



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)

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P. O. Box 3605  
903 University Boulevard  
Tucson, Arizona 85722

December 21, 1970

Mr. William Stump  
Route 13, Box 994  
Tucson, Arizona

Blind Subject: Old Pueblo Mine,  
Tucson Mountains, Pima County,  
Arizona

Dear Mr. Stump:

You may recall that Mr. Melville See and I stopped by your copper property, southwest of Tucson, last October. At that time, you very kindly took us about the property on a short tour, and this letter is principally to thank you for your time and effort on our behalf. It was a very pleasant afternoon and the property is of considerable interest, at least geologically. I was really quite surprised at the amount of oxides which your prospecting has uncovered beneath rather barren-looking surface outcrops.

At that time, Cominco had two rigs on the property drilling, with an option which you informed us expires in January, subject to their renewal. Should Cominco not exercise their option for renewal, I hope you will allow us to give the property further consideration, and I would greatly appreciate it if you would drop me a line or telephone call when the decision by Cominco is known.

Again, thank you for your hospitality and perhaps we will have contact in the future. Best wishes for the New Year and a happy Christmas Season.

Yours very truly,

John E. Kinnison  
Regional Geologist

JEK/bl

b.c.c. J. J. Durek  
File  
Blue

Blind Note: This property is on the southwest outskirts of the city of Tucson, in the Tucson Mountains, and I briefly saw it many years ago. By careful prospecting Stump has uncovered considerable amount of copper oxide and chalcocite at a shallow depth beneath a surface which showed principally barren silica veinlets in abundance, but very little copper at the surface. I suspect that the chalcocite is hypogene. As a practical exploration prospect, the property maybe too small, and I suspect that the values will actually be too spotty and low grade--however, it is an interesting geological occurrence which from a standpoint of technical advancement with ap-

plication to other areas of similar capping, warrants whatever additional scientific study we can make. I have a suite of specimens which will be the basis for this study.

## NOTE FILE ON "PORPHYRY COPPER"

Location: R 13 E Sections 17, 18, 19, 20  
T 14 S

PROPERTY: Old Pueblo  
DISTRICT: Amole  
MT. RANGE: Tucson Mts.  
COUNTY: Pima  
STATE: Arizona

Source of Information <input checked="" type="checkbox"/> Field Observations <input type="checkbox"/> Publications <input type="checkbox"/> Company Files <input checked="" type="checkbox"/> Other	Explanation: Field work consisted of a brief property examination and the collection of 21 rock-chip samples on a 400' grid pattern. The core logs of the 9 holes drilled by Cominco were obtained from the property owner, after Cominco dropped their option.  Reviewed by: Melville See Date.....October..29, 1971.....
Recommended Company Interest Classification: <input type="checkbox"/> Active <input type="checkbox"/> Possible <input type="checkbox"/> None <input checked="" type="checkbox"/> Scientific	Qualifying Remarks: The property has much scientific interest in that analogous deposits may have escaped detection in the Southwest. It is similar to a porphyry copper deposit, having disseminated low grade Copper values with chalcocite enrichment. However, it has the following unusual characteristics: limited pervasive alteration, a low Py content, and a lack of diagnostic leached capping or live limonite.

## MINERALIZATION

**Alteration and Metallization:** The host rock is an andesite porphyry (Short's Ranch andesite). Alteration consisted mainly of intense silification in the form of silica veinlets along fractures, and weak argillization of the feldspar phenocrysts. The areas of best mineralization are characterized by copper paint along fractures at the surface. At several feet depth, chalcocite and chrysocolla occur as the most abundant Copper minerals. Oxidation of the chalcocite by descending meteoric waters with attendant solution of silica could have produced the chrysocolla. Small amounts of pyrite, chalcopyrite, and bornite have been observed in the core. Mineralization depth generally terminates at the andesite - Cat Mt. rhyolite contact.

**Leached Outcrops:** The outcrop of the mineralized andesite is not characterized by gossan formation and is leached only at the immediate surface. A geochemical survey of rock-chip samples outlined the area of mineralization with values ranging from 500 to 1000 ppm. Limonite is very sparse and has a transported texture.

**Enrichment:** Enrichment appears to have been an important factor in upgrading what must have been a lean protore. Since in the deposit, only relatively small amounts of primary sulphides remain, it is theorized that lateral migration of ferric sulphate solutions from oxidizing pyrite zones in the adjacent rhyolite may have been the agent for the enrichment of the protore. Polished section work has revealed chalcocite replacing cores of bornite. A cross section across the deposit indicates a thin enriched chalcocite blanket dipping eastward. It is possible that some chalcocite may be hypogene.

## STRUCTURE

**Fissures:** The Short's Ranch andesite is a well fractured host rock. The andesite is bounded on the north, west, and south by a strong fault contact with the rhyolite. The andesite appears to be a down-dropped or graben-like structure, into which lateral migration of acidic groundwaters could have occurred.

**Intrusives:** The Short's Ranch andesite may be a sill-like intrusive. There is some variation in texture from a coarse porphyry to a finer equigranular texture near the center of the deposit.

**Breccia Pipes:** No breccia pipe has been observed, though breccia textures occur in the andesite. It is possible that this is collapse breccia texture, which may have formed during the subsidence of the graben structure.

**Cover Rocks:** None

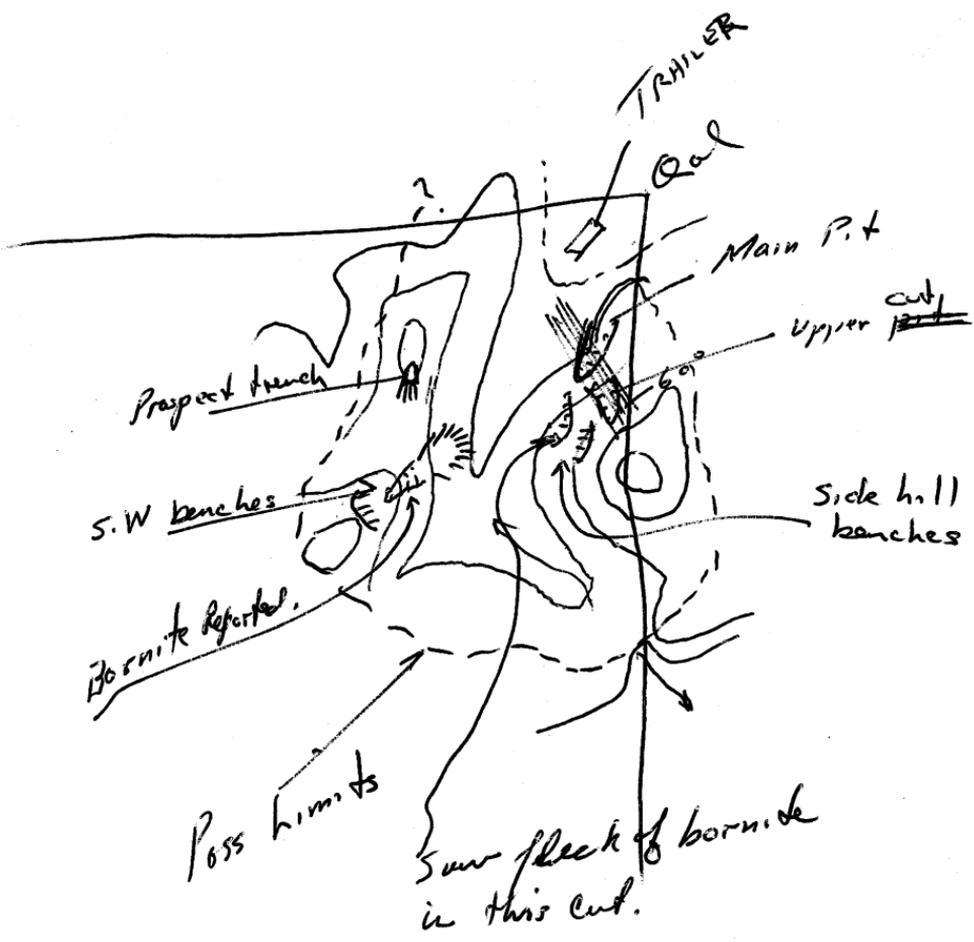
## DEVELOPMENT, PRODUCTION, FACILITIES, ECONOMIC POSITION, ETC.:

Four drill holes assayed an average of .15% Cu for an average depth of 625', giving a tonnage calculation of 37,500,000 tons of .15% Cu. A leach operation, using oxide material from open cuts, has been attempted but no information is available as to its success. Five other drill holes, surrounding the four better holes, intersected only weak Cu mineralization (<.1%), suggesting that the deposit has been adequately explored.

MS/b1 (10-29-71)

Old Pueblo  
Pima Co

3-10-13



Field sketch  
Visit JER, m. See  
Oct 1968-1970

CONTOUR INTERVAL 50 FEET

0 1000 2000 3000 4000 5000 FEET

