CAMBIOR USA, INC. NO. 06593

ROCK: ☐ Date: _____

SOIL: ☐ State: _____

SED.: ☐ County: _____

Project: _____

DRILL HOLE NO. _____ FROM _____ TO _____

Loc.: T _____ N/S; R _____ E/W; _____ ¼; S _____

Quad: _____ Scale _____

RX: Dump/ Tailings Outcrop/ Float Fresh/ Weathered

Outcrop Location: _____

_____ NO. _____

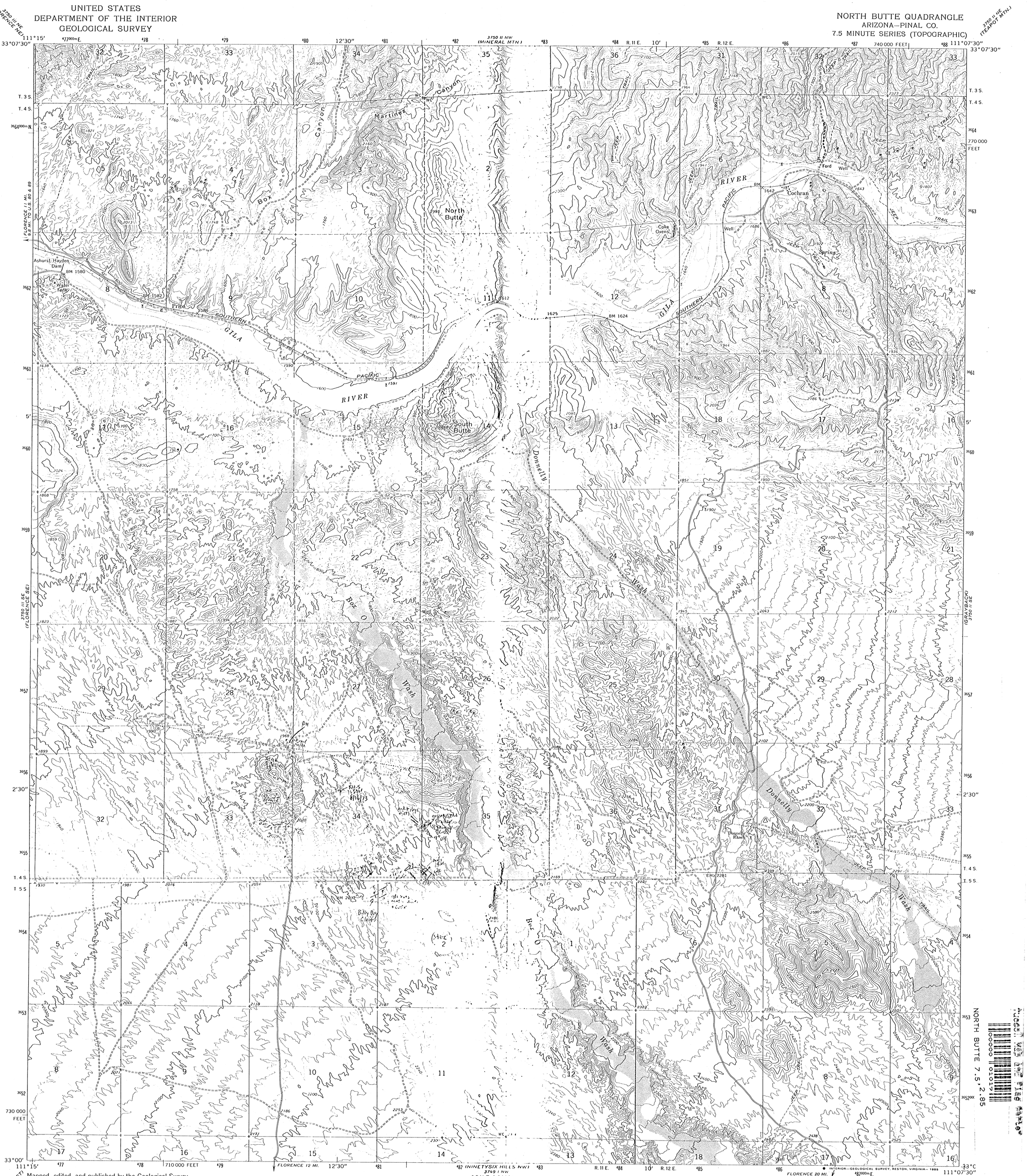
Sample Description: 15' drill

Same as 92 w/

inc Cu on fracs and Cu play

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

NORTH BUTTE QUADRANGLE
ARIZONA—PINAL CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey
in cooperation with the Bureau of Reclamation

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1962. Field checked 1964

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

To place on the predicted North American Datum 1983 move the projection ines 3 meters south and 62 meters east as shown by dashed corner ticks

Fine red dashed lines indicate selected fence lines

UTM GRID AND 1964 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

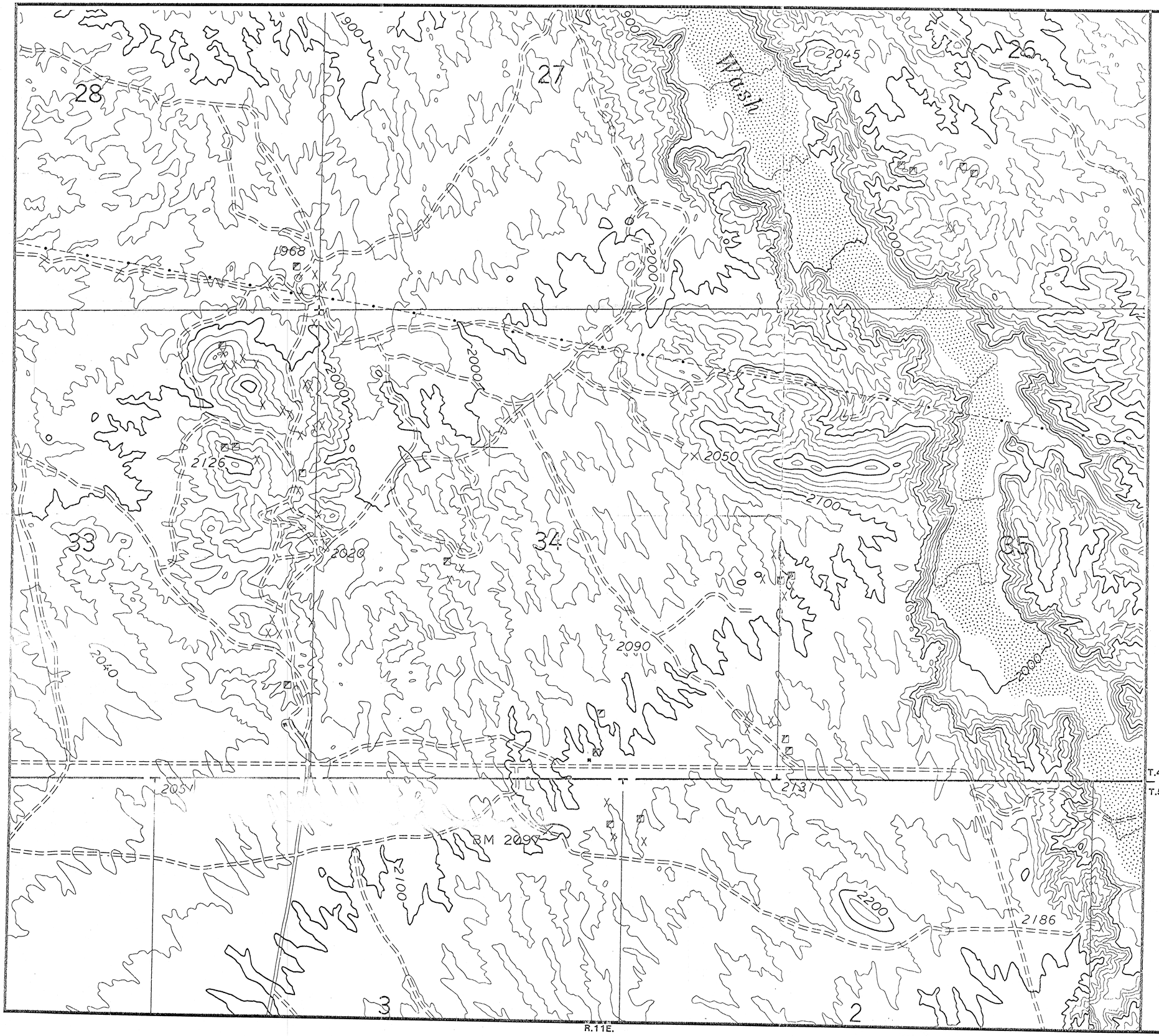
QUADRANGLE LOCATION

ROAD CLASSIFICATION
Light-duty — Unimproved dirt

Map photoinspected 1978
No major culture or drainage changes observed

NORTH BUTTE, ARIZ.
N3300—W11107.5/7.5

1964
PHOTOINSPECTED 1978
DMA 3750 II SW—SERIES V898



SCALE

500 250 0 500 1000 FEET

WESTMONT MINING INC.
4949 So. Syracuse Street Suite 4200 Denver, CO 80237

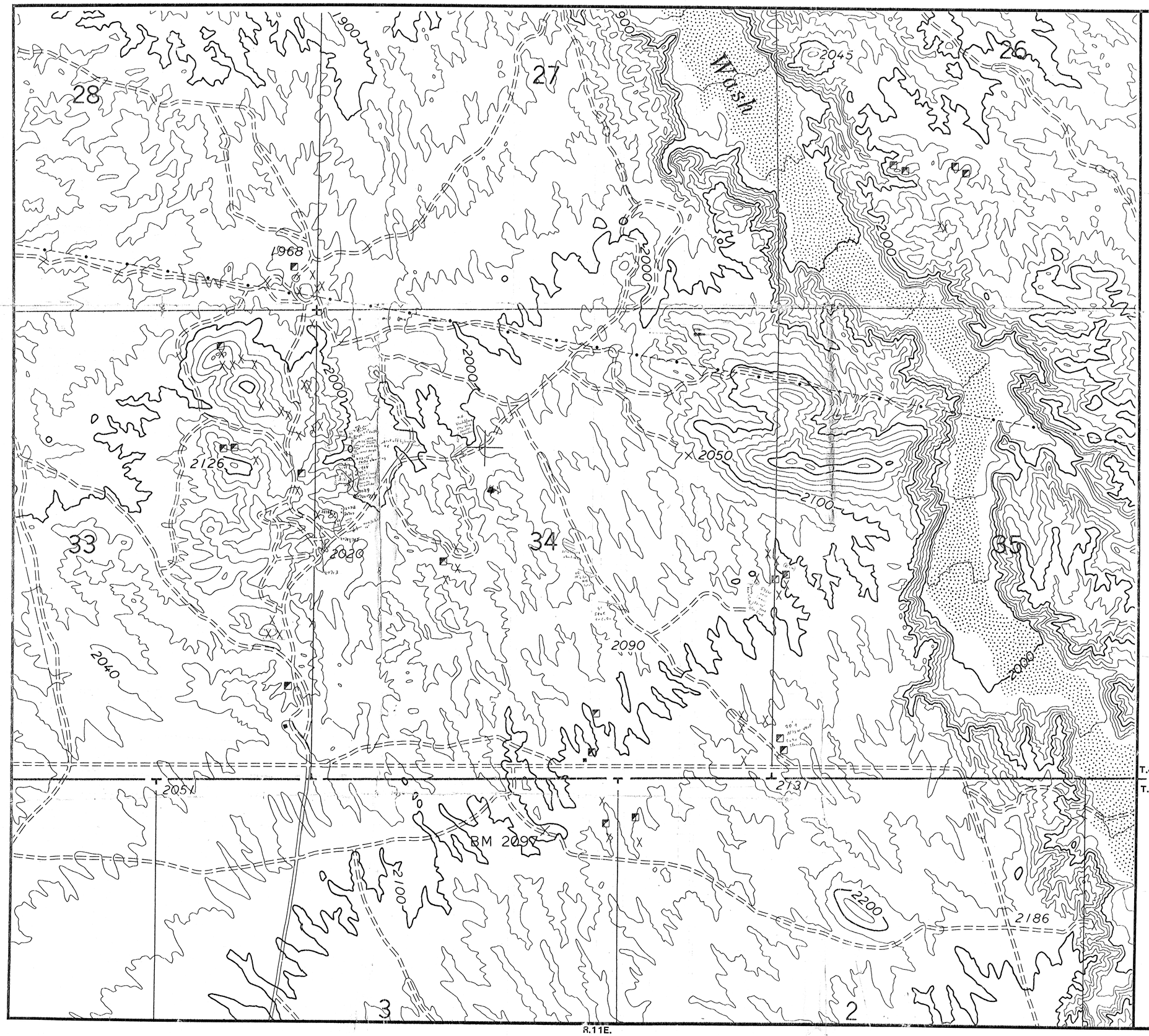
COMPILED:

DRAFTED:

REVISED:

Pinal County, Arizona
Red Hill Project

DATE: SCALE: DWG. NO.:



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4949 So. Syracuse Street Suite 4200 Denver, CO 80237

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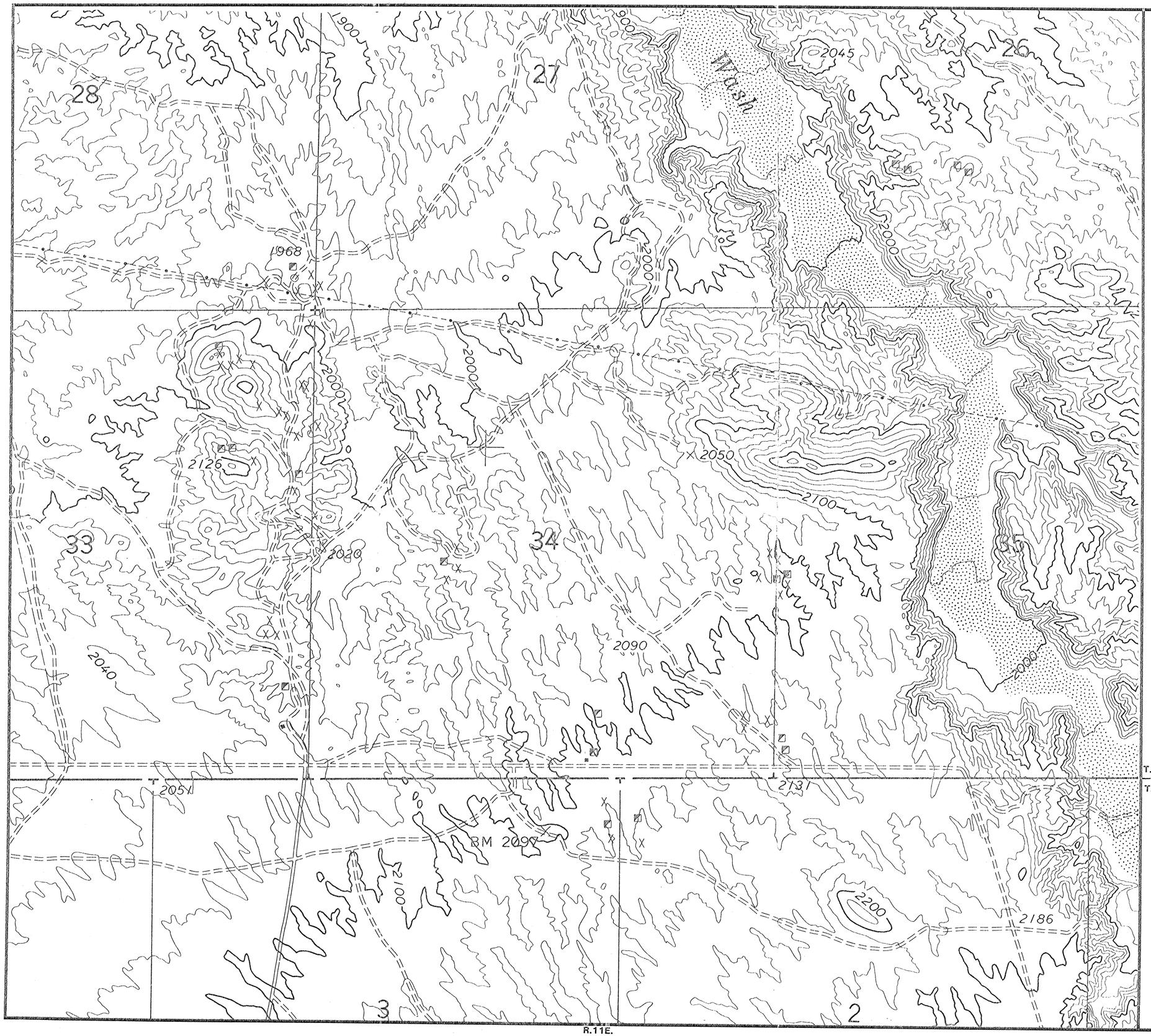

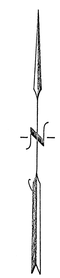

SCALE

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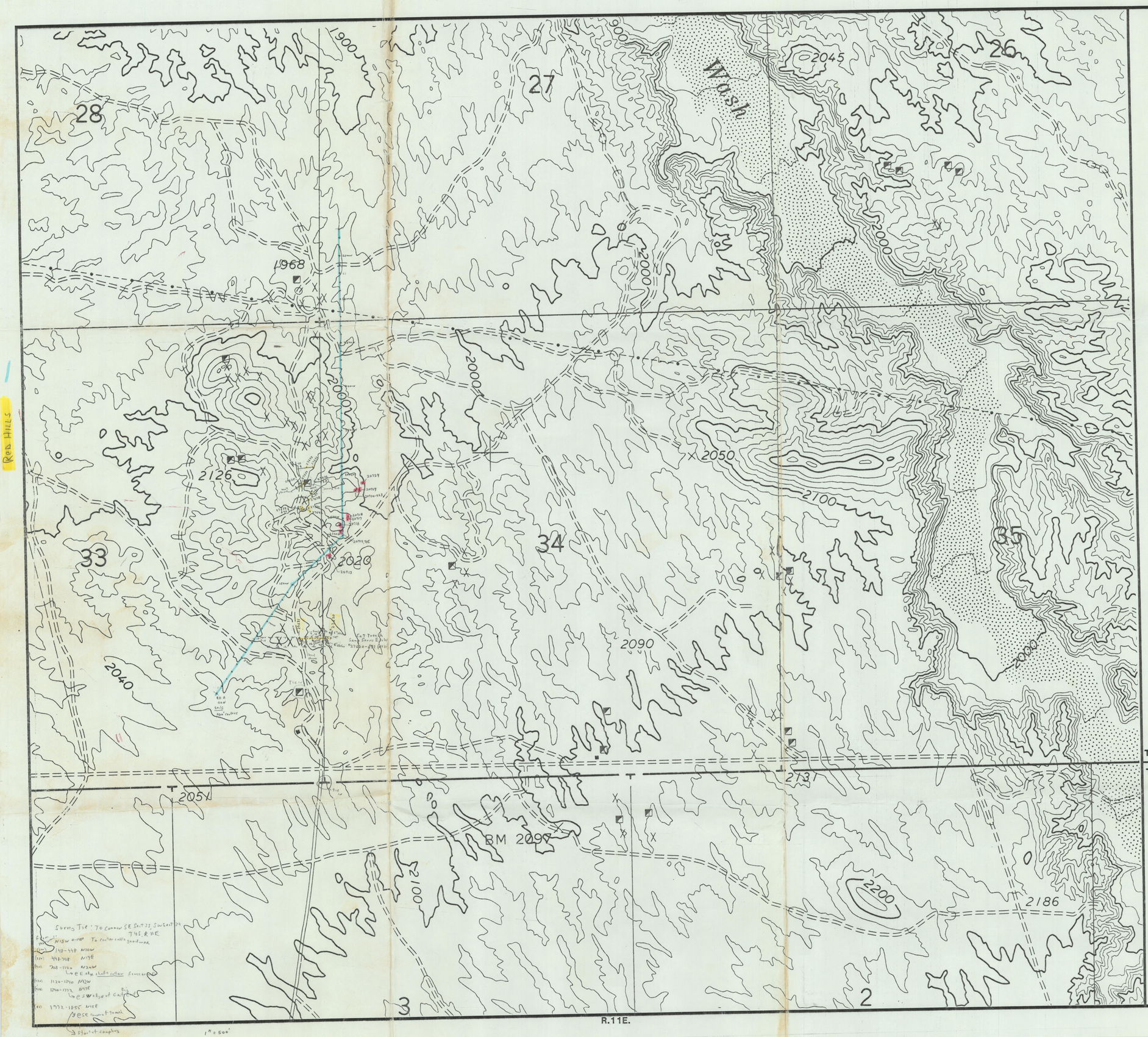


SCALE

500 250 0 500 1000 FEET

WESTMONT
MINING INC. 4949 So. Syracuse Street Suite 4200 Denver, CO 80237

COMPILED:

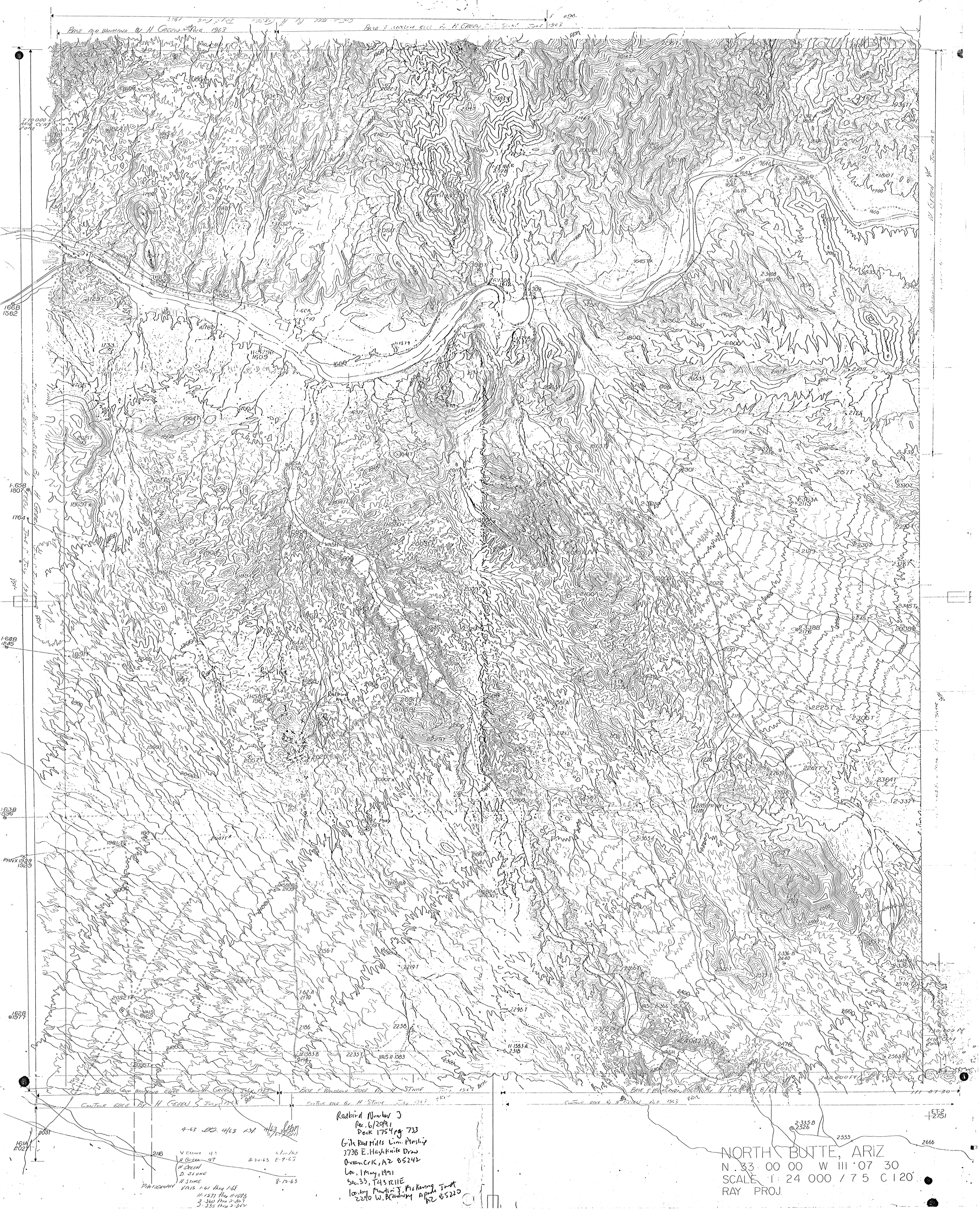
DRAFTED:

REVISED:

Pinal County, Arizona
Red Hill Project

DATE: SCALE: DWG. NO.:

NORTH BUTTE, ARIZ
N. 33 00 00 W 111 07 30
SCALE 1 24 000 / 7.5 C 120
RAY PROJ



Gila Red Hills Mining

3738 Hashknife Draw • Queen Creek, Arizona 85242
(602) 982-8224 Voice Mail (602) 731-6444 • Fax (602) 731-6444

please file:
only after everyone else.
Red Hills Pinal Co. Az
[illegible]

May 29, 1992

Randy Moore
Cambior USA, Inc.
Exploration Office
230 S. Rock Blvd., Suite 23
Reno, NV 89502

Dear Randy,

Again we express our appreciation for Cambior's interest in our Red Hills property. Our feeling is that we are on the same wave length with you regarding the claims as both intriguing and also relatively unevaluated for oxide copper by today's standards.

As before we will continue our efforts to research information about earlier exploration of the deposit. Just recently, for example, we learned that ASARCO's drilling on the property did not focus on its oxide potential, nor was it really centered on the immediate Red Hills area in particular. As was typical of the time (early 70's), they were looking for a sulfide deposit. Also, we are pursuing some information relating to some VLF work performed by an associate of our predecessor Troy Ray. This VLF work is supposed to have indicated a definite mineralized structure in and north of the Red Hills area. Should we be able to obtain this data we will be happy to forward it to your office. Likewise for any other data uncovered, whether positive or negative.

As requested by Gary Parkison, we filed aerial photographs with the Arizona State Land Department, Minerals Division, to establish evidence of existing surface disturbance existing prior to our staking of the claims. We are currently fencing the open shafts with barbed wire to protect the public.

During the summer we will be prospecting for chrysocolla veins and possibly applying for a permitted small mining operation, continuing in the area in which we performed our 1991-1992 assessment work, Redbird 22. It's now established that the Red Hills property contains at least several chrysocolla and related copper mineral veins of greater than average size, which are semi-precious or possibly higher in value. We are developing a small market for this material. If we resume negotiations with Cambior we would like to discuss a chrysocolla exclusion similar to those in practice at other active copper mines in the area.

Please address any correspondence to my home address on the enclosed card, as I have been made spokesman for our partnership.

Regards,

Martin McKenna
General Partner

REC - CAMBIOR USA
JUN - 4 1992

Gila Red Hills Mining
2290 W. Broadway Rd • Apache Junction, AZ 85220

MARTIN McKENNA
General Partner

(602) 982-8224 Voicemail/Fax: (602) 731-6444
602 340 9579

Talks about 6 core holes drilled in 1949.

Paul Gilmour, 1969

PROPOSALS FOR EXPLORATION IN THE RED HILLS AREA, PINAL CO., ARIZONA.

GENERAL.

The Red Hills area is situated in Pinal County in T.4 S., R.11 E., Secs. 27, 28, 33 and 34 and lies about twelve miles east of Florence. Easy access is provided by excellent graded roads and trails.

The area slopes gently toward the northwest and is traversed by intermittent creeks which drain in that direction into the Gila River.

GEOLOGY.

Lithology

According to the Geologic Map of Pinal County published by the Arizona Bureau of Mines, the Red Hills area is underlain by granitic rocks of Precambrian age which have been cut by Laramide intrusions. All of these rocks are partially concealed by a thin veneer of Tertiary and Quaternary volcanic and sedimentary deposits.

This generalized picture is confirmed by direct observation. Thin-section study of a suite of six specimens collected by the writer indicated that the Laramide intrusions are principally quartz monzonite and quartz latite porphyry. These rocks are, in turn, cut by a large easterly-striking aplite dyke and by a swarm of andesite dykes, most of which appear to strike in a northeasterly direction.

Mineralization

Numerous abandoned mine workings dot both the Red Hills and the surrounding area. Gold, silver and copper have, reportedly, been mined at various periods. Oxidized copper minerals are common in many of the

old workings as well as in some of the cuts and trenches excavated in recent years. Twelve (obviously selected) samples collected from these workings by previous owners of the property average a trace of gold, 0.2 ounces per ton of silver and 1.29 per cent copper. The oxidized copper minerals tend to be associated with small east-west striking shear zones or crush zones and dykes of granitic or andesitic composition.

Toward the end of 1949 six diamond drill holes, ranging in length from 395 to 911 feet, were put down on the property. The results of the drilling appear to have been poor - at least by the standards of the time. Significantly, only one of the holes was drilled away from the immediate neighbourhood of the Red Hills.

DISCUSSION.

In spite of the exploration which has been carried out to date, especially drilling, it is believed that the Red Hills area is not without merit as a copper prospect. The reasoning behind this conclusion is as follows:

It is, of course, well known that a zonal distribution of both ore and rock-forming minerals exists in many, if not all, copper deposits of the so-called porphyry type. Typically, the pattern of alteration results in the formation of a central area enriched in potassic minerals such as sericite, biotite and orthoclase, surrounded by a quartz-sericite zone which is succeeded, in turn , by an argillic halo. Sulphide mineralization is similarly zoned concentrically in such a way that the best copper values tend to correspond with the gradational contact between the central area and surrounding quartz-sericite zone. The zone of highest, total-acid-forming sulphides on the other hand - the pyritic "halo" - is displaced outward and therefore coincides with the quartz sericite zone. It goes without saying that radical departures from this idealized symmetrical pattern may be expected to exist.

One of the consequences of this pattern of mineralization and alteration is that the zone of (hypogene) silification typically lies outside the high-copper zone. It also follows from the distribution of acid-forming sulphides compared to alteration that weathering and supergene alteration will tend to reinforce this general scheme.

In practical terms these relationships mean that the rocks which are likely to be most resistant to weathering and, consequently, to form the most prominent topographic features are likely to lie to one side of the copper zone or, in other words, that the Red Hills may represent a portion of the silicified zone of a porphyry system.

In order to test this hypothesis an attempt should be made to determine whether or not zoning of mineralization and alteration exists and, if it does, to learn in what direction, or directions, away from the Red Hills a concealed deposit might lie.

If the working hypothesis outlined above is adopted, the requisite test work largely falls into place.

The area around the Red Hills should be mapped geologically, paying particular attention to the estimated sulphide content of the rocks and the types and degree of alteration. Initially, a fairly large area - approximately six sections - should be mapped in a reconnaissance manner in hopes of recognising the outlines of a zoning pattern. As the mapping proceeds selected areas should be mapped in greater detail. It is believed that rock geochemistry might also be used profitably in the attempt to unravel the zoning in and around the Red Hills. Owing to the amount of copper which is concentrated in small shear zones, etc., it would obviously be desirable to avoid sampling material containing visible copper minerals.

Depending on the nature of the results obtained from the above, it might be desirable to conduct I.P. surveys of selected areas. All of this work

should, of course, be directed toward the selection of drill sites for the final phase of the initial exploration program.

ESTIMATE OF COSTS.

In order to expedite the geological mapping, it is proposed that coloured air photos on a scale of about 1 inch to 500 feet should be obtained. Depending on whether or not the Red Hills area has already been photographed in colour (and preliminary inquiries suggest that it has) the cost of the necessary coverage should be about $500 to $1000. The cost of the actual mapping, plotting etc., would be about $3000.

A sufficient number of samples for a preliminary geochemical survey could be collected and analysed for Cu and Mo for a total of approximately $2,000. If both soil and rock samples were taken in the field the total cost would be about $3,000.

It is obviously impossible to estimate at this time the amount and, consequently, the cost of any I.P. surveys which might be required, but, given the conditions existing at the Red Hills, it may be stated that a large amount of coverage can be obtained for $10,000.

The same reservation must apply to estimating the cost of a drilling program. However, if an optimistic view is taken and it is assumed that two drill targets might be outlined, each meriting testing by means of two holes 1000 feet in depth, the cost of drilling, logging, splitting, assaying and analysis of the results would be about $50,000.

The total cost of an initial exploration program, hopefully taking the Red Hills property to a decision stage, would therefore be about $67,000.

3838, Calle de Soto,
Tucson, Arizona
21st November, 1969

Signed:

Paul Gilmour

Paul Gilmour

Wolcott Report
12/30/46

GEOLOGICAL RECONNAISSANCE REPORT

ON THE

ARIZONA COPPER GROUP

PINAL COUNTY, ARIZONA

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LOCATION AND DESCRIPTION OF PROPERTY

The Arizona Copper Group consists of 30 contiguous lode claims, situated approximately 11 miles east of Florence in Pinal County, Arizona. The ground covered by this group lies in Sections 28 and 35, T 4 S, R 11 E. All claims are full size (600' x 1500') and are held by location in the name of John F. Johnson, 427 West Dana Avenue, Mesa, Arizona.

The property lies approximately four miles north of the Florence-Ray Highway, with which it is connected by a very good graded road. To reach the mine from Florence requires only about 25 minutes of easy driving, and the road can be travelled in any season of the year. Copper smelters at Superior and Hayden are each approximately 40 miles distant from the property and each may be reached, either by railroad, from Florence as the shipping point, or by direct truck haulage on good highways.

A high-tension power line from Coolidge Dam crosses one corner of the property, but no effort has been made, as yet, to utilize this power.

No water supply has been developed on the property, but there is little doubt that a fairly adequate supply can be developed when it becomes necessary. The Gila River is approximately four miles to the north at an elevation 500 feet lower than the camp site.

TOPOGRAPHY

The topography of the area around the Arizona Copper Group is marked by low, rolling hills and fairly wide, shallow sand-washes. There are no precipitous slopes, and any point on the property could be made accessible to trucks or cars with a minimum of effort and expense. The average elevation above sea level is in the neighborhood of 2,000 feet.

Vegetation is moderately dense and typically desert in character, consisting mostly of palo-verde, ironwood and various types of cacti.

GEOLOGY

Rock Formations

Granite and quartz-monzonite are the predominant basal rocks in this locality, and certainly they are the oldest. The granite is, in all probability, pre-Cambrian in age, and the quartz-monzonite may be equally as old. There is as yet, however, no clear evidence upon which to base any estimate as to the relative ages of the two formations.

Throughout the area in which the Arizona Copper Group and adjoining properties are located the basal formations have been extensively cut and broken by intrusions of diorite, diabase, monzonite-porphyry, aplite and, in a few places, by pegmatite. On the basis of present knowledge, no definite age correlation can be made between these various intrusives, but it seems reasonable to assume that most of them were introduced during the

Cretaceous or Tertiary periods.

In addition to the rocks mentioned above, there may be observed a few small dikes of a dark-colored, felsitic rock which weathers on the outside to a light tan color.

Structure

The most notable structural feature in this locality is a series or system of roughly parallel east-west faults and fracture zones which appear over an area of several square miles. Within the boundaries of the Arizona Copper Group the fractures are closely spaced - so close in places that they give almost an appearance of sheeting. A great majority of these faults and fractures exhibit a remarkable uniformity of strike and dip (see map accompanying this report). The average strike trend is about N 80° E, and the dip varies from vertical to about 75° to the northwest.

Between the major breaks there is a network of minor cross-fractures, but none of these shows any evidence of appreciable movement. They were probably caused by stresses which developed in the blocks between the faults. Although the cross-fractures do not have such a markedly uniform strike-trend as that of the major fracture zones, there is a noticeable tendency toward a N 45° E direction. This diagonal trend suggests a lateral movement of the fault blocks as well as a vertical or steeply inclined movement of normal faults. No evidence of thrust-faulting has been observed in the area. Most of the major faulting probably

took place during the intrusion of the granite and quartz-monzonite by the later rocks mentioned above.

In the southern part of the Arizona Copper Group several reddish-brown hills rise conspicuously above the surrounding terrain. These hills are known locally as "the dome". It is not believed, however, that they actually represent any structural condition. A probable explanation of their existence would be that the extensive silicification which has taken place along the fracture-zones in this area has made the rocks more resistant to erosion than the surrounding country.

Mineralization and Ore Occurrence

Iron, usually in the form of amorphous hematite, but sometimes as platy specularite, is present in the fractures throughout the property. In the hills described above as "the dome", iron mineralization has discolored the rock between the fracture-zones, giving the entire surface a conspicuous dark red color.

Quartz also is plentiful and, associated with iron, it forms prominent outcrops along the fault fissure veins. Silicification has also occurred along all of the major fracture-zones.

Copper may be found, usually as chrysocolla, sometimes as malachite, in practically every fracture on the property. It occurs on or very near the surface in small lenses and stringers, and in many places it is in sufficient quantity to constitute a

low-grade ore. Dozens of trenches and shallow pits from one end of the property to the other mark places where surface ore was dug, sorted and shipped out during 1916 and 1917 when copper prices were high. There are also a few small shafts, most of them in bad repair. These have a reported maximum depth of 100 feet, and none of them were accessible at the time this examination was made.

No sulphide copper was observed at any point on the property, either in the open-cuts or in the materials on the dumps, and it is quite evident that none of the old workings ever got through the oxidized ore. The depth to which oxidation may extend in this property can be determined only by exploratory work, but it is probable that this depth will not be excessive. Active operations on an adjoining property have recently encountered chalcopyrite in a vein at a depth of 150 feet, and there is no reason to doubt that similar conditions exist in the Arizona Copper Group.

The most highly mineralized area in this group of claims is outlined by a dotted line on the map. This area is approximately 2,000 feet wide and 4,000 feet in length, and includes the red hills which have been mentioned above. It should be pointed out that this is strictly a reconnaissance map. Only a part of the veins and fracture-zones are shown, and locations are approximate. Other areas outside this dotted boundary may be as well mineralized, but much of the surface of these outlying areas is covered with loose wash material, and hard-rock exposures are fewer.

CONCLUSIONS AND RECOMMENDATIONS

Surface showings on the Arizona Copper Group are remarkably good. The continuity, uniformity, and abundance of mineralized fracture-zones and fault fissure veins are such as to justify the expectation that they will persist to a considerable depth. The widespread distribution of oxidized copper ore on the surface indicates that there is a good chance for satisfactory ore-bodies below the leached surface material.

No opinion can be given at this time as to the presence or absence of large, low-grade disseminated ore-bodies on this property. Copper disseminations in the quartz-monzonite were noted in places, but this evidence was too scanty to justify any general conclusion. In view, however, of the extensive fracturing and the heavy surface mineralization in the red hills and immediate vicinity, the existence of disseminated copper ore-bodies should be regarded as a distinct possibility.

It is considered highly probable that high-grade copper ore may be encountered along some of the fault fissure veins on the property. Particular attention is directed to two strong veins which outcrop on the Arizona Copper No. 1 claim. One of these outcrops shows only iron and quartz on the surface. The other shows copper at various places. It is believed that proper exploratory work on either vein would prove to be well worthwhile. Many other veins on the property appear to offer very attractive prospects, but the two mentioned above are outstanding.

The justification for a reasonable amount of exploratory work on the Arizona Copper Group cannot be too strongly emphasized. The choice as to the method must, of course, be governed by the expense involved. In view of the extensive area upon which information would be desirable, drilling would secure more comprehensive results than actual underground work. Diamond drilling would be preferable to churn drilling - at least for the preliminary work - since the veins and fractures dip steeply, and an inclined hole would be much more in the nature of a structural cross-cut. If diamond drilling should encounter disseminated copper ore-bodies, churn drilling could follow later for blocking-out purposes.

If diamond drilling should be decided upon, there are four areas which should offer the best opportunity for exploration of this sort. These areas are, in the order of their importance:

1) The west end of Arizona Copper No. 1 claim.

2) North side of Arizona Copper No. 20 claim (somewhere near midway between end lines).

3) Near center of Arizona Copper No. 19 claim.

4) Eastern part of Arizona Copper No. 22 claim.

A certain amount of detailed geological work would be advisable in order to fix actual drilling locations and dip of holes to obtain the maximum amount of information from each hole. The depths to which these holes should be drilled will depend upon what is encountered during the course of the work; but in any event, they should be planned to attain a minimum depth of

300 feet vertically below the surface. That would mean an actual inclined depth of approximately 500 feet, depending upon the slope. These are minimum figures, and deeper drilling may prove to be advisable when the work has progressed to this point. If satisfactory results are obtained by the work outlined above, other favorable areas could be similarly explored.

In conclusion, it seems worthwhile to repeat that the surface showings on the Arizona Copper Group are such as to thoroughly warrant a reasonable expenditure for the purpose of exploring this ground below the zone of leaching and oxidation.

3017 N. 16th Drive
Phoenix, Arizona
December 30, 1946

H. N. Wolcott
Registered Geologist & Mining Engineer
Arizona Certificate No. 675

J. DAVID LOWELL
CONSULTING GEOLOGIST
5215 N. ORACLE TUCSON, ARIZONA 85704 PHONE 887-5341

February 12, 1970

Mr. Marvin H. Morris
Quintana Minerals Corporation
500 Jefferson Building
Houston, Texas 77002

Dear Tiger:

Attached are maps showing a portion of Area 21 which also overlaps the area of the Bell Western property in Pinal County.

Our geochem samples in Area 21 showed distinct copper and molybdenum anomalies in the southeast quarter of section 33, and these anomalies were further confirmed when check samples were cut in the same area. The results are shown on the attached geochem map on which I have contoured the values. You should discount to some extent the very high values as Julio says these were from areas with visible copper stains, but there is still a fairly large area on the edge of cover which averages over 700 ppm Cu and 2 ppm Mo. I doubt that the area of the main mine workings would run as high as 700 ppm Cu. A color anomaly is visible from the air, and this anomaly showed up even more clearly when our samples were laid out. Several holes including a 1700 foot hole were drilled by Kaiser Cement Co. in Section 11, and my guess is that these were probably drilled on an IP anomaly and perhaps intersected some shallow disseminated pyrite which could be related to the same porphyry copper system.

On the map I have indicated the positions of the Cu, Mo, and color anomalies, and have made a stab at outlining the cluster of peripheral mineral prospects. The preore-postore contact line is, as Clark says, "hideously straight," which suggests a fault contact rather than a sediment surface, but the Kaiser holes probably got through cover and appear to be on the postore side of the projection of the contact.

The data sent us indicates that the southwest corner of the Bell Western claim group is the southwest corner of Section 33, but from the air we saw additional claim corners which indicate that the east half of Section 32 has been added to the claim group. We saw no indication that claims have been staked in Sections 4 or 5 (both sections are U.S. mineral and surface), but we assume that there are some valid claims in sections 3, 10, and 11 under a different ownership.

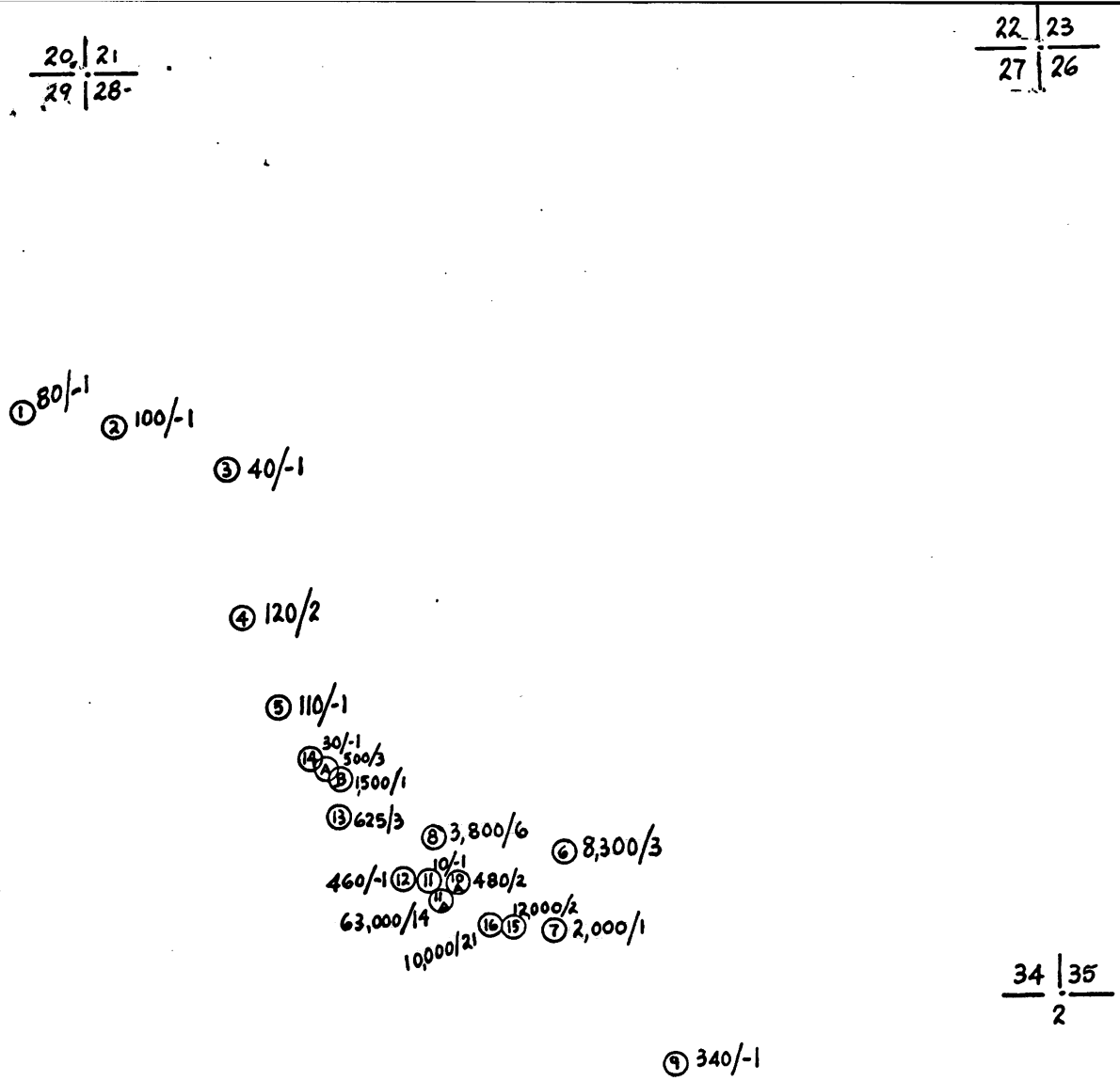
My recommendation is that we stake Section 4 and the west half of 3, if these two areas are open, and that we punch down a quick hole near the center of the northeast quarter of section 4. For about $5000, we can test a moderately good target of the sort we are drilling in the PCR program.

I see little hope for the area where Bell Western's interest seems to be concentrated because it is mostly outcrop area with relatively weak alteration and only sparsely scattered mineralization. The most serious flaw in the Section 4 target would probably be the relatively narrow width and spotty character of the mineralized zone as seen in the outcrop area but it could easily grow in strength in the covered area to the southwest.

With best regards,

J. David Lowell

JDL:h



Quintana 1:2 000

AREA No. 21
BOX WASH
PINAL CO., ARIZ.
① Cu/Mo

J. DAVID LOWELL
CONSULTING GEOLOGIST

5211 N. ORACLE TUCSON, ARIZONA 85704 PHONE 887-5341

March 10, 1971

PROGRESS REPORT

Area 21 - Box O Wash
Pinal County, Arizona

Field work and air reconnaissance are now complete at Box O Wash. Based on thèswwork we are recommending a single scout drill hole through postmineral gravel in sec. 4, T. 5 S., R. 11 E.

The Florence mining district, which includes Area 21, has no recorded mineral production but has produced small amounts of copper from shallow workings which are clustered about a Laramide stock. Two years ago Kaiser Cement and Gypsum Co. drilled several holes immediately east of our target area and subsequently abandoned their claims. At present Bell Western Corporation of Houston, Texas is planning to mine and leach oxide copper on their property immediately north of our claim group.

Known copper mineralization in the district is related to a pyritic Laramide stock which crops out on the Bell Western property. Alteration related to the stock extends outward for some distance into the granitic host rock but is seen to diminish in intensity to the northwest, north and east. Postmineral cover prevents observation on the south and southwest.

A single drill hole at the location shown on the accompanying map will test the continuity of the pyrite zone beneath postmineral cover and explore the extrapolated central portion of the mineral cluster. Information from the Kaiser drilling to the east suggests that less than 1,000 feet of gravel may be present.

Jim Yanex staked 112 Bee claims between March 1 and 4, 1971 on the following schedule:

Bee claims 1 thru 28	March 2, 1971
Bee claims 29 thru 56	March 1, 1971
Bee claims 59 thru 84	March 3, 1971
Bee claims 57, 58, and 85 thru 112	March 4, 1971

We are contacting the holders of the grazing leases, Mr. and Mrs. Roundy of Mesa, Arizona, and will schedule the road building and site construction. Transcontinent Company will move their Con-Cor rig to Box O Wash following completion of the work at Ruby.

L. Clark Arnold
3/10/71

LCA:h

FILED
MAR 23 1964

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine ALVAREZ CLAIMS Date 1/22/64

District FLORENCE DIST., PINAL COUNTY Engineer Lewis A. Smith

Subject: Mine Visit with Murrell Smith (Ariz. Dev. Board). 1/22/64

PROPERTY: 32 unpatented claims (work done for 1963)

LOCATION: SE¼ S-33, T4S, R11E.

ACCESS: Travel east to southeast, on Kelvin-Florence Hwy., for 10.2 miles and thence, north 3.4 miles on a narrow graded road that terminates at the ranch house 3/4 mile northwest of the mine area.

OWNERS: Ben and Frank Alvarez & Jess Bird who live in a trailer court at Alma School Rd. and W. Main Street, Mesa, Ariz.

WORK: (1) A 300-ft. shaft, inclined at 45 deg. N, is apparently well timbered and is open down to the water level.

(2) A 175-ft. shaft lies about ½ mile east of (1) and is not in very good condition even though apparently open.

(3) 70-foot adit, coursing nearly N-S, is situated about ¼ to 3/8-miles NW of (1). This was used as a powder magazine.

(4) Several shallow bulldozer cuts were made in order to remove soil covers for a look at the bedrock. These, while shallow, cover much of the south half of the property.

(5) Several shallow pits, short adits and cuts are well distributed over the claims.

TOPOGRAPHY: The claims blanket a group of low hills that are no more than 100 ft. higher in elevation than the surrounding mesa or plain. These hills are more or less rolling and are bordered on the east and west by large washes that drain into the Gila River a few miles to the north. "Barbed" consequent gullies, about parallel to each other, project into the flanks of the hills on the east and west. These follow the less silicified zones that lie between the more or less parallel shear zones and dikes. The shears stand in locally higher refief due to silicification of the country rock along them and in the contact zone bordering the dikes. A strong fault, that offsets the shear zones and dikes, trends roughly N 20-25 deg. W through the center of the area. A separate set of parallel gullies feed a larger wash that follows the fault course. Some of these, on the east side of the fault, flow diagonally in the opposite direction to the fault or axial stream. On the other (west) side, the gullies flow in the same direction diagonally into the fault stream. Most smaller gullies are short and have much steeper gradients than the main washes. The intervening roughly parallel ridges are consequently narrow and steeply sloped and are separated along the two resultant main hill lines by shallow and narrow saddles. The crests of the two main ridge claims are, therefore, roughly serrated.

ROCKS: The mineralized area is roughly 1½ miles long and ½ to 5/8 of a mile wide, trending about N 25-30 deg. W. Most of this area is occupied by a gray, more or less, porphyritic rock that, upon superficial obsefvation, appears to be monzonite or monzonite porphyry. The rock texture varies from graphic to fine-grained, but the

graphic phase appears to be in a zone that is near to the top of the intrusive mass. In the deeper drainage channels this monzonite (?) is generally finer-grained in texture. The rock is cut by numerous, roughly parallel shear zones and dikes that generally trend about N 60-70 deg. E and dip variably at steep angles both to the SE and NW. Usually the dike outcrops are intermittently exposed. Some are composed of intermediate material, such as andesite (?) while others appear to be diabasic. The andesite (?) is on the basic side. Silicification, along the shears and dike contacts is sufficiently strong to sometimes form quartz veinlets, or small blebs. This process decreases to a much less amount out in the intervening monzonite (?) zones. Some strong silicified bands reach up to 30 feet wide. More commonly the contact-silicified bands, along the dikes, contain most of the chrysocolla showings, whereas, this mineral appeared to be much less prevalent in the sheared zones. Kaolinization of the feldspars in the monzonite (?) is more prevalent next to the dikes or in the shear bands, but is also fairly prevalent in the intervening areas. Limonite, mostly derived from sulphides, is also more prevalent in the shears and contact zones. This limonite indicates strong pyrite, with some copper. The limonite is in fracture coats, thin stringers and occasional lenses. Where the monzonite is less silicified and kaolinized, in the intervening areas, the limonite also is noteably less prevalent and where present, it is less concentrated. The limonite locally is of the "relief" type, or was probably derived from chalcocite, or argentite, or both, and this is very locally, strongly concentrated. Much more of the limonite is of the type that was derived from sulphides that had an iron; copper or iron; silver ratio of $4\frac{1}{2}$-7 to 1. More than half of the observed limonite had a higher iron; copper ratio. Sometimes "halo-banding" of the limonite around original sulphide occurrences is seen in the shear zones and particularly along fractures. The concentration of so much of the limonite near, or in, the shears, or dike contacts give the impression that the mineralization is, to a large degree, concentrated in bands with wider intervening areas in which it is considerably less concentrated. However, where workings penetrated deeper below the immediate outcrops, more limonite appears than was evident at the surface. This situation is not uncommon in areas where erosion and weathering have been active for a long time. In some observed cases, in similar rocks, elsewhere, "whipping out" of nearly all of the limonite may extend downward to several feet. Even, with this in mind, the concentration in the intervening belts here still appears to be noteably less. Therefore, the tenative conclusion, in the absence of drilling, is that the intervening areas would, at least, be low grade and the more mineralized bands, or areas, would have to carry them. Two specific areas, one around the inclined shaft and one in the north central portion, appear to be more intensely mineralized than the rest of the property. The shear zones in these areas, are closer together and the limonite concentration is greater. These would also be more prospectable. A few drill holes, in these two better areas should determine their worth.

The mine is reported to have yielded some good silver during the early days along with gold values. This was mostly shipped to Magma Smelter. Small piles of chrysocolla-bearing material are present in several places. The gold is reported to have come from workings in the SE portion and was preferably in a yellow quartz, or younger quartz vein. The older white "bull" quartz does not generally appear to be much mineralized.

Alvarez Group

COPY

R A Bird
446 E Main
Mesa Ariz

DESCRIPTION OF SAMPLES
TAKEN BY L. G. THOMAS

ARIZONA COPPER COMPANY
Florence, Arizona
May, 1948

No.	Length Cut Feet	Description	Cu %	Au Oz	Ag Oz	Fe %	Insol. %
1061	3.75	Pit, South center Copper #20	.35	Tr	.2		
1062	4.0	N.E.Fissure @ S.W.Cor. Copper #20	.46	Tr	.1		
1063	7.0	Two 40' shafts, Copper #21	1.84	.02	.1	4.20	87.78
1064	4.0	"Teddy Bear" Pit, Copper #19	.46	Tr	.1		
1065	1.5	E-W vein, Copper #18	.87	Tr	.1		
1066	3.0	Typical veins in diorite porphyry pit, Chango #7	2.15	.01	.2	17.12	66.00
1067	4.0	Iron ox. in 20' adit, Copper #2- Exclude from copper average	.20	Tr	.1		
1068	7.0	E-W fissure @ S.W.Cor. Copper #1	.41	Tr	.1		
1069	6.5	N. 80 E. fissure, 470 ft. N.W. of A.C. shaft #1 on Copper #3 west of road	1.36	Tr	.2		
1070	4.0	N. 70 W. Fissure, 400' N. of A. C. shaft #1, East of road	1.30	Tr	.3		
1071	4.0	Vernes Santo shaft, N. 63 W. fissure	2.07	Tr	.3		
1072	Grab Use 2 Ft.	Vernes Santo Av. grade ore dump	4.69	.01	.4		

Average grade - Length of each cut times % Copper divided by total length of cuts (excluding No. 1067) is 1.29%
Arithmetical Av. = 1.45%

Copied
Tucson, Ariz.
3/15/61

Gila Red Hills M

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General Partner

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602 340 9579

May 29, 1992

Randy Moore
Cambior USA, Inc.
Exploration Office
230 S. Rock Blvd., Suite 23
Reno, NV 89502

Dear Randy,

Again we express our appreciation for Cambior's interest in our Red Hills property. Our feeling is that we are on the same wave length with you regarding the claims as both intriguing and also relatively unevaluated for oxide copper by today's standards.

As before we will continue our efforts to research information about earlier exploration of the deposit. Just recently, for example, we learned that ASARCO's drilling on the property did not focus on its oxide potential, nor was it really centered on the immediate Red Hills area in particular. As was typical of the time (early 70's), they were looking for a sulfide deposit. Also, we are pursuing some information relating to some VLF work performed by an associate of our predecessor Troy Ray. This VLF work is supposed to have indicated a definite mineralized structure in and north of the Red Hills area. Should we be able to obtain this data we will be happy to forward it to your office. Likewise for any other data uncovered, whether positive or negative.

As requested by Gary Parkison, we filed aerial photographs with the Arizona State Land Department, Minerals Division, to establish evidence of existing surface disturbance existing prior to our staking of the claims. We are currently fencing the open shafts with barbed wire to protect the public.

During the summer we will be prospecting for chrysocolla veins and possibly applying for a permitted small mining operation, continuing in the area in which we performed our 1991-1992 assessment work, Redbird 22. It's now established that the Red Hills property contains at least several chrysocolla and related copper mineral veins of greater than average size, which are semi-precious or possibly higher in value. We are developing a small market for this material. If we resume negotiations with Cambior we would like to discuss a chrysocolla exclusion similar to those in practice at other active copper mines in the area.

Please address any correspondence to my home address on the enclosed card, as I have been made spokesman for our partnership.

Regards,

Martin McKenna
General Partner

REC - CAMBIOR USA
JUN - 4 1992

Report by A.B. Thompson, 1951

GEOLOGICAL REPORT ON
RED HILLS DISSEMINATED COPPER DEPOSIT
ON PROPERTY OF
ARIZONA CONSOLIDATED GOLD AND COPPER MINES COMPANY
FLORENCE-PINAL COUNTY-ARIZONA

The low chain of Red Hills buttes, rising out of surrounding Sahuara cactus-studded desert plain, lies about 12 miles east of Florence, Pinal County, Arizona, in the Red Hills Mining District.

The Red Hills mining rights are in possession of Arizona Consolidated Gold and Copper Mines Company by virtue of mining lode claim locations.

Eighty miles west by paved highway is the large supply center of Phoenix, capital of Arizona and Gile River is 7 miles north of the property. A good graded dirt highway from Florence passes through Red Hills. An electric power line from Coolidge Dam passes within 300 feet of Red Hills camp on the property.

Attention of miners was early attracted to the Red Hills area where red oxides of iron color the hills an attractive hue. An area 3600 feet long, from north to south, and averaging about 1800 feet wide has been highly fractured, faulted and soaked with mineral solutions. Today these processes are revealed in the gently rounded Red Hills, ribbed with parallel and closely repeated dikes; outcrops of silicified fracture zones, iron oxides and the copper silicate chrysocolla.

Water has been encountered in several shafts sunk in the Red Hills area at depths of 60 to 120 feet below the surface. Operating conditions for mining throughout the year are ideal.

A minimum of timber for support of mine workings is indicated by preservation of old workings without much support. Desert flora consists of a profuse growth of several varieties of cactus, a healthy carpet of desert grass and brush together with trees which furnish fodder for range cattle.

A small comfortable camp has been erected at the southern end of Red Hills. Elevation at the mine is about 2600 feet. Supplies are obtained from Florence and Phoenix.

During field examination of six days, investigations were confined to determination of geological conditions affecting deposition of copper ore bodies at Red Hills. Data on title, history, value and production of copper ores were not examined during field work, other than through statements of those associated with former operations. This information shows that the property consists of a compact, contiguous group of 90 mining lode claims, outlined on the accompanying map; 73 of which claims are held by right of location and 17 of which are partly owned or are in the process of acquisition. The entire Red Hills area is held under mining location rights by the Arizona Consolidated Gold and Copper Mines company.

Fifteen miles northeast of Red Hills Copper deposit, across Gila River, is the major disseminated copper mine of Kennecott Copper, at Ray, Arizona, at about the same elevation as Red Hills. Thirty four miles across the desert to the southeast is a newly developed disseminated copper mine of the first magnitude. It is the great copper ore deposit of the San Manuel mine. References in literature describe San Manuel ranking with the leading Utah

Copper and Morenci, Arizona, disseminated copper deposits in tonnage of copper ore developed. So pronounced is the similarity of the Red Hills geological picture with that of San Manuel, that a comparison of the two properties will be outlined herein.

In this examination only 12 claims of the Arizona Consolidated Gold and Copper Mines Company were investigated. Copper ore deposits are indicated at other points on the property.

GEOLOGY

ROCKS:

Relatively few rock formations are exposed in the Red Hills. The oldest rock, forming the basement here and of a large area in this sector of Arizona, is pre-Cambrian quartz monzonite. It is a part of a granitic mass which is found fully 50 miles to the southeast as the oldest formation in the San Manuel copper mine and nearby Catalina Mountains.

The unaltered quartz monzonite is a light-pink coarse-grained porphyritic rock, characterized by coarseness of feldspar phenocrysts which often reach an inch or more in maximum measurement.

The quartz monzonite in the Red Hills area has been intensely affected by shattering, fracturing and hydrothermal alteration connected with ore deposition. It has been impregnated by solutions carrying iron and copper and silica, which were an aftermath of intrusion of monzonite porphyry dikes. These dikes form a ribbed, east-west grid of parallel low ridges, repeated every 10 to 50 feet or more from north to south, as minor projections above the altered quartz monzonite basal pediment.

Monzonite porphyry, of Tertiary age, occurs chiefly as narrow parallel dikes which penetrated the older quartz monzonite along parallel fissures to form the east-west striking structural dike pattern. The porphyry is much finer-grained than the quartz monzonite and is easily distinguished from it in outcrops. Little difference in mineral or chemical composition exists between these two granitic rocks, although the porphyry has less quartz. Hydrothermal alteration and mineralization by iron and copper solutions and deformation by closely spaced east-west fractures in monzonite porphyry is similar to that in the quartz monzonite host rock.

Irregular fine-grained diabase dikes cut the quartz monzonite and monzonite porphyry. They are small and numerous and contain no ore minerals, although it is probable they have had in places some relation to localization of ore deposition.

A persistent fine-grained east-west striking aplite dike, up to 100 feet in width, with near-vertical dip, cuts through the Red Hills copper area and also clear across the Arizona Consolidated Gold and Copper mines estate for more than one mile. Along the north side of the aplite dike, in places, heavy deposition of vein quartz, iron oxides and copper ore minerals can be seen. This mineralization is pronounced in a fissure parallel to and about 10 to 20 feet north of the dike and can be detected in a fractured zone as much as 100 feet wide along the north side of the dike.

Because the aplite dike fills a persistent major crustal fracture in the quartz monzonite, deposition of copper minerals

along its course indicated connection with deep-seated fissuring and sources of ore depositing solutions. Other smaller aplite dikes are present in Red Hills but pale in comparison to the giant heretofore described.

Felsite dikes are frequent throughout Red Hills and conform to the east-west grid pattern for dikes and fractures. They are generally narrow and appear to have a close connection with formation of vein quartz, iron and copper minerals.

The felsite dikes cut the preceding rocks and present a cream-colored very fine-grained rock seamed often with fractures saturated with iron oxide solutions. Often oxidation of pyrite in the felsite dikes gives the outcrop a light pink color.

At the surface therefore, over the designated Red Hills area, mineralization is indicated by oxidation products; iron oxides, principally hematite and limonite resulting from oxidation of pyrite; chrysocolla, resulting from oxidation of chalcocite and chalcopyrite; and by quartz veins and jasper, colored red by hematite, by quartz stringers and seams dispersed in all directions where fracturing and mineralization has been intense. The prevailing red color of Red Hills is due to hematite released by oxidation of pyrite.

STRUCTURE:

The most prominent structural feature of Red Hills copper area is the north-south-striking West fault cutting clear through the center of the 3600-foot-long ridge of red buttes.

Parallel to the West fault and 600 feet easterly is the similar major East fault which forms an eastern boundary to Red

Hills ridge and to the area under investigation. These two faults, the West and East faults, include within their walls the eastern pediment of Red Hills ridge.

It is apparent on the surface that the 600-foot wide fault zone formed by these two major lines of movement in Red Hills ridge has had a pronounced influence on deposition of ore minerals. Reference to the accompanying map will illustrate the wide swath cut through the eastern half of Red Hills ridge by these two major fault planes. It is apparent in the field too, that minor parallel fault planes on the west side of the West fault have extended influence of this structure up the red eastern slopes of Red Hills ridge and exert a similar beneficial influence on concentration of mineral deposition.

The major structural feature of this 600 to 1000-foot wide north-south fault zone is an anticlinal flexure developed at about the center, north to south, of Red Hills ridge. Interpretation of this fault anticline in the quartz monzonite and monzonite porphyry mass of Red Hills ridge suggests the structural influence that has concentrated intrusion of dikes and deposition of disseminated copper and iron minerals in Red Hills.

In spite of large areas of disseminated copper and iron mineralization in east-west fracture zones from the south to the north tip of Red Hills, a distinct increase in surface indications of ore deposition is evident along the strike of the West and East faults. This influence for richer ore deposition appears strongest in a 600-foot wide zone along the west side of the West

fault and between the West and East faults. It appears as though these eastward dipping faults have acted as walls directing circulation of mineralizing solutions which formed the quartz, iron and copper deposits.

Like the great tabular ore zones of the San Manuel mine, where the ore lies upon the eastward dipping pyritic zone of Red Hill, this structure on the claims of Arizona Consolidated Gold and Copper Mines Company appears to concentrate the best copper mineral zone of Red Hills on the red core of the ridge as a footwall.

Dips of the West and East faults are hard to obtain for nowhere has surface digging unearthed a satisfactory exposure of the fault plane. Its course and dip have been estimated from surface indications and occasional contacts of quartz monzonite and monzonite porphyry along its course. Dips estimated for the West fault vary from 65 degrees to 85 degrees east. Dips of the East fault are estimated at 35 degrees east to vertical.

It is thus apparent that Red Hills ridge is a core of pyritic quartz monzonite, sliced into thin vertical layers by east-west striking monzonite porphyry dikes and vertical east-west fracturing. And into this mass of fractured rock, with a hood of impervious fault clay entered the mineralizing solutions that formed the disseminated copper deposits indicated by widespread chrysocolla outcrops which extend from the south limit of Red Hills ridge to the northern limit, 3600 feet distant.

MINERALIZATION:

A significant exhibit of copper ore deposition is present at

the south end of the Red Hills as this mineralized area is approached. Opencut and tunnel workings for 200 feet west of the West fault have been dug on an east-west-striking fracture zone from which chrysocolla ore has been mined and shipped. A 100-foot deep shaft, now filled, is reported dug right at the west contact of this mineralized zone and the West fault. It appears that, in this initially considered working alone, as much evidence of copper mineralization is present as can be found in the entire outcrop visible at the San Manuel mine, 34 miles southeast.

Chrysocolla, hydrous silicate of copper, and vein quartz and hematite, red oxide of iron, are the chief minerals in these workings. Still further west along this same zone, outcrops indicate a continuation of mineralization.

Going further north on the west side of the West fault, outcrops of east-west-striking silicified fracture zones, soaked with iron oxide and containing chrysocolla films along fracture planes and permeating the monzonite in places, continue for 3600 feet through the Red Hills ridge.

The basal and ancient quartz monzonite foundation of the region is here ribbed with small and large east-west striking monzonite porphyry dikes; some a few feet wide, others more than 100 feet wide. In both of these monzonite formations, east-west striking, vertical fracture zones have sheeted the entire ridge into a permeable mass that has been favorable for entrance of mineralizing solutions believed to be genetically connected with the Tertiary monzonite porphyry intrusion.

Silicification of the dikes and host rock along the vertical east-west fracture planes has formed indurated zones of most intense silicification and these project, several feet high, as ridges above the surrounding rock, repeated one after another, every few feet to every 100 feet or so, along the entire ridge, from south to north. They cut the north-south Red Hills ridge into vertical east-west standing slices from the south end to the northern extremity.

At the north end of Red Hills ridge singularly enough, another 120-foot deep shaft was sunk on an iron-copper zone of vertical sheeting and fault movement, thus completing a picture of Red Hills with deepest shafts sunk at southern and northern extremities.

At about the center of the ridge, from south to north, where an anticlinal arch is apparent in the West fault, surface diggings have exposed chrysocolla concentrations along many east-west fracture zones. A concentration both of silica and chrysocolla outcrops also occurs along the west side of the West fault zone.

The evidence is unmistakable that throughout Red Hills ridge, iron and copper sulphide minerals were deposited in the quartz monzonite and monzonite porphyry east-west fracture zones which shatter the entire red ridge. Red and brown iron oxides and chrysocolla outcrops seen today are remnants of oxidized sulphides, the surface trace of sulphide mineralization to be expected in these rocks at depths where oxygen has not attacked and destroyed the sulphide minerals.

Another distinctive channel for uprising mineralizing solutions is found on the north side of the mile long 70-100-foot wide, east-west aplite dike which paints a white path clear across the northern third of Red Hills at right angles to its strike. A prominent quartz-iron-copper cropping, standing 10 feet above the surface can be seen marking a mineral zone solution channel about 15 feet north of and parallel to the dike on the Copper #20 claim.

Where the northerly striking west fault cuts through the east-west striking aplite dike and moves the east side of the fault about 165 feet north, a concentration of mineralization has occurred on the west side of the fault, resulting in the prominent outcrop is reminiscent of quartz croppings over some of the best copper deposits of the state. It appears advisable to explore this bold quartz cropping at depth, for it is highly saturated with iron oxides and shows chrysocolla films.

The above description of mineralization on the west side of the West fault applies also to the east side, where a 600-foot wide north-south strip of mineralized Red Hills lies between the West and East faults. Because of greater east-west shattering between these faults, an increase in the number of silicified ridges is apparent in this inter-fault zone. These are concentrated particularly in the northern half of the zone where anticlinal structure creates an arch.

For this reason it appears best to start preliminary exploration at seemingly favorable points in this anticlinal structure.

Between the West and East faults, in the northern half of Red Hills, four hills stand out, ribbed with silicified mineralized dikes and fractures. They represent the ultimate in mineral deposition in the ridge. Chrysocolla is evident as films in the fractures and rocks exposed by opencuts, shallow shafts and outcrops.

Visible mineralization of Red Hills therefore consists of an oxide zone of unknown depth containing the copper silicate chrysocolla. It is undoubtedly certain that chrysocolla results from oxidation of either Chalcophyrite of Chalcocite, primary and secondary sulphides of copper, which are thus indicated at some unknown depth beneath the surface.

Alteration of the quartz monzonite and monzonite porphyry has resulted in decomposition of the feldspar of the rock in zones of intense fracturing and mineralization, and in silicification along fractures. Near the West and East fault zones alteration of the rocks has proceded further, and a bleached mass of kaolinite and various alteration products outcrop in the most intensely mineralized fracture zones intersecting the faults.

Surface evidence therefore indicates a disseminated copper sulphide zone beneath the chrysocolla and hematite-limonite deposits on Red Hills eastern flank.

COMPARISON WITH OTHER DISSEMINATED COPPER DEPOSITS

Red Hills copper area lies in the Basin and Range province of southern Arizona. Geologic history similar to that of proven major copper mines nearby, can reasonably be expected from similarity of rocks, structure and mineralization. Within a

radius of 120 miles lie such rich and well known Arizona mining districts as San Manuel, Globe, Morenci, Bisbee, Miami, Superior, Jerome, Bagdad, Ajo and Ray.

So near are the Ray and San Manuel copper deposits, with a patently identical geologic history, that comparison of these deposits with Red Hills will serve to portray what may be expected in exploration at Red Hills.

Since San Manuel rock occurrences and associations are identical with those of Red Hills, it is interesting to note that chrysocolla and iron oxide surface evidence of the immense copper ore body developed by churn drilling at San Manuel, is similar to the chrysocolla and iron oxide outcrops at Red Hills.

One hundred and twenty two churn drill holes were drilled to outline San Manuel ore deposit, and the mineralized rock was found to be remarkably uniform in copper content. A comparatively regular tabular zone of enriched copper sulphide ore was found dipping from 50 degrees to 60 degrees southeast. The ore zone averages about 400 feet in thickness. The footwall of this zone is highly pyritic monzonite and is represented at the surface by the red iron-stained rocks of Red Hill. The ore zone, on its dip, extends to depths of over 3000 feet.

The hangingwall of the copper ore body is gradational and indefinite, due to its determination by means of copper content. Oxidation of the hangingwall rock, from the sulphide ore body to the surface has resulted in a great mass of low-grade chrysocolla-bearing monzonite that varies in depth from 300 to 1600 feet. Many holes drilled through this hangingwall of the main copper

sulphide zone show an horizon of very lean oxidized rock.

No relation between sulphide enrichment and the underground water table at San Manuel is apparent. Deep oxidation is no doubt due to tilting of the copper deposit formations to the southeast after leaching of the overlying oxide zone by surface waters and enrichment of the sulphide zone below.

The greater part of the copper in the secondarily enriched sulphide zone, lying just beneath the oxide zone is in the form of the secondary copper sulphide chalcocite, which is usually a replacement, by downward percolating copper-bearing waters, of chalcopyrite, primary copper-iron sulphide, and secondarily of pyrite.

One drill hole at San Manuel showed 390 feet of oxide zone averaging 1.1% copper. The secondarily enriched sulphide zone, just beneath the oxide zone, had a thickness of 40 feet and averaged 1.793% copper. The primary sulphide zone, below the secondary zone, averaged 1.877% copper.

The first 17 churn drill holes drilled by the United States Bureau of Mines in the San Manuel Copper deposit are described in Report of Investigations 4108, where assay returns from samples taken every five feet down the holes are recorded, along with notations on the character of rock and of copper mineralization present. Four more holes drilled by Magma Copper Co. are similarly described.

It is apparent that, for the first 400 to 700 feet on the average, the drills passed through an oxidized zone in quartz monzonite and monzonite porphyry which contained around 0.25% to

1% copper in the form of chrysocolla.

Below this oxide zone, an enriched sulphide zone was entered by the drills, where chalcocite and chalcopyrite were the main copper sulphide minerals. Copper content of the formation increased in this sulphide ore zone to around 1% copper or more; sometimes however only 0.75% copper was found. This was the copper ore body of the San Manuel mine. A thickness of 400 feet of this ore might be used as an illustration of the magnitude of the deposit which has a length, in one ore body of 3800 feet.

Below the enriched chalcocite-chalcopyrite zone lies the primary sulphide zone which may have any width until the underlying pyritic zone of Red Hill is reached. Some rock, containing primary metallization is as rich in copper as the secondary chalcocite zone-showing that little enrichment of copper is sometimes present in the San Manuel disseminated copper deposit. This is illustrated by one drill hole wherein primary ore extended from 705 to 2,160 feet. The average copper content for the 1,455 feet was just over 0.9% copper, most assays returned between 0.75% and 1.1% copper.

Altho Magma Copper Co., in its annual report for 1946 states that there are 66,000,000 tons of oxide ore averaging 0.7% copper in the deposit, this oxide mineralization is not relied upon for copper production. The slightly enriched secondary sulphide and primary sulphide ore zones below the oxide zone are relied on to furnish profitable copper ore.

This story has great import for Red Hills exploration on property of the Arizona Consolidated Gold and Copper Mines Company, with identical geological setting among quartz monzo-

nite basement and monzonite porphyry dike rocks; with a pyritic footwall in evidence and fracturing and widespread chrysocolla outcrops, Red Hills exploration should disclose a somewhat similar arrangement of oxide, secondary sulphide and primary sulphide copper ore zones as San Manuel. It is quite probable that copper deposition of both ore deposits came from the same deep regional source of mineralization, that is, the parent magma of the intrusive monzonite porphyry.

A somewhat less complicated picture of copper ore enrichment is presented by the disseminated copper deposit at Ray, 15 miles northeast of Red Hills. Here the deposit is a secondary enrichment of disseminated chalcocite associated with and partly replacing primary pyrite in the pre-Cambrian Pinal schist, and to a slight extent in the monzonite porphyry responsible for the mineralization. The ore body is a flat-lying mass, irregular in outline and of variable thickness. The long axis of this copper deposit extends roughly east and west for about 7000 feet. It ranges in width from about 200 feet in the center to over 2000 feet at the ends. The thickness of the ore ranges from 15 to 400 feet and averages around 150 feet. An average depth of 225 feet of oxide zone overlies the ore body; chrysocolla is the main copper mineral of the oxide zone. The concentration of secondary copper was greatly influenced by fault barriers which confined the descending enriching solutions to well defined areas. Value of copper produced in the Ray district to date approach the grand total of $400,000,000.00.

EXPLORATION AT RED HILLS

It can readily be seen, my comparing Red Hills mineralized outcrops and rock varieties and structural pattern, that great resemblance exists with the San Manuel copper deposit. The formation of disseminated copper deposits at Ray also sheds light on expectations of copper enrichment at Red Hills.

Apparently the churn drill program followed at the San Manuel copper mine in exploring for the copper ore body at depth, should be emulated at Red Hills. As shown heretofore, the anticlinal structure formed by the West and East faults along the eastern half of Red Hills ridge may be the guide to copper ore deposits at Red Hills. It therefore seems best to churn drill Red Hills eastern flank at selected spots to determine the presence of secondary copper sulphide ore bodies beneath outcrops which indicate copper enrichments below.

With this exploration in view, it is interesting to note that color of outcrop at San Manuel distinguished the zone in which the copper deposit lay. This shade is a dark brownish red, from a sericitized rock commonly seamed with chrysocolla, indicating copper and iron sulphides at depth.

RECOMMENDATIONS:

Five proposed churn drill holes have been spotted on croppings of dark brownish red monzonite near the footwalls of the West and East faults. It is recommended that eight-inch churn drill holes be drilled at these points to explore for secondary copper sulphide ore bodies at depth in Red Hills ridge.

It is probable that the depth of secondary sulphide ore at San Manuel is the most likely information applicable to Red Hills.

It is unlikely that present water level is related to depth of oxidized zone or secondary sulphide enrichment. Using San Manuel as a guide therefore, sulphide enrichment at Red Hills should be encountered above the 600-foot depth in drill holes. It is possible that a much shallower depth will obtain. In advance of drilling however, certain forecast is impossible and drill holes should continue to greater depth if necessary to pass through the oxidized zone; pass through the secondarily enriched sulphide zone and into the primary ore zone.

PROPOSED CHURN DRILL HOLES:

#1 Hole: proposed to be drilled in the footwall of the West fault near the southwest corner of the copper #1 claim, will penetrate a brownish-red highly fractured outcrop, containing brown iron oxides and seams of chrysocolla, which appears to indicate deposition of copper sulphides at depth.

#2 Hole: near the Mexican shaft, on Copper #1 claim, likewise is located on croppings of brown oxides of iron and chrysocolla-seamed monzonite. The hole also will descend in the footwall of the West fault near the center of the anticlinal arch in the strong structural zone of movement. The brownish iron-stained appearance of rock on the dump of the nearby Mexican shaft furnishes strong support to expectation of good results from this hole.

#3 Hole: is located on the east side of the Red Hills, in the footwall of the East fault and at about the center of Chango #7 claim, 480 feet east of its westerly endline. Here, the hole will penetrate a ridge characterized by brownish red outcrops of

sericitized monzonite porphyry seamed with chrysocolla. The ridge lies at the top of the east-west anticlinal arch exhibited by the East fault and appears to contain the most attractive outcrop of any ridge east of the West fault.

#4 Hole: is a deviation from the policy followed in locating the first three holes. It is located near the center of Copper #20 claim, 360 feet west of the east endline. It is also about 30 feet north of the large east-west aplite dike which cuts clear across Red Hills ridge. The hole will go down in the vicinity of a quartz specular hematite-chrysocolla outcrop that could well be part of the United Verde ore body outcrop at Jerome. There may be a copper ore shoot along the aplite dike at this point. Only exploration can settle that question.

#5 Hole: is located near the north end of Red Hills, where strong outcrops of quartz, iron oxides and chrysocolla filling fracture zones project to a position in the footwall of the West fault.

These five holes all lie in the north half of Red Hills. They are all predicated on the hypothesis that a combination of favorable outcrops, structural anticline due to faulting and apparent position overlying the red core of Red Hills will bring to them the optimum of good results.

Depth to which these holes should be drilled can only be determined when the drills penetrate the oxide, secondary sulphide and primary sulphide zones of copper deposition. Possibly more than 1000 feet depth will be advisable, as at San Manuel. Possibly less than 1,000 feet depth will tell the story, as at Ray.

CONCLUSIONS

The Red Hills mineralized outcrops and rock formations resembling so closely those of the noted, major San Manuel copper deposit 34 miles southeast of Red Hills, warrant exploration by churn drilling to determine the presence of disseminated copper ore bodies at depth.

The anticlinal fault structures of the West and East faults in Red Hills indicate a concentration of copper mineralization beneath the 3600-foot long ridge.

It is therefore a sound exploration endeavor to churn drill as recommended above in a search for copper ore bodies. Red Hill ridge certainly contains mineral indications at the surface of a magnitude comparable to those of the closely related San Manuel mine, and should be carefully explored with the expectation of major copper ore discoveries.

Respectfully submitted,

A. P. Thompson, B.Sc.; A.M.
Mining Geologist
Oakland, California

June 21, 1950

REGISTERED GEOLOGIST
CERTIFICATE EXPIRES
A. P.
THOMPSON
DEC. 31, 1951
ARIZONA, U.S.A.

Leylander Rept., 1956

GEOLOGY OF THE RED HILLS COPPER AREA
PINAL COUNTY, ARIZONA

This report covers the geological study of the Red Hills copper property using large scale vertical steroscopic color air photography for Northern Resources Corporation.

The area was visited on the ground with Mr. John F. Johnson in November 1955, and photographed with Aero Ektakrome film a short time later. A report on the area supplied by Mr. A. M. Buranek was used to supply details of ground activity and mineralization. Also a detailed report made by Mr. L. G. Thomas covering several weeks examination was made available through his kind offer.

Resulting from this study are the following recommendations:

1. the potential porphyry copper area underlies the SE section of the Red Hills and initial testing be confined to this area;
2. a series of four drill holes below 800 feet with one hole to 1500 feet be drilled on Copper 1, 2, 3 and 4 claims as indicated on sepia print of claim map.

BASIS OF PHOTOGEOLOGICAL STUDY

For analysis and evaluation of a potential ore deposit is is necessary to establish the geologic setting as thoroughly as possible. Photographic coverage of a sufficiently large area to illustrate all of the rock types in their structural relationships, together with alterations related to mineralization is essential. With sufficient background and knowledge of the region the size and shape and orientation of such required area can best be determined by aerial reconnaissance. The size of the area required determines the scale of the photographs.

The Red Hills lie on the southwest corner of a large exposure of basement complex granites and gneisses of several types covered in part by Tertiary volcanic tuffs, flows, conglomerate, and recent alluvium. There are apparently no Paleozoic sedimentary rocks in the area, the distribution of which would illustrate major structural features to best advantage.

It appeared most desireable to cover about 60 square miles of the surrounding area to get an adequate sampling of the basement complex to determine patterns, which can be used as guides, lacking displacements of layered rocks. Besides the Red Hills vicinity proper it was decided to photograph two short strips over the Ray copper property about 15 miles to the northeast. It is likely that the Red Hills mineralization and related alteration would be fairly closely related to that area, more so than to the San Manuel area 35 miles to the southeast. The subsequent scale for the area came out about 750 ft./in., which is adequate for everything but the finest details of vein deposits which are not of interest in this area.

For study of the general area non-stereoscopic examination of the photography is adequate. The photographs are most conveniently studied in roll form on a light-table. Spots of interest can be studied in more detail with a 4 inch magnifier, about 2 1/2 power, which also gives a partial 3 dimensional picture.

Geologic strip maps are made under the stereoscope covering the critical area, and enough of the surroundings to illustrate the geologic pattern. The area selected was from the alluvium south of the Red Hills north to the Gila River, and from the alluvium on the west side to the Box C wash. The strip maps are made on frosted acetate to give maximum transparency. A second overlay of the acetate map is inked to make ozalid prints to be colored for the final map. It will be noticed that there is some mis-matching between the adjacent strips. This is due to parallax, or scale change due to relief on the photographs -- a characteristic of all photographs. The contacts, particularly surrounding the Red Hills are gradational, so no precise lines can be drawn -- only an estimate provided by the perspective and lighting of the individual strips of photographs. This same problem exists in ground mapping, which can be partially compensated for by detailed mineralogic study. However, the gross pattern can best be seen on the stereoscopic color photographs.

GENERAL GEOLOGIC CONSIDERATIONS

During the past nine years the writer has studied most of the major copper producing areas with large scale vertical stereoscopic color air photography, together with many other types of ore deposits and mining districts. General criteria for evaluation of the ore potentialities of an area have been derived from this study which differ in many respects from conventional ore theory. These criteria are used in analysis and evaluation of the Red Hills copper property.

Basically, important ore deposits are related to major structural features, and have important volumes of rock change due to passage of hydrothermal solutions. The evidence has indicated a metasomatic origin of the porphyry copper mines rather than an intrusive mineralized stock --- the classical Butler-Lindgren-Emmons theory. It is to be expected that future discoveries will be made in areas where those structural and alteration features are not graphically developed.

Another observation has been that there is a sweating-out of the iron from the body of granitic rock which is developed into a porphyry copper body, accompanied to a certain extent with sweating-out of the silica, although part of the silica is derived from juvenile sources.

To a large extent evaluation of new areas must be done by empirical analogy to known situations, and cannot be deduced from theoretical considerations in the present state of knowledge of the field.

In most areas the important structural control, is quite often regional

thrusting above (though often including part of) the basement complex which acts as dam or buffer to the ascending mineralizing solutions. Concentration nodes along the thrusts are formed by intersecting shears, often with a third set of normal or reverse faults which provides a distinct zone of mineralization.

In areas such as the Red Hills where layered rocks are absent structures may be inferred from change in pattern of the basement complex. This occurs in the area southeast of the Red Hills, where a bending in the foliations is quite prominent.

Good expression of alteration types [illegible]ly related to ore "gossan-types" are valuable, but they cannot be expected to occur prominently in new areas, since their value is recognized by ground examination. The zonal arrangements with more removed non-gossan alterations such as exist at the Red Hills must be used. With the exception of Ajo and covered areas such as Mineral Hill, a certain amount of "gossan-type" is present in close proximity of ore zones. It might be mentioned that in some areas studied a good distinction of "gossan-types" was apparent on colored photographs which escaped more than twenty years of study of the districts by ground geologists. This was particularly true of Ely, Nevada and Pioche, Nevada. The lack of moderately well-developed "gossan-type" --- a small scale relative of the San Manuel red hill. This alteration seems confined to this area and supports the opinion that it is the nearest to the potential disseminated copper zone. There seems to be a light development of another "gossan-type" alteration (light yellow brown) along an east-west line 600 feet to the south, which supports

the inference. That most of the production has been from this restricted area is also good substantiation. The kaolinization and sericitization, which would be most closely related to the disseminated copper mineralization are largely confined to this area as far as can be determined.

PHOTOGEOLOGICAL FINDINGS

The photo study indicates that the large area including the Red Hills is composed of pre-Cambrian basement complex, principally granite gneiss. The foliation is consistent, striking N 70 E except for the disturbed area just southeast of the Red Hills. It cannot be determined whether the Red Hills is a separate unit of more homogenous granite, or strictly an alteration facies. In either case, it seems sure that there is no separate stock of Paleozoic or more recent time intruded into the area. The bending of the foliation in the granite gneiss comples just southeast of the Red Hills is probably result of differential rising of the Red Hills block due to its increased competency due to silicification and other alteration in periods of tectonic activity. In this respect the geologic analysis differs strongly with the reports of Wolcott, Thompson, and Leggett.

There is a N 30-45 E fracture system fairly well developed. It is not believed that the grid pattern produced by these two fault sets or flat fault sets is particularly significant with respect to ore. They are broadly developed over the district and not confined to the Red Hills, and do not reflect intrusive activity.

There is a similar expression of the basement complex rocks --- general types and distribution --- in several area studied other than the Red Hills. There

is nothing unusual in the pattern in the Red Hills area.

A fairly uniformly grained granitic rock, possibly a large dyke, occurs about 2 1/2 miles north of the Red Hills. There is a possibility of disseminated copper in this unit.

A light colored dyke about 100 feet wide cuts through the center of the Red Hills. It was apparently injected along the basement complex foliation. That this dyke persists through the Red Hills with little variation supports the theory that the Red Hills is an alteration facies of the basement complex rock. It seems that the rock is a Tertiary volcanic, and probably post-mineral. Along such features there is often a small amount of sulfide mineralization. But the writer doesn't believe it an important feature in search for important ore bodies.

A basic dyke swarm intrudes the fracture system in the basement complex with about N 10 E strike. They are of indeterminate age. Personal reports of investigations which found small percentages of copper in such dykes might mean a pre-mineral age for them. However, they don't seem to have a significance with respect to any porphyry copper to be found beneath the Red Hills.

There are several units in the alluvium and conglomerate overlying much of the area, but since they didn't have a bearing on the ore they were not differentiated.

A fairly homogeneous granitic block is exposed about one mile east of the Red Hills. This has considerably less alteration and mineralization then the Red Hills. It may be a metasomatic product or a separate unit of the basement

complex. It doesn't appear to have important mineral potential.

The only guide to structural controls of ore emplacement is the bending of the granite-gneiss basement complex adjacent to the southeast part of the Red Hills. There is probably a zone of broken rocks adjacent to the Red Hills in this zone whicy may have provided a more permeable area for mineralizing solutions. The alteration in the basement complex supports this theory. Extensive bulldozing has removed information necessary to a comparison of this zone with its surroundings.

The geologic strip maps showing distribution of the rocks and structures is attached. They should be matched to detail, and can be shifted to join closely in immediate area viewed. Since there are very few units involved and no geologic column is necessary a legend has been omitted.

A transparent overlay of the claim map to the same scale can be used to check the geology against claim and cultural information.

RECOMMENDATIONS

There is sufficient possibility of disseminated copper underlying the Red Hills to justify an adequate drilling campaign. The four holes marked on the sepia print overlay would give a good index of the grades to be found. If of sufficiently good grade to be developed, offsets to these first holes on grid pattern to block out ore should be undertaken. The first four holes to 800 feet to 1500 feet would be much more satisfactory. If no mineralization of commercial grade were encountered, a new appraisal of the economic possibilities

of the area should be undertaken -- using what petrologic information was gained in the drilling program.

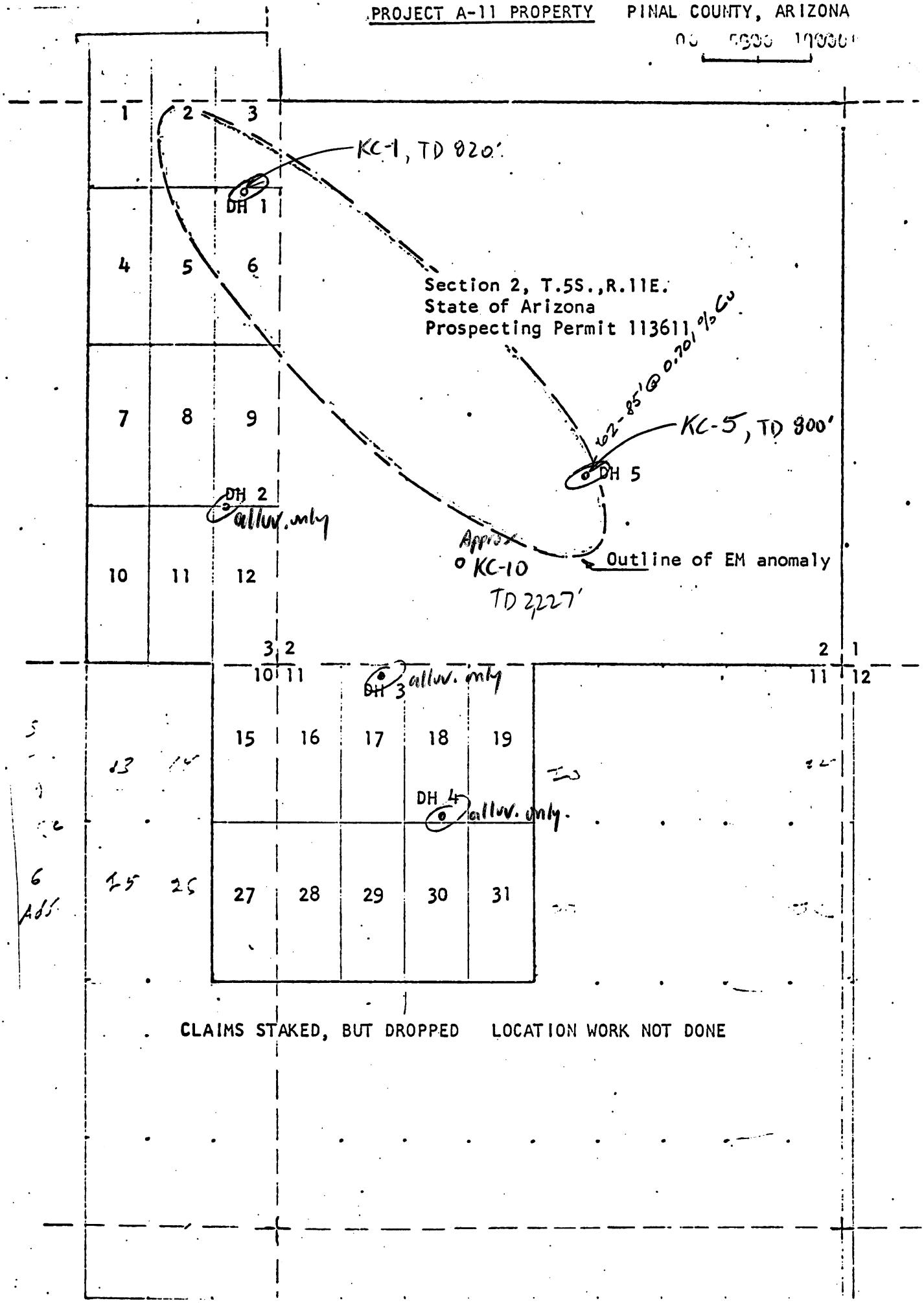
No comment on the other drilling recommended by Leggett will be made, since the geologic factors have been discussed in the body of this report.

The writer has been led by observation of many districts to a metasomatic origin of porphyry copper and other ore deposits. This is diametrically opposed to the Spur theories. Much literature could be cited in support of those observations. A brief treatment of the field with bibilography is given in "The Origin of Metamorphic and Metasomatic Rocks" by Hans Ramberg -- University of Chicago Press, 1952.

No treatments of economics of such a program will be included, since this is largely at the discretion of the company, and was covered in part by Leggett. If the ore is fairly deep, as indicated by alteration and mineralization types of the Red Hills, drilling will be fairly expensive. If success is met with in the first four holes, an offset grid will require 14 additional holes, so it would seem prudent to have sufficiently large budget for such eventuality at the outset.

(signed)
Philip A. Layland
Geologist,
Tucson, Arizona
3/12/56

PROJECT A-11 PROPERTY PINAL COUNTY, ARIZONA



KAISER CEMENT & GYPSUM CORPORATION

INTER-OFFICE MEMORANDUM

TO P. S. Hass

DATE September 22, 1969

COPIES TO A. B. Brown
E. B. Connors
D. F. Towse

FROM J. M. Garoutte

hole #10

Monday, September 22, drilling on Hole ~~#9~~ at Florence was discontinued at a depth of approximately 2200 feet. The hole was stopped in a rather heavy concentration of oxidized iron in a heavily brecciated zone.

This decision was a common decision between Weldon Humphrey, Dr. William Lacy and myself. Dr. Lacy is Professor of Exploratory Geology at the University of Arizona and is acting as a consultant to us on the exploration projects.

In attempting to determine the precise reason for the anomaly, Dr. Lacy gave the opinion that the anomaly was caused by the extreme brecciation in depth and the deep oxide iron mineralization. The copper which appeared in the outcrop would normally be assumed to have an origin in the sulfides and that the copper sulfides would appear in greater concentration at depth. This evaluation was assisted in its logic by the brecciated condition of the rock below the sediments and the faulted area. However, Dr. Lacy stated that the presence of minor amounts of manganese mineralization indicates that ferro manganese probably was the source of the oxides in the outcrop rather than sulfides of copper. He stated that there was an anomaly and that this was the source and that further drilling would show no different ground. B. S.

Dr. Lacy said the technique was proper and he might suggest checking with surface geophysics the next attempt though any method attempted in this instance would not have changed the original evaluation.

FORM 150

KAISER CEMENT & GYPSUM CORPORATION

INTER-OFFICE MEMORANDUM

TO J. M. Garoutte

DATE December 10, 1968

COPIES TO E. B. Connors
W. C. Humphrey
R. Reppert

FROM D. Towse
Don

SUBJECT ARIZONA PROJECT A-11 SUMMARY STATUS REPORT

1. History of Project

7-12-68	Mr. Humphrey reported an airborne EM anomaly in Sections 2,3, 10, 11 T.5S, R.11E., Pinal County, Arizona.
7-19	Application for prospecting permit on Section 2, State of Arizona land.
7-23/26	Surveyed and located 60 lode claims.
8-9	Mr. Humphrey completed ground geophysical survey.
8-20	Core drill began on Hole #1. Geologic mapping started.
9-4	State of Arizona granted Prospecting Permit #113611 on Sec. 2, T.5S., R.11E., to Kaiser Cement and Gypsum Corporation.
9-17	Notice of location work recorded for Claims 1, 2, 3, 4, 5 and 6. (Work done was 500' of drilling Hole #1.)
10-22	Drilling completed.
10-23	Equipment removed.
11-6	Notice of location work recorded as follows: For Claims 7, 8, 9, 10, 11, 12 (80' drilling Hole #2). For Claims 15, 16, 17 (70' drilling Hole #3). For Claims 18, 19, 27, 28, 29, 30, 31 (100' drilling Hole #4).

2. Summary

Five holes were drilled, as follows:

hole KC-1

		Depth:
#1	located in Claim #6	820'
#2	located in Claims #9 and 12	80'
#3	located in Claim #17	70'
#4	located in Claim #18	100'
#5	located in Section 2	800'

Only Holes #1 and #5 reached bed-rock. The other three holes were drilled for location work and penetrated only alluvium. Small amounts of mixed pyrite and chalcopyrite occur as widely separated bands in both Holes #1 and #5. There is no evidence of increase in intensity of mineralization with depth.

In Hole #1, the maximum copper was 0.27 percent in a one foot interval at 720 to 721 feet. There were traces of molybdenum near the bottom of the hole.

Hole #5 was near the surface exposure of a narrow steeply-dipping altered and mineralized fault intersection. The mineralization was cut at 73 to 85 feet, where the 12 foot interval averaged 0.93 percent copper. This was in the oxidized zone, and the highest grade interval was copper

silicate deposited on joint surfaces. A great deal of sericite and clay alteration was encountered throughout.

The attached sheets show X-ray spectrograph analyses of the mineralized parts of Holes #1 and #5. These check well with wet chemical analyses of duplicate smaples.

3. Conclusions and Recommendations. The mineralization found to date is similar to the non-commercial shows on the surface that have been explored by others by means of open cuts, adits, and shallow shafts. The significance of the sericitization in Hole #5 remains to be evaluated. Both Holes #1 and #5 were on the airborne and surface EM anomaly, and, according to Mr. Humphrey at the time, the holes, particularly #1, were located so as to give a fair test of the geophysics.

At the depths indicated, and with solid rock overburden, to be economical the target we are looking for must cover 60 to 80 acres, so it is useless to make minor re-location of drill holes to conform to small surface structural features.

In order to evaluate the results to date, before a decision is made to do any deeper drilling, the following should be completed:

a. Additional ground geophysics to attempt to identify the conductor causing the EM response, and to determine if it is caused by the extensive surface and near surface oxidation or by the hydrothermal mica (sericite) and clay related to the minor structures.

b. Complete geological mapping on and outside the property, by analysis of fracturing, to determine if the Kaiser property is also anomalous structurally as well as geophysically. Mapping will tell if alteration is regional or is concentrated in certain spots.

c. Analyze the economics, by comparison with other properties of comparable depth and mining conditions, in order to pre-determine the parameters of volume and grade necessary to make an economic ore body.

Kaiser has 22 located claims at present. Beyond the work already done, $2,200 worth of work will have to be done to hold these after September 1, 1969. This work can be geologic and geophysical surveys.

The work required to hold the permit on Section 2 is completed, and rentals have been paid, so our rights there run to September, 1970.

DT:dcs

Cutting Log

Kaiser Cement and Gypsum Corporation Core Boring KC-10 Drilled Aug., 1969

Location: Florence District, Project A-11, - Located 1500 feet east and 500 feet north of the southwest corner of Section 2, T5S, R11E.

0 - 120 feet - Alluvium-breccia, recovered in coarse sand sizes, consists of pink orthoclase feldspar, gray orthoclase and plagioclase feldspars, glassy subhedral to euhedral quartz, rare biotite plates, weathered to a gold color. Dark minerals are largely magnetite, black, octahedral, magnetic. Possible very rare grains of chalcopyrite associated with hematite stained and sheared granite fragments. Rare muscovite grains are present in some intervals. Rare grains are sheared granite containing intergrown quartz and a sericite coating.

120-130 feet - Sample fragments appear fresher because of larger fragments cut to finer sizes by the drilling process.

130-215 feet - Alluvium-breccia, same as above, no mineralization, 1% of samples are rhyolite tuff, pink, aphanitic, calcareous, some fragments contain several perc of calcite crystals.

215-230 feet - Core test - recovered 60%
Consists of angular coarse sand size alluvium-breccia fragments of pink granite. 5-10% cobbles size gray to pink granite fragments. Rhyolite tuff fragments and boulder size fragments were recovered with sheared boundaries at a 45 degree angle.

230-310 feet - Recovered coarse sand size alluvium- breccia fragments. no mineralization.

310-360 feet - Possible bedrock contact - recovered very fine sand sizes in harder zone. Consists largely of gray granite, a small percentage of diorite, light gray, medium textured - possible dike.

360-550 feet - Breccia-alluvium, recovered coarse to fine sand sizes, contains similar assemblage of rock forming minerals to above. Pink orthoclase feldspar makes up 10-15% of samples. Dark minerals 2% - entirely made up of magnetite, black, magnetic, and silicates with a light greenish gray streak. Rock fragments are calcareous. No visivle evidence of mineralization. Breccia coatings and fragments are recovered in some samples, light gray, kaolinized, contain spherical fragments formed by fault movement.

Cuttings
25-30 Ni, Cu, Zn, Mo, Ag all 0.0%
125-130 " " " " " " "

Cutting Log - Core Boring KC-10, Continued.

550 - 610 feet - Granite, contains pink orthoclase feldspar, gray feldspars, glassy quartz with some euhedral crystals, biotite, black, platy, some chlorite alteration of biotite and rock forming minerals, dark minerals are largely magnetite and ferromagnesian minerals with a light gray streak. No visible evidence of mineralization.

610 - 680 feet - Granite, contains pink orthoclase feldspar, gray feldspars, glassy quartz with some euhedral crystals, biotite, black, platy - largely altered to green chlorite in this interval, 10-30% of grains are black, intergrown calcite with abundant pyrolusite and some silver from trace element testing; dark minerals are largely magnetite.

680 - 700 feet - Granite, contains pink orthoclase feldspar, gray feldspars, glassy quartz with some euhedral crystals, biotite, black, platy, very little chlorite alteration in this interval, more kaolin alteration and evidence of fault gouge as sheared grains and spherical kaolinized grains, dark minerals are largely magnetite in 2 to 4 percent of sample.

700 - 770 feet - Granite, contains pink orthoclase feldspar, gray feldspars, glassy quartz with some euhedral crystals, biotite, black, platy, very little bleached - kaolin altered fragments in this interval, abundant chlorite and chlorite stain amounting to 30 - 50% of samples, possible rare chalcocite and molybdenite as coatings, 5-10% calcite grains containing abundant pyrolusite and possible silver values.

Core Log:

778-790 feet - Box 3, recovered 75%.
Granite porphyry, contains phenocrysts of orthoclase, gray orthoclase and plagioclase, biotite is chloritized, some epidote stain on fractures, rare fractures are coated by quartz crystals, dark coatings of pyrolusite and possible rare chalcocite grains - pyrolusite is accompanied by abundant calcite, some limonite stain on fractures, intensely kaolinized zones associated with high angle fractures - 85 degrees, chlorite and sericite alteration on fractures accompanied by coatings of hematite stain, this interval is very soft and can be split by finger pressure.

790-800 feet - Box 4, recovered 90%
Granite porphyry, alternating gouged and slightly bleached soft and hard zones respectively, contains pink orthoclase phenocrysts up to 3/4 inch in size, matrix is gray feldspars and subhedral quartz.

800-812 feet - Box 5, recovered 75%
Granite porphyry same as above - harder, 8 feet of box 5 is coherent rock, fractured at 85 degrees, coated with sericite and gouge on fractures, limonite replacement of biotite to some degree throughout interval, probable chalcopyrite relict weathered voids, chalcedony and quartz crystals on some fractures inclined 60 degrees.

812 - 821 feet - Box 6 recovered 95%
Granite porphyry, alternating hard and soft zones, 85 degree fractures coated with hematite stain, some limonite stain on fractures, biotite is fresh and unaltered in this interval, some silicification.

Core Log - Core Boring KC-10, Continued.

821-831 feet - Box 7, recovered 90%
Granite porphyry, fractured at 85 degrees, fractures coated by hematite stain, and clay gouge, two six inch gouge zones are intensely kaolinized, most biotite is fresh and unaltered, traces of malachite stain occur with biotite, rare;

831-844 feet - Box 8, recovered 70%
Granite porphyry, fractured at 85 degrees, biotite is unaltered but surrounded by hematite stain, possible coatings of molybdenite and tiny, rare, cream colored, metallic grains of steely chalcocite.

844-852 feet - Box 9, recovered 90% Ni, Cu, Zn, Mo, + Ag all 0.0%
Granite porphyry, fractured at 85 degrees, slightly bleached and silicified, some hematite stain and kaolin gouge on fractures, two fractures are filled with veins of black calcite one inch wide, contains 150 PPM copper, and 150PPM silver by trace element testing. 4 oz/ton

852-863 feet - Box 10, recovered 80%.
Granite porphyry, coarse textured, biotite unaltered but surrounded by hematite stain, fractures coated by light hematite stain and clay gouge, rock is hard, contains quartz and calcite on fractures, some pyrolusite dendrites on fractures.

863-873 feet - Box 11, recovered 90% Ni, Cu, Zn, Mo, Ag all 0.0%
Granite porphyry, coarse textured, slightly kaolinized, biotite is fresh but surrounded by hematite stain, contains quartz and rare chalcocite and possible black calcite on fractures, rarely calcite is associated with books of biotite.

Core Log - Core Boring KC-10, Continued.

873-882 feet - Box 12, recovered 95%
Granite porphyry, coarse textured, hard, silicified, quartz crystals on rare fractures biotite fresh but surrounded by red hematite stain. Cuttings contain 1% black manganiferous calcite and 1% pyrrhotite, white metallic, magnetic, evolves sulfur dioxide in hydrochloric acid.

882-893 feet - Box 13, recovered 80% Ni, Cu, Zn, Mo, Ag all 0.0%
Granite porphyry, phenocrysts of orthoclase, coarse textured, fractured at 60 and 85 degrees, bleached and kaolinized to a moderate degree, fractures coated by sericite and hematite stain, pyrolusite dendrites on fractures, several fracture surfaces have a few tiny grains of bornite and steely chalcocite, very small amount; 883-884 is broken zone with manganiferous calcite on fractures, rare vugs contain amethystine quartz. 1% of sample is metallic pyrrhotite, magnetic, white, intergrown dark minerals and quartz in sheared rock may be sphalerite. Cutting samples in this interval should be assayed for nickel.

893-902 feet - Box 14, recovered 95% Ni, Cu, Mo, Zn, Ag all 0.0%
Granite porphyry, phenocrysts of orthoclase, coarse textured, upper 2 feet hard - remainder of interval is gouge zone, intensely kaolinized - hematite stained on major fractures as 1/16 inch coatings, badly broken, recovered as sand sizes and up to 2 inch lengths - no visible mineralization noted. Cutting samples contain 1/2 to 1% pyrrhotite and a small amount of black, manganiferous calcite.

902-912 feet - Box 15, recovered 90%
Gouge zone ends at 903 feet. Granite porphyry, phenocrysts of orthoclase, coarse textured, biotite fresh and surrounded by a halo of red hematite stain, hard, silicified recovered in lengths up to 15 inches. No visible mineralization. Cutting sample contains 0.4% total heavy metals. Bluish green possible hemimorphite No copper, silver, mercury; 3 to 5% pyrrhotite, white metallic, magnetic.

912-922 feet - Box 16, recovered 90%
Granite porphyry, phenocrysts of orthoclase, coarse textured, biotite, fresh, surrounded by a halo of red hematite stain, slightly silicified, broken zone 915-918 feet. No visible mineralization. Manganiferous calcite coatings on fractures. Cutting samples contain up to 5% of bluish green possible hemimorphite and 2% pyrrhotite.

922-932 feet - Box 17, recovered 90%
Granite porphyry, phenocrysts of orthoclase, coarse textured, individual grain boundaries obscured by shearing, not altered or weathered, slightly kaolinized gray feldspar, hard, silicified, pyrolusite dendrites on fractures, biotite, fresh, surrounded by halo of red hematite stain, one fracture contains 1/8 inch thickness of chlorite alteration. Cutting samples contain 5 to 10% pyrrhotite, white, metallic, magnetic.

932-943 feet - Box 18, recovered 80%
Granite porphyry, phenocrysts of orthoclase, coarse textured, sheared grains in some intervals, no kaolin alteration or fine grained gouge, crushed, grain boundaries obscure, hard, recovered in lengths up to 2 feet. Pyrolusite dendrites on fractures, biotite, fresh, black, surrounded by halo of red hematite stain. Cutting samples contain 10% pyrrhotite, white, magnetic, metallic.

Core Log - Core Boring KC-10, Continued.

943-976 feet - Box 19, recovered 30%
Quartz monzonite porphyry, contains phenocrysts of pink orthoclase, glassy quartz, gray feldspars, quartz and gray feldspars are matrix ~~1/8 to~~ 3/8 inch grains, biotite, black, platy books, fresh surrounded by a halo of red hematite stain, soft kaolinized gouge zones up to 6 inches in thickness are present. Cutting samples contain pyrrhotite, white, magnetic, metallic - 5-8% in interval 940-950 feet; 1-2% in interval 950-960 feet; less than 0.5% in 960-970 feet interval, and 1/2 to 1% in 970-980 feet interval.

976-991 feet - Box 20, recovered 60%
Quartz monzonite porphyry, contains phenocrysts of pink orthoclase, matrix of glassy quartz, gray feldspars, biotite, black, surrounded by halos of red hematite stain, grains are 3/8 inch in size, some kaolin alteration giving gray feldspars a dull, gray appearance, very thin coatings of pyrrhotite and possible rare chalcocite on fractures. Cutting samples contain 1% magnetite and 0.1 to 0.5% pyrrhotite in white, metallic, magnetic grains.

991-1001 feet, Box 21, recovered 90%
Quartz monzonite porphyry, phenocrysts of orthoclase, hard, vertical fractures coated by quartz crystals in 1 foot of interval, soft gouge zone (6 inches) in bottom of interval, biotite is black, platy, surrounded by halos of hematite stain. very thin coatings of possible chalcocite in upper 2 feet of interval. Cutting samples contain 1% magnetite and 0.1% pyrrhotite, white, metallic, magnetic grains which evolve sulfur dioxide in hydrochloric acid.

1001-1011 feet - Box 22, recovered 90%
Quartz monzonite porphyry, phenocrysts of orthoclase, contains gray feldspars and glassy quartz matrix 3/8 inch in size, hard, silicified rock, intense alteration of biotite to chlorite, biotite texture completely obliterated; tiny grains of bornite occur blue, iridiscent grains on some fractures, yellow metallic mineral is white on scratched surface, magnetic, pyrrhotite, pale green and limonite brown stain on fractures. More intense alteration occurs in cycles of 250-300 feet depth as chlorite-epidote-kaolin-broken zone-kaolin-epidote-chlorite. Faults are spaced 50 to 60 feet apart on this basis. Cutting sample contains only a few grains of pyrrhotite in this interval. Total heavy metals 0.25%.

1011-1021 feet - Box 23, recovered 90%
Granite porphyry, coarse textured, consists of orthoclase in crystals up to 3/4 inch in size, glassy quartz and blebs and veinlets of chlorite, biotite is completely altered to chlorite, one fracture at 1014 feet coated by crysocolla and a few small grains of dark blue covellite, Light green stain on feldspar may be incipient copper stain, recovered in lengths up to 1 foot, hard rock, silicified. Total heavy metals 0.32%. Cutting sample contains 1% pyrrhotite, white, magnetic.

1021-1031 feet - Box 24, recovered 90%
Granite porphyry, coarse textured, consists of pink orthoclase, glassy quartz, chlorite grains and blebs replacing biotite, some epidote stain, fractures stained yellow and red by oxidation, yellow may be molybdenum oxide or chromate, small grains of bornite on one fracture surface. Much more intense chlorite alteration in the interval below 1000 feet, hard silicified rock, recovered in lengths up to 2 feet. Total heavy metal content of cuttings 0.15%.

Core Log - Core Boring KC-10, Continued.

1031-1040 feet - Box 25, recovered 90%

Quartz monzonite porphyry, phenocrysts of orthoclase, matrix is gray feldspar and glassy quartz in 3/8 inch grains, biotite intensely altered to chlorite, hard silicified rock, biotite at bottom of interval near a 4 inch gouge zone is weathered to a dark red earthy color. Cutting sample contains 0.1% pyrrhotite, 1% magnetite, sulfide ore minerals absent, Total Heavy Metals 0.01%, Copper 16 PPM.

1040-1050 feet - Box 26, recovered 90%

Quartz monzonite porphyry, coarse textured phenocrysts of pink orthoclase, matrix of gray feldspar and quartz, biotite, fresh, black, 50% in in tiny 1/8 inch grains, 50% in 3/8 inch grains, three foot interval 1043-1046 feet has chlorite intensely altered to chlorite. Copper test from cutting sample negative. Selected sample from core at 1042 feet tests 150 PPM copper. The mineralization is associated with altered, silicified biotite with a gray color rather than the normal hematite red stain normally associated with the biotite, occurs from 1040 to 1042 feet.

1050-1058 feet - Box 27, recovered near 100%

Quartz monzonite porphyry, contains pink orthoclase phenocrysts in a matrix of quartz and light gray feldspar, biotite, black, platy, 3/8 inch crystals; some zones comprising 40% of interval has biotite intensely altered to chlorite; gouge zone at 1057 feet 6 inches thick, no visible mineralization. Cutting sample has possible rare grains of sphalerite, dark minerals 1% magnetite, black; 1% pyrrhotite, white, metallic, magnetic.

1058-1066 feet - Box 28, recovered near 100%

Quartz monzonite porphyry, contains phenocrysts of orthoclase in a matrix of quartz and light gray feldspar, biotite, black, platy, 3/8 inch crystals, most is fresh, surrounded by a halo of hematite red stain, hard rock, recovered in lengths up to 12 inches, gouge zone 1061-1062 feet, soft, kaolinized weathered. Cutting sample contains 1% magnetite, black, magnetic; 1/2% pyrrhotite, white, magnetic.

1066-1076 feet - Box 29, recovered 90%

Quartz monzonite porphyry, part of zone nearly equigranular orthoclase, quartz, gray feldspars, grains average 3/8 to 1/2 inch in size, biotite, black, comprises 5% of rock, largely unaltered, some zones have a halo of hematite red stain surrounding biotite, hard rock, recovered in lengths up to 18 inches. Cutting sample contains 1% magnetite, black, 1/2% pyrrhotite, white, magnetic, possible rare yellow sulfide grains. Copper test - negative; Total Heavy metals test -40PPM.

1076-1085 feet - Box 30, recovered 90%

The interval from 1076-1081 is identical to above description.
The interval from 1081-1085 feet is a gouge zone, contains spherical particles formed by fault movement, intensely kaolinized, soft, plastic, contains thin coatings of hematite red stain on fracture planes, chlorite stained in finer frained portions of the interval. Copper test - negative. Total Heavy Metals Test - 30 PPM. Drillers are losing greater amounts of water since this zone was encountered.

Core Log - Core Boring KC-10, Continued.

1085-1095 feet - Box 31, recovered 90%

Quartz monzonite pearly equigranular pink orthoclase, gray feldspars, and glassy quartz, biotite 5%, black, platy, fresh, surrounded by halos of hematite red stain, hard rock, recovered in lengths up to 18 inches. Cutting sample contains 3-4% magnetite, black, magnetic; and 3-4% pyrrhotite and iron cuttings from drilling equipment; dark and heavy minerals are all magnetic, no mineralization other than pyrrhotite.

1095-1107 feet - Box 32, recovered 75%.

Quartz monzonite, contains equigranular pink orthoclase, gray feldspars, and glassy quartz, biotite 5-10%, black, platy, largely unaltered, hard, fresh rock recovered in lengths up to 18 inches.

1107-1127 feet - Box 33, recovered 50%.

Quartz monzonite porphyry, contains pink orthoclase phenocrysts, matrix of quartz and gray feldspars, biotite 5-8% fresh, black, unaltered; grains surrounded by a halo of hematite stain. The interval from 1121-1127 (recovered 2 feet) contains traces of copper mineralization, rock is softer in lower 10 feet of interval, upper 4 feet hard, recovered in lengths up to 18 inches. Cutting sample contains 2% magnetite and 2% pyrrhotite and metallic iron cuttings from drill equipment. Copper test - 12 PPM.

1127-1137 feet - Box 34, recovered 90%

Chloritized quartz monzonite, consists of chlorite and relict phenocrysts of pink orthoclase, alternating hard and soft zones, hematite red stain on fractures, possible sphalerate mineralization, higher copper and total heavy metals beginning with this interval. Some zones in lower part of interval have less intense alteration. Copper test - 30 PPM; Silver - negative, Total heavy metals 125 PPM.

1137-1147 feet - Box 35, recovered 90%
Quartz monzonite, medium textured, intense chlorite alteration - limited zones are entirely composed of medium green calcareous chlorite, fractures have yellowish green epidote stain, alternating hard and soft zones, most intense zones of alteration appear to be thin aphanitic basalt layers. Cutting sample contains 2% magnetite and 2% white, metallic pyrrhotite and iron cuttings from drill equipment. Chemical testing - Silver, negative; Copper dissolved in aqua regia, 0.2%

1147-1170 feet - Box 36, recovered 40%.

Quartz monzonite, equigranular pink orthoclase and rare porphyritic phenocrysts some soft zones in poor recovery interval, most rock is hard, silicified, 50% is quartz and gray feldspar, biotite is intensely altered to chlorite, possible rare tiny sulfide grains, some epidote stain near bottom of interval, hematite red stain on fractures, abundant pyrolusite dendrites. Cuttings samples contain 2% magnetite, black, magnetic, and 2% pyrrhotite and iron cuttings from drilling equipment.

Core Log - Core Boring KC-10, Continued.

1170-1179 feet - Box 37, recovered near 100%

Quartz monzonite, equigranular, contains pink orthoclase in equigranular grains and as phenocrysts; matrix is gray feldspars and glassy quartz in grains of 3/8 to 1/2 inch size; biotite intensely altered to chlorite, grains are obscure in the lower 4 feet of interval because of shearing or possible intrusive dike; hematite red stain on fractures, possible ore zone 1 foot thick, tiny grains give fracture surfaces a salt and pepper appearance.

1179-1188 feet - Box 38, recovered near 95%

1181-1185 feet - Diorite to basalt, fine textured to aphanitic - possible intense alteration of quartz monzonite to chlorite. 1185-1188 feet - Intensely chloritized rock having only orthoclase feldspar remaining unaltered, some epidote stain, rock appears dark, dull green and fine textured, copper test 20 PPM on selected specimens.

1188-1198 feet - Box 39, recovered 80%

1188-1190 feet - Gouge zone, rock flour with kaolin alteration, hematite stain on major fracture planes. 1190-1198 feet Quartz monzonite, intense chlorite alteration, only orthoclase is unaltered in some intervals, hard rock, recovered in lengths up to 18 inches, possible rare ore minerals as tiny grains. Cutting sample Contains 2% magnetite, 4% white metallic pyrrhotite and iron cuttings from drilling equipment.

1198-1208 feet - Box 40, reoovered 90%

Quartz monzonite porphyry, contains orthoclase as phenocrysts and equigranular grains, matrix and biotite intensely altered to chlorite, however, alteration is less intense than above, more epidote stain, more kaolinization, softer rock, Metallic mineral in chlorite, tan, metallic, hardness 4-5, 0.1%, Sample extracted in aqua regia tests 100 PPM for copper.

1208-1217.5 feet - Box 41, recovered 90%

Quartz monzonite porphyry, contains orthoclase phenocrysts in a matrix of light gray feldspar and glassy quartz, less intense chlorite alteration, more epidote stain, more kaolinization, softer rock - 1208-1210 interval is harder, black coal like mineral intergrown with quartz, metallic, bright streak, sample boiled in aqua regia tests 100PPM copper.

1217.5-1227.5 feet - Box 42, recovered 90%

Quartz monzonite porphyry, contains 40% gray kaolinized feldspar, glassy quartz, phenocrysts of orthoclase; biotite, black, fresh; 85 degree high angle fracturing is more intense in this interval accompanied by soft, clayey rock and fractures coated by chaloocite in lower 1 foot of interval - tests 250 PPM copper after boiling in aqua regia. Cutting sample contains 2% magnetite and 2% pyrrhotite and iron cuttings from drilling equipment.

Core Log - Core Boring KC-10, Continued.

1227.5-1237 feet - Box 43, recovered 95%

Quartz monzonite porphyry, contains phenocrysts of orthoclase in a matrix of gray feldspars, slightly kaolinized, and glassy quartz, hematite red stain on fractures, major fractures are at 85 degrees. Copper test on selected dark mineral specimens 16 PPM. Cutting samples contain 1% magnetite and 1-2% pyrrhotite and iron cuttings from drilling equipment.

1237-1248 feet - Box 44, recovered 85%

Quartz monzonite porphyry, extremely kaolinized and gouged, grain texture is obliterated in much of the interval. Upper 6 inches of interval is fresh and hard, Copper test on hematite red stain on fractures after oxidation in nitric acid and oxidation - 2 PPM. Cutting samples contain 1% magnetite and 1-2% pyrrhotite and iron cuttings from drilling equipment.

1248-1258 feet - Box 45, recovered 90%

1248-1250 - kaolinized gouge zone bounded by 45 degree fractures, sheared at a high angle, light gray rock flour, kaolinized, stained by hematite red material on major fracture surfaces. 1250-1258 - granite porphyry, contains pink orthoclase 5-10% of gray feldspars, glassy quartz in anhedral grains, no visible mineralization

1258-1275 feet - Box 46, recovered 55%

Quartz monzonite porphyry, intensely fractured hard rock, widely spaced (3 feet of core interval) 85 degree fractures. biotite, black, fresh, platy, closely spaced 30 degree fractures, fractures coated by dark mineral, possibly chalcocite, higher copper values in cutting sample - panned concentrate contains 0.02%. Cutting samples contain 1% magnetite and 1-2% pyrrhotite and iron cuttings from drilling equipment.

1275-1285 feet - Box 47, recovered 90%

Quartz monzonite porphyry, coarse textured, hard, relatively fresh, gray feldspars slightly kaolinized, biotite, fresh, black,- 2 types present 1. Large plates 1/2 inch in size. 2. Tiny grains with random orientation in areas up to 1/2 inch in size, biotite surrounded by a halo of red hematite stain. Possible ore mineral (chalcocite as coatings in the interval from 1283-1285 feet. Selected specimen of ore " tests 60 PPM copper.

1285-1295 feet - Box 48, recovered 90%

Quartz monzonite porphyry, coarse textured, phenocrysts of orthoclase up to 1 1/2 inches in size, biotite 5%, fresh, black, platy; surrounded by a halo of hematite red stain, rare fractures have a coating of possible chalcocite. Upper 3 feet of interval (1285-1288 feet) is badly gouged and broken, hard rock, recovered in lengths up to 12 inches, Selected specimen of dark minerals tests 20 PPM copper.

1295-1306 feet - Box 49, recovered 85%

Quartz monzonite porphyry, coarse textured, contains phenocrysts of pink orthoclase 5% biotite, black, fresh, surrounded by a halo of hematite red stain, fractured at 85 degrees, hard rock, gray feldspars are kaolinized, slight hematite stain on fractures, broken, fractured rock recovered in lengths up to 12 inches. Cutting samples contain 1% magnetite and 1-2% pyrrhotite and iron cuttings from drilling equipment.

Core Log - Core Boring KC-10, Continued.

1306-1317 feet - Box 50, recovered 82%

Granite, phenocrysts of pink orthoclase, matrix is largely glassy quartz and a very small amount of fray feldspars, rock is extremely broken into 2-4 inch lengths by 60 and 85 degree fractures, biotite is altered to chlorite in the interval from 1306-1312 feet, biotite fresh, black in remainder of interval. very rare grains of sulfide minerals, black, dull, metallic streak. Cutting samples contain 1% magnetite and 1-2% pyrrhotite and iron cuttings from drilling equipment. Copper test on selected specimens 150 PPM after leaching in nitric acid and oxidation.

1317-1327 feet - Box 51, recovered 90%

Quartz monzonite porphyry, phenocrysts of pink orthoclase, matrix is glassy quartz and gray feldspars, biotite, black, platy, slaghtly altered to a gol color, some chloritization, intensively kaolinized and crushed in the interval 1317 - 1321 feet. remainder of interval fractured at 85 degrees, fractures coated by hematite red stai Copper tests 5 PPM after oxidation. Cutting samples contain 1-2% magnetite and 1-2% pyrrhotite,and iron cuttings from drilling equipment. Panned cuttings contain 350-400 PPM Cu after oxidation.

1327-1336 feet - Box 52, recovered near 100%

Granite, equigranular, contains pink orthoclase in a matrix of glassy quartz, rock has a dull gray appearance because of kaolin alteration, intensely fractured at 85 degrees, interval from 1332-1334 has coatings of a bright black, non-metallic mineral, and black dendrites of pyrolusite, fractures in remainder of interval are coated by kaolin and hematite red stain. Cutting samples contain 1-2% magnetite and 1-2% pyrrhotite and cuttings from drilling equipment. Selected panned cuttings from drilling equipment tests 400-500 PPM copper after oxidation.

1336-1345 feet - Box 53, recovered 90%

Granite, equigranular, contains pink orthoclase and glassy quartz, coarse textured, biotite, fresh, black, platy; kaolinized near fractures, fractures coated by clear clacite crystals with a few small grains and coatings of black calcite and pyrolusit dendrites, hard rock, fractured at 85 degrees. Cutting samples contain 1-2% magneti and 1-2% pyrrhotite and cuttings from drilling equipment. Selected specimens of "ore" test 500-600 PPM copper.

1345-1355 feet - Box 54, recovered 90%

Quartz monzonite porphyry, phenocrysts of pink orthoclase, matrix is gray feldspars and glassy quartz, biotite, black, platy, fresh 5%, alternating hard rock and sand size gouge in 2 intervals, some fractures calcite coated and have small areas and coatings of black calcite, sericite and light hematite stain on fractures. Cutting samples contain 1-2% magnetite and 1-2% pyrrhotite, white, metallic and iron cuttings from drilling equipment.

1355-1365 feet - Box 55, recovered 90%

Granite, coarse textured, equigranular, pink orthoclase and glassy quartz, biotite, black, fresh, intensely fractured, coatings of yellow stain on fractures MoO_2??, a 1 inch zone at 1356 is fine textured diorite or diabase with black soft sooty material resembling charcoal having a greasy appearance and feel, Tests positive for silver, 0.02% Mo. Cutting samples contain 1% magnetite and 1-2% pyrrhotite and iron cuttings from drilling equipment.

Core Log - Core Boring KC-10, Continued.

1365-1375 feet - Box 56, recovered 90%

Granite, coarse textured, equigranular pink feldspar and glassy quartz, biotite, 5%, black, platy, intensely fractured at 60 degrees and 85 degrees, some intervals are crushed, soft, easily broken with finger pressure, coatings of calcite crystals on some fractures associated with black sooty chalcocite as coatings and scattered grains, some pyrolusite dendrites on fractures. Rare possible argentite on fractures, white, metallic, soft, streak metallic, gold colored weathered surface, natural amalgam???. Cutting samples contain 1-2% magnetite, black, megnetic and 1-2% pyrrhotite, white, and iron cuttings from drilling equipment.

1375-1385 feet - Box 57, recovered 90%

Fault gouge, rock consists of kaolin, light gray, and talc, pale green, greasy feel, intense shearing and fracturing, pale chlorite stain, hematite red stain on major fractures, some black stain possibly cupric oxide as thin coatings, soft rock, entire box split without hammer, lower 3 feet of interval recovered in sand size fragments.

1385-1395 feet - Box 58, recovered 90%

Fault gouge and intensely kaolinized granite, grain boundaries obscured by shearing. The interval 1390-1395 feet is coherent rock, 1385-1390 recovered as sand size gouge and a few thin intervals of sound granite, very slight alteration, extensive breccia light coatings of hematite and limonite stain on fractures. no evidence of visible mineralization.

1395-1405 feet - Box 59, recovered 90%

Granite, brecciated, contains clay size gouge, kaolinized, consists of pink orthoclase phenocrysts and glassy quartz, very slight alteration, biotite 5%, black, platy, largely fresh and unaltered, interval from 1400-1405 is largely recovered as sand size grains, contains coherent sheared zones in lengths up to 6 inches.

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

DRILLING LOG

PROJECT 11-A Florence, Ariz.

HOLE NO. KC-10

LOCATION Examination by Dr. Lacy -

TOTAL DEPTH

DATE STARTED August 22, 1969 COMPLETED

LOGGED BY

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery
1405	1415	BRECCIATED GRANITE CONSISTING OF PINK ORTHOCLASE PHENOCRYSTS AND GLASSY QUARTZ; 5% BLACK PLATY BIOTITE; GRAIN BOUNDARIES ARE OFTEN OBSCURED BY SHEARING; SLIKEN-SIDES OBSERVED IN SEVERAL ZONES. 50% RECOVERED AS SAND-SIZED BRECCIA AND GOUGE.	STRONGLY KAOLINIZED FELDSPARS; BIOTITE ALTERED TO HEMATITE AND/OR LIMONITE IN KAOLINIZED ZONES WHICH APPEARS AS A HALO AROUND THE BIOTITE. EUHEDRAL, CLEAR CALCITE IS FOUND AS VEIN FILLINGS AT 1409, 1412, 1413. CHLORITIZATION OCCURS AT SLIKEN-SIDES.	NONE APPARENT						95% FOR Box No. 60
1415	1425	SAME AS ABOVE - ROCK IS IN TACT AND ONLY MODERATELY ALTERED FROM 1417 TO 1419	SAME AS ABOVE.	NONE APPARENT						90° FOR Box No. 61
1425	1438	SAME AS ABOVE - ROCK IS INTACT AND ONLY MODERATELY ALTERED FROM 1425 TO 1427.	SAME AS ABOVE - KAOLINITE IS OFTEN STAINED BY HEMATITE AND/OR LIMONITE	NONE APPARENT						60% FOR Box No. 62
1438	1447	HIGHLY ALTERED, BRECCIATED GRANITE; 5% BLACK, PLATY BIOTITE. FRACTURES ARE CLAY FILLED SHOWING SOME SLIKENSIDES.	VERY STRONGLY KAOLINIZED; HEMATITE STAINING; SOME CHLORITIZATION	NONE APPARENT						95% FOR Box No. 63

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

PROJECT 11-A, FLORENCE, ARIZONA

DRILLING LOG

HOLE NO. KC-10

LOCATION

TOTAL DEPTH

DATE STARTED COMPLETED

LOGGED BY J.J.R.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	
1447	1456	GRANITE, COARSE GRAINED EQUIGRANULAR, PINK FELDSPAR AND GLASSY QUARTZ; 5% BLACK PLATY BIOTITE. GRANITE IS BRECCIATED TO SAND-SIZE FROM 1447 to 1453.	FELDSPAR IS SLIGHTLY KAOLINIZED AND STAINED WITH LIMONITE. BIOTITE SLIGHTLY ALTERED TO HEMATITE, RED HALOS AROUND BIOTITE. EUHEDRAL, CLEAR CALCITE OCCURS AS VEIN FILLINGS.	NONE APPARENT						75% FOR BOX No. 64	
1456	1466	SAME AS ABOVE - FAULT GOUGE AT 1462, 1465 OTHERWISE ROCK IS MASSIVE	SAME AS ABOVE	NONE APPARENT						100% FOR BOX No. 65	(≤0)
1466	1476	SAME AS ABOVE - BRECCIATED AT 1475	SAME AS ABOVE	NONE APPARENT						100% FOR BOX No. 66	5
1476	1486	SAME AS ABOVE - BRECCIATED FROM 1480 TO 1482	SAME AS ABOVE - CHLORITE IS PRESENT ON SOME FRACTURES	NONE APPARENT						95% FOR BOX No. 67	
1486	1496	SAME AS ABOVE - PLATY, BLACK BIOTITE 5-10%	SAME AS ABOVE	NONE APPARENT						95% FOR BOX No. 68	SA
1496	1505	SAME AS ABOVE -	SAME AS ABOVE	NONE APPARENT						100% FOR BOX No. 69	
1505	1515	SAME AS ABOVE - FRACTURES ARE FILLED WITH A THIN FILM OF GOUGE WHICH IS PROBABLY KAOLINITE-CHLORITE-LIMONITE. DISKING APPEARS TO HAVE OCCURRED JUST BELOW POINT WHERE BX CORE BEGINS (1510).	SAME AS ABOVE	NONE APPARENT						100% FOR BOX No. 70	SA
1515	1525	SAME AS ABOVE - BRECCIATED ZONES AT 1522, 1523, 1524	SAME AS ABOVE	NONE APPARENT						100% FOR BOX No. 71	

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

DRILLING LOG

PROJECT 11-A FLORENCE, ARIZONA

HOLE NO. KC

LOCATION

TOTAL DEPTH

DATE STARTED COMPLETED

LOGGED BY J.G.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	
1525	1535	SAME AS ABOVE - BRECCIATED ZONE TO SAND-SIZE AT 1525, 1530	SAME AS ABOVE	NONE APPARENT						100% FOR Box No. 72	
1535	1545	SAME AS ABOVE	SAME AS ABOVE - SECONDARY BIOTITE IN CALCITE VEINS IS ALTERED TO VERMICULITE	NONE APPARENT						100% FOR Box No. 73	
1545	1555	SAME AS ABOVE	SAME AS ABOVE	NONE APPARENT						100% FOR Box No. 74	
1555	1565	SAME AS ABOVE - FRACTURE SPACING < 3". BRECCIATION TO SAND-SIZE AT 1559-1560, 1561-1562, 1564 - 1565	MODERATE KAOLINIZATION OF FELDSPARS, SOME ALTERATION OF BIOTITE TO HEMATITE	NONE APPARENT						70% FOR Box No. 75	
1565	1575	SAME AS ABOVE - GRAIN BOUNDARIES ARE OFTEN OBSCURED BY REHEALED SHEARING. BRECCIATED ZONES: 1565-1566, 1572-1574	SAME AS ABOVE	NONE APPARENT						95% FOR Box 76	
1575	1585	BRECCIATED GRANITE, PINK FELDSPAR, 5% BLACK, PLATY BIOTITE. OCCASIONAL SMALL (<1") XENOLITHS OF BIOTITE WITH SOME FELDSPAR	MODERATE KAOLINIZATION OF FELDSPARS	NONE APPARENT						95% FOR Box No. 77	
1585	1595	GRANITE, COARSE GRAINED, EQUIGRANULAR, PINK FELDSPAR AND GLASSY QUARTZ, 5% BLACK, PLATY BIOTITE; FRACTURES AT SPACINGS < 4". GOUGE AT 1587.	BIOTITE PARTIALLY ALTERED TO HEMATITE ALONG FRACTURE SURFACES BUT ONLY SLIGHTLY ALTERED IN ROCK MASS. VERY SLIGHT KAOLINIZATION	NONE APPARENT						95% FOR Box No. 78	
1595	1605	SAME AS ABOVE - FRACTURE SPACING: 2-6"	SAME AS ABOVE	NONE APPARENT						100% FOR Box No. 79	
1605	1615	SAME AS ABOVE - FRACTURE SPACING: 2-18" SMALL (<1") XENOLITHS OF BIOTITE WITH SOME FELDSPAR.	SAME AS ABOVE	NONE APPARENT						100% FOR Box No. 80	

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

PROJECT 11-A FLORENCE, ARIZONA DRILLING LOG HOLE NO. KC-

LOCATION TOTAL DEPTH

DATE STARTED COMPLETED LOGGED BY J.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	
1615	1625	PORPHYRITIC GRANITE, PINK FELDSPAR, 5% BLACK, PLATY BIOTITE; BRECCIATED AT 1618.	SAME AS ABOVE	NONE APPARENT						100% FOR Box No. 81	S
1625	1634	SAME AS ABOVE – FRACTURE SPACING: 2-12" BRECCIATED AT 1629	SAME AS ABOVE	NONE APPARENT						95% FOR Box No. 82	SA
1634	1644	SAME AS ABOVE –	SAME AS ABOVE	NONE APPARENT						100% FOR Box No. 83	
1644	1654	SAME AS ABOVE – BRECCIATED ZONE: 1652-1653 EUHEDRAL, CLEAR CALCITE APPEARS AS VEIN FILLINGS, SLIKEN SIDES ON SOME FRACTURE SURFACES.	SAME AS ABOVE – AT AND BELOW BRECCIATED ZONE MODERATE KAOLINIZATION OCCURS	NONE APPARENT						95% FOR Box No. 84	S
1654	1664	SAME AS ABOVE – BRECCIATED ZONE AT 1660.	SAME AS ABOVE	NONE APPARENT						95% FOR Box No. 85	
1664	1679	BRECCIATED GRANITE, 50% IS SAND-SIZED, SLIKENSIDES PRESENT.	STRONG KAOLINIZATION OF FELDSPARS; BIOTITE PARTIALLY ALTERED TO HEMATITE	NONE APPARENT						66% FOR Box No. 86	

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

PROJECT 11-A FLORENCE, ARIZONA

DRILLING LOG

HOLE NO. KC -1

LOCATION

TOTAL DEPTH

DATE STARTED COMPLETED

LOGGED BY J. G.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	BREC
1678	1688	BRECCIATED GRANITE; PINK FELDSPARS, GLASSY QUARTZ, 5% PLATY, BLACK BIOTITE. GRANITE HAS BEEN SHEARED AND REHEALED, GRAIN BOUNDARIES ARE OFTEN OBLITERATED BRECCIATION AT 1683, 1685, 1688 TO SAND-SIZE. SLIKENSIDES ON SOME FRACTURE SURFACES	MODERATE TO STRONG KAOLINIZATION OF FELDSPARS; SOME ALTERATION OF BIOTITE TO HEMATITE FORMING HEMATITIC HALOS AROUND BIOTITE. BOTH EFFECTS ARE GREATER IN STRONGLY BRECCIATED ZONES. SLIGHT CHLORITIZATION ON FRACTURE SURFACES - RELATED TO SLIKENSIDES. CLEAR, EUHEDRAL CALCITE AS FRACTURE COATINGS ON STEEPLY DIPPING FRACTURES.	PYROLUSITE DENDRITES AT 1682						75% FOR Box No. 87	
1688	1711	SAME AS ABOVE - BRECCIATION TO SAND-SIZE FROM 1688 TO 1696; 1696 TO 1704 IS MISSING	SAME AS ABOVE - REHEALED ZONES APPEARS TO HAVE SOME LIMONITE STAINING. POSSIBLE SLIGHT SERICITIZATION.	OCCASIONAL PYROLUSITE DENDRITES. BROWNISH-BLACK STAIN IN HIGHLY BRECCIATED ZONES IS PROBABLY WAD.						40% FOR Box No. 88	
1711	1721	PORPHYRITIC GRANITE, PINK FELDSPAR, 5% BLACK, PLATY BIOTITE. BRECCIATED TO SAND-SIZE FROM 1712 TO 1713 AND 1715-1716. OCCASIONAL SMALL XENOLITHS (<1") OF BIOTITE SCHIST. GRANITE HAS BEEN SHEARED AND REHEALED.	KAOLINIZATION OF PLAGIOCLASE. SLIGHT HEMATITIZATION AND CHLORITIZATION OF BIOTITE. SOME LIMONITE STAINING. POSSIBLE SLIGHT SERICITIZATION.	SLIGHT AMOUNT OF WAD.						95% FOR Box No. 89	

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

DRILLING LOG

PROJECT 11-A FLORENCE, ARIZONA

HOLE NO. KC-1

LOCATION

TOTAL DEPTH

DATE STARTED COMPLETED

LOGGED BY J. Q.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	BRE
1721	1732	SAME AS ABOVE — BRECCIATED TO 1" SIZE FROM 1721.5 TO 1722.5	SAME AS ABOVE — CHLORITIZATON ON SOME FRACTURE SURFACES	NONE APPARENT						90% FOR BOX NO. 90	7A
		BOXES 91, 92, 93 ARE MISSING									

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

DRILLING LOG

PROJECT 11-A FLORENCE, ARIZONA

HOLE NO. KC-10

LOCATION

TOTAL DEPTH

DATE STARTED COMPLETED

LOGGED BY P. J. R.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	
1732	1753	SAME AS ABOVE - BRECCIATED TO SAND-SIZE FROM 1741 TO 1750. 1732-1736 MISSING.	SAME AS ABOVE LIMONITIC STAINING OF CLAY COATING IN STEEPLY DIPPING FRACTURES.	NONE APPARENT						45% FOR Box No. 91	
1753	1763	SAME AS ABOVE - BIOTITE CONTENT LOCALLY INCREASES TO 10%. BRECCIATION TO SAND-SIZE AT 1757	SAME AS ABOVE - STRONG KAOLINIZATION AT 1757.	NONE APPARENT						95% FOR Box No. 92	Δ
1763	1772	SAME AS ABOVE - BRECCIATED 1765-1770	SAME AS ABOVE - STRONG KAOLINIZATION 1765-1770	NONE APPARENT.						95% FOR Box No. 93	Δ Δ Δ

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

PROJECT 11-A FLORENCE, ARIZONA DRILLING LOG HOLE NO. KC-10

LOCATION TOTAL DEPTH

DATE STARTED COMPLETED LOGGED BY J. R.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	SKECC
1772	1782	PORPHYRITIC GRANITE, PINK FELDSPAR, 5% BLACK, PLATY BIOTITE. GRANITE HAS BEEN SHEARED AND REHEALED.	SOME KAOLINIZATION OF PLAGIOCLASE, SLIGHT HEMATITIZATION OF BIOTITE FORMING HALOS. LIMONITE STAINING.	NONE APPARENT						95% FOR Box No. 94	
1782	1791	SAME AS ABOVE- POSSIBLE FAULT GOUGE AT 1790. SMALL, BIOTITIC XENOLITH AT 1789.5	SAME AS ABOVE- SERICITIZATION FROM 1789 TO 1790 ALSO COMPLETE KAOLINIZATION AND SOME CHLORITIZATION CLEAR, EUHEDRAL CALCITE ON 60° DIPPING FRACTURE AT 1790°	NONE APPARENT						95% FOR Box No. 95	
1791	1801	SAME AS ABOVE- BIOTITE SCHIST XENOLITH AT 1800.5. BRECCIATION TO SAND-SIZE FROM 1799 TO 1800.	SAME AS ABOVE INTENSE KAOLINIZATION FROM 1794 TO 1795 AND 1799 TO 1800.	NONE APPARENT						90% FOR Box No. 96	
1801	1811	SAME AS ABOVE- BLACK, PLATY BIOTITE 10% OCCASIONAL SLIKENSIDES. BRECCIATED TO SAND SIZE FROM 1802 TO 1803. AND 1806 TO 1807.	SAME AS ABOVE-	NONE APPARENT						95% FOR Box No. 97	
1811	[illegible]	SAME AS ABOVE- BIOTITE 5%, BUT LOCAL CONCENTRATIONS MAY APPROACH 20%. BRECCIATION TO SAND SIZE FROM 1815 TO 1816 AND AT 1819 AND 1820. PHENOCRYSTS OF ORTHOCLASE REACH 2" IN LENGTH. SLIKENSIDES WELL DEVELOPED AT 1818	SAME AS ABOVE-	NONE APPARENT						95% FOR Box No. 98	

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

DRILLING LOG

PROJECT 11-A FLORENCE, ARIZONA

HOLE NO. KC-10

LOCATION

TOTAL DEPTH

DATE STARTED COMPLETED

LOGGED BY J.J.R.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	BRECC
1821	1835	SAME AS ABOVE - GOUGE AT 1829.	SAME AS ABOVE - SLIGHT SERICITIZATION CLEAR EUHEDRAL CALCITE FILLED VEIN 1829-30; THICKNESS OF VEIN - 1/16"; DIP: 85°	NONE APPARENT						60% FOR Box No. 99	
1835	1845	SAME AS ABOVE CALCITE FILLED VEIN FROM 1837 TO 1838.	SAME AS ABOVE - STRONG KAOLINIZATION NEAR VERTICAL FRACTURES.	VERY SLIGHT AMOUNT OF CHALCOPYRITE (?) IN VERT. CALCITE VEIN AT 1837.						95% FOR Box No. 100	

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

DRILLING LOG

PROJECT 11-A FLORENCE, ARIZONA

LOCATION

DATE STARTED COMPLETED

HOLE NO. KC-1

TOTAL DEPTH

LOGGED BY J.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	BE
1845	1855	PORPHYRITIC GRANITE; PINK FELDSPAR PHENOCRYSTS, GLASSY QUARTZ, 5% BLACK, PLATY BIOTITE; GRANITE HAS BEEN SHEARED AND REHEALED. OBSCURING GRAIN BOUNDARIES. BRECCIATED ZONE 1849-1850.	SOME KAOLINIZATION OF PLAGIOCLASE. SLIGHT HEMATITIZATION OF BIOTITE FORMING HALOS. LIMONITE STAINING. CLEAR EUHEDRAL CALCITE AND MINOR SERICITIZATION IN STEEPLY DIPPING FRACTURES.	NONE APPARENT						75% FOR Box No. 101	
1855	1863	SAME AS ABOVE - MINOR SLIKENSIDE AT 1862.	SAME AS ABOVE - MAJOR INCREASE IN SERICITIZATION AT 1862.5. MINOR SERICITIZATION ALONG FRACTURES ABOVE THIS ZONE	PYROLUCITE AS DENDRITES AND VERY SMALL EARTHY MASSES IS ASSOCIATED WITH CALCITE IN FRACTURE FILLINGS.						95% FOR Box No. 102	
1863	1871	SAME AS ABOVE - A FEW 1" PHENOCRYSTS OF HORNBLENDE FROM 1863 TO 1864	MODERATELY SERICITIZED ZONE FROM 1863 TO 1865. CLEAR, EUHEDRAL CALCITE AS FRACTURE FILLINGS. SLIGHT KAOLINIZATION OF FELDSPARS	SAME AS ABOVE						90% FOR Box No. 103	
1871	1881	SAME AS ABOVE. 1" XENOLITH OF BIOTITE SCHIST AT 1874. 1/2" PHENOCRYST OF HORNBLENDE AT 1879. BRECCIATED FROM 1879 TO 1881	STRONGLY SERICITIZED AND MODERATELY KAOLINIZED FROM 1879 TO 1881. SERICITIZATION APPEARS TO FOLLOW NEAR VERTICAL FRACTURES.	SAME AS ABOVE						80% FOR Box No. 104	

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

DRILLING LOG

PROJECT 11-A FLORENCE, ARIZONA

HOLE NO. KC-

LOCATION

TOTAL DEPTH

DATE STARTED COMPLETED

LOGGED BY JG

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	BEE
1881	1897	SAME AS ABOVE - TO 1887 BELOW 1887 EPIDOTE REPLACES PART OF THE BIOTITE. EPIDOTE + BIOTITE = 10%.	SLIGHTLY KAOLINIZED AND SERICITIZED. BIOTITE IS PARTIALLY ALTERED TO HEMATITE. BELOW 1888 BIOTITE IS PARTIALLY ALTERED TO EPIDOTE. SERICITIZED ZONES AT 1884-1887, 1893-1897	OCCASIONAL SMALL MASSES OF PYROLUCITE.						60% FOR BOX No. 105	
1897	1907	GRANITE PORPHYRY; PINK FELDSPAR PHENOCRYSTS; 10% BLACK BIOTITE STRONGLY ALTERED TO EPIDOTE. GRANITE HAS BEEN SHEARED AND REHEALED.	EPIDOTE AND HEMATITE FROM BIOTITE. SOME CLEAR, EUHEDRAL CALCITE IN FRACTURES DIPPING AT 60°	NONE APPARENT						95% FOR BOX No. 106	
1907	1916	SAME AS ABOVE TO 1912 - BELOW 1912, NO EPIDOTE IS PRESENT, GRANITE IS AS DESCRIBED FOR 1845-1855. BRECCIATED ZONES 1907-1908, 1912 TO 1914	SAME AS ABOVE TO 1912. BELOW 1912, ALTERATION IS AS DESCRIBED FOR 1845-1855.	NONE APPARENT						75% FOR BOX No. 107	
1916	1926	SAME AS ABOVE	SAME AS ABOVE	NONE APPARENT						100% FOR BOX No. 108	
1926	1935	SAME AS ABOVE - 1" XENOLITH OF BIOTITE SCHIST AT 1931.	SAME AS ABOVE MINOR ALTERATION OF BIOTITE TO EPIDOTE	NONE APPARENT						100% FOR BOX No. 109	
1935	1945	SAME AS ABOVE	SAME AS ABOVE	NONE APPARENT						100% FOR BOX No. 109	

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

DRILLING LOG

PROJECT 11-A FLORENCE, ARIZONA

HOLE NO. KC-

LOCATION

TOTAL DEPTH

DATE STARTED COMPLETED

LOGGED BY J.G.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	BRI
1945	1954	PORPHYRITIC GRANITE; GRAY TO PINK FELDSPAR PHENOCRYSTS; GLASSY QUARTZ 5-10% BLACK, PLATY BIOTITE; GRANITE HAS BEEN SHEARED AND REHEALED. OBSCURING SOME GRAIN BOUNDARIES. 2" BIOTITE RICH XENOLITH AT 1947. MINOR SLIKENSIDES AT 1950.	SLIGHT KAOLINIZATION OF FELDSPARS FOLLOWING FRACTURES. SOME HEMATITIZATION OF BIOTITE FORMING HALOS. CLEAR, EUHEDRAL CALCITE IN STEEPLY DIPPING FRACTURES.	SLIGHT AMOUNT OF PYROLUCITE ASSOCIATED WITH EUHEDRAL, CLEAR CALCITE.						100% FOR Box 111	
1954	1964	SAME AS ABOVE - 1½" BIOTITE RICH XENOLITH AT 1954. MINOR SLIKENSIDES AT 1963. BRECCIATION AT 1959. FRACTURES DIPPING AT 85° APPEAR TO BE EN ECHELON.	SAME AS ABOVE	SOME DENDRITIC AND EARTHY PYROLUSITE ASSOCIATED WITH STEEPLY DIPPING, CALCITE FILLED FRACTURES.						95% FOR Box No. 112	
1964	1974	SAME AS ABOVE - BRECCIATION TO SAND SIZE MATERIAL AT 1971.5 TO 1972, 1973-1974. ZONES OF RED GOUGE DIPPING AT 30° AT 1973.5 - 1974. MOST OF CORE IS ALTERED ENOUGH THAT INTACT ROCK MAY BE BROKEN BY HAND.	SAME AS ABOVE - MINOR EPIDOTIZATION OF BIOTITE 1971-1974. KAOLINIZATION IN BRECCIATED ZONE IS ALMOST COMPLETE.	SAME AS ABOVE - SULFIDE MINERAL AT 1975 (?)						95% FOR Box No. 113	
1974	1982	SAME AS ABOVE - HIGHLY BRECCIATED. MOST OF INTACT CORE IS ALTERED TO THE POINT THAT IT MAY BE BROKEN BY HAND.	FELDSPARS ARE HIGHLY KAOLINIZED. BIOTITE IS MODERATELY HEMATITIZED AND SLIGHTLY ALTERED TO EPIDOTE. SOME CLEAR, EUHEDRAL CALCITE IS PRESENT	SMALL AMOUNTS OF PYROLUSITE. WAD FILLED FRACTURE AT 1975.						90% FOR Box No. 114	

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

DRILLING LOG

PROJECT 11-A FLORENCE, ARIZONA

HOLE NO. KC-

LOCATION

TOTAL DEPTH

DATE STARTED COMPLETED

LOGGED BY R.J.C.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	BRECC
1984	1995	SAME AS ABOVE - HIGHLY BRECCIATED, BASIC DIKE FROM 1992 TO 1993. CONTACTS WITH GRANITE ARE SHARP, BUT DIKE HAS BEEN HIGHLY BRECCIATED AND REHEALED. IT IS IMPOSSIBLE TO OBTAIN A FRACTURED SURFACE THAT IS NOT SLIKENSIDED	SAME AS ABOVE -	SAME AS ABOVE						90% FOR Box No. 115	
1996	2027	HIGHLY BRECCIATED AND ALTERED GRANITE. FROM 2006 TO 2020, FELDSPARS ARE LOCALLY SLIGHTLY GREENISH IN COLOR. HEMATITE STAINED SLIKENSIDES ALONG FRACTURES IS COMMON	SAME AS ABOVE. FROM 2020 TO 2025, KAOLINIZATION IS COMPLETE.	SAME AS ABOVE						30% FOR Box No. 116	
2027	2038	BRECCIATED AND ALTERED GRANITE WHICH HAS BEEN SHEARED AND REHEALED. HIGHLY BRECCIATED, APHANITIC BASIC DIKE SIMILAR TO DIKE MENTIONED ABOVE FROM 2028 TO 2029. THIN WHITE CALCITE VEINS FILLING FORMER FRACTURES ARE PRESENT IN DIKE	SAME AS ABOVE - PLAGIOCLASE IS STAINED YELLOW FROM 2037 TO 2038. ALTERED, INTACT GRANITE MAY BE BROKEN WITH HANDS.	SAME AS ABOVE -						85% FOR Box No. 117	
2038	2048	PORPHYRITIC GRANITE; GRAY TO PINK FELDSPAR PHENOCRYSTS; 10% BLACK, PLATY BIOTITE. GRANITE HAS BEEN SHEARED AND REHEALED. PLAGIOCLASE IS STAINED YELLOW. SLIKENSIDES ARE COMMON ALONG FRACTURES. 1/8" SEAM OF HEMATITIC FAULT GOUGE AT 2047. DIPPING AT 60°.	SLIGHT KAOLINIZATION OF FELDSPARS. SLIGHT HEMATITIZATION OF BIOTITE FORMING HALOS. OCCASIONAL SLIGHT ALTERATION OF BIOTITE TO EPIDOTE. STRONG KAOLINIZATION FROM 2047 TO 2048	NONE APPARENT						95% FOR Box No. 118	

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

PROJECT 11-A FLORENCE, ARIZONA

DRILLING LOG

HOLE NO. KC-10

LOCATION

TOTAL DEPTH

DATE STARTED COMPLETED

LOGGED BY J. J. R.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	BREC
2048	2058	SAME AS ABOVE - FROM 2048 TO 2053, GRANITE IS HIGHLY ALTERED WITH ZONES OF INDIAN RED, HEMATITIC GOUGE UP TO 2" THICK, DIPPING AT 20 TO 60°.	SAME AS ABOVE, EXCEP FROM 2048 TO 2053 WHERE KAOLINIZATION IS COMPLETE.	HEMATITE CONTENT IN GOUGE ZONES						100% FOR Box No. 119	(60) (60)
2058	2068	SAME AS ABOVE - STEEPLY DIPPING FRACTURES ARE FILLED WITH WHITE CALCITE 1/32" THICK. BIOTITE SCHIST XENOLITH 1" LONG AT 2066. MINOR SLIKENSIDES ALONG MOST FRACTURES	SAME AS ABOVE	NONE APPARENT						100% FOR Box No. 120	
2068	2078	SAME AS ABOVE	SAME AS ABOVE, EXCEPT KAOLINIZATION IS MODERATE	NONE APPARENT						100% FOR Box No. 121	
2078	2088	SAME AS ABOVE. - SAND-SIZE GRAINS FROM 2087-2088 DUE TO ALTERATION. WITH STRONG HEMATITE STAINING.	SAME AS ABOVE CLEAR, EUHEDRAL CALCITE IN STEEPLY DIPPING FRACTURE AT 2078.5; STRONG KAOLINIZATION FROM 2087 TO 2088	OCCASIONAL PYROLUCITE DENDRITES						75% FOR FOR Box No. 122	
2088	2098	SAME AS ABOVE - 2" BIOTITIC XENOLITH AT 2095	SAME AS ABOVE	SAME AS ABOVE						95% FOR Box No. 123	
2098	2120	SAME AS ABOVE - BRECCIATED ZONES AT 2098-2103, 2107 TO 2118.	SAME AS ABOVE	SAME AS ABOVE						35% FOR Box No. 124	ΔΔ ΔΔ ΔΔ
2120	2126	SAME AS ABOVE	SAME AS ABOVE	NONE APPARENT						60% FOR Box No. 125	

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

DRILLING LOG

PROJECT 11-A FLORENCE, ARIZONA

HOLE NO. KC-10

LOCATION

TOTAL DEPTH

DATE STARTED COMPLETED

LOGGED BY D.J.C.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo	Assays	Assays	Assays	% Core Recovery	PRECC
2130	2140	PORPHYRITIC GRANITE; PINK FELDSPAR PHENOCRYSTS UP TO 1½" LONG, GLASSY QUARTZ; BLACK, PLATY BIOTITE 5%. GRANITE HAS BEEN SHEARED AND REHEALED OBSCURING SOME GRAIN BOUNDARIES. MINOR SLIKEN SIDES ON MOST FRACTURES.	SLIGHT KALLINIZATION OF PLAGIOCLASE. SLIGHT ALTERATION OF BIOTITE TO HEMATITE PRODUCING RED ALTERATION HALOS. ALSO VERY SLIGHT ALTERATION OF BIOTITE TO EPIDOTE. CLEAR, EUHEDRAL CALCITE XTALS IN STEEPLY DIPPING FRACTURES.	SLIGHT AMOUNT OF PYROLUSITE IN DENDRITES AND EARTHY BLEBS ALONG SOME FRACTURES.						95% FOR Box No. 126	
2140	2150	SAME AS ABOVE -	SAME AS ABOVE	SAME AS ABOVE						95% FOR Box No. 127	
2150	2160	SAME AS ABOVE - BRECCIATED ZONE TO ½" FROM 2159-2160. 2" BIOTITIC XENOLITH AT 2155.	SAME AS ABOVE - DEGREE OF KAOLINIZATION INCREASES FROM 2157 TO 2160 WHERE STRONG KAOLINIZATION OCCURS. OCCURANCE IS TIED TO STEEPLY DIPPING FRACTURES.	SAME AS ABOVE - 2 SMALL CUBES OF PYRITE (1mm) AT 2153. NOT ASSOCIATED WITH FRACTURES.						95% FOR Box No. 128	Δ
2160	2170	SAME AS ABOVE. - BIOTITE CONTENT INCREASES TO 10% AFTER 2165.	KAOLINIZATION DECREASES TO NORMAL FROM 2160 TO 2161	SLIGHT AMOUNT OF PYROLUSITE IN FRACTURES.						100% FOR Box No. 129	Δ
2170	2180	SAME AS ABOVE - BRECCIATED ZONES FROM 2171 TO 2172, 2174-2175' AND 2179-2180'. 1" BIOTITIC XENOLITH AT 2175	SAME AS ABOVE - STRONG KAOLINIZATION IN BRECCIATED ZONES.	SAME AS ABOVE						95% FOR Box No. 130	Δ Δ Δ

MINERAL EXPLORATION

KAISER CEMENT & GYPSUM CORPORATION

DRILLING LOG

PROJECT 11-A FLORENCE, ARIZONA

LOCATION

DATE STARTED _____ COMPLETED _____

HOLE NO. KC-1

TOTAL DEPTH 222

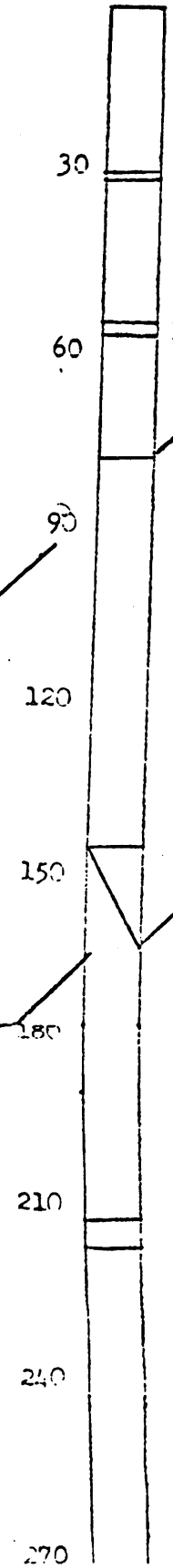
LOGGED BY J. J. Q.

From	To	Description	Alteration	Mineralization	Assays Cu	Assays Mo				% Core Recovery	BRE
2180	2190	SAME AS ABOVE - BRECCIATION AT 2187	SAME AS ABOVE - SOME LIMONITE STAINING OF KAOLINIZED PLAGIOCLASE.	SAME AS ABOVE - PYROLUSITE CONTENT SLOWLY HAS INCREASED WITH DEPTH.						95% FOR BOX NO. 131	Δ
2190	2200	SAME AS ABOVE -	SAME AS ABOVE - MOST STEEPLY DIPPING FRACTURES CONTAIN: CALCITE AND A THIN COATING OF LIMONITE STAINED CLAY.	PYROLUSITE CONTENT HAS INCREASED TO A NOTICEABLE AMOUNT IN STEEPLY DIPPING FRACTURES.						30% FOR BOX NO. 132	
2200	2210	SAME AS ABOVE - WELL DEVELOPED SLIKEN-SIDES STAINED RED AT 2208.5'.	SAME AS ABOVE - DEGREE OF KAOLINIZATION INCREASES TO MODERATE FROM 2200 TO 2210	SAME AS ABOVE						95% FOR BOX NO. 133	
2210	2220	SAME AS ABOVE - NUMEROUS SLIKENSIDES WITH THIN (1/16") HEMATITIC GOUGE FROM 2210 - 2217. BRECCIATION AT 2217	STRONG KAOLINIZATION OF FELDSPARS. RED-HEMATITIC STAINING OF FELDSPAR IS COMMON.	SLIGHT AMOUNT OF PYROLUSITE						70% FOR BOX NO. 134	Δ
2220	2227	SAME AS ABOVE - BRECCIATION 2220 - 2221 2224 - 2227.	SAME AS ABOVE SOME LIMONITE STAINING OF FELDSPARS.	SAME AS ABOVE						80% FOR BOX NO. 135	ΔΔ Δ Δ Δ
	END OF HOLE										

Log of Hole
Assays only from
503' - 820',
no assays 0-530
TD 822

Log of hole
Rotary 0-770
Core 770-2227'
Hole Dead - no real assays

Core Boring KC-1



Chloritized granite

Pegmatitic feldspar and quartz

Diorite, chloritized, contains pyrolusite dendrites, texture of original rock is visible in some intervals

Granite composition

270

Granite composition
Zone of alteration
Granite composition

300

Zone of alteration
Malachite
Granite composition

BROKEN CRUSHED ALTERED

330

350

Granitic aphanitic phase

Chloritic alteration of biotite.
Pegmatitic granitic phase

390

Zone of alteration - kaolin

Begin sulfide zone (pyrite)

420

Sparse pyrite

450

Limonite veinlets with crysocolla

Crysocolla veinlet.
Sparse pyrite.
Malachite stain.

480

Granite (pegmatitic)

Sparse pyrite

510

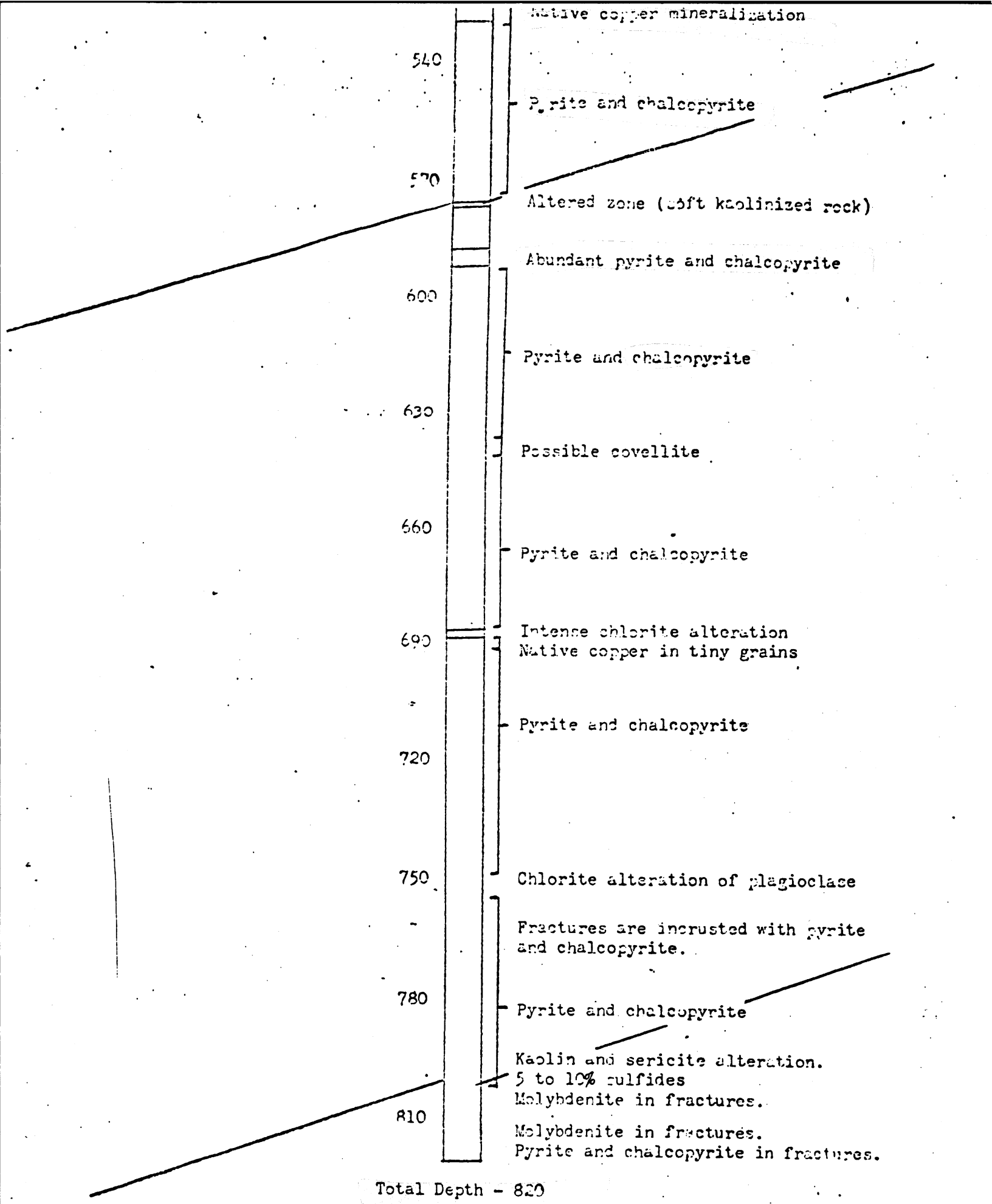
Granite zone
Native copper mineralization

540

Pyrite and chalcopyrite

570

Altered zone (soft kaolinized rock)


Native copper mineralization
540
Pyrite and chalcopyrite
570
Altered zone (soft kaolinized rock)
Abundant pyrite and chalcopyrite
600
Pyrite and chalcopyrite
630
Possible covellite
660
Pyrite and chalcopyrite
690
Intense chlorite alteration
Native copper in tiny grains
Pyrite and chalcopyrite
720
750
Chlorite alteration of plagioclase
Fractures are incrusted with pyrite and chalcopyrite.
780
Pyrite and chalcopyrite
Kaolin and sericite alteration.
5 to 10% sulfides
Molybdenite in fractures.
810
Molybdenite in fractures.
Pyrite and chalcopyrite in fractures.
Total Depth - 820

A-11 SAMPLE ANALYSIS LOG

Sample No.	Depth	%Cu
57	503-06'	.11
58	516-20	.20
59	522-28	.10
60	528-34	.06
61	534-38	.05
62	538-48	.05
63	551-52	.07
64	552-57	.05
65	567-74	.06
66	576-80	.07
67	580-85	.06
68	588-93	.15
69	597-602	.19
72	617-22	.13
70	631-39	.08
71	639-40	.05
73	649-54	.05
74	654-58	.05
75	658-62	.05
76	662-67	.07
77	667-72	.06
78	672-77	.07
79	677-81	.05
80	681-86	.06
81	686-91	.14
82	691-95	.05
83	695-700	.06
84	700-705	.06
85	705-709	.06

Hole No. K.C. No. 1

Sample No.	Depth	%Cu	%Mo
86	709-14'	.05	
87	714-20	.05	
88	720-21	.27	
89	721-24	.07	
90	724-28	.06	
91	728-32	.10	
92	732-33	.10	
93	733-38	.05	
94	738-42	.05	
95	742-44	.05	
96	744-46	.08	
97	746-52	.06	
98	752-57	.06	
99	757-61	.05	
100	761-65	.05	
101	765-70	.05	
102	770-75	.05	
103	775-79	.05	
104	779-84	.06	
105	784-89	.06	
106	789-94	.06	
107	794-98	.05	
108	798-803	.06	
109	803-09	.08	.01
110	809.5-10	.10	.02
111	810-15	.08	.01
112	815-18	.13	0
113	818-22	.06	0

Kaiser Cement and Gypsum Corporation Core Boring KC-1, Core Log,

Location: Florence, Arizona; Project A-11; 25 feet south and 25 feet west of the North Center End of Claim 6, Section 3, T5S, R11E.

Core Description by Robert S. Reppert

Box No.	Core Recovery	Depth	Description
		29	Chloritized granite, feldspar 35-40%, chlorite and dark minerals 60%, fracture surfaces are coated with carbonate
		30	Quartz monzonite porphyry, feldspar phenocrysts in a groundmass of quartz and plagioclase feldspar, biotite 3-5%, yellowish brown and hematite stain in fractures and surrounding the dark minerals and biotite.
1	25%		
	100%	35	
	100%	40	
2	100%		
		45	

Core Recovery 27'–500' = 94.5% Rec.
" " 500–820 = 95.4 " "
" " 27–820 = 95.3 " "

Kaiser Cement and Gypsum Corporation Core Boring KC-1, Core Log, Continued.

Box No.	Core Recovery	Depth	Description	Notes
	48 55%	48		
	50 90%	50		
	100%			8/23/68
	55 100%	55	Pegmatitic feldspar and quartz, flesh colored orthoclase in crystals up to 3/4 inch, 10 to 20 percent quartz in glassy grains, muscovite mica in books up to 1/2 inch	
	60 86%	60	Quartz Monzonite porphyry, phenocrysts of orthoclase in a groundmass of plagioclase and quartz, 5% biotite in unaltered books, limonite and hematite stain in fractures and surrounding dark minerals and biotite.	
	100%			
	75%	65		
	70 94%	70		

Kaiser Cement and Gypsum Corporation Core Boring KC-1, Core Log, Continued.

Box No.	Core Recovery	Depth	Description	Notes
	72	72		
	75	75		
	100%		Chloritic aphanitic diorite, dark green, contains unaltered granitic remnants, carbonate on some fractures, hematite stain, dendritic pyrolusite on fracture surfaces, silicified, very hard.	
	100%	80		
	92%			
	85	85		
	100%			
	100%			8/24/68
		90	Dark minerals show iridiscent reflections. Pseudomorphs of limonite on fractures, bright red hematite stain on fractures.	
	35%			
	87%	95		

Kaiser Cement and Gypsum Corporation Core Boring KC-1, Core Log, Continued.

Box No.	Core Recover.	Depth	Description	Notes
	96	96		
	100%	100		
	80%	105		
	110 100%	110	Pyrolusite dendrites on fracture surface, approximatley 1% limonite pseudomorphs Alteration appears to become less intnse - relict structure of granitic rock is visible	
	115	115	Yellow sulfur? stain on fractures Quartz veinlet - 1to2% voids Limonite stained	
	119	119	Quartz veinlet - 1to2% voids, limonite stained	

Kaiser Cement and Gypsum Corporation Core Boring KC-1, Core Log, Continued.

Box No.	Core Recovery	Depth	Description	Notes
	100%	120	Yellow stain on carbonate in fractures	
	84%	125	Pyrolusite on fractures	8/26/68
	100%			
	100%			
	100%	130	Limonite pseudomorphs on fractures	
	100%			
	100%	135	Weathered zone dark minerals and limonite stain	
	100%			
		140	Fractures contain limonite and carbonates.	
		143		

Kaiser Cement and Gypsum Corporation Core Boring KC-1, Core Log, Continued.

Box No.	Core Recovery	Depth	Description	Notes
		144		
	145	145	Quartz monzonite porphyry and magnetitic Diorite, slight alteration. Dark minerals show alteration to chlorite and magnetite. Hematite bands indicate possible pyrite alteration	8/27/68
13	100%			
	150	150	Quartz monzonite porphyry gradational to diorite composition, chloritic alteration, Diorite zone	
	155	155		
14	100%			
				Crysocolla stain on fractures in quartz monzonite porphyry. Massive chlorite, quartz veinlet, possible sulfides, pseudomorphs of limonite.
		160		
			Massive orthoclase feldspar with epidote alteration. pseudomorphs of limonite, hematite stain	
	165	165		
5	100%	167		

Kaiser Cement and Gypsum Corporation Core Boring KC-1, Core Log, Continued

Box No.	Core Recovery	Depth	Description	Notes
	188			
15	100%			
	170	170		
			More massive chloritization of dark minerals. Quartz monzonite porphyry with chloritic alteration	
	175	175	Quartz veinlets	Limonite in quartz 8/28/68
16	100%			Pyrolusite dendrites in quartz.
			Epidote alteration of dark minerals.	
	180	180		Waxy greenish color - Malachite?
			Quartz monzonite porphyry	Cubic limonite pseudomorphs. Slight crysocolla stain on fractures.
			Epidote alteration of dark minerals, Epidote stain except in orthoclase	
17	100%			
	185	185		Cubic limonite pseudomorphs Pyrolusite dendrites.
			Chloritized zone. Epidote alteration except for orthoclase	Limonite on fracture planes
				Quartz veinlet with epidote, platy orthorhombic metallic mineral - hard 8/29/68
			Quartz monzonite porphyry	
		190		Less alteration.
18	95%			