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ELGIN BRYCE HOLT
CONSULTING MINING ENGINEER
PHOENIX, ARIZONA.

Subject: RIO VISTA MINES

RIO VISTA MINE OWNERS
Box 1617
Parker, Arizona.

Gentlemen:

I am submitting for your consideration a report concerning the RIO VISTA MINES, giving an outline of the main features of these properties, including my ideas necessary to carry out certain new exploratory work, with the express and in view of putting your holdings on a paying basis.

LOCATION:

These properties are located in the Cienega Mining District, Yuma County, Arizona, five miles northeasterly of Parker, within the Planet Range of Mountains, at a point one mile east of the Colorado River. An excellent road connects the mines with Parker, which is located on a branch line of the Santa Fe R.R.

ELECTRIC POWER:

Cheap hydro-electric power can be obtained, on application, from a transmission line, passing within one mile from properties; rates of course, varying with the amount of power used.

HOLDINGS:

The Rio Vista Mines consist of two groups, to-wit: Rio Vista South Side, composed of 16 unpatented claims; and the Rio Vista North Side, of 10 unpatented claims. Owners have complied with all requirements of the U. S. Mining Laws; and the annual assessment work on these claims has been performed to date.

HISTORICAL:

Properties were formerly owned and operated by the Quartz King Mining Company, prior to and after 1908, which company was mainly controlled by French, Belgian and Swedish capitalists. Work was carried out under the direction of Consulting Engineer, Major-General Baron Gustave de Payron.

During the said period, a comprehensive plan of mine development was conducted, not with a view to making immediate profits, but for the purpose of preparing the properties for large scale milling and smelting operations. While the development program, just mentioned, was progressing, the World War occurred, which affected European finances to such an extent that the company was forced to close down.

The greater part of the development work mentioned can be used to advantage, by present owners, especially the 287 foot double compartment shaft, located on the Rio Vista South Side ground.

In 1921-22, the properties passed into the hands of E. S. Osborne and associates, after which development work continued until the serious illness and death of Mr. Osborne.

During 1927, a mill with a capacity of 125 tons daily was erected adjacent to the Rio Vista South Side Group; but as it was unsuited to the recovery of the gold-copper values in the ore which was proven by a short test run, the mill closed down and the machinery removed, leaving the mill building intact. This

building is now in excellent condition and could be used in the event a new mill, so designed as to recover values, should be installed.

GEOLOGY:

Embraced within these two groups of claims is a north-south trending ridge composed of sedimentary rocks, consisting of alternating beds of limestone, quartzite and so-called schist, but which is probably calcareous shale. These beds have been folded and tilted until at the present time the dips of same range from 45 to 80 degrees West from the horizontal, along the western slope of ridge. Furthermore, there is evidence that the ridge in question is a truncated anticline. This ridge has a maximum elevation above the surrounding foot-hills of 250 feet.

The prevailing country rock of the main mountain range to the east of the ridge mentioned is composed of pre-Cambrian granite-gneiss complex; while to the west of ridge, and between the same and the Colorado, Tertiary andesite rocks prevail, and these in turn are bordered by Colorado River conglomerates.

METALS:

The two principal economic metals, so far discovered in these properties are copper and gold.

MINERALIZED ZONE:

Traversing the sedimentary ridge referred to from south to north, starting at the main workings of the Rio Vista South Side Group and, ending beyond the main working of the Rio Vista North Side, a total distance of 2000 feet, is a huge mineralized fault zone, from 100 to 200 feet wide, and composed of brecciated quartzite, limestone and "schist" rocks, which have been recemented by ascending thermal solutions carrying silica, calcite, copper, iron and gold. These thermal solutions, originating in deep seated molten magmas, percolated throughout the brecciated and fissured zone mentioned transforming areas of same into ore carrying the metals, as above set forth.

VEINS:

Traversing the said mineralized zone, within the Rio Vista South Side Group, are three major fissure veins, from four to around ten feet wide. These veins strike north and south and dip 80 degrees West from the horizontal.

DEVELOPMENT WORK ON THE RIO VISTA SOUTH SIDE:

Considerable mine development work has been done in this area, consisting of a 287 foot standard double compartment vertical shaft, timbered with regulation square sets, with corner posts and hanging rods, and lagged with 2" by 12" boards. This timbering is still in good condition and the shaft could be reconditioned and put in shape for use, from surface to bottom.

On the 250 foot level of this shaft, cross-cuts were run east and west and the three ore-bearing veins mentioned were intersected and explored to slight extent by short drifts; but no assay data is available as to the tenor of the ore opened up by this work, though it is understood that good ore was found.

Other work adjacent to shaft, on surface, consists of a number on the three veins mentioned, as well as cross-cuts, raises, shallow shafts, etc.

ASSAY VALUES:

Many of the workings referred to expose large reserves of low grade gold and copper-gold ores, there being tens of thousands of tons indicated; but these reserves unfortunately have never been plotted on assay maps of this area. Owners claim, and rightly so, that it is very difficult to attempt to make a proper sampling of these disseminated ores by ordinary channel methods of sampling, such as used on lode properties, due to the irregular distribution of values. However, several hundred individual assays are now available in files of owners, which may be inspected by interested parties. While these assays vary from traces to around \$90.00 gold per ton, owners claim the average to be about \$3.80 per ton in that also, per these assays, copper ranges from traces to above 30%; the higher copper ores occurring in pay streaks up to 18 inches wide.

DEVELOPMENT WORK ON THE RIO VISTA NORTH SIDE:

Also considerable development work was done on the Rio Vista North Side, the same consisting of a main cross-cut tunnel around 400 feet in length, which intersects three ore bearing veins and these were explored by a number of drifts, from 100 to 200 feet in length each. Other work consists of a vertical prospect 135 feet in depth; also an inclined shaft to a depth of 240 feet, following a vein carrying gold values. In the bottom of this incline some high grade gold was found.

All in all, the ore zone on the North Side is similar in character to the South Side, values here occurring mainly in brecciated Quartzsite, and in fissure veins, therein. Deeper work will be necessary in order to explore this area.

CHARACTER OF SURFACE ORES:

The ores so far developed in the various workings of the Rio Vista Mines and to a depth of 287 feet in the main shaft, consist of oxidized material in which the following minerals are noted; hematite, malachite, azurite, cuprite, with occasional residual chalcocite. Specimens showing free gold, visible to the naked eye, are frequently found in the surface workings.

SECONDARY SULPHIDE ORES:

Top rank mining engineers and geologists who have examined these mines have recommended these properties, stating that the same present a potential ore supply which give them the earmarks of large and profitable mines. Also, without a question of doubt in my mind, and this is concurred in by other engineers who have seen these properties, extensive bodies of secondary sulphide ores should be found below the permanent water level in these mines. This is attested by the fact that oxidized ore zone shows extensive weathering and leaching action caused by the rise and fall of the water level through the ages. In this way the oxidized ore zone was robbed of its copper values which migrated downward and no doubt re-deposited as enriched sulphides, such as bornite, chalcocite, and so forth, in the neighborhood of the permanent water level, and which should be encountered by sinking the 287 foot shaft around 113 feet deeper, which would reach the level of the Colorado River, and where the permanent water level should be found.

When and if such objective can be attained, as above set forth, your properties can no doubt be put on a paying basis from shipping ore alone. Hence, I here and now recommend that your main 287 foot shaft be sunk around 125 feet deeper, where a station should be cut from which cross-cuts east and west should be driven in order to intersect the main ore veins, on which drifts should be

run in search of the sulphide ore mentioned.

CONCLUSION:

After having spent several days looking over the Rio Vista properties, I do not hesitate to recommend them, for a careful investigation, to anyone looking for a worth-while mining investment. Furthermore, I believe that if these mines can be developed along the lines herein described, extensive deposits of secondary copper sulphide ores, carrying goodly values in gold, will be found, in deeper areas adjacent to the permanent water level, out of which a great deal of money should be made. In short, the general outlook of these mines is most pleasant with large tonnage indicated.

Very sincerely yours,

S/ Elgin B. Holt.

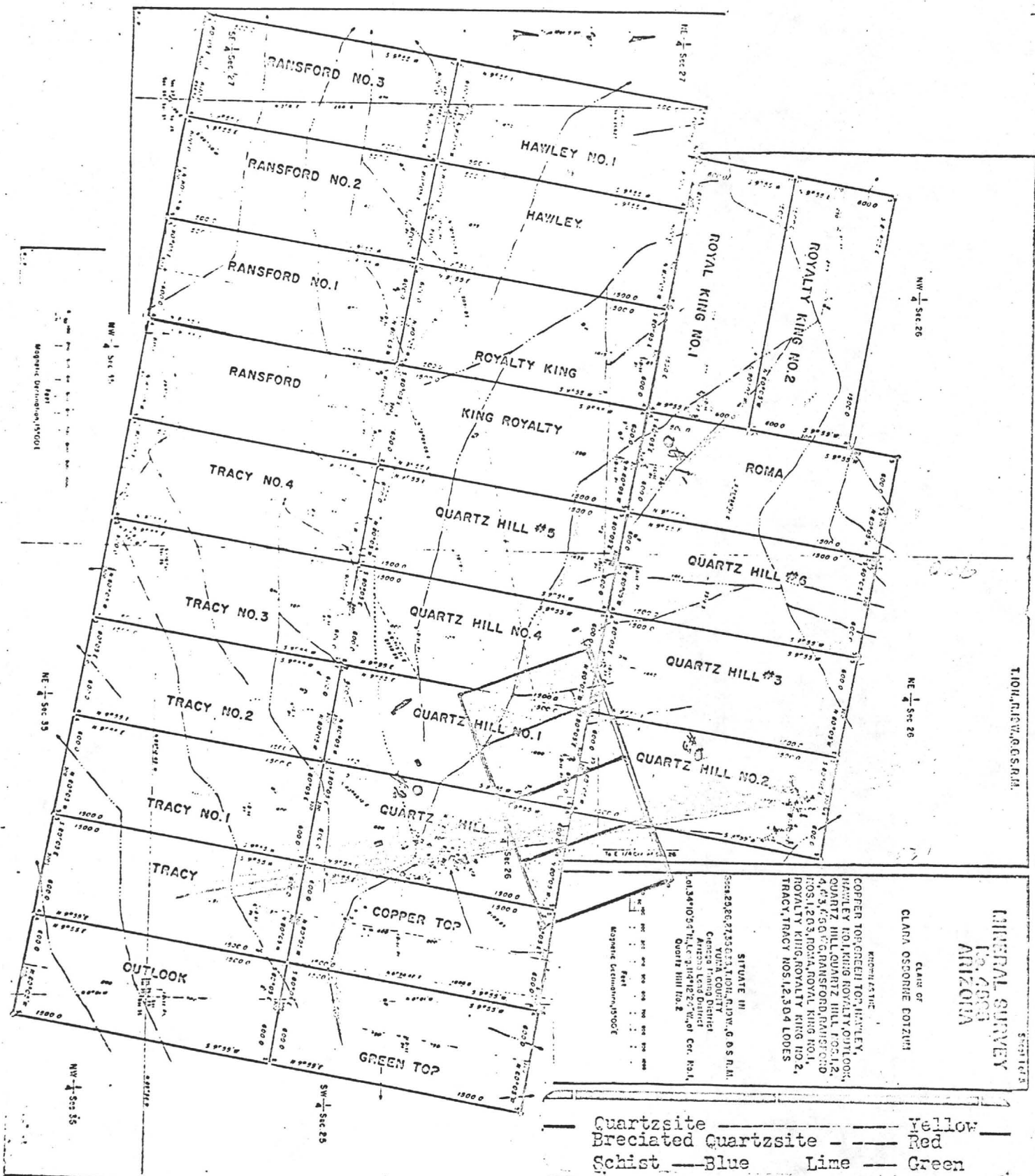
February 2, 1941

The Rio Vista Mine with all improvements thereon consist of the following named 26 lode and 13 placer claims located in the Cienega Mining District, County of Yuma, State of Arizona, known and described as follows, to wit:

	<u>NAME OF CLAIM</u>	<u>DOCKET</u>	<u>PAGE</u>	
	Green Top	(21)	(284)	Dec. 5, 1921
	Copper Top	(21)	(269)	Oct. 8, "
	Quartz Hill	(21)	(266)	" 9, "
	Quartz Hill No. 1	(21)	(267)	" 9, "
	Quartz Hill No. 4	(21)	(286)	" 9, "
	Quartz Hill No. 5	(21)	(287)	Nov. 30, "
	King Royalty	(21)	(476)	Feb. 20, 1922
	Royalty King	(21)	(477)	" 20, "
	Outlook	(21)	(407)	" 20, "
	Tracy	(21)	(421)	" 20, "
	Tracy No. 1	(21)	(422)	" 20, "
	Tracy No. 2	(21)	(423)	" 20, "
	Tracy No. 3	(21)	(424)	" 20, "
	Tracy No. 4	(21)	(525)	" 20, "
	Ransford	(21)	(416)	" 20, "
<u>S. S.</u>	Ransford No. 1	(21)	(417)	" 20, "
	Quartz Hill No. 2	(21)	(268)	Oct. 9, 1921
	Quartz Hill No. 3	(21)	(285)	Nov. 30, "
	Quartz Hill No. 6	(21)	(288)	" 30, "
	Roma	(21)	(475)	Mar. 22, 1922
	Royalty King No. 1	(21)	(478)	" 22, "
	Royalty King No. 2	(21)	(479)	" 22, "
	Hawley	(21)	(411)	Feb. 21, "
	Hawley No. 1	(21)	(412)	" 21, "
	Ransford No. 2	(21)	(418)	" 21, "
<u>N. S.</u>	Ransford No. 3	(21)	(419)	" 21, "

Lode Claims covered by Placer

Quartz Hill Placer	(574)	(785)	Jul 22, 1969
Hawley Placer	(702)	(710)	May 12, 1972
Hawley No.1 Placer	(702)	(709)	" " "
Ransford Placer	(702)	(716)	" " "
Ransford No.1 Placer	(702)	(715)	" " "
Ransford No.2 Placer	(702)	(712)	" " "
Ransford No.3 Placer	(702)	(711)	" " "
Royalty King Placer	(702)	(713)	" " "
King Royalty Placer	(702)	(714)	" " "
Quartz Hill No.4 Placer	(702)	(718)	" " "
Quartz Hill No.5 Placer	(702)	(717)	" " "
Tracy No. 3 Placer	(702)	(720)	" " "
Tracy No. 4 Placer	(702)	(719)	" " "



MINERAL SURVEY
T. 10N. R. 10W. G. 5S. R.M.
ARIZONA

CLAIM OF
CLARA OSCORNE COITZUM

PROPERTY
COPPER TOP GREEN TOP HAWLEY
HAWLEY ROYALTY KING ROYALTY OUTLOOK
QUARTZ HILL QUARTZ HILL NO. 1, 2, 3, 4, 5
QUARTZ HILL NO. 1, 2, 3, 4, 5
ROYALTY KING ROYALTY KING NO. 1, 2
TRACY, TRACY NO. 1, 2, 3, 4 LODES

SITUATE IN
SECTIONS 26, 27, 35, T. 10N. R. 10W. G. 5S. R.M.
YUMA COUNTY
ARIZONA
COPPER TOP GREEN TOP
QUARTZ HILL NO. 1, 2, 3, 4, 5
QUARTZ HILL NO. 1, 2, 3, 4, 5
ROYALTY KING ROYALTY KING NO. 1, 2
TRACY, TRACY NO. 1, 2, 3, 4 LODES

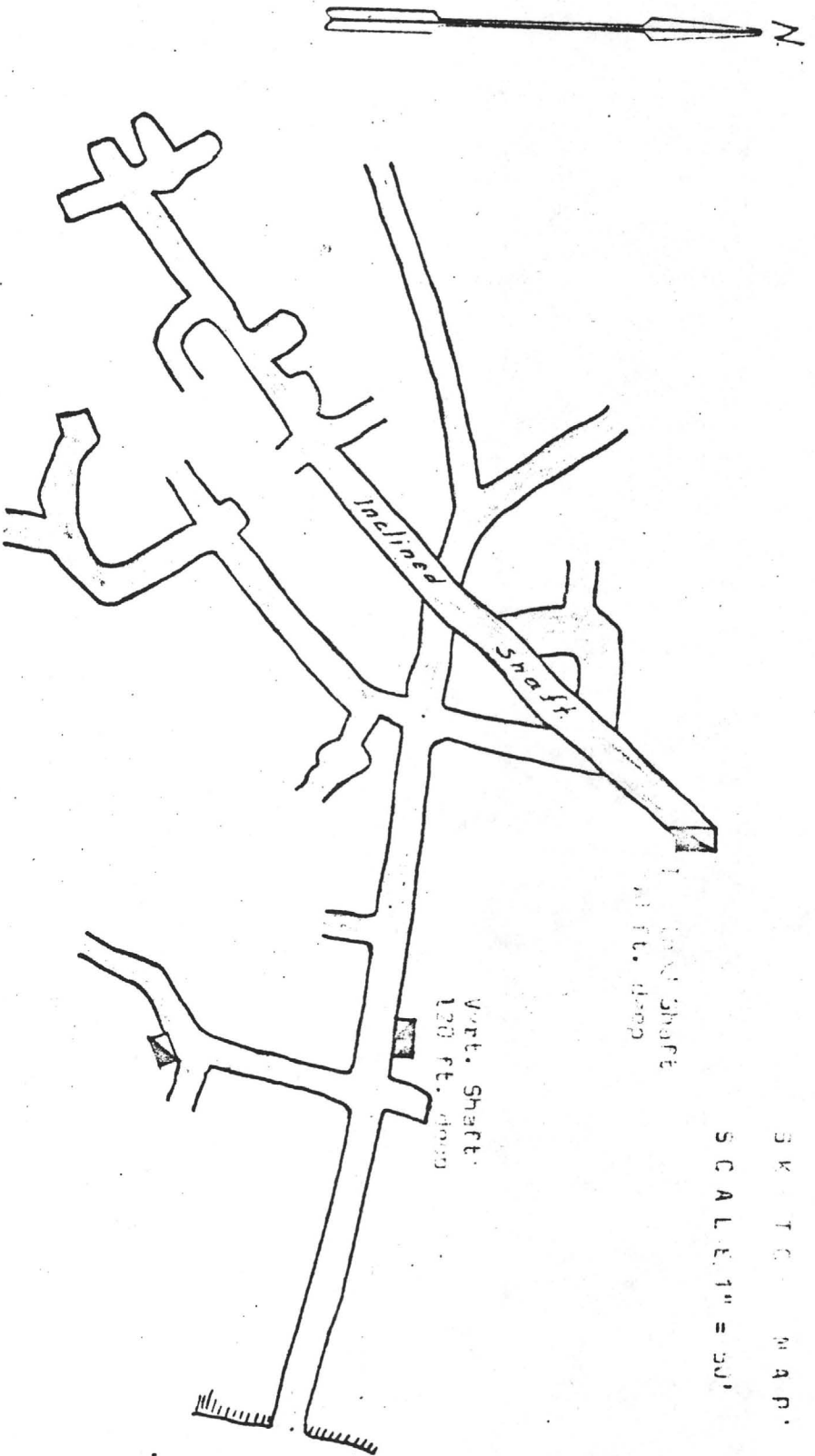
Quartzsite — Yellow
Brecciated Quartzsite — Red
Schist — Blue Lime — Green

Report of Elgin B. Holt, Field Engr.
Dept. of Mineral Resources
State of Arizona

RIO VISTA MINE

SKETCH MAP

SCALE 1" = 50'

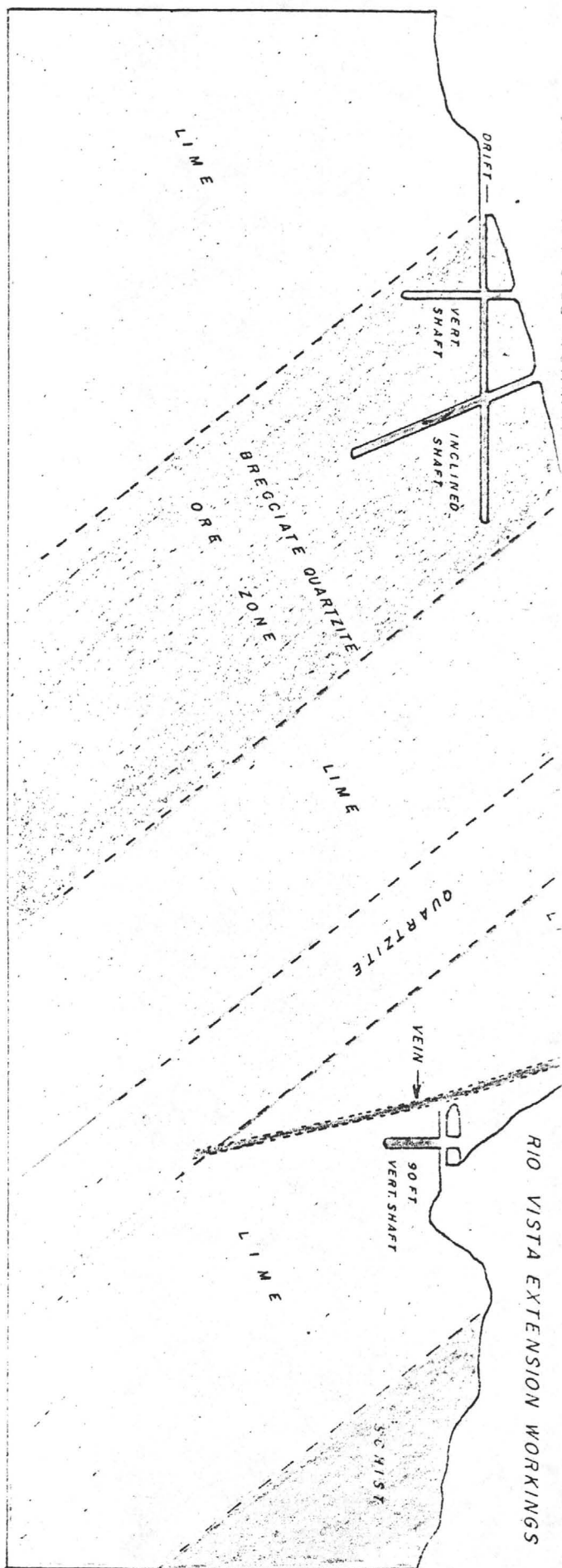


This sketch map plan of the Rio Vista workings, North Shaft, was made from information obtained from the records of Mr. E. J. Osburn.

Drafted by:

L. A. A. R. R. R.

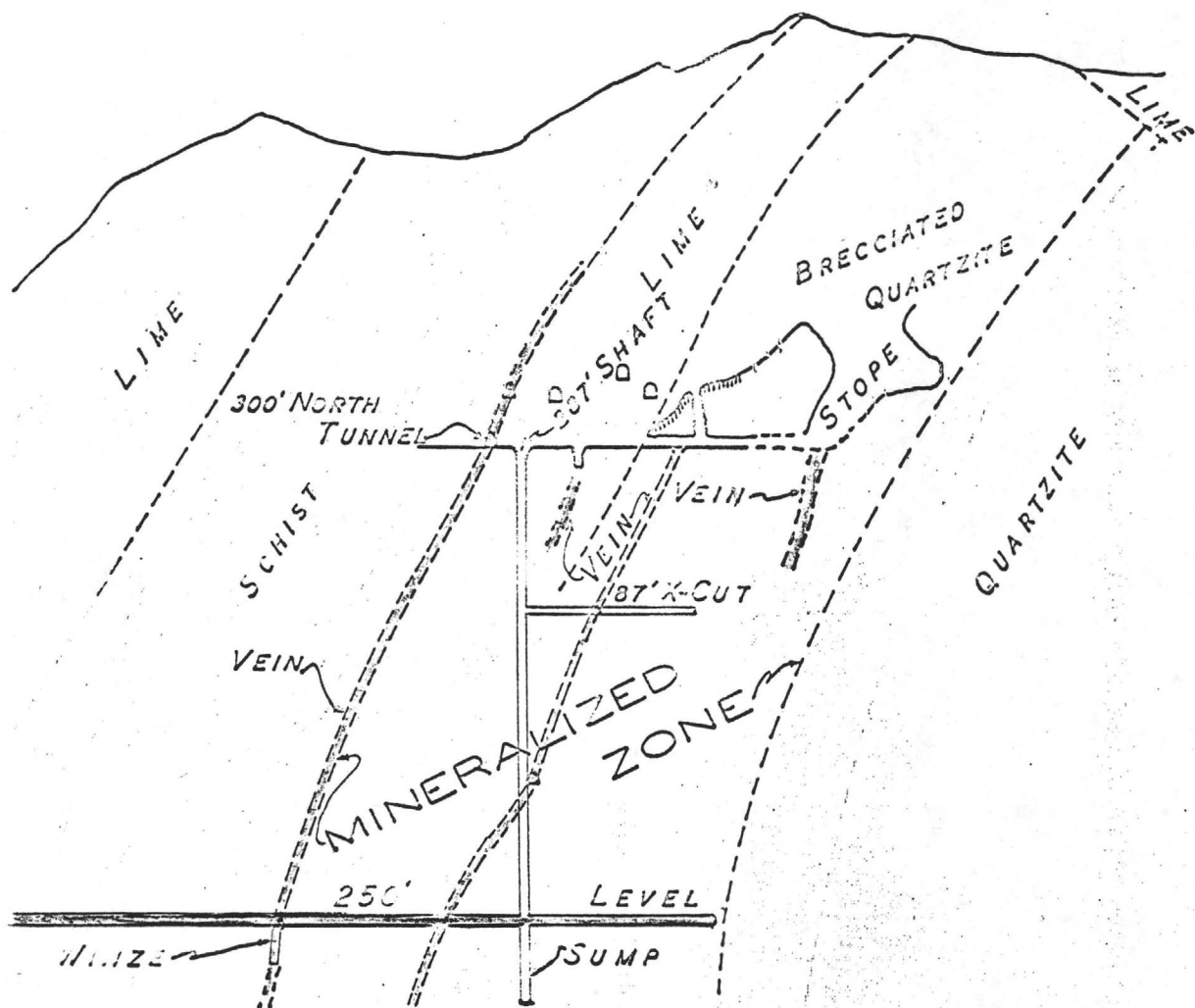
L. A. A. R. R. R.



GEOLOGIC CROSS-SECTION
SKETCH MAP, LOOKING SOUTH

Located in sections 23 and 26, T. 10 N.,
R. 19 W., G. A. S. R. M., Cienega Mining
District, Yuma County, Arizona

By ELGIN B. HOLT.



CROSS-SECTION
 OF VISTA SOUTH SIDE MINE
 COCHISE DISTRICT
 YUMA COUNTY, ARIZ.

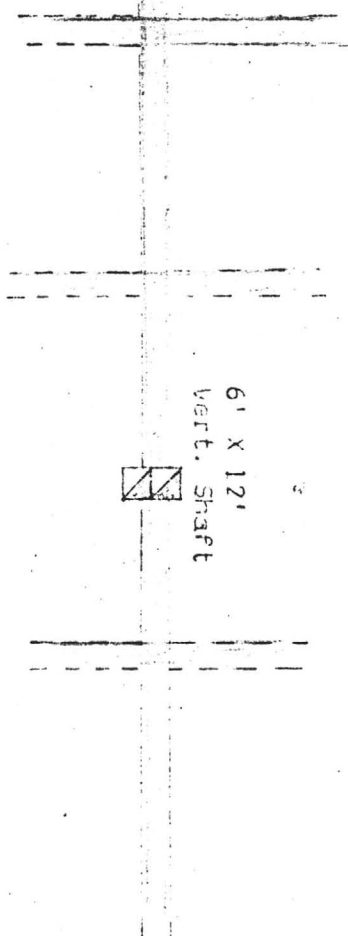
SKETCH MAP
 Scale: 1" = 100'

P L A N
(Projected)

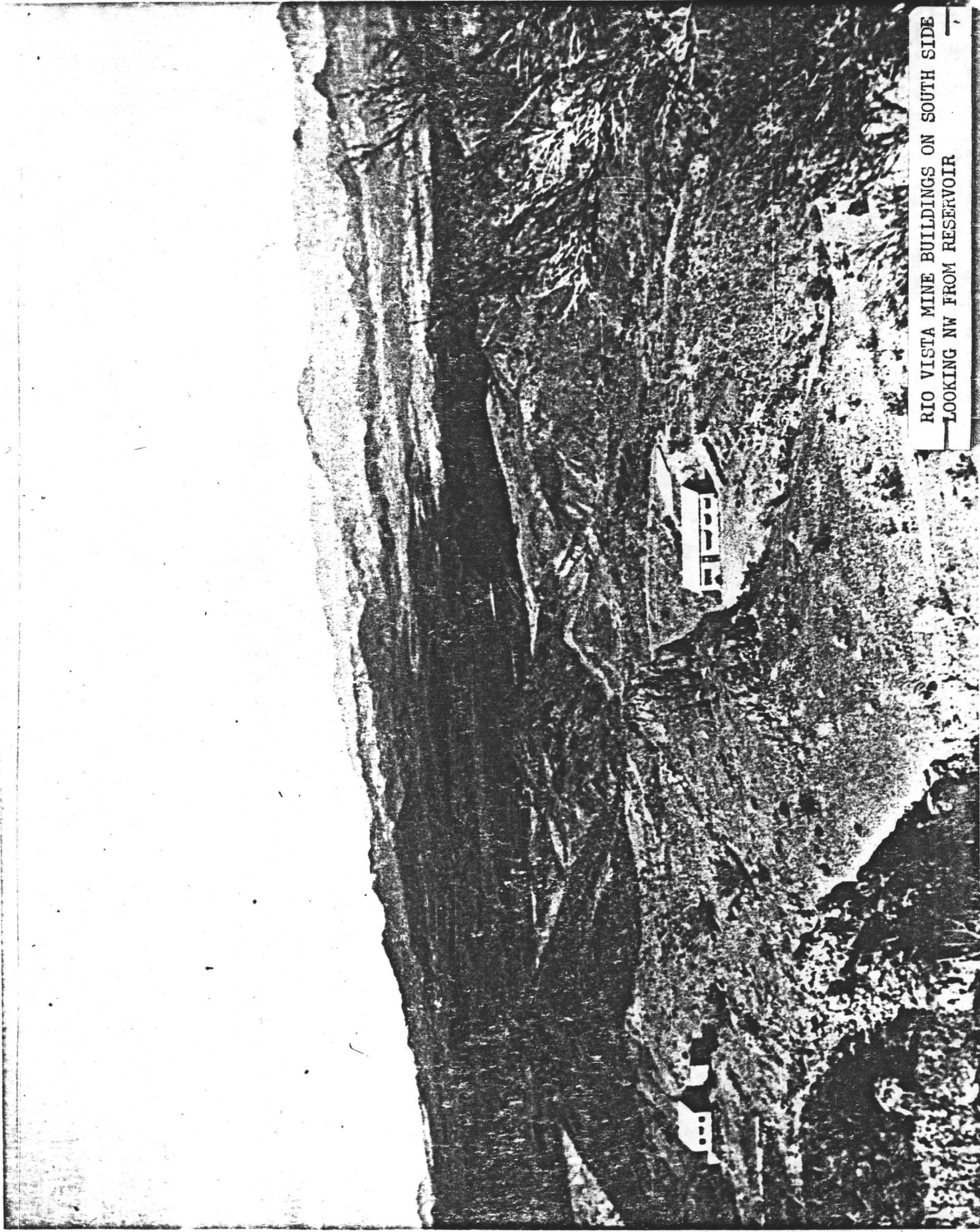


265' Crosscut

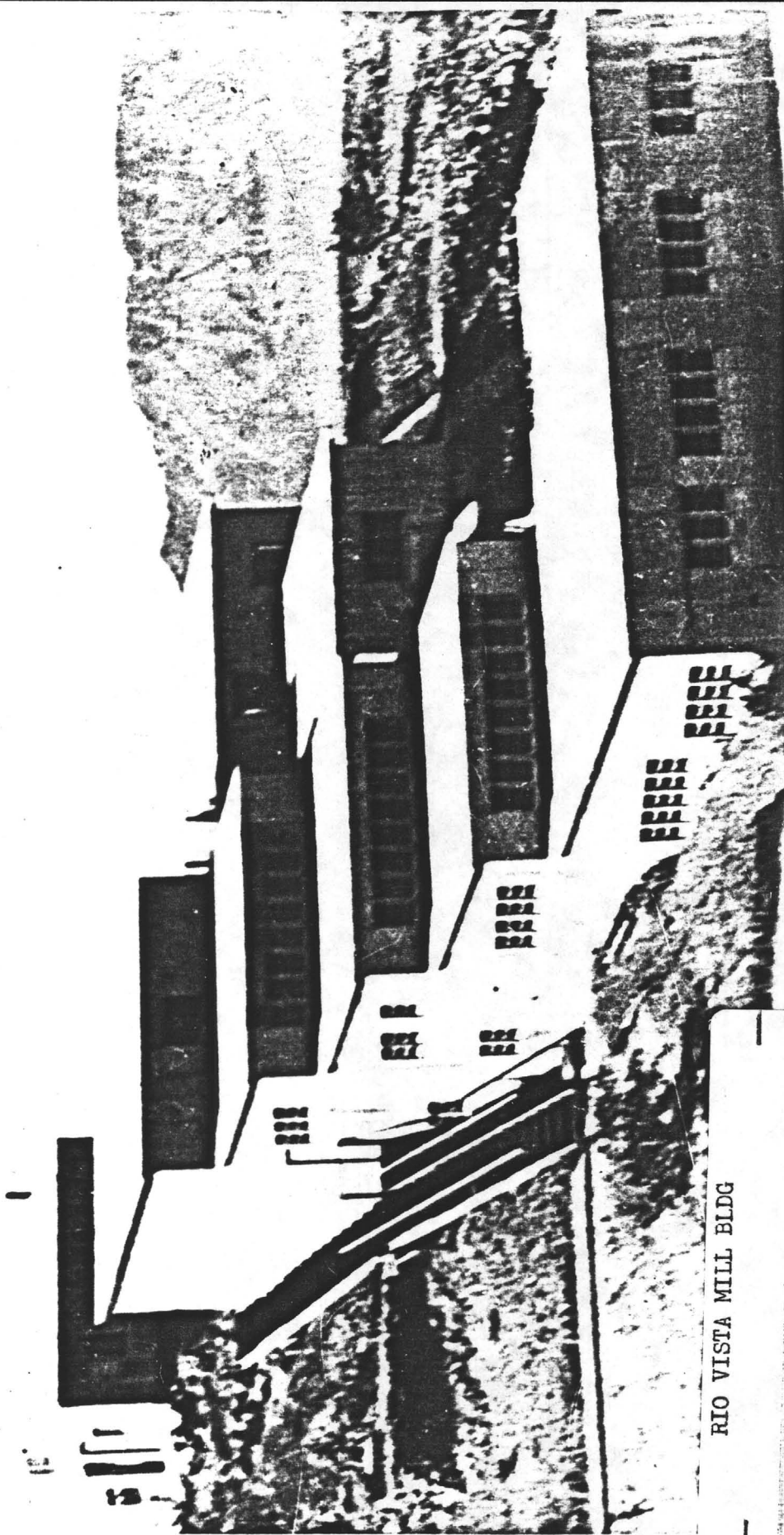
RIO VISTA MINE
SKETCH MAP
SCALE 1" = 40'



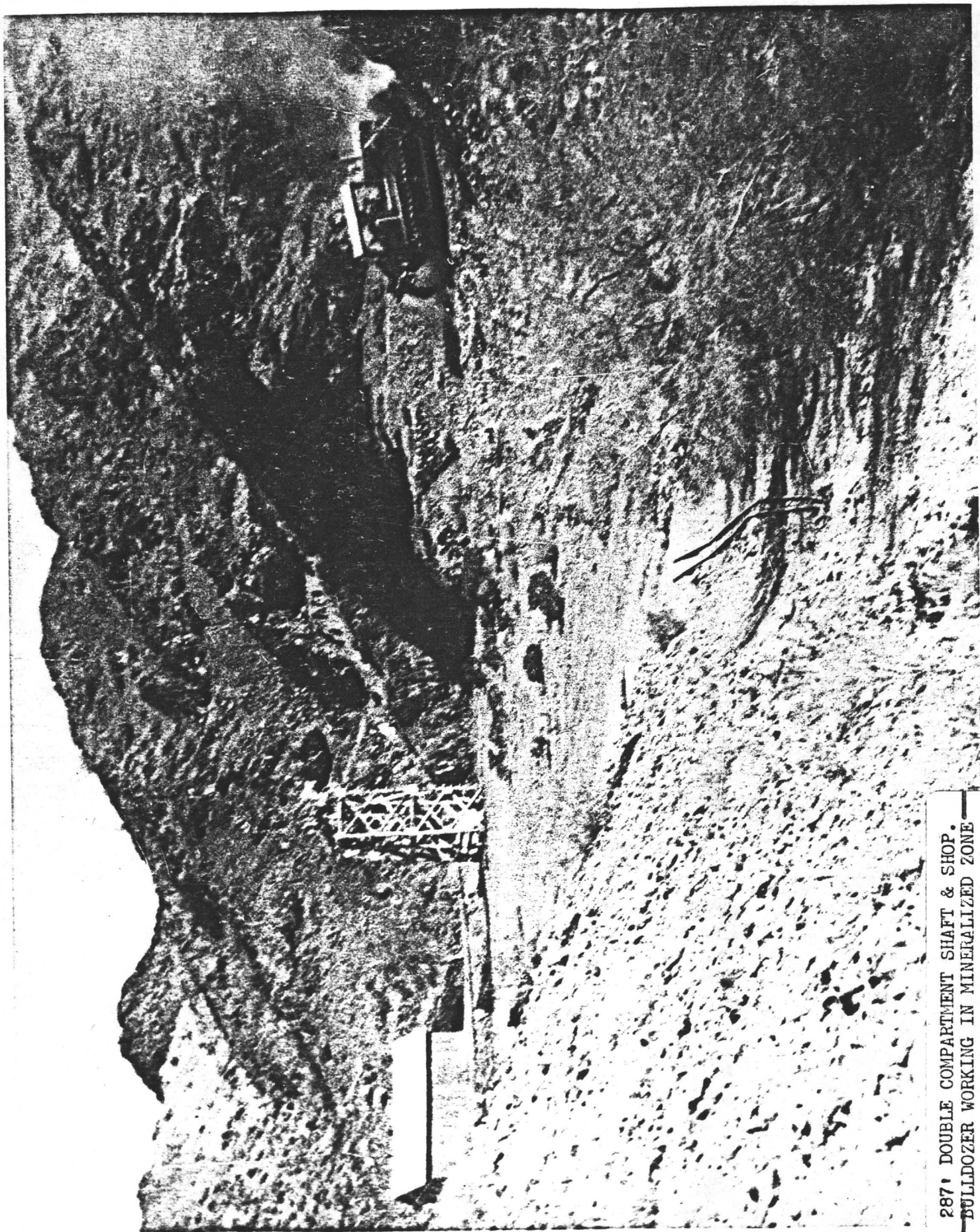
Note.
No information available for the Plan View of
drifts and crosscuts.



RIO VISTA MINE BUILDINGS ON SOUTH SIDE
—LOOKING NW FROM RESERVOIR

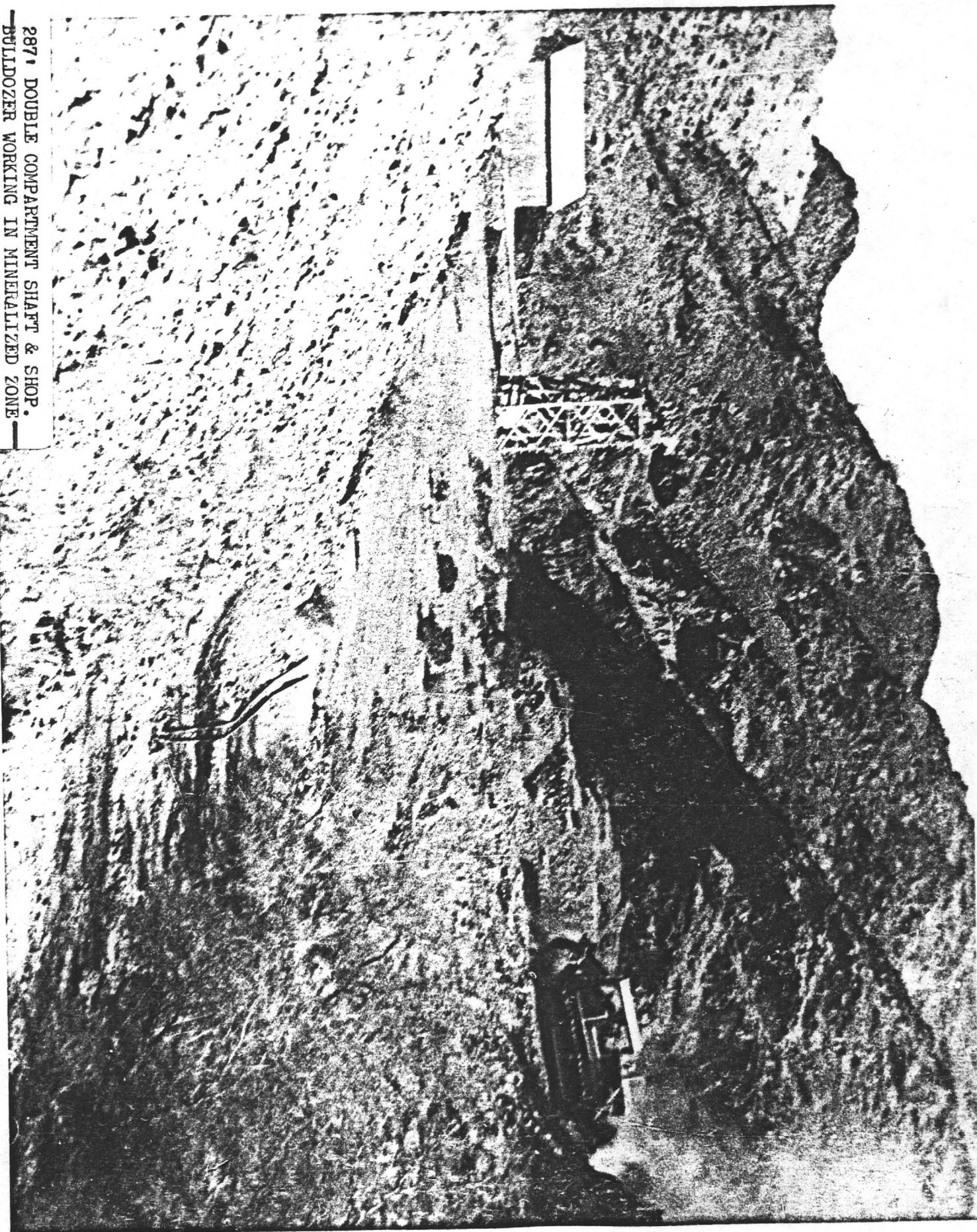


RIO VISTA MILL BLDG



287' DOUBLE COMPARTMENT SHAFT & SHOP.
—BULLDOZER WORKING IN MINERALIZED ZONE—

287 • DOUBLE COMPARTMENT SHAFT & SHOP.
—BULLDOZER WORKING IN MINERALIZED ZONE—





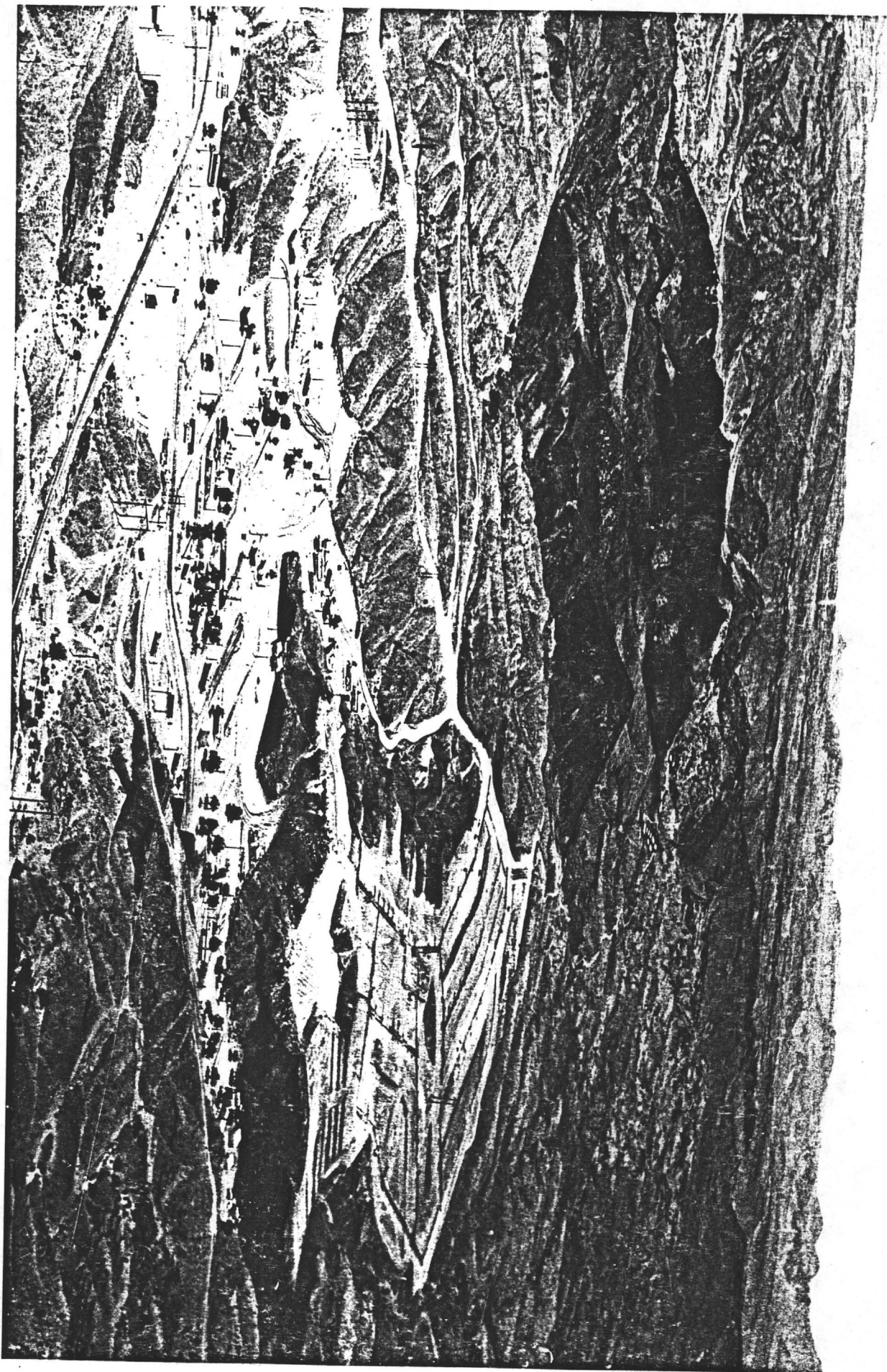
BULLDOZER WORKING DIRECTLY BACK OF
— DOUBLE COMPARTMENT SHAFT. S. SIDE —

LOOKING SE FROM STATE HIGHWAY TO MINE
IN UPPER CENTER & RIGHT IN PICTURE

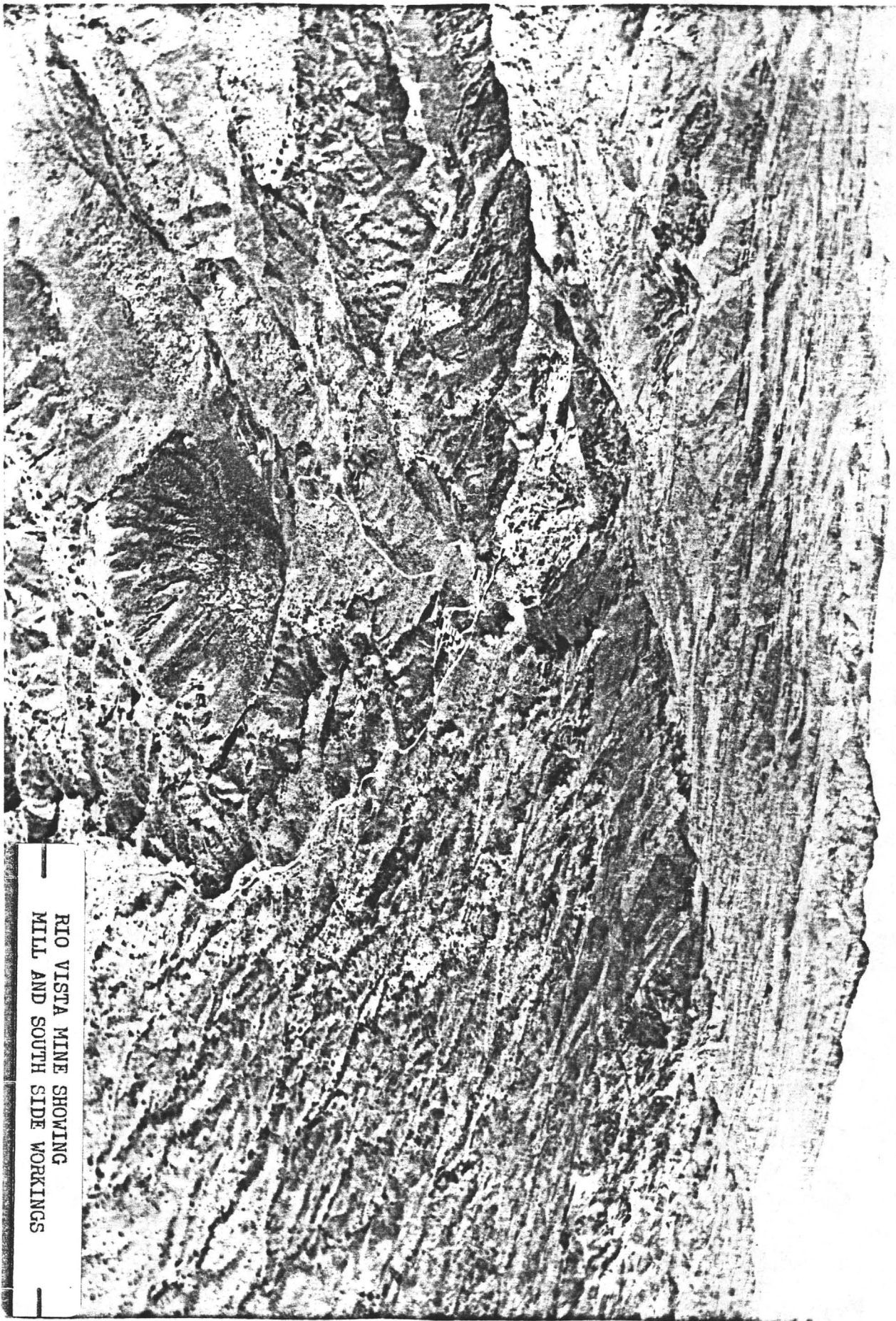




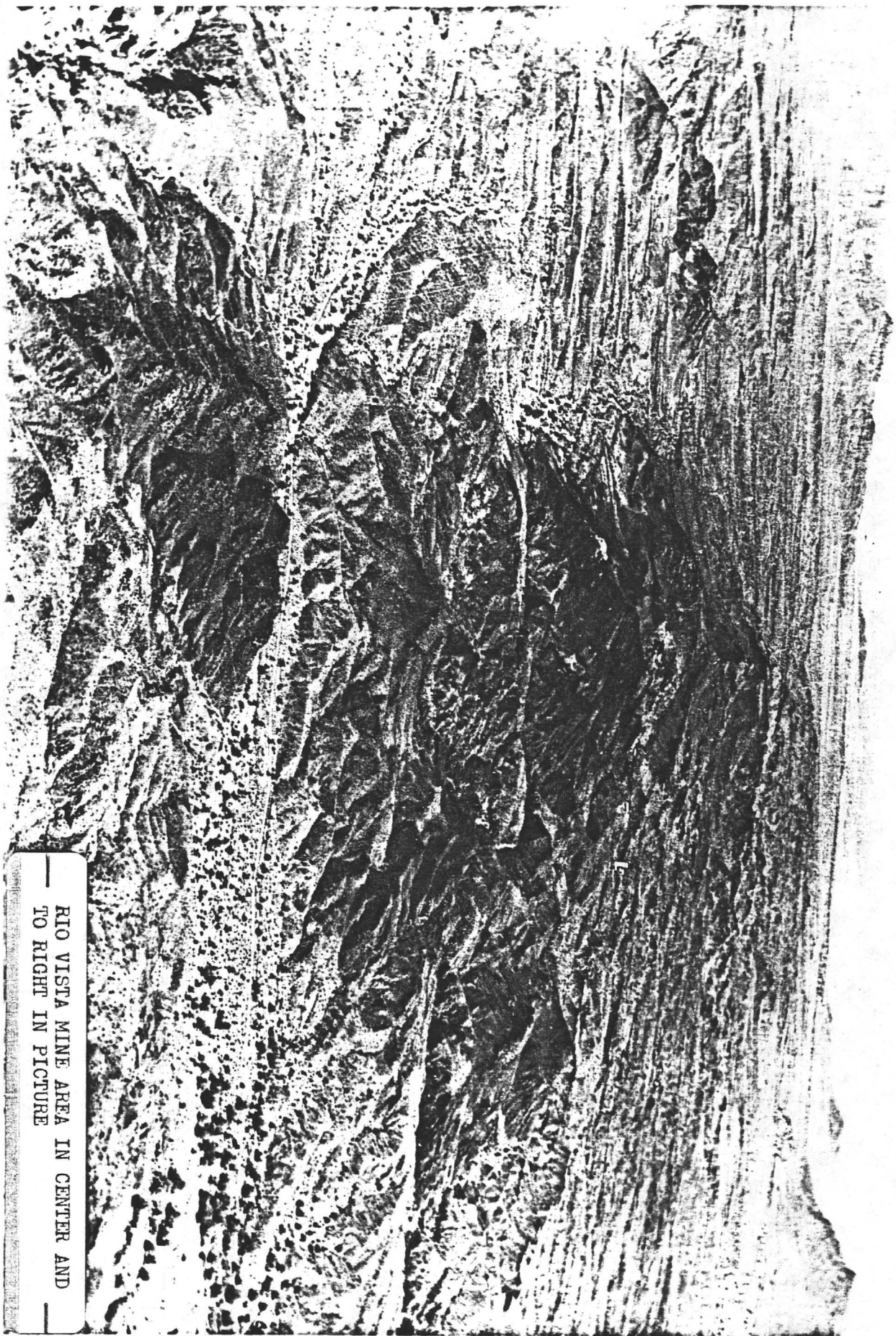
LOOKING SE - CLOSER VEIN OF MINE AREA
— CENTER AND RIGHT IN PICTURE —



RIO VISTA SOUTH SIDE MINE WORKINGS &
MILL IN MOUNTAINS IN CENTER OF PIC-
TURE ADJACENT TO LAKESIDE DEVELOPMENT.



RIO VISTA MINE SHOWING
MILL AND SOUTH SIDE WORKINGS



— RIO VISTA MINE AREA IN CENTER AND
TO RIGHT IN PICTURE —

Copy
10-29-84

Copy

RIO VISTA MINE

REPORT

TO

MRS. C. O. BOTZUM

FOR

THOMAS CHANDLER

ATTORNEY AT LAW

RETURN TO:

Joseph Pagano
P.O. Box 6575
Huntington Bch, CA
92615

by

JAMES R. YUELL

REGISTERED GEOLOGIST

Copy

L. A. CORNEJO, P. E.
REGISTERED: MINING ENGINEER,
LAND SURVEYOR AND U.S. MINERAL SURVEYOR
—
1221 EAGLE AVE. — TELEPHONE 669-2619
PARKER, ARIZONA 85344

March 23, 1981

M E M O R A N D U M

TO: Mr. Thomas Chandler, Attorney

Mrs. C.O. Botzum

RE: RIO VISTA MINE, EXPLORATION

Enclosed is a plan and a vertical projection of the mineralized zone in the Main Vertical Shaft area.

Two options may be considered to explore the area at depth. One, is to reopen the Main Shaft and sample the underground workings. Second, drill inclined holes to intersect mineralization that may exist at depth.

The cost to reopen the shaft to the 250 ft. level depends on the conditions of the timbers and walls. If this is done, an engineer or geologist will be able to evaluate the findings at that depth and make projections accordingly. Should economic ore be found, the money expended in the rehabilitation of the Main Shaft is not wasted because the shaft will be used to extract such findings.

The second alternative is exploring by drilling and it can be as effective as reopening the Main Shaft. The mineralized zone consists of brecciated quartzite, it runs Northerly and Southerly, dipping approximately 60° to the West. The wall rock to the West consists of limestone and schist. Copper oxides and carbonates occur in the brecciated quartzite and is more concentrated along the contact with the limestone, therefore, any drill hole to explore this area at depth should be west of the main shaft and dipped to the east in order crosscut this contact. The angle

March 23, 1981

of inclination is dependent of the depth of the area to be explored.

If this route of exploration is selected, I recommend that the first hole be drilled as indicated on the attached maps. This hole will explore the mineralized brecciated quartzsite at a depth of 500 ft.

Below a copper outcrop showing at the surface and will be crosscutting the contacts as well as the shaft.

The access to the drill site is by a good graded road off Highway 95.

In view of the assurance by the engineers that examined the underground workings of existing veins with good values of gold and copper at the first and second levels, the owners as well as I favor the first alternative of reopen the main shaft.

Shall such veins exists, a fast production can be started and take advantages of the present good market value of gold and copper.

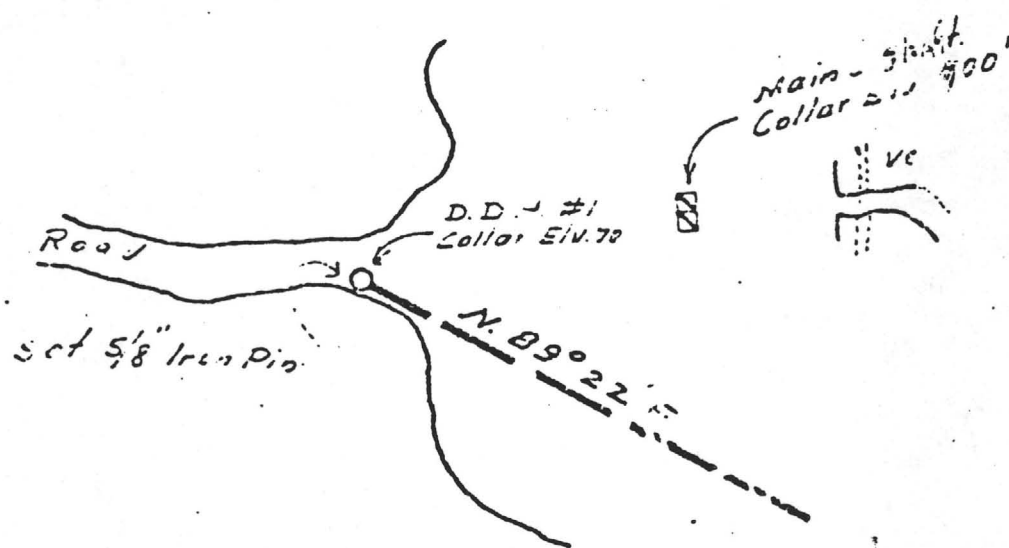
Respectfully submitted,

L.A. Cornejo, P.E.
Mining Engineer



L.A. Cornejo

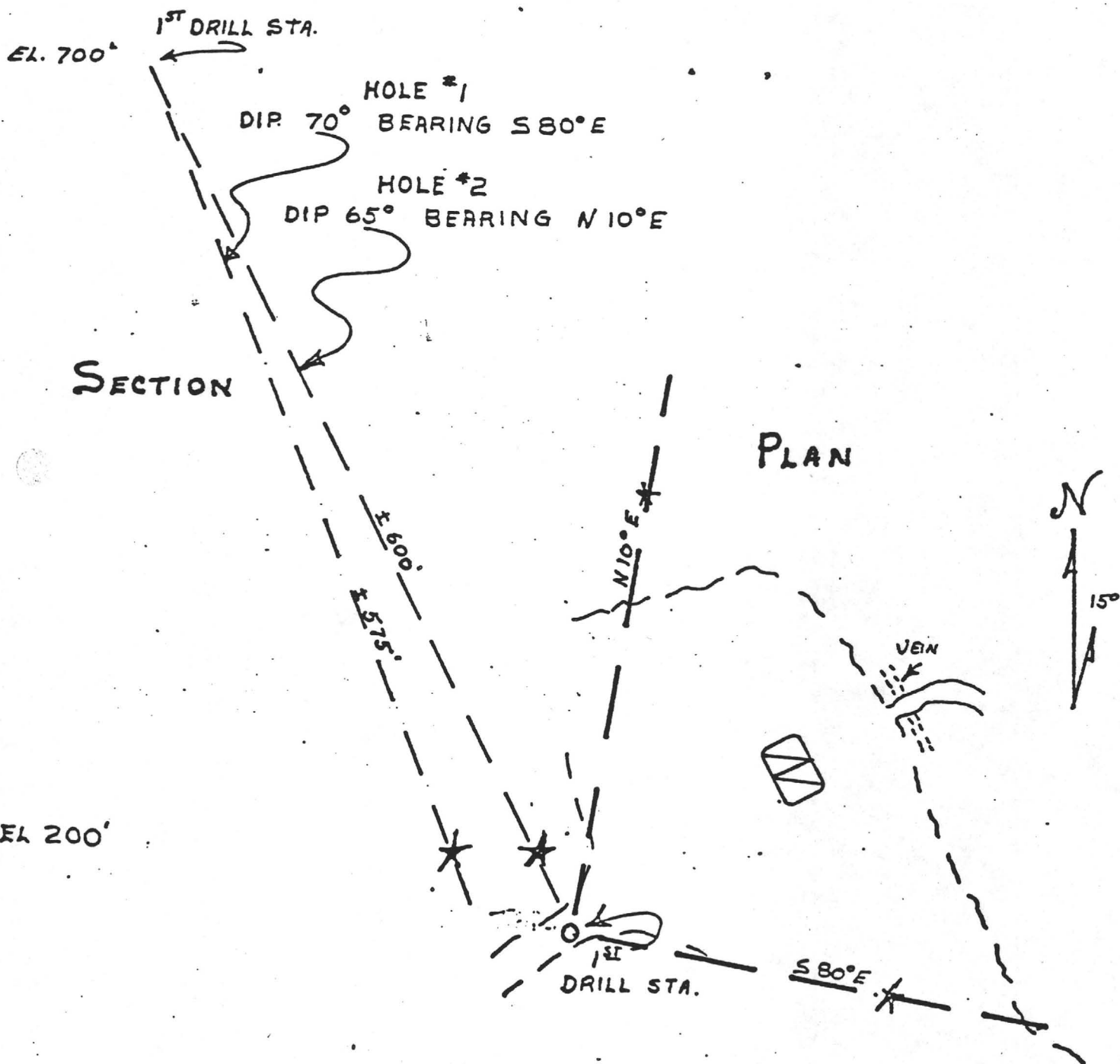
PLAN



L.A. CORNEJO
 P.E. No. 112



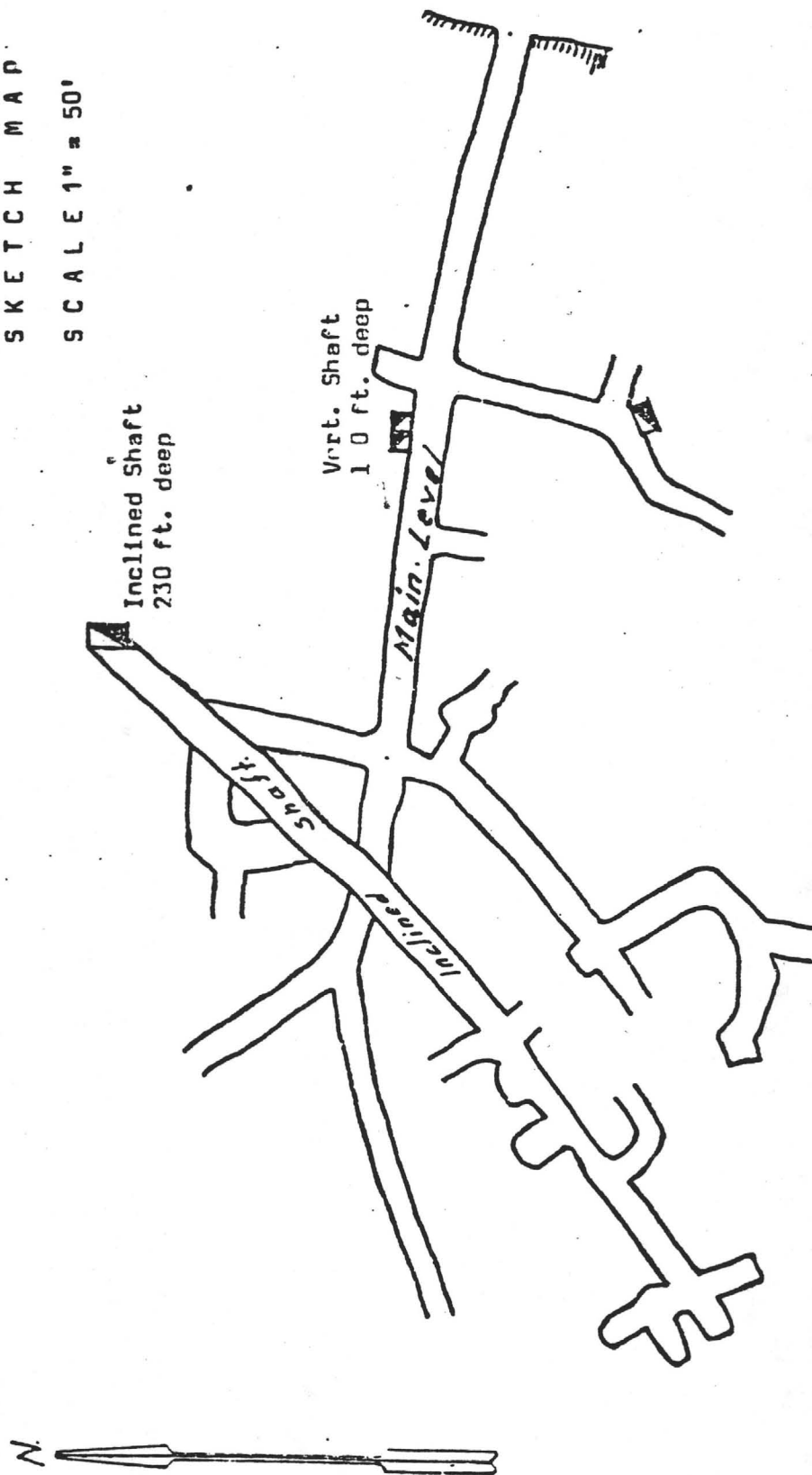
PROPOSED EXTENTION EVALUATION



RIO VISTA MINE

SKETCH MAP

SCALE 1" = 50'

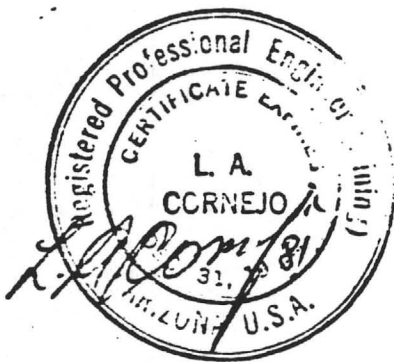
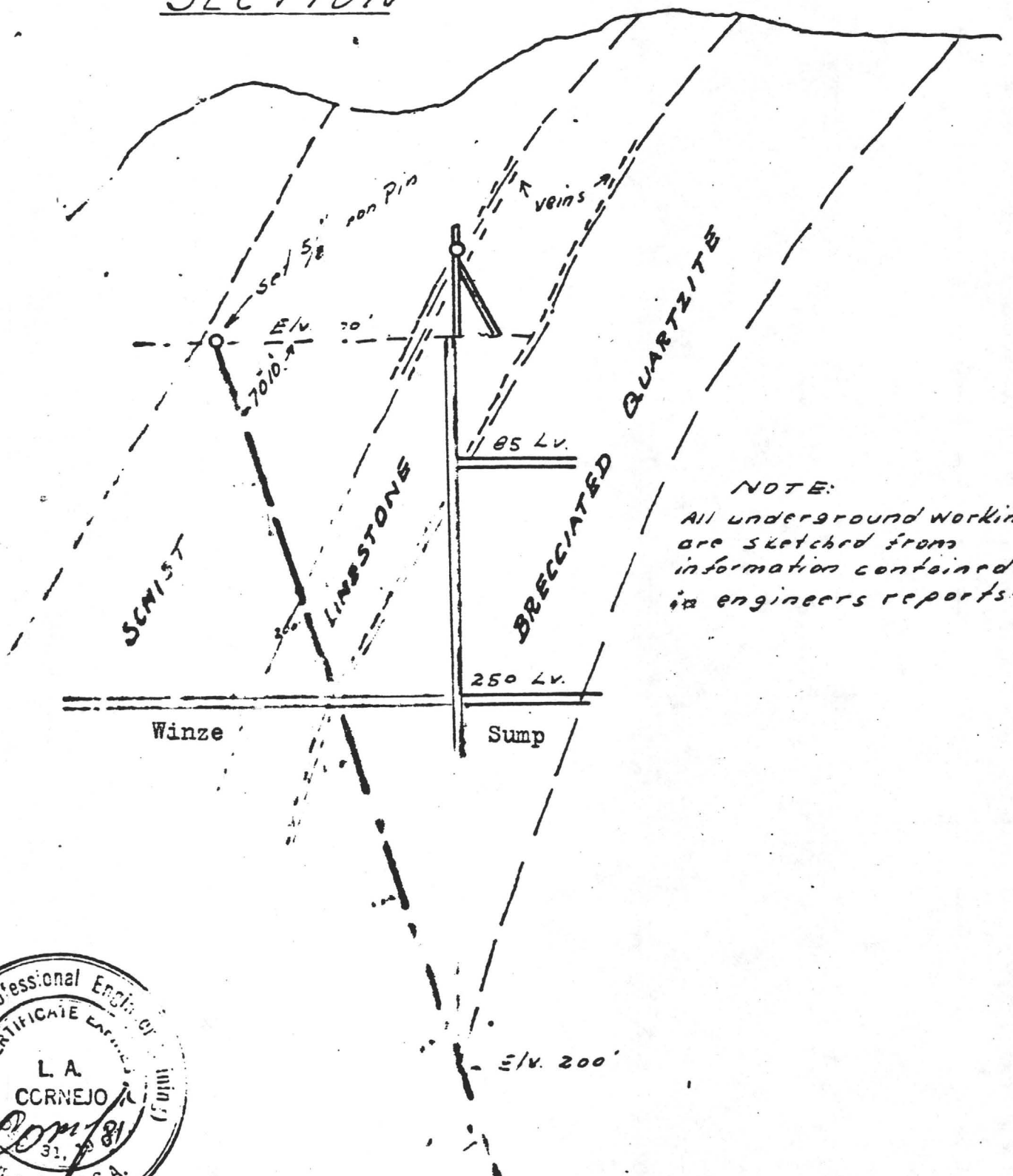


This sketch map plan of the Rio Vista workings, North Shaft, was made from information obtained from the records of Mr. E. S. Osborne.

Drafted by:

L. A. Cornejo
L. A. Cornejo, Mining Eng.
July 26, 1908

SECTION



L.A. CORNEJO
 Mining Eng.

This is a report of investigation of the Rio Vista Mine, located in Section 26, Township 10 North, Range 19 West, G&S.R.B.M., a group of 27 placer and lode claims.

The history of the mine is shrouded in abundant interest and tantalizing promise. However, through divided management policies and economic conditions beyond control of the operators, its potential was never allowed to be brought into the full light of economic reality.

The records indicate that below the present water level in the main shaft, ore was to be found with assays of 1 oz. gold, and 5% copper. Information was furnished by Mrs. Botzum from a report by Elgin B. Holt. Similar values were found in the workings on the Quartz Hill #2 claims. The host limestone and brecciated structure are traced between the main shaft and the north area. The characteristic alteration of ore minerals and the secondary and tertiary product indicate to me that an ore deposit of sizeable magnitude exists.

The contacts between the limestone and the quartzites, or the break between the metamorphic rocks and the meta sedimentary rock systems is characterized by a brecciated or altered rock zone. The brecciated rock zone is recemented in part by secondary

Rio Vista Mine Report

ground waters rich in carbonates and more recently by secondary silica from the nearby and recent volcanic rocks.

The ore was brought to its original location following the weak contacts between the limestone meta sediments and the quartzite by hydrothermal injection. This plumbing system also manifested itself along the bedding of the sediments and chloritized shists.

Subsequently, tectonic activity aggravated this mineralized unconformity and produced the present brecciated zone as is evidenced by the scattered copper and gold pockets. The ore minerals are both indigeneous and transported. Record has it that vein-type ore was encountered on the 250 foot level in the main workings. (Communication with C. Botzum.)

This postulation being correct, then it would follow that more ore could be found within this brecciated zone, particularly near the east contact with quartzite and chloritized shist.

This assemblage will leave a tail of ore mineral of decreasing size and abundance as the ore mineral moves

Rio Vista Mine Report

tectonically from its original place of hydrothermal deposition. Solving this important puzzle will substantially reduce exploration costs.

It therefore follows that at least one and preferably three drill holes should be invested in order to ascertain the validity of this proposition. The first hole should be a high angle-hole, 60° - 70° , and striking so that it is intersecting the contact at 30° , preferably on the south of the main shaft and about 300 feet below the present shaft collar. Care should be taken so that this drill hole is clear of existing mine workings, to keep drilling costs at a minimum. (See Plate #1).

The second hole can be drilled from near the same surface drill site but intersecting the contact north of the main shaft at nearly the same elevation; the second hole should evidence similar mineralogy sequences.

A third hole should be drilled from a different location further north and targeted at a depth 100 feet below the level of hole 1 and 2; its angle of intersection with the east contact will be determined in light of the evidence from the first two holes.

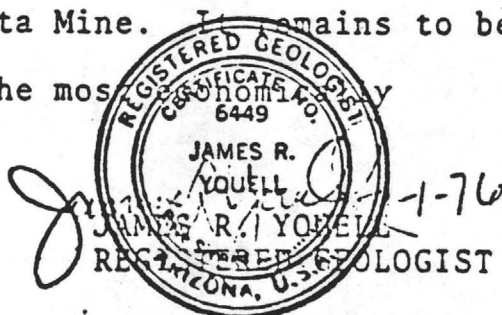
Rio Vista Mine Report

A hard look can be taken at the interbedded mineralization, similar to, if not directly related, that is exposed around the main shaft. The strong hematization along with accessory mineralized halos, barite and sericite, is an important ore source in the mining district. This additional target will offer promising values in gold, as indicated in other mines in this district.

The continuation of the ore beneath the alluvial cover in the southwest section of the claim group can be established through Geophysical methods using existing outcroppings as base measurement stations. The Geophysics will give better control over drilling budget costs by outlining contrasting properties of the ore and host rocks.

CONCLUSION:

The Rio Vista Mine should be a very promising gold and copper producing property. The recent research in hydrometallurgy of gold by the U. S. Bureau of Mines, offers low cost extraction through heap and insitu leaching. These extraction techniques should be amenable to the Rio Vista Mine. It remains to be established as to which will be the most suitable.



CPX
ELGIN BRYCE HOLT
CONSULTING MINING ENGINEER
PHOENIX, ARIZONA.

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Box 1617
Parker, Arizona.

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HISTORICAL:

Properties were formerly owned and operated by the Quartz King Mining Company, prior to and after 1908, which company was mainly controlled by French, Belgian and Swedish capitalists. Work was carried out under the direction of Consulting Engineer, Major-General Baron Gustave de Payron.

During the said period, a comprehensive plan of mine development was conducted, not with a view to making immediate profits, but for the purpose of preparing the properties for large scale milling and smelting operations. While the development program, just mentioned, was progressing, the World War occurred, which affected European finances to such an extent that the company was forced to close down.

The greater part of the development work mentioned can be used to advantage, by present owners, especially the 287 foot double compartment shaft, located on the Rio Vista South Side ground.

In 1921-22, the properties passed into the hands of E. S. Osborne and associates, after which development work continued until the serious illness and death of Mr. Osborne.

During 1927, a mill with a capacity of 125 tons daily was erected adjacent to the Rio Vista South Side Group; but as it was unsuited to the recovery of the gold-copper values in the ore which was proven by a short test run, the mill closed down and the machinery removed, leaving the mill building intact. This

building is now in excellent condition and could be used in the event a new mill, so designed as to recover values, should be installed.

GEOLOGY:

Embraced within these two groups of claims is a north-south trending ridge composed of sedimentary rocks, consisting of alternating beds of limestone, quartzite and so-called schist, but which is probably calcareous shale. These beds have been folded and tilted until at the present time the dips of same range from 45 to 80 degrees West from the horizontal, along the western slope of ridge. Furthermore, there is evidence that the ridge in question is a truncated anticline. This ridge has a maximum elevation above the surrounding foot-hills of 250 feet.

The prevailing country rock of the main mountain range to the east of the ridge mentioned is composed of pre-Cambrian granite-gneiss complex; while to the west of ridge, and between the same and the Colorado, Tertiary andesite rocks prevail, and these in turn are bordered by Colorado River conglomerates.

METALS:

The two principal economic metals, so far discovered in these properties are copper and gold.

MINERALIZED ZONE:

Traversing the sedimentary ridge referred to from south to north, starting at the main workings of the Rio Vista South Side Group and, ending beyond the main working of the Rio Vista North Side, a total distance of 2000 feet, is a huge mineralized fault zone, from 100 to 200 feet wide, and composed of brecciated quartzite, limestone and "schist" rocks, which have been recemented by ascending thermal solutions carrying silica, calcite, copper, iron and gold. These thermal solutions, originating in deep seated molten magmas, percolated throughout the brecciated and fissured zone mentioned transforming areas of same into ore carrying the metals, as above set forth.

VEINS:

Traversing the said mineralized zone, within the Rio Vista South Side Group, are three major fissure veins, from four to around ten feet wide. These veins strike north and south and dip 80 degrees West from the horizontal.

DEVELOPMENT WORK ON THE RIO VISTA SOUTH SIDE:

Considerable mine development work has been done in this area, consisting of a 287 foot standard double compartment vertical shaft, timbered with regulation square sets, with corner posts and hanging rods, and lagged with 2" by 12" boards. This timbering is still in good condition and the shaft could be reconditioned and put in shape for use, from surface to bottom.

On the 250 foot level of this shaft, cross-cuts were run east and west and the three ore-bearing veins mentioned were intersected and explored to slight extent by short drifts; but no assay data is available as to the tenor of the ore opened up by this work, though it is understood that good ore was found.

Other work adjacent to shaft, on surface, consists of a number on the three veins mentioned, as well as cross-cuts, raises, shallow shafts, etc.

ASSAY VALUES:

Many of the workings referred to expose large reserves of low grade gold and copper-gold ores, there being tens of thousands of tons indicated; but these reserves unfortunately have never been plotted on assay maps of this area. Owners claim, and rightly so, that it is very difficult to attempt to make a proper sampling of these disseminated ores by ordinary channel methods of sampling, such as used on lode properties, due to the irregular distribution of values. However, several hundred individual assays are now available in files of owners, which may be inspected by interested parties. While these assays vary from traces to around \$90.00 gold per ton, owners claim the average to be about \$3.20 per ton in that also; per these assays, copper ranges from traces to above 30%; the higher copper ores occurring in pay streaks up to 18 inches wide.

DEVELOPMENT WORK ON THE RIO VISTA NORTH SIDE:

Also considerable development work was done on the Rio Vista North Side, the same consisting of a main cross-cut tunnel around 400 feet in length, which intersects three ore bearing veins and these were explored by a number of drifts, from 100 to 200 feet in length each. Other work consists of a vertical prospect 135 feet in depth; also an inclined shaft to a depth of 240 feet, following a vein carrying gold values. In the bottom of this incline some high grade gold was found.

All in all, the ore zone on the North Side is similar in character to the South Side, values here occurring mainly in brecciated Quartzsite, and in fissure veins, therein. Deeper work will be necessary in order to explore this area.

CHARACTER OF SURFACE ORES:

The ores so far developed in the various workings of the Rio Vista Mines and to a depth of 287 feet in the main shaft, consist of oxidized material in which the following minerals are noted; hematite, malachite, azurite, cuprite, with occasional residual chalcocite. Specimens showing free gold, visible to the naked eye, are frequently found in the surface workings.

SECONDARY SULPHIDE ORES:

Top rank mining engineers and geologists who have examined these mines have recommended these properties, stating that the same present a potential ore supply which give them the earmarks of large and profitable mines. Also, without a question of doubt in my mind, and this is concurred in by other engineers who have seen these properties, extensive bodies of secondary sulphide ores should be found below the permanent water level in these mines. This is attested by the fact that oxidized ore zone shows extensive weathering and leaching action caused by the rise and fall of the water level through the ages. In this way the oxidized ore zone was robbed of its copper values which migrated downward and no doubt re-deposited as enriched sulphides, such as bornite, chalcocite, and so forth, in the neighborhood of the permanent water level, and which should be encountered by sinking the 287 foot shaft around 113 feet deeper, which would reach the level of the Colorado River, and where the permanent water level should be found.

When and if such objective can be attained, as above set forth, your properties can no doubt be put on a paying basis from shipping ore alone. Hence, I here and now recommend that your main 287 foot shaft be sunk around 125 feet deeper, where a station should be cut from which cross-cuts east and west should be driven in order to intersect the main ore veins, on which drifts should be

run in search of the sulphide ore mentioned.

CONCLUSION:

After having spent several days looking over the Rio Vista properties, I do not hesitate to recommend them, for a careful investigation, to anyone looking for a worth-while mining investment. Furthermore, I believe that if these mines can be developed along the lines herein described, extensive deposits of secondary copper sulphide ores, carrying goodly values in gold, will be found, in deeper areas adjacent to the permanent water level, out of which a great deal of money should be made. In short, the general outlook of these mines is most pleasant with large tonnage indicated.

Very sincerely yours,

S/ Elgin B. Holt.

February 2, 1941

CLAIM MAP
RIO VISTA MINES

Lime
Schist
Brecciated
Quartzite
Quartzite

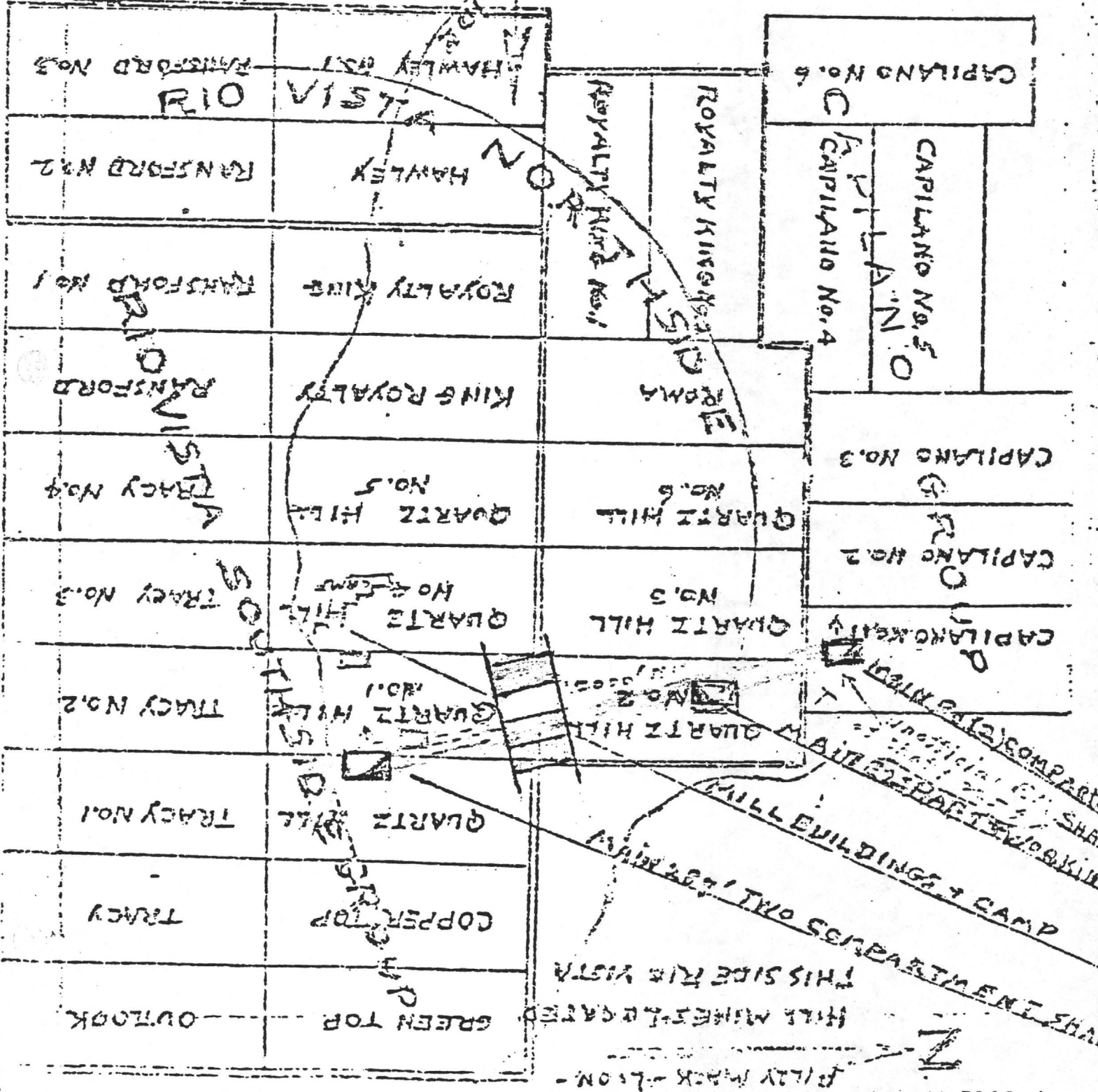
Report of Elgin B. Holt 1942
(Dept Mineral Resources
Field Engineer -
State of Arizona)

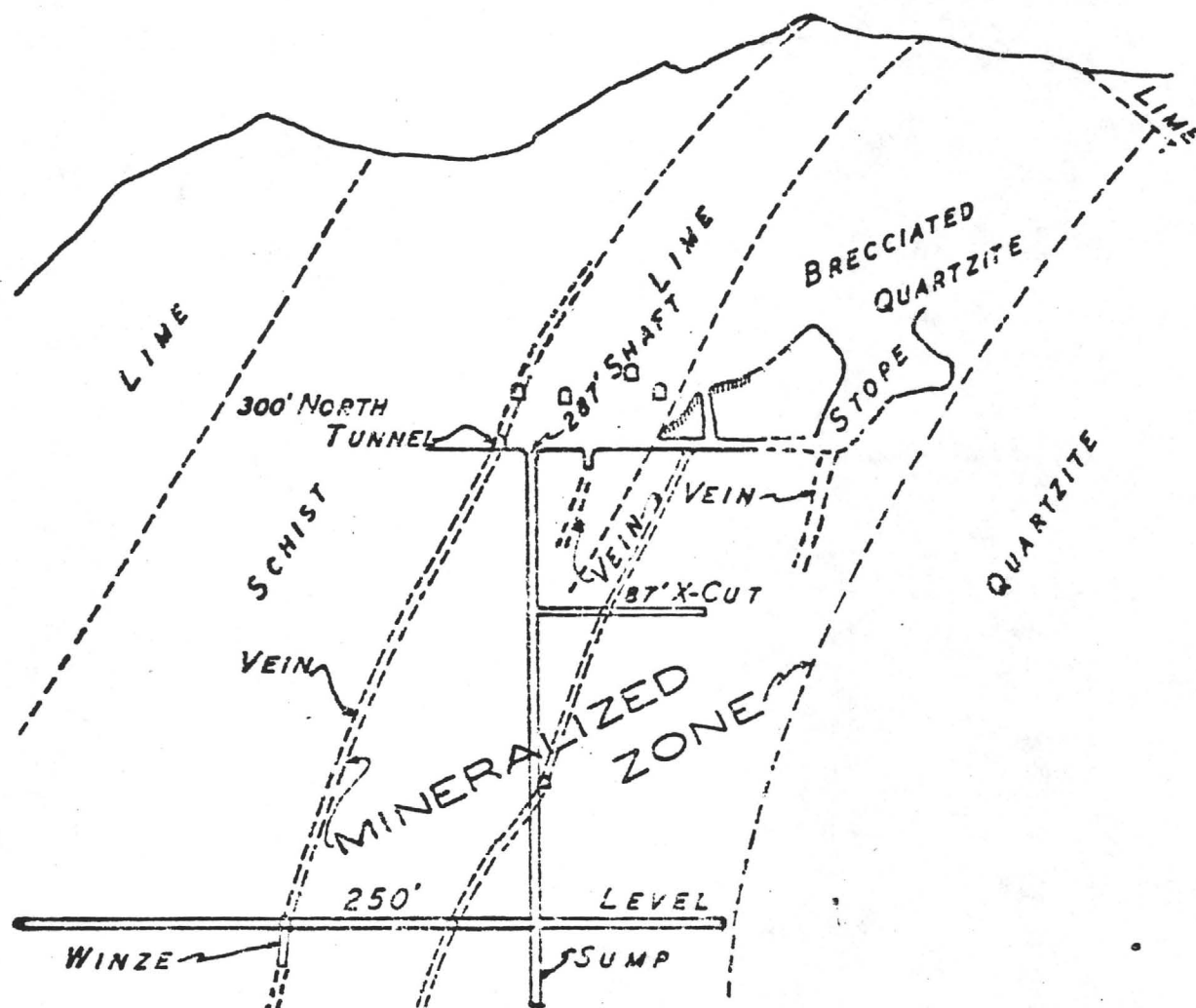
ROAD

Mineral
Fault -
200 ft wide

ROAD TO NORTH SIDE

Mineralized
ZONE -

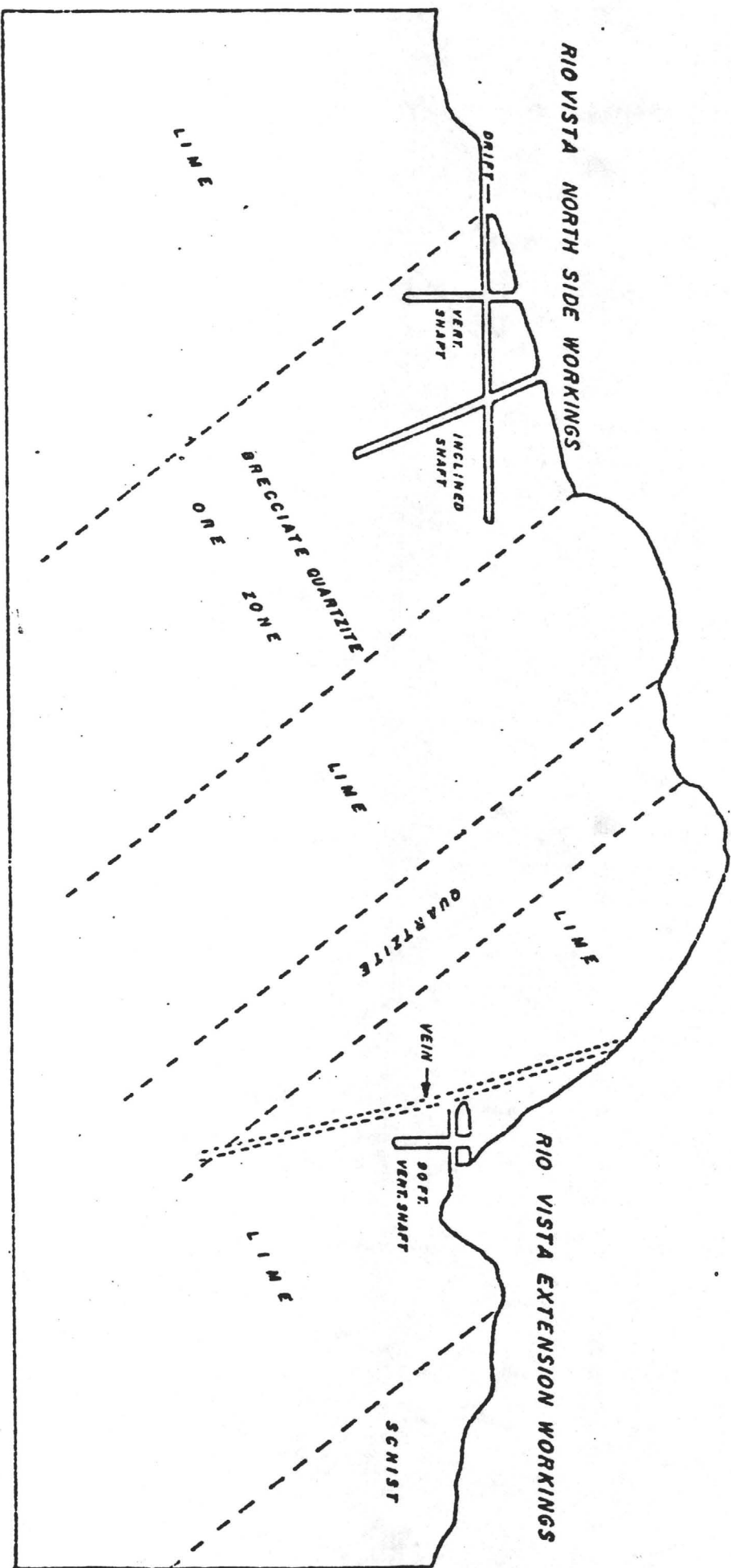




CROSS-SECTION
 RIO VISTA SOUTH SIDE MINE
 CIENEGA DISTRICT
 YUMA COUNTY, ARIZ.

SKETCH MAP
 Scale: 1" = 100'

RIO VISTA NORTH SIDE AND RIO VISTA EXTENSION



GEOLOGIC CROSS-SECTION
SKETCH MAP, LOOKING SOUTH

Located in sections 23 and 26, T. 10 N.,
R. 19 W., G. & S. R. M., Cienega Mining
District, Yuma County, Arizona

By ELGIN B. HOLT.

Copy

May 6, 1965

Mr. Charles Chandler
Scottsdale, Arizona.

Dear Mr. Chandler:

It is not my intention to write a Geological report on Mrs. Botzum's Rio-Vista property at this time as many very favorable reports have been written in the past. I would, however, like to explain my personal opinion as to the untouched values in this area as I have already proven on the Mineral Hills, which I operated for over two years, at a very nice profit.

My examination of the Rio-Vista leads me to believe that a large body of Sulfide ore lies beneath the Oxidised showings which are so prevalent on the surface area, and no where, at no time has anyone ever sunk a shaft or drilled into the permanent water table which is approximately 400 - 450 feet from the surface elevations.

I have indicated on the attached "Claims" map where, in my opinion, three Diamond core holes should be drilled; No. 1, at the lowest elevation suitable and as near possible to the 100' shaft 400' deep. No. 2, near to the double compartment shaft which is approximately 285' deep, this hole should go at least 500' or 215' below the present mineralized Zone. No. 3, near the North side mineral zone and approximately 400' below the ground elevation.

Should No. 1 show a sulfide mineral zone, I would suggest a grid pattern in that area to determine the full extent of the mineralization. The extent of drilling must be determined by the core showings.

The attached estimate of cost is based on quoted prices from a reliable drilling contractor.

I am also enclosing reports from, Elgin B. Holt, E.M. and C. A. Hammond, E.M. which I believe to be helpful, as both men were well qualified.

Most large copper deposits are of Hydrothermal origin and are genetically related to igneous rocks. Replacement, in general, has been a more important factor in the formations of deposits than has simple cavity filling. In most deposits, both processes have been active. Deposits, which consist of the copper minerals disseminated in extensive zones in granitic areas now yield about 85% of all copper produced in Arizona.

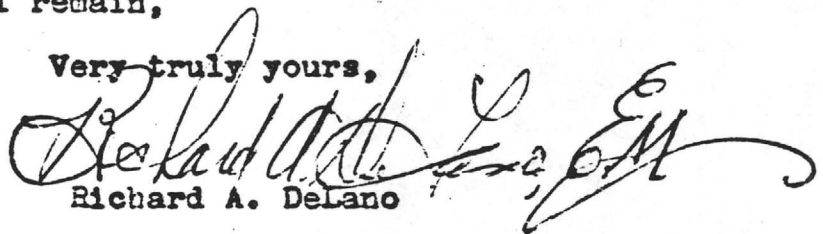
- 2 -

Copper deposits that have undergone super enrichments form a very important group of ores. In these deposits, copper minerals are leached from the zone of oxidation, carried downward in solution, and deposited below the permanent water table, thus enriching the primary ores.

It is my firm opinion that there is an extensive sulfide ore bed below the oxidized area on the Rio-Vista and is a continuous ore zone which includes the Mineral Hills, Planet and Swansea Mines. All of which have proven shipping records.

If I can be of further assistance, please feel free to call on me and until then, I remain,

Very truly yours,

A large, stylized handwritten signature in dark ink, appearing to read 'Richard A. DeLano', with a long horizontal flourish extending to the right. The signature is written over the typed name 'Richard A. DeLano'.

Richard A. DeLano

Los Angeles, Cal.
April 14, 1932

Mr. E. S. Osborne
Parker, Arizona

In order to gain a more comprehensive knowledge of the structural features of the Rio Vista Copper-Gold Mines Group, it was necessary to make a somewhat rapid reconnaissance survey of the general topography and geological features of the surrounding country.

The results of such observations as I was able to make during the time at my disposal are embodied in the accompanying geological report. The geological age of the rocks exposed in the section is evidently paleozoic and if the linguoloid-like shells are confirmed it may be as old as cambrian-purplish quartzite to the east and intersected by brownish plutonic quartz.

PLUTONIC QUARTZ ROCK

A close examination of the ledge of quartzite near the out crop of the Rio Vista Mine - auriferous lode and the structure of the Rio Vista Mines and also along the out crops to the south and north show that the silicified sedimentary rocks have been crushed - brecciated and faulted. The masses of brecciated quartzite representing the re-cementing of the crushed zones by ascending thermal water carrying silic in solution. Numerous transverse veins and impregnations of quartz of a more homogenous structure indicating the invasion of the quartzite by subsequent plutonic magmas.

Subsequent to the plutonic invasion a third period of fracturing took place which has resulted in the production of the auriferous quartz lodes. Such lodes are evidently connected with profound earth movements and resulting faultings, thus providing a passage for ascending metallic solutions.

Relation between the Geology and Topography. The relation between the topography and geological structure is marked in all places where the limestone present in places very irregular contours, due to variation in dips often in saucer shaped depressions or conversely with quaqua-versal dips. Regular anticlinal or synclinal folds are not common, although monoclinals are frequent being formed by the cutting of broad anticlinals by faultings.

The present geographic features, although largely due to the resistance of the harder rock, masses to the action of the atmospheric denudation and erosion are primarily the result of great earth stresses and faultings and the subsequent action of the up welling of siliceous magmas in the cementing and consolidation of the rocks over the crushed and fractured areas.

THE FUTURE OF DEEP MINING IN THE RIO VISTA GROUP AREA

The geological features of the district immediately surrounding the Rio Vista Group area are the result of the mining operations already carried on at the lower levels of the Rio Vista Group justify for the belief in the downward continuity of the payable ore bodies, and that the locality is one which offers very favorable conditions for very successful mining. The indications of the formation of the metallic auriferous contents of the lodes by ascending solutions along the lines of fissures by great earth movements which may extend to profound depths indicates a condition of permanency which augers well for the future of deep mining. The minor transverse faults observed in the mine workings, although they may have

in some cases disturbed the ore shoots, have on the other hand produced a secondary enrichment at and near the planes of contact within the vadose zone of circulation meteoric waters.

The ore shoots of the Rio Vista Group of Mines have been sufficiently developed to prove their richness and downward continuity with every probability of future continuance as greater depths are reached.

Respectfully submitted for your approval,

S/ C. C. A. Hammond, E.M.

Dated: Los Angeles, California
April 14, 1932

on the

RIO VISTA COPPER-GOLD MINES
Parker-Yuma County, Arizona

MR. E. S. OSBORNE
Parker, Arizona

I have the honor to herewith submit my examination of the RIO VISTA COPPER-GOLD MINES GROUP.

LOCATION: Parker, Arizona, 270 miles via new highway from Los Angeles, California. Rio Vista Copper-Gold Mines are approximately 5 miles northeast of Parker. Upon completion of the Boulder Dam project, with cheap hydro-electric power from the Dam, mining and milling power costs will be quite nominal at approximately \$1.00 per horse power per year.

HOLDINGS: Twenty-six (26) claims or approximately 520 acres of land. Held by location and assessment work in accordance with State and United States laws.

TOPOGRAPHY: Mines are located in the west foothills of the Planet Range of mountains. These foothills are rolling at the mine and are easy of access by truck or automobile. Between the mines and Parker is a very good road of easy grades. Allow heavy trucks to handle heavy loads.

GEOLOGY: The country rock of this area is of the pre-cambrian complex granite gneiss which has been intruded by diorite on the east and westerly line while the andesite trends northeasterly and southwesterly. The intrusion of diorite is the evident cause of the fissure and to its influence the mineralization is due. The faults show on the east and west sides and are of a series of stop faults in the vein with depth which will, no doubt, show them to extend toward the andesite where shaft reaches ore at the two hundred fifty foot level. The sinking of the main shaft will eventually show the influence andesite in the mines of the Rio Vista Group. In my opinion the dike will be the hanging wall of the vein.

MINERALOGY: The composition of the ore is almost ideal for amalgamation and cyanidation treatment. The ore being of an easily crushed quartz, schist and impregnated with oxides of iron. At some points copper is in evidence, but no mineral shows which would render ore difficult or complex in treatment. I believe from my sampling that in the lower workings which is firmer, that in further depths an average can be determined at much better advantage than in the broken up and crushed zone now influenced by intrusion and faults.

DEVELOPMENT: A great amount of work has been done on the property principally on the double compartment main shaft to an approximate depth of 287 feet with cross cuts and a series of tunnels and winze on the ore will give an excellent opportunity to determine the condition of the deposition with the strike and depth of the vein and to sample with tunnel and cross cuts, approximately the vein now is developed over an area of many acres.

SAMPLING: My sampling was done first with the view of estimating the tonnage and value of ore in sight and secondly to determine the probable and possible tonnage indicated by the various openings on the property. I found

the average width of milling ore in the various cuts, shallow shafts, tunnels, up-raises to be from four feet to unknown width. No walls, The values vary as the ore has been crushed and twisted by intrusions rendering channel cuts hard to make on account of soft ore running. At the bottom of the main double compartment shaft is changing, evidently, getting away from the crushed zone. The vein is firm and strong. In such class of ore as now is exposed a laboratory test is the only way (except mill test) to average tonnage and mill values.

A great amount of ore can be mined in the development of cross cuts from main shaft, but at this time no width can be determined to estimate tonnage. On account of the high assays received in all the values accountable to my mind to the ore conditions very similar to other very rich copper-gold mines I have examined, assayed and reported on. I believe new development should be confined to sinking main shaft and drifting on the vein north at this shaft. The deepest working on the property. This entire property is very valuable and warrants the expenditure for extensive development. I unhesitatingly advise active and thorough development of this exceptional copper-gold property.

CONDITIONS: Similar to former copper-gold camps in Arizona in the desert districts. Hot dry days in the summer with fine winter weather.

WATER

CONDITIONS: Ample to supply water in excess for a large reduction works and camp.

The Rio Vista Group of copper-gold mines are yet to be opened up. The mining work has been fairly well done enough workings to prove the structure, fissure, dip and strike and copper-gold values are there.

I assayed many samples of free gold in the Andesite that proves conclusively that the values both high and low are there and copper values too.

The sinking of the main shaft and connecting up with the north shaft will open up rich workings; also great tonnage with the values warranting a plant. You will most emphatically have an exceptional productive property.

Respectfully submitted

/S C. C. A. Hammond, E.M.

Dated: Los Angeles, California
April 14, 1932

Geologic Report on the Rio Vista Mine Area
La Paz County, Arizona

By C. A. Oakley

June 5, 1984

The Rio Vista mine is located in the Cienega Mining District, La Paz County, Arizona. More specifically in T1N, R19W in Sections 25 and 26. Two sets of workings separated by 1/2 mile mined on the same mineralized structure. The Rio Vista Northside is located in the NW 1/4 section of Section 26, and the Rio Vista Southside (or the Rio Vista Extension) located in the N 1/2 of the SW 1/4 section of Section 26.

Approximately three (3) days were spent at the Rio Vista making a reconnaissance geological map, geochemical sampling of selected suspected ore horizons, and sampling material from the old mill site and mine dumps.

Drill Hole TC-1 was located on May 7, 1984, and drilled to a length of 270' at an angle of -65° . The hole was located at the site recommended in previous reports. Drilling ceased in a quartz breccia due to bad ground conditions.

Both the Northside and Southside Rio Vista mined ore from a quartz-breccia zone that runs the length of a NNW trending hill. The quartz-breccia zone represents the plane of a thrust fault that typifies the structural geology of western Arizona.

Although field observations were only of a reconnaissance nature, the following ideas may be put forth.

Mesozoic metamorphic rocks (mostly schist and schistose meta volcanics) slid over Paleozoic or possibly Mesozoic limestone and quartzite of indeterminate age. Silica from the quartzite was mobilized and filled the fault zone. Renewed fault motion brecciated the quartz and rock fragments in the breccia. During Mid-Tertiary orogeny, the area was subjected to block faulting with beds being tipped. At the Rio Vista area, the beds are almost standing on end with dip angles of 65° to 80° . The obvious mineralization at the Rio Vista is again typical of that found in the Cienega Mining District.

Specular hematite, copper carbonates and silicates (primarily malachite and chrysocolla respectively) along with scarce specks of free gold are found in mineralized portions of the quartz breccia. According to the Arizona Bureau of Geology and Mineral Technology, approximately 200 tons of ore were removed from both the Northside and Southside workings. Combined ore grade was 6-1/2% Cu, 0.45 oz. Au/ton, and 0.2 oz. Ag/ton.

The specular hematite at the Rio Vista is fairly coarse crystalline and of obvious primary hydrothermal origin. The copper carbonates and silicates, siderite (Fe carbonate) and the free gold are also primary in origin. No relief limonite after sulfides was found, although trace amounts of very fine pyrite cubes were located along fracture surfaces of quartz vein material in the quartz-breccia. The system is obviously sulfur poor, and if any sulfides were to be present they would be so in minor amounts, and other than ubiquitous pyrite they would be of high metal to sulfur ratio varieties (such as bornite, i.e., 55% Cu, as opposed to chalcopyrite, which may contain up to 33% Cu). I doubt, however, that any significant amounts of sulfide minerals will be encountered at the Rio Vista.

In the course of the field reconnaissance, a jasperoidal body was mapped near the Northside workings. The jasperoid was iron stained and was sub-parallel to bedding. Several small feeder veins of cryptocrystalline quartz were found. The presence of the jasperoid, along with reports that several major mining companies were in western Arizona searching for low grade bulk tonnage gold deposits, presents the possibility of a low grade "invisible" gold deposit.

Samples from the jasperoid, although far from ore grade, did have readable amounts of gold (.004 oz. Au/ton) indicative of an auriferous system.

Although most fine grained gold deposits are of the Carlin type, i.e., micron size gold disseminated in black shales and shaly limestones with associated mercury, arsenic and antimony minerals, other large tonnage-low grade gold deposits have been found in rocks as diverse as rhyolite (Round Mt., 13mm tons 0.05 oz. Au; Goldfield, Nev., 1mm ton 0.05 oz. Au/ton; and the Hayden Hill and High Grade Districts of Northern California).

Disseminated gold has also been found in alkaline sills in Montana (Zortman, 20 million tons, 0.025 oz. Au/ton), and in metamorphosed arkose in Nevada (Mineral Ridge).

All that is needed to create a low grade high tonnage gold deposit are:

1. Abundant water
2. A heat source to create and drive hydrothermal fluids
3. Permeable host rock
4. A reducing environment where gold is removed from solution
5. A source of gold

We know the hydrothermal system once active at the Rio Vista is auriferous. The host rocks are permeable and reactive. The problem that remains is obvious. Is there sufficient tonnage of gold bearing rock of high enough grade to warrant further exploration.

Results of Drilling

Metamorphic and sedimentary beds, and the thrust plate (i.e., quartz breccia) all strike approximately N-S and dip steeply to the west (60-80°). A Venture Drilling Company CP-650WS down the hole hammer-rotary rig was set up at the Southside site and an angle hole was drilled at a bearing of N90E and a bearing of -65° to a length of 270 feet. A condensed log of the hole follows:

<u>Depth</u>	<u>Rock</u>	<u>Au</u>	<u>Ag</u>
0 - 55	Red-Brown Schist	0.013	0.11
55 - 90	Grey-Green Schist	0.013	0.06
90 - 120	Red-Brown Schist	0.013	0.05
120 - 190	Grey-Green Schist	0.010	0.05
190 - 220	Red-Brown Schist	0.004	0.05
220 - 225	Red-Brown Schist	0.015	0.10
225 - 255	Quartz Breccia	0.010	0.13
255 - 270	Quartz Breccia	0.024	0.08

As stated earlier, bad ground conditions were encountered in the quartz breccia, necessitating abandonment of the hole. It would be interesting to drill through the quartz breccia to check the obvious higher gold content, extent of the breccia, and the lower plate (of the thrust) mineralization.

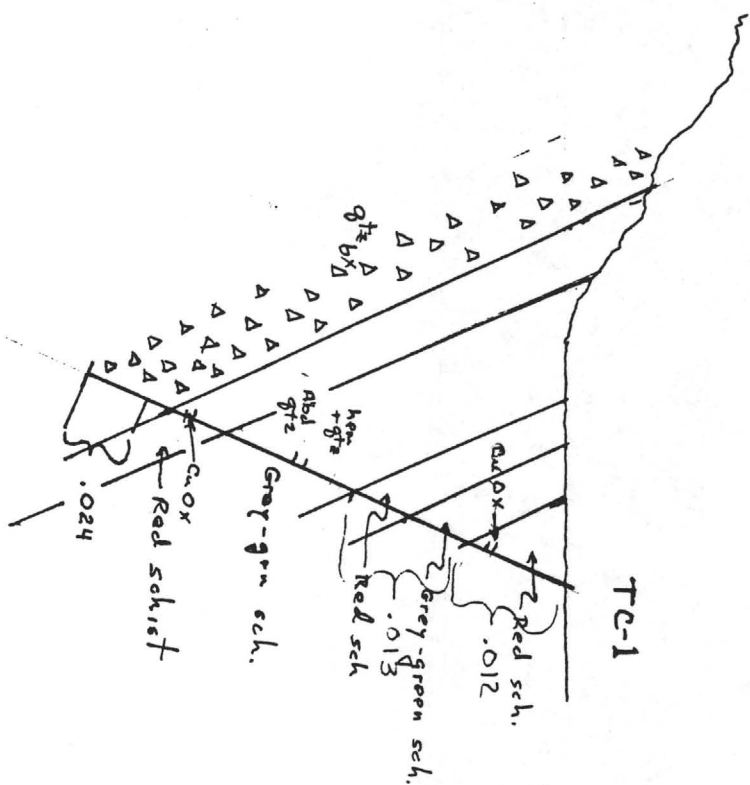
Two things were surprising in the upper plate rocks. First was the lack of limestone in the drill cuttings. The limestone either pinched out in the vicinity of the drill hole (field mapping supports this), or that calc-silicate altered schist which retained some weathering characteristics of limestone was mistakenly mapped as such. Also of great interest are the gold values found in the schist. Although no ore grade mineralization was intercepted, the 190 feet of 0.012 oz. Au/ton is highly anomalous. Many of the new open pit gold mines in the Southwest are mining ore with less than 0.05 oz. Au/ton. The Zortman-Landusky mines in Montana are profitable at 0.025 oz. Au/ton. 2X to 5X enrichment would make ore.

Recommendations

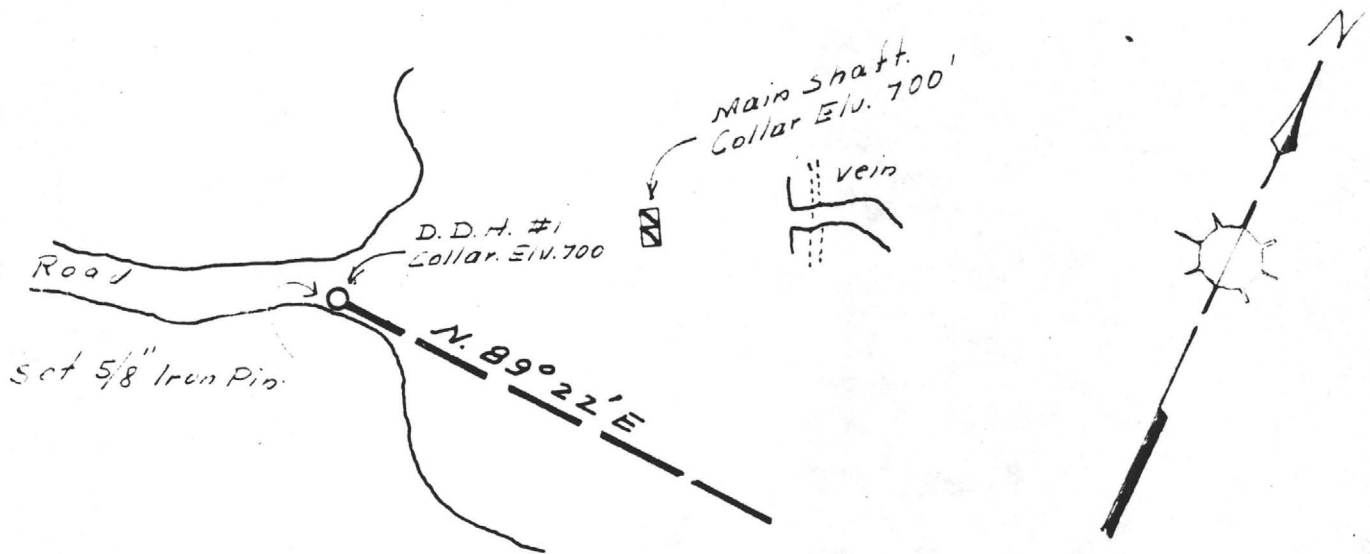
The first recommendation is obvious. Drill through the breccia in more than one place to test the grade, and also to see if lower plate rocks are also mineralized. With the 3000' strike length, there is good potential that sufficient grade and tonnage could be blocked out to stand on its own as ore.

The second recommendation would be to first check the validity of the drill hole assays. If the assays prove accurate, then follow with a program of grid sampling the surface for gold and its pathfinder elements of antimony, arsenic and silver. Anomalous areas should be delineated and evaluated for drilling.

Idealized Cross Section
 Rio Vista Mine
 La Paz County, Az
 1" = 100'

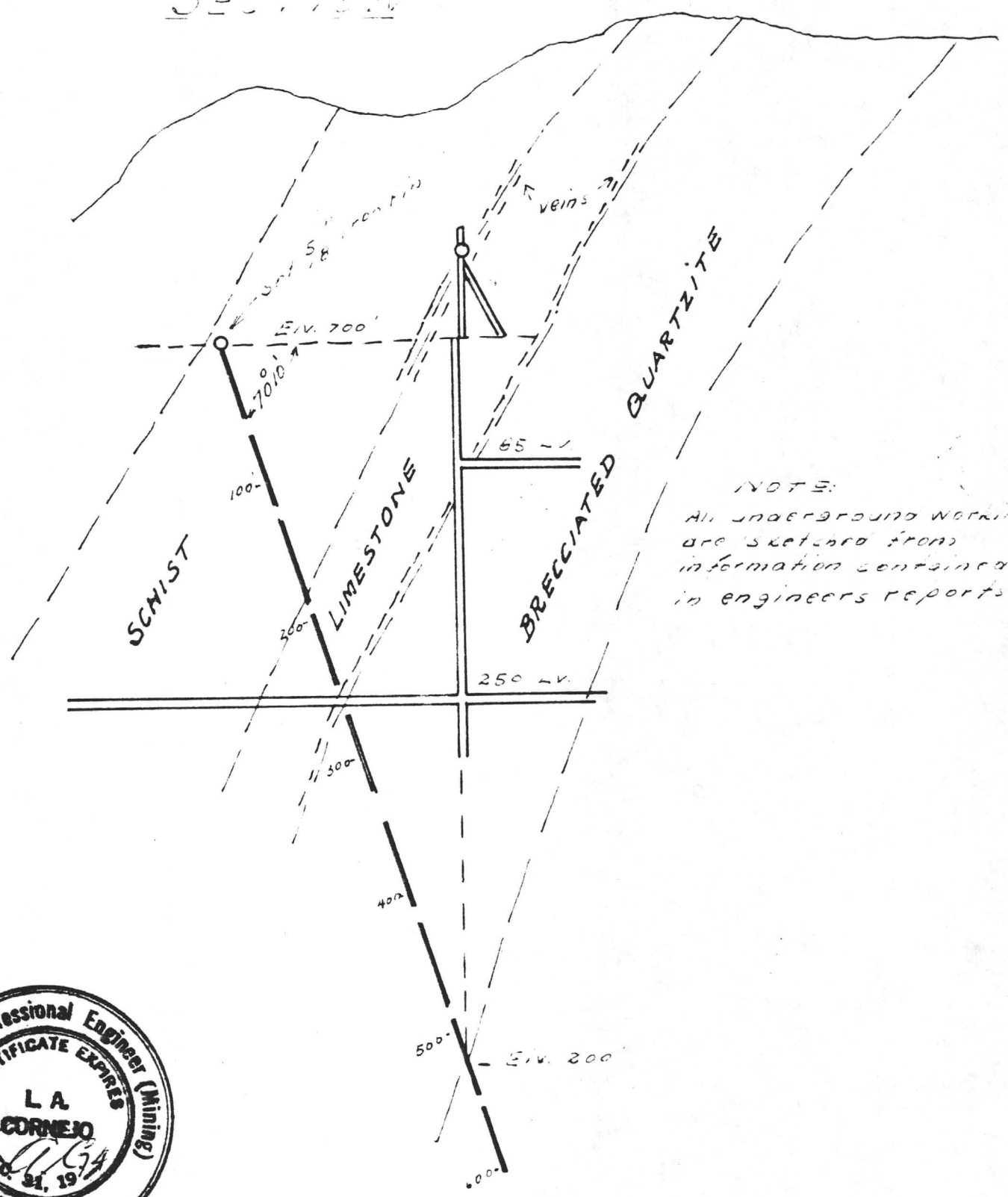


PLAN



L. A. CORNEJO,
 Mining Eng.

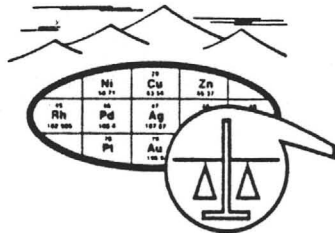
SECTION



NOTE:
 All underground workings
 are sketched from
 information contained
 in engineers reports



L.A. CORNEJO
 Mining Eng.



SKYLINE LABS, INC.
1775 W. Sahuaro Dr. • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

REPORT OF ANALYSIS

JOB NO. UJT 007
June 20, 1984
PROJECT: TC
TC1 25-30
PAGE 1 OF 1

VENTURE DRILLING COMPANY
P.O. Box 50325
Tucson, Arizona 85703

Analysis of 3 Drill Cutting Samples

ITEM	SAMPLE NUMBER	FIRE ASSAY
		Au (oz/t)
1	TC1 25-30	<.005
2	TC1 100-105	<.005
3	TC1 265-270	.030

cc: C.A. Oakley
3202 North Country Club
Tucson, Arizona 85716

*These numbers do not
agree well with the Jacobs #'s*



1435 S. 10th AVE.

Jacobs Assay Office

Registered Assayers



PHONE 622-0813

Certificate No.

63797

TUCSON, ARIZONA 85713

5/17 84

Sample Submitted By Mr.

VENTURE DRILLING

SAMPLE MARKED	GOLD OZS PER TON	SILVER	SAMPLE MARKED	GOLD OZS PER TON	SILVER
TC-1			205-210	0.003	0.05
0-20	0.012	0.10	210-215	0.002	0.05
20-25	0.013	0.05	215-220	0.001	0.05
25-30	0.013	0.20	220-225	0.015	0.10
30-35	0.014	0.15	225-230	0.014	0.40
35-40	0.014	0.20	230-235	0.010	0.05
40-45	0.012	0.05	235-240	0.018	0.05
45-50	0.012	0.05	240-245	0.003	0.15
50-55	0.012	0.05	245-250	0.011	0.05
55-60	0.013	0.05	250-255	0.006	0.05
60-65	0.013	0.05	255-260	0.025	0.05
65-70	0.013	0.05	260-265	0.020	0.05
70-75	0.012	0.05	265-270	0.028	0.15
75-80	0.015	0.10			
80-85	0.013	0.05			
85-90	0.014	0.05			
90-95	0.012	0.05			
→ 95-100	0.015	0.05			
→ 100-105	0.013	0.05			
105-110	0.013	0.15			
110-115	0.013	0.05			
115-120	0.012	0.05			
120-125	0.011	0.05			
125-130	0.012	0.05			
130-135	0.013	< 0.05			
135-140	0.008	0.10			
140-145	0.013	0.05			
145-150	0.013	0.05			
150-155	0.007	< 0.05			
155-160	0.008	0.05			
160-165	0.006	< 0.05			
165-170	0.006	0.05			
170-175	0.012	< 0.05			
175-180	0.013	0.05			
180-185	0.009	0.05			
185-190	0.006	0.05			
190-195	0.013	0.05			
195-200	0.003	0.05			
200-205	0.006	0.05			

FIRE ASSAY
1 ASSAY FOR EACH SAMPLE
LESS THAN

Very respectfully,

[Signature]

Charges \$

382.50

REPORT

on the

RIO VISTA COPPER-GOLD MINES
Parker-Yuma County, Arizona

MR. E. S. OSBORNE
Parker, Arizona

I have the honor to herewith submit my examination of the RIO VISTA COPPER-GOLD MINES GROUP.

LOCATION: Parker, Arizona, 270 miles via new highway from Los Angeles, California. Rio Vista Copper-Gold Mines are approximately 5 miles northeast of Parker. Upon completion of the Boulder Dam project, with cheap hydro-electric power from the Dam, mining and milling power costs will be quite nominal at approximately \$1.00 per horse power per year.

HOLDINGS: Twenty-six (26) claims or approximately 520 acres of land. Held by location and assessment work in accordance with State and United States laws.

TOPOGRAPHY: Mines are located in the west foothills of the Planet Range of mountains. These foothills are rolling at the mine and are easy of access by truck or automobile. Between the mines and Parker is a very good road of easy grades. Allow heavy trucks to handle heavy loads.

GEOLOGY: The country rock of this area is of the pre-cambrian complex granite gneiss which has been intruded by diorite on the east and westerly line while the andesite trends northeasterly and southwesterly. The intrusion of diorite is the evident cause of the fissure and to its influence the mineralization is due. The faults show on the east and west sides and are of a series of stop faults in the vein with depth which will, no doubt, show them to extend toward the andesite where shaft reaches ore at the two hundred fifty foot level. The sinking of the main shaft will eventually show the influence andesite in the mines of the Rio Vista Group. In my opinion the dike will be the hanging wall of the vein.

MINERALOGY: The composition of the ore is almost ideal for amalgamation and cyanidation treatment. The ore being of an easily crushed quartz, schist and impregnated with oxides of iron. At some points copper is in evidence, but no mineral shows which would render ore difficult or complex in treatment. I believe from my sampling that in the lower workings which is firmer, that in further depths an average can be determined at much better advantage than in the broken up and crushed zone now influenced by intrusion and faults.

DEVELOPMENT: A great amount of work has been done on the property principally on the double compartment main shaft to an approximate depth of 287 feet with cross cuts and a series of tunnels and winze on the ore will give an excellent opportunity to determine the condition of the deposition with the strike and depth of the vein and to sample with tunnel and cross-cuts, approximately the vein now is developed over an area of many acres.

SAMPLING: My sampling was done first with the view of estimating the tonnage and value of ore in sight and secondly to determine the probable and possible tonnage indicated by the various openings on the property. I found

the average width of milling ore in the various cuts, shallow shafts, tunnels, up-raises to be from four feet to unknown width. No walls, The values vary as the ore has been crushed and twisted by intrusions rendering channel cuts hard to make on account of soft ore running. At the bottom of the main double compartment shaft is changing, evidently, getting away from the crushed zone. The vein is firm and strong. In such class of ore as now is exposed a laboratory test is the only way (except mill test) to average tonnage and mill values.

A great amount of ore can be mined in the development of cross cuts from main shaft, but at this time no width can be determined to estimate tonnage. On account of the high assays received in all the values accountable to my mind to the ore conditions very similar to other very rich copper-gold mines I have examined, assayed and reported on. I believe new development should be confined to sinking main shaft and drifting on the vein north at this shaft. The deepest working on the property. This entire property is very valuable and warrants the expenditure for extensive development. I unhesitatingly advise active and thorough development of this exceptional copper-gold property.

CONDITIONS: Similar to former copper-gold camps in Arizona in the desert districts. Hot dry days in the summer with fine winter weather.

WATER

CONDITIONS: Ample to supply water in excess for a large reduction works and camp.

The Rio Vista Group of copper-gold mines are yet to be opened up. The mining work has been fairly well done enough workings to prove the structure, fissure, dip and strike and copper-gold values are there.

I assayed many samples of free gold in the Andesite that proves conclusively that the values both high and low are there and copper values too.

The sinking of the main shaft and connecting up with the north shaft will open up rich workings; also great tonnage with the values warranting a plant. You will most emphatically have an exceptional productive property.

Respectfully submitted

/S C. C. A. Hammond, E.M.

Dated: Los Angeles, California
April 14, 1932

Los Angeles, Cal.
April 14, 1932

Mr. E. S. Osborne
Parker, Arizona

In order to gain a more comprehensive knowledge of the structural features of the Rio Vista Copper-Gold Mines Group, it was necessary to make a somewhat rapid reconnaissance survey of the general topography and geological features of the surrounding country.

The results of such observations as I was able to make during the time, at my disposal are embodied in the accompanying geological report. The geological age of the rocks exposed in the section is evidently paleozoic and if the linguoloid-like shells are confirmed it may be as old as cambrian-purplish quartzite to the east and intersected by brownish plutonic quartz.

PLUTONIC QUARTZ ROCK

A close examination of the ledge of quartzite near the out crop of the Rio Vista Mine - auriferous lode and the structure of the Rio Vista Mines and also along the out crops to the south and north show that the silicified sedimentary rocks have been crushed - brecciated and faulted. The masses of brecciated quartzite representing the re-cementing of the crushed zones by ascending thermal water carrying silic in solution. Numerous transverse veins and impregnations of quartz of a more homogenous structure indicating the invasion of the quartzite by subsequent plutonic magmas.

Subsequent to the plutonic invasion a third period of fracturing took place which has resulted in the production of the auriferous quartz lodes. Such lodes are evidently connected with profound earth movements and resulting faultings, thus providing a passage for ascending metallic solutions.

Relation between the Geology and Topography. The relation between the topography and geological structure is marked in all places where the limestone present in places very irregular contours, due to variation in dips often in saucer shaped depressions or conversely with qua-qua-versal dips. Regular anticlinal or synclinal folds are not common, although monoclinals are frequent being formed by the cutting of broad anticlinals by faultings.

The present geographic features, although largely due to the resistance of the harder rock, masses to the action of the atmospheric denudation and erosion are primarily the result of great earth stresses and faultings and the subsequent action of the up welling of siliceous magmas in the cementing and consolidation of the rocks over the crushed and fractured areas.

THE FUTURE OF DEEP MINING IN THE RIO VISTA GROUP AREA

The geological features of the district immediately surrounding the Rio Vista Group area are the result of the mining operations already carried on at the lower levels of the Rio Vista Group justify for the belief in the downward continuity of the payable ore bodies, and that the locality is one which offers very favorable conditions for very successful mining. The indications of the formation of the metallic auriferous contents of the lodes by ascending solutions along the lines of fissures by great earth movements which may extend to profound depths indicates a condition of permanency which augers well for the future of deep mining. The minor transverse faults observed in the mine workings, although they may have

in some cases disturbed the ore shoots, have on the other hand produced a secondary enrichment at and near the planes of contact within the vadose zone of circulation meteoric waters.

The ore shoots of the Rio Vista Group of Mines have been sufficiently developed to prove their richness and downward continuity with every probability of future continuance as greater depths are reached.

Respectfully submitted for your approval,

S/ C. C. A. Hammond, E.M.

Dated: Los Angeles, California
April 14, 1932

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine **MANMON**
District **Cienega, Yuma County**

Date **July 24, 1944**
Engineer **Elgin B. Holt**

Subject: **R E P O R T**

OWNERS: Harry M. Osborne, Parker, Arizona, and H. A. Loring, Yuma, Arizona.

METALS: Copper, with small values in gold and silver.

AREA & LOCATION: This mine, consisting of 3 patented claims, is situated 10 miles easterly from Parker. It is reached by following a county-maintained road for 5 miles east from Parker, and thence around another five miles up a sand wash to the mine. This latter part of the road is in bad condition and would have to be repaired before cars and trucks could be driven to the property.

EXAMINATION: On July 11, 1944, I visited the property, in company with Harry M. Osborne and J. S. Coupal. With some difficulty, Osborne drove the car we were using to a point about one mile from the mine. We then walked the rest of the distance to it and back. As we spent less than 3 hours at the property, this report, at best, is merely a brief description of the same.

HISTORICAL:

The Manmon Mine was worked from time to time by E. S. Osborne, father of Harry M. Osborne, from around 1905 to 1917. During the latter year, it was sold to Boston people who carried out further work in the mine to about 1921, at which time it was closed down due to the slump in copper during that year. The property later was sold to the State of Arizona to cover unpaid taxes and was purchased by present owners during April, 1944.

During the operations of E. S. Osborne and his successors, some ore was shipped to the Clarkdale and Hayden smelters; but no records of these shipments were available at the time of visit.

OTHER MINES: Other mines in the Cienega District, in which this property is located, are as follows: Rio Vista, Billy Mack, Lion Hill, Sue, and the Empire Mine.

The latter property, situated some 3 miles northwest of the mine under discussion, according to W. W. Harritt, produced 2,270 tons of hand-sorted copper-gold ore averaging around \$30.00 per ton. Also it produced from April 27, 1941, to May 1, 1942, 956 tons of shipping ore averaging \$14.74 per ton in copper and gold, this being mine run ore with light sorting. Ore is still being mined and shipped by "leaners" from this property in a small way.

All of these mines have been worked from time to time during the last 40 years and considerable ore has been shipped or milled therefrom.

MINE WORKINGS:

1. The Upper Tunnel, which is open for inspection and which we entered, was driven through a schist formation S. 22 degrees W. about 400 feet. At 50 feet from the portal of this tunnel a flat dipping vein of oxidized copper ore was cut, said vein striking, more or less, from NW to SE, and dipping around 30

degrees to the SW. Here was found a lens of ore, most of which has been stoped out, measuring from 4 to 10 feet wide and 70 feet in length. This lens was stoped to the surface an inclined distance of 60 feet and partly to a depth of 40 feet. After the tunnel passed through the flat dipping vein mentioned it was driven to its end in barren country rock.

2. At an elevation about 30 feet below the portal of the Upper Tunnel, the Lower Tunnel was started and was driven S. 5 degrees W. about 50 feet; thence southwesterly about 550 feet, cutting a number of small veinlets of no importance and containing bunches and streaks of oxidized copper ore. Also three or four raises were run from this tunnel level to the Upper Tunnel level. Again, several shallow winzes were sunk on the streaks of copper ore mentioned with nil results. Furthermore, lateral work was done on the Lower Tunnel level in the nature of two cross-cuts to the southeast and these were connected at the back end forming a loop. This "loop", I would say, is about 300 feet in length and intersects a number of copper-bearing stringers ranging from inches to say two feet in width; copper ore occurring in bunches and kidneys of negligible importance. At one point this "loop" cuts a small flat-dipping copper-bearing vein, which may or may not be the flat-dipping vein mentioned as occurring in the Upper Tunnel workings.

All in all, no vein of commercial importance was found in the Lower Tunnel workings. However, at one point in these workings I noticed a wide fissure filled with iron-stained leached vein material, which might lead to ore at a greater depth.

3. Also an inclined shaft was sunk on another vein to a depth of 255 feet, per H. M. Osborne, with some drifting on vein. This vein strikes NW-SE and dips around 45 degrees to the SW. It is in the nature of a mineralized fault zone, showing considerable shearing and brecciation, with a width in excess of 12 feet and shows copper stains at surface. Osborne stated that some ore had been shipped from this shaft; but no records were available of such shipments. The shaft is caved in and, hence, not accessible. The vein in question geologically speaking, is the most promising showing over any other vein of property, in that it is of goodly width, well-defined, has distinct hanging and foot walls, and evidently deep-seated. Should operations be resumed at property, the shaft mentioned should be cleaned out with a view to making a careful study and examination of the vein referred to and its possibilities.

ASSAYS: I made no attempt to sample the mine in detail, but I cut three pilot samples with a view to determining the character of the ore. These were run by the Arizona Assay Office, Phoenix, Arizona, on July 13, 1944, with the following results:

<u>No.</u>	<u>Place-Width</u>	<u>Silver-oz.</u>	<u>Gold-oz-val.</u>	<u>Copper-lb</u>
1.	Vein, Lower Tunnel - 8"	Trace	Trace	1.51
2.	Vein, Upper Tunnel - 4'	0.1	0.04 - \$1.40	4.47
3.	200 tons dump ore - grab	0.1	0.01 - .35	5.00

ORE RESERVES: Referring to the Upper and Lower tunnels above described, there are only small amounts of ore blocked out in these workings, as such ores as were encountered by the former operators of this property were mostly stoped out and

and shipped. However, by selective mining and close hand-sorting it might be possible to remove from these openings several car loads of ore possibly running four or five percent in copper.

Also there are around 200 tons of sorted ore piled on the dumps from which a grab sample was taken with results above noted.

CONCLUSION: The Mammon Mine, as it now stands, is a prospect, on which considerable money would have to be expended in order to prove whether it is of any importance or not. By no means is it my desire in this report to turn the property down. I merely want to point out that the present time there is no great amount, or rather considerable amount, of commercial ore blocked out or indicated in the mine. On the other hand, all mines were once prospects, and as such the property has potential value. Furthermore, it is my firm opinion and belief that if ample venture money could be found with which to develop and explore this property to a depth of 500 or 600 feet deep, or to some point to the permanent water level of the mine, that thereby it is possible to uncover important underground reserves of sulphide ores, of shipping or milling grade, out of which considerable money could be made.

The above opinion is based on the fact that the surface veins so far exposed are filled with secondary oxidized copper ores, as well as with leached vein material, indicating a downward migration of copper values. Hence, at some deeper level there should exist in this property bodies of secondary sulphide ores, such as chalcocite, bornite, etc.

/s/ Elgin B. Holt

*Other repts also on Mammon in files - probably also
repts for other mines in greater Virginia Dist. 10/29/84*



CW/VER

CLARA OSBORNE BOTZUM

HOUSE OF REPRESENTATIVES
STATE OF ARIZONA

669-8693
TEL. MOHAWK 9-2712
BOX 1612 675
PARKER, ARIZONA

Shafiqullah

Geoscience

626-1885

Data Power

626-1396

626-2781

Ralph B Sievwright
Attorney at Law
Mining

114 W Adams
Suite 719
Title & Trust Bldg
Phoenix
258-7871

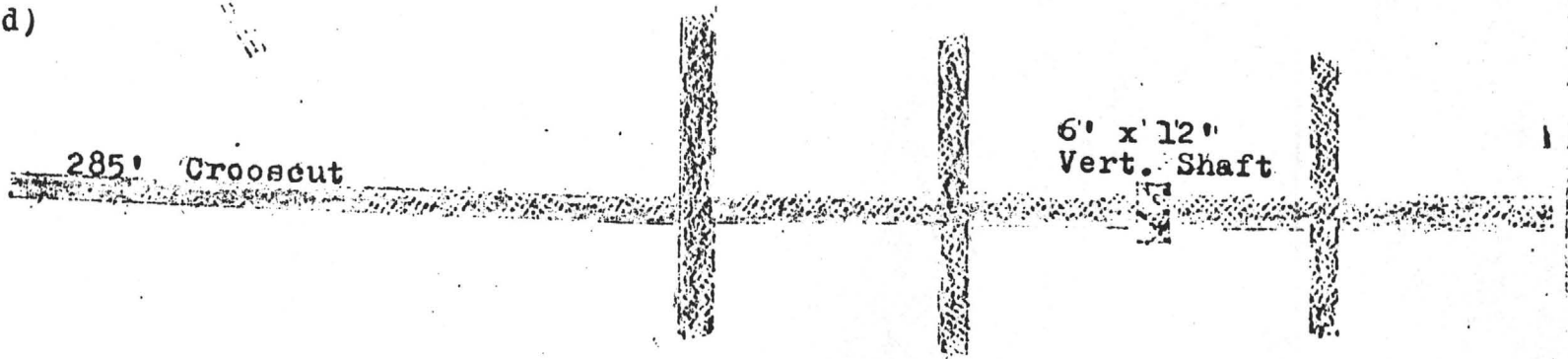
Mac.

RIO VISTA-MINE

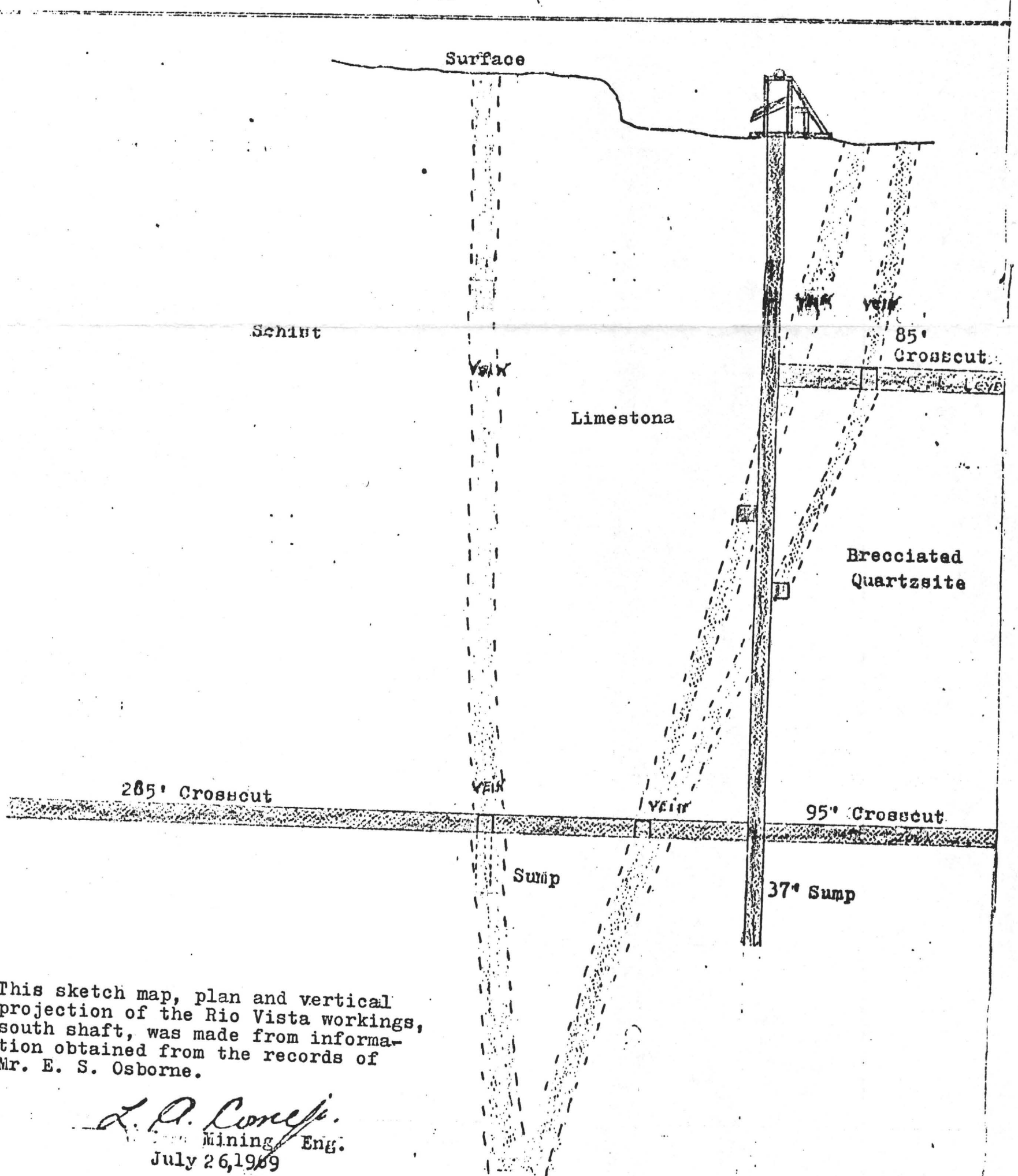
Sketch Map

Scale 1" = 48'

PLAN
(Projected)



Plan.
No information available for the
Plan View of the drifts and crosscuts.



This sketch map, plan and vertical projection of the Rio Vista workings, south shaft, was made from information obtained from the records of Mr. E. S. Osborne.

L. P. Conner
Mining Eng.
July 26, 1969

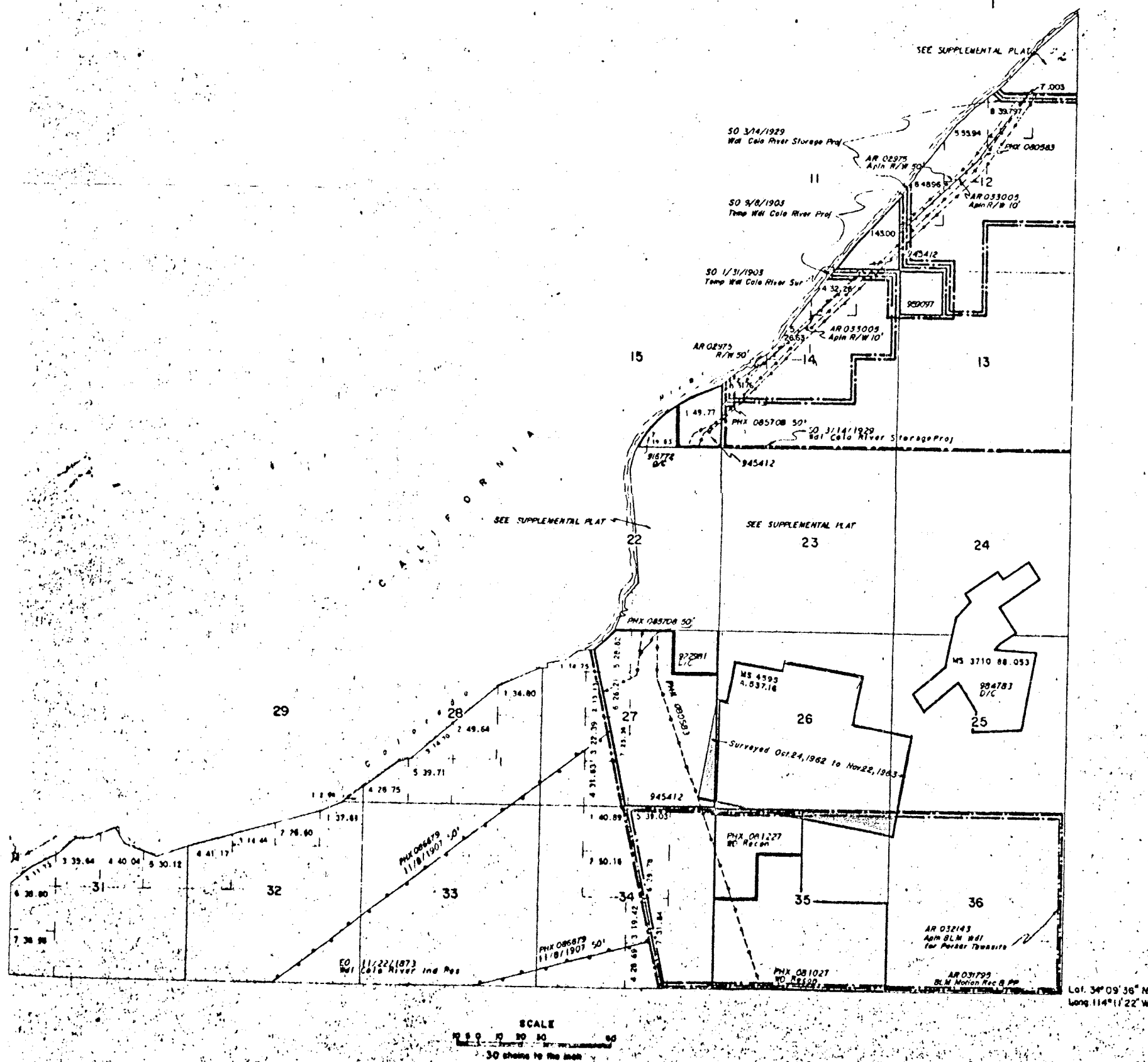
YUMA COUNTY

STATUS OF PUBLIC DOMAIN LAND AND MINERAL TITLES

[illegible]

FOR ORDERS EFFECTING DISPOSAL OR USE OF
UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION,
MINERALS, WATER AND/OR OTHER PUBLIC PURPOSES,
REFER TO INDEX OF MISCELLANEOUS DOCUMENTS

ALL TP UNDER CONSIDERATION FOR SMALL TRACT CL H/2/1358:

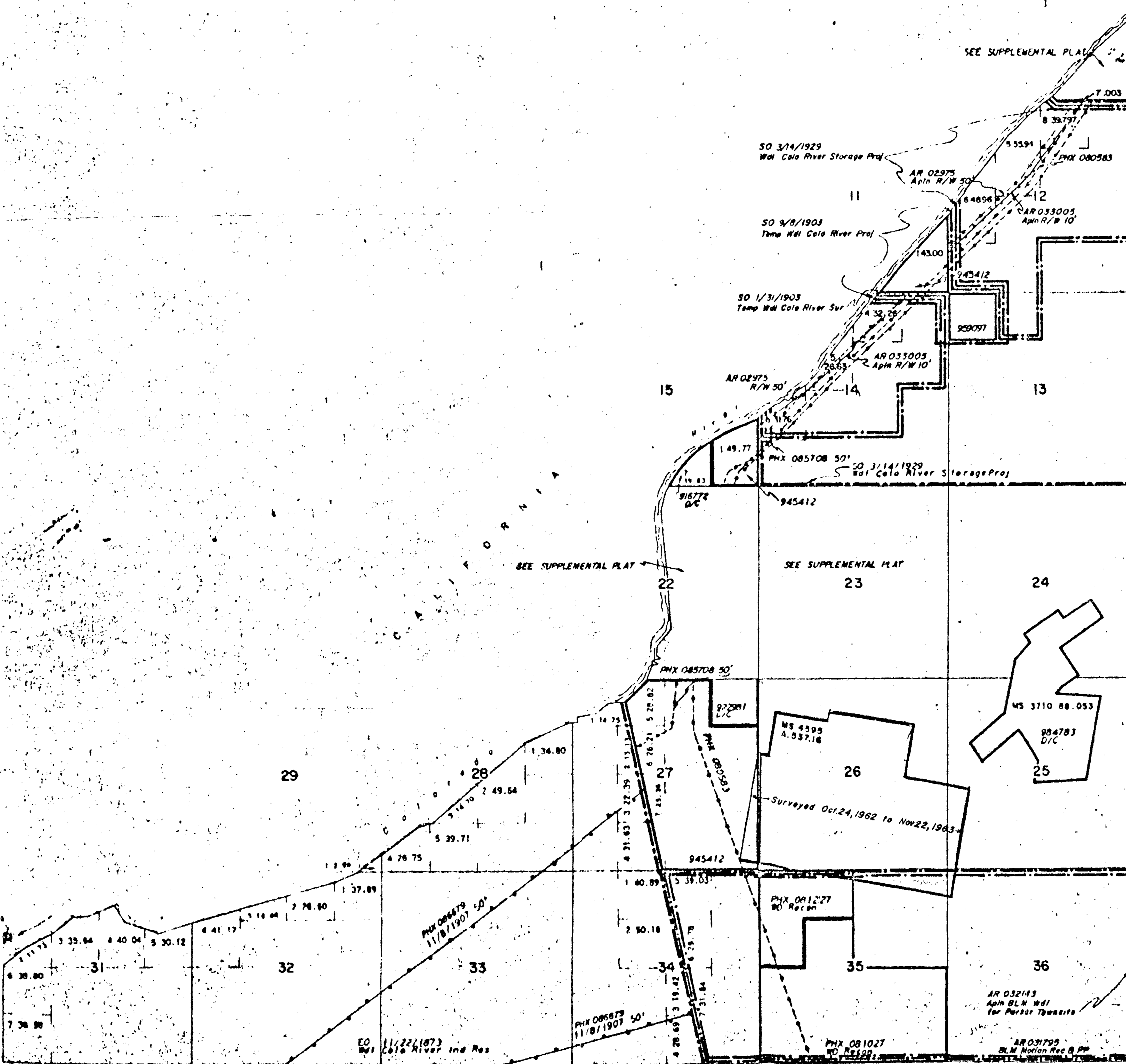
[illegible]

T. 10 N.
R. 19 W.

YUMA COUNTY

[illegible]

ALL TP UNDER CONSIDERATION FOR SMALL TRACT CL H/2/1959



Lat. 34° 09' 36" N
Long. 114° 11' 22" W

[illegible]

Y. ION.

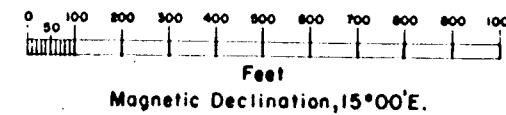


**MINERAL SURVEY
No. 4595
ARIZONA**

CLAIM OF
CLARA OSBORNE BOTZUM

KNOWN AS THE
COPPER TOP, GREEN TOP, HAWLEY,
HAWLEY NO. 1, KING ROYALTY, OUTLOOK,
QUARTZ HILL, QUARTZ HILL NOS. 1, 2,
4, #3, #5 & #6, RANSFORD, RANSFORD
NOS. 1, 2 & 3, ROMA, ROYAL KING NO. 1,
ROYALTY KING, ROYALTY KING NO. 2,
TRACY, TRACY NOS. 1, 2, 3 & 4 LODES

SITUATE IN
Secs. 25, 26, 27, 35 & 36, T. 10 N., R. 19 W., G. & S. R. M.
YUMA COUNTY
Cienega Mining District
Arizona Land District
Lat. 34° 10' 54" N., Long. 114° 12' 24" W., at Cor. No. 1,
Quartz Hill No. 2



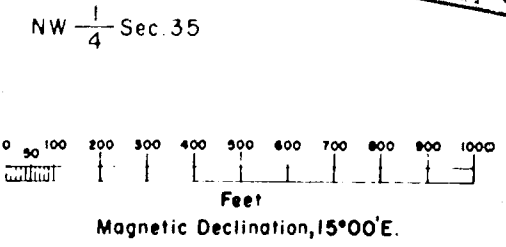
Surveyed Oct. 24, 1962 to Nov. 22, 1963
By Louis A. Cornejo, Mineral Surveyor

RIO VISTA MINE

The Rio Vista Mine consists of the
above described twenty six (26) un-
patented lode mining claims.
The area shaded in Sections 35 and 36
on the South boundary line of the Rio
Vista Mine is controlled by the U.S.
Department of the Interior, Bureau of
Land Management.
The land shaded in Section 27, on the
West boundary line is patented and
belongs to the Lake Side Project.

The Rio Vista Mine is located about
7 miles N.E. of Parker, Arizona.
L. A. Cornejo
L. A. Cornejo, Mining Engineer.

October 11, 1978 Recorded with the
U.S. Department of the Interior, Bureau
Of Land Management, Phoenix, Arizona



MAP OF MINING CLAIM LOCATION

1. The name of the claim is Moon Man No. 8
2. The NW corner of the claim is about 1600 feet in a Northerly direction to a survey monument or permanent natural object described as the N. 1/4 Cor. of Sec. 25, T10N, R19W G&SRB&M
3. The type of location monument is a monument 4 ft. high of stones
The type of corner and end monuments are posts 4 ft. high or a 3 ft. monument of stones
4. The bearing and distance between the corners of the claim are beginning at the NW corner of the claim, 600 feet in a SWerly direction to the SW corner, then 1500 feet in a Easterly direction to the SE corner, then 600 feet in a NEerly direction to the NE corner, then 1500 feet in a Westerly direction to the point of beginning.

MAP

One inch = One thousand feet

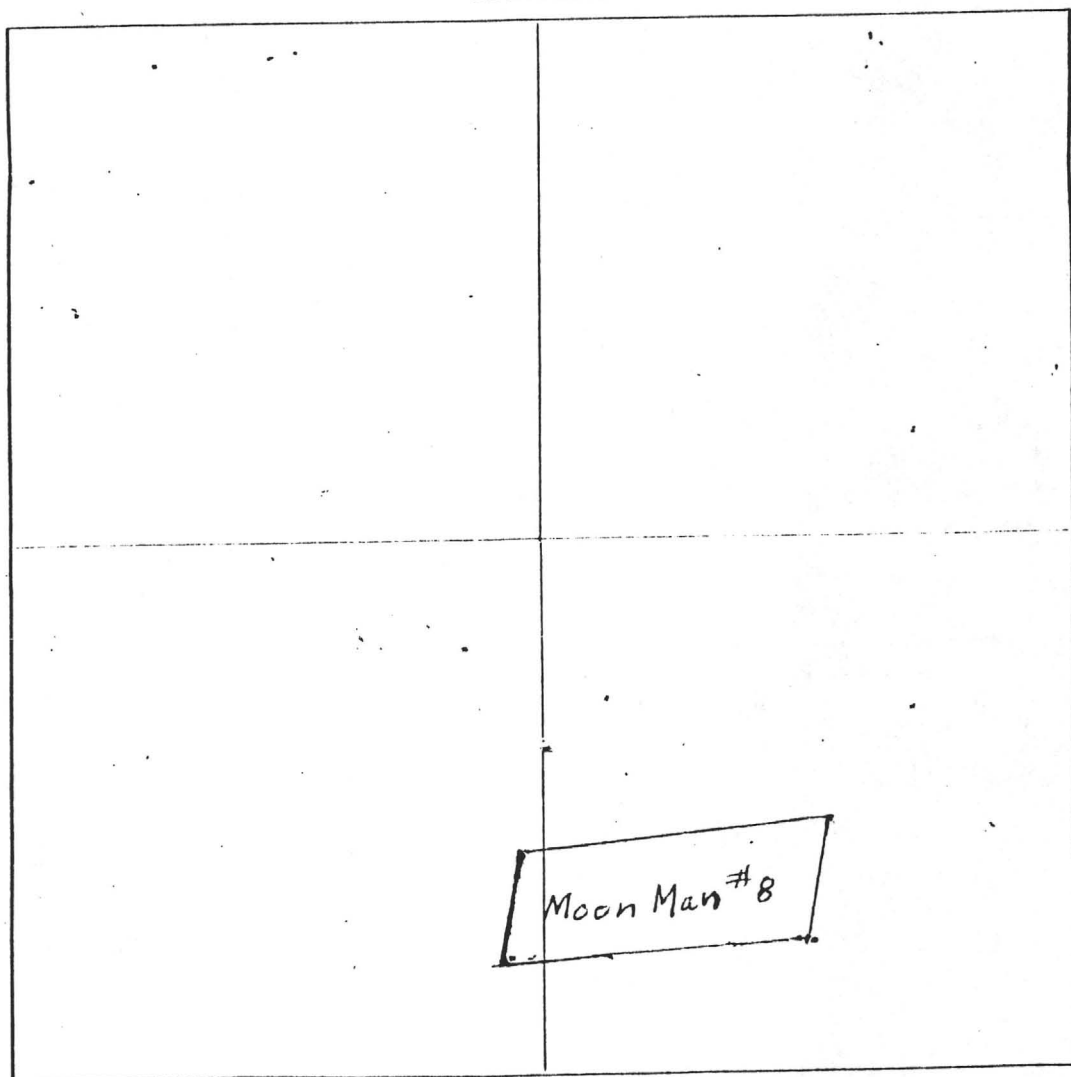
North Arrow



ONE MILE

ONE MILE

640 ACRES



Section 25 Range 19W Township 10N, G&SRB&M

Date December 14, 1983

J. P. Hinds
Signature

STATE OF Arizona
County of La Paz
In Docket No. N/A

I hereby certify that the within instrument

19

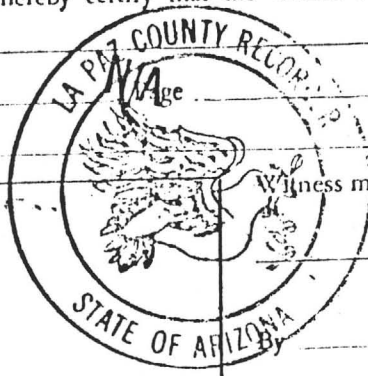
at the request of

Fee No.:

172082
DEC 9 9 33 AM '83

When recorded mail to:

P4



Witness my hand and official seal.

Lois K. Hesse

County Recorder

Deputy N/A Recorder

Fee: \$ 5-

NOTICE OF MINING CLAIM LOCATION

1. ☐ Location ☐ Amendment ☒ Relocation
2. ☐ Placer ☒ Lode ☐ Millsite ☐ Tunnelsite
3. The name and address of the Locator is

J. P. Hinds

Name

P. O. Box 746

Address

Parker

City

AZ

State

85344

Zip

A MC 216611

4. The name of the claim is Moon Man No. 8
5. The date of the location is Dec. 14, 1983
6. The claim is 1500 feet long and 600 feet wide. The distance from the Location monument to each end of the claim is 480 feet in a Westerly direction and 1,020 feet in an Easterly direction.
7. The general course of the claim is from the East to the West
8. The location of the claim is in Section 25, Township 10 N, Range 19 W
G&SRB&M, Cienega Mining District, La Paz County, Arizona.
9. If amending or relocating, the previous claim name was Ceneca
Mineral Survey No. 3710 recorded in Map 46, Book 311,
ASSESSOR'S OFFICE Mining District, Yuma (Now La Paz) County, Arizona.
10. The location of the claim with reference to a natural object or permanent monument is
The NW Cor. is about 1600 ft. from the S 1/4 Cor. of Sec 25
in a Southerly direction.

RECEIVED
B.L.M. AZ STATE OFFICE

MAR 9 1984

07.45 A.M.
PHOENIX, ARIZONA

Date December 14, 1983

J. P. Hinds
Signature

MAP OF MINING CLAIM LOCATION

1. The name of the claim is Moan Man No. 7
2. The NW corner of the claim is about 2,200 feet in a Northerly direction to a survey monument or permanent natural object described as the N. 1/4 Cor. of Sec. 25, T. 10 N, R. 19 W, G & SRB & M
3. The type of location monument is a post 4 ft. high in a monument of stones
The type of corner and end monuments are posts 4 ft. high or a monument of stones 3 ft. high
4. The bearing and distance between the corners of the claim are beginning at the Northerly corner of the claim, 600 feet in a Southerly direction to the SW corner, then 1500 feet in an Easterly direction to the SE corner, then 600 feet in a NEerly direction to the NE corner, then 1500 feet in a Westerly direction to the point of beginning.

MAP

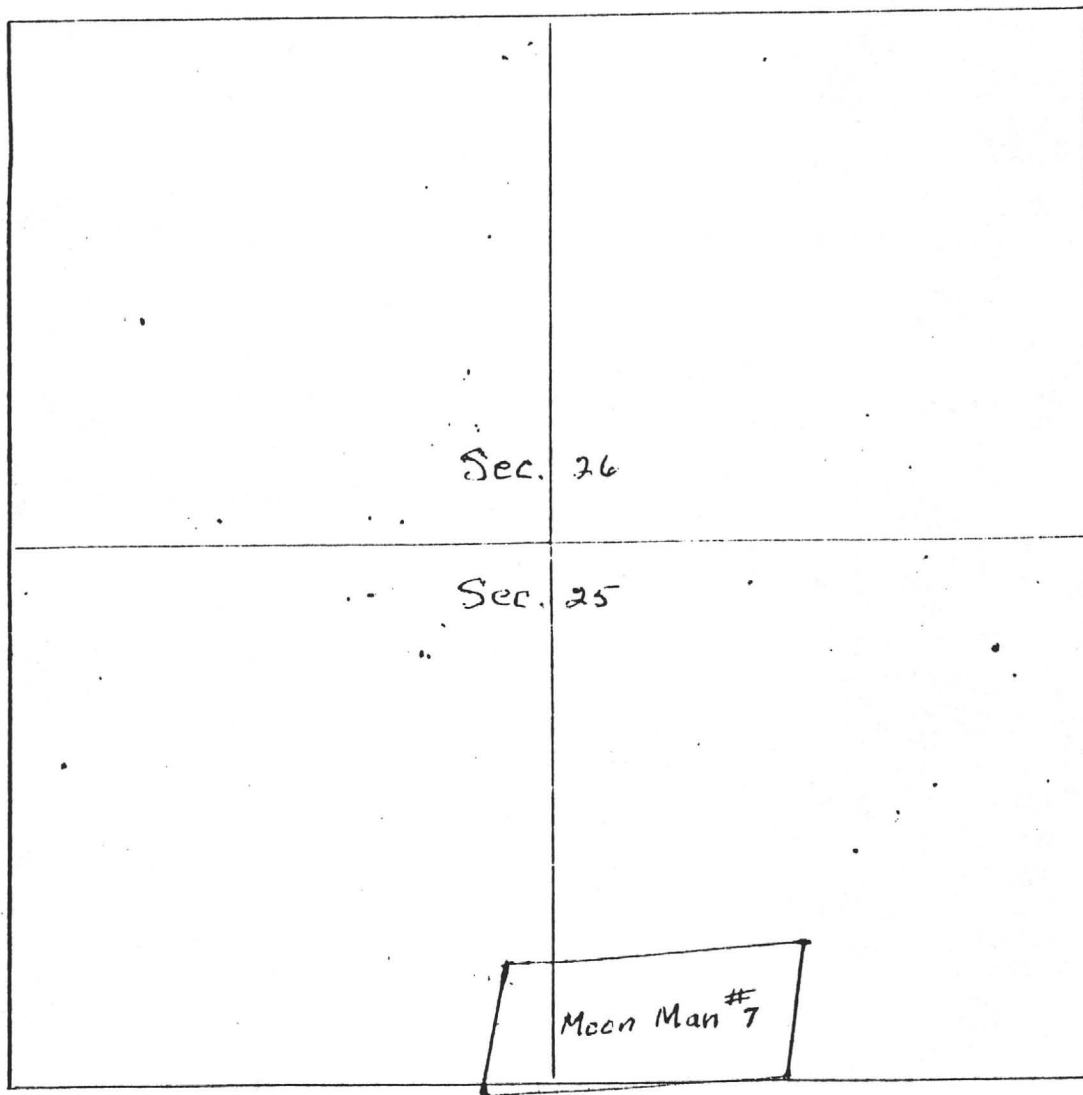
One inch = One thousand feet

North Arrow



ONE MILE

ONE MILE



640 ACRES

Section 25 Range 19 W Township 10 N, G & SRB & M

Date December 14, 1983

[Signature]
Signature

STATE OF Arizona
County of La Paz
In N/A No.

I hereby certify that the within instrument was filed and recorded
19 1983 M.

INDEXED

at the request of
DEC 19 9 32 AM '83

Fee No.

1-72082

32 AM '83

When recorded mail to:

PH



These my hand and official seal.

Lola K. Hesse

County Recorder

N/A Deputy Recorder

Fee: \$

5-

NOTICE OF MINING CLAIM LOCATION

1. ☐ Location ☐ Amendment ☒ Relocation
2. ☐ Placer ☒ Lode ☐ Millsite ☐ Tunnelsite
3. The name and address of the Locator is
J. P. Hinds

Name

P.O. Box 746

Address

Parker

AZ

85344

City

State

Zip

4. The name of the claim is Moon Man No. 7
5. The date of the location is Dec. 14, 1983
6. The claim is 1500 feet long and 600 feet wide. The distance from the Location monument to each end of the claim is 550 feet in a Westerly direction and 1050 feet in an Easterly direction.
7. The general course of the claim is from the East to the West
8. The location of the claim is in Section 25, Township 10N, Range 19W
G&SRB&M, Cienega Mining District, La Paz County, Arizona.
9. If amending or relocating, the previous claim name was Jack Rabbit
Mineral Survey No. 3710 recorded in Map 46, Book 311,
Assessor's Office Mining District, Yuma (Now La Paz) County, Arizona.
10. The location of the claim with reference to a natural object or permanent monument is
The NW Cor. is about 2,200 ft. from the N 1/4 Cor. of Sec. 25
in a Westerly direction.

RECEIVED
B.L.M. AZ STATE OFFICE

MAR 9 1984

07.45 A.M.
PHOENIX, ARIZONA

Date December 14, 1983

J. P. Hinds
Signature

A MC 216610

MICROFILMED

STATE OF Arizona
County of La Paz

I hereby certify that the within instrument was filed and recorded

Fee No.

In N/A Act No.

19

INDEXED

at the request of

DEC 19 9 32 AM '83

When recorded mail to:

PU - J.P. HINDSLois K. Hesse
County RecorderDeputy N/A Order

Fee: \$

5-

NOTICE OF MINING CLAIM LOCATION

1. ☐ Location ☐ Amendment ☒ Relocation
 2. ☐ Placer ☒ Lode ☐ Millsite ☐ Tunnelsite

3. The name and address of the Locator is

J. P. Hinds

Name

P.O. Box 746

Address

Parker

City

AZ

State

85344

Zip

4. The name of the claim is Moon Man No. 6
 5. The date of the location is Dec. 14, 1983
 6. The claim is 1500 feet long and 600 feet wide. The distance from the Location monument to each end of the claim is 575 feet in a SE erly direction and 925 feet in a NW erly direction.
 7. The general course of the claim is from the NW to the SE
 8. The location of the claim is in Section 25, Township 10 N, Range 19 W
G&SRB&M, Cienega Mining District, La Paz County, Arizona.
 9. If amending or relocating, the previous claim name was Butte
Mineral Survey No 3210 recorded in Map 46, Book 311
Assessor's Office Mining District, Yuma (Now La Paz) County, Arizona.
 10. The location of the claim with reference to a natural object or permanent monument is
The NWerly Corner is about 930ft. in a SWerly
direction from the N 1/4 Cor. of Sec. 25

RECEIVED
B.L.M. AZ STATE OFFICE

MAR 9 1984

07.45 A.M.
PHOENIX, ARIZONADate December 14, 1983

Signature

A MC 216609

MAP OF MINING CLAIM LOCATION

- The name of the claim is Moon Man No. 6
- The NWerly corner of the claim is about 930 feet in a NEerly direction to a survey monument or permanent natural object described as the S $\frac{1}{4}$ Corner of Sec. 24 and the N $\frac{1}{4}$ Cor. of Sec. 25, T10N, R19W G & S, R & M
- The type of location monument is a monument of stones 3 ft. high
The type of corner and end monuments are posts 4 ft. high or a monument 3 ft. high of stones.
- The bearing and distance between the corners of the claim are beginning at the NWerly corner of the claim, 750 feet in a SWerly direction to the SW corner, then 1500 feet in a SEerly direction to the SE corner, then 750 feet in a NEerly direction to the NE corner, then 1500 feet in a NWerly direction to the point of beginning.

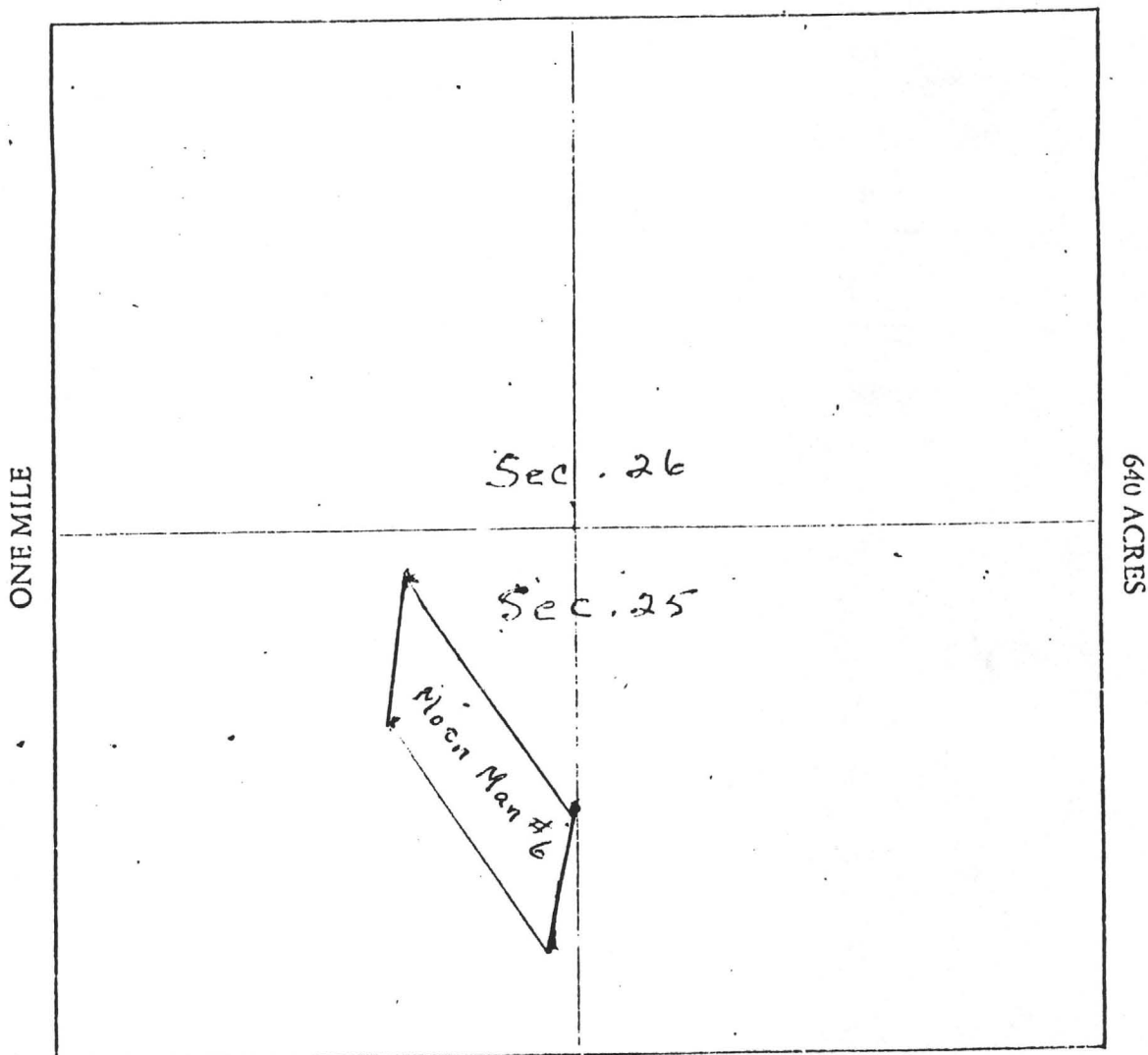
MAP

One inch = One thousand feet

North Arrow



ONE MILE



Section 25 Range 19W Township 10N G&SRB&M

Date December 14, 1983

J. P. A. Fido
Signature

CALIFORNIA
ARIZONA

TION, R 19 W
G+SRB+M

Sec. 24, E 1/2
Sec. 25, N 1/2

TION, R 18 W
Sec. 19 W 1/2
C K S K N

LA PAZ County, ARIZONA

MOON MAN

Claims 6-17

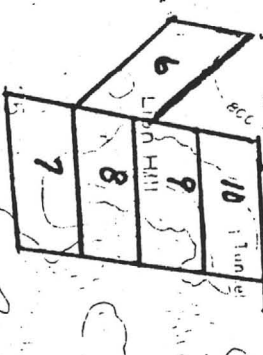
MOON MAN 15-17

located
12/27/83

MOON MAN 11-14
located 12/17/83

Billy Mack
Mountain

Billy Mack
Mine



MOON MAN 6-10
located 12/14/83

Scale 1:24,000

J.P. Hinds, Owner
P.O. Box 746
Parker, AZ 85344

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07.45 A.M.
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ace or converter" are intended to cover any metallurgical apparatus employing an air blast under pressure. The claims of the patent are five in number, as follows:

1. The method of operating blast furnaces or converters using an air blast, consisting in reducing the moisture content of the air to a small and substantially uniform percentage, supplying the dried air at a substantially uniform temperature and weight to blowing engines, and then forcing this air to the furnace or point of use; substantially as described.
2. The method of obtaining uniformity in the operation of blast furnaces and converters, consisting in supplying thereto air of a small and substantially uniform moisture content, and of a substantially uniform temperature and weight.
3. The method of supplying air to blast furnaces and converters, consisting in reducing the air to a low and substantially uniform temperature, reducing its moisture content to a small and substantially uniform percentage, maintaining the air thus treated at a substantially uniform temperature as it passes to the blowing engines, and then forcing said air to the blast furnace or converter.
4. In air supply apparatus for blast furnaces or converters, a refrigerating chamber, arranged to reduce the air to a low and substantially uniform temperature and to a low and substantially uniform moisture content, a blowing engine between the refrigerating chamber and the blast furnace or converter, and a conduit connecting the refrigerating chamber and the blowing engine and arranged to maintain a substantially uniform temperature of the air at the blowing engine.
5. The combination with a refrigerating chamber and a blowing engine, of a conduit connecting the same, and a conduit extending from the blowing engine to a blast furnace or converter, and means for insulating or protecting the conduit between the refrigerating chamber and the blowing engine, whereby air of a substantially uniform temperature and weight, as well as of a substantially uniform low moisture content, is supplied to the blowing engine.

The extensive onyx deposits of the Cerantes estate near Etlá, Oaxaca, Mexico, have been taken under option by Consular Agent Lawton, of Oaxaca and associates. These deposits have not been systematically developed by the owners, but have been worked to some extent, and are part of extensive onyx deposits, some of which have been worked for about twenty years. The onyx is of close grain, of beautiful coloring, and fair weathering qualities, and the ease of working it, together with the extent of the deposit, makes it potentially valuable.

Ore Deposits in the Vicinity of Parker, Arizona

SPECIAL CORRESPONDENCE

For many years the region along the Colorado river, in the vicinity of the Parker Indian reservation, and on both the California and Arizona sides of the river, has been known to be a field of promise for the copper miner. Development, however, was slow until the building of the California & Arizona railroad. With the town of Parker as a center, a circle drawn on a radius of 20 miles would include within its area four important ranges, or parts of ranges, in which are copper, copper-gold and gold-ore deposits. There is one district where surface conditions indicate that lead minerals may be the basic ore carrying the gold, shallow workings having produced considerable material of this kind. These deposits occur in the Plomos mountains, 15 to 20 miles southeast of Parker. Some minerals of tellurium have also been found there.

Southwest of Parker, 18 miles, is the Riverside range, in which two companies are developing groups of claims, while the individual prospector is exceedingly busy. The ore-bearing formations are schists and limestones; the ores are copper-gold and gold, the gold tenor of those deposits now being developed being somewhat higher than in the copper ores of the other districts. West and north of Parker are the Whipple, Turtle and Copper Basin districts, the latter having been the scene of more or less activity for many years. A large area here is intensely mineralized and a number of operators are now opening ground; one company, it is stated, is mining ore of shipping grade. The Calumet & Arizona company, of Bisbee, has recently acquired the Horn group in the Turtle mountains.

ORE OCCURRENCE

The districts north and northeast of Parker have been more extensively developed and are being more vigorously attacked at present. A type of ore deposition in this district, serving to illustrate that in other mines in the same formation, is found on the property of the Arizona Empire Copper Mines Company. This property is nine miles northeast of Parker and exhibits all of the features characteristic of this area, both as to ores and geology. A geologic section from the river easterly through the Eagle, Carnation and Cyclone groups, begins at the river, with a red-brown granitoid basic rock, generally coarsely crystalline, intruded by gray porphyry dikes, along the course of which are copper-bearing veins, as yet undeveloped. This is succeeded by a gneiss in which are no mineral veins of commercial importance. Lying against the eastern margin of this gneiss is an erup-

tive rock (syenite), in and over which are the uptilted limestones, shales, schists and quartzites of the ore-bearing zone. These have been intruded on the bedding planes by the same eruptive. Overlying all are flows of dolerite lava.

The sediments have been folded, and the ore deposits occur in the contacts and in the fault fissures due to the folding movement. Along the lines of contact with the limestone, the shales and limestones have been silicified to a marked extent, and the exposures are much like quartz veins. Mineralization along these contacts extends into both the shales and limes, forming chamber deposits in the lime and permeating the shales as a general impregnation of the lamination and fracture planes; the whole forming an ore-bearing zone with a core, or central vein, of quartz or quartzose material heavily mineralized with copper minerals. The gangue of this central vein is usually silicious, and the minerals, to the depth attained, entirely products of oxidation. Sulphides have not yet appeared. An important feature of these deposits, commercially, is the comparatively high gold tenor. This metal is present in all the ores thus far developed in this region.

HEMATITE ACCOMPANIES ORES

Hematite in the form of specular iron is a characteristic accompaniment of all of these deposits, large masses in chambers and veinlets occurring throughout both the limestone and shales, but especially in the contact zones. These bodies invariably contain gold in varying amounts, such determinations as have been made indicating an average content in the neighborhood of \$5. They will probably give place to copper or copper-iron minerals, in depth. At what depth the sulphide zone will be encountered is undetermined and will likely be first ascertained by the drilling operations about to be inaugurated by the Arizona Empire company. That the intricate system of veinlets in the mass of contact shale, now filled with oxidized copper ore, will have the mineral replaced by sulphide ores in depth, is the opinion of several prominent engineers who have inspected these holdings.

Two miles southeast of the Cyclone group, the company has acquired and will develop the Wardwell and Osborne group of six claims, where the showings are as strong and in general the same as those of the groups described. Pipe lines to the river will be laid, and the entire property vigorously developed. The Lewisohns are developing the Planet mine to the northeast of this district in the same formations. The Clara Consolidated is finishing its smelting plant and railroad at Swansea. The Arizona Empire company is preparing to test its properties with a core drill to learn the depth at which sulphides occur. The working shaft will not be sunk until this drilling is accomplished.

La Paz, AZ ~~Yuma, AZ~~