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Arizona Geological Survey
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PRINTED: 04/17/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: MYSTERY HILL MINE GROUP

ALTERNATE NAMES:
CLAYTON
DIANA MAY
EAST SIDE
MILDRED
BLUE BELL

LA PAZ COUNTY MILS NUMBER: 9

LOCATION: TOWNSHIP 10 N RANGE 13 W SECTION 17 QUARTER W2
LATITUDE: N 34DEG 12MIN 23SEC LONGITUDE: W 113DEG 38MIN 12SEC
TOPO MAP NAME: IVES PEAK - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
COPPER OXIDE
SILVER
GOLD LODE
LEAD
FLUORINE FLUORSPAR

BIBLIOGRAPHY:
KEITH, S.B., 1978, AZBM BULL. 192, P. 115
ADMMR MYSTERY HILL MINE GROUP FILE
ADDITIONAL WORKINGS IN SE1/4 SEC 17 & E CEN &
CEN SEC 18

NAME OF MINE: Mystery Hill
(30 mi. N.E. of Bouse)

COUNTY: Yuma
DISTRICT:
METALS: Cu, Au

W

OWNER: Mrs. M.A. Reynolds, Bouse

OPERATOR AND ADDRESS:		MINE STATUS	
DATE:		DATE:	
11/44	J. B. French, Box 306 Bouse	11/44	Producing
		1/45	Closed
4/45	Coronation Mng.Co., Chas. Milton, Mgr., Bouse	4/45	Developing

MILTON, Charles
P. O. Box 387
Bouse, Arizona

See M file - re request for mine reports 2-12-45
" " " " " access road & int. to hold forms 3-20-45

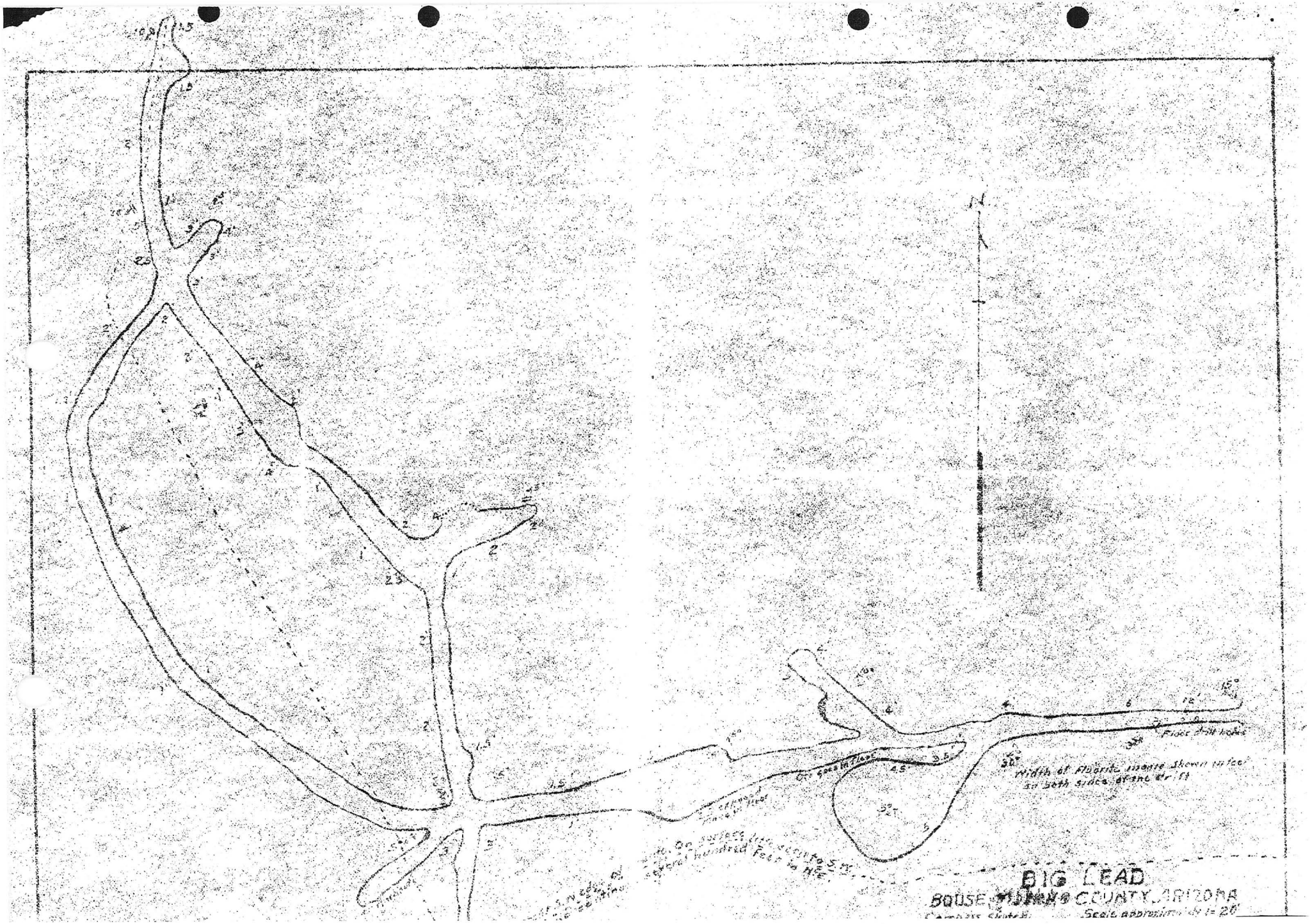
See MYSTERY HILL - re request for bulletins 3-26-45

MYSTERY HILL (MILL?) MINE GROUP

Yuma County
Alamo District

Section 10N 13W, W. Cen & SE¼ 17,
E. Cen. & Cen. 18

See: Index of Mining Properties in Yuma Co., Az.
Bulletin 192 - 1978, Pg. 114
Bureau of Geology and Mineral Technology


BIG LEAD
BOUSE MINES COUNTY, ARIZONA
Width of fluorite insets shown in feet on both sides of sinuous drift
Face drift inches
Ore seen in floor
Scale approximately 1" = 20'

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

VERBAL INFORMATION SUMMARY

1. Mine file: MYSTERY HILL MINE GROUP
2. Mine name if different from above:
3. County: La Paz
4. Information from: Don Earle

   Company: Sun Land Leasing Co.

   Address: P.O. Box 20793

   Wickenburg, AZ 85358

   Phone: 684-5852
5. Summary of information received, comments, etc.:

Mr. Earle reports purchasing 27 unpatented S and O claims that include the Mystery Hill Mine Group. The property was leased to Barrett Sleeman of Christina Exp. This past year the company drilled 2 holes chasing a historic tale but the holes were not angled enough to intersect the mineralized structures. Considering this, it is interesting to note the assay results did contain some anomalous gold values.

Date: December 20, 1988

Nyal J. Niemuth, Mining Engineer

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine BIG LEAD MINE

Date April 20, 1955

District MOHAVE COUNTY ??

Engineer MARK GEMMILL

Subject:

Mr. Townsend has reported on several occassions that he had given options on this property, but nothing has materialized ao far.

No. 156 Du

Phoenix, Arizona,
Nov. 2, 1944.

CHAS. A. DIEHL

ARIZONA ASSAY OFFICE

Phone 3-4001 815 North First Street P. O. Box 1148

MINERAL RESOURCES
NOV 8 1944
ARIZONA

This Certifies That samples submitted for assay by Mr. Chas. H. Dunning. contain as follows per ton of 2000 lbs. Avoir.

MARKS	SILVER Ounces	SILVER Tenths	VALUE (Oz.)	GOLD Ounces	GOLD Hundths	VALUE (Oz.)	TOTAL VALUE Of Gold and Silver	% PERCENTAGE CaF_2	% PERCENTAGE LEAD	REMARKS
Tails 1-CL								76.12		
Tails								20.28		
Concentrates.								95.57	.03	

Charges $ 13.00

Assayer ARIZONA ASSAY OFFICE

May 22, 1946

Mr. J. C. Townsend
Bouse, Arizona

Dear Mr. Townsend:

I have yours regarding the fluorite or Big-Lead property and I would be glad to recommend this property to anyone for thorough investigation.

I liked this property and its very persistant vein, and although I made no detailed examination, I certainly feel that such is justified and would be glad to recommend it accordingly.

So please advise whom you would like to have me write to, and I will be most glad to do so.

Yours sincerely,

Chas. H. Dunning
Director

CHD:LP

Bouse-Arizona May 20th., 1946

Mr. Charles H. Dunning, E. M.

Director, Department of Mineral Resources

304 Homebuilders Building

128 N. First Avenue-Phoenix, Arizona

DEPT. MINERAL RESOURCES
RECEIVED
MAY 22 1946
ARIZONA
PHOENIX

Dear Mr. Dunning:

I am negotiating a sale of the "BIG-LEAD" properties-the fluorspar claims- to Mr. A. G. Johnson of the Mahoning Mining Company of Rosiclare, Illinois, and the party who got me this contact has recently received a letter from this prospect, requesting "whatever information is available from the Bureau of Mines of Arizona regarding the "Big-Lead","prior to sending Engineeer to examine for them the possibility of their acquisition by them.

Now, Mr. Dunning, I know that no Report made by the Department has been made, nor does there exist a geological Survey of the Big-Lead, but, I do know that you know these properties as you have been upon them in the past, and, that being the case, I respectfully request that you write and tell these Illinois people if the Big-Leade is worth their while to examine, or not.

Perhaps I should not ask you to go to this trouble, but knowing your good nature, and your untiring effort to bring new operators into the Arizona mining field, it is because of this knowledge, that I voice the present request .

I am under great obligations to you for past co-operation, and beg your indulgence for bothering you at this time.

With personal regards, and thanking you in advance for complying with this present request of mine, I remain.,

Sincerely yours,

James C. Townsend

J. C. Townsend

DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON ACTIVE MINING PROJECT

Date: 1/2/45

Name of Mine: Mystery Hill

Owner or Operator: J. A. Whitney

Address: 1706 E. McKinley Phoenix

Mine Location: 35 Miles north of Bouse Ariz.

Filing Information

File System:

File No.:

This chart to be used for gallons of gasoline required per month.

PRESENT OPERATIONS: (check X)

Production: X; Development: ; Financing: ; Sale of mine: ;

Experimental (sampling): ; Owner's occasional trip: ;

Other (specify):

PRODUCTION: **Past and Future.**

	Tons
Approx. tons last 3 months	
Approx. present rate per 3 months	Stone
Anticipated rate next 3 months	300
If in distant future check (X) here	~~X~~

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	Miles or Hours Per Month	Gallons Required Per Month
Personal Cars			
Light or Service Trucks	1-heavy	1200	120
Ore Hauling Trucks			
Compressors			
Other Mine or Mill Eqpt.			

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

Copper

REMARKS:

OK

ARIZONA DEPARTMENT OF MINERAL RESOURCES

By: Chas. H. Downing

DEPT. MINERAL RESOURCES
RECEIVED
OCT 17 1944

DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON ACTIVE MINING PROJECT

Date: October 16, 1944

Name of Mine: Mystery Hill

Owner or Operator: J. B. French, Superintendent

Address: Box 306, Bouse, Ariz.

Filing Information

File System:

File No.:

This chart to be used for gallons of gasoline required per month.

Mine Location:

PRESENT OPERATIONS: (check X)

Production X; Development ; Financing ; Sale of mine ;

Experimental (sampling) ; Owner's occasional trip ;

Other (specify)

PRODUCTION: **Past and Future.**

	Tons
Approx. tons last 3 months	None -----
Approx. present rate per 3 months	600
Anticipated rate next 3 months	600
If in distant future check (X) here	

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	Miles or Hours Per Month	Gallons Required Per Month
Personal Cars			
Light or Service Trucks	1	1200 miles	120
Ore Hauling Trucks	1		
Compressors	1 20-HP	208 hours	416
Other Mine or Mill Eqpt.			
Total gals. gas per month -----			536

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

REMARKS: French states that actual work will start on this mine within 10 days. I recommend that he be alloted 536 gallons gasoline per month for the next 3 months, providing operations continue.

ARIZONA DEPARTMENT OF MINERAL RESOURCES

By Elgin B. Holt, Field Engineer.

DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON ACTIVE MINING PROJECT

DEPT. MINERAL RESOURCES
RECEIVED
OCT 17 1944
PHOENIX, ARIZONA

Filing Information

File System.....

File No.....

This chart to be used for gallons of gasoline required per month.

Date.....October 16, 1944.....

Name of Mine.....Diana Mae.....

Owner or Operator.....J. B. French, Agent.....

Address.....Box 306, Bouse, Arizona.....

Mine Location.....In Yuma County, 35 miles NE of Bouse.....

PRESENT OPERATIONS: (check X)

Production...X...; Development.....; Financing.....; Sale of mine.....;

Experimental (sampling).....; Owner's occasional trip.....;

Other (specify).....

PRODUCTION: **Past and Future.**

	Tons
Approx. tons last 3 months	None
Approx. present rate per 3 months	1200
Anticipated rate next 3 months	1200
If in distant future check (X) here	

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	Miles or Hours Per Month	Gallons Required Per Month
Personal Cars	1	1300	86
Light or Service Trucks			
Ore Hauling Trucks			
Compressors	1 20-HP	208 hours	416
Other Mine or Mill Eqpt.			
	Total gals. gas per month -----		502

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

Silicious copper-gold ore to be shipped to smelter.

REMARKS:

French, et al, started work on the Diana Mae mine on Oct. 12th, 1944. I recommend that they be alloted 622 gallons gasoline per month for the next 3 months.

ARIZONA DEPARTMENT OF MINERAL RESOURCES

By.....

Elgin B. Holt, Field Engineer

NAME OF MINE: Diana Mae

COUNTY: Yuma

DISTRICT:

OWNER: James C. Townsend, Bouse

METALS: Cu

W

OPERATOR AND ADDRESS: 30 mi. NE of Bouse

DATE:		DATE:	MINE STATUS
12/44	Jess B. French, Box 306, Bouse	12/44	Shipping
	& W. W. Whiting	1/45	Closed
5/45	J.C. Townsend, Bouse	4/45	Shipping
		6/45	Idle

March 26, 1945

Arizona Bureau of Mines
University Station
Tucson, Arizona

Gentlemen:

Please forward to Mr. Charles Milton, mining engineer of Carnation Mining Company who have recently taken option on a mining property near Bouse, Arizona, any bulletins dealing with the geology and mining conditions of Yuma County, especially in the vicinity around Bouse and the Swansea Mine.

This company is also expecting to operate several properties down there when they get organized.

Mr. Milton's address is Bouse, Arizona.

Yours very truly,

A. C. Nebeker
Field Engineer

ACN:LP

CC: Mr. Charles Milton

CORONATION MINING COMPANY, INC.

A Delaware Corporation—Legalized In Arizona

—«»—

Principal Offices: 927-929 MARKET STREET, WILMINGTON, DEL.
Arizona Offices: CORONATION BUILDING, BOUSE, ARIZONA

—«»—

P. O. Address BOX 387, BOUSE, ARIZONA

August 16th., 1945

Mr. H. F. Mills, Manager
Shattuck Denn Mining Corporation
Humboldt-Arizona

RE: BIG-LEAD BLUESPAR CLAIMS

Dear Mr. Mills:

As per instructions of Mr. Thomas Bardon of your Corporation, I herewith enclose my Report upon the Big-Lead, in the assurance that, if you will examine these properties, you will, no doubt recommend their acquisition.

Mr. Bardon wrote me on the 1rst. inst., but it has taken me quite a while to complete the Report referred to.

Trusting that you will give this matter the serious attention that it merits, I remain,

Yours very truly

Charles Milton

Charles Milton

INFORMATIVE REPORT UPON THE "[illegible]" MINING CLAIM GROUP:

1.- THIS GROUP carries FLUORSPAR-LEAD-SILVER and Gold values, in about the following ratio:

Fluorspar	70%
Lead	6%
Silver	7 Ozs.
Gold	$2. per ton

****

2.- FLUORSPAR:

Principal mineral-Fluorspar fluorite is a calcium fluoride, containing 51.1 percent calcium and 48.9 percent fluorine. The mineral itself is rarely contaminated with impurities, but is generally associated with other minerals from which it must be seperated for commercial use. It is lustrous, glass-like mineral, generally transparent to translucent. It may be clear and colorless, or range in color from slightly bluish through varying grades of violet, amethyst, purple, ~~purple~~, green and yellow. The specific gravity is 3.18, and the hardness 4.

It crystallizes in the isometric system, and possesses perfect octagedral cleavage. It does not effervesse with dilute hydrochloric acid, but heated with hot sulphuric acid, it gives off fumes of hydrofluoric acid, which etch glass.

Fluorspar occurs as a rock-forming mineral in various formations. It is most abundant in veins and in sedimentary formations, but is also found as a minor accessory in granite, syenite, pegmatite, gneiss and sejist, and more rarely in volcanic rocks.

SPECIFICATIONS:

METALLURGICAL: -Fluxing Grade:

Minimum Calcium fluoride-content		85%
Maximum Silica		5%
Sulphur	Not over	0.3%

For iron and steel foundries gravel to nut size, free from dust is preferred. Most metallurgical uses call for about the same grade of spar, except that in aluminum production, a 98.5% grade is required.

CHEMICAL GRADE:

Both the Ceramic and Chemical grades of fluorspar are used in pulverized form, but the "acid" grade is frequently purchased in lumps by the chemical plants and pulverized by them.

Specifications request 98% purity, with less than 1% calcium carbonate.

GLASS MANUFACTURE:

Glass industries require fluorspar of 95% purity, containing not over 3% silica, 1% calcium carbonate, and 0.12% ferric oxide. The material must be free of lead, zinc, and sulphur, and ground to at least 55% minus mesh.

ENAMELS:

Specifications require 95% to 98% grade and less than 2.5% silica, calcium carbonate, lead, zinc and otthar objectionable impurities. Material must be ground so that 60% passes 100 mesh.

~~PRICES~~
PRICES

The maximum prices for metallurgical-grade fluorspar of $25 to $28, a short ton, which became effective Nov. 2, 1942, were increased $5, per ton July 1, 1943. The base price for ceramic and acid grades of fluorspar were increased on July 1, 1943 to $37, a short ton.

.....

THE " MIG-LEAD "
oooooooooooooo

GEOGRAPHY:

These quartz mining claims are situte and located 30 miles N. E. of Bouse-Arizona, near the Bill Williams River, in Yuma County. The properties are accessible by means of a branch line of the Santa Fe Railway System, the Arizona & California Railroad, which connects Wickenburg on the Santa Fe, Prescott & Phoenix Railway with Parker, where the Arizona & California Railroad crosses the Colorado River, to tap the main Santa Fe line at Cadiz, California. A good trucking-road permits access to claims from BOUSE, the nearest shipping point; PARKER is 27 miles N. of Bouse.

CLIMATE: VEGETATION:

The terrain covered by this Infomative Report is all under 1,400' in elevation. The climate of the region is arid, with June to the middle of September the hot months, and with fine, mild winters.

The summer heat is rendered tolerable by the dryness of the atmosphere, and the cool evenings and nights, even on the hottest summer day. The climate is exceptionally healthful, as the sun emits the maximum of the beneficial ultra-violet rays daily, in excess of those to be had in certain parts of Egypt that have heretofore been highly recommended to health-seekers because of this natural phenomena.

As is characteristic of this part of Arizona,

there are two annual periods of precipitation, or so-called rainy seasons , one in summer, extending from about the middle of June to the middle of September, and the other in winter, extending from December to March. The winter precipitation is usually the heavier and more widely distributed. In both seasons, the greater part of the rainfall occurs in local showers or storms, and in hot summer weather it is often concentrated in cloud-bursts occuring in the higher mountain ranges. The distribution naturally depends somewhat on the location, with relation to the prevailing direction of the breezes, the first series of heights that interposes their presence to the prevailing direction of the winds receiving amounts somewhat in excess of even the higher succeeding ranges.

The vegetetation here is principally of the sub-tropical desert type of the spinous forms of those having little leaf surface being dominant. Every plant in the flora is either prickly or aromatic, leaf surfaces are reduced to a minimum, devices for storing water attain their greatest perfection, and the dominant color is a dull gray. The somber colors and the reduction of leaf surface are likely to deceive the observer both in regard to the richness of the flora in species and the abundance of plant life, which is far greater than one would suspect.

Cacti, in many different varieties form the most abundant vegetation in this area. CHOLLA-Opuntia fulgida of several different varieties; PRICKLY PEARS-any cactus of the genus Opuntia; Nigger-Head-Echino cactus; GREASEWOOD- Sarcobatus vermiculatum; Palo Verde-Cercidium torreyanum , and IRONWOOD, a first cousin of the mahogany of the tropics abounds here , and fuzed plants, and desert palms are plentiful.

As Palo Verde, and Ironwood trees are unfit for use in the mines, the rough and unfinished mine-timbers when required, must be shipped-in from Flagstaff or Williams, Ariz; discarded Pine and Redwood railway ties may be bought from the Santa Fe Railway.

GEOLOGY: TOPOGRAPHY: RELIEF: GENERAL FEATURES:

This area shows typical desert topography. The area covered by the mountains ranges is small, as compared with that of the valleys. Most of these ranges rise abruptly out of the desert, and intervening valleys, which slope with decreasing declivity down to the washes of the Bill Williams River, filled with the detrital material resulting from the erosion of the mountains. In the Northern ~~part~~ part of the area, lava flows have tended to make the topography somewhat rolling. The foothills of the Bill Williams River owe part of their prominence to lava flows that cap the older rocks and in places surround their bases . No deeply dissected stream valleys are present in the area except in the washes near the Bill Williams River, where fairly steep, though short, precipitious canyons have been formed. The axes of the mountain ranges extend in two seperate lines, one N.E. and S.W., the other N. and S. It is possible that this latter direction may have resulted from erosion of the original stream-course of Bill Williams River, which formed a new outlet for its waters.

The lowest elevations in the area occur along the present stream-bed of Bill Williams River, which is around 1,000'.

The difference in height between the mountain tops and the valleys, however, is between 200 to 400'.

In the main, the mountains are carved from old crystalline and metamorphic rocks, and the ridges and slopes are therefore ~~fairly~~ fairly regular and lack the abrupt cliffs and terraces characteristic of ranges in which the sedimentaries participate ~~largely~~ largely in the structure. In detail, however, the landscape bears the imprint of desert erosion, of which small, but deep scarps, jagged rocks, the outcrops, and sharply cut ravines are typical. Because of the almost total lack of vegetation, excepting the the heretofore mentioned, little or no soil covers the mountains, the result being, that their contours and natural colors stand-out with very marked prominence.

DRAINAGE:

The Bill Williams River, tributary to the Colorado River, drains this particular area; it has running water throughout the year in its lower lower course.

GROUND-WATER LEVEL:

In this part of Arizona, the ground-water level fluctuates with the seasons, and is different at different localities, and no definite distance below the surface can be given as the present water-table level. In general, this conforms to the topography of the mountains, standing HIGH in in the mountains, and LOW in the valleys, although there are many exceptions and erratic underground channels are found in parts of the area.

GENERAL GEOLOGIC FEATURES:

The rocks of the region may be divided into pre-Cambrian, Mesozoic, Tertiary, and Quaternary.

Granites, gneisses, schists, quartzites, limestones, dolomites, and argillites constitute the pre-Cambrian rocks, all of which are, at many places, cut by intrusive rocks of different kinds and ages.

Diabase, pegmatites, and aplite are the most common dike rocks in the pre-Cambrian, but other types also are here.

TERTIARY:

The lava flows, with the exception of some of the basalts which are interbedded in and rest on top of Temple Bar conglomerate, I assign to the Tertiary System. Several of the ranges in this region are capped by volcanic rocks, and some of the peaks in the area are composed entirely of igneous flows.

QUATERNARY:

The broad valleys between the mountain ranges here, the river banks, and the thick gravels which occur N. of Bill Williams River, all of these, including most of the basalts, pertain to the Quaternary system.

PRE-CAMBRIAN ROCKS: Granite-Gneiss-Schist Complex:

The oldest rocks in the area are of Archean age. They are granitic; many are gneissic, and some are decidedly schistose in structure. Material of and belonging to this complex makes up much

of the Bill Williams Mountains. The granite here is of normal structure. These rocks occur in many places, depending, in color, on the presence and alignment of the ferro-magnesian minerals, and the degree of alteration of any or all of the constituents of the rock.

Pegmatite and aplite dikes are common throughout the granite-gneiss-schist area. Some of the intrusions are of large proportions, being several hundred feet wide and several thousand feet long.

Generally, the pegmatite dikes are of smaller proportions. Pegmatite represents another phase of granite, being composed of very large crystals of orthoclase, quartz, and mica.

INTRUSIVE ROCKS: BASIC ROCKS:

Throughout the area, diabase and the derivates of other basic rocks are almost universally present in large exposures of pre-Cambrian rocks. Part of the basic rocks are schistose, some are massive, and most of them have undergone metamorphism so great, that they now form amphibolitic rock. Where these rocks have been intruded by formations other than limestone, they have seem to have either cut the formations entirely, or else to have formed sills or sheets between the various strata. With the limestone, however, conditions are locally quite different, and frequently great thickness of the material can be seen in which the metamorphic amphibolite plays an important part. Here, the limestone seems to have been partly absorbed by and literally saturated with the basic rock, so that the result is like that produced by immersing a fractured brick in hot slag, or, better, like bricks that have undergone long service in mercury condensers.

The basic rock was introduced under the weight of former overlying sediments and filled all of the open spaces, besides replacing parts of the limestone. The amphibolites found in this area were formed through the alteration of basic rocks like diabase, diorite, or gabbro.

BRECCIA:

There is present in this area at least the basal portion of a breccia similar to the so-called Groggs breccia. ~~The~~ The actual age of this formation is unknown, although it seems certainly to be late Tertiary. This breccia is composed mainly of coarse fragments of crystalline rock poorly stratified and roughly cemented by calcareous and siliceous solutions. In all the occurances the breccia rests on the old pre-Cambrian rocks and is only of nominal thickness, representing the oldest and based phase of the formation.

QUATERNARY DEPOSITS: BASALT FLOWS:

In the Southwest, many of the basalts are commonly called mal-a-pi-., a mispronounciation of the Spanish mal pais- mal pah-ees'- meaning bad country-a term which is also used to to describe the broken character of the country caused by the cubical weathering of the basalts, and subsequent formation of steep cliffs. During Tertiary and Quaternary time, thick deposits of breccia and conglomerate were laid down, and frequently directly on top of pre-Cambrian rocks, allowing the tremendous erosion which had taken place during preceeding periods.

EFFECTS OF METAMORPHISM: REGIONAL DYNAMOMETAMORPHISM:

All of the pre-Cambrian rocks in the area have been subjected to dynamometamorphism, with the result that the gneisses, schists, amphibolites, and argillites show very pronounced foliation, and that the limestones, quartzites, and amphibolites evince considerable chemical alteration attendant upon this process.

The sandstones have been silicified, and quartzite has resulted; the limestones have been changed to dolomite, and the effects of dynamometamorphism upon the limestones and the interbedded amphibolites have been far-reaching, and have played a very important part in the formation of the replacement deposits of the "ZINC-LEAD" ores, carrying in addition to the fluorspar, copper, lead, silver and gold values.

CONTACT METAMORPHISM:

The principal results of contact metamorphism are seen here in connection with the intrusion of the granite. The properties under consideration here show decided evidence of contact metamorphism phenomena, and it is more than probable that the ores existing here owe their origin to the solutions accompanying this granite intrusion.

GEOLOGIC HISTORY:

This area was a zone of greatest differential uplift. Not only were the Cambrian, Ordovician, and Silurian rocks uplifted and eroded, but the limestones were cut by calcite veins and in part silicified. At this time, the Paleozoic rocks were completely folded, the larger proportions of the flexures striking West of North. After considerable folding had taken place, and before the end of the deformation, granitoid rocks were intruded into the Paleozoic strata. The intrusion was accompanied by local buckling of strata, as proven by contact metamorphism, and by ORE DEPOSITION. It was followed by the intrusion of a quartz-monzonite porphyry, and later of diorite porphyry. A long period of erosion, extending at least to Eocene time followed the post-Jurassic folding and consequent mountain building. Both the length of this erosion period, no peneplain was formed.

The Eocene inaugurated the Tertiary period, accompanied by important deformation, erosion, and ore deposition. The Tertiary rocks, being largely in flows, in contra-distinction to the intrusive post-Jurassic rocks, produced little contact metamorphism.

The permanency of the structural lines were indicated in early Cretaceous time, and along these lines the Tertiary deformation occured. Next, there was an important and probably long erosional interval, followed by a mighty extrusion of rhyolite, equal or in excess, in bulk, to the outflows of late Pliocene time. The rhyolite, in turn, was followed by andesite and dacites.

It was during this general period that the most important ore deposits in the Tertiary rocks were formed, presumably by waters heated by the still-hot magmas. The ascendency of erosion over faulting is indicated here by the broad and rounded detrital embayments which notch the Bill Williams Mountains.

GENERAL CHARACTER OF THE ORE DEPOSITS:

The deposits here, the fillings of open fissures, and the attending silicification of the country rock are evidently

due to ascending heated waters, which carried, in addition to metallic salts, notable quantities of silica, carrying locally likewise salts of calcium as well as fluorine, sulphurous acid and chlorine. The presence of fluorine is indicated by the alteration of biotite to muscovite. Sulphurous acid is a constituent of alunite and chlorine of scapolite. The waters, in part, then, were of magmatic origin, and contained gases typical of waning volcanism.

Ore deposits in the area under consideration, are therefore confined to the Paleozoic rocks, the post-Jurassic granitoid rocks, and to the older Tertiaries.

PRINCIPAL ROCK GROUPS:

The area contains a large variety of both igneous and sedimentary rocks, the igneous being dominant, being represented here by Andesite, Granite, Monzonite, Basalt, Alaskite, Latite, Aplite, Granite porphyry, Rhyolite, Monzonite porphyry, Lacite, Diorite porphyry, Syenite, and Diorite.

DEVELOPMENT:

There are about 50,000 tons [illegible] blocked-out ore developed from shallow underground workings of 1,400 feet; there is likewise a large dump containing good values.

WATER:

Water for domestic and milling purposes can be developed close to these properties at nominal cost.

HISTORICAL:

So far as known, these properties were first worked by the late Chas. Graves in 1921, who is said to have packed-out on burros high-grade ores, of $40,000 value; after Mr. Graves's death, crushed to death by an accident within one of the adits of the BIG-LEAD, in 1900, the properties remained abandoned until 1908, when they were located by J. E. Rogers, who took out wagon-loads of good ores from claims, the last lot of 64-tons, carrying 56 ozs. silver, 26% lead, and $5.50, per ton in gold, besides the fluorspar content. After that, Rogers operated mines in the Swansea District, and claims were located by H.A.Reynolds, et al, but have not operated the properties since their acquisition; none of the mentioned owners endeavored to develop these properties, except with a view of extracting and shipping the highest grade ores with the least of development work.

NAMES OF CLAIMS: SUPERFICIAL AREA, 20-ACRES, EACH:

MYSTERY HILL #1

EAST SIDE LEAD

LEAD BUTTE

Above claims are of record in Mining Records of Yuma County, at City of Yuma., Arizona. They, the claims, are located in the Santa Maria Mining District, and properties are unincumbered.

The blocked ores have a minimum value of $30. per ton, and at least 15,000 gross may be recovered from dump upon the BIG-LEAD.

The properties under consideration may be enlarged by the location of additional claims if it is desired to make a large Group of it; the cost will be $1. per claim of 20-acres for recording fee, plus the cost of location-work required by the mining Laws of Arizona, which work must be performed and recorded within 90-days of date of location.

PRICE OF PROPERTIES:

$50,000 cash on account of blocked ores, plus $90,000 upon a 10% net royalty.

ORIGIN OF ORES UPON " BIG-LEAD " PROPERTIES:

The ores upon these properties undoubtedly originated in and through the circulation of the underground waters, due to the intimate association of the ores with large quantities of certain minerals, especially calcite and dolomite, not known to be formed to any notable extent except from solution.

ALL ROCKS are more or less permeable. In general, the finer grained rocks are less pervious, even though and when they include a larger total pore space. The cavities of rocks, of whatever origin, may be conceived of as being filled, or in cases partially filled, with the dilute solutions known collectively as ground-water. This water is not usually dormant, but is constantly in motion, though that motion may be very slow. However, the familiar adage that water tends to seek its level, applies here. It cannot be doubted, that the ordinary down-ward movement of water is interrupted by temporary returns of same to the surface. This occurs in three ways: First, in obedience to ordinary hydrostatic laws; Second, as a result of capillarity; Third, by definite upward movements resulting from thermal agencies. The most familiar phenomena indicating such a return of the water to the surface are those of springs and seepage. In general, the ground-water level follows the surface topography, standing HIGH in the hills, and LOW in the valleys. Conditions above and below different levels are radically different, particularly in all that relates to the chemical constitution of the ground-water. It is the meeting place of waters of diverse composition and as a result a frequent plane of ore accumulation and change in character. The metals, as originally precipitated from the Cambro-Silurian Sea, were thoroughly disseminated. It has been the work of the under-ground waters to gather the component parts of Ore Deposits. Many of these ore bodies have been, in turn, torn to pieces as a result of changing conditions or the general advance of erosive forces DOWNWARD. The metals have been carried away, only to be re-deposited in a different locality, or to a deeper horizon.

Concentration has followed concentration, and the ore bodies now upon the "BIG-LEAD" properties, and upon the surrounding terrain, are the result, the net result, of a long series of processes.

The general chemical process has been one of oxidation of sulphides, transportation of sulphates, and precipitation as sulphides. The Principal condition producing precipitation upon the terrain under consideration was the mingling of solutions with various

ARIZONA DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA

June 30, 1958

To the Owner or Operator of the Arizona Mining Property named below:

Mystery Hill (Yuma County)	Copper, Gold
(Property)	(ore)

We have an old listing of the above property which we would like to have

DEPARTMENT OF MINERAL RESOURCES
State of Arizona
Mineral Building, Fairgrounds
PHOENIX, ARIZONA

:h as complete detail

urns, shipment returns

h might interest a

REASON FOR NON-DELIVERY CHECKED
UNCLAIMED
MOVED LEFT NO ADDRESS
NO SUCH POST OFFICE IN STATE NAMED

~~Mr. Chas. Milton~~
~~Coronation~~ Mining Co.
~~Bouse,~~
~~Arizona~~

Frank P. Knight

FRANK P. KNIGHT,
Director.

Enc: Mine Owner's Report

ARIZONA DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA

June 30, 1958

To the Owner or Operator of the Arizona Mining Property named below:

Mystery Hill (Yuma County)	Copper, Gold
(Property)	(ore)

We have an old listing of the above property which we would like to have brought up to date.

Please fill out the enclosed Mine Owner's Report form with as complete detail as possible and attach copies of reports, maps, assay returns, shipment returns or other data which you have not sent us before and which might interest a prospective buyer in looking at the property.

Frank P. Knight

FRANK P. KNIGHT,
Director.

Enc: Mine Owner's Report

No. 156 Du

Phoenix,, Arizona,

Nov. 4, 1944.

CHAS. A. DIEHL

ARIZONA ASSAY OFFICE

Phone 3-4001

815 North First Street

P. O. Box 1148

MINERAL RESOURCES
RECEIVED
NOV 8 1944
ARIZONA

This Certifies That samples submitted for assay by Mr. Chas. H. Dunning. contain as follows per ton of 2000 lbs. Avoir.

MARKS	SILVER Ounces	SILVER Tenths	VALUE (Oz.)	GOLD Ounces	GOLD Hundths	VALUE (Oz.)	TOTAL VALUE Of Gold and Silver	% PERCENTAGE CaF_2	% PERCENTAGE LEAD	REMARKS
Tails 1-CL								76.12		
Tails								20.28		
Concentrates.								95.57	.03	

Charges $ 13.00

Assayer ARIZONA ASSAY OFFICE

CAD

No. 156 Du

Phoenix, Arizona,

Nov. 4, 1944.

CHAS. A. DIEHL

ARIZONA ASSAY OFFICE

Phone 3-4001 | 815 North First Street | P. O. Box 1148

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Tails 1-CL								76.12				
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Concentrates.								95.57	.03			

Charges $ 13.00

Assayer ARIZONA ASSAY OFFICE

May 22, 1946

Mr. J. C. Townsend
Bouse, Arizona

Dear Mr. Townsend:

I have yours regarding the fluorite or Big-Lead property and I would be glad to recommend this property to anyone for thorough investigation.

I liked this property and its very persistant vein, and although I made no detailed examination, I certainly feel that such is justified and would be glad to recommend it accordingly.

So please advise whom you would like to have me write to, and I will be most glad to do so.

Yours sincerely,

Chas. H. Dunning
Director

CHD:LP

DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON ACTIVE MINING PROJECT

Date 1/2/45

Name of Mine Mystery Hill

Owner or Operator J. A. Whitney

Address 1706 E. McKinley Phoenix

Mine Location 35 miles north of Bonne Ariz.

Filing Information

File System

File No.

This chart to be used for gallons of gasoline required per month.

PRESENT OPERATIONS: (check X)

Production X; Development; Financing; Sale of mine;

Experimental (sampling); Owner's occasional trip;

Other (specify)

PRODUCTION: **Past and Future.**

	Tons
Approx. tons last 3 months	
Approx. present rate per 3 months	None
Anticipated rate next 3 months	300
If in distant future check (X) here	~~50~~

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	Miles or Hours Per Month	Gallons Required Per Month
Personal Cars			
Light or Service Trucks	1-heavy	1200	120
Ore Hauling Trucks			
Compressors			
Other Mine or Mill Eqpt.			

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

Copper

REMARKS:

Ok

ARIZONA DEPARTMENT OF MINERAL RESOURCES

By Chas. H. Browning

DEPT. MINERAL RESOURCES
RECEIVED
OCT 17 1944
PHOENIX, ARIZ.

DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON ACTIVE MINING PROJECT

Date: October 16, 1944

Name of Mine: Mystery Hill

Owner or Operator: J. B. French, Superintendent

Address: Box 306, Bouse, Ariz.

Filing Information

File System:

File No.:

This chart to be used for gallons of gasoline required per month.

Mine Location:

PRESENT OPERATIONS: (check X)

Production X; Development ; Financing ; Sale of mine ;

Experimental (sampling) ; Owner's occasional trip ;

Other (specify)

PRODUCTION: **Past and Future.**

	Tons
Approx. tons last 3 months	None -----
Approx. present rate per 3 months	600
Anticipated rate next 3 months	600
If in distant future check (X) here	

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	Miles or Hours Per Month	Gallons Required Per Month
Personal Cars			
Light or Service Trucks	1	1200 miles	120
Ore Hauling Trucks	1		
Compressors	1 20-HP	208 hours	416
Other Mine or Mill Eqpt.			
		Total gals. gas per month -----	536

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

REMARKS: French states that actual work will start on this mine within 10 days. I recommend that he be alloted 536 gallons gasoline per month for the next 3 months, providing operations continue.

ARIZONA DEPARTMENT OF MINERAL RESOURCES

By Elgin B. Holt, Field Engineer.

DEPARTMENT OF MINERAL RESOURCES

REPORT TO OPA ON ACTIVE MINING PROJECT

DEPT. MINERAL RESOURCES
RECEIVED
OCT 17 1944
PHOENIX, ARIZONA

Filing Information

File System.....

File No.....

This chart to be used for gallons of gasoline required per month.

Date.....October 16, 1944.....

Name of Mine.....Diana Mae.....

Owner or Operator.....J. B. French, Agent.....

Address.....Box 306, Bouse, Arizona.....

Mine Location.....In Yuma County, 35 miles NE of Bouse.....

PRESENT OPERATIONS: (check X)

Production...X...; Development.....; Financing.....; Sale of mine.....;

Experimental (sampling).....; Owner's occasional trip.....;

Other (specify).....

PRODUCTION: **Past and Future.**

	Tons
Approx. tons last 3 months	None
Approx. present rate per 3 months	1200
Anticipated rate next 3 months	1200
If in distant future check (X) here	

EQUIPMENT OPERATED:

Type	Quantity or Horse Power	Miles or Hours Per Month	Gallons Required Per Month
Personal Cars	1	1300	86
Light or Service Trucks			
Ore Hauling Trucks			
Compressors	1 20-HP	208 hours	416
Other Mine or Mill Eqpt.			
	Total gals. gas per month -----		502

PRODUCT PRODUCED OR CONTEMPLATED: Name metals or minerals.

Silicious copper-gold ore to be shipped to smelter.

REMARKS:

French, et al, started work on the Diana Mae mine on Oct. 12th, 1944. I recommend that they be alloted 622 gallons gasoline per month for the next 3 months.

ARIZONA DEPARTMENT OF MINERAL RESOURCES

By.....

Elgin B. Holt, Field Engineer

Mystery Hill

March 26, 1945

Arizona Bureau of Mines
University Station
Tucson, Arizona

Gentlemen:

Please forward to Mr. Charles Milton, mining engineer of Carnation Mining Company who have recently taken option on a mining property near Bouse, Arizona, any bulletins dealing with the geology and mining conditions of Yuma County, especially in the vicinity around Bouse and the Swansea Mine.

This company is also expecting to operate several properties down there when they get organized.

Mr. Milton's address is Bouse, Arizona.

Yours very truly,

A. C. Nebeker
Field Engineer

ACN:LP

CC: Mr. Charles Milton

INFORMATIVE REPORT UPON THE "[illegible]" MINING CLAIM GROUP:

1.- THIS GROUP carries FLUORSPAR-LEAD-SILVER and Gold values, in about the following ratio:

Fluorspar	70%
Lead	6%
Silver	7 Ozs.
Gold	$2. per ton

.....

2.- FLUORSPAR:

Principal mineral-Fluorspar fluorite is a calcium fluoride, containing 51.1 percent calcium and 48.9 percent fluorine. The mineral itself is rarely contaminated with impurities, but is generally associated with other minerals from which it must be seperated for commercial use. It is lustrous, glass-like mineral, generally transparent to translucent. It may be clear and colorless, or range in color from slightly bluish through varying grades of violet, amethyst, purple, ~~purple~~, green and yellow. The specific gravity is 3.18, and the hardness 4.

It crystallizes in the isometric system, and possesses perfect octagedral cleavage. It does not effervesse with dilute hydrochloric acid, but heated with hot sulphuric acid, it gives off fumes of hydrofluoric acid, which etch glass.

Fluorspar occurs as a rock-forming mineral in various formations. It is most abundant in veins and in sedimentary formations, but is also found as a minor accessory in granite, syenite, pegmatite, gneiss and sejist, and more rarely in volcanic rocks.

SPECIFICATIONS:

METALLURGICAL: -Fluxing Grade:

Minimum Calcium fluoride-content		85%
Maximum Silica		5%
Sulphur	Not over	0.3%

For iron and steel foundries gravel to nut size, free from dust is preferred. Most metallurgical uses call for about the same grade of spar, except that in aluminum production, a 98.5% grade is required.

CHEMICAL GRADE:

Both the Ceramic and Chemical grades of fluorspar are used in pulverized form, but the "acid" grade is frequently purchased in lumps by the chemical plants and pulverized by them.

Specifications request 98% purity, with less than 1% calcium carbonate.

GLASS MANUFACTURE:

Glass industries require fluorspar of 95% purity, containing not over 3% silica, 1% calcium carbonate, and 0.12% ferric oxide. The material must be free of lead, zinc, and sulphur, and ground to at least 55% minus mesh.

ENAMELS:

Specifications require 95% to 98% grade and less than 2.5% silica. Calcium carbonate , lead, zinc and otthar objectionable impurities. Material must be ground so that 65% passes 100 mesh.

~~SUGGEST~~
PRICES

The maximum prices for metallurgical-grade fluorspar of $25 to $28, a short ton, which became effective Nov. 2, 1942, were increased $5, per ton July 1, 1943. The base price for ceramic and acid grades of fluorspar were increased on July 1, 1943 to $37, a short ton.

.....

THE " BIG-LEAD "
oooooooooooooooo

GEOGRAPHY:

These quartz mining claims are situate and located 30 miles N. E. of Bouse-Arizona, near the Bill Williams River, in Yuma County.
The properties are accessible by means of a branch line of the Santa Fe Railway System, the Arizona & California Railroad, which connects Wickenburg on the Santa Fe, Prescott & Phoenix Railway with Parker, where the Arizona & California Railroad crosses the Colorado River, to tap the main Santa Fe line at Cadiz, California. A good trucking-road permits access to claims from BOUSE, the nearest shipping point; PARKER is 27 miles N. of Bouse.

CLIMATE: VEGETATION:

The terrain covered by this Infomative Report is all under 1,400' in elevation. The climate of the region is arid, with June to the middle of September the hot months, and with fine, mild winters.
The summer heat is rendered tolerable by the dryness of the atmosphere, and the cool evenings and nights, even on the hottest summer day. The climate is exceptionally healthful, as the sun emits the maximum of the beneficial ultra-violet rays daily, in excess of those to be had in certain parts of Egypt, that have heretofore been highly recommended to health-seekers because of this natural phenomena.

Continued As is characteristic of this part of Arizona,

there are two annual periods of precipitation, or so-called rainy seasons , one in summer, extending from about the middle of June to the middle of September, and the other in winter, extending from December to March. The winter precipitation is usually the heavier and more widely distributed. In both seasons, the greater part of the rainfall occurs in local showers or storms, and in hot summer weather it is often concentrated in cloud-bursts occurring in the higher mountain ranges. The distribution naturally depends somewhat on the location, with relation to the prevailing direction of the breezes, the first series of heights that interpose their presence to the prevailing direction of the winds receiving amounts somewhat in excess of even the higher succeeding ranges.

The vegetation here is principally of the sub-tropical desert type of the spinous forms of those having little leaf surface being dominant. Every plant in the flora is either prickly or aromatic, leaf surfaces are reduced to a minimum, devices for storing water attain their greatest perfection, and the dominant color is a dull gray. The somber colors and the reduction of leaf surface are likely to deceive the observer both in regard to the richness of the flora in species and the abundance of plant life, which is far greater than one would suspect.

Cacti, in many different varieties form the most abundant vegetation in this area. CHOLLA-Opuntia fulgida of several different varieties; PRICKLY PEARS-any cactus of the genus Opuntia; Nigger-Head-Echino cactus; GREASEWOOD- Sarcobatus vermiculatum; Palo Verde-Cercidium torreyanum , and IRONWOOD, a first cousin of the mahogany of the tropics abounds here , and Yucca plants, and desert palms are plentiful.

As Palo Verde, and Ironwood trees are unfit for use in the mines, the rough and unfinished mine-timbers when required, must be shipped-in from Flagstaff or Williams, Ariz; discarded Pine and Redwood railway ties may be bought from the Santa Fe Railway.

GEOLOGY: TOPOGRAPHY: RELIEF: GENERAL FEATURES:

This area shows typical desert topography. The area covered by the mountains ranges is small, as compared with that of the valleys. Most of these ranges rise abruptly out of the desert, and intervening valleys, which slope with decreasing declivity down to the washes of the Bill Williams River, filled with the detrital material resulting from the erosion of the mountains. In the Northern part part of the area, lava flows have tended to make the topography somewhat rolling. The foothills of the Bill Williams River owe part of their prominence to lava flows that cap the older rocks and in places surround their bases . No deeply dissected stream valleys are present in the area except in the washes near the Bill Williams River, where fairly steep, though short, precipitious canyons have been formed. The axes of the mountain ranges extend in two separate lines, one N.E. and S.W., the other N. and S. It is possible that this latter direction may have resulted from erosion of the original stream-course of Bill Williams River, which formed a new outlet for its waters.

The lowest elevations in the area occur along the present stream-bed of Bill Williams River, which is around 1,000'.

The difference in height between the mountain tops and the valleys, however, is between 200 to 400'.

In the main, the mountains are carved from old crystalline and metamorphic rocks, and the ridges and slopes are therefore ~~fairly~~ fairly regular and lack the abrupt cliffs and terraces characteristic of ranges in which the sedimentaries participate ~~largely~~ largely in the structure. In detail, however, the landscape bears the imprint of desert erosion, of which small, but deep scarps, jagged rocks, the outcrops, and sharply cut ravines are typical. Because of the almost total lack of vegetation, excepting the the heretofore mentioned, little or no soil covers the mountains, the result being, that their contours and natural colors stand-out with very marked prominence.

DRAINAGE:

The Bill Williams River, tributary to the Colorado River, drains this particular area; it has running water throughout the year in its lower lower course.

GROUND-WATER LEVEL:

In this part of Arizona, the ground-water level fluctuates with the seasons, and is different at different localities, and no definite distance below the surface can be given as the present water-table level. In general, this conforms to the topography of the mountains, standing HIGH in in the mountains, and LOW in the valleys, although there are many exceptions and erratic underground channels are found in parts of the area.

GENERAL GEOLOGIC FEATURES:

The rocks of the region may be divided into pre-Cambrian, Mesozoic, Tertiary, and Quaternary.

Granites, gneisses, schists, quartzites, limestones, dolomites, and argillites constitute the pre-Cambrian rocks, all of which are, at many places, cut by intrusive rocks of different kinds and ages.

Diabase, pegmatites, and aplite are the most common dike rocks in the pre-Cambrian, but other types also are here.

TERTIARY:

The lava flows, with the exception of some of the basalts which are interbedded in and rest on top of Temple Bar conglomerate, I assign to the Tertiary System. Several of the ranges in this region are capped by volcanic rocks, and some of the peaks in the area are composed entirely of igneous flows.

QUATERNARY:

The broad valleys between the mountain ranges here, the river banks, and the thick gravels which occur N. of Bill Williams River, all of these, including most of the basalts, pertain to the Quaternary system.

PRE-CAMBRIAN ROCKS: Granite-Gneiss-Schist Complex:

The oldest rocks in the area are of Archean age. They are granitic; many are gneissic, and some are decidedly schistose in structure. Material of and belonging to this complex makes up much

of the Bill Williams Mountains. The granite here is of normal structure. These rocks occur in many places, depending, in color, on the presence and alignment of the ferro-magnesian minerals, and the degree of alteration of any or all of the constituents of the rock.

Pegmatite and aplite dikes are common throughout the granite-gneiss-schist area. Some of the intrusions are of large proportions, being several hundred feet wide and several thousand feet long.

Generally, the pegmatite dikes are of smaller proportions. Pegmatite represents another phase of granite, being composed of very large crystals of orthoclase, quartz, and mica.

INTRUSIVE ROCKS: BASIC ROCKS:

Throughout the area, diabase and the derivates of other basic rocks are almost universally present in large exposures of pre-Cambrian rocks. Part of the basic rocks are schistose, some are massive, and most of them have undergone metamorphism so great, that they now form amphibolitic rock. Where these rocks have been intruded by formations other than limestone, they have seem to have either cut the formations entirely, or else to have formed sills or sheets between the various strata. With the limestone, however, conditions are locally quite different, and frequently great thickness of the material can be seen in which the metamorphic amphibolite plays an important part. Here, the limestone seems to have been partly absorbed by and literally saturated with the basic rock, so that the result is like that produced by immersing a fractured brick in hot slag, or, better, like bricks that have undergone long service in mercury condensers.

The basic rock was introduced under the weight of former overlying sediments and filled all of the open spaces, besides replacing parts of the limestone. The amphibolites found in this area were formed through the alteration of basic rocks like diabase, diorite, or gabbro.

BRECCIA:

There is present in this area at least the basal portion of a breccia similar to the so-called Groggs breccia. ~~The~~ The actual age of this formation is unknown, although it seems certainly to be late Tertiary. This breccia is composed mainly of coarse fragments of crystalline rock poorly stratified and roughly cemented by calcareous and siliceous solutions. In all the occurances the breccia rests on the old pre-Cambrian rocks and is only of nominal thickness, representing the oldest and based phase of the formation.

QUATERNARY DEPOSITS: BASALT FLOWS:

In the Southwest, many of the basalts are commonly called mal-e-pi-., a mispronounciation of the Spanish mal pais- mal pah-ees'- meaning bad country-a term which is also used to to describe the broken character of the country caused by the cubical weathering of the basalts, and subsequent formation of steep cliffs. During Tertiary and Quaternary time, thick deposits of breccia and conglomerate were laid down, and frequently directly on top of pre-Cambrian rocks, showing the tremendous erosion which had taken place during preceeding periods.

EFFECTS OF METAMORPHISM: REGIONAL DYNAMOMETAMORPHISM:

All of the pre-Cambrian rocks in the area have been subjected to dynamometamorphism, with the result that the gneisses, schists, amphibolites, and argillites show very pronounced foliation, and that the limestones, quartzites, and amphibolites evince considerable chemical alteration attendant upon this process.

The sandstones have been silicified, and quartzite has resulted; the limestones have been changed to dolomite, and the effects of dynamometamorphism upon the limestones and the intercalated amphibolites have been far-reaching, and have played a very important part in the formation of the replacement deposits of the "ZIG-LEAD" ores, carrying in addition to the fluorspar, copper, lead, silver and gold values.

CONTACT METAMORPHISM:

The principal results of contact metamorphism are seen here in connection with the intrusion of the granite. The properties under consideration here show decided evidence of contact metamorphism phenomena, and it is more than probable that the ores existing here owe their origin to the solutions accompanying this granite intrusion.

GEOLOGIC HISTORY:

This area was a zone of greatest differential uplift. Not only were the Cambrian, Ordovician, and Silurian rocks uplifted and eroded, but the limestones were cut by calcite veins and in part silicified. At this time, the Paleozoic rocks were completely folded, the larger proportions of the flexures striking West of North. After considerable folding had taken place, and before the end of the deformation, granitoid rocks were intruded into the Paleozoic strata. The intrusion was accompanied by local buckling of strata, as proven by contact metamorphism, and by ORE DEPOSITION. It was followed by the intrusion of a quartz-monzonite porphyry, and later of diorite porphyry. A long period of erosion, extending at least to Eocene time followed the post-Jurassic folding and consequent mountain building. Both the tending the length of this erosion period, no peneplain was formed.

The Eocene inaugurated the Tertiary period, accompanied by important deformation, erosion, and ore deposition. The Tertiary rocks, being largely in flows, in contra-distinction to the intrusive post-Jurassic rocks, produced little contact metamorphism.

The permanency of the structural lines were indicated in early Cretaceous time, and along these lines the Tertiary deformation occured. Next, there was an important and probably long erosional interval, followed by a mighty extrusion of rhyolite, equal or in excess, in bulk, to the outflows of late Pliocene time. The rhyolite, in turn, was followed by andesite and dacites.

It was during this general period that the most important ore deposits in the Tertiary rocks were formed, presumably by waters heated by the still-hot magmas. The ascendency of erosion over faulting is indicated here by the broad and rounded detrital embayments which notch the Bill Williams Mountains.

GENERAL CHARACTER OF THE ORE DEPOSITS:

The deposits here, the fillings of open fissures, and the attending silicification of the country rock are evidently

due to ascending heated waters, which carried, in addition to metallic salts, notable quantities of silica, carrying locally likewise salts of calcium as well as fluorine, sulphurous acid and chlorine. The presence of fluorine is indicated by the alteration of biotite to muscovite. Sulphurous acid is a constituent of alunite and chlorine of scapolite. The waters, in part, then, were of magmatic origin, and contained gases typical of waning volcanism.

Ore deposits in the area under consideration, are therefore confined to the Paleozoic rocks, the post-Jurassic granitoid rocks, and to the older Tertiaries.

PRINCIPAL ROCK GROUP:

The area contains a large variety of both igneous and sedimentary rocks, the igneous being dominant, being represented here by Andesite, Granite, Monzonite, Basalt, Alaskite, Latite, Aplite, Granite porphyry, Rhyolite, Monzonite porphyry, Dacite, Diorite porphyry, Syenite, and Diorite.

DEVELOPMENT:

There are about 50,000 tons [illegible] ores developed from shallow underground workings of 1,400 feet; there is likewise a large dump containing good values.

WATER:

Water for domestic and milling purposes can be developed close to these properties at nominal cost.

HISTORICAL:

So far as known, these properties were first worked by the late Capt. Graves in 1894, who is said to have packed-out on burros high-grade ores, of $40,000 value; after Mr. Graves's death, crushed to death by an avalanche within one of the adits of the BIG-LEAD, in 1900, the properties remained abandoned until 1938, when they were located by J. E. Rogers, who took out wagon-loads of good ores from claims, the last lot of 64-tons, carrying 58 ozs. silver, 26% lead, and $5.50, per ton in gold, besides the fluorspar content. After that, Rogers operated mines in the Swansea District, and claims were located by H.A.Reynolds, et al, but have not operated the properties since their acquisition; none of the mentioned owners endeavored to develop these properties, except with a view of extracting and shipping the highest grade ores with the least of development work.

NAMES OF CLAIMS: SUPERFICIAL AREA, 20-ACRES, EACH:

MYSTERY HILL #1

EAST SIDE LEAD

LEAD BURTS

Above claims are of record in Mining Records of Yuma County, at City of Yuma., Arizona. They, the claims, are located in the Santa Maria Mining District, and properties are unincumbered.

The blocked ores have a minimum value of $30. per ton, and at least 45,000 gross may be recovered from dump upon the BIG-LEAD.

The properties under consideration may be enlarged by the location of additional claims if it is desired to make a large Group of it; the cost will be $1. per claim of 20-acres for recording fee, plus the cost of location-work required by the mining Laws of Arizona, which work must be performed and recorded within 90-days of date of location.

PRICE OF PROPERTIES:

$50,000 cash on account of blocked ores, plus $950,000 upon a 10% net royalty.

ORIGIN OF ORES UPON " BIG-LEAD " PROPERTIES:

The ores upon these properties undoubtedly originated in and through the circulation of the underground waters, due to the intimate association of the ores with large quantities of certain minerals, especially calcite and dolomite, not known to be formed to any notable extent except from solution.

ALL ROCKS are more or less permeable. In general, the finer grained rocks are less pervious, even though and when they include a larger total pore space. The cavities of rocks, of whatever origin, may be conceived of as being filled, or in cases partially filled, with the dilute solutions known collectively as ground-water. This water is not usually dormant, but is constantly in motion, though that motion may be very slow. However , the familiar adage that water tends to seek its level, applies here. It cannot be doubted, that the ordinary down-ward movement of water is interrupted by temporary returns of same to the surface. This occurs in three ways: First, in obedience to ordinary hydrostatic laws; Second, as a result of capillarity; Third, by definite upward movements resulting from thermal agencies. The most familiar phenomena indicating such a return of the water to the surface are those of springs and seepage. In general, the ground-water level follows the surface topography, standing HIGH in the hills, and LOW in the valleys. Conditions above and below different levels are radically different, particularly in all that relates to the chemical constitution of the ground-water. It is the meeting place of waters of diverse composition and as a result a frequent plane of ore accumulation and change in character. The metals, as originally precipitated from the Cambro-Silurian Sea, were thoroughly disseminated. It has been the work of the under-ground waters to gather the component parts of Ore Deposits . Many of these ore bodies have been, in turn, torn to pieces as a result of changing conditions or the general advance of erosive forces DOWNWARD. The metals have been carried away, only to be re-deposited in a different locality, or to a deeper horizon.

Concentration has followed concentration, and the ore bodies now upon the "BIG-LEAD" properties , and upon the surrounding terrain, are the result, the net result, of a long series of processes.

The general chemical process has been one of oxidation of sulphides, transportation of sulphates, and precipitation as sulphides. The Principal condition producing precipitation upon the terrain under consideration was the mingling of solutions with various

DEPARTMENT OF MINERAL RESOURCES
State of Arizona
Mineral Building, Fairgrounds
PHOENIX, ARIZONA

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NO SUCH POST OFFICE IN STATE NAMED

RETURNED TO SENDER

~~Mr. Chas. Milton~~
~~Coronation Mining Co.~~
~~Bouse,~~
~~Arizona~~

ARIZONA DEPARTMENT OF MINERAL RESOURCES
MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA

June 30, 1958

To the Owner or Operator of the Arizona Mining Property named below:

Mystery Hill (Yuma County)	Copper, Gold
(Property)	(ore)

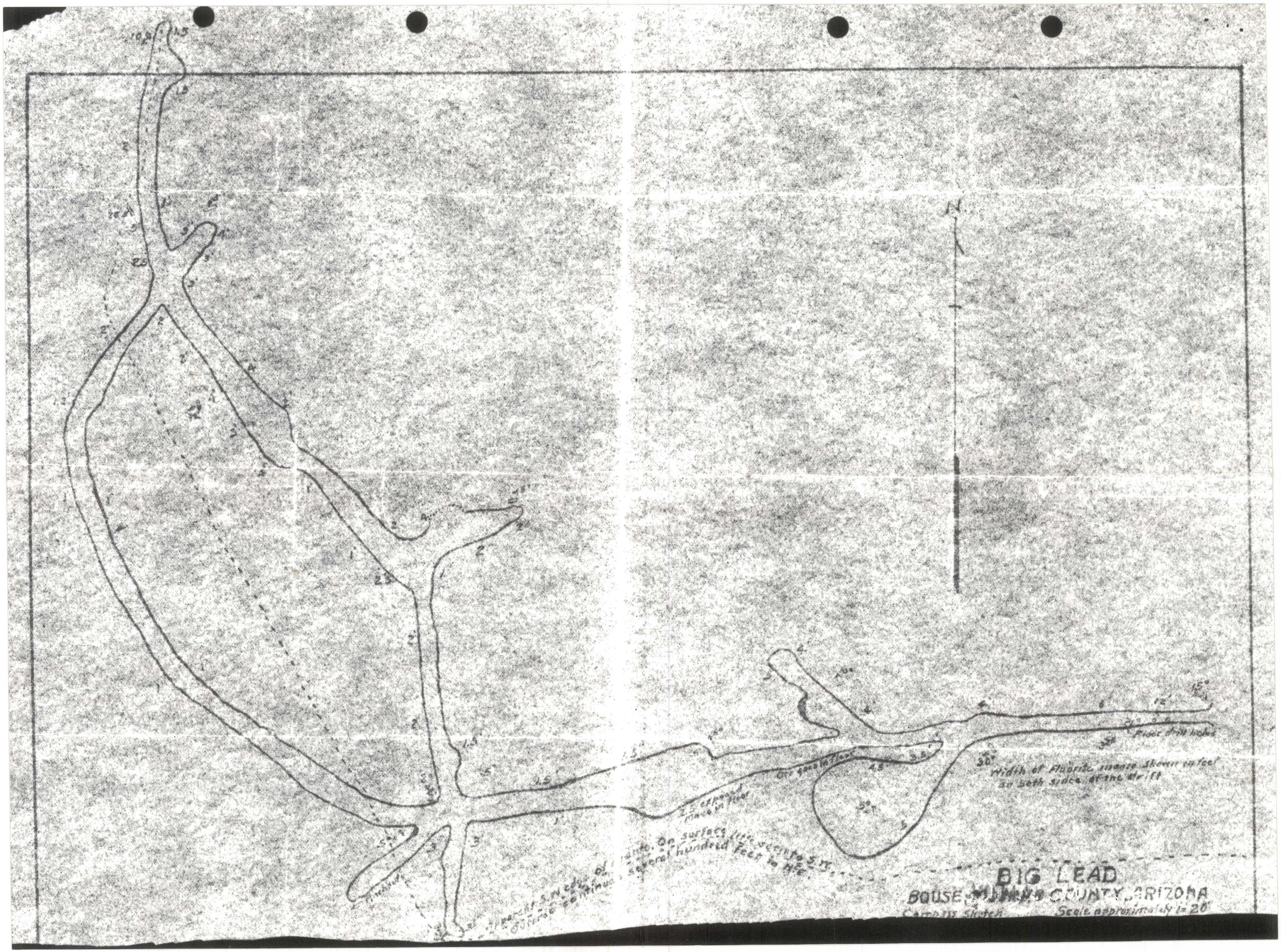
We have an old listing of the above property which we would like to have brought up to date.

Please fill out the enclosed Mine Owner's Report form with as complete detail as possible and attach copies of reports, maps, assay returns, shipment returns or other data which you have not sent us before and which might interest a prospective buyer in looking at the property.

Frank P. Knight

FRANK P. KNIGHT,
Director.

Enc: Mine Owner's Report


N.
Width of Rhyolite mantle shown in feet
on both sides of the drift
Fuse drill holes
BIG LEAD
BOUSE, YUMA COUNTY, ARIZONA
Campus Sketch
Scale approximately 1" = 20'