



CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

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Report on MANHATTAN DEVELOPMENT COMPANY'S PROPERTY
near PARADISE, ARIZONA, by Satchell, VanWagenen &
Satchell, Globe, Arizona.

Globe, Arizona, April 15, '10.

Mr. William C. Rice, Treas.,
Houghton, Michigan.

Dear Sir:

At your request I have visited the property owned by the
Manhattan Development Company, situated near Paradise, Arizona.

I spent a week on the property and submit the following
report for your consideration.

Trusting that my efforts may prove of interest and fill
your requirements, I beg to remain,

Very truly yours,

(Signed) E. T. Satchell.

MANHATTAN DEVELOPMENT COMPANY

Paradise, Cochise Co., Arizona.

The property of the Manhattan Development Company consists
of thirty-seven (37) claims, of which number thirty-five (35) are
held by United States patent, and two (2) by location on which patents
have been applied for, and are now pending. The property lies about
 $2\frac{1}{2}$ miles north of Paradise, Cochise County, Arizona, and about $1\frac{1}{2}$
miles northwest of the plant of the Chiricahau Development Company.

The physiography of the country is rough, being a series of
hills separated by gulches, in several of which there is flowing water.
The timber is small and little of it is suitable for mining purposes
other than for lagging, but an abundance of cord wood for fuel is a-
vailable on the property.

The principal mineral veins and croppings on the various
claims are connected by good trails and several good camp locations
could be chosen.

GENERAL INFORMATION

The formation of this group of claims is limestone conformably overlying granite. The limestone in many places is highly silicious, and the granite altered so that in some instances it presents the appearance of porphyry.

The country is cut by several well defined veins which are of good size and maintain a general direction from southeast to northwest. Where these fissures occur, there are porphyry intrusions which generally follow the foot wall of the vein and in some cases form part of the vein filling or vein matter.

MINERALIZATION

This property shows an extremely high mineralization. The claims almost without exception show well defined, good sized veins. These veins appear on the surface and the croppings are composed of a honeycombed silicious vein matter carrying a high percentage of the oxides of iron. In every instance there is some copper content in these croppings but the leached condition of the vein filling accounts for the fact that in most cases the copper is little more than a stain. In some cases, however, copper carbonates occur in their crystalline form on the surface of these veins and of a grade high enough to be commercial.

This group may be best dealt with by making three divisions, which divisions are made according to the principal veins and the economic value of the property, and are as follows:

- No. 1. Rider and Demorest.
 - No. 2. Smith Spring.
 - No. 3. Copper Bluff.
-

RIDER and DEMOREST.

On the extreme west end of the Hidden Treasure claim, there is a gulch which runs from north to south and seems to cut off the Rider and Demorest veins, as neither of these veins can be traced on the opposite side of this gulch. This leads to the belief held by some, that at this point a faulting has occurred which threw the Rider vein about 150 feet to the north and gave it a trend of about 25 degrees to the south of its original course.

As there is no development work on the property at this point other than surface tunnel workings, and no Geological surface evidence, this theory cannot be substantiated. For this reason, despite the similarity of the vein fillings, these veins will be considered separately.

(a) The Rider vein starts at the extreme west end of the Hidden Treasure claim and has a trend of E. 15 degrees S. It appears to be from 8 to 10 feet in width and can be traced by means of its croppings and by shallow shafts, across the entire length of the Hidden Treasure, the Jhu, the Rodeo, and part of the Iron Cap claim, going a distance of about a mile.

At many places on this vein, the croppings are composed almost entirely of iron oxides, in a honeycombed condition and carrying in every instance considerable copper in the form of carbonates.

After having traced the Rider vein across the entire length of the Hidden Treasure claim and finding it to continue with the same trend until it met the vein formerly called the Jhu vein, which maintains the same direction, the writer is convinced that the two veins are one and the same, and consequently considers it in its entirety as the Rider vein.

The development on the Rider vein consists of a tunnel known as the Rider tunnel, several small cuts on the Hidden Treasure claims, three shallow shafts, a tunnel and winze on the Jhu claim, a tunnel on the Rodeo and a tunnel on the Iron Cap. In addition to these there are several small assessment holes at various places along the vein.

The Rider tunnel is about 350 feet long and is driven at a point at the extreme west end of the Hidden Treasure claim. The vein at this point shows very little mineralization on the surface and is badly broken up by a series of faults or slips, which twist the vein out of its natural and original dip and trend. The tunnel shows considerable mineralization for its entire length and in one or two places the copper showing is excellent. At about 200 feet from the portal, there is either a contact of the Rider with a cross vein, or a split occurs in the Rider vein, forming an angle of about 70 degrees. This cannot be definitely determined until more development work has been done.

A winze has been started at this point and sunk on an incline for about 10 feet. This winze is on the wrong side of the tunnel and to be of any value should be located on the southside and about 50 feet nearer the portal, so as to cut the intersection of these veins on the

dip at depth. Considerable ore occurs in this winze for its entire depth.

At this point in the tunnel the contact or slip measures 19 feet across and a cross-cut was started, which shows mineralization for 21 feet to the south and for thirty feet to the north. The north cross-cut leaves the vein at 49 feet, but the vein can be struck by drifting further to the west.

The tunnel continues for 150 feet further into the hill and the fact shows evidences of iron and copper. The greatest depth gained does not exceed 150 feet.

ASSAYS FROM SAMPLES TAKEN IN RIDER TUNNEL

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
1.- 4 feet of ore, 4 feet below tunnel level in winze	2.1%	1.2 oz.	Trace
2.- 4 feet of ore, 7 feet below tunnel level in winze.	2.8%	1.3 oz.	Trace
3.- 3 feet of ore, hanging wall side of winze	1.2%	1.0 oz.	Trace
4.- Specimens from side of winze	1.1%	.9 oz.	Trace
5.- Specimens from bottom winze	1.8%	.9 oz.	Trace
6.- 3 feet of ore, top of face of tunnel	.4%	.8 oz.	Trace
7.- Granite in bottom of face of tunnel	1.1%	.7 oz.	Trace
8.- 4 feet of ore, top of tunnel, 14 feet from face.	.9%	.8 oz.	Trace
9.- Side of tunnel, 24 feet from face	1.1%	.9 oz.	Trace
10.- Side and top of tunnel, 34 feet from face.	1.2%	1.0 oz.	Trace
11.- Top of tunnel, 44 feet from face	.8%	1.0 oz.	Trace
12.- Streak in foot wall, 65 feet from face	14.5%	1.8 oz.	Trace
13.- Bunch of ore in foot-wall 75 feet from face	.7%	.8 oz.	Trace
14.- 18 inches ore in foot-wall 85 feet from face.	1.3%	.7 oz.	Trace
15.- Bunch ore in foot-wall opposite crosscut	9.3%	1.2 oz.	Trace
16.- Azurite in foot-wall 95 feet from face	.7%	.6 oz.	Trace
17.- Side of tunnel, 110 feet from portal	.6%	1.4 oz.	Trace

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
18.- Specimen at winze	3.1%	1.7 oz.	Trace
19.- South cross-cut, 2 feet of ore	.8%	1.0 oz.	Trace
20.- Mouth south cross-cut sides and top	1.1%	1.1 Oz.	Trace
21.- 2 feet ore, top of mouth, south cross-cut	.6%	.9 oz.	Trace
22.- West side, south crosscut, 4 feet from face	1.3%	1.5 oz.	Trace
23.- Ore at contact of two veins	1.2%	1.0 oz.	Trace
24.- 7 feet of ore, north cross-cut, over winze	1.5%	.9 oz.	Trace
25.- 6 feet ore, 10 feet from winze, north crosscut	2.1%	1.6 oz.	Trace
26.- 3 feet ore, tunnel, 25 feet from winze	.9%	.8 oz.	Trace
27.- 4 feet ore, tunnel, 100 feet from portal	.3%	.9 oz.	Trace
28.- Specimens of ore from tunnel	5.8%	1.4 oz.	Trace
29.- Speciments from Rider dump	5.3%	2.2 oz.	Trace

A small incline shaft has been started 600 feet from the portal of the Rider tunnel, which shows the vein to be about 5 feet wide at this point, and to be thoroughly mineralized throughout. The copper content here is particularly good, considering the extremely leached condition of the vein matter. The vein appears to be in place at this point, with no evidence of faulting.

A S S A Y S

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
1.- 4 feet of ore, bottom 10 foot shaft.	.9%	1.4 oz.	Trace
2.- Sample of ore on dump	1.8%	2.1 6z.	Trace

One hundred feet further eastward on the vein, small open cuts disclose copper ore assaying as follows:

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
Gossen, showing carbonates	16.1%	1.8 oz.	Trace

Two hundred feet further, there is a large iron blow-out with the vein fully 10 feet wide at this point.

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
Speciments from open-cut	1.6%	.9 oz.	Trace

At the extreme east end of the Hidden Treasure claim, and on the Rider vein, a shallow shaft has been sunk, which shows the same character of vein matter, and the same copper content:

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
1.- Specimens from ore pile	7.5%	.7 oz.	Trace

On the Jhu claim and on the Rider vein, a tunnel has been run to cut the vein, and a winze sunk on the vein. The cropping on this claim shows a high state of mineralization, and the copper value is especially good. Good ore is found in the winze, and this winze proves the vein to be increasing in width. Samples taken at this point show the following values:

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
1.- Mixed ore from dump	17.8%	1.6 oz.	Trace
2.- Carbonates from dump	17.9%	1.9 oz.	Trace
3.- Sulfides from dump	16.7%	2.1 oz.	Trace

On the saddle of the hill near the west end of the Jhu claim, a shallow shaft has been sunk on the Rider vein, and the mineral showing here is good. Values in sample are as follows;

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
1.- Sample from dump	20.8%	1.8 oz.	Trace

The Rider vein continues thru the Rodeo and Iron Gap claims, and several openings have been made on the vein on these claims. All these openings show iron and copper, but not in as large quantities as further west on the vein.

(b) The Demorest vein seems to start at the extreme east end of the Copper Queen claim, and can be traced by surface croppings about three-fourths of a mile toward the west. It runs a little more to the south than the Rider vein and appears on the Copper Queen claim to be larger. A tunnel has been started to cut the Demorest vein at a depth of about 150 feet but has not been run far enough to reach the vein. Several shallow shafts have been sunk and each of these shows good vein filling and strong copper values. Sample assays as follows:

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
1.- Average of ore from Demorest vein	13.3%	1.1 oz.	Trace

OPINION OF RIDER AND DEMOREST

It is the writer's opinion that the Rider and Demorest veins are worthy of development and that properly conducted work will prove commercial quantities of good grade copper ore in the form of chalcopyrite, with an excess of sulfur in the form of pyrite.

This opinion is based upon the persistency of the veins, their thorough mineralization at every point; that they either crop or are opened up; the extreme leached condition of the gooson and the presence of copper sulfide at the various points where any depth has been attained.

Development work on this vein should be in the shape of an incline shaft at some point along the vein on the Hidden Treasure claim. This point should be carefully selected with reference to the conditions of the surface and the vein. This incline shaft should be sunk to a depth of at least 400 feet, and I believe at this depth, the ore will be in sufficient quantities along the vein to warrant the sinking of a working shaft and the prosecution of thorough development.

A winze should be sunk on the south side of the Rider tunnel 50 feet in front of the contact. This winze should open up a good sized body of copper sulfide, running at least 4.0% at a depth not to exceed 150 feet. It should be sunk at least 75 feet to catch the contact and show the condition at that depth.

The tunnel on the Demorest should be continued to reach the Demorest vein and the condition of the vein when encountered will determine the future development work on this end of the property.

The development of the Jhu end of the Rider vein will be outlined under the Smith Spring section of this report.

* * * * *

The Smith Spring vein runs almost east and west and can be traced on the surface diagonally across the Standard and Badger claims. It is the largest on the property and the croppings show it to be from 50 to 60 feet in width on the surface.

The principal work done on the Smith Spring vein is on The Standard claim and consists of a tunnel driven to cut the vein, and a twenty-five (25) foot shaft on the vein. The vein has an apparent dip of about 70 degrees to the south. Its appearance on the surface is good, con-

sisting of a honeycombed iron bearing quartz. The so-called Iron Hat is strong, and in places, the iron is leached to a remarkable extent. All along the vein copper as a carbonate is found in good quantities and appears to have been subjected to great leaching.

The tunnel which has been driven at the spring on the Standard claim shows good copper values for over 40 feet along both walls and roof, and the fact is still in copper bearing vein matter, showing the vein to be of good size. This tunnel gives no great depth, the greatest gained being not over 30 feet, and except for crosscutting the vein, it is of no value.

The bottom of the 25 foot shaft on the Smith Spring vein is in quartzite, carrying disseminated values of copper and iron as sulfides. Assays from the Smith Spring vein are as follows:

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
1.- Disseminated ore from 25' shaft	1.0%	1.2 oz.	Trace
2.- Cropping of vein	.9%	1.3 oz.	Trace
3.- Specimens from dump	2.9%	1.8 oz.	Trace

OPINION ON SMITH SPRING

There is no question but that the Smith Spring vein should be developed to a depth of at least 400 feet. I do not believe that high grade ore can be looked for in this vein, but the thorough dissemination throughout the exposed vein matter leads to the belief that large bodies of a grade of from three to four percent copper can be developed. This ore should be of a concentrating character and probably can be concentrated six into one, giving a splendid smelting product.

A shaft sunk on the vein near the spring can be used to develop the east end of the Rider vein, as from the dip of the Rider vein, a crosscut from the bottom of a 400 foot shaft on the Smith Spring vein, will not exceed 500 feet in length to catch the Rider vein at a depth of 500 feet.

There is little or no chance for secondary enrichment on the Smith Spring vein, as the leached zone is too shallow to permit of much enrichment to the sulfides below.

The size and character of this vein, the thorough dissemination of values, and the probability that primary ores will be reached near the surface, leads me to believe that a small amount of development work will prove the value of this vein as a commercial producer.

— COPPER BLUFF —

Under the Copper Bluff vein, the extreme eastern end of the Manhattan property must be considered.

The greatest amount of work done at any one place on the Manhattan property is the Smith tunnel. This tunnel has been run into the hill for over 11,00 feet and with the exception of a few bunches of ore, discloses no mineral. To the northeast of the Smith tunnel on the surface, there are two small shafts on a vein, which show good iron values and some copper, but the Smith tunnel has never reached this vein and is apparently too far to the northwest. This tunnel should be disregarded in considering the value of the property. Assays from the Smith tunnel are as follows:

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
1.- 100 feet in front of winze	.5%	.5 oz.	Trace
2.- 1 foot ore, 400 foot from portal	.6%	.6 oz.	Trace
3.- Specimens from dump	11.4%	1.3 oz.	Trace

On the extreme eastern end of the Copper King claim, a faulted and twisted congestion of vein matter shows on the surface, and a splendid showing of copper is present at this point. A good deal of work will have to be done at this point, if the trend of the vein and its mineral value is to be determined.

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
1.- Gossen from vein	3.5%	2.0 oz.	Trace
2.- Ore from dump	17.9%	2.7 oz.	Trace

The Copper Bluff claim shows a good strong vein running northeast and southwest and about 30 feet wide on the surface. A shaft has been sunk on this vein to a depth of about 40 feet and shows considerable copper at different points in its footwall side, the bottom being in leached ore. A tunnel has been run to connect with this shaft and gives about 65 feet of depth in its fact. This tunnel proves the vein to be over 30 feet in width and shows a highly leached condition of vein matter carrying some copper. Assays from the Copper Bluff vein are as follows:

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
1.- Sample ore on dump	25.9%	1.7 oz.	Trace
2.- From shaft, 10' below surface	20.3%	1.8 oz.	Trace
3.- Bottom of shaft	1.3%	1.3 oz.	Trace

OPINION

The vein on the Copper Bluff, with depth undoubtedly will show high grade copper deposits. The extremely leached condition of the vein for at least 60 feet of depth, and at that depth showing no hardening of the vein matter, would show that there is a splendid chance of encountering a large zone of secondary enrichment before the primary sulfides are reached. The surface ore on this claim is high grade and with depth, good sized ore bodies or extremely rich ore should be opened up.

This particular point presents a very attractive place for development work, which could be done at very little cost, as the vein matter is extremely soft and sinking could be done cheaply.

* * * * *

The claims of the Manhattan Development Company, taken as a group present a very good chance of producing, with judicious and careful development work, a good property, and there is every reason to believe that a paying mine can be developed.

The property certainly has a great deal of merit from an economic standpoint and as there is practically no development work done on the claims to date, they must be considered as prospects.

The few places where development work has been done with any evidences of a definite plan, in all cases tend to prove the value of the veins, and the presence of copper sulfides in commercial quantities at depth.

While visiting the property, the writer covered the ground as carefully as possible and took great pains to establish the continuity of the different veins mentioned. The Rider vein is certainly a strong one, well mineralized with iron and copper for at least 5000 feet in length, and should the Demorest prove to be the misplaced extension of the Rider, for twice that length; while the vein is not so large in width, the persistency of the porphyritic intrusions will undoubtedly cause it to contain good bodies of high grade copper ore.

Some work should be done on the Smith Spring vein and this is doubly important as the Jhu end of the Rider vein can be developed from a shaft located on the Smith Sprint vein, thus accomplishing a double object.

There is no question that good grade copper ore will be developed on the Copper Bluff, but as this vein cannot be traced far on the surface, the quantity is problematical.

Respectfully submitted,

(Signed) E. T. Stachell.

Globe, Arizona, April 15, '10.

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APPENDIX

While visiting the Manhattan Development Company's property several of the claims owned by Mr. Carl Rice and Mr. Thomas Fish, were visited, which claims adjoin the Manhattan group. I found that the formation of these claims was very similar to that of the Manhattan, and notably among their claims, consider the Mohawk and the Arizona to be particularly good prospects.

The Mohawk shows a good vein well mineralized and offers a good chance of developing copper bearing ore of commercial value.

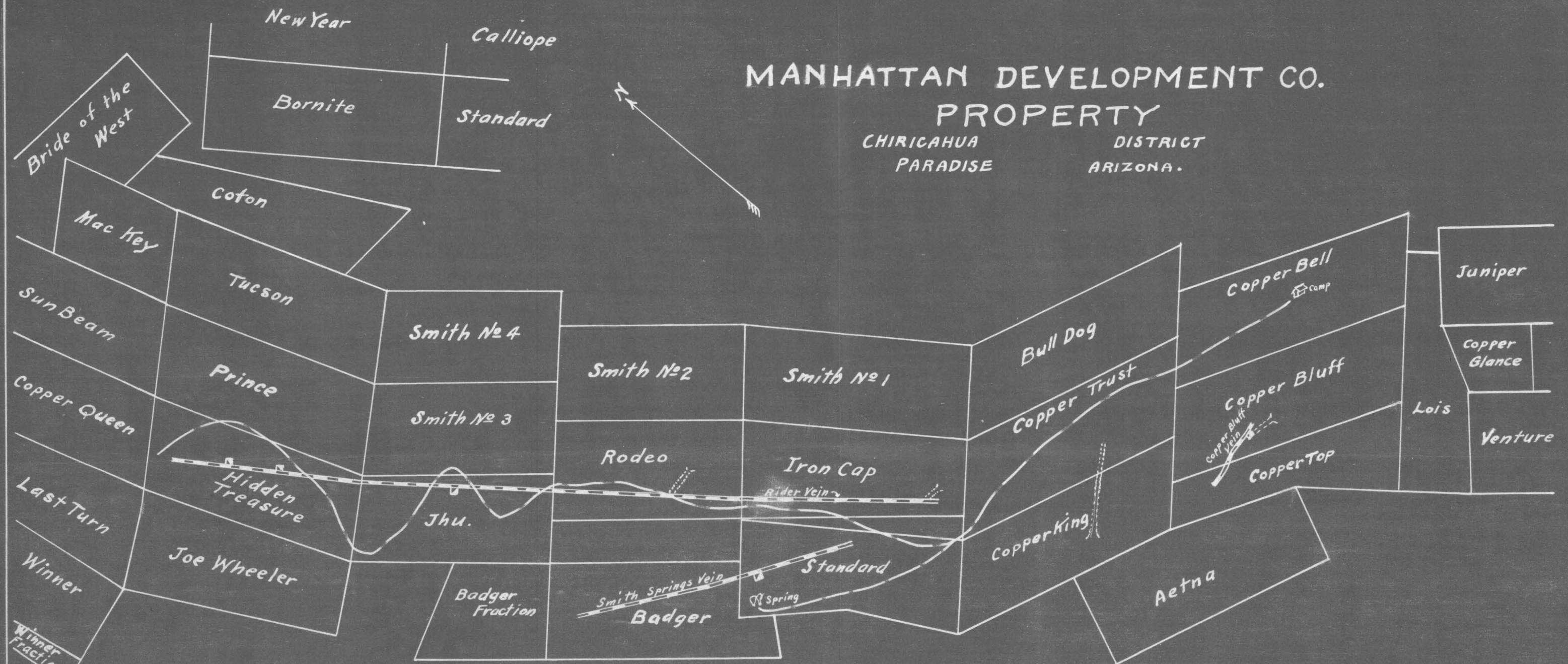
The Arizona claim has a well defined contact vein, having limestone as a hanging wall and altered granite as a footwall with a porphyry intrusion. This vein should be developed. Samples taken from these claims show the following results:

<u>Description</u>	<u>Copper</u>	<u>Silver</u>	<u>Gold</u>
1.- Shaft on Mohawk Claim	1.2%	.9 oz.	Trace
2.- Specimens from ore pile, shaft on Arizona Claim	15.6%	2.6 oz.	Trace
3.- Carbonates from 8' outcropping Arizona	5.9%	1.6 oz.	Trace
4.- Lead ore, Chiricahua Claim	.6%	31.2 oz.	Trace
		(Lead-----59.6%)	

MANHATTAN DEVELOPMENT CO. PROPERTY

CHIRICAHUA
PARADISE

DISTRICT
ARIZONA.



LEGEND:-

Vein ———
Trail ———
Shafts □

Manhattan
Cm