



CONTACT INFORMATION

Mining Records Curator
Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

The following file is part of the

Arizona Department of Mines and Mineral Resources Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

PRINTED: 08-29-2012

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: RAY SUPERIOR PROPERTY

ALTERNATE NAMES:

ARIZONA SUPERIOR

PINAL COUNTY MILS NUMBER: 141

LOCATION: TOWNSHIP 3 S RANGE 13 E SECTION 2 QUARTER N2
LATITUDE: N 33DEG 12MIN 18SEC LONGITUDE: W 110DEG 59MIN 24SEC
TOPO MAP NAME: HOT TAMALE PEAK - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

LEAD
SILVER
COPPER

BIBLIOGRAPHY:

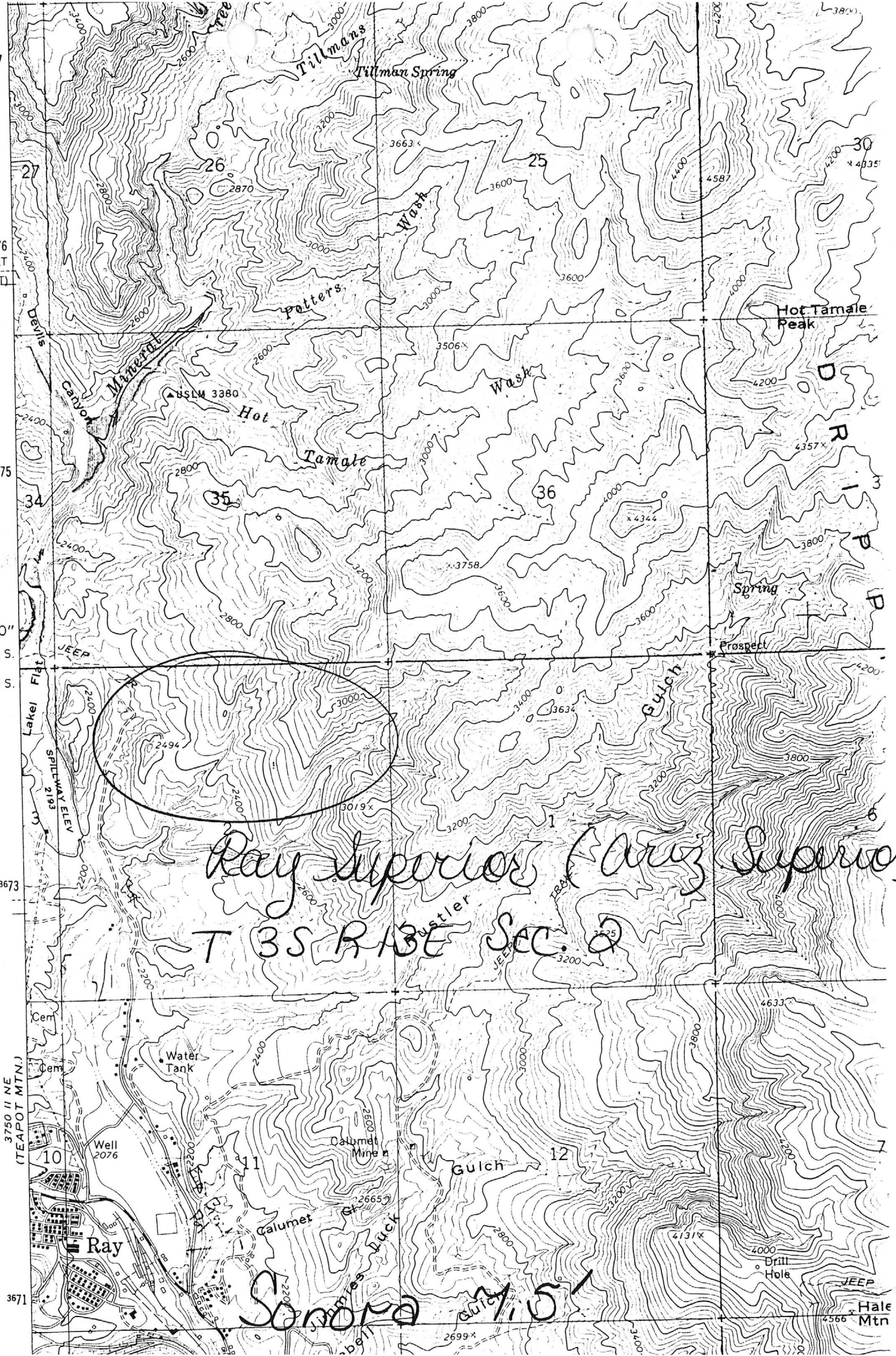
ADMMR RAY SUPERIOR PROPERTY FILE
ADMMR FILES-ADOT MAP 1949, P. 3

3677
3676
810 000 FEET
(EAST)

12'30"
T. 2 S.
T. 3 S.

3750 II NE
(TEAPOT MTN.)

3671



Ray Superior (Ariz Superior)
T 3S R 13E Sec. 2

Sonora 7.51

Mineral
Canyon

Potters

Wash

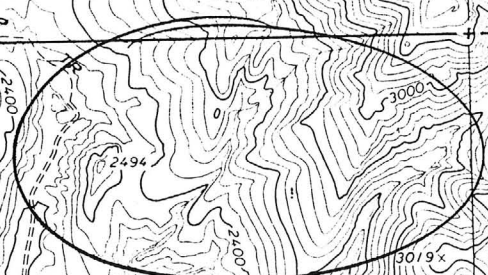
Hot
Tamale

Hot Tamale
Peak

Spring

Prospect

Lake Flat
SPLITWAY ELEV
2193



Cem

Cem

Water
Tank

Well
2076

Ray

Calumet
Mine

Gulch

Calumet

Gravel

Calumet
Lack

Drill
Hole

JEEP

Hale
Mtn

ARIZONA SUPERIOR MINE
(RAY SUPERIOR)

REFERENCES

PINAL COUNTY
MINERAL CREEK DIST.
T3S R13E Sec. 2

Pinal County MILS Index #141

AKA: Ray Superior Property

Adot Map 1949, p. 3

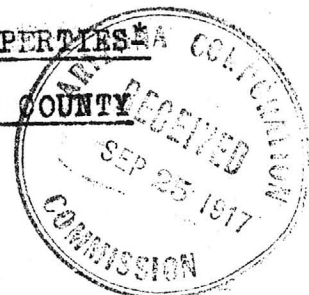
Sonora, AZ 7.5' Topo (included in file)

Exhibit B

REPORT ON THE RAY SUPERIOR COPPER COMPANY'S PROPERTIES

MINERAL CREEK - MINING DISTRICT - PINAL COUNTY

ARIZONA - By Wm. F. Gordon, M. E.



.....000.....

The property consists of 51 claims, lying in the Porphyry sedimentary contact district bordering on Mineral Creek. In close proximity is the Ray Consolidated Company, the Ray Hercules Company, the Ray Broken Hill Company and the Ray Silver Lead Company. The Ray Consolidated is exclusively in the porphyries, the others in both sedimentary and porphyry. The three last named properties have large tonnage of high grade ore, and are much more profitable with reasonable development and equipment.

I have lately given considerable time to the Ray Superior group, going into detail examination. It belongs in the sedimentary-porphyry, AND IT WILL MAKE ANOTHER LARGE PRODUCER OF THIS CLASS. The field work clearly points out the proper development lines. A massive diabase intrusion has divided the property into two well defined portions. This intrusion has a cross section of 600 to 800 feet, and its strike follows closely the main canyon which takes its head on the property. Going up the canyon from Mineral Creek, the limestones are exposed on the left hand side; they form a contact with the diabase intrusion. These limestones are also blockfaulted, the fault lines running off at various angles from the diabase contact. These block-faults are characterized by intrusive dykes, whose outcrops are highly mineralized.

Gordon. 2.

A tunnel has been started low down in the main gulch. The projection of this tunnel will enter the diabase-sedimentary contact, and will also open the way into the sedimentary block-faults. THERE IS LITTLE QUESTION ABOUT ORE BEING OPENED UP WITH THIS DEVELOPMENT. On the opposite side of the diabase intrusion on the right hand side of the gulch, the contact is with the quartzites. The block-faulting is similar to the limestone side, and the line of development will be similar. A development tunnel is now being driven - Lead Silver of high grade has already been encountered, and the ground is very promising for Lead-Silver and Copper. At the head of the main gulch the faulting in the sedimentaries has been very profound - so much that it has resulted in a reverse throw. This is the heaviest of the sedimentary faulting. Small development work has exposed Lead-Silver ore of good grade. An incline shaft will be sunk here following the ore pitch of the limestones. THIS GROUND SHOULD PRODUCE QUICKLY.

I advise development work to be continued at the three points mentioned, and I ANTICIPATE THAT ALL THREE WILL DEVELOP INTO COMMERCIAL MINES.

Yours truly,

(Signed) Wm. F. Gordon.

Ray, Arizona.
April 15th, 1917.

V 302

Report On

THE RAY SUPERIOR COPPER COMPANY.

Mineral Creek Mining District, Pinal County, Arizona.

The property is about one and one-half miles north of Ray, Arizona and one-half mile east of Mineral Creek.

The grade is gradually up hill from the railroad at Ray to the property. A wagon road may be built at a reasonable price. The transportation presents no great difficulties.

GEOLOGY.

The geological conditions correspond with all the other properties which lie in the sedimentaries which extend from Hayden to Superior. Resting on diabase or granite is a series of quartzite the maximum thickness of which reaches 1000 feet or more. Resting conformably upon the quartzite is a series of limestones of about 600 feet vertical measure. The lower 150 feet of the limestone, the portion lying immediately above the quartzite, is of Silurian or Devonian age. In this lower limestone the greater deposits of ore are found.

All the open, producing mines ^{present} present similar conditions, and as there are several in this same reef, it is reasonable to assume that the conditions will repeat themselves. In fact, many prospects which have followed the proven lines of the older mines are fast developing into valuable properties. A few of the open properties are Christmas, London Arizona, Ray Lead Company, Broken Hill Company, Grand Pacific, Magma Mining Company, all properties of high grade ore in volume.

The general conditions are as follows: Block faulting of the sedimentaries. Following the faulting there has pushed up through the fault planes porphyry dykes. These dykes have been the channels through which ascending ore solutions have reached the soluble and receptive limestones. The solutions were probably acid and leaching out the alkaline limestones have become neutral and deposited their burden of mineral in the leached cavities. The larger ore bodies all occur in irregular masses in the limestones, following the faults and dykes, and in the limestones just above the quartzite. Stringers of ore also occur along the dykes in the quartzite, but no occurrence of massive ore has as yet been discovered. At times the porphyry dykes are mineralized, especially with copper, as at the Magma Mine, Superior, Arizona.

I made examination of the property of the Ray Superior Company several months ago and was reasonably sure the ore conditions existed here. There was one point lacking and that was, did the limestones rest conformably on the quartzite or had they slid horizontal on their base and cut loose from their mineral dykes. I suggested development work, which has been lately finished and which shows conclusively that the limestones are resting properly. This gives the property all the conditions, i. e., the ore bearing limestone, the faulting and the dykes. Also, ore shows in outcrops, showing the conditions are proper.

RECOMMENDATIONS.

The property is worthy of development and money spent here will probably bring rich returns. It is impossible to state how large the ore bodies will be. Nothing but development will tell this, but all the conditions are here, including the ore showing.

A tunnel sight should be selected at a point as close to the quartzites as possible, in the limestones. The tunnel should also be so it will reach a fault quickly and cheaply. And this fault must be characterized by a porphyry dyke.

Wm F. Gordon

Ray, Jan. 12, 1917.

Report consists of 3 written pages and should be considered in its entirety.

SUMMARY AND CONCLUSIONS.

SUMMARY:

- Location - Ray Mining District, Pinal County, Arizona.
- Area - 64 surveyed claims, approximating 1,280 acres of mineral bearing lands.
- Development - Little outside of location and prospecting work.
- Geology - Located in an area of sedimentary rocks and intrusive porphyries, diabase, etc., all considerably faulted and fractured, with the probability of ore being encountered and developed at fault junctures, along fault fissures and on the contact planes of the limestone and quartzites.
- District - One of intense mineralization and scene of operations of the Ray Consolidated Copper Company, the Ray Hercules Company, the Ray Lead Development Company, Broken Hill, and many others.
- Working Facilities- Excellent. Located less than two miles from Ray and the Ray & Gila Valley R. R. with a short haul to concentrator and smelter at Hayden, Arizona.

CONCLUSIONS:

The property of the Ray-Superior Copper Company appears to me to lack only systematic and proper development to bring it within the list of successfully producing mines of the Ray District. The geological conditions correspond with all other properties which lie in the sedimentary area extending from Hayden to Superior, and the surface indications here, as elsewhere in the same area, are such as to warrant the belief that success will be met with in its systematic and well-considered development. That work of development and exploration elsewhere herein referred to seems apparent in its advisability



and such is, accordingly, recommended.

Respectfully submitted,

W. E. FORBES,

Mining Engineer.

.....

REPORT ON THE PROPERTIES
OF
RAY SUPERIOR COPPER COMPANY.

GENERAL:

Location - The mining claims herein described and referred to are located in the Ray Mining District, Pinal County, State of Arizona, about one and one-half miles northeast of the town of Ray, the terminus of the Ray & Gila Valley Railroad North from Kelvin station on the Arizona Eastern R. R.

Area - The property of the Ray Superior Copper Company consists of sixty-four (64) lode mining claims, each 600 feet in width by 1,500 feet in length, comprising a total of approximately 1,280 acres of mineral rights embraced in a roughly rectangular figure, approximately 1,800 feet in width by 12,000 feet in length, its long axis following roughly the course of what is known as Copper Canon, in a direction southwest to northeast.

Altitude - The altitude of Ray, at the railroad station, is about 2,000 feet above sea level. Approaching the claims here under consideration, an ascent of about 500 feet is gained at the southwest end of the group, from which point, going up Copper Canon, a total ascent of substantially 2,500 feet, to a total altitude of approximately 4,500 feet above sea, is made on arrival at the northeast end of the group of claims.

Climate - The climate is that such as prevails throughout the semi-arid regions of southern and central Arizona. More or less rain is experienced in the summer months and light falls of snow are not uncommon in winter. The climate at all seasons is dry, bracing and extremely healthful, and permits of mine operations being carried on throughout the year without interruptions due to climatic conditions.

Water - Excepting for domestic purposes, no con-

Consolidated Copper Company's respective plants, are immediately available and two ever-running springs on the Ray Superior property will furnish ample water for all other purposes.

Power - The properties of the Company are fortunately so situated, within comparatively short distance of the power line, from Hayden, Arizona, of the Ray Consolidated Copper Company, as to insure the receipt of dependable electric power at reasonable rates.

Reduction - The concentrating of smelting plants of the Ray Consolidated Company, are located at Hayden, at the junction of the Ray & Gila Valley & Arizona Eastern Railroads, upwards of twenty miles distant from the town of Ray. All ores from the Ray district go to these plants, which furnish a nearby market for ores of milling and direct smelting grades, and do away with the necessity of local plants for their treatment.

Labor - In common with all the Arizona mining camps the great majority of miners and mine laborers in the Ray District are Mexicans. These form on the whole, a dependable supply of fairly competent mine workers and ample number.

GEOLOGY: The Ray ore district is notable as the scene of operations of the Ray Consolidated Copper Company. This great property consists of 2,143 acres of mining claims, within which area there have been developed as calculated to January 31st, 1916, ore reserves approximating 72,000,000 tons. The daily output of ore is large, running well into the thousands of tons of ore, averaging something over two per cent (2%) in copper content, placing the Ray Consolidated well to the fore as one of the great mines of the world.

The geology of the Ray Consolidated shows a flat ore body of large dimensions and extending for several thousand feet through the property. Weed describes this mineralized zone as consisting essentially of a highly metamorphosed iron-stained granite, much of the upper part of which has been leached of its copper values, this leached zone being succeeded by ore carrying copper sulphides greatly enriched by the secondary re-deposition of chalcocite, latter constituting the main ore value. A fault east of the ore body brings such body against quartzite and limestones, while the ore body is crossed and cut in places by diabase dikes.

The Ray Consolidated ore body is here described at more or less length for the purpose of distinguishing the difference in relations, both geological and mineralogical, between the classes of ore there found, and the nature of its occurrence, and that which with any reason can be anticipated in other sections of the immediate locality. It consists essentially of an elongated mass of iron stained granite, 150 to 400 feet in thickness, 1,000 to 3,000 ft. wide, and 9,000 feet long, impregnated with fine-grained copper minerals and composing what is known as a disseminated deposit. It is

bounded on the West by an unaltered schist and on the east by quartzite and limestone, sedimentary rocks, along a fault plane, roughly traversed today by Mineral Creek. An eastern projection of this same ore body beyond the east side line of the Ray Consolidated property, carries it a short distance into adjoining claims, property of the Ray Hercules Company, but in no other section of the district, so far as is now known or as is likely, is ore found under similar conditions, or of a nature related to that of the Ray Consolidated Company.

The Sedimentaries - As has been stated, immediately adjoining the Ray Consolidated ore body on the east and separated from it by a fault plane are quartzite and limestone. These rocks belong to the series of sedimentaries which compose the great rock mass of the region. They occur in beds frequently separated by intrusive porphyritic and diabase dikes, but are often found superimposed, one on the other, in close contact. These beds frequently show reverse dips, at times east and again west, as they have been influenced by intrusives, and immediately north, east and south of Ray are crossed and broken by intense faulting.

The major fault system, which includes the Mineral Creek, Adventure, Calumet and Major faults, strikes in a general north-south direction, and is readily traceable from the extreme southeasterly part of Ray Consolidated ground and northerly through Ray Hercules, Arizona Ray, Lakal and Ray Superior ground. The minor faults strike substantially east and west and are found from south of Ray Hercules ground north through and beyond Ray Superior ground. These two fault systems, occurring as they do in a region of sedimentary rocks and particularly of limestone, render conditions extraordinarily favorable for the passage of mineral-bearing solutions and the deposition of ores of various kinds in the bedding planes of the rocks and particularly along the contact planes of the limestone and quartzite. Illustrative of what has just been said, attention is here drawn to the Great Magma mine, in the Superior District North of Ray, and to the Ray Lead Development, Broken Hill, Seventy-Nine, Gila Canon Copper, London-Arizona, and other mines in the Ray District, in all of which ore bodies of more or less magnitude and of superior grade have been successfully developed under conditions as above referred to, or, as is frequently the case, at the junction of two fault fissures or along the fissures themselves.

Geology of Ray Superior Group - The foregoing descriptive outline of the sedimentary rocks and their structure applies with force to the geology of the Ray Superior group of claims.

Copper Canon heads at the northeasterly end of the group and runs approximately west, forming a juncture with Mineral Creek at the northwest corner of the property. Starting at this juncture and passing up the canon the four principal faults, and several minor fractures, of the North-south

systems, Mineral Creek, Adventure, Calumet and Major faults, are easily observed as cutting through the entire width of the property, 1,800 feet. The floor of the canon consists of an intrusive diabase. South of the diabase, and well up on the mountain side, dikes of porphyry and again quartzite alternate with narrower diabasic intrusions. Evidence of east-west faulting on this side of the canon is all but lacking. Displacement of the porphyritic dikes by the Calumet and Major faults is prominent.

On the north side of the canon the effects of both fault systems are seen at their best. Here the large diabase intrusion is flanked on its north side by a reddish, altered limestone, a rock recognized locally as one of, if not the most prominent ore bearing formation in the district. This in turn is flanked by alternating beds of white and other limestones, followed by porphyry, quartzite and diabase in turn. The rocks here have been greatly disturbed by faults of both systems and the likelihood of ore being developed in amount is pronounced.

DEVELOPMENT: The Ray Superior property is as yet purely in the prospective stage and the work of development now being undertaken should be progressed with as fast as possible, the indications being that it will result favorably.

ADIT TUNNEL, No. 1. This adit is being driven from the North side of the Canyon and has for its object the cutting at depth of a large body of iron porphyry, which at the surface is from 300 to 400 feet in width, showing copper minerals along fracture joints, and which at depth, promises to develop into large bodies of porphyritic ore. This tunnel will need to be driven approximately 600 feet to reach the porphyry dike, but it is not improbable that while being driven, it will intercept other bodies of Copper and lead bearing ores as its course will cut two or more fracture planes in the limestones before reaching the dike mentioned.

This adit will be the main ore output for the North side of the Canyon as cross cuts 1,000 feet each way would cut most of the main fault fissures on North side, Winzes could be sunk below that level and raises made to the surface where desirable.

ADIT TUNNEL, No. 2. This adit is being run south, from the south side of the canon, and has for its object the cutting at depth of a body of iron-stained porphyry which, at the surface, gives promise also of development into an important body of ore. Another adit tunnel should be started later from near the bottom of canyon that will cut the ore body approximately 450 feet below its outcrop, then drift both ways, on the ore, winzes could be put down from that level and raises made to the surface, making this adit tunnel the main ore output for the

A shaft should be sunk at a point further east, on the south side of the canon, where the porphyry referred to with Tunnel No. 2, cuts through a body of quartzite, striking practically north and south. The indications and geological conditions here are such as to warrant the belief that the work proposed would meet with important results.

A good wagon road could be built from the Railroad depot to the property connecting with the portals of the main workings for approximately \$3,000.

Generally speaking, the work of development undertaken now or later should have for its immediate object the proving of ore in commercial quantity in

- (1) the porphyritic dikes referred to above
and
- (2) along contact planes between quartzite and limestone, occurring as replacement deposits in the limestone itself and at the junctures of, and along the north-south and east-west fissures.



SUPERIOR-ARIZ #10

#11

#8

#9

#6

#7

#4

#5

#2

#3

S. A.

#1

SA #12

/3

14

15

940

500'

320

320

105

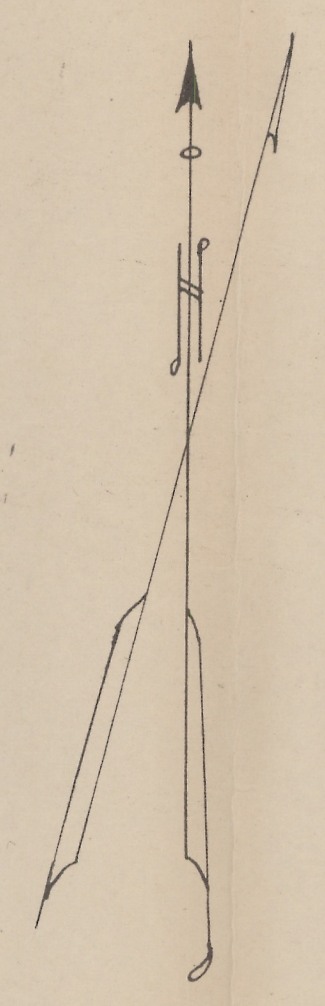
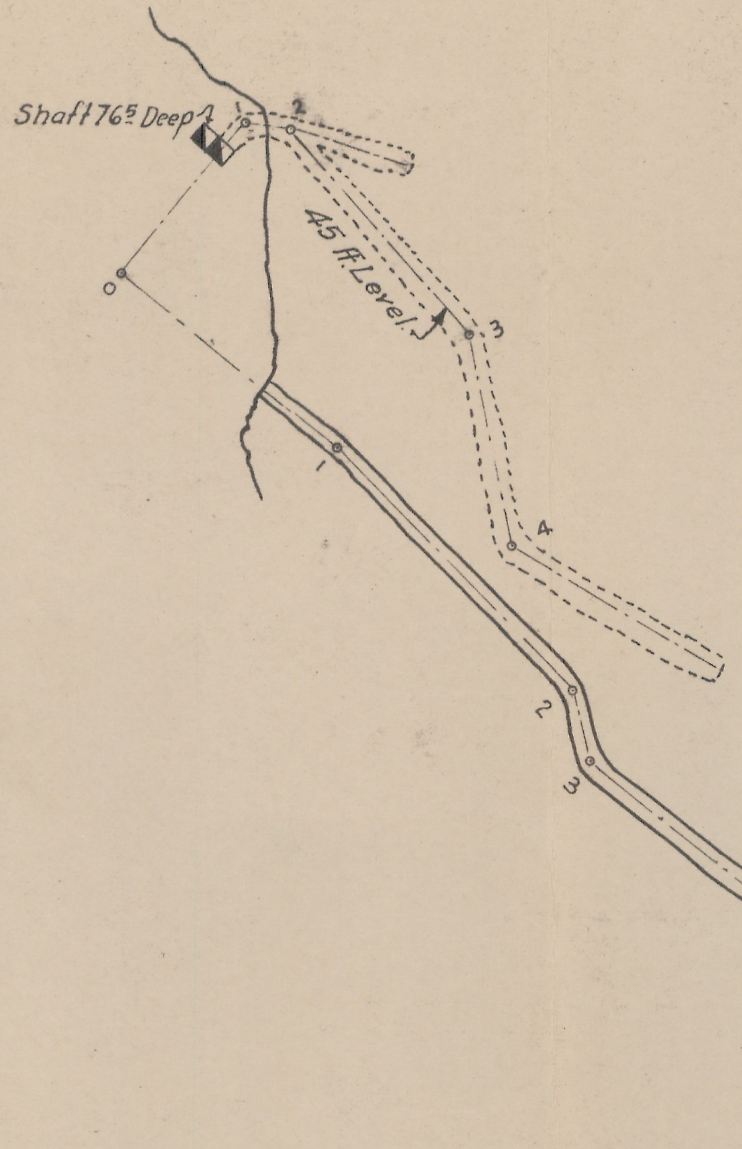
120

100

725 RISE
30/29
37/32

*Plotted
R. 8/18/70*

ARIZONA - SUPERIOR
MINING COMPANY
SUPERIOR, ARIZONA.



STATION FROM	TO	DISTANCE	BEARING MAGNETIC TRUE
0	1	57.65	S 67° E.
1	2	70.50	S 60° 11' 30" E.
2	3	14.77	S 31° 04' 30" E.
3	4	60.20	S 68° 03' E.
4	5	35.05	S 60° 42' E.
5	6	44.60	S 79° 51' E.
6	7	29.88	S 63° 31' E.
7	8	68.60	S 71° 51' E.
7	-	38.40	N 25° 14' E.
8	9	73.80	S 67° 28' E.
9	10	98.98	S 62° 34' E.
10	11	66.06	S 65° 42' E.
11	12	34.52	S 79° 22' 30" E.
12	12a	45.00	N 16° 53' W.
12a	-	28.00	N 1° 36' W.
12	13	58.95	S 55° 02' 30" E.
13	14	24.58	S 45° 59' 30" E.
14	15	140.30	S 72° 33' 30" E.
15	16	25.75	S 41° 21' 30" E.
16	17	26.40	S 64° 11' 30" E.
17	18	29.88	S 43° 56' E.
18	19	16.50	S 8° 54' E.
19	A1	24.62	N 38° 38' E.
A1	A2	112.25	N 10° 07' W.
A2	A3	79.88	N 25° 22' E.
A3	A4	73.25	N 16° 37' E.
A4	A4a	6.70	S 86° 53' E.
A4a	-	50.00	S 87° W.
A4a	-	115.70	N 6° 30' W.
A4	A5	27.84	N 86° 53' E.
A5	A6	28.98	N 74° 48' E.
A6	A7	85.55	N 78° 33' E.
A7	A8	52.64	S 26° 04' E.
A8	-	36.40	S 6° 31' W.
A7a	A7a1	38.30	N 40° E.
A7a1	-	115.00	East.
B1	B1	15.20	N 65° 53' 30" E.
B1	B2	129.78	N 1° 47' 30" E.
B2	B3	72.05	N 14° 08' 30" E.
B3	B4	45.95	N 24° 07' 30" E.
B4	B5	36.35	N 3° 15' W.
B5	B6	27.97	N 40° 25' W.
B6	-	20.00	N 1° 20' E.
45 F.	Total LEVEL	2282.78	f.
0	1	5.20	N 25° 16' E.
2	-	26.00	N 88° 18' E.
2	3	56.40	S 57° 17' E.
3	4	43.83	S 27° 20' E.
4	-	50.50	S 74° 31' E.
Grand	Total	2464.71	f.

UNDERGROUND SURVEY
OF
ARIZONA SUPERIOR MINE.

SCALE 1" = 40 FT.





STATION FROM	TO	DISTANCE	BEARING MAGNETIC TRUE
0	1	57.65	S 67° E.
1	2	70.50	S 60° 11' 30" E.
2	3	14.77	S 31° 04' 30" E.
3	4	60.20	S 68° 03' E.
4	5	35.05	S 60° 42' E.
5	6	44.60	S 79° 51' E.
6	7	29.88	S 63° 31' E.
7	8	68.60	S 71° 51' E.
7	-	38.40	N 25° 14' E.
8	9	73.80	S 67° 28' E.
9	10	98.98	S 62° 34' E.
10	11	66.06	S 65° 42' E.
11	12	34.52	S 79° 22' 30" E.
12a	12a1	45.00	N 16° 53' W.
12a1	-	28.00	N 1° 36' W.
12	13	58.95	S 55° 02' 30" E.
13	14	24.58	S 45° 59' 30" E.
14	15	140.30	S 72° 33' 30" E.
15	16	25.75	S 41° 21' 30" E.
16	17	26.40	S 64° 11' 30" E.
17	18	29.88	S 43° 56' E.
18	19	16.50	S 8° 54' E.
10	A1	24.62	N 38° 38' E.
A1	A2	112.25	N 10° 07' W.
A2	A3	79.88	N 25° 22' E.
A3	A4	73.25	N 16° 37' E.
A4	A4a	6.70	S 86° 53' E.
A4a	-	50.00	S 87° W.
A4a	-	115.70	N 6° 30' W.
A4	A5	27.84	N 86° 53' E.
A5	A6	28.98	N 74° 48' E.
A6	A7	85.55	N 78° 33' E.
A7	A8	52.64	S 26° 04' E.
A8	-	36.40	S 6° 31' W.
A7a	A7a1	38.30	N 40° E.
A7a1	-	115.00	East.
16	B1	15.20	N 65° 53' 30" E.
B1	B2	129.78	N 1° 47' 30" E.
B2	B3	72.05	N 14° 08' 30" E.
B3	B4	45.95	N 24° 07' 30" E.
B4	B5	36.35	N 3° 15' W.
B5	B6	27.97	N 40° 25' W.
B6	-	20.00	N 1° 20' E.
45 ft. LEVEL	Total	2282.78	f.
0	1	5.20	N 25° 16' E.
2	-	26.00	N 88° 18' E.
2	3	56.40	S 57° 17' E.
3	4	43.83	S 27° 20' E.
4	-	50.50	S 74° 31' E.
Grand	Total	2464.71	f.

UNDERGROUND SURVEY
OF
ARIZONA SUPERIOR MINE.

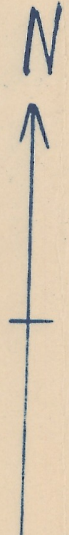
SCALE 1" = 40 FT.

Diabase
Quartzite
Limestone
Porphyry
Metamorphic Zone
Geol. from sketch loaned
by T.A. Ensign. 1927

On Dump
Zero of
Elev. & Dist.

Shaft.

No. Vein.



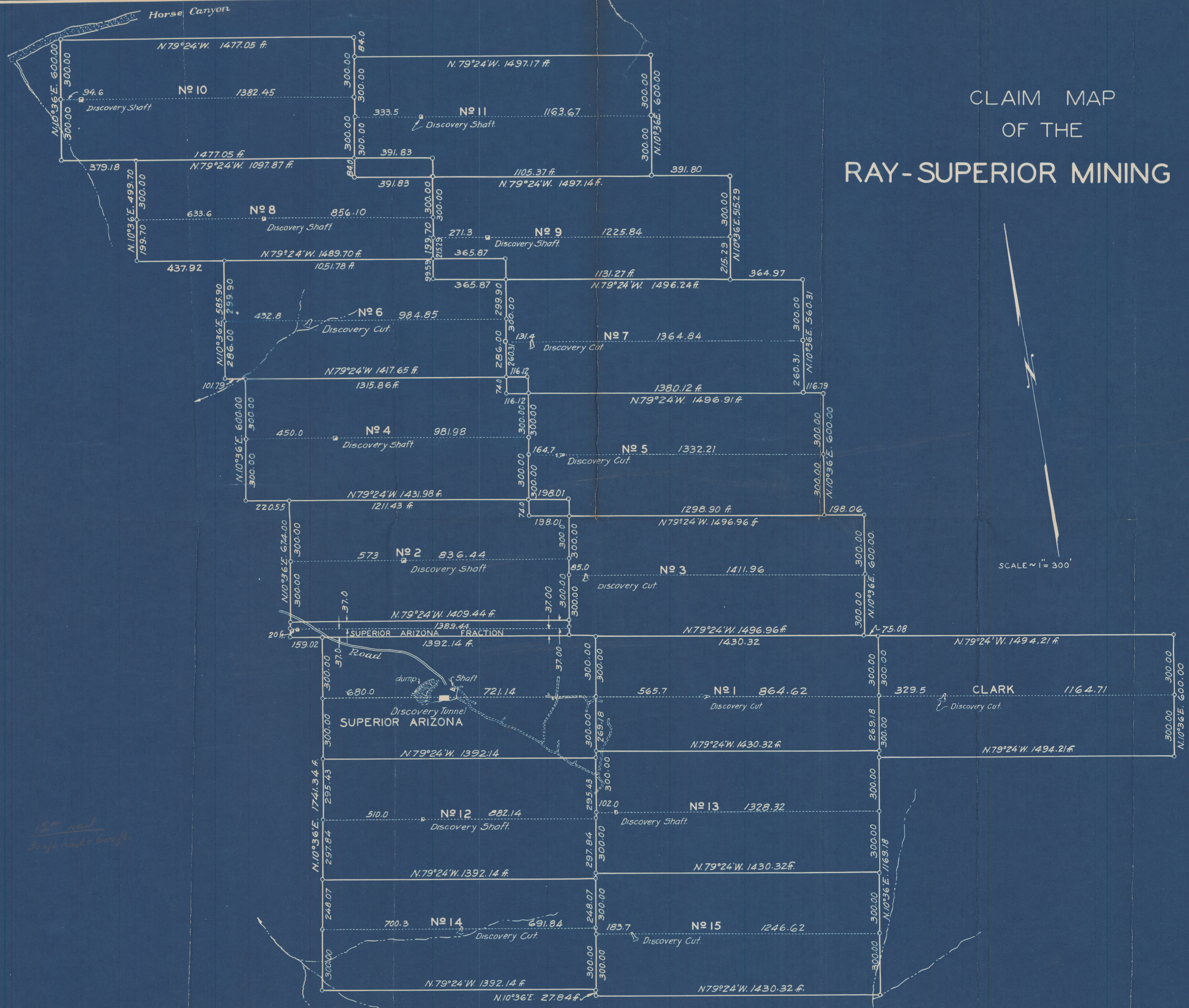
DEVELOPMENT
OF
ARIZONA-SUPERIOR MINING CO.

Scale 1" = 40'

January 1, 1926



CLAIM MAP OF THE RAY-SUPERIOR MINING CO.



SCALE ~ 1" = 300'

*See map
Superior - copy*