



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](mailto:inquiries@azgs.az.gov)

The following file is part of the G. M. Colvocoresses Mining Collection

### **ACCESS STATEMENT**

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

### **CONSTRAINTS STATEMENT**

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

### **QUALITY STATEMENT**

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

J. T. MURPHY  
SUPERIOR,  
WISCONSIN

August 29, 1931

A 9/10  
31  
SEP 1 - 1931

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

Dear Mr. Colvocoresses:

Because of your letter in the Engineering and Mining Journal of August 24th I am sending this note of congratulation not particularly because I happen to have a mining prospect but because I know of many old mining prospects and old mines which might become valuable properties if just a little money was spent on their investigation.

I am sending you old reports on the Black Rock property near Wickenburg and while they may not interest you they will at least confirm the theory about such properties as outlined in your good letter to the Journal.

I was not personally interested in this property when the \$200,000 was spent on it in a crazy way by a bunch of spiritualists who had a meeting every Sunday night and asked the spirit of control what to do with their funds.

The property has never been drilled and nothing at all is known of it below the water level.

I bought the property at a sheriff's sale at the suggestion of Kirby Thomas, mining engineer, who died while examining a mine in Quebec just a few weeks ago.

When you have looked over the reports kindly return them.

Sincerely yours,

JTM-DS

J. T. Murphy

Think Bill Graham Rock  
again! Black

*Black Rock Mine*

J.T. MURPHY  
SUPERIOR,  
WISCONSIN

*A 17, '32*  
August 2, 1932

Mr. George H. Colvocoresses,  
Mining and Metallurgical Engineer,  
1108 Luhrs Tower,  
Phoenix, Arizona.

My dear Mr. Colvocoresses:

About a year ago I had some correspondence with you about the old Black Rock property in the Constellation district near Wickenburg. Perhaps you will remember the old reports that you looked over at that time.

A few months ago we came to the conclusion that we would do a little cleaning up in the drift on our own account so we have been pursuing that course and shall probably continue in a small way for the present.

We have been a little bit surprised at some of the samples of rock which have been shipped to us, Samples 39412 and 39413 of plain vein rock in large pieces. Samples 39435, both numbers the same and called sample number 1 and sample number 2 we did not take very seriously because they had the appearance of having been crushed a little and might have been beneficiated.

But we thought perhaps you might be interested in the reports anyway.

Sincerely yours,

*J.T. Murphy*

JTM-DS

*Crang. Sample for terminal Air = 63.00  
Sample Air = 40.20  
#1 Air = 136.40  
2 Air = 98.00*

*Black Rock Mine*

J.T. MURPHY  
SUPERIOR,  
WISCONSIN

*A 17, '32*

August 2, 1932

Mr. George H. Colvocoresses,  
Mining and Metallurgical Engineer,  
1108 Luhrs Tower,  
Phoenix, Arizona.

My dear Mr. Colvocoresses:

About a year ago I had some correspondence with you about the old Black Rock property in the Constellation district near Wickenburg. Perhaps you will remember the old reports that you looked over at that time.

A few months ago we came to the conclusion that we would do a little cleaning up in the drift on our own account so we have been pursuing that course and shall probably continue in a small way for the present.

We have been a little bit surprised at some of the samples of rock which have been shipped to us, Samples 39412 and 39413 of plain vein rock in large pieces. Samples 39435, both numbers the same and called sample number 1 and sample number 2 we did not take very seriously because they had the appearance of having been crushed a little and might have been beneficiated.

But we thought perhaps you might be interested in the reports anyway.

Sincerely yours,

*J.T. Murphy*

JTM-DS

*Comp. Superf. tunnels*  
 $\text{Area} = 63.00$   
 $\text{Lump. Area} = 40.20$   
 $\# 1 \text{ Area} = 136.40$   
 $2 \text{ Area} = 98.00$



J.T. MURPHY  
SUPERIOR,  
WISCONSIN

August 29, 1931

A 9/10

31

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

SEP 1 1931

Dear Mr. Colvocoresses:

Because of your letter in the Engineering and Mining Journal of August 24th I am sending this note of congratulation not particularly because I happen to have a mining prospect but because I know of many old mining prospects and old mines which might become valuable properties if just a little money was spent on their investigation.

I am sending you old reports on the Black Rock property near Wickenburg and while they may not interest you they will at least confirm the theory about such properties as outlined in your good letter to the Journal.

I was not personally interested in this property when the \$200,000 was spent on it in a crazy way by a bunch of spiritualists who had a meeting every Sunday night and asked the spirit of control what to do with their funds.

The property has never been drilled and nothing at all is known of it below the water level.

I bought the property at a sheriff's sale at the suggestion of Kirby Thomas, mining engineer, who died while examining a mine in Quebec just a few weeks ago.

When you have looked over the reports kindly return them.

Sincerely yours,

JTM-DS

J.T. Murphy

Think Bill Graham Rock  
after 1 Black

BLACK ROCK MINE

(note by J. H. S.)

Judging from the three reports by Woodbridge, Merrill and Thomas the vein on which the shaft was sunk developed a width of two ft. of ore which would only run about \$4.50 per ton except where pockets of sulphides were found in which values were as high as \$30.00 but the quantity is entirely problematical.

Woodbridge estimated in 1909, 6,000 tons of \$6.00 ore developed, but since working costs would probably exceed \$6.00 the net value of this reserve was nil and this ore may since have been mined and shipped.

The three engineers mentioned, agree that the property is merely a prospect and are rather luke-warm in their recommendations which, however, seem to favor some additional development on the chance that sufficient high grade ore may be found in the underlying sulphide zone to permit profitable operations.

The Black Rock was examined some months ago by W. B. Gohring, who told me over the 'phone that he considered it entirely worthless and turned it down on behalf of his clients. Gohring says that the surface is largely occupied by a red hill composed of some altered volcanic rock which does not seem to have any values whatever. The shaft is in a gulch some distance from the hill and the shaft and tunnel workings are now caved and could not be examined until considerable money had been spent in cleaning them out and reopening. The vein along the outcrop is not over two ft. wide and probably contained some gold, but it does not appear possible that it could be worked with profit, unless very high grade values should be found of which, according to Gohring, no evidence exists and no promise is apparent.

September 11, 1931

STATEMENT OF AN EXAMINATION OF THE BLACK ROCK PROPERTIES OF THE  
DULUTH ARIZONA COMPANY OF SUPERIOR, WISCONSIN

Arizona-Duluth Mining Company,

Gentlemen:

The following is a report of my findings after an examination of your property near Wickenburg, Arizona;

These properties consist of the following named eight lode mining claims, to wit: Hobson's Choice, Mercury, Gold Bug No. 2, Olympia, Olympia Extension, Cacti, Rosalind and Brooklyn. They comprise an area of approximately 139.5 acres and form, with the exception of the Brooklyn a compact group. They lie in Yavapai county about three miles northwest from Black Rock peak and about sixteen miles northeast from the town of Wickenburg, which is the nearest railway point. The Santa Fe, Prescott & Phoenix railroad runs through Wickenburg, and the new Santa Fe branch west to the Colorado river, which is ultimately to be a part of the main line of the Atkinson, Topeka and Santa Fe road, starts at that point and is in operation to Parker, on the Colorado river. Spring and Slim Jim gulches cross the property debouching a mile or two to the west in Hassayampa river; a fair, though mountainous road connects the property with Wickenburg which is the base of supplies.

Many mines are situated in the general district of which the Black Rock forms a part. Some of these are idle and have been so for years and for various causes, some are active, some are resuming operations after long inaction. Precious metals were first found in the region in 1863, when placers were opened on Hassayampa and other streams. This was followed by a great activity which diminished with the fall of silver and the attitude of the Apaches. After railway connection was made with Prescott and Phoenix a moderate enlivenment occurred that has continued to this time. It is impossible to determine the production of the region, but it has doubtless been many millions of dollars. Now the more important properties are the Congress that has been opened to a depth of about 5,000 feet; the Octave that is said to have 150,000 tons of ore blocked out and to have shown an average extraction of about \$8 for the past four years; the Vulture, a famous old mine now being



being reopened; the Planet-Saturn, Crown Point, Constellation and others. In the immediate vicinity of Black Rock are many small properties and the remains of scores of arrastras in which former prospectors and miners worked the richer oxydized ores of surface, taking therefrom paying quantities of gold. At the present time a very considerable excitement is right to the West of Wickenburg, in what is known as the Salome District, where exceedingly rich small pockets of gold have been found practically on surface.

The ores of this district are found in quartz veins cutting across the country, in a generally northwest and southeast direction; at this property the main vein has a course about 20 degrees north or west. They are of great frequency and of apparent strength on surface. Most of them appear to dip to the north. They are strongly iron stained on their croppings, and frequently carry free gold in sufficient percentage to permit more or less profitable panning. In general it is a region of deep, strong veins, well defined at depths to which the deepest work has been carried down, of rather bunchy mineral enrichment, with ores oxydized close to surface but changing to iron sulphides with depth, these sulphides often carrying very high values in gold, and some silver.

The country is syenite, biotite, granite, porphyry and other eruptives. At the shaft the formation has been cut to a depth of something more than 200 feet, showing a granite footwall, a granite porphyry hanging lying between the main vein and a parallel vein coming in from the north and dipping to the south toward an intersection with the other, and back of this north vein a diorite foot. As a general rule in that district payable veins carry one diorite wall.

That vein upon which most of this company's work has been done can be traced almost continuously by surface outcroppings for a distance of more than 3,400 feet. A photograph of a portion of this outcrop, taken a few feet from the shaft, accompanies this report. This vein courses across the Olympia Extension, Olympia and Gold Bug No. 2. For much of this distance a parallel vein, dipping to the south, can be traced along its outcropping, which varies in distance from that on which the shaft is sunk from 150 to about 50 feet. These two veins vary from a foot or two in width to six or seven feet, more or less obscured by the fallen debris

of the outcroppings, so that it is difficult to determine the actual width of the vein in place. Within 92 feet of the east end of Olympia Extension claim a ten ft. testpit has been sunk on the outcrop of the lode, this defining its character, which is strong and very well oxydized. At this point it is more than five feet wide and dips to the north 15 degrees. The dip of the north lode is impossible to determine at this point. At occasional points along this claim and the Olympia, east of the shaft, other shallow shafts and testpits have been sunk, all of them in the vein and all defining it to be of the same nature as where first cut on the Olympia extension. West from the shaft the two veins cut across an arroyo and still to the northeast they can be followed across to where cut by Spring gulch, on a practically continuous outcropping of iron stained quartz.

On the Brooklyn claim, which lies by itself to the southeast of the general group, some work has been done cutting 30 feet into a very strong dyke running into the mountain over which this vein outcrops. A similar, and possibly the same, vein has been opened by a short cross-cut and shallow shaft near the center of Rosalind claim, where the nature of the rock is especially favorable, and where gold can be readily panned from the quartz. The distance between these two openings is not far from 2,000 feet.

Hobson's Choice claim was located for water rights and a reservoir has been sunk there and connected with the location, engine and boiler houses, etc. by a pipeline nearly 3,000 feet long. This gives an abundant and ample supply of good water for all purposes at slight expense.

Mercury and Cacti claims carry parallel lodes that, especially on Mercury, outcrop strongly and well. Cacti is cut by Slim Jim gulch and the remains of old arrastras were seen there.

Present workings on the property are confined to the Olympia claim. They consist of a shaft, a tunnel, and drifts on two levels, with occasional crosscuts, winzes and raises on the vein. In all 815 feet of work have been done here as follows:



Shaft, depth - - - - -	300 ft.
Tunnel, giving access to shaft at first level- - - - -	90 ft.
East drift, 1st level, from breast of tunnel to shaft- - - - -	154 ft.
West drift, 1st level, from shaft to limit of work- - - - -	41 ft.
Crosscut, raise and winze, from drift 60 ft. east of shaft - - -	90 ft.
Raise at intersection of tunnel and drift - - - - -	40 ft.
Second level drift, 100 ft. below 1st west of shaft- - - - -	30 ft.
Crosscut in same - - - - -	10 ft.
Second level, east - - - - -	45 ft.
Crosscuts in same- - - - -	15 ft.
	815 ft.

This shaft has been sunk in the vein and is, therefore, not on a continuous angle but changes its course from time to time. For the entire depth a plan of the shaft and cross-section of the formation cut are as follows:

Near the bottom the vein straightens up, apparently from a connection with the north vein, and the shaft will doubtless be diverted to correspond. Its foot is in hard diorite. From Slim Jim gulch, at a point near to and southeast of the shaft, a tunnel is driven 90 feet into the vein, is there turned into a drift along the vein and continues along it for 195 feet, as noted above, cutting the shaft in its course.

In the underground workings nineteen samples were taken of the vein, in back and sides of the drifts, etc. These were secured every ten feet where possible, though in places the vein was exposed but in part, and at some points the drift was in country rock. Collated, these samples show the following:

Location	No.	Ft. from breasts	Width	Assays and values per ton		
				Oz.	\$ ct.	
Upper level west.	1	1	2.0	.40	8.20	Vein dips 30 degrees from vertical, hanging wall in vein matter of iron stained quartz.
	2	11	3.5	.15	3.08	
	3	21	2.5	.38	7.79	
	4	31	3.0	.10	2.05	
	5	51	2.0	.22	4.51	
	6	61	2.5	trace		10' west of shaft
	7	71	1.0	.26	5.33	10' east of center of shaft; considerable iron sulphide shows along vein in this vicinity, and would probably improve values somewhat.
	8	80	2.0	.12	2.46	Tunnel here is in foot-wall, but with part of vein shown.
	9	88	2.0	.10	2.05	Sample probably does not show full width of vein, for same reason as above.
	10	100	1.5	.60	12.30	Same remark as above.
	11	115	2.0	.17	3.49	The entire vein shows in drift; this is intersection of 10' cut north in granite-porphry, and of raise and 40' winze, both of which are doubtless in vein, the winze is filled with water.
	12	133	2.5	.32	6.56	Measurement not full width of vein.
	13	148	2.0	.22	4.51	Same as above.
Upper level east.	14	160	1.5	.14	2.87	Sample seems to be full width of vein, (Sample is at junction of main tunnel, and of raise running up 40' on vein from which ore has been stopped and shipped.
	15	180	3.0	.30	6.15	Sample of 15' from E breast, in soft matter (Sample in iron sulphide which comes in here the vein shows rather hungry looking and seems to be split up.
	16	10	1.0	1.40	28.70	10' W of shaft.
	17	20	1.5	.21	4.30	10' E of shaft.
	18	40	2.0	.20	4.10	Sampled at face of cut cutting S of vein which is split here.
	19	60	2.5	.28	5.74	



Average width of vein so far as could be determined, some samples being not full width on account of lack of full exposure, as noted, is 2.1 feet, the average value of the rock sampled is \$6.01, and eliminating the sample taken in iron sulphide (no. 16) is \$4.49 per ton. By the "foot ounce" method of computation, probably more nearly correct, the values are, including all the one high iron sample, \$4.51.

These values are disappointingly low, less, in fact, than those of other and former samplers, I am informed. A considerable amount of rock is about the mill, taken from the outcroppings and upper work, that will undoubtedly run much higher than anything I have shown above. But this surface rock is not what is depended on to make a permanent mine, and I did not take more than one specimen sample, which gave a return of \$29.75 per ton. This sample was not as good as many others that might have been taken. Indeed the nature of the rock about the mill is particularly good and will give excellent returns. But this result is not to be given too much weight in determining the value of the ore deposit in general.

The winze sunk from the upper level drift is said to have gone down forty feet, but it is now filled in part with water and could not be examined. The crosscut at the breast of the east drift, second level, was intended to cut the vein beneath this winze and be connected with it, but this work has not been done. In view of the amount of work so far accomplished I am unable to estimate more than 6,000 tons of ore actually proved. In any estimate of "possible ore" one might perhaps consider that the entire outcrop of the main vein is as promising as where the shaft was sunk, in which case the amount of ore would reach several hundred thousand tons. Admitting the full results of the sampling done, and considering the proven ore, there is in sight a gross value of some \$36,000.

It will cost not far from \$4 a ton to mine the ore developed, and the cost of milling at a point so far removed from a base of supplies will be in the neighborhood of \$2 a ton. This is supposing that reduction is possible under comparatively simple methods, which is apparently reasonably sure. There are not no reduction facilities on the ground, the old mill being valueless except for what material may be taken from it for use in other processes than those originally adopted. With a loss of 10% in every ton of



ore treated, which is not excessive and should be figured on, there will be a net loss on every ton of ore treated, supposing present conditions underground are permanent and nothing better is to be looked for.

Such being the case the company is against this proposition: Is it best to close and cease operations, abandoning the large sum that has been spent here, or is there sufficient promise in the ground at the bottom of the present workings and elsewhere throughout the property, is there a hope to be drawn from the workings of other and deeper mines in the same district to warrant the expenditure of more money in further prospecting and sinking? In the study of this question we must consider the outlay heretofore made in machinery, reduction works, and in part also, in the underground development as wiped out and of no avail.

These veins are strong and prominent, and look very well on surface, exceptionally well, in fact. The district generally is one of deep veins that carry enrichment at considerable depths. While this enrichment is bunchy there is no question of its presence. But the vein out at the bottom of the shaft is meagrely charged with gold; it is narrow and tight and does not look very well, at that point. Unless there is a marked improvement soon it is not worth following. But it must be remembered that this is not uncommon, indeed, is rather the rule, in this immediate section. The Congress, Octave and other successful and important mines have shown an impoverishment at or near water level, and a corresponding improvement lower down and it is more than possible, is even quite probable, that the same condition may exist here. Then, again, the shaft left the main vein near the 200 ft. level, and has been since then cross-cutting the country in the search of the north vein. This especially makes the property look worse than it should. I do not think that the Olympia vein has been tried out and found wanting by the work done; it should be sunk on to greater depth, and should be carefully followed, nor permitted to become lost. If the Olympia vein should be considered worthless by reason of the work done upon it the opportunities for profitable exploration of the property are limited to some other portion of the ground, either elsewhere on Olympia or on some other vein. There is no question but the Olympia looks as well on surface as any other explored at all, or exposed on the entire property; had it not been so work would doubtless have been begun elsewhere.

The veins cut on the Rosalind and Brooklyn claims look well, but no better than the Olympia. On Brooklyn the highest surface values found were developed in a shallow tunnel, which has a distinctly promising appearance. However, the work done on all of these mentioned is but shallow, and it is entirely probably that they too will cut into impoverishment at some depth approximating the water level. It is scarcely advisable to scatter development to any such extent as an abandonment of the Olympia in favor of any of them would necessitate. Let whatever main work is to be done continued in the Olympia, with the hope that, on the vein, and with depth, re-enrichment may come in, as it has elsewhere in the region. Perhaps a little inexpensive prospecting at the Brooklyn and Rosalind will be advisable, as it can be done at very slight expense and quickly.

I have no doubt that the oxydized ores on surface of these veins can be mined and milled at a profit. On the four prominent veins exposed is a tonnage that would serve a ton stamp mill sometime, and when the permanent orebodies are developed at depth this upper ore will have an important bearing on the grade of the rock taken to mill. The treatment of this surface rock should be undertaken merely as an adjunct to that of beneficiating the ores derived from deeper.

In my opinion the prospect of securing ores of sufficient value to pay for operating, and in ample quantity, underground in the continuation and course of present main openings is not good. The intention when the shaft was started was to follow a vein, not to crosscut the country at depth, and this should be adhered to strictly in the hope of re-entering a zone of higher gold values, which the experience of the district leads one to expect with some assurance.

The Company has a good engine house and machine shop, several excellent dwellings and a boarding house with accommodations for a large crew of men. Its machinery equipment includes five "West Coast" type gasoline engines, varying in size from a 5 hp to a 54 hp and of a total horsepower of 129. One of these drives a compressor plant that works one drill and a pump, though it is too small to operate both at one time. The mine, fortunately, does not make much water and a short time takes out what water accumulates. There is a large hoist, not especially adapted for this work,



but good enough for the present. It was designed for a depth of 3500 ft. Shaft was originally arranged for a cylindrical skip running on small side wheels, but a bucket is not used. There is a mill building, large enough for ten stamps; but which was fitted with a blake crusher, cornish rolls, etc. and cyanide tanks. Cornish rolls are not adapted to this rock, and there should be a stamp battery in their place. Both crusher and tanks are available for ore reduction and it is probable that these will require some changes to fit them for the ores of the district, though this is a matter for future consideration.

DWIGHT E. WOODBRIDGE

Duluth, Minnesota, May 1st, 1909.

THE CONSOLIDATED KANSAS CITY SMELTING & REFINING CO.

El Paso Smelting Works Branch--El Paso, Texas, January 31, 1911

Bought of Duluth-Arizona Mfg. Co.

Address Wickenburg, Arizona

Lot 2021

Classification Ore

Car No.	init.	Weight Wet H <sub>2</sub> O	Dry )	1/21	New York Quotations January
26589	At	2114	1 2092	Silver	53.0

Aug ozs	Ag ozs	Ins.%	Fe%
2.88	1.4	53.4	18.3

Assay and Analysis per ton

	Conditions	Rate	Values per ton	Total
Gold 2.88		20.00	57.60	
Silver 1.4	Ozs 95	53.0	.70	
Iron 18.3		5	.92	59.22

Deductions

Treatment		2.00
Bricking		
Insoluble 53.4	8	4.27
		6.27
	Price per ton	52.95

Gross proceeds	1.046 Tons @ \$52.95	
Less freight from @ 9.10 per ton		3.67
Less excess freight switching		2.00
Less sampling		3.00
Balance due		46.72
		55.39
		55.39

Made by

G--Inv. Clerk

Approved  
F.C. Earle, Manager

AMERICAN SMELTING & REFINING CO.  
(OMAHA PLANT)

Omaha, Neb. Nov. 10th, 1905

Mr. W. H. M. Wirling,  
Sioux City, Iowa.

I hereby certify that sample of Ore received from you show the following results per ton of 2,000 pounds:

No.	Mark	Ounces gold	Ounces silver	percent copper
		1.84	0.565	13.6
		1.26	9.54	13.1
		0.04	2.36	9.2

(Signed) Geo. C. McIntyre  
Assayer



MEMORANDUM  
re

DULUTH - ARIZONA

By Kirby Thomas, 25 Broadway, N.Y.

The Duluth Arizona Company owns what was formerly known as the Black Rock mine. The property includes eight patented claims with several good houses and some mining machinery and a mill. It is located about 12 miles East of Wickenburg in the Constellation District.

The Black Rock Mine was purchased about 10 years ago for \$30,000 by the Duluth-Superior Syndicate. A Company was organized, and, according to local report, something like \$250,000 was spent on the property at various times for various purposes. The mining development is limited and not conclusive. A mill was erected to treat the ore by cyanidation and the operation of this was abandoned when it developed that there was not enough ore available to operate it regularly. This blunder of the premature installation of the mill and certain extravagant and unsound policies with regard to the equipment, involved the Company financially and the property has been closed down for several years. In the meanwhile the bondholders have been protecting the property and controlling it.

Owing to the limited development work on the property it is still in the prospective stage. The work done is mostly on a quartz vein which showed rich gold ore at the surface and the work disclosed that up to a depth of 200 feet the vein carried good values in gold, mostly associated with iron sulphide. Several samplings of the property have been submitted to me, but I believe that the sampling made by Mr. Rose of Salt Lake City, giving an average of \$10 in gold per ton to developed ore, is about correct. I personally knew Mr. Rose and after he had made this examination conferred with him in Mexico and I believe that his sampling can be depended upon.

The small amount of ore which was developed at that time has been milled in part and is not now available for measurement. At any rate there is no developed ore tonnage which can be considered at this time in connection with the proposition proposed.

The vein is accessible at the tunnel, which goes to a depth of 120 ft. and there it has a width exceeding 3 ft. and contains sulphides

with gold values. Apparently the shaft left the vein shortly below this tunnel level and was driven on an incline to cut an iron vein which apparently has dipped toward the quartz vein which lies roughly parallel to it and northeast of it. As a result the shaft has not reached a point where it gives any important information. Consequently until the shaft is extended to a greater depth on the quartz vein and until it cuts the iron vein, it affords no information of value. Under the conditions it may be expected as probable that the continuation of this shaft will develop more ore and there is a possibility that it might disclose ore both in the quartz vein and in the iron vein.

The quartz vein on the property is of a distinct type and genesis from the iron veins. The latter represent mineralization along roughly parallel fault planes and the iron vein system on the Duluth Arizona is related directly to the same veins on the Monte Christo property, and these veins have the same nature and genesis as the Monte Christo veins. The quartz vein which is the main feature of this property developed so far apparently does not show in the Monte Christo mine nor does it run in that direction.

There has been no development of consequence done on these iron veins on the Duluth Arizona. They show some copper stains and some copper and iron sulphides near the surface and are reported to carry small gold veins.

The quartz vein on the Black Rock is apparently chiefly gold bearing and the iron veins are more likely to carry silver and possibly copper and other metals, with some gold.

The property should be developed by sinking the shaft to 300 to 500 feet and drifting and crosscutting on the quartz vein. A small amount of additional equipment would be required to do this and the buildings on the property would be of value in connection with this proposed work. Until this work is done, or equivalent work, there can be no certainty of the property being a mine.

I would not feel justified in advising the purchase of the property outright in its present condition.



There might be a speculation in such a purchase and if the bondholders and the stockholders would offer the property for exploration and development or would agree to turn the property into a development and exploration company on condition that a reasonable campaign of exploration be carried out, the proposition would be justified and attractive. I do not know whether the bondholders and stockholders could be brought together to join in such a plan or not. It has occurred to me that if some outside interests would take this matter up and put up a small amount of money to get it under-say that the parties who are already in the proposition might be induced to come forward with other money to save their investment by reason of their faith in the property, as evidenced by their earlier investment.

The proposition has merit and it is reasonably worth while to try to putt it together and to provide for the development as planned.

These general recommendations are respectfully submitted, together with Mr. Merrill's statement concerning the property and his letters and some sketch maps made at the time of my examination of the property.

# Black Rock

## A STATEMENT CONCERNING THE DULUTH-ARIZONA CLAIMS

The property of the Duluth-Arizona Mining Company, formerly known as the Black Rock Mining Company, is located in Wickenburg District in Yavapai County, Arizona. It is about 12 miles Northeast of Wickenburg with which it is connected by a good wagon road.

The property consists of eight mining claims; viz: Gold Bug, Olympia, Olympia extension, Cacti, Rosalind, Brookly, Mercury and Hobson's Choice. The claims are not all full mining claims and the whole area is about 140 acres. The claims are all patented and the title is in the name of the Company.

### MINERAL LODES

These claims are strongly mineralized with quartz veins cutting across the country rock, which is granite, syenite, porphyry and other eruptives to a smaller degree. There are many veins all appearing well on the surface. Some of them are so strong that they can be seen for miles. They are all strongly iron stained on the surface and carry gold values that permitted of profitable panning to the natives. Ruins of arrastras are present on all sides.

The vein on which most prospecting has been done runs the whole length of Gold Bug, Olympia and Olympia Extension, a distance of 3400 feet. This vein varies in width from two feet to six or seven feet and carries free gold in rotten or oxidized quartz. Parallel with this vein on the same claims for most of the distance is another vein which dips toward the first at angles about 15 degrees. At various places on the first vein mentioned, test pits have been sunken to determine the vein and in all cases the vein is shown to be strong and well defined. The north vein is not so well defined and it has not been so persistently prospected but from a geological standpoint, it is promising enough to be tested. The samples taken from the vein gave average values of 50¢ to \$2.00 per ton.

The Mercury and Cacti both carry parallel lodes which, especially on the Mercury, are well defined and look well. The Rosalind has a strongly marked vein of quartz similar nature to the Olympia. On this claim is a shaft partially filled with water which shows the



vein well. The vein shows high values in gold even by panning. The vein from the Rosalind probably extends into the Brooklyn where it shows better than in the Rosalind. This vein has been prospected some and shows well both as to width and values.

The Hobson's Choice is north of the others and was taken for water rights and has a spring that produces lasting water in considerable quantities. A pipe line has been laid to the camp to which sufficient water for all purposes may be taken.

#### DEVELOPMENT

Several hundred feet of development work has been done on all of the claims combined, but the work was all done without competent direction and therefore does not show up the property well. It is not claimed that the development work shows the value of the money put into it.

Most of the work has been done on the Olympia. On this claim is a tunnel driven from the gulch side into the vein and thence following the vein about a hundred and seventy-five feet. This drift on the vein is about 120 feet below the surface and shows the gradual changing from the oxidized quartz to the sulphides. A shaft was sunken down from the surface through this tunnel and down some distance deeper. As this shaft left the vein soon after it left the tunnel it is of very little value even though it is partially filled with water. About 40 feet west of the shaft in the tunnel there is a winze sunken in the tunnel on the vein and at the depth of 40 feet it shows a strong sulphide vein about 40 or more inches wide, with a total width of more than 50 inches. I am not sure but that this winze is filled partially with water at this time. The development work on the Olympia shows conclusively that the ore turns to sulphide with depth and in that it is similar to the other mines of this region. Other mines of this region show that the ore below the water level increases in values very rapidly and that they hold out to a depth of over 4000 feet, as in the Congress. As far as we have investigated the sulphide zone it has increased in width and has shown an increase in values.

#### VALUES

The values have varied greatly with the different samplers that we have sent out. Mr. Fred H. Perkins of Salt Lake City took his samples

largely from the sulphide zone as that is to be the permanent ore and found the average value to be a trifle over \$25.00. Mr. Geo. W. Rose of Salt Lake City sampled all of the available places before the winze filled with water and found the average value a little over \$10.00 per ton. Other estimates have gone as low as \$8.00 per ton and others have gone as high as \$12.00. From my own assaying and sampling, I am inclined to take the last value as being nearly correct.

A ton of sulphide ore was shipped to the smelter at El Paso, Tex. on Jan. 21, 1911, and on Jan. 31st the following report was made:

Gold	2.88 oz.	\$57.60	
Silver	1.4 oz.	.70	
Iron	18.3 oz.	.92	\$59.22 per ton

Deductions			
Treatment		2.00	
Insolubles		4.27	<u>6.27</u>
Total, net per ton			\$52.95

This ore consisted of sulphides from the shaft below the drift and tunnel level on the Olympia.

#### CONCLUSION

I think that the facts justify the statement that this property is promising and that it will warrant careful and complete exploration and development.

The large mines of this district all show a zone at the water level that is leaner than it is above or below it, there being a great enrichment with depth. This mine holds its own and in fact is somewhat wider and better at the beginning of the sulphide zone. Below is a sketch map of the claims.

J. A. MERRILL