear Walker:

Thank you very much for yours of the 15th just received and the information contained.

I have suspected from the first that some of the engineers who had examined the Diamond Joe had greatly over estimated the tonnage of comparatively high grade ore, but I do not gather from your letter whether your Mr. Paddison sampled the entire mine or only the portions which appeared to be of the best grade. It seems to me that the lead values disappear practically altogether before the bottom (225' level) is reached and some of the ore which is said to have come from that point assayed 10 oz. in silver and only one tenth of one per cent lead. However, I am hoping that we shall find that the lead values continue down to the 180' level, in which event the tonnage of ore which will average say 10 oz. silver and about 7% lead should be considerably larger than Paddison figured for the reserve of material, which would run 13 oz. silver and 9% lead.

As to the metallurgy of the oxidised ore from the upper levels, which seems to be by far the best material on the property, I was also inclined to doubt if a good recovery could be made by concentration but I have been given a report of a test made by the General Engineering Corporation and indicating a recovery of better than 90% in both silver and lead values, almost all of which were in oxidised ore.

The probability that a recovery in excess of 80% can be made is checked to some extent by correspondence with the Cyanamid Company and the Pan-American Engineering Corp. and if the records of the Diamond Joe mill were correctly kept it would appear that they actually recovered some 85% of both lead and silver, although there is some doubt in regard to the silver.

Considering the property as a small scale operation and in view of the fact that a very good mining and milling plant is on the ground, although lacking a few minor items of equipment, I have hopes that something may be done with this property and am going ahead with the investigation as mentioned in my previous letter. Thank you very much, indeed, for what you have written me and you may be sure that I shall keep the information entirely confidential except from my immediate clients, and even to them will mention no names.

2- Foster S. Naething

Shall look forward to seeing you next month when you pass through Phoenix on your way to Tombstone.

Best regards.

Sincerely,

GMC:DF

R. 3/18.36

Salt Lake City, Utah.

426 L St.,

March 15, 1936.

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

Dear Mr. Colvo:

Responding to your inquiry regarding the Diamond Joe silver-lead mine near Wickenburg, this property was examined by L. F. Paddison, one of our engineers, in 1928. The ore reserves of the property were represented by the owners of the property to average about 13 oz. silver and 9% lead, but Mr. Paddison found only about 15,000 tons of such ore, and since most of it was oxidized, he was unable to figure a sufficient mill recovery to repay mining. Consequently he turned the property down, first on the score that it could not be operated profitably, and secondly on the ground that, in any event, it was too small to be of interest to our company. This information, of course, is strictly confidential.

I am expecting to visit our Tombstone operations some time next month, and will be glad to pay you a visit, if I should chance to pass through Phoenix.

With personal regards,

Very sincerely yours,

R. T. Walker

March 27th, 1936

Mr. R. T. Walker
426 L Street
Salt Lake City. Utah

RE: DIAMOND JOE MINE

Dear Walker:

Thank you very much indeed for your letter of the 24th inst. and the information contained. I have spent the last four days at the property with Harbauer and a couple of men and while we had not had the opportunity to do any great amount of sampling we had done a good deal of measuring and investigation as far down as the water level and had already reached the conclusion that the ore body was extremely limited in extent and by no means in line with the representations and reports of several engineers which had been furnished me before I started the investigation. I had also reached the conclusion that either the grade of ore which was sent to the mill was very low or that a very poor recovery of values had been made in the concentrators, but I believe that this latter condition could be remedied and even if we could only count on about 15,000 tons of ore which would average 13. oz. silver and 9% lead I should have been disposed to go ahead since this grade of material, if located in the upper levels, could, I believe, be mined and milled with a reasonable margin of profit sufficient to pay back the expense involved in reopening the mine and reconditioning the equipment.

Under the existing conditions it would hardly be possible to sample more than 7,000 or 8,000 tons of presumably pay ore above the water level and the cost of unwatering to the 180 would be considerable so everything considered the proposition does not look attractive even as a small investment and I expect the matter will be dropped entirely as far as I am concerned unless some of the others should want to go ahead on the chance of developing additional ore, which seems fairly good on the north side of the ground which has been opened to date and also some distance further north where there is quite a lot of molybdenum in the form of wulfenite showing on the vein near the surface.

Needless to say I am very grateful to you for what you have told me and that will be kept as absolutely confidential.

If I can at any time reciprocate in a similar manner it will always be a pleasure to do so.

A short time ago a rather experienced engineer called on me in reference to a gold deposit near Sassabee which, as you may know, is right along the Mexican border some twenty-five miles west of Nogales. Apparently only a limited amount of development work has been done but the interested parties believe that they are on the way to prove up a very large tonnage of ore which will average better than $6.00 in gold and carry from one to two oz. in silver per ton. They claim that the width of this ore body is in excess of 200' and that they can develop sufficient water in the vicinity to operate a 500 ton cyanide mill.

I personally know nothing about this mine or prospect except that I have heard it similarly described by a couple of other mining men but it occurs to me that if your company is still looking up large deposits of gold ore it might be worth your while to investigate to some extent when you are next in Tucson and if you wish I will gladly obtain some further information from one of the interested parties who is a local man. I understand that no money is now available for further development and that a reasonable deal could be made with people who would continue to open up the ground.

Best personal regards.

Sincerely,

GMC:DF

Q. 3/27. 36

Salt Lake City, Utah.
426 L St.,
March 24, 1936.

Mr. G. M. Colvocoresses,
1108 Luhr's Tower,
Phoenix, Arizona.

Dear Mr. Colvo:

Responding to your letters of the 18th and 21st inst., with further reference to the Diamond Joe or Tindale mine near Wickenburg:

Paddison never prepared a report of the results of his examination of this property. This is in line with our general policy that, in order to cover as many properties as possible with our limited exploration staff, we prepare formal reports only on properties which possess present or future possibilities; and for such properties as we consider hopeless, we simply file away our field notes, together with a brief statement of the salient features, and the conclusions arrived at.

As to the latter, Paddisonn wrote as follows, after describing briefly the physical conditions at the property: "The exposures in the incline shaft and drifts show a five to seven foot brecciated zone of the granodiorite country rock, cemented by secondary calcite. Near the surface this zone contains irregular stringers of galena, while at the bottom oxidation has been so complete that there is no evidence of sulphides. Mr. Koyk informed me that samples from this vein showed an average of 13 oz. silver and 9% lead. The dimensions of this chute show approximately 15,000 tons of probable ore. If it proves to be the grade which Mr. Koyk states, it cannot be mined at a profit. * * * The possibilities for development on strike and down dip are not favorable and I am rather pessimistic about my final recommendations."

This report was written before Paddison had received the assays on the samples which he took, but these evidently did not change his conclusions, particularly as the assays on the 225 level averaged only 3 oz. silver and 2% lead, while those on the 180 level averaged only 12 oz. silver and 1% lead; and it was only in the upper levels that he obtained commercial assays. It appears from the foregoing that Paddison did not himself report the existence of 15,000 tons of 13-oz-9%-Pb ore in the ore-shoot, as I previously wrote you; but merely that if the ore-shoot had the dimensions as shown on Koyk's maps, it would contain that tonnage. Figuring the ore-shoot as a whole to be uncommercial, Paddison evidently did not bother to compute the tonnage, on the basis of his own sampling.

G.M.C. #2

From the preceding, it would appear as if it were not worth while to unwater the property, in order to resample the lower levels, and operations of the property will be justified only on what the workings above the water level show. The only hopeful suggestion I can offer is that possibly the ore-shoot has such a flat rate one way or the other, that its downward continuation may have been missed by the lower levels.

With personal regards,

Sincerely yours,

R. T. Wallace

office

RE: A. MURPHY'S SAMPLING AND EXAMINATION OF THE DIAMOND JOE, JANUARY, 1937.

Murphy took a lot of samples mainly to check Beale and others and he found that there appeared to be only one body of good ore near the inclined shaft and extending down through the 83' level which he estimated to contain about 2000 tons and to have an average of 14 oz. ag and 7% Pb. This ore was cut off sharply and below and beyond this the vein carried about 7 oz. ag and 1% Pb or less, but there were two tongues of the better grade material which went down like the roots of a double tooth.

It results therefore that (1) the quantity of better grade ore now developed does not justify reopening the mine on any large scale or attempting to run the present mill.

(2) The great bulk of the ore above the 180' level would only pay to work if the price of silver should go to $1.00 or better per oz.

(3) Much of the best ore has already been stoped out and the chances of finding any large additional tonnage seem poor and it is not likely that ore in the south shoot would pay to work.

(4) If lead and/or silver advance it may pay to put in a very small mill and to work out this highest grade ore, provided a good recovery can be made at reasonable cost per ton.

With lead at 6¢ a small operation by a leaser might yield some profit.

Arthur Murphy's Assays of Samples of Diamond Joe 1/13/37

****

	Ag. oz.	Pb. %
Harbauer's sample		
#1, north side of winze just above water level	7.8	1.0
#2, 16' above #1	9.9	0.25

	Ag. oz.	Pb. %
#4, north side of winze at 83' level	2.4	0.28
#5, south " " " " " "	0.5	0.68

Murphy resampled at #1 and #4 and his results checked very closely with these taken by Harbauer. His samples on the upper levels gave better results and show a very limited tonnage which carries Ag...13--15 oz. and Pb. 6--9%., but it is very doubtful if there is enough of this ore to justify re-opening the mining and fixing up the mill.

UNITED VERDE EXTENSION MINING COMPANY
MINES: JEROME, ARIZONA
SMELTER: CLEMENCEAU, ARIZONA

George Kingdon
General Manager

Jerome, Arizona,
November 18, 1936.

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

Dear Colvo:

I have your letter of November 17th and note what you say about the Diamond Joe.

This, of course, is confidential as I don't want to hurt any sale for Mrs. Koyk. However, I am sure there is nothing in the lower levels. I was watching the development very closely at that time and I think Mr. D'Arcy's report showed 15 ounces of silver and 5 per cent lead and the next report I had was just about like yours. I have no doubt your estimate and samples are just as accurate as any we have, but I am still doubtful about the water and about the savings.

= 16.80 gm.

I am not positive, but I think Dan Finlayson did the milling.

Colvo, I can't quite see my way clear to gamble on the Diamond Joe, as there is such a small margin of profit when you figure the chances are against finding any more ore. That is how I feel about it.

With kind regards,

Yours very truly,

Geo Kingdon

GK/DJ

November 17th, 1936

Mr. George Kingdon, Gen'l. Manager
United Verde Extension Mining Co.
Jerome, Arizona

RE: DIAMOND JOE MINE

Dear Kingdon:

Thank you for your letter of the 14th and information regarding the Diamond Joe Mine near Wickenburg. I am glad to see that we appear to be in agreement regarding the tonnage of ore and am anxious to learn if we also agree in respect to the average grade and other conditions.

I have never been on the lower levels at the mine since these were under water at the time of my investigation, but my most reliable information came from an official of one of the large mining companies whose field engineers thoroughly sampled the property in 1928 and they confirm your statement that there was absolutely no pay ore on the lower level and practically nothing of any value below the so-called 180' level. Their estimate of tonnage in the upper levels is in line with yours and I have also used the figure of 15,000 tons as representing the ore which was actually developed. I am not so sure in regard to the average grade of this material but by comparing a number of reports by different engineers and cutting these down to some extent for safety's sake I have concluded that the average is about 12. oz. in silver and 6% lead with .02 gold. At present prices (lead sold yesterday at 5.20¢ per pound and seems to be going higher) this gives a gross value of over $16.00 per ton and figuring on only an 80% recovery in concentrates the values in these concentrates would represent $13.00 per ton or a net of $8.50 per ton to the operator after deducting hauling, freight, smelting, and marketing charges as per terms given me by El Paso. I have figured that the developed ore being near the surface and well opened up for mining could be mined and milled for $4.50 per ton leaving a profit of $4.00 or a total of $60,000 on the present ore reserve. From this $60,000 return I would expect to spend from $5,000 to $10,000 in looking for additional ore by extending the present drifts in the upper levels and also by prospecting the southern ore shoot which looks rather promising on the surface. Even if the full $10,000 were expended as above and absolutely no additional ore were found the net return should be around $50,000 and the first $30,000 would go to pay back the expenditure for equipping the mine for operation and the working capital which would merely be tied up during the operations and

the operators under my agreement with the owner would have in addition a net profit of about $10,000 while Mrs. Koyk would also get $10,000 and have her equipment as at present together with some additional equipment to be sold for whatever it might bring.

I am particularly anxious to learn if your investigation indicated a similar grade of ore to that which I have assumed bedause that point is most essential.

As to the recovery in the mill Koyk and others stated that this was about 85%, but I have only figured on an 80% recovery which should be conservative.

The water question would indeed be serious if one were planning to operate on any large scale but unless several different people have misinformed me there is enough normal flow of water into the shafts of the Diamond Joe and into the shaft of the Great Southern to permit the concentration of about 40 tons of ore per day and that is all the production the mine should be called upon to make unless and until considerable additional ore is developed.

Of course, this is a comparatively small operation and if it proves to be limited to the present ore reserve it will only last for a little over a year, but the risk involved appears to me to be comparatively small and one should get back his money with a minimum profit of $10,000 and a very much larger profit if additional ore of similar grade should be found, and I think that the outlook in this regard is favorable.

Of course I would never attempt to reopen the main shaft near the mill which is now caved and goes to the 400' level, but would operate entirely from the little No. 2 shaft which is open down to the 180' and apparently in first-class condition. The hoist and cage would have to be moved down to this shaft and a trestle provided to haul the ore cars up to the mill bin. Otherwise there is very little new equipment needed at the mine.

If you agree with me in respect to the average grade of the ore, mill recovery, and costs of operations it seems that our only difference of opinion would lie in respect to the advantages of making an investment of the nature indicated and please do not think that I am writing this letter with any idea of causing you to change your opinion. I have already advised Neil Clark, who is representing Mrs. Koyk, that I have not at present any friends who wish to take over the Diamond Joe and Clark is taking the matter up with other people, but since it is possible that I may be associated with them I am very anxious to make just as sure of my ground as possible and the way I feel at present I would not hesitate to go into the operation myself if I had the available cash.

I note that Mr. Douglas would not be interested in

the Carissa Mine in Wyoming about which I personally know very little, although I have received a number of lengthy and favorable reports which seem to indicate that it is worthy of investigation. Sometime when opportunity permits I will tell him something of the nickel properties with which I am familiar if he cares to hear about them but generally speaking I don't like to attempt to present any mining properties to other people and I almost never do so except to mining companies or mining engineers who are quite capable of forming their own opinion and correcting my ideas if they are wrong, so I will be grateful for any further comment on the situation at the Diamond Joe.

Will you kindly ask Mr. Douglas if he ever heard from Searles in regard to the Zeebright Mine near Grass Valley, California.

Yours very truly,

GMC:DF

ESTIMATE OF WATER STORED IN DIAMOND JOE MINE BELOW 180' level @ 7.5 gal per foot.

	Cubic feet
180(225', 2 Incline rasies 60' long and 5 x 6 = 120 x 5 x 6	3600
2 shafts 8 x 10 x 45	3600
225' level and crosscuts 800 x 5 x 7	28000
Station stopes, etc. say	4800
	40,000

40,000 cubic feet x 7.5 = 300,000 gals.

Estimating 500 gals per ton of ore this storage would serve to run 600 tons @ 50 tons per day i. e. for 12 days, but during that period the normal flow of water in the mine if only @ 10 gal per minute or say 15,000 gals. per day would have added 180,000 gals. or enough to continue running for another 10 to 15 days, and treating a total of over 1000 tons of ore.

If provision for returning water is made it should be possible to treat the ore with 15,000 gals of water per day which the mine could probably supply at least for a time.

REVISED CALCULATIONS RE DIAMOND JOE

(Based on latest El Paso Smelter Quotations and prices of metals on Febfuary 27th, 1936)

Assume run of mine ore--

Au--	0.02	gross value	$0.70
Ag--	11.00	" "	8.52
Pb--	8.%	" "	7.20
	Total		$16.42

Assume Concentration at ration of 7: 1 with recovery of 85% of value.

Then 1 ton of concentrates will assay:--

Au--	0.12 oz.
Ag--	65.00 oz.
Pb.-	47.6% = 952#

Smelter will pay for Au @ $32.81825		$ 3.94
95% Ag @ 75.5¢		46.62
Pb. less 30# = 922# and pay for 90% = 830# @ 4.55 less 1.425 = 3.125		25.94
Value of one ton concentrate		$ 76.50

Less Charges

Hauling to Wickenburg	$3.00 (allow for moisture)	
Freight to El Paso, $50.00 value,	7.88 " " "	
Treatment charge	6.34	
	$17.22	17.22
Net return per ton concentrates		$59.28
Net return per ton ore		8.47
Less cost of mining developed ore	$2.20	
Less cost of milling	2.00	
Taxes, overhead, etc.	.27	
Total operating costs	$4.47	4.47
Net profit per ton		$4.00

Net profit per day -------$200.00

Profit should be increased when operating at 100 tons per day.

RE SHIPMENT OF CRUDE ORE FROM DIAMOND JOE TO EL PASO SMELTER

****

This seems entirely impractical. The payments for the average grade of ore (12 oz. ag and 6% Pb) would equal 11.66 per ton and the costs allowing $3.00 for mining would be $13.60 per ton resulting in a loss of $2.00 per ton.

If the ore could be selectively mined or sorted up to an average grade of 20 oz. ag and 10% Pb. the payments would be $20.12 per ton and the costs (allowing $6.00 for mining and sorting) would be $17.60, showing a profit of $2.50 per ton which would not repay the preliminary expense considering the small tonnage of such ore as might be shipped and it is by no means sure that any such grade could be produced.

If Diamomd Joe Mine should only contain 15,000 tons of ore as per Paddison's report with Ag 13. oz. and Pb 9% and gold presumably 0.02.

Value per ton would be about $10.00 and profit should be at least $5.00 per ton.

15,000 x 5 equals $75,000.

	Operators	Owners
Division of profits First 30,000	$27,000	$ 3,000
Next $45,000	22,500	22,500
	49,500	25,500
Plus working capital	15,000	
Salvage on new equipment	2,500	
	67,000	
Less original investment	30,000	
NET PROFIT	37,000	

Note 6/5/43

Fld 11

DIAMOND JOE MINE

According to John Herr, the assayer and ore buyer in Wickenburg, who was a party to the latest operations they have worked out the ore pocket of good grade lead-silver ore near to the shaft, and made good money from the shipments due to the bonus-price paid for the lead.

Total production only amounted to from 1000 to 1200 tons of ore, and no extension of this shoot was found.

Dillard does not think that any of this lead-silver shoots in the desert country will carry values to any depth.

EQUIPMENT AT DIAMOND JOE MINE

The main equipment on the ground is:

Power House.

Benz Diesel Engine, manufactured or sold by the Chicago Pneumatic Tool Company and is a six cylinder vertical engine, rated at 214 Brake horsepower, at 327 Revolutions per minute, equipped with a fly wheel and direct connected to 175 KVA Westinghouse generator. 3 Phase 60 cycle, 400 or 440 Volts, complete with damper winding and direct connected exciter. There is also a switch board which goes with the engine and generator. The price of this equipment was $15,737.00 F. O. B. Pittsburgh, and I believe that the engine was only operated for a few months and am reliably informed that it is in excellent condition throughout.

Shop. Complete blacksmith forge with blower and tools; pipe cutting equipment to take up to 8" pipe; one No. 5 Ingersoll Leyner drill sharpener; one small drillpress.

Hoist House One direct drive Diesel compressor--C. P. Hot Head 309 cu. ft. air per minute; one gas driven 40 H. P. Western Hoist, small motor driven priming compressor with air tank and gauge, two steel air receivers 3½ by 9 ft., and 3 by 5½ ft.

~~One wood gallows frame 27 ft. high.~~

Assay Office. Complete equipment except muffle furnace includes, Braun crusher and pulverizer, motor drive; pulp balance, button balance, and scales; full line of chemicals and glassware.

Tanks:

1000 gals. fuel oil tank

4300 gal. cooling tank with slat cooler on top.

10,000 gal. water storage tank, steel

50,000 gal. water storage tank, wood stave.

Mill

~~9" by 16" Universal jaw crusher~~

Autmmatic feeder to rod mill 50

4' by 8' Marcy rod mill 1000

22 Doer classifier, drag type 200

3 K-K flotation machines

~~1 Wilfley table~~

1 Doak vacuum pump 100

1 6' by 4' Oliver filter 200

1 28' wood stave tank with Doer Thickener for tails

Sand and circulating pumps, motors, belting, shafting and piping. 350

Miscellaneous.

Surveyors transit, rod, tapes; adding machine, typewriter, 5 mine cars. 200

2100

The buildings cost $13,000.00 and the equipment $65,000.00. The machinery has been well taken care of and is in perfect condition.

2100
8300
10400
Bldgs 1600
12000
Piping rails etc. 500
12500

Said to have been purchased by Hickey of Fulton [illegible] about March 10th. Hickey has no money of his own acc. to Finlayson & may be acting for others or joint dealing as a promoter

EQUIPMENT AT DIAMOND JOE MINE

The main equipment on the ground is:

Power House.

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3 K-K flotation machines

1 Wilfley table

1 Doak vacuum pump

1 6' by 4' Oliver filter

1 28' wood stave tank with Doer Thickener for tails

Sand and circulating pumps, motors, belting, shafting and piping.

Miscellaneous.

Surveyors transit, rod, tapes; adding machine, typewriter, 5 mine cars.

The buildings cost $13,000.00 and the equipment $65,000.00. The machinery has been well taken care of and is in perfect condition.

September 11th, 1939

Mr. Robert L. Frost
Box 185
Altadena, California

Re: Diamond Joe Mine

Dear Frost:

I acknowledge your two letters of September 7th and 9th on the above subject and replying particularly to the latter, I would be glad to make a brief re-examination of the property and revise my estimates accordingly for the sum of $100.00. Also, my charge for copies of maps, reports, etc., would be $100.00. Some of these reports are quite long and the maps are in such shape that I should have to have them traced and prints made from the tracings all of which would involve considerable out of pocket expense.

I believe that Mr. Wanvig, if interested at all, would wish to have all of the data from my files and also an up to date report based on another visit to the property so that you can figure $200.00 is the total expense involved.

As to obtaining an option on the mine, I really hesitate to take any steps in this direction until you have definitely ascertained whether or not Wanvig is disposed to give it serious consideration. The attorney for Mrs. Koyk, the owner, assured me a few days ago that no deal had been made and unless something of this kind should come up very unexpectedly, you may assume that such is the situation and if you find that Mr. Wanvig is favorably disposed and will agree to pay for further investigation, as mentioned above, I would immediately take the matter up and obtain an option for 30 or 60 days. I am quite sure that this can be done without any cash payment but if we should secure the option at the present time and then ask for a renewal, it is probable that the owner would only agree to renew if some cash were actually paid over.

Referring to my first letter in reference to the Diamond Joe, Morton told me that this property had been brought to the attention of his company in Cincinnati by some promoter last winter or spring and that as a result of this presentation Mr. Fowler, their Chief Geologist, arranged to make an examination on which Morton accompanied him. Morton told me that both he and Fowler were very favorably impressed with the Diamond Joe and considered that it should be operated profitably but found it entirely too

small to meet the requirements of the Eagle-Picher Company. I am quite sure that Morton would verify this statement if you or I requested him to do so but I do not understand that they made any thorough examination or sampling after they determined its limitations.

There is a very nice little camp at the Diamond Joe (I believe it is still intact) and no one could ask for a better winter climate but an operation of this size will not stand any great amount of overhead expense as you can readily realize and the actual mining and milling should be carried on by some competent technical man. However, I sincerely hope that both you and Mr. Wanvig's son might derive substantial advantage from the operation of the property and as you know, I am personally inclined to be conservative and perhaps I have not done full justice to the possibilities of the mine and the probable extent of the ore bodies or life of the operation. Unless we have another spell of very bad weather, I expect to be going to Prescott the latter part of this week and will certainly make an effort to look in on the Forbach Placer and see what is doing there.

Personal regards.

Yours very truly,

GMC:MF

P.S. Since dictating the above I have had quite a long talk with Mr. Clark, the attorney for Mrs. Koyk, and he assures me that they will not deal with any other parties until he has heard from me again, assuming that I can communicate with him during the next three or four weeks. I understand that Clark and Pratt have recently advanced some money to the owner of this property and therefore will have some say in any deal that may be made and I believe that they will be entirely reasonable. Pratt is a well-known engineer and has been for many years in the employ of the American Smelting and Refining Company and more recently the superintendent of their mine at Octave although he has now left on a trip to South America. Pratt is extremely enthusiastic regarding the property as you may gather from his report and he and Clark have suggested that

any prospective purchaser might make some kind of a deal similar to that which the A. S. & R. made for the Octave. As I understand it, this permits the lessees to first repay to themselves from net earnings all of the capital invested in the equipment and development of the mine and thereafter the future profits are divided on a percentage basis between the lessees and the owner until the full purchase price of the property is paid by the lessees. Perhaps you and Mr. Wanvig would find a contract of this nature more attractive than an ordinary form of Bond and Lease but in any event you can rest assured that the owner will not do business with other parties if you are in a position to continue negotiations any time during the next month or so and I presume there is but little doubt that Wanvig will reach a decision within that period.

Yours very truly,

GMC:MF

C 9/11.

Box 185
Altadena, Cal.
September 9 1939. 34

Mr. G. M. Colvocoresses,
Phoenix, Arizona.

Dear Mr. Colvocoresses;

I acknowledge receipt of your's of the 6th. enclosing in duplicate Statement relative to the Diamond Joe mine, also copies of Pratt's report on the property.

In preparing my material to send on to Wanvig, two questions arise in my mind and on them I would like a little further information before writing him.

What would the cost be of the brief examination you very properly feel should be made before you can make an estimate as to the present conditions at the mine and the sum that would, in your judgment be needed to put the place into operation?

The other question is what charge there might be for copies of maps, other reports etc. from your files.

In short, I want to get to Wanvig the approximate cost of placing in his brother's hands, whatever data and information as might be necessary to give him the complete picture.

In an earlier letter regarding the property, I understood that Morton and perhaps Fowler with him, had seen this property and, while favoring it as a small thing, turned it down solely on account of its size. Is this also correct?

You see, Wanvig while he does not know Morton personally, does know very well indeed of the Eagle-Picher and any favorable word coming from this concern would of necessity carry a lot of weight.

I just want to get the picture as clearly as possible in my own mind before sending material along. I'll be glad to have word from you on these points as I hope to have some word from Wanvig and to send on the material during the coming week.

Would it be advisable to make an effort to tie up the property for a brief time while this material is in transit and being considered? I believe that it would help my own position if I could say that I have the property under option to lease or buy, for a limited time.

The set-up in starting is in many ways very favorable.

I have long enjoyed Wanvig's friendship and confidence. He has ample funds and as a shrewd business man cannot fail to see a certain advantage in a commodity that is really a basic one and with a price range that, under the existing foreign conditions should enjoy an up-swing.

It also offers a diversification from his main interest, his manufacturing plant, and lastly- He has a daughter and her husband, living in Tucson, the boy at present engaged in the real estate business and probably not doing a great deal in the matter of progress and profits.

With all these angles in mind, I shall endeavor to set up the proposition as interestingly as I can.

If things should be favorably considered, I would expect to be regarded as the "finder" so far as he is concerned and as such, receive a certain interest in the picture, though what such interest might be, I have little enough idea. Probably, if things reach that stage, a certain allowance for expenses while the principal investment were being returned and after that, a stated percentage of net profits would be the best plan, if it were possible to so arrange it.

I shall have to be guided in many of these questions and would very naturally rely on your experience and knowledge in such matters.

Sincerely,

Robert L. Frost.

G 9/11
34

Box 185
Altadena, Cal.
September 7 1939.

Mr. G. M. Colvocoresses,
Phoenix, Arizona.

Dear Mr. Colvocoresses;

I have been hoping any day to receive date relative to the Wickenburg property.

In the meantime, I wrote Wanvig that owing to some questions as to title, I was unwilling to take his time or that of his brother in considering a proposition as to which there might be any question, title or otherwise.

I then mentioned the word from you that both Morton and you knew of this Wickenburg property; that it was too small for the large operators but that it appeared to have plenty of merit for a small and profitable operation.

I then went on to repeat to him what I have told him in person- my own desire to return to Arizona and that this property, entirely aside from any personal friendship but purely as a business proposition, might be a good thing in which his son-in-law living at Tucson, might become interested.

I closed with the assurance that I had before me no detailed information as to values, ore established or even the investment required to put the property into operation but that if even his curiousity were aroused, I could get them for him and that his brother John could go over them and see if they appeared at all interesting.

I have not yet heard from him though as to that, I am not sure that he may not have encountered some complications in his North Cape cruise and that his return may perhaps be delayed.

In any event, I know that I shall hear from him and that, as soon after that as I have the information at hand, I shall acquaint him with the proposition there at the Diamond Joe mine.

That is as the matter stands at the moment.

Sincerely,

Robert L. Frost.

September 18th, 1939

Mr. Robert L. Frost
Box 185
Altadena, California

Re: Diamond Joe

Dear Frost:

This will reply to your letter of the 15th and I regret that mine of the 11th seems to have given rise to some misunderstandings on your part.

Mr. Clark assures me that the Diamond Joe can be obtained on a 10% royalty lease with option to purchase and the other plan was merely his suggestion based on a similar arrangement which the A. S. & R. had made when taking over the Octave Mine and which seemed to be working well. Mrs. Koyk is not a business woman and all affairs connected with her husband's estate have been handled by Clark whom I have known pleasantly for over 20 years and with whom I have done business on several occasions. It was at his recommendation that I investigated the Diamond Joe in 1936 and although I found it to be much smaller than represented, I have since kept it in mind as very suitable for any party desiring to invest a limited capital.

As to the interests of Clark & Pratt; it is my understanding that these would have no bearing whatever on the terms which would be made with a lessee or purchaser but merely involve the subsequent payment by the owner of fees for services rendered and perhaps for money advanced to help her to hold the property. Pratt has gone to South America and would not be consulted and Clar, whose office is in Phoenix, will continue to represent Mrs. Koyk as he has done in the past.

At the time that I investigated the Diamond Joe, I went carefully over all of the reports and other documents which Clark and Mrs. Koyk had in their files and made copies of everything which appeared important. The owner has the Pratt Report,- which was made subsequently,- and of which I sent you a copy and she also has the prior reports referred to by Pratt and I presume that all these were in the possession of the promoter who presented the property to the Eagle-Picher Company. Since Pratt is an interested party, his statements and conclusions cannot be accepted as altogether unprejudiced but many of them are confirmed by the work of independent engineers. (This is one reason why I never put myself in a similar position by accepting an interest in a mine or taking a commission from the owner.)

The owner does not have the results of my own examination which involved out of pocket expenses of some $150.00 nor the information which I obtained directly from the officials of mining companies whose engineers examined and sampled the mine before 1930 while the lower levels were still unwatered and these I consider the most important part of my file.

I have already given you data which should enable Mr. Wanvig to determine whether ar not he is sufficiently interested to make any further investigation and spend the small amount of money suggested in my last letter. If such is not the case we can let the matter drop so far as I am concerned; otherwise, you or he can obtain all of my data and a completed and revised report as stated for $200.00 either before or after you have seen him personally. This is my only present personal interest in the project although I should always be glad to do more professional work if such were desired.

I will keep this letter open until Wednesday as I expect to visit Prescott tomorrow and if possible will run over to the Forbach Placer and add a note in reference to its present status.

Yours very truly,

GMC:MF

P.S. Yesterday I stopped in at the Forbach Placer and found that active work is actually in progress although it appeared to have only just started.

Donnley was not on the property although they said he had been there the day before and one of Schimmer's sons was apparently in charge of the work.

The equipment consists of one 3/4 yard power shovel and a caterpillar bulldozer which are digging or pushing the gravel and feeding it to a belt conveyor that leads to the portable washing plant which is equipped with shaking screens, sluice boxes and two Mitchell bowls. Another similar plant consisting

of a trommel and Mitchell bowls was standing nearby. All the above were located in Jackson Wash directly north of the camp buildings. That is in the upper section of the wash above the dam and I presume that they intend to store their tailings from this upper section in the old dams as otherwise these would run down and contaminate the gravel in the lower portion of the wash which we sampled so carefully.

The washing plant itself was not running and only the bulldozer was in action. The wash had been pretty well filled in with surface material by the recent heavy rains and my guess is that the material which they will mine and wash is bound to be pretty low grade for you will remember that Forbach had previously mined out most of the pay streak in upper Jackson Wash when he was running his old plant financed by the Van Dykes.

I believe that this will give you the information you desired and enable you to form an opinion as to your future policy.

Personal regards.

Sincerely,

GMC:MF

Ans 9/18. 39

Altadena, Cal.
Box 185
September 15 1939.

Mr. G. M. Colvocoresses.
Phoenix, Arizona.

Dear Mr. Colvocoresses;

Absence from home has delayed my acknowledgement of your letter of the 11th.

It was my first impression that your original mention of the Wickenburg property was with the idea that the mine in question might be obtained on a royalty basis, direct with the owner.

Your later letter mentions that Clark, Mrs. Koyk's attorney, and Pratt, the engineer whose report I have, have an interest in the property and would naturally be consulted in any arrangements that might be later made.

As a result, I am a bit confused as to the actual interests involved. I think it better to have some of these preliminary questions clear in my own mind before any final presentation to Mr. Wanvig is made.

Is it also a fact that all data regarding the mine is limited to your files? I am wondering if there are not still further papers in the hands of the owner. The fact that the property was submitted to the Eagle-Picher by some promoter or other would lead to the inference that there are reports and data available without taking a lot of your own time in compiling them.

This long-range work is always unsatisfactory. There is just a possibility that I shall have to go to Milwaukee this fall. If that transpires, and I should know very shortly, I would want to stop off at Phoenix and get the picture first-hand, then proceeding by train to Milwaukee and a personal presentation. I would get a lot further that way, all things otherwise being equal.

Just what is the interest Pratt and Clark have in the property and why could not the original suggestion ofroyalty be available? My own thought is that this would probably be more satisfactory.

Sincerely and hastily,

Robert L. Frost.

Robert L. Frost.

WELLS, POTTER, FISH & USTICK, Inc.

ESTABLISHED 1906

110 FULTON STREET, NEW YORK

HAROLD A. GILMAN
PRESIDENT

J. GERARD McLAUGHLIN
COUNSEL

July 25, 1941

Mr. G. M. Colvocoresses,
1102 Luhrs Tower,
Phoenix, Arizona.

Dear Mr. Colvocoresses:

We thank you for your letter of July 21 and we are asking Dr. James W. Fountain, 11 West Jefferson Street, Phoenix, to communicate with you and make an appointment at your mutual convenience. Perhaps you can arrange to have him call at your office.

Although we and the Company are well aware of the fact that you are considered as an over-weight risk, if the rest of your physical condition is satisfactory I see no reason why we could not obtain the renewal. Let us hope for the best at least.

Very truly yours,

Harold A Gilman
President.

#14

Diamond Joe fo

Original Duplicate

A G R E E M E N T

THIS AGREEMENT, made and entered into this 13th day of March, 1936, at Phoenix, Maricopa County, Arizona, by and between DIAMOND JOE MINING COMPANY, INCL., a corporation organized under the laws of Arizona, and NELL KOYK, individually and as Administratrix of the Estate of George R. Koyk, deceased, hereinafter called the owners and First Parties, and G. M. COLVOCORESSES, of Phoenix, Maricopa County, Arizona, hereinafter called Lessee and Second Party.

WHEREAS:

(a) The Diamond Joe Mining Company, Inc., is the owner, subject only to the paramount title of the United States, of that certain group of ten (10) unpatented mining claims in the White Picacho Mining District, Yavapai County, Arizona, the notices of location whereof are of record in the office of the County Recorder of said Yavapai County, Arizona, by name and book of record as follows:

NAME	BOOK OF MINES	PAGE
CHARLES NO. 1,	135	93
CHARLES NO. 2,	141	93
CHARLES NO. 3,	141	94
CHARLES NO. 4,	135	94
CHARLES NO. 5,	135	95
CHARLES NO. 6,	135	96
DIAMOND JOE NO. 7,	132	376
DIAMOND JOE NO. 8,	132	377
NUMBER 9,	141	95
NUMBER 10,	141	96.

The improvements upon said mining claims, in addition to the underground workings thereon, consist of a Diesel engine power plant rated at 240 horsepower, a partially equipped concentrating mill designed for a daily capacity of approximately 100 tons, a mine hoist, air compressor, and other mining machinery, buildings, structures, and improvements, all of which, together with the above described mining claims are free of liens and encumbrances and it is understood and agreed that this lease and option is intended to and shall embrace and include all mining

claims, water rights, and other real and personal property in any wise held or controlled by lessors in the vicinity of the above described property including particularly the two claims in the Great Southern group, regardless of whether or not these premises are completely and accurately described herein, and if the descriptions herein prove to be inaccurate or incomplete, this agreement shall be amended so as to include any ground inadvertently omitted or improperly described herein.

(b) That the Diamond Joe Mining Company has a capitalization of 1,000,000 shares without nominal or par value. That all of the issued and outstanding stock of said corporation consists of 490,000 shares, all of which stands in the name of George R. Koyk, and the certificates therefor are deposited with the Valley National Bank, at Phoenix, Arizona, as escrow agent, subject to the orders and control of the Corporation Commission of the State of Arizona.

(c) That the said George R. Koyk died on or about the 12th day of January, 1935, and thereafter Letters of Administration upon his estate were duly issued out of the Superior Court of Maricopa County, State of Arizona, to Nell Koyk, the surviving wife of said decedent and she is now the duly appointed, qualified and acting Administratrix of the estate of said deceased.

(d) That Second Party desires to obtain the exclusive right to make a complete examination of said mining property, together with an option for a lease with the right to purchase said property upon the terms and conditions hereinafter set forth.

NOW, THEREFORE, in consideration of the foregoing premises and of the promises and covenants hereinafter set forth to be kept and performed by them, the parties hereto do hereby agree as follows:

(1) First Parties hereby grant to Second Party, for a period of sixty (60) days from the date hereof, the right to enter upon the above described premises, and every part thereof,

for the purpose of thoroughly examining and sampling the same, and Second Party agrees to promptly make said examination, and within said sixty (60) days to notify the owners whether or not he elects to proceed further under this agreement or to cancel the same without further liability herein.

(2) If Second Party elects to proceed hereunder, he and his agents and employees shall immediately enter into possession of said property and every part thereof and safely keep, preserve, and maintain the same in accordance with the terms hereof, and he, with his said agents and employees, shall have the exclusive right to develop, mine, mill, concentrate, and otherwise recover, remove, and market the ores and mineral products thereof, and within thirty (30) days after electing to proceed hereunder, Second Party shall enter upon the execution of plans for properly equipping, developing, and operating said property, and shall proceed diligently therewith.

In this connection it is mutually understood that in order to properly and efficiently operate the leased property it will be necessary for Second Party to replace certain portions and units of the mining and milling equipment which have been removed from the premises and repair portions of the mill and mine, including the Number 3 shaft located near the mill, also re-condition and equip the Number 2 shaft for operation, and install facilities for transporting ore from this shaft to the mill, and otherwise properly prepare the mine for the economic extraction of ore, and to further provide an adequate water supply for the treatment of approximately one hundred (100) tons of ore per day.

All expenditures made by Second Party for such purposes and for the subsequent improvement of the plant to permit the production and treatment of the largest tonnage of ore that it may be economically advantageous to produce and treat shall be considered as capital advances, all of which are to be repaid to

Second Party from earnings as provided in Article 3 hereof.

(3) All operations of Second Party upon said premises shall be conducted in a safe, proper, and workmanlike manner, and shall be under the complete and exclusive control of Second Party and conducted solely at his expense. When and if the property shall be upon a producing and profitable basis, ninety per cent (90%) of all net profits (to be determined as hereinafter provided) shall be applied, first to reimburse Second Party for any and all capital advances hereunder, including also a working capital of not more than Twenty Thousand Dollars ($20,000.00) with interest on the said advances at the rate of six per cent (6%) per annum. The remaining ten per cent (10%) of the net profits shall be paid to the First Parties at quarterly intervals.

Commencing with the date of Second Party's election to proceed with the development and operation of the property he shall pay to First Parties the sum of One Hundred Fifty ($150.00) Dollars, and a like sum each month thereafter except during any and all months when First Parties' share of the profits equal or exceed One Hundred Fifty ($150.00) Dollars a month. All such payments shall be treated and considered as capital advancements to be repaid to Second Party out of earnings as provided in this Article.

(4) Net profits shall be determined by deducting the total expenses of whatsoever nature in connection with the operation of the property, from the net proceeds from the sale of crude ore, concentrates, bullion, or other products from the property.

(5) If and when Second Party shall be fully reimbursed as aforesaid, all net profits in excess of the amount required to maintain working capital as above provided, shall be divided equally between First Parties and Second Party, and shall be paid accordingly at quarterly intervals.

(6) The term of this agreement shall be for a period

of twenty (20) years from and after the date hereof, unless terminated prior to the expiration of said term, as hereinafter provided.

(7) At all reasonable times an accredited representative or representatives of First Parties shall have full and free access to said property and to the plants handling the ores, and to the metallurgical and financial records pertaining thereto, so as to be currently informed and assured as to the correctness of the accounts which Second Party shall render as soon as conveniently possible after the termination of each quarterly period; and the First Parties shall have sixty (60) days from the date of mailing of said quarterly accounts within which to examine the same and object thereto in writing if any error is found therein, it being understood and agreed that failing such objection within said period, the accounts shall be considered correct.

(8) Copies of all monthly reports by the Superintendent or Manager of development, operations, etc., and of all assay and other maps explanatory thereof shall be mailed currently to First Parties.

(9) The product from the leased mine, whether crude ore, concentrates, bullion, or other products, shall be marketed at the best terms obtainable at any reputable smelter or refinery in the United States, with due regard to the difference in freight rates thereon.

(10) The charge to be made on the operating account before division of profits for non-resident management, supervision, and consultation, that is to say, for managment above that of the resident Superintendent or Manager of the property, shall not exceed Three Hundred Fifty ($350.00) Dollars per month.

(11) In the event that the operation of the said property shall at any time become unprofitable, whether by reason of decline in the prices of metals produced or of ores of low grade or refractory nature, difficulties in mining, milling, marketing,

or otherwise, all expenditure in connection therewith in excess of the amount of working capital available for the purpose shall again be considered as capital advances by Second Party and repaid to him as other capital advances, as hereinabove provided, and further net profits shall not be distributed between the parties hereto until such reimbursement shall have been completed and until further working capital shall have been provided in the amount stipulated above or in such amount as the parties shall then mutually consider desirable.

(12) Second Party hereby expressly reserves the right to terminate this agreement at any time during the period hereof by giving sixty (60) days previous notice in writing to the owners of his intention to do so, and upon the termination hereof either by limitation or by notice as herein provided, Second Party shall be under no further liability hereunder other than for the payment of all bills and other obligations incurred by him and all profits due to the owners up to the date of such termination, and Second Party shall leave upon the property all fixed equipment placed thereon by the Second Party whether or not he shall have been previously reimbursed therefor.

(13) Second Party shall not be required to mine, mill, smelt, refine, or otherwise dispose of the product of said property during such time as he shall be prevented from so doing by causes beyond his control (including labor troubles) or when the low grade of such product or low market prices shall render operations hereunder unprofitable, and during any such period or periods Second Party shall be excused from performance hereunder excepting only the obligation to make monthly payments to First Parties as provided in Article 3 hereof and to care for said property as though he were the owner thereof, including the obligation to pay all taxes assessed thereon and becoming due from time to time, and to maintain the same free from any lien resulting from

his occupation or operation; provided, however, that upon the removal of the cause of disability or the development of profitable ores, Second Party shall promptly resume and continue his operations under this agreement.

(14) Second Party shall and hereby agrees to do or cause to be done, without charge to the owners, upon each of the above described mining claims, or for the benefit thereof, at least One Hundred ($100.00) Dollars worth of work in compliance with the laws of the United States relating to annual or assessment work required to be done to hold and avoid a forfeiture of said property. Such work shall be completed before the expiration of the year within which it is required to be done, but Second Party, if he so desires, may proceed to obtain patent for and on behalf of the owners to all or any of the mining claims hereby leased and the actual cost of obtaining such patents will be considered as an advance under the terms of Article 3 hereof.

(15) Second Party alone shall be responsible to any and all of his employees, and others, (except the representatives of First Parties), for any claims for injuries or damages sustained during the development and operation of said property by Second Party, and Second Party shall secure and maintain during the term of this agreement contracts of insurance with the Arizona Industrial Commission, or with an approved insurance company, insuring and saving harmless first parties on account of injuries to or death of employees of Second Party.

(16) Second Party shall pay before the same become delinquent, all lawful taxes levied and assessed upon the property during the life of this agreement, and Second Party shall keep said property and every part thereof free from liens for material and labor used and employed upon said premises during the life of this agreement, and Second Party shall post and keep posted on said mining claims, for the benefit of First Parties, notices

of non-liability of First Parties and of the property herein described, under the provisions of Paragraph 2029 of the Revised Code of Arizona, 1928 exempting mines and mining claims from liens for labor done thereon, or material furnished therefor while being operated under bond, option, or lease.

(17) Second Party shall insure and keep insured against loss by fire all insurable property upon the premises, and in the event of fire loss any payments received shall be utilized to repair or replace the damaged structures or equipment, or if this is not deemed advisable, there shall be an equitable adjustment between the parties hereto as their interest may at that time appear.

(18) In the event that Second Party leases and proceeds to develop and operate said property under the terms of this agreement, First Parties hereby grant to Second Party throughout the term of this lease the exclusive right, privilege and option to purchase all of the issued and outstanding stock of the Diamond Joe Mining Company, Inc., and all of the rights and interests of either or both of said First Parties in and to the leased premises, and all the real and personal property thereon situate, for the sum of One Hundred and Fifty Thousand Dollars ($150,000.00) with interest thereon after one year from the date hereof at the rate of five per cent (5%) per annum, all payable in lawful currency of the United States, and in the event that Second Party shall exercise this option to purchase, then any and all sums of money previously paid to the First Parties under the terms of this agreement shall be credited against the purchase price herein stipulated and the balance of said purchase price shall be paid within thirty (30) days, or on such terms as may then be mutually agreed upon by the parties hereto, and upon the completion of the full payment of the purchase price First Parties will execute and deliver legal and sufficient conveyances to all of the

described real and personal property in favor of Second Party or his assign.

(19) During the term of this agreement First Parties hereby warrant that no further stock of the Diamond Joe Mining Company shall be issued without the consent and approval of Second Party, and further that no act or omission on their part will be allowed to create any lien, debt, or encumbrance upon the Diamond Joe Mining Company, nor upon the leased premises.

(20) Any payments made by Second Party hereunder shall be made to the written order of First Parties, and unless otherwise specified at the offices of Clark & Clark, Attorneys-in-Law, Heard Building, Phoenix, Arizona.

(21) Second Party may at any time assign this agreement or any part thereof to other parties and all rights and obligations under this agreement shall inure to the benefit and be binding upon the heirs, executors, administrators, successors, and assigns of the parties hereto, and shall be a covenant running with the land.

IN WITNESS WHEREOF, the parties hereto have duly and legally executed this instrument in duplicate in the City of Phoenix, Maricopa County, Arizona, this 13th day of March, 1936.

WITNESSES:

Seal

James Deck

Clarence O'Hare

DIAMOND JOE MINING COMPANY, INC.

BY: Nell Koyk Pres.

Neil G. Clark Secy.

Nell Koyk

Nell Koyk

Administratrix of the Estate of George R. Koyk, deceased

FIRST PARTIES

Dorothy Ferguson

E. M. Colvocoresses

SECOND PARTY

Mine Exp after Exam & Start up at Diamond Joe.

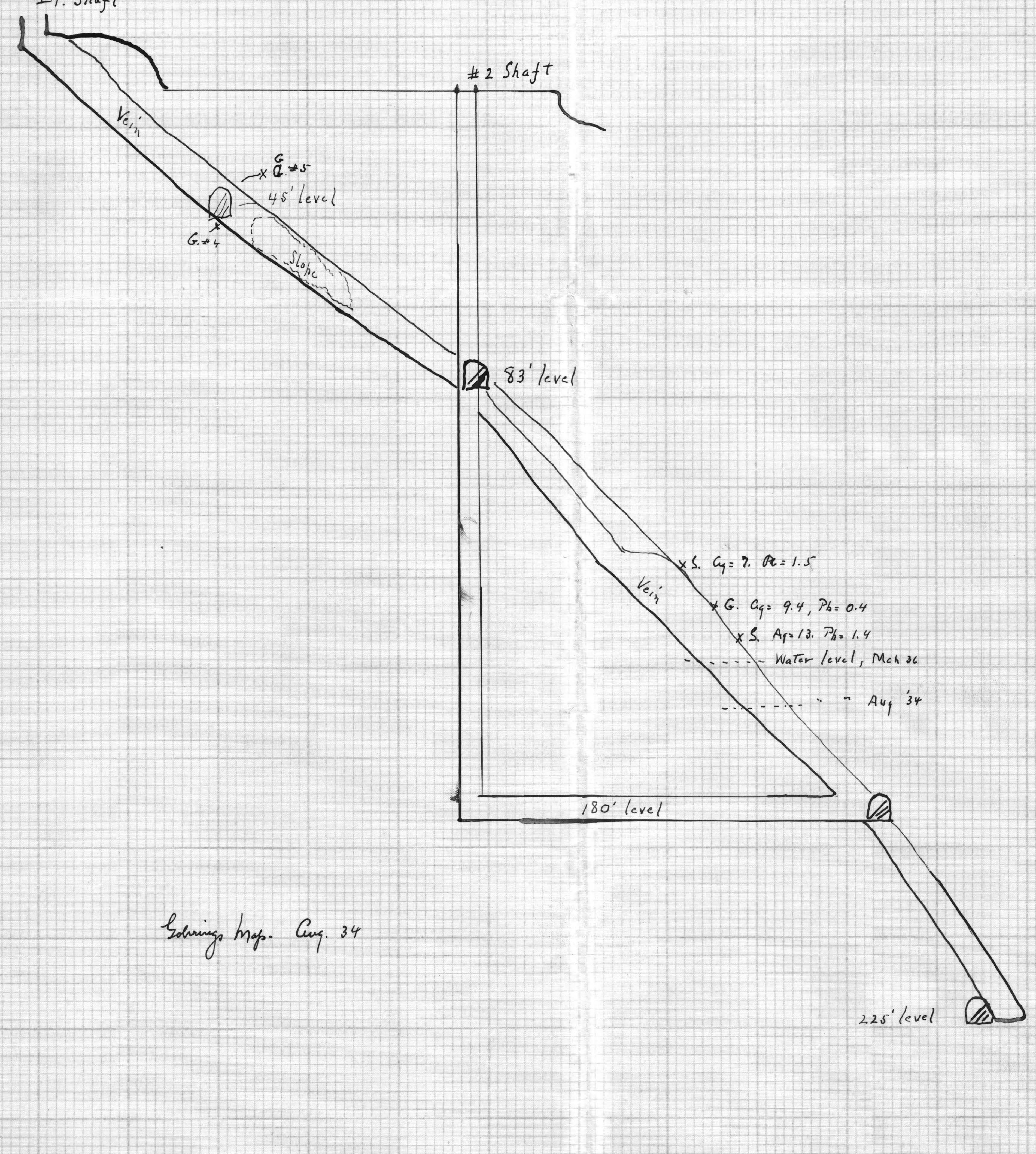
Item.	Purchase Price	Labor & Install etc	Total.
1 Headframe for #2 Shaft (tripod & use bucket)		100	100
1 Hoist @ #2 " (rent from Keller.)	100	100	200
Use truck & take ore to mill (rent	100		100
Ore bin for truck etc		200	200
Crusher at mill (rent from Keller.	100	100	200
Present flot mach to be fixed.		50	50
Ore table (rent fr Keller).	50	100	150
1 air drill, hose & steel.	250	50	300
Supplies.	200		200
Miscellaneous & Comp Ins.			300
			1800

But actually make prelim exam (on minimum schedule) & get the mine in operation for less than $3000 but it would surely be operating on a shoe string & would not pay its way unless we could work out some high grade ore with gross value say $25.00 for ton

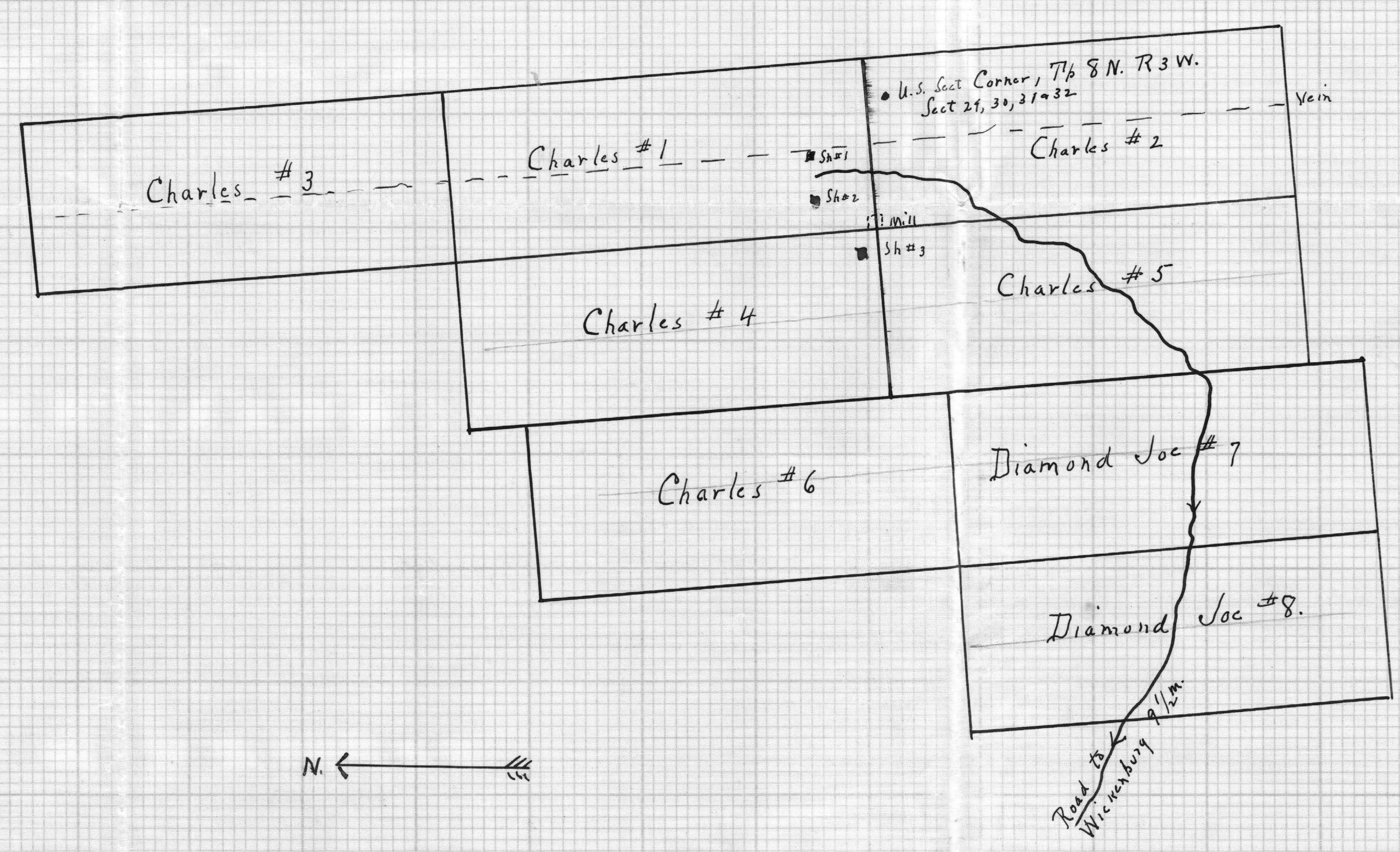
Feb. 36 Important Matters in which should receive advice

	1	2	3	4	5	6	7	8	10	11	12	13	14	15	17	18	19	20	21	22	24	25	26	27	28	29
Check of Knoedler (2800	⊗																									
Lord re [illegible] decision			X						W			⊗			X	X					X					X
Check of [illegible] Circuit 150.			X	X	X				W	Ⓦ								⊗	○	X				X		
Le Croix re Pacific	X		X	X					X	X	X		W					X	X	X						
[illegible] re Mate Christ	⊗								X	X	X	⊗			X	X			X	X						
Kelley re [illegible] 103	⊗		X	X	W				X	W	X			X	X	X				X		⊗				X 110
[illegible]					X				?	X	⊗			X	⊗		X				X	X	X			
Elliot re [illegible]					X				X	X	X				⊗		?									
re [illegible] Plan.								X	?	X	X			?												
Hurd re [illegible]	X		X	X					X	X	X		X	?												
Burchard re [illegible] Smith Co					X				?	X	X															
Check of [illegible] 130										⊗																
Re Paul Schmidt Co			X		X				⊗				?							X						
Taylor [illegible] Mexico								X	?	X		?														
Burden re [illegible]													X	?						X						
[illegible]									⊗																	
[illegible] re [illegible]										W			⊗													
Hersley re [illegible]														⊗						X				X		
Marigold re [illegible]														⊗		⊗			X	X	X	X	X	\		
[illegible] re [illegible]															W					X		⊗				
Elin " "																						W				
[illegible] " " "																										

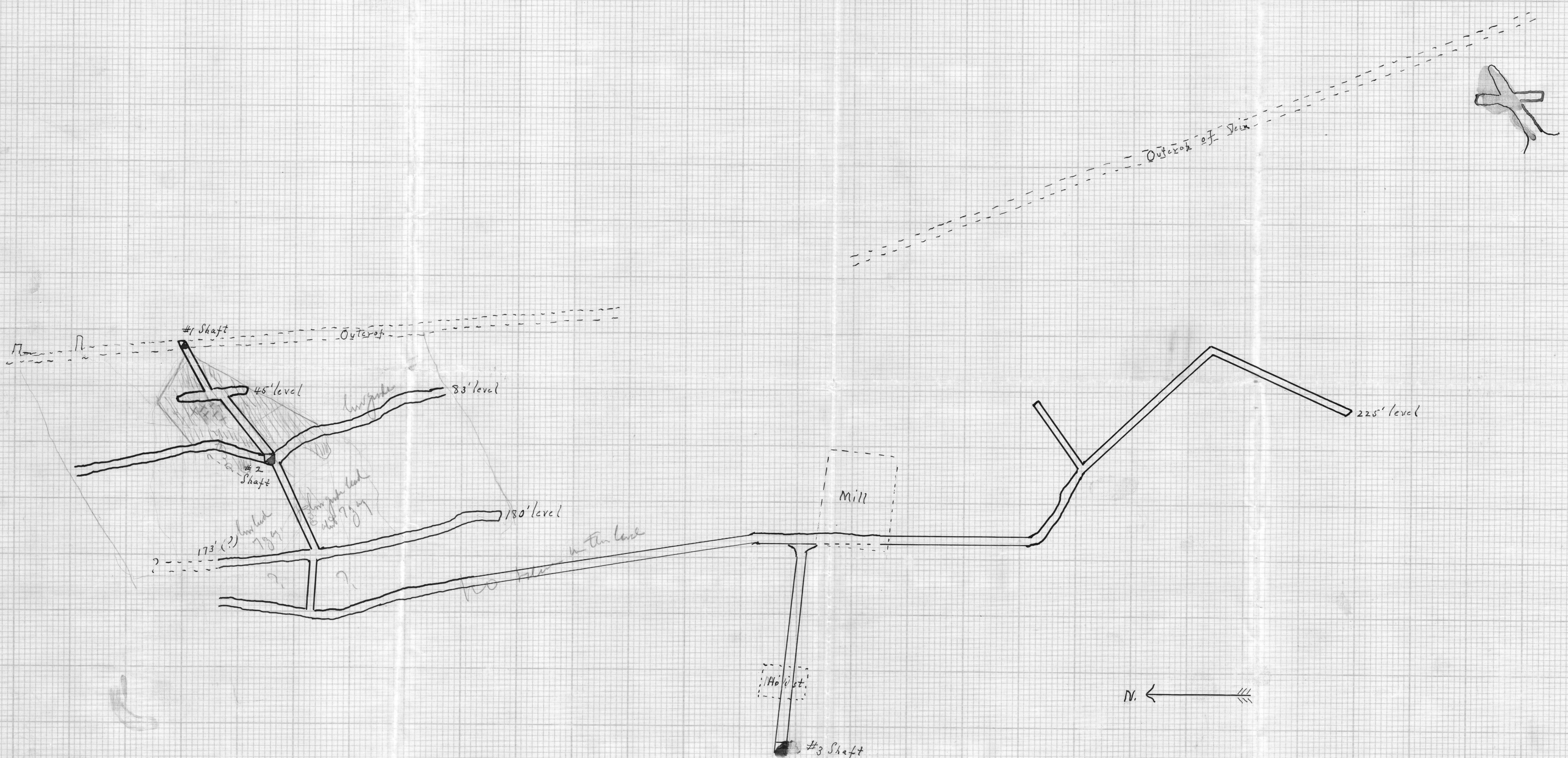
DIAMOND JOE (Section on Vein) Scale 1" = 20'.



Gohrings Map. Aug. 34



Scale 1" = 400'



DIAMOND JOE MINE.

Scale 1" = 40'