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

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M-E-M-O-R-A-N-D-U-M

TO: J. D. Lowell

FROM: John E. Kinnison

DATE: January 11, 1979

SUBJECT: Cholla Mountain Land Status

At a meeting in this office with Jack Splane, the following land data was requested:

1) Owners and lessees (if any) of private surface and/or mineral rights.

2) Evidence of existing prospecting permits or mineral leases on land with state mineral rights.

For the following areas:

T.4S., R.9E.; Secs. 19, 29, 30, 31, 32

T.5S., R.9E.; Secs. 5, 6, 7

T.4S., R.8E.; Secs. 25, 26, 35, 36

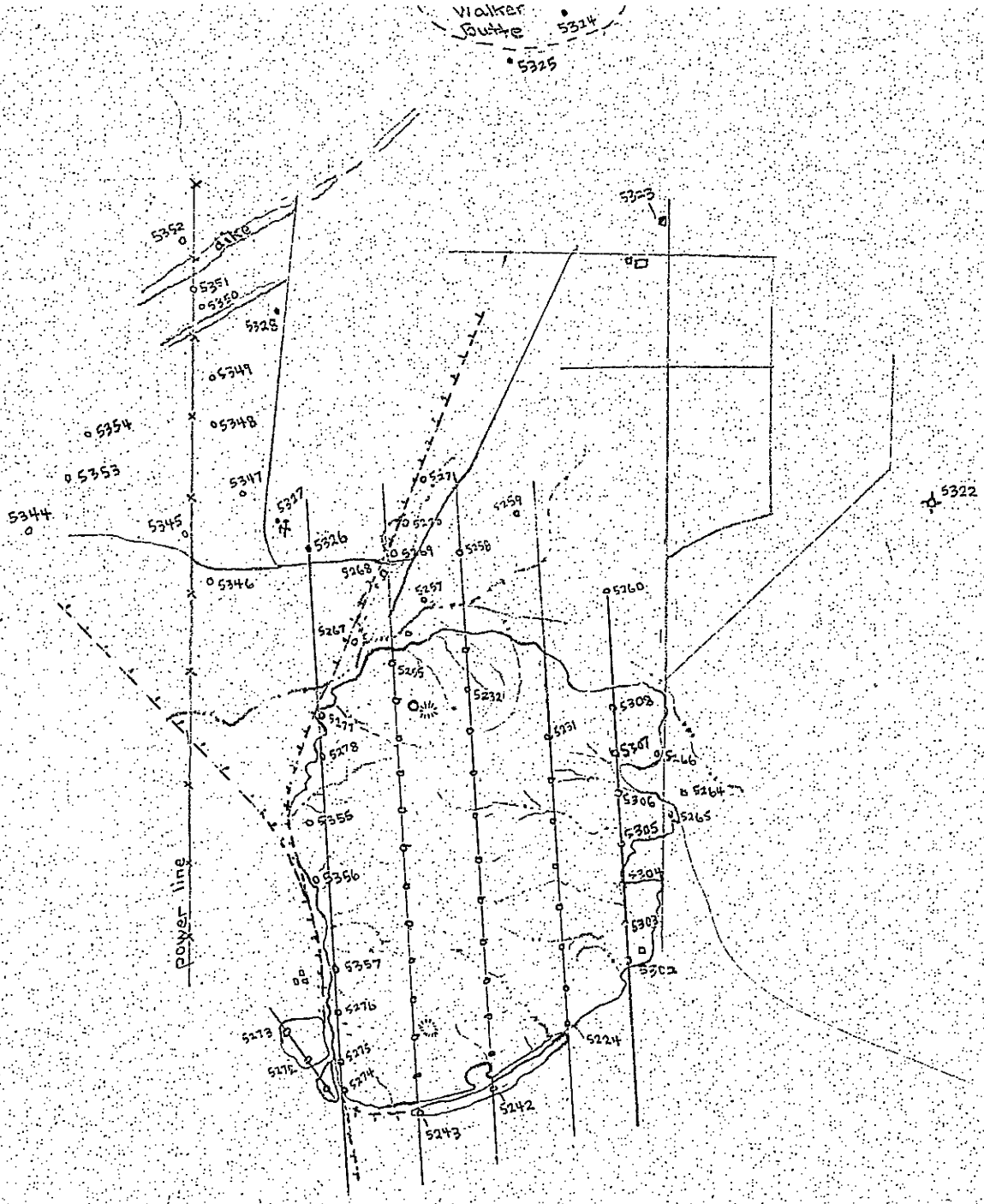
T.5S., R.8E.; Secs. 1, 2, 3, 10, 11, 12

A further request was made to determine if the State Land Dept. would release logs and other drill data furnished to them on relinquished prospecting permits, under the Freedom of Information Acts.

When the above data has been acquired, priority of parcels for acquisition will be furnished to Mr. Splane, who will make contact with owners for option negotiations.

JEK:sbc

cc: C. Dowd



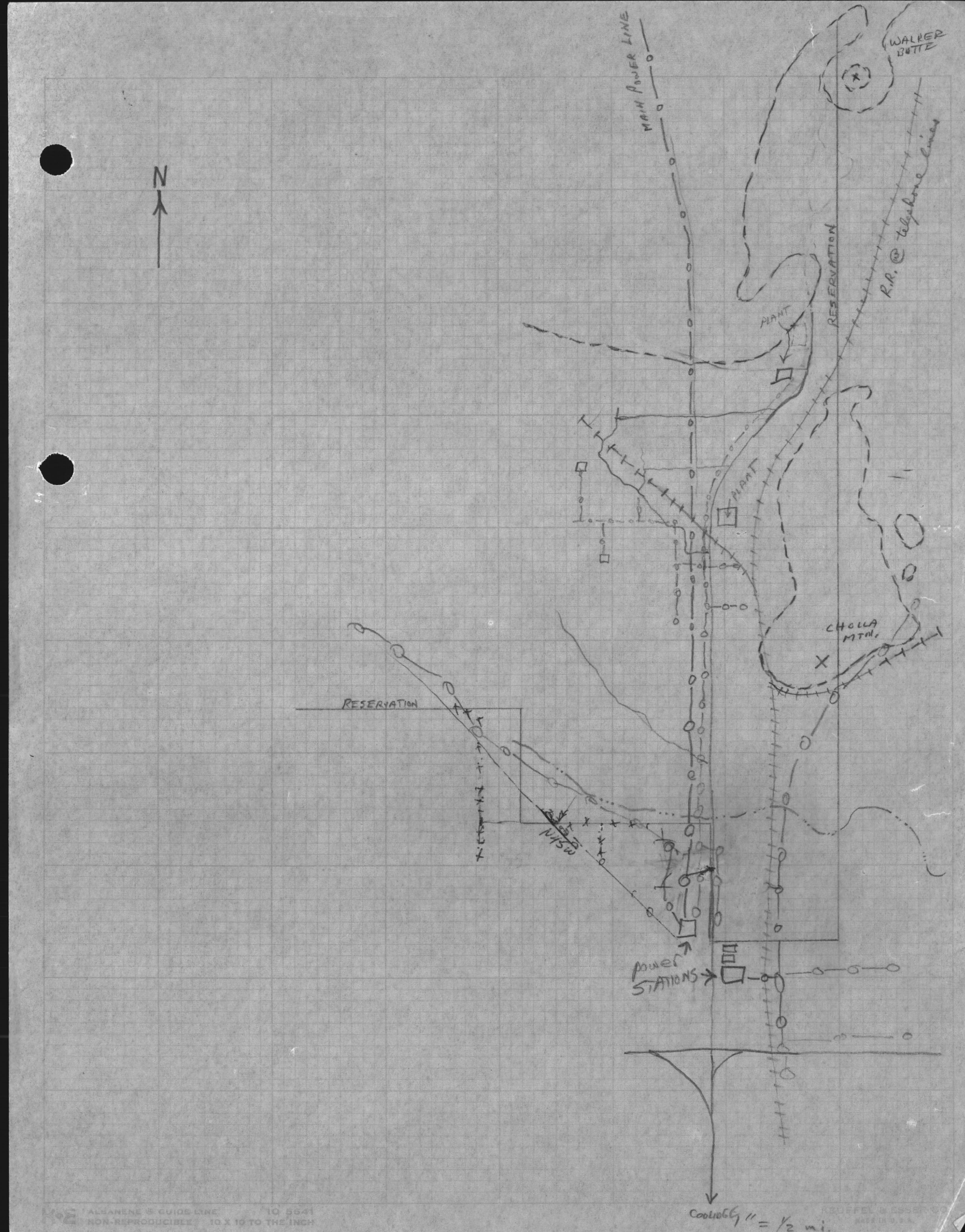
Cholla Mt. Project

N

• rock chip sample site
(sites at 300' intervals)
w/ sample #

1" = 2000'

✧ Drill hole cuttings



ALBANENE ® GUIDE LINE 10 5541
NON-REPRODUCIBLE 10 X 10 TO THE INCH

PULPS NOT CALLED FOR IN 90 DAYS, AND REJECTS NOT CALLED FOR IN 30 DAYS, WILL BE DESTROYED. IF STORAGE OF PULPS OR REJECTS IS DESIRED, CHARGES WILL APPLY PER OUR SCHEDULE.

To: **HAWLEY & HAWLEY**
Assayers and Chemists, Inc.

(For Customer's Use)

From: KAISER EXPLORATION & MINING
5938 N. ORACLE ROAD
TUCSON, ARIZ.

- [ ] Single Analysis
- [ ] Verified Analysis*
- [x] Geochemical Analysis
- [ ] Spectrographic Analysis

*Verified Analysis will be run unless otherwise specified

FEB. 15 1972

Page 1 of 1 pages

Interval	Sample No.	Au	Ag	Pb	Cu	Zn	Mo		
	6067				X				Lgr, gas line road - SACATON
	6068				X			RERUN	3084
	6069				X				3090
	6070				X				3092
	6071				X			RERUN	5258
	6072				X				5267
	6073				X				5268
	6074				X				5271

Hawley & Hawley called

Copper trace analyses

Code	ppm	Previous results
6067	> 1000	?
6068	413	46 (3084)
6069	> 1000	122 (3090)
6070	709	76 (3092)
6071	> 1000	744 (5258)
6072	> 1000	477 (5267)
6073	> 1000	143 (5268)
6074	> 1000	110 (5271)

Please call back if you want them to do more work on these samples

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

BOX 50106 1700 W. GRANT RD.,
TUCSON, ARIZONA 85703 (602) 622-4836

Registered Assayers
OVER 50 YEARS

BRANCHES
Douglas
Hayden
Morenci
Inspiration
El Paso
St. Louis

IDENTIFICATION	Gold OPT	Silver OPT	Lead %	Copper %	Zinc %	Mo. %			
				ppm					
				Rejects from orig					Rerun Pulps
6067		~~3084~~		307			orig		
6068		~~3090~~		42	3084		46		
6069		~~3092~~		100	3090		122		
6070				74	3092		76		
6071				542	5258		744		
6072				432	5267		477		470
6073				168	5268		143		
6074				104	5271		110		111

Sacator Goshawk exploration prospect.

CC: Kaiser Exploration & Mining
ADD: 5938 North Oracle Road
CITY: Tucson, Arizona 85704
ADD:
CITY:

REMARKS: Trace analysis

Analysis Cert. By

Preparation $ 7.20
Analysis $ 12.00

ACC:	Date Spl. Received	Date Compl.		$
KAISER EXPLORATION & MINING	2/16/72	2/29/72	TUC 345980	19.20

HH3

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Registered Assayers
OVER 50 YEARS

BRANCHES

Douglas
Hayden
Morenci
Inspiration
El Paso
St. Louis

IDENTIFICATION	Gold OPT	Silver OPT	Lead %	Copper %	Zinc %	Mo. %			
				ppm					
				Rejects from orig					
6067				307					
6068				42			- 46		
6069				100			- 122		
6070				74			- 76		
6071				542			- 744		
6072				432			- 477	- 430	
6073				168			- 143		
6074				104			- 110	- 111	

CC: Kaiser Exploration & Mining
ADD: 5938 North Oracle Road
CITY: Tucson, Arizona 85704
ADD:
CITY:

REMARKS: Trace analysis

Analysis Cert. By

Preparation $ 7.20
Analysis $ 12.00

ACC:	Date Spl. Received	Date Compl.		$
KAISER EXPLORATION & MINING	2/16/72	2/29/72	TUC 345980	19.20

HH3

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BOX 50106 1700 W. GRANT RD.,
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Registered Assayers
OVER 50 YEARS

BRANCHES
Douglas
Hayden
Morenci
Inspiration
El Paso
St. Louis

IDENTIFICATION	Gold OPT	Silver OPT	Lead %	Copper ~~%~~ ppm	Zinc %	Mo. ~~%~~ ppm			
6061				10		< 2	WHITE TANK		
6062				14		< 2			
12-21-1				279		5	Mingus		
12-21-2				63		5			
12-21-3				67		7			
3078				43		< 2	Chotla Hills		
3079				397		< 2			
3080				> 1000		< 2			

Chotla Tank Hills Copper Maricopa Co
Ferrocarril
Pima Co
Chotla Hills " Sonora Mex
Mingus " "

CC: Kaiser Exploration & Mining Co.
ADD: 5938 North Oracle Road
CITY: Tucson, Arizona 85704
ADD:
CITY:

REMARKS:
Trace analysis

Analysis Cert. By

Preparation $
Analysis $ 32.00

ACC: KAISER EXPLORATION & DEVELOPMENT | Date Spl. Received | Date Compl. 1/7/71 | TUC 345864-A | $ 32.00

HH3

Chilla Mtn file

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

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TUCSON, ARIZONA 85703

Review of Pulps

work copy

BRANCHES
DOUGLAS, ARIZONA
HAYDEN, ARIZONA
EL PASO, TEXAS
ST. LOUIS, MO.

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
				ppm	old				
old H&H									
6063 - 5232			172	235	118			Chilla Mtn Pulp Co Hrz	
6064 5260		Review		460	462				
6065 5267		No Chg	490	840	477				
6066 5271				111	110				

CC: Kaiser Exploration & Mining
ADD: 5938 North Oracle Road
CITY: Tucson, Arizona 85704
DD:
CITY:

REMARKS: Trace analysis

ANALYSIS CERT. BY H E Hawley

PREPARATION $
ANALYSIS $ 6.00

HH3A

ACC: KAISER EXPLORATION & MINING

DATE SPL. RECEIVED 1/21/72 | DATE COMPL 1/22/72 | TUC 345921 | $ 6.00

Chello Min file — Return of Pulps

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.

1700 W. GRANT RD. • BOX 50106 • 622-4836

TUCSON, ARIZONA 85703

BRANCHES: DOUGLAS, ARIZONA; HAYDEN, ARIZONA; EL PASO, TEXAS; ST. LOUIS, MO.

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
				ppm	Old				
Old H&H									
6063 - 5232			172	235	118			Chelton Pard Co Hrz	
6064 5260		Return		460	462				
6065 5267		No Chg	490	840	477				
6066 5271				111	110				

CC: Kaiser Exploration & Mining
ADD: 5938 North Oracle Road
CITY: Tucson, Arizona 85704
DD:
CITY:

REMARKS: Trace analysis

ANALYSIS CERT. BY: H E Hawley

PREPARATION $
ANALYSIS $ 6.00

HH3A

ACC: KAISER EXPLORATION & MINING

DATE SPL. RECEIVED 1/21/72 | DATE COMPL 1/22/72 | TUC 345921 | $ 6.00

HAWLEY & HAWLEY
ASSAYERS AND CHEMISTS, INC.
1700 W. GRANT RD. • BOX 50106 • 622-4836
TUCSON, ARIZONA 85703

Work Copy

BRANCHES
DOUGLAS, ARIZONA
HAYDEN, ARIZONA
EL PASO, TEXAS
ST. LOUIS, MO.

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
				ppm					
3088				77					
3089				23					
3090				122					
3091				110					
3092				76					

Chalk Hill Copper
Pinal Co Ariz

CC: Kaiser Exploration & Mining
ADD: 5938 North Oracle Road
CITY: Tucson, Arizona 85704
DD:
CITY:

REMARKS:
Trace analysis

ANALYSIS CERT. BY H E Hulsey

PREPARATION $ 4.50
ANALYSIS $ 7.50

ACC: KAISER EXPLORATION & MINING

DATE SPL. RECEIVED 1/17/72 | DATE COMPL 1/19/72 | TUC 345909 | $ 12.00

HH3A

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ASSAYERS AND CHEMISTS, INC.

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TUCSON, ARIZONA 85703

Work Copy

BRANCHES: DOUGLAS, ARIZONA; HAYDEN, ARIZONA; EL PASO, TEXAS; ST. LOUIS, MO.

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
				ppm					
3088				77					
3089				23					
3090				122					
3091				110					
3092				76					

CC: Kaiser Exploration & Mining
ADD: 5938 North Oracle Road
CITY: Tucson, Arizona 85704
DD:
CITY:

REMARKS: Trace analysis

ANALYSIS CERT. BY A E Richard

PREPARATION $ 4.50

ANALYSIS $ 7.50

ACC: KAISER EXPLORATION & MINING

DATE SPL. RECEIVED 1/17/72

DATE COMPL 1/19/72

TUC 345909

$ 12.00

HH3A

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TUCSON, ARIZONA 85703

Work Copy

BRANCHES
DOUGLAS, ARIZONA
HAYDEN, ARIZONA
EL PASO, TEXAS
ST. LOUIS, MO.

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
				ppm					
3081				24					
3082				18					
3083				76					
3084				46					
3085				37					
3086				84					

CC: Kaiser Exploration & Mining
ADD: 5938 North Oracle Road
CITY: Tucson, Arizona 85704
DD:
CITY:

REMARKS:
Trace analysis

ANALYSIS CERT. BY H E Nichol

PREPARATION $ 5.40
ANALYSIS $ 9.00

ACC: KAISER EXPLORATION & MINING

DATE SPL. RECEIVED 1/13/72 | DATE COMPL 1/19/72 | TUC345896 | $ 14.40

HH3A

HAWLEY & HAWLEY
ASSAYERS AND CHEMISTS, INC.
1700 W. GRANT RD. • BOX 50106 • 622-4836
TUCSON, ARIZONA 85703

Work Copy

BRANCHES
DOUGLAS, ARIZONA
HAYDEN, ARIZONA
EL PASO, TEXAS
ST. LOUIS, MO.

IDENTIFICATION	GOLD OPT	SILVER OPT	LEAD %	COPPER %	ZINC %	MO. %	IRON %		
				ppm					
3081				24					
3082				18					
3083				76					
3084				46					
3085				37					
3086				84					

Cholla Mtn Copper
Prod to Hoz

CC: Kaiser Exploration & Mining
ADD: 5938 North Oracle Road
CITY: Tucson, Arizona 85704
DD:
CITY:

REMARKS:
Trace analysis

ANALYSIS CERT. BY H E Hirlad

PREPARATION $ 5.40
ANALYSIS $ 9.00

HH3A

ACC: KAISER EXPLORATION & MINING

DATE SPL. RECEIVED 1/13/72 | DATE COMPL 1/19/72 | TUC345896 | $ 14.40

J. E. K.

MAR 25 1971

NOTES

John Kinnison recording, March 24, 1971

In company with Mel See, we examined the railroad cuts along the south flank of Cholla Mountain along the abandoned railroad grade. The rock is still principally Coolidge granite, cut by porphyry dykes--these would be a quartz monzonite of the typical ~~affanitic~~ aphanitic porphyry type. The granite is chloritized along quartz seams, and shows very infrequent spots of copper stain. A trace of "live limonite" is present. There is a notable less quantity of potassic alteration evidenced by feldspar veinlets and sericite, such as appears on the southwest flank along the new railroad cut. A little potassic alteration was seen along the contact zone with the quartz monzonite porphyry. Along the contact also, the Coolidge granite is more shattered, and there are veinlets in several directions. Elsewhere, the granite is traversed by a sheeted structure, with mineralized zones several feet up to perhaps eight feet apart. The granite between these sheeted mineralized structures is relatively fresh. Actually, it should be classified as essentially unaltered between the mineralized fissures.

Further east along the railroad cuts, we have observed other dykes of porphyry. In each case the walls of the dyke on both sides are surrounded by a disturbed zone of granite with quartz veinlets and hematite--with occasional "live limonite." Some orthoclase, pink and secondary, is adjacent to the dyke and extends across about two feet in width--perhaps a little more.

The last two railroad cuts on the east leaving the southeast flank of Cholla Mountain, show relatively fresh granite with a little epidote--it definitely appears that mineralization is weaker here. There is, much quartz in thin seams through the rock, but appears generally weaker as far as the intensity of mineralization is characterized.

North of the main peak called Cholla Mountain, on the northeast slope of that peak, there are several small prospect shafts accessible by road from the powerline on the east side. On the northeast slope of Cholla Mountain itself, these prospect pits are dug on one-half to one-foot wide silicified shear zones, with some small amount of sericite locally present, and some limonitic staining. Traces of copper oxide are present. The silicified shears strike about N 70° E, and are widely separated. The Coolidge granite between the shear zones exhibits only locally feeble alteration. Further northeast still, prior to the mountain merging under alluvium, these shear zones essentially disappear and mineralization is non-existent. Therefore, it appears that these shear zones north of Cholla Mountain, and which extend apparently across the top of Cholla Mountain (as checked on the ground) strike directly into the railroad cut which shows the best mineralization on the southwest flank of Cholla Mountain. It would thus appear, that the mineralization intensity is increasing toward the southwest in the direction of the railroad cuts themselves.

Farther to the north, on a ridge extending north from Cholla Mountain, at a water tank, Mel See has located a very small area which locally shows a little secondary feldspar. This might deserve further checking around the flanks of this northern extent of bedrock. However, it appears isolated from the main zone which we have been looking at earlier in the day.

At the end of the day, we checked the southwest flank of the mountain at the railroad cut where the mineralization is most intense, and went around to the south west side of this outcrop adjacent to alluvium. On the surface there are exposed close-spaced fissures with strong sericite and a little transported hematite with local traces of "live limonite." Very scattered small specks of green copper oxides are also noticeable. The veins are predominately quartzose but with very coarse sericite adjoining them. This would appear to be an extension of the better mineralization exposed in that railroad cut, and thus the extent of this better mineralization

extends beneath alluvial cover on the southwest flank of Cholla Mountain. It would project onto the Gila Indian Reservation.

Future exploration ~~of~~ in this southwest under alluvium will be difficult due to numerous powerlines which will make induced polarization traverses difficult. Also, there are farmlands immediately in the vicinity of the projection. However, about three-thousand feet farther southeast (visual estimate) the Gila Flood Plain is a flat terrain, which would be easily traversed by IP lines, and which has no fences or other obstructions.

An additional note on the exposures of quartz monzonite porphyry dikes, as seen in railroad cuts and also on the surface on the northeast slope of Cholla Mountain. These dikes are nowhere strongly mineralized. Only the feeblest traces of pyrite are in evidence in a few localities. There is some indiscriminate iron staining of the porphyry, but this may in part be derived from the oxidation of sulphides contained in the nearby granite wall rocks. As observed in the railroad cuts where exposures were good, it was seen that for the most part the quartz veins and little sulphide stringers now oxidized to limonite, ~~and~~ and at the contact between granite and dike, and these mineralized veinlets do not penetrate from the granite into the dike. In a few instances quartz veins were seen to traverse from mineralized granite into the dike, but this type of occurrence was rare. We theorize that the porphyry dikes must have been injected at a very late stage in the course of hydrothermal mineralization, were not fractured during this late stage of mineralization, and therefore received only the smallest amount of mineralized quartz veinlets and the most minute quantity of disseminated sulphides. Rock alteration of the porphyry is virtually absent.

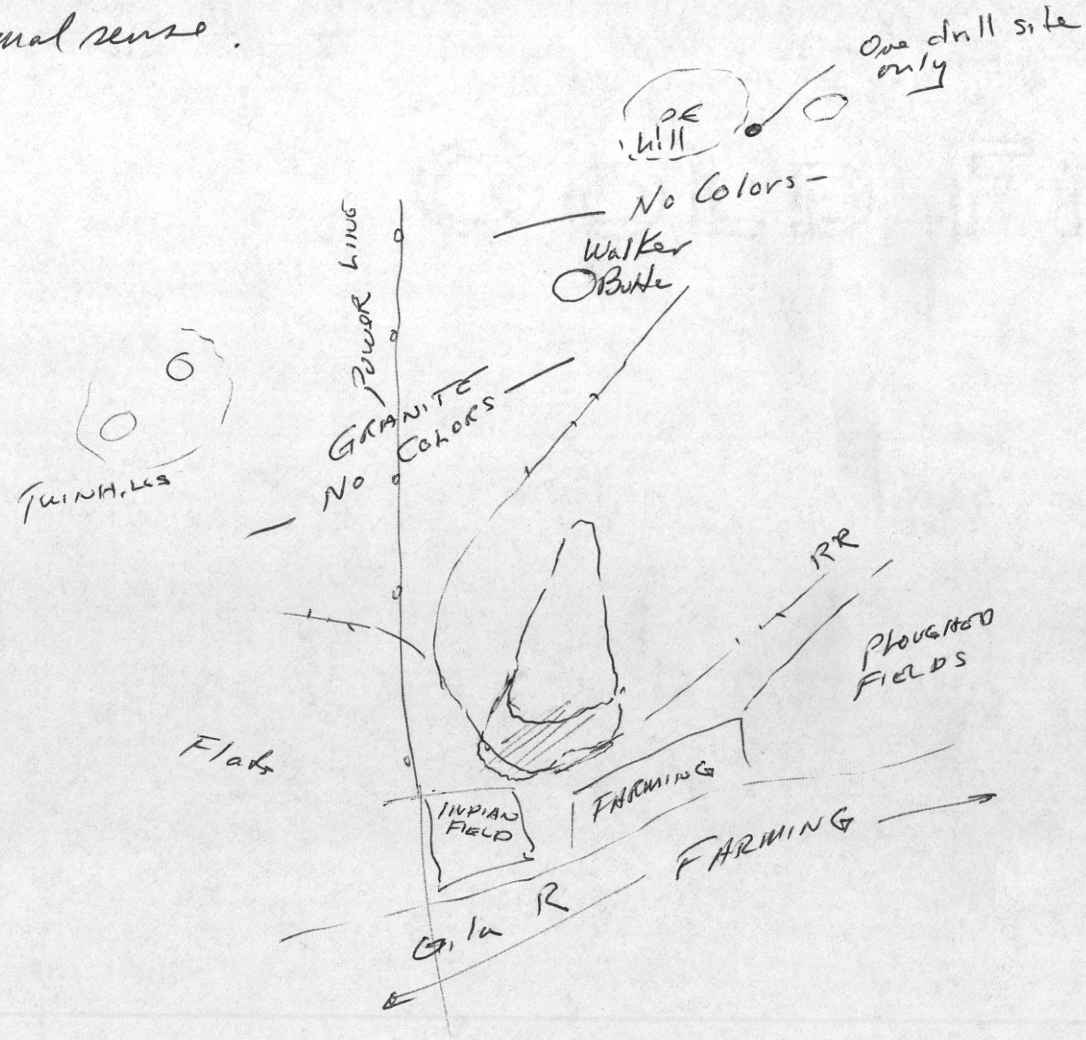
JEK/bl
3-25-71

Notes condensed from recorder

Air Recon 3/16/71

1. Cholla Mtn exhibits a muted tan color-streaking suggestive of a NE "grain", on its south and southwest ~~ei~~ end.

2. The colors are not indicative of alteration in the normal sense.



J. E. K.

DEC 28 1971

AIR RECONNAISSANCE, December 27, 1971

John Kinnison recording:

Hudgin Air Charter at the International Airport, taxiing for take-off. Pilot: Palen Hudgin; plane: Cherokee 180; time: 12:48 p.m.; weather: slight overcast, sun relatively bright, appears clear of clouds northerly toward Coolidge, which is our destination. Coolidge on our left, Cholla Mountain dead ahead. Time: 1:13 p.m.; altitude: 3,000 feet or about 1,500 feet above ground surface. Plowed fields extend right up to the abandoned railroad grade. Some of these fields are planted. Others are plowed but not planted. Paralleling the railroad grade northerly, there are earth cracks visible west of Cholla Mountain. These could be roads, but do not appear to be so. Circle north in toward an old abandoned ranch house. There appears to be a drill site east of the Hunt highway at about two miles, will say about one mile, north of Cholla Mountain. There is a clear area, a possible drill site 200 or 300 feet south of the road leading east from the abandoned ranch house. and About one mile E. from the ranch house. On line with this drill hole just described and to the north half a mile and then another half mile two to clear spots, which may be drill sites. The north one, about ~~west~~ east of Walker Butte has been occupied by a drill hole. The other one seems fresh and unoccupied. The south one, ~~west~~ east of the ranch house coming up, does not appear occupied. An abandoned shaft is spotted in between the south and next north drill sites. Altitude down to 500' above ground It has penetrated bedrock, a little bit of old woodwork left. This was never known to me before. Also there are trenches on the west side of the railroad up by the pre-Cambrian Larimide contact hill, which may have exposed the bedrock. The drill pad east of the Hunt highway has definitely been occupied. It is about 800 feet east of the road and a mile, say north, of the bend from the Posten Butte westerly-easterly road.

Have set course east toward Posten Butte. No drills spotted. Returning to Cholla mountain and will follow an abandoned railroad grade. Extensive canal work following along the railroad grade, and between that and farmed or plowed fields there would be no chance of any visible earth cracks being seen. The possible earth cracks mentioned earlier on the west side of Cholla mountain may be Indian trails--they are rather numerous and do not look right for earth cracks. There may be some outcrop just to the east of the east flank of Cholla mountain of the . They may also be Indian-ruin mounds, but should be field checked.

Altitude up to 6,000 feet. Running southeast from Walker Butte, there are some noticeable large earth cracks. These do not seem to, as a group, extend to the east of the Hunt highway. There is also apparently a northeasterly drain to some of the drainage extending northeast of the north end of Cholla mountain. There are notable earth cracks north of Walker Butte and extending across the Hunt highway. But these are not within the area of immediate interest.

Time: 1:45 p.m. Begin return to Tucson. Landed at Hudgin's port in Tucson at 2:15 p.m.

JEK/bl
12-28-71

CHOLLA MOUNTAIN PROJECT

Melville See

The discovery (J. E. Kinnison, 1970) of sericite-potassic feldspar alteration in the Laramide granite of Cholla Mountain, initiated a detailed geochemical program of this isolated mountain.

Rock chip samples were collected at 500 feet intervals on N-S grid lines spaced 1000 feet apart. Two geochemical anomalies were found to exist: a larger one, unclosed to the northeast due to shallow alluvial cover, and a smaller anomaly unclosed to the southwest due to deep alluvial cover.

A Continental ? drill site in the alluvium 3000 feet to the northeast of Cholla Mountain evidenced granite cuttings. These were collected, and geochemical results indicated they were weakly anomalous.

Because of the difficult land situation, complicated by the close proximity of the Gila Indian reservation to the west and north, and the 1970 state exploration permit by a rival company taken on state land adjacent to Cholla Mountain on the east, no further exploration was initiated. Also there was some evidence indicating that recent IP lines may have been run immediately north of Cholla Mountain in the shallow alluvium by another company. At the present time, land investigation might reveal that state land under former exploration permits, may now be open. However, an evaluation of the exploration results to date should be made before initiating further work.

These results may be summarized:

1. Sericite-potassic feldspar alteration occurs along a northeast oriented fracture system within the Laramide granite of Cholla Mountain. These fractures often evidence copper paint, and are widely distributed throughout Cholla Mountain. The copper paint may be resultant from thin chalcopyrite stringers, which have oxidized. Mineralization appears to have a strong northeast structure control.

2. Two open geochemical copper anomalies do exist.

a. The southwest anomaly is open due to the sudden appearance of deep alluvial cover adjoining the Gila River. These deep gravels may represent the down-dropped block of a fault immediately south of Cholla Mountain. Bedrock is at least 600 feet deep. IP work would be complicated by the Gila River gravels.

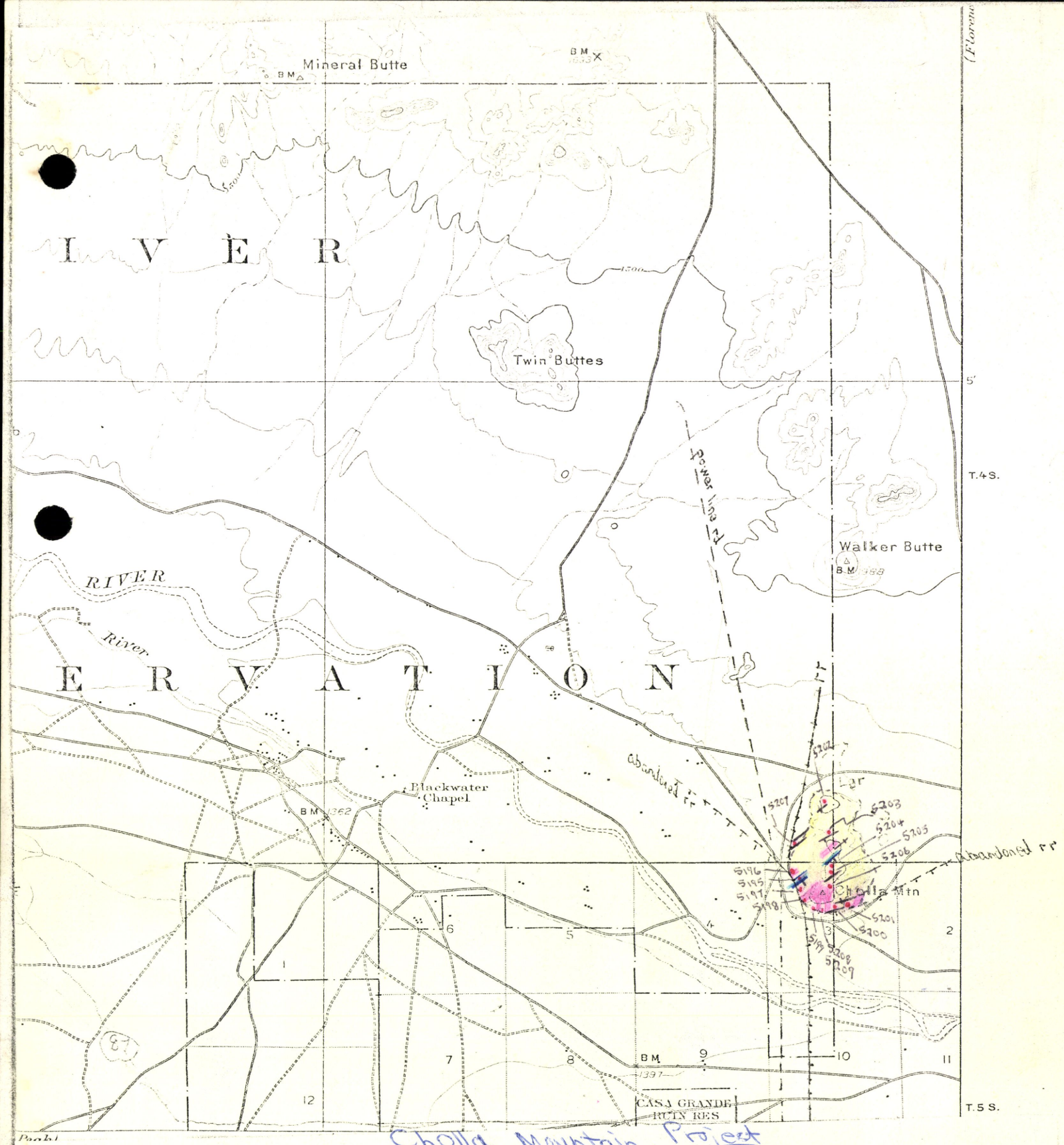
b. The northeast anomaly is open due to shallow alluvial cover. However, the penetration to bedrock in this area by a single drill hole

indicated only weakly anomalous copper values. IP work by other companies probably has also covered this area, and in the absence of further drilling, it probably proved negative.

3. Study of aerial photographs reveal a strong northeast fracture system cutting Cholla Mountain. This fracture pattern may be traced out into the shallow alluvium to the northeast. This pattern shows up on aerial photographs as linear patterns, probably caused by the differential compaction or settling of alluvium over the larger fractures in the bedrock. This setting may be caused by slight earth tremors, which occur from time to time. (J. E. Kinnison)

In conclusion, Cholla Mountain represents an outcrop of Laramide granite (with porphyry dikes), which has weak copper mineralization, structurally controlled. Any attempt to trace possible extensions of the mineralization to the northeast or the southwest must be evaluated in light of the evidence collected in this report. The technique of following mineralization under shallow alluvial cover by the study of differential compaction (using aerial photographs) indicates a promising exploration tool.

MS/bl



Cholla Mountain Project

Porphyry dike

Laramide granite

copper stain along fracture

fracture, usually accompanied by sericite & K feldspar

1" = 1 mile

N

Water Well Cuttings (stored at Univ. of Arizona Bureau of Mines)

(approx location: N of Gila River & about 2000-3000' SW of Cholla Mt)

Well hole #

1067:

620' - 650' granite w/ trace of limonite
minor biotite (chloritized)
possible porphyry fragments

695

690' - porphyry fragments?

FINAL REPORT

CHOLLA MTN. 142-175

FINAL REPORT

CHOLLA MTN. REPORT

CAP 142-175

The subject project has been described in previous quarterly reports. Briefly stated, we had developed sufficient geologic data to infer the possibility that Conoco's Florence deposit (Poston Butte), which is a major primary deposit grading about 0.4% Cu -- but which has negligible chalcocite enrichment -- was in the upper plate of a low-angle fault. We gathered evidence suggesting that the original top of the deposit beneath Tertiary conglomerate or volcanics, could have been shifted several miles to the southwest, toward a zone of mineralized fissures at the south end of Cholla Mountain, along a secondary low-dipping fault within the upper plate.

We now feel that the assumption of direction of movement, which was based on the tilt of the erosion surface carved on mineralized Oracle granite and overlain by a layer of Yellow Peak conglomerate (equivalent to Whitetail), thus giving us a plane of tilt and therefore, by rule of thumb, a direction of movement, requires reassessment. Cross-sections in our files (only partially complete) do indicate an abrupt drop in grade deep below the Conoco deposit at Poston Butte which verifies, or at least tends to verify, the assumption that the flat fault shown on their model was indeed correct.

We suspected that the porphyry dikes and stringers of sulfide mineralization (evidenced by their leached boxworks) at the south end of Cholla Mtn. represented the tail end of the zone of alteration and mineralization, and that the low grade pervasive copper anomaly - although in some respects surely exotic, probably derived mainly from thin veinlets such as those which may be seen along the railroad cuts on the south and west sides of Cholla Mtn. If this entire length is related to a single deposit, it seems abnormally long. A low-angle fault slicing above the major copper center at Poston Butte could account,

we believed, for such a lengthening of the zone. This slice could well contain the upper portion and residual leached capping and chalcocite enrichment of substantially higher grade.

Drill hole data gathered surrounding the district indicated extensive drilling exploration, even though we do not have information or analyses on all of the holes. Moreover, the mineral rights were private and only one tract of ground was obtainable at a reasonable cost. We were, thus, limited to the land owned by Virgil Chandler, which appeared to be situated in an ideal location to test the fault hypothesis as outlined above.

Drill hole CM-1 evidently penetrated the southwestern, propylitically altered edge of the portion of the deposit now held by Asarco, but the copper assays were low - under 100 ppm. Drill hole CM-2, located about 3/4 mile southwest of the first hole, entered fresh-appearing Precambrian Oracle granite, but with surprisingly high copper geochemical analyses averaging well above 100 ppm with a maximum of 670 ppm. Our drilling, therefore, has merely added to the already present pattern of probably exotic copper (although transport may not have been far distant from originally mineralized fractures) which surrounds Cholla Mtn. This, in turn, lies southwesterly from the southwestern tip of the mineralization as we now believe it occurs surrounding the Asarco ground.

There is no "hard" data on the deposit held by Asarco. Information supplied by S. Van Nort suggests the two deposits are similar, but that the Asarco deposit is smaller -- about 1/3 the tonnage of Conoco's. Early cross-sections displayed at previous meetings, prior to our drilling, indicated a trough between the two deposits, but placed both deposits in the same plate. A reinterpretation shown by the cross-section in this report indicates the Asarco deposit to be part of an upper plate strand, which was shifted from above the Conoco deposit. The trough, known by drilling and partly located by gravity, is now thought to be a simple graben. This interpretation is questionable, but possible; we should remember that we have no hard data on the Asarco deposit.

The geologic map here presented shows the principal features affecting this project. The district as such has not yet been wholly abandoned, and we are maintaining an action file which may eventually produce another concept in this area. At this time, however, the concept as originally presented appears doubtful, and we recommend that the option on the Chandler ground be dropped.

Attachments:

- Geologic map (pocket)
- Cross-section (pocket)
- 1 geophysical map (pocket)
- Land ownership map (pocket)
- Geophysical report (bound at end)
- Geologic and assay logs, CM-1 and 2 (bound at end)
- Cholla Mtn. rock geochemistry (bound at end)
- List of owners (bound at end)

GRAVITY SURVEY

CHOLLA MTN PROJECT

PINAL COUNTY, ARIZONA

FOR

PILLAR, LOWELL & ASSOCIATES

PROJECT 0902

Registered Professional Engineer (Geophysical)
CERTIFICATE NO. 8842
W. GORDON WIEDUWILT
DATE SIGNED 3/21/79
Arizona U. S. A.

mining geophysical surveys inc

GRAVITY SURVEY
CHOLLA MTN PROJECT
PINAL COUNTY, ARIZONA
FOR
PILLAR, LOWELL & ASSOCIATES

Registered Professional Engineer (Geophysical) CERTIFICATE NO. 9842 W. GORDON WIEDUWILT DATE SIGNED 3/21/79 Arizona U. S. A.

INTRODUCTION:

During January and February 1979 a gravity survey was performed on the titled project. The field survey was under the direction of Kem Johnson, technician; the report and interpretation by Robert E. West and W. Gordon Wieduwilt, geophysicists for Mining Geophysical Surveys, Inc.

Reconnaissance gravity data was obtained in January followed by detailed surveys along accessible roads in early February. Geological data including previous drill hole results pertaining to the area was discussed by John Kinnison.

SUMMARY:

A very complex area of gravity boundaries suggests a horst and graben structure across a broad area extending from Cholla Mtn to Florence and mainly north of the Gila River drainage. East of Florence a deep basin characteristic is observed. A buried ridge extending south-southeasterly from Cholla Mtn separates two deep basins which occur south of Coolidge and southwest of Florence.

The complex horst and graben structures west of Florence are partly supported by the location of outcrop and by known

drilling results. Minor variations in the simple Bouguer gravity data reflect these known conditions and possibly other buried trends. A steep regional gravity trend decreasing to the east complicates the depth to bedrock interpretation in this complex pediment. Assuming a 0.2 gm/cm^3 specific gravity contrast between alluvial cover and bedrock, a number of depth to bedrock estimates were made.

GRAVITY INTERPRETATION:

Three sets of gravity sections, A, B, and C, and one detailed section, D, were plotted to aid in the interpretation. These sections allow positioning of gravity boundaries on relatively steep slope segments of the profiles. In section D an E-W regional gravity gradient is assumed, and residual gravity values were used to obtain depth estimates noted on the map. No N-S gradient is assumed in the basin area south of Coolidge. From previous experience in the Florence area, we believe a specific gravity contrast of 0.2 gm/cm^3 best represents the average difference between bedrock and the graben fill.

There may be difficulty in matching known low angle graben margins to the gravity interpretation since such margins would not be sharply defined by gravity contrast, especially if the grabens were a relatively broad shallow feature of only 500' or 1000' deep.

A large area of ranch or farmland along the northern edge

of the basin southwest of Florence was inaccessible to the survey. The need for additional data is obvious in this area where the complex horst and graben structure is trending south into a deep basin.

SURVEY PROCEDURE:

A LaCoste and Romberg, Inc. model G geodetic gravity meter (#325) was used for the survey. This meter has a reading accuracy of 0.01 mgal and a drift rate of less than 1 mgal/month.

The gravity survey was tied to the Florence B Base Station of the Arizona Gravity Base Station Network, with observed gravity of 979 407.234 $\pm$.013 mgal.

Latitude, longitude, and elevation were obtained for each station from the following 7.5' U.S. Geological Survey topographic maps:

1) Blackwater, AZ
2) Coolidge, AZ
3) Florence, AZ
4) Valley Forms, AZ

Contour intervals for these maps are 10' for 1) and 3), and 5' for 2) and 4). Most of the reconnaissance stations were observed at section corners, bench marks, and other identifiable places where spot elevations were noted on the maps. The detailed lines were surveyed by chain along existing roads and tied to section corners where possible.

The gravity data was reduced by computer using standard gravity corrections. Linear drift corrections were applied to the field data after tide corrections had been applied. Latitude, free-air, and Bouguer corrections were made on the observed gravities. Terrain corrections were not applied to the data. A density of 2.67 gm/cm^3 was used for the Bouguer correction.

Respectfully submitted,

W. Gordon Wieduwilt
Geophysicist

Registered Professional Engineer (Geophysical)
CERTIFICATE NO.
8842
W. GORDON
WIEDUWILT
DATE SIGNED 3/27/79
Arizona U. S. A.

March 26, 1979

Tucson, Arizona

PROJECT CIHOLLA MT (CAP 142-175) PAGE 1

D.D.H. No. CM-1 SCALE 1"=100' BY AAO/JEK

LOCATION Sec 31 T5S R9E COLLAR EL 1430 DATE 4/2/79

% Core Recovery	Mineralzn	Alteration	Structure	Rock Type	Description
					0
					0-120 Brownish gray 5YR 4/1; Assorted pebbles, rounded; 30-40% Granitic; 50-60% volc (mainly andesite)
					100
					120-300 Lt. brown - buff clay (50%) + coarse sand (50%); grains are prop. granite, volc, qtz, feldspars; slight increase clay towards bottom
					200
					300
					300-360 LT yellowish brown sand & clay (70% & 30% respectively) sands mostly silica and feldspars
					360-440 Lt. br gr sand (90%) & clay (10%) Felds & qtz frags; very few litho frags.
					400
					440-520 LT. brownish green, mainly granite frags (partly prop alt?) some with Fe stains; few schist frags.
					500
					520-580 Lt yel br fine sand with 20-30% clay
					580-680 Br-gray granite; slightly prop frags; few Fe rich frags ± 3% black basalt/and frags; granitic component from PE gr (oracle)
					600
					680-960
					700
					Lt Reddish brown Granitic cuttings, Fe oxides common. 680-960 only minor clay. Both Lgr & PEgr Frag. present. Prob Not BR.
					800
					820 & 840 Chrysocolla - Vy Minor.
					900
					960-1000 Clay Zone with Minor sands from above (Contamination)
					1000

CORE ASSAYS

INTERVAL FROM	INTERVAL TO	MINERAL Cu	MINERAL Mo		
0	100	20	<2		
100	200	25	<2		
200	300	30	<2		
300	400	15	<2		
400	500	40	<2		
500	520	70	4		
520	540	60	2		
540	560	120	2		
560	580	115	4		
580	600	120	2		
600	620	95	2		
620	640	95	2		
640	660	105	4		
660	680	125	4		
680	700	100	4		
700	720	95	6		
720	740	80	2		
740	760	125	2		
760	780	105	2		
780	800	125	2		
800	820	385	4		
820	840	380	4		
840	860	370	20		
860	880	345	16		
880	900	160	6		
900	920	165	6		
920	940	155	2		
940	960	115	2		
960	980	90	2		
980	1000	90	4		

PROJECT CHOLLA MT PAGE 2
D.D.H. No. CM-1 SCALE ____ BY ____
LOCATION ____ COLLAR EL ____ DATE ____

% Core Recovery	Mineralizn	Alteration	Structure	Rock Type	Depth	Description
					1000	1000 - 1260 TD BR - PC Oracle gr. Contamination from sands up hole continues in BR section to 1060 ft.
					1010	
					1020	spot core 1017 - 1026.5 60% Rec. PC gr. Clay alt. Moderate Mafics 50% → hm. w/ Brown hm flocculent of rock, locally. Seams of indigenous brown hm/Py, ± 2% est orig Total Sulfs. No Cu Mins recognized. (5/L2)
					1030	
					1040	
					1050	Cuttings free of up-hole Contam. below about 1050.
					1060	
					1070	
					1080	
					1090	
					1100	

CORE ASSAYS

INTERVAL FROM	INTERVAL TO	MINERAL Cu	MINERAL Mo		
1020	1030	95	4		
1030	1040	70	2		
1040	1050	60	2		
1050	1060	55	2		
1060	1070	50	8		
1070	1080	70	2		
1080	1090	430	6		
1090	1100	315	2		

PROJECT CHOCA MT PAGE 3

D.D.H. No. CM-1 SCALE _____ BY _____

LOCATION _____ COLLAR EL _____ DATE _____

% Core Recovery	Mineralizn	Alteration	Structure	Rock Type		
					1100	granitic cuttings as previous. s/ FeOx staining + flecks of hem.
					1110	
					1120	
					1130	
					1140	
					1150	1150-1250 Cuttings Coarser, less alt. to clog
					1160	
					1170	
					1180	
					1190	
					1200	

CORE ASSAYS

INTERVAL FROM	INTERVAL TO	MINERAL Cu	MINERAL Mo		
1100	1110	105	2		
1110	1120	45	2		
1120	1130	45	2		
1130	1140	35	2		
1140	1150	45	2		
1150	1160	50	2		
1160	1170	50	2		
1170	1180	140	2		
1180	1190	90	<2		
1190	1200	75	<2		

PROJECT CHOLLA MT PAGE 4
D.D.H. No. CM-1 SCALE _____ BY _____
LOCATION _____ COLLAR EL _____ DATE _____

% Core Recovery	Mineralizn	Alteration	Structure	Rock Type

1200

granitic cuttings continue. No changes

1210

1220

1230

1240

1250

SPOT CORE 1250-60
Pre granite. Wk alt feld → clay. Most lim. on Fracs. or adsorbed into feldspar, derived Mainly from breakdown of Biotite. est 1% Former total Sulf. (20/<2)

1260

TD 1260

Note - Cuttings assays consistently higher than spot core. Reason unknown, but suspected unseen contamination from Alluvial section 500-1000 feet

CORE ASSAYS

INTERVAL FROM	INTERVAL TO	MINERAL Cu	MINERAL Mo		
1200	1210	70	<2		
1210	1220	60	2		
1220	1230	90	2		
1230	1240	65	2		
1240	1250	95	6		

1525.5

PROJECT CIHOLLA MT PAGE 1

D.D.H. No. CM-2 SCALE _____ BY A. ONA & JEK

LOCATION SW/4, NW/4, SW/4 SEC 31 R9E, T5S COLLAR EL _____ DATE 4-16-79 4-25-79

% Core Recovery	Mineralizn	Alteration	Structure	Rock Type		CORE ASSAYS INTERVAL FROM	TO	MINERAL Cu	Mo		
					0 Lt. gray to purple pebbles 30-40% granitic frags; 60-70 volcs.	0					
								20	<2		
					100		100				
					Lt. brownish gray sandy frags; volcs 50-60%, granitic frags 40-50%.			35	<2		
					200		200				
								35	<2		
					300		300				
					340-720 Pinkish gray sands 90% granitic frags (includes large feldspar frags) 10% black to brown red volcs.			40	2		
					400		400				
								35	2		
					500		500				
								35	2		
					600		600				
								45	2		
					700		700				
					720-860 Brown to gray clay & rock frags. Includes small amt of schist frags.			6	<2		
					800		800				
								70	2		
					860-1040 Lt. gray to brown frags w/ granitic - 60%; clay frags 40%.		900				
					900						
								60	2		
					1000		1000				

% Core Recovery	Mineralzn	Alteration	Structure	Rock Type

PROJECT CHOLLA MT PAGE 2
D.D.H. No. CH-2 SCALE _____ BY ADMA & JEK
LOCATION _____ COLLAR EL _____ DATE _____

1000

1040 – 1240
Lt. gray to brown frags –
1100 granitic 80%, clay 10%, veins 10%

Spot core 1130 – 1135
Gravel (25/2)

1200

BR? Contaminated by up hole cgl – Note pick up in Assays

PROBABLE BR CONTACT ± 1240 – Based on general appearance of cuttings.
1240 – 1380
Lt gray to brown frags with
1300 80% granites
15% clay
5% veins

1400 SPOT CORE 1388 – 1389 BR (1150/2)
Med. gr. Qtz monzonite, very weakly altered?

1380 – 1440 Pink to light brownish green granite – 50%, clay 20%, veins – 30%

1500 1440 – 1520. Lt pink to dark grey frags gran – 20% veins – 60% clay 10%.

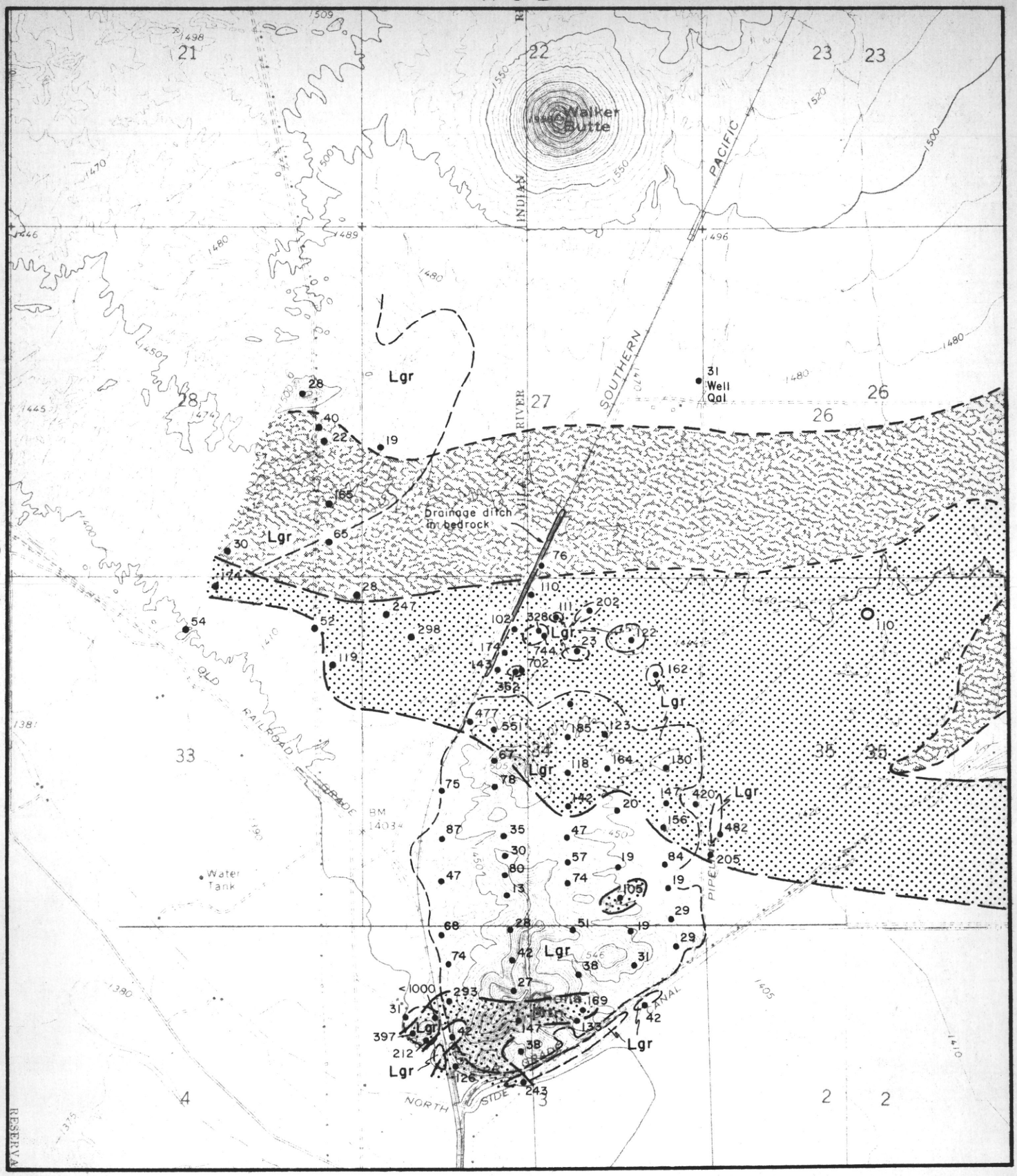
SPOT CORE
(45/.8) 1520 – 1525.5 coarse gr. granite veins very weak prop alteration pb O rack gr

1600

TD 1525.5'

CORE ASSAYS

INTERVAL FROM	INTERVAL TO	MINERAL Cu	MINERAL Mo		
1000	1020	85	2		
1020	1040	75	2		
1040	1060	75	2		
1060	1080	45	2		
1080	1100	35	<2		
1100	1120	55	2		
1120	1140	40	2		
1140	1160	30	2		
1160	1180	40	2		
1180	1200	140	60		
1200	1220	190	36		
1220	1240	200	6		
1240	1260	140	2		
1260	1280	130	2		
1280	1300	100	4		
1300	1320	60	2		
1320	1340	300	4		
1340	1360	190	8		
1360	1380	80	2		
	1390	130	6		
	1400	105	4		
	1410	105	2		
	1420	170	4		
	1430	145	2		
	1440	155	4		
	1450	105	<2		
	1460	120	<2		
	1470	250	2		
	1480	310	2		
	1490	410	2		
	1500	670	2		
	1510	245	2		
	1520	200	2		



CHOLLA MTN. ROCK GEOCHEMISTRY

CHOLLA MOUNTAIN PROJECT

CAP 142 - 175

PINAL COUNTY, ARIZONA

•205 SAMPLE SITE
PPM COPPER

+100 PPM COPPER

40-100 PPM COPPER

0 2000
SCALE IN FEET