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NUNEZ STATION PROSPECT

Supplemental Report  
by  
John Kinnison and John Sandy

3-11-43.2 NUNEZ STATION PROSPECT  
Supplemental Report  
John Kinnison and John Sandy



# INTER-OFFICE MEMORANDUM

TO (NAME, LOCATION, ZIP)

► J. J. Durek  
Oakland, California

DATE

► June 7, 1973

FROM (NAME, DEPT., LOCATION)

► J. E. Kinnison  
Tucson, Arizona

COPIES TO

► Blue  
J. Sandy

SUBJECT

► NUÑEZ STATION COPPER PROSPECT, SUPPLEMENTAL REPORT, PINAL COUNTY, ARIZONA

This will transmit Mr. Sandy's interpretation of our ground magnetic survey (Attachment A), and the following maps:

Attachment B - Geologic Map; 1 in. = 2,000';  
Attachment C - Geochemical Sample Map; 1 in. = 2,000';  
Attachment D - Ground Magnetic Survey Map; 1 in. = 2,000';  
Attachment E - Logistics Map; 1 in. = 2,000'.

Reference may be had to my report of April 13, for background explaining general geologic features of the district, objective sought, and recommendations for exploration procedure. The new data herein transmitted supplements that of April 13, and provides additional information. However, there are no changes of general geologic interpretation or of the outlook for exploration.

Mr. Sandy's interpretation of the magnetic survey lends support to the interpretation that bedrock is shallow, at least in part of the prospective area. He notes that certain assumptions and calculations yield a depth of less than 100' to the top of the two magnetic "high" anomalies which trend southwest across the Maricopa Highway and railroad track, one near Bon and one near Nuñez Station. These "high" may, as suggested by Mr. Sandy, result from a relatively thin layer of volcanics, whose present position in the Nuñez prospect area is due to block faulting. Although the Tertiary volcanic section is not known elsewhere in this immediate vicinity or in the Sacaton range, deep drill hole penetrations six miles to the south near Stanfield have encountered remnants of andesite. If this interpretation is correct, the presence of mid-Tertiary volcanics would enhance the chances for preservation of chalcocite if a mineralized zone is there present.

The somewhat undulating "flat" which exists between the Nuñez and Bon "high" and southwest of the "high" in Section 21 is non-diagnostic as a clue to mineralization. This "flat" may be caused as much by rock susceptibility as by depth to bedrock, and it is worth noting that if a strongly altered area there exists (probably with a low magnetic susceptibility), bedrock could be relatively shallow.

J. J. Durek  
Page 2  
June 7, 1973

The area of prospective interest, as outlined on Attachment B, remains unchanged from my earlier report. This area is delineated laterally by known drill penetrations, or outcrops, of unmineralized bedrock; or otherwise limited by areas suspected of being deeply covered with valley gravels. Within the interior of the prospect area, only within Section 31 are there relatively deep producing water wells, although portions of other sections have at one time been cleared for farming. Parts of Sections 25 and 30 have been prepared for farming, but nearby water wells have been abandoned, and the land is not in current use. The possibility remains that a reintrant from the main Casa Grande basin might extend northerly through the cultivated area in Section 30, but such a basin reintrant is not satisfactorily demonstrated by the magnetic work.

Geologic mapping in the Sacaton range was done by Mr. Richardson and Mr. Strobel, while the pediment search was done by myself. Geochemical sampling indicates copper and zinc to be slightly anomalous within the diorite in the area sampled, with the exception of well cuttings in Section 32 (Sample #4022A). Fragments of Sacaton granite from an abandoned dug well in Section 29 (Sample #4018), which are slightly mineralized, are about twice normal background for that rock in both copper and zinc.

Of special interest, although open to multiple interpretation, is an unusual pile of mineralized debris south of the railroad along the west line in Section 30. This occurrence, first noted by Mr. Strobel, consists of a relatively old pile--perhaps five or ten tons--of strongly to weakly mineralized Sacaton granite. The pile is at the level of the old dirt road to Maricopa; it has been cut through by a drainage ditch, and partly dispersed by miscellaneous bulldozer work and power line poles. The strongly altered fragments contain at least some limonite derived from chalcocite. Although this ancient pile of rocks could have been dumped from a truck or other source for use as road fill or for some other purpose, this seems unlikely. One interpretation is that a dug well, now destroyed by the drainage ditch which cuts through the pile, penetrated either mineralized bedrock or a boulder train derived from a nearby mineralized outcrop. If this interpretation were correct, the Nunez Station prospect would be greatly enhanced.

Approximately  $\frac{1}{2}$  mile southeast of the map coverage, an abandoned water well of unknown depth was found which has penetrated stream-worn pebbles of strongly sericitized porphyry with copper oxides on seams, and flooding the altered feldspars. These pebbles are clearly derived from one or more layers of conglomerate which this water well has penetrated. In light of probable drainage direction, and of older conglomerate cover in the vicinity of Asarco's Sacaton mine, it seems unlikely for that deposit



J. J. Durek  
Page 3  
June 7, 1973

to have provided the altered porphyry fragments. The Nunez Station prospect would seem to offer a reasonable source area for these porphyry pebbles with copper oxides, as well as the ancient pile of altered Sacaton granite above mentioned.

/fn

SECRET  
NOFORN  
15 SEP 1989

ATTACHMENT A



# INTER-OFFICE MEMORANDUM

TO (NAME, LOCATION, ZIP)

► J. E. Kinnison  
Tucson, Arizona

DATE

► June 7, 1973

FROM

► John Sandy  
Tucson, Arizona

*J. S.*

COPIES TO

► Blue  
J. E. Kinnison  
J. Sandy

SUBJECT

► GROUND MAGNETIC SURVEY, NUÑEZ PROSPECT, PINAL COUNTY, ARIZONA

## Coverage

Approximately 55 miles of foot and vehicle traverses were made of a 25-square-mile area southwest of the Sacaton Mountains in five field days. The Southern Pacific Railway runs northwest-southeast across the center of the area from Bon to Nuñez Station.

Readings were taken at 200-foot intervals on the foot traverses and at one-tenth mile intervals on the vehicle traverses. Lines were spaced one-half mile apart with some fill-in where necessary.

## Instrument

A McPhar Protonmag GP-70 magnetometer was used for the entire survey. All readings were taken using an 8' staff to elevate the sensor head above ground effects. No readings were made within 75' of the vehicle or any other metallic object with the exception of some power and telephone lines where they had no apparent effect.

## Preliminary Interpretation

Salient features include:

1. A northeast-trending, 2½-mile long, 1-mile wide "high" just southwest of Bon;
2. A northeast-trending, 3-mile long, ¾-mile wide "high" west of Nuñez Station;
3. A northeast- to north-trending, 2-mile "high," southwest of the Sacaton Mountains;
4. A large arcuate "low" surrounding these first two "highs" and separating them from the "high" southwest of the Sacaton Mountains in Sections 21 and 22.

5. Elongate "lows" within the large arcuate "low" and two elongate "lows" between the Bon and Nuñez "highs" with a large "flat" area between them.

The elongate highs at Bon and Nuñez exhibit steep gradients around their perimeters which suggests that they are near-surface, high-angle fault features. Their rather abrupt, northeast-end terminations indicate faulting at near right angles to strike with an alluvial basin or marked change of magnetic susceptibility on the down-thrown (northeast) side. This is corroborated by the low that parallels the railroad track just northeast of the center of the map.

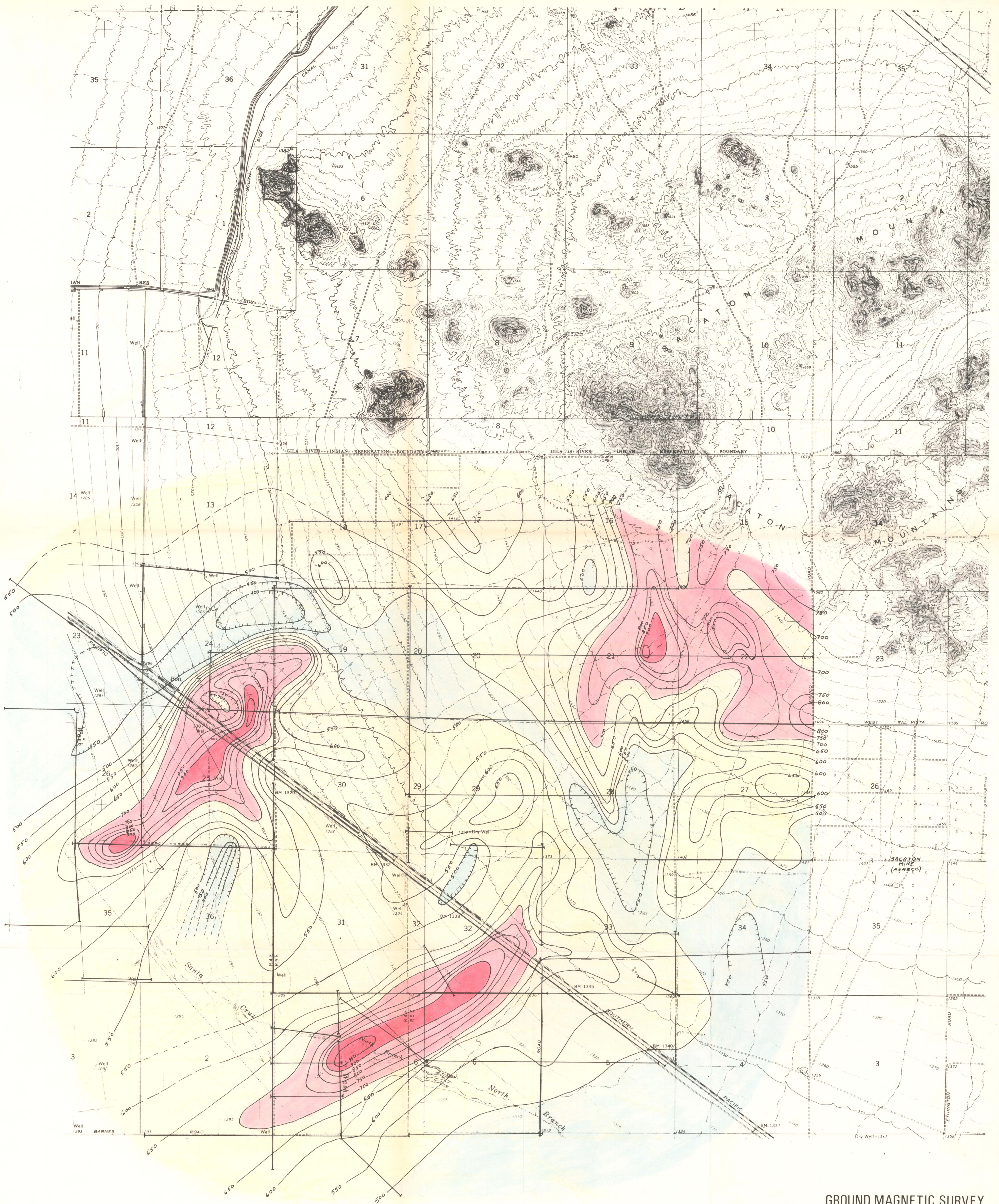
The Laramide diorite-granite contact in the southern Sacaton Mountains can be projected to the southwest for at least two miles. This contact is cut by the large low paralleling the railroad track, but may be continued as the Nuñez high. It is more likely, however, that both the Nunez and Bon highs result from shallow block faulting.

A key well log in Section 25 southeast of Bon shows "black lava" from 388' to 481', with some sediment below. Since this well is located on the Bon high, it is possible that the basalt is the cause of the high. Average basalt has a magnetite-ilmenite content of 6.5%. Contrasted to surrounding rocks in this area, which are probably granitic (with an average magnetite-ilmenite content of 2.0%), the magnetic susceptibility would be much greater. No other volcanics are present in this immediate vicinity, the closest being about six miles away. The Bon and Nuñez highs are probably of the same origin. They have the same strike, approximate length and width, relief and gradients.

Graphic depth calculations give a depth of approximately 100' to the top of the anomalous rock for both the Bon and Nuñez anomalies. This is assuming that the anomalies are caused by a narrow tabular body of relatively high magnetic susceptibility.

/fn





GROUND MAGNETIC SURVEY  
NUÑEZ STATION  
Copper Prospect

Total Intensity Magnetic Field  
50 Gamma Interval

SCALE 1:24000

by J. Sandy and P. Strobel

5 / 2 / 73

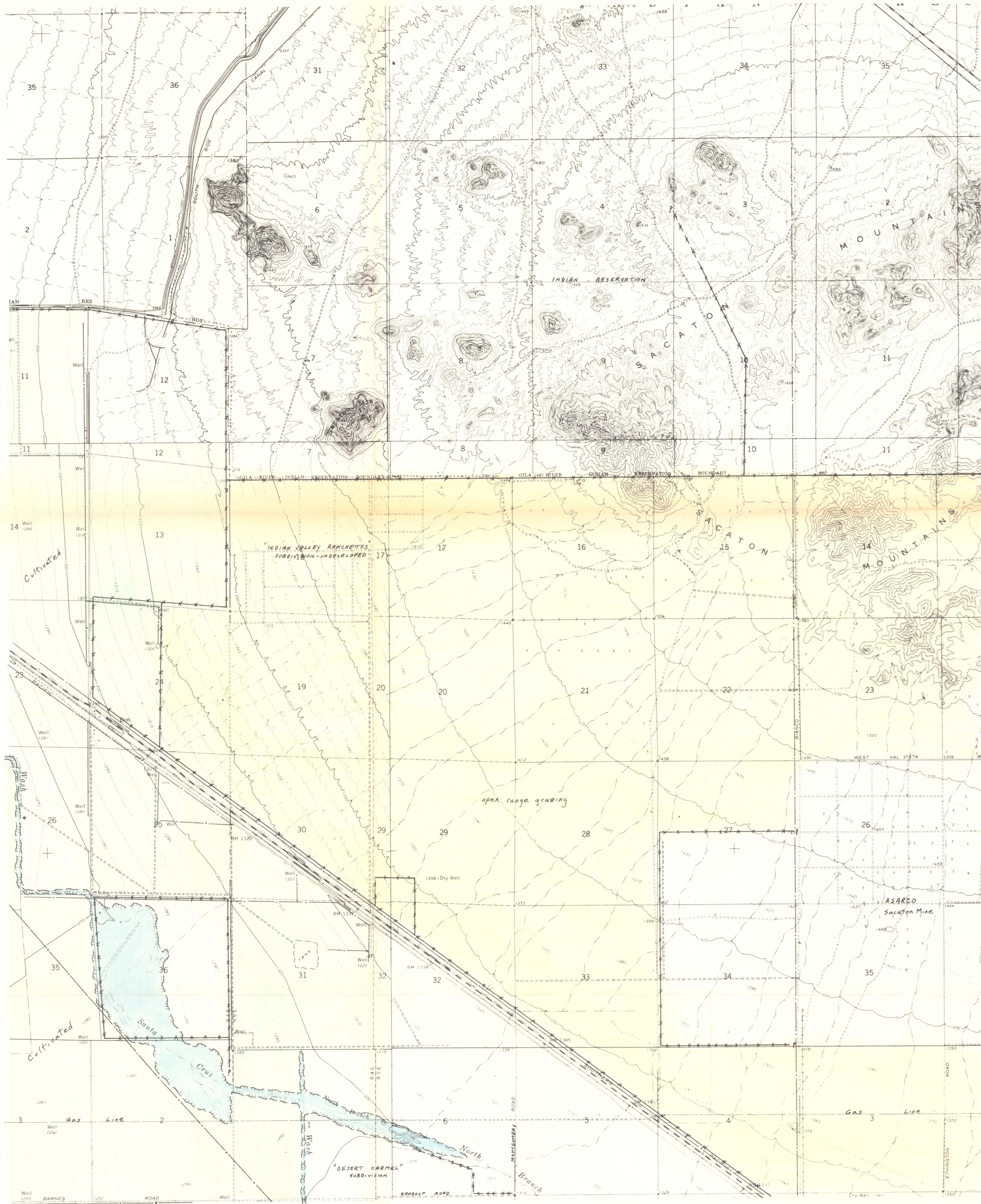
DWG-TUC 23

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COMPANY

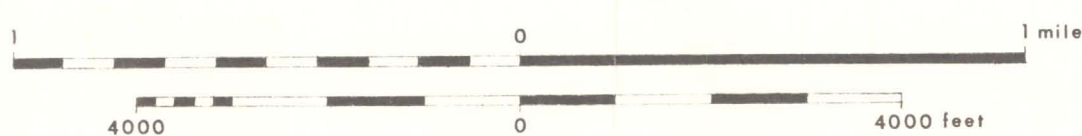
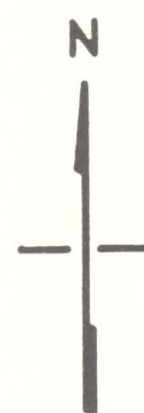
SURVEY LINES

ATTACHMENT D  
TO ACCOMPANY Report  
TO J.D. Durick  
BY Revisions & Hardy  
DATE 6/1/73





- Railroad Tracks
- Power Lines
- Fence
- Water area - limited access



ATTACHMENT E  
 TO ACCOMPANY Report  
 TO J.D. Burke  
 BY Reynolds & Sandy  
 DATE 6/1/73

LOGISTICS MAP  
 of the  
 NUÑEZ STATION  
 Copper Prospect

SCALE 1:24,000

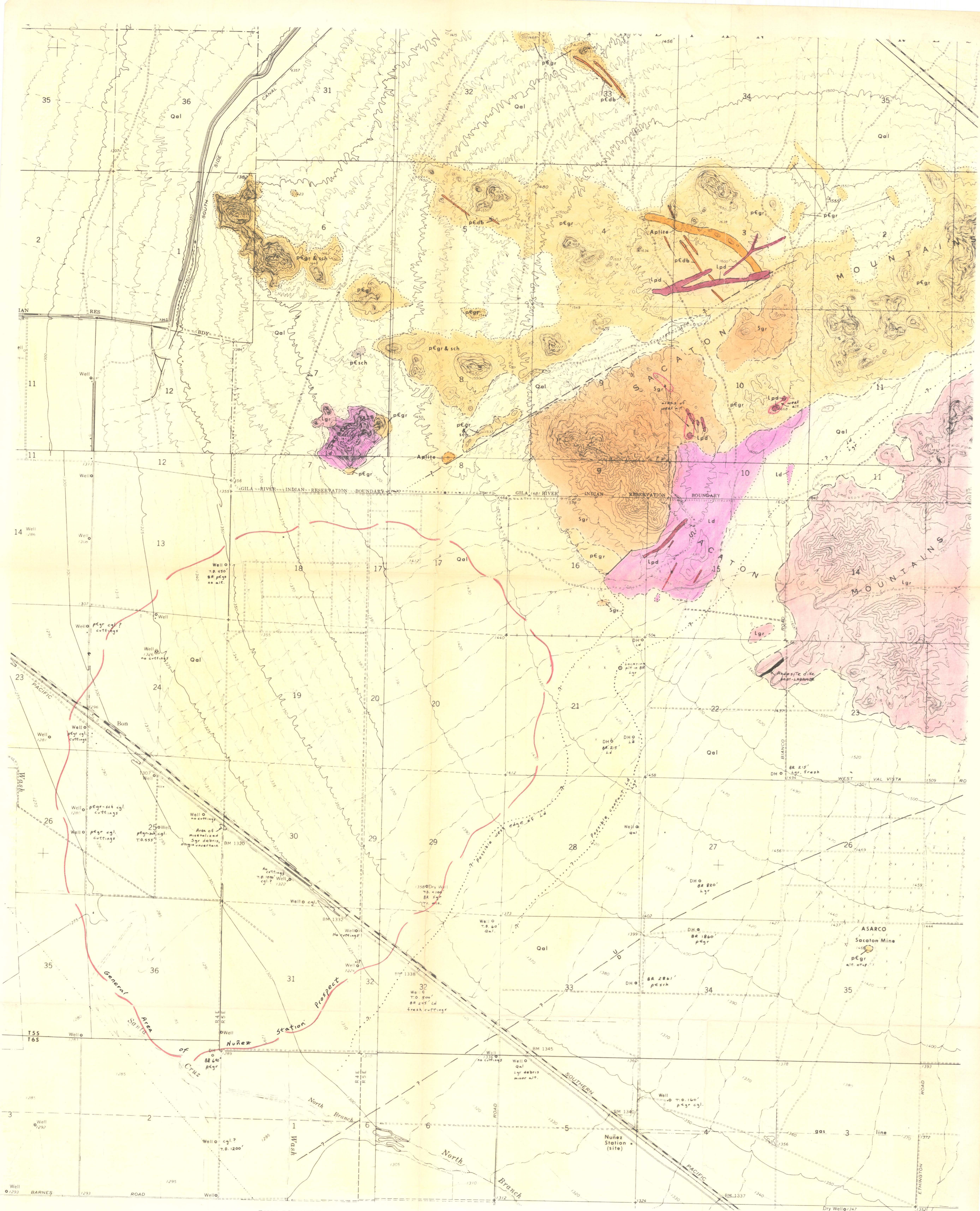
5/21/73

DWG. TUC 26

by P.S. Strobel

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 COMPANY





# EXPLANATION

## QUATERNARY

Qal Alluvial gravels

## LARAMIDE

Lpd Porphyry dikes

Ld Diorite

Lgr Coolidge Granite

## YOUNGER PRECAMBRIAN

pEdb Diabase dikes

Sgr Sacaton Granite

## OLDER PRECAMBRIAN

Aplite Aplite dikes

pEgr Oracle Granite

pEsch Pinal Schist

Contacts

Vein

Fault

Approximate outline of alteration

Water well

Drill hole

Location pit

N

ATTACHMENT B  
TO ACCOMPANY Report  
TO J. J. Durak  
BY Kinnison + Sandy  
DATE 6/1/73

## GEOLOGIC MAP of the NUÑEZ STATION Copper Prospect

Geology by: P.S. Strobel, G.L. Richardson,  
J.E. Kinnison

SCALE 1:24,000

5/21/73

DWG. TUC 24

by P.S. Strobel

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