



## **CONTACT INFORMATION**

Mining Records Curator  
Arizona Geological Survey  
1520 West Adams St.  
Phoenix, AZ 85007  
602-771-1601  
<http://www.azgs.az.gov>  
[inquiries@azgs.az.gov](mailto:inquiries@azgs.az.gov)

The following file is part of the

Arizona Department of Mines and Mineral Resources 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.

PRINTED: 08-07-2006

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: SUNRISE GROUP & ENTREMEDIO GP.

ALTERNATE NAMES:

PIMA COUNTY MILS NUMBER: 847

LOCATION: TOWNSHIP 17 S RANGE 12 E SECTION 23 QUARTER SW  
LATITUDE: N 31DEG 55MIN 50SEC LONGITUDE: W 111DEG 05MIN 30SEC  
TOPO MAP NAME: TWIN BUTTES - 15 MIN

CURRENT STATUS: UNKNOWN

COMMODITY:  
COPPER SULFIDE

BIBLIOGRAPHY:  
ADMMR SUNRISE GROUP & ENTRAMEDIO GP  
ADDITIONAL WORKINGS SEC. 26, 34 & 35

**THE WEST SILVER BELL PROJECT, PIMA COUNTY, ARIZONA**

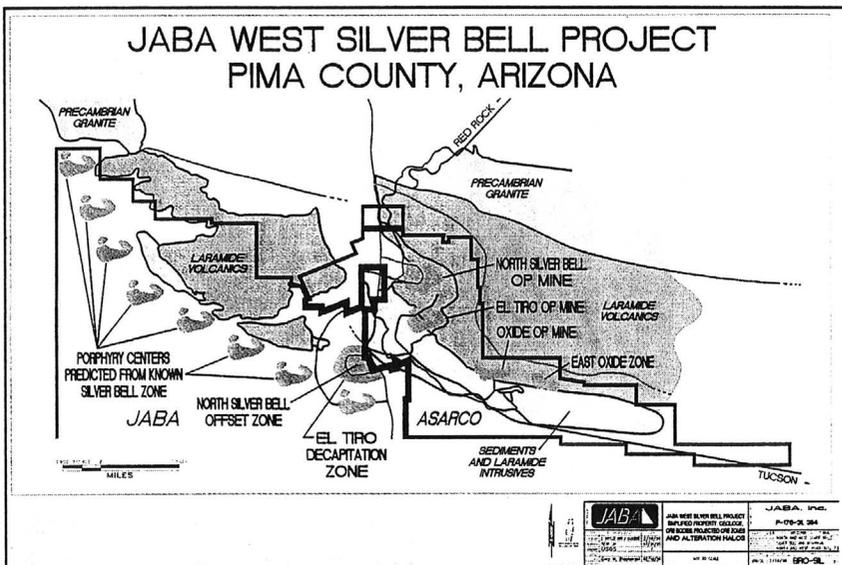
Historically, the Silver Bell district has been extremely productive. First examined by Spaniards in the 16th century, the area's rich copper and silver veins were then opened up by prospector-miners in the 19th century. It was among the earliest districts recognised as a "porphyry copper system" and was mined both underground and from open pits from 1904 until 1983 for copper, molybdenum and precious metal by-products. The current copper porphyries at the Silver Bell mine total approximately 250 million tons of mined and mineable ore averaging around 0.7% copper. The area is known for enriched, high-grade zones, one which is thought to have allowed Asarco to recover its capital investment in the Silver Bell mine in only seven months.

JABA's expertise in this area is extensive. JABA Inc.'s CEO, Jim Briscoe, served as Resident Geologist at the Silver Bell mine during 1965-1968. He was also responsible for outside exploration in the district and consequently formulated structural-lithographic models which he has continued to develop.

Dr. Guilbert started using Silver Bell as a University of Arizona teaching field laboratory in the early 1970s. His emphasis was and remains the undisturbed-surface field expression of porphyry characteristics at the North Silver Bell in a half symmetry outcrop pattern. The "missing western half" of the Silver Bell porphyry is now the subject of a portion of JABA's current exploration efforts.

Recent structural analysis by JABA indicates a left lateral, southwest displacement of the western half of the copper porphyry to an area west of the Atlas Mine, under shallow alluvial cover. Extension of that structural-tectonic model has generated skarn (Atlas-type) and porphyry copper (Silver Bell-type) targets in the West Silver Bell Mountains. JABA's land position includes 3.5 square miles of state exploration permits and 650 lode claims, totalling 23 square miles.

This extensively developed model indicates the potential for several porphyry centers under the area's broad alluvial cover. The area's alteration distribution and apparent Silver Bell lithologies (by structural offset) indicate an ideal setting for major copper/molybdenum/silver/zinc ore deposits within JABA's property. Recent assays have confirmed the probability of outlining a number of copper porphyry zoning patterns, and revealed unexpected gold anomalies on JABA property.

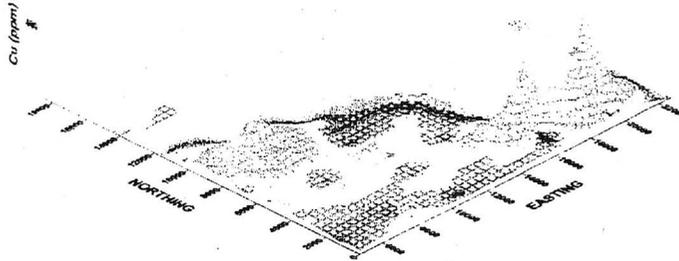


Asarco's Silver Bell Mine and Jaba property. Potential porphyry centers are in green.

*From JABA Annual Report 1996*

THE WEST SILVER BELL PROJECT, PIMA COUNTY, ARIZONA

COPPER IN SOIL



Map showing elevated copper values in one of seven structurally indicated copper porphyry target areas.



Asarco's Silver Bell Mine, showing the Oxide and El Tiro pits. The North Silver Bell ore body is under cover. JABA's properties are to the left.

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

August 7, 1958

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

<u>Entramedio group (Pima County)</u>	<u>copper</u>
(Property)	(ore)
Sunrise group	

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

Tucson, Arizona,

April 23, 1918.

Mr. I. B. Stone,

President, Arizona Sunrise Copper Co.,

Tucson, Arizona.

Dear Sir:

According to your request I have made an examination of the Entramedio and Sunrise groups of mining claims, owned by the Arizona Sunrise Copper Company, and herewith submit to you my report.

Very truly yours,

*James R. Hubbard*

Mining Engineer.



ENGINEER'S REPORT  
SUNRISE and ENTRAMEDIO MINES,  
Pima Mining District, Pima County,  
Twin Buttes, Arizona.

Arizona Sunrise Copper Co., Owners.  
Tucson, Arizona.

By

J. R. Hubbard, Mining Engineer,  
Tucson, Arizona.

April 16 - 23, 1918.

#### LOCATION.

The Entramedio group of mining claims is located in the Pima Mining district, Pima County, Arizona, about  $1\frac{1}{2}$  miles westerly from the town of Twin Buttes. This property is about 5 miles southerly from the San Xavier mine and  $2\frac{1}{2}$  miles northerly from the old Morgan mine. This group joins the Alpha mines on the south.

The Sunrise group is located midway between the Entramedio and the old Morgan mine, being about  $1\frac{1}{2}$  miles northerly from the latter.

#### CLAIMS.

The Entramedio group comprises the following lode mining claims - the Entramedio Nos. 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 & 10.

The Sunrise group comprises fourteen lode mining claims as follows: Sunrise, Sunrise Nos. 1 - 2 - 3 - 4, Victoria Nos. 1 & 2, the Italia, Secorro, and the Delores Nos. 1 - 2 - 3 - 4 & 5.

#### TOPOGRAPHY.

These two groups are situated for their greater part in the low hills directly west of the town of Twin Buttes. The western portion of the Sunrise group extends up into the low granite hills. They lie at an elevation of approximately 2200 feet. They are of easy access by wagon road over level country both from Twin Buttes to the east and Tucson 25 miles to the north.

Good Mexican labor is available at \$2.50 per day.

#### WATER AND TIMBER.

Water for camp purposes has been developed in a 36 ft. shaft located in a gulch which crosses the Sunrise group. There is no timber on the property and the cost of sawed timbers and lumber is slightly in advance of

the cost at Tucson, Arizona, which at the present time varies from \$40.00 to \$50.00 per 1000 ft.

#### OTHER MINES OF THE DISTRICT.

The most notable mines in the same geological formation in the immediate vicinity are the Alpha mine, adjoining the Entramedio on the north and the Morgan mine,  $1\frac{1}{2}$  miles south of the Sunrise group. At the present time the Alpha mine has developed a good body of disseminated ore in the porphyry from which a considerable amount of high grade ore has been shipped. The Morgan mine has a credit of a production which amounts in excess of one hundred thousand tons of high grade ore from one stope alone. To the east  $1\frac{1}{2}$  miles, at Twin Buttes, is the Glance mine, which is a regular shipper of a large monthly tonnage. A little closer to the group is the Minnie mine which has a record of several hundred thousand dollars production. Northerly five miles are the Mineral Hill, Plumed Knight, San Xavier, Vulcan and the San Xavier Extension mines. These are all producing mines and have a combined record of production running into several million dollars.

Throughout the district from the San Xavier mines to those at Twin Buttes, active development is being carried out in many places.

In the porphyries, drilling and shaft development is being carried on to locate lodges of disseminated ores. In the limestone, the large bodies of contact deposits are being explored.

#### GEOLOGY.

The geology of this district is that of a granite intrusive which has uplifted the sedimentaries, followed by porphyritic intrusions along or near the contact of the sedimentaries with the granite.

Thus we have on the western edge of the belt from north to south a low range of granite hills. Along the eastern flank of these hills is a broad belt of the porphyritic rock and yet further east is a north-south belt of metamorphosed limestones. In its southern portion this belt turns to the east so immediately south of Twin Buttes the granite extends approximately east-west.

In places, throughout the porphyry belt, are isolated bodies of granite, some of which are of considerable extent. Therefore the intrusion of porphyry has been to a great extent into the granites as well as in the granite-limestone contact.

As a result of this geological condition, we have those ore zones common to the metamorphosed limestones due to contact metamorphism and a further mineralization of the porphyries both as disseminated ores, and as veins in the granite.

The ore bodies of the San Xavier and adjacent mines and those in the immediate vicinity of Twin Buttes, together with those directly between these two are due to contact metamorphism and the ore makes along the porphyry-limestone or the granite limestone contact, or entirely in the limestone near the contact.

The mineralization of the porphyries is an established fact. The extent of the dissemination and the average value of the ore is not yet known. One group of mines is being drilled to determine this. In other places shafts are being sunk and lateral workings driven and all of the work, almost without exception, shows an extensive mineralization of the porphyries.

The porphyries have been subjected to great fracturing and the mineralization has made from the fractures. Often a series of fractures have made close together and parallel. These have become filled with quartz and a metallic content,

and the enrichment has extended into the rock between the fractures. Directly in the vein filling the fracture, the ore is often very rich, carrying values high in copper, lead, silver and gold.

There is very little secondary enrichment, the primary sulphide ores showing as a rule near the surface. There are exceptions to this. As the distance from the vein increases in the adjacent rock, the sulphides of iron increase, those of copper and galena decreasing. So the disseminated ore becomes poorer at a distance from the vein.

The entire Entramedio group of claims is located on this porphyry. The evidence of fracturing exists and the oxidation of iron sulphides has stained the exposed porphyry all shades of brown and red. An examination of the oxidized surface rocks shows the presence of small cavities which before oxidation held the mineral crystal.

Not much development work has been done on this group and its value must be based on the showing made by the development work on the adjacent Alpha lode, as the geology of the two is exactly the same.

At the Alpha a series of parallel veins show on the surface which are recognizable by the iron stained outcrop which, upon examination, shows the presence of lead oxide. The veins are from 100 to 200 feet apart and stand nearly vertical. Their width varies from one to three or more feet. A shaft sunk near one of these veins encountered sulphides at a shallow depth and at the depth of 200 feet cross cuts were driven to cut various veins. Some of these were cut. The ore in the veins consisted of massive chunks of ore, carrying values as chalcopyrite, galena, gold and silver with some pyrite. This fine ore was found more or less

uniform, of high shipping grade along the vein. Between the veins the country rock was mineralized, the pyrite predominating.

The mine waste dump at the Alpha, shows several thousand tons of material. This is made up entirely from the enriched low grade rock between the veins. This dump has been sampled by several engineers and such sampling gives it a value of over \$9.00 per ton in gold, silver, copper and lead. This of course would be a disseminated ore of high grade, much higher than necessary for successful operation if the ore zone is found to be extensive enough.

Development will show the same conditions to exist on the Entramedio as on the Alpha. The Entramedio covers 200 acres of ground similar to the Alpha and therefore is likewise as worthy of development.

The Sunrise group is located further back on the granites than the Entramedio group. Intrusions of porphyry show throughout the granite. The granite has been greatly fractured and there has been slipping along the fracture zones. Along the porphyry-granite contacts and in the fracture zones, mineralization has occurred.

The development work done consists of three shafts sunk in filled fractures in the granite. Two of these have been sunk in a filled fracture or vein in the granite on the Sunrise claim. The material in this fracture was originally broken pieces of granite. Solutions have followed this fracture and filled it with quartz and accompanying mineralization. The crushed granite in the fissure has been greatly altered and is barely recognizable. Sericitization is almost complete, the vein material being yellowish in color, showing minute scales of sericite, also silica and grains of pyrite and chalcopyrite. Oxidation has

caused the decomposition of the feldspars, sericite and pyrite, resulting in so much kaolinization as to almost destroy the original character of the rocks.

The Kaolinized material is stained with iron oxide and copper carbonates. One shaft has been sunk in this material to the depth of 105 ft. Forty feet from this shaft another shaft has been sunk to the depth of forty feet, at the bottom of which twenty feet of drifting has been done. These two shafts are in the same vein. Some ore of a shipping grade was extracted. The greater part of the material, however, is oxidized ore of low grade. About 100 tons of this, which forms the dump, shows complete oxidation. It is much stained with copper carbonates.

On the Dolores No. 2 lode a shaft has been sunk in a similar fracture to the depth of 36 feet. This shows a vein 6 ft. wide. Its outcrop along the surface is quartz which gives out with depth. In the quartz is some copper sulphide, while the decomposed material contains copper carbonates.

On the Dolores No. 5 lode an outcrop of quartz porphyry shows mineralization which is greatly oxidized. A location hole sunk in the quartz porphyry on the Sunrise No. 4 lode shows mineralization as copper carbonate and lead oxide.

#### CONCLUSION.

These properties are well located with reference to the belt of mineralized porphyry and are worthy of development.

The Entramedie group should be well prospected before the location of a shaft is determined upon. A system of fractures should be first found and the shaft sunk in

their vicinity in such a location as to allow the shortest distances for crosscutting the fractures. Such work, if properly laid out and done, should develop a quantity of disseminated ore as well as the richer ore of the veins, sufficient as to make the property very valuable.

With reference to the Sunrise group, one of the two shafts on the Sunrise claim should be sunk to a sufficient depth to open up the ores of secondary enrichment, which should not be over a total depth of 200 feet. The possibility of encountering a large shoot of such ore as was found in the Morgan mine is good. Not over \$2000.00 will be needed to finish this shaft, which will prove the Sunrise group.

A further sum of \$2000.00, if carefully expended in a shaft, ought to open up the disseminated ores of the Entramedio group. After this is done, financing on a larger scale, which will be necessary, should be easy of accomplishment.

Respectively submitted,

*James R. Hubbard*  
Mining Engineer.



Returned to Write

REASON RETURNED  
 Undelivered  
 Unknown  
 Mailed, but no address  
 No reach office in state  
 Do not return to this office

RECEIVED  
 AUG 11 1968  
 DEPT. MINERAL RESOURCES  
 PHOENIX, ARIZONA

PHOENIX, ARIZ.  
 AUG 7  
 6 30 PM  
 79 58



Mr. I.B. Stone, Pres.  
 Arizona Sunrise Copper Co.  
 Tucson, Arizona

**Insufficient address**



PART OF PIMA MINING DISTRICT  
PIMA COUNTY ARIZONA

SCALE 2000 FT. = 1 INCH

MORNING	SANDIEGO	PERU	STANDARDS	SHERIDAN	BULLION
PORTLAND	COPPER ENGINE	COPPER BUTTE	COPPER KING	COPPER QUEEN	COPPER GLANCER
MINNIE	COPPER BUTTE	COPPER KING	COPPER QUEEN	COPPER GLANCER	COPPER BLISS

Arthur C. Wheatley CE  
46 N Stone Ave  
TUCSON ARIZONA

T. 17 S

T. 17 S

T. 18 S

T. 18 S