AN ORGANIZATION INTERESTED IN THE PROBLEMS OF THOSE WHO OPERATE SMALL MINING PROPERTIES IN ARIZONA

ARIZONA SMALL MINE OPERATORS ASSOCIATION

OFFICE OF STATE SECRETARY
CHARLES F. WILLIS
508 TITLE AND TRUST BLDG.
PHOENIX, ARIZONA

June 13, 1952

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WILLCOX
WINKELMAN
YARNELL
YUMA

Mr. Luke Walker,
798 Hope Avenue,
Santa Barbara, California.

Dear Mr. Walker:

I have a letter from Bill Broadgate in which he advises me that the Yuma Metals, Inc. application has been approved and that a contract is now being drawn up by the DMEA legal department.

This process generally takes about a week. Therefore, if Mr. White does not hear anything within 10 days, will you please let me know and I will have Mr. Broadgate follow it up.

Very sincerely yours,

Charles F. Willis

Charles F. Willis
State Secretary

CFW:VSW

The above letter received just as this booklet is going to press.
Luke Walker Secy

MINES IN SILVER DISTRICT
YUMA COUNTY

MILL ON COLORADO
HEAD OF MARTINEZ LAKE

Yuma Metals, Inc.

LLOYD C. WHITE, GEN. MGR.

D. L. McDANIEL, PRES.
OTTO MOTEJL, VICE PRES.
CHAIRMAN OF BOARD
LUKE WALKER
SECY. & TREAS.

YUMA, ARIZONA

To Our Stockholders:

This paper was prepared by order of your board of directors; for the purpose of better acquainting you with the properties, future plans, and etc..

We suggest that you retain this paper in your files, as from time to time you will receive additional information that will refer to the maps, cuts and information herein contained.

Respectfully Submitted
YUMA METALS, INC.

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Assay Map Red Cloud Mine. from of book.

RED CLOUD MINE PROPERTIES

One of the Early Important Mineral Discoveries in Arizona

The Red Cloud was primitively mined by "single jack" method in the 1870's and the ore was sorted and hi-graded underground. The selected ore was carried to the surface on human backs or drawn up to the surface in rawhide buckets, transported by burros to the Colorado River. On the return trip, the burros packed badly needed water.

The ore, on reaching the river, was carried by boats to the Gulf of California; finally transferred to ocean sailing vessels that conveyed the ore to Wales. Later, some ore was shipped by boat to Selby, California.

Practically no ore has been mined since 1889, but there has been a great deal of development work done. The work was done, both for the purpose of blocking out ore and for the search for a water supply that was essential for modern milling processes at the mine site, most of which has been done since 1924.

As above stated, very little ore has been taken since 1889, but the development work, consisting of deepening the mine from 270 feet to a 500 foot level and several drifts added, as shown on mine map. This work today would cost over $100,000.00. The greatest value of all was the development of a good water supply. Besides this, there is the 335 foot drift away from the vein to a diamond drill room which is essential to explore the vein to depth. During this development work, a large amount of good milling ore was raised to the surface and placed on the old dump that had been left by the early miners.

The Red Cloud Mine has practically all the ore left in it by the old-timers, and there are from 30,000 to 40,000 tons blocked out and a large amount mined and stored in the stopes. Seventy percent of the dump is still intact. Meager operations have taken the other thirty percent of dump ore in recent years. According to University or Arizona Bulletin No. 158, $1,587.00 in value was removed in 1934-37; $37,714.00 in 1941; $20,052.00 in 1947-49. These amounts were on a recovery of less than one-half of assay values and the price of lead was much lower than now.

In 1924, at the time development work was planned, the price of silver and lead was the second highest in history, before the development work was completed in 1925 the price of silver had dropped from $1.32 an ounce to 70 cents an ounce.

Due to the break in the silver market the operations were suspended and during the following eight year period to 1933, silver continued downward to 25.01 cents per ounce and lead to 2.747 cents per pound, the lowest price for both minerals in 85 years. The operators of the mine at the time were working under bond and lease agreement and were unable to meet lease obligations so were forced to return the property to the owners.

Another asset of the Red Cloud Mine, which is essential to economic modern milling, is that it has a fine mill site with plenty of elevation and large tailing space adjacent to the opening of the shaft.

OTHER PROPERTIES OWNED BY YUMA METALS INC.

THE DIVES MINE has high grade milling ore; is accessible and will easily develop into not only a large mine but a profitable mine.

THE RIHO MINES have both sulphide and oxidized ore, there being more galena in them than any other of the properties. While the veins are much narrower, running from 24 inches to four feet, the ore runs higher in value per ton.

THE NEW NORTH GERONIMO and NEW SOUTH GERONIMO and NEW HAMBURG Mines have less development work, but from the assays and wide width of the veins could easily be mines of some consequence.

The other claims have outcropping assays showing they all carry values that might well develop into several good mines. However, they need more exploration work to prove their real value.

The district is accessible by fair dirt roads which have been developed in the past few years.

RECENT OWNERSHIP HISTORY

D. L. McDaniel, Otto Motejl and Luke Walker, under the name of RED CLOUD MILL and MINING COMPANY, purchased the Red Cloud Mine in 1949, and since have acquired the other properties. In November, 1951, all these properties were incorporated as YUMA METALS, Inc.

Lloyd C. White has been General Manager since late 1950. Mr. White was outstanding as a Consulting Mining Engineer, with offices in San Francisco, associated with Hershey and Berch, and his wide experience as a Consulting Mining Engineer on many prominent properties in Canada and Mexico, as well as the United States, and as General Manager for many years of the Bradley's Yellow Pine Mines and Mills at Stibnite, Idaho. Having Mr. White as General Manager assures us of competent engineering, mill designing and the best of management.

Mr. White has outlined a comprehensive program of further mine development and deep diamond drilling as well as an operating program.

For the past three years extensive metalurgical work, engineering and geological study have been carried on. Information and ore tests from the United States Bureau of Mines, the Arizona Bureau of Mines, Denver Equipment Company, Cyanide Corporation of America, Mr. L. C. Penhoel, Mr. A. L. Poarch, Mr. Edward Eisenhauser, Jr., and others in this field, have been very helpful. On account of laboratory work and many ore tests, the recovery has been nearly doubled. This, of course, more than doubles the net ore value as the mining and milling costs are the same no matter what the recovery.

FROM REPORT OF ROBERT MORGAN

Mining Engineer

SUBJECT: Silver District *September 18, 1940*

The History of the Silver District dates back to the early Seventies prior to the building of the railroad, when this section of Arizona was served by steamboats on the Colorado River. The higher grade ores near the surface were mined and hand sorted to give a product as high in Silver as possible as the miners were not paid for the lead or zinc in those days. These sorted ores were shipped by river boats down the Colorado River to the Gulf of California where they were re-shipped to San Francisco for treatment. A small experimental smelter was erected on the Red Cloud mill site on the river but proved unsuccessful due to lack of proper fuel and insufficient knowledge of smelter practice, and for some years the mines reverted back to the Shipping basis conducted almost entirely by Mexicans who mined the surface ores by crude methods, but made no attempts to develop the properties as a whole.

The building of the Southern Pacific Railroad and the Subsequent discontinuation of river transportation isolated the District and followed a few years later by the demonitization of Silver caused the District to lapse into inactivity which has been broken but sporadically in the intervening years. Ore sorting of past operations has produced surface dumps on the various properties of some thousands of tons which later sampling has proven to be milling grade.

The Geology of the Silver District has been designated by the United States Geological Survey and the Arizona Bureau of Mines as a Pre-Cambrian Basal Complex, consisting of Schist, Altered Granite, Andesite Tuffs and Breccias capped by flows of Andesite and Rhyolite Porphyry.

Shafts, open cuts and tunnels ranging from a few feet to around 60 to 100 feet in depth are scattered over the properties at various places and are almost invariably in live vein matter of substantial width, either of positive commercial values as they stand, or sufficiently enriched and so located geologically as to be attractively indicative of the probability of developing commercial milling ore in appreciable tonnages at reasonable cost.

RED CLOUD MINE

On the easterly side of the valley and with an approximately similar strike lies another range of steep hills flanked for some thousands of feet by a very strongly out cropping vein system known locally as the Dives Princess Vein, productive of moderate quantities of high grade ore on the surface at different locations in former days, but as yet undeveloped. The two vein systems differ in their characteristics, the Red Cloud dipping 45 degrees to the east, while the Dives dips 55 degrees to the west in the northern portion and to the east in the southern sections. Minor hills and a pronounced flow of rhyolitic and andisitic tuffs occupy much of the basin separating the two ranges of hills, the tuffs forming the hanging wall of the Red Cloud vein, the foot wall being the hills of granitic material against which it rests.

Granites, rhyolites, tuffs, schists, and dikes of the older porphyries are the most noticeable feature of the vicinity geologically. Gross fractures extending into the footwall are occasi-

onally noticeable at the Red Cloud, with an attendant widening of the vein to a thickness of 35 to 50 feet. Nodules of granite enclosed in the ore, which is deposited in a distinct banded formation, point to the probable replacement of the foot wall and the possible passing of several periods of fracturing and fissuring with attendant mineralization.

The Red Cloud ore shoot so far as developed to the present time covers a strike of between 300 and 400 feet on the vein where it out-cropped to heighth of some 30 to 50 feet above the surface in the northern end of the claim. This out-crop for a width of 20 to 30 feet and a length in excess of 300 feet was shot down, sorted and the higher grades shipped. In the open pit there is additional ore on the foot wall to a distance of several feet, explored but slightly and of undetermined extent and value.

From the bottom of this open cut, inclined shafts were sunk in the ore on the hanging wall, some thousands of tons of which were mined out on an average thickness of four feet, occasionally twice that, over a strike of about 300 feet. There remains in this hanging wall section probably one half to two thirds of the original pay streak, and several thousand tons of broken ore backfilled into stopes and raises from underground sorting. Whatever ores of milling values may have existed between this particular streak and the footwall remain in their entirety.

When the presence of values to the depth of about 300 feet on the incline had been established, a vertical shaft was sunk to cut the vein at this depth, which became the main level of the mine. Drifts were run 160 feet south from the bottom of this shaft and 270 feet north, the latter reaching approximately the north end line of the claim.

From this level an inclined shaft in line with the vertical shaft was sunk an additional 240 feet in an effort to penetrate the sulphides, water was encountered at a total depth of about 540 feet on the incline. From this lower shaft but little actual mining was done, as the upper level ores apparently had not been depleted beyond the point of profitable sorting up to the time when conditions previously described led to the general shutting down of the District. Such ores as were extracted below the main level in the stopes to the north of the shaft were evidently of excellent grade.

Opening of the ores other than shown in the sample map is confined to a few short cross cuts toward the foot wall in various parts of the workings, insufficient to be of conclusive value, and the drifts just above water level, approximately 150 – 175 feet each way from the shaft, driven under Mr. Boerickes's tenancy of the property. Cross cuts show the ore body at this depth to be over 35 feet in width with the true foot wall not yet reached, in the writer's opinion. Owing to the present lack of ventilation at this depth, these water level drifts and cross cuts are not yet systematically sampled by the writer but appear persistently in ore, some of which at least is of excellent grade.

The Red Cloud property has been thoroughly sampled by Mr. B. W. W. McDougal E. M. and by Burch Hershey and White. I also check sampled the mine myself several years ago and estimated that there is left in the hanging wall section some 32,000 tons of ore having a metal content of 6% lead, 10 ounces silver and ½% Molybdenum. Past mining and sorting operations have produced material tonnages of dumps which are scattered over considerable area and are very difficult to measure, but have been estimated by different engineers at from 12,000 to 30,000 tons. Sampling of these dumps indicate a mineral content of 4.5% lead and 8 oz. silver and ½% Molybdenum.

The Red Cloud shaft having a total depth of 340 feet on the incline is the deepest working the District and the only one to reach water, this water supply was estimated by Mr. Hershey, consulting Geologist for the Primes Chemical Co. at from 75 to 100 gallons a minute. If this is correct it is a valuable asset as it would be sufficient water for a 125 ton mill.

The Geronimo Group consists of 6 claims and is a continuation of the Red Cloud Vein. Such work as has been done on this group is confined to the extreme north end on the Geronimo claims. The Geronimo is located on a cross fracture which strikes off of the main vein North 60 degrees West. Here a massive out crop of iron stained quartz calcite vein material ranging in width from 30 to 100 feet cuts through the mountain and crops on the surface for a distance of 1,200 feet. On the south end of this out crop is an inclined shaft 125 feet deep, no drifting has been done from this shaft. Other work consists of cross cut tunnels, open cuts and shallow pits. Such samples as I have taken from these openings while spaced at too irregular intervals to be conclusive as to the average grade of the ore does indicate the probable existence of an enormous tonnage of low grade ore.

This ore deposit should be drilled and thoroughly sampled, for if it or any considerable part of it should prove to be of commercial grade, it could be mined cheaply by open pit methods to considerable depth without stripping. About 600 feet north of this deposit on the North Geronimo claim is another out crop with a length of several hundred feet and a surface width of 20 to 80 feet. The only work to date on this claim is an incline shaft sunk in the hanging wall of the vein on the south end of the ore shoot 85 feet deep with a short drift each way from the shaft at the bottom. The general character and mineral content of the ore exposed is about the same as the Red Cloud.

The Dives Group consists of 15 claims which completely cover the outcrop of the central vein system from end to end, a distance of about 18,000 feet. The property is traversed by a strong highly mineralized vein 10 to 50 feet in width. In the center of this group on the Dives claim there is exposed in the surface a showing of ore that appears worthy of further development. There is a shaft 40 feet deep and a drift north about 45 feet, all in ore of excellent grade, also a vertical working shaft at a lower elevation has been sunk 100 feet. From the bottom of this shaft a cross cut has been started which when completed should cut this ore shoot 180 feet below the out crop. According to my calculations this cross cut has about 30 feet to go to reach its objective. This property is favorably located to the more developed portions of the District, being about three fourths mile from the Red Cloud and should be sampled by drilling. It is my belief that this would add material tonnages of commercial ore to the known reserves at moderate cost.

The Mandarin Chloride Group consists of 18 claims, occupies the extreme east side of the District is undeveloped and their chief value lies in the future. The veins are strong, well mineralized and of generous widths and form a valuable reserve for future development and subsequent large scale operations.

In summing up the future possibilities of the Silver District as a whole these points seem to stand out. There are two wide ore bodies about a mile apart which are partly developed, the Black Rock and Red Cloud. These have produced considerable amounts of high grade ore from streaks along their walls. There are three others available equally wide and conveniently located for development. In addition, within the District there are approximately 60,000 lineal feet of out croppings, which represent potential ore reserves for many years to come.

All of the development so far has been in the oxidized zone. All geologic evidence points to the fact that it is very probable that there will be a zone of secondary enrichment at or near water level, also primary sulphides below the secondary zone, this point is economically very important. Intelligent exploration by drilling and underground work is essential to determine the location, size, shape and mineral content of these ore bodies. The results of which will make it possible to plan the most economic scale of operations, as well as the particular mining methods most adaptable to the individual properties. Without the accurate data which will be yielded by the exploratory program it is difficult to predict the scale of operations or their probable results.

The ideal method of attack on a proposition of this magnitude by a large and well financed mining company would be to drill the entire District and block out a huge tonnage of ore, then start with a large plant, dependent in size on the results obtained. This would require an enormous investment as well as several years time. To my mind such method of operation is neither necessary or desirable, as this property is so situated as to lend itself admirably to a step by step plan of operation and development with a moderate investment and a minimum of risk.

At the time of my first visit into the Silver District in 1924, I was immediately and favorably impressed with the possibilities for successful development which I deemed to be strikingly evident. These impressions were largely offset from the view point of practicability of early operations by a study of the transportation situation, but I recommend to certain persons the gradual acquisition of selective portions of the District. With the construction by Yuma County of a bridge across the Gila River in 1920, removed what I considered to be the sole remaining barrier to the practicable and profitable development of the District. The data of various descriptions upon which the within statements are based has been the results of my own work and observations aided by consultation with such engineers as Mr. Walter G. Swart, Messrs. Burch, Hershey and White, Mr. Harlan H. Bradt, Mr. Thomas Baines, Jr., Mr. Edmond Newton and other engineers of recognized competence and ability who have from time to time made examinations of the different properties.

Original Report Signed
Robert Morgan
Mining Engineer

FROM REPORT OF ELGIN BRYCE HOLT

Consulting Mining Engineer

SUBJECT: Red Cloud Mine *January 20, 1942*

LOCATION:

The Red Cloud Mine is located in the Silver Mining District in Yuma County, Arizona, about 40 miles north of Yuma and four miles east of the Colorado River. It is reached by turning off the Yuma-Quartzite highway about six miles northeasterly from a suspension bridge across the Gila River, located around four miles westerly from Dome, a station on the Southern Pacific Railroad and then traveling 28 miles to property over a fair desert road, over which trucks can operate.

HISTORICAL:

The property was discovered in 1879. In 1881, it was purchased by the Red Cloud Mining Company, controlled by Knapp and Norton of New York. This company worked the mine profitably until 1892, when operations ceased due to the low price of silver. There is no accurate record of the production, but from the best authorities available the production of this property ran well over a million dollars.

During this early period, there was a town and Post Office adjacent to Red Cloud, known as Silent, said to have contained a population of two or three thousand people at its peak. Prior to the time when the Southern Pacific Railroad was completed through Yuma, during 1881 or 1882, communication between this area and the outside world was largely by means of steamboats, which plied up and down the Colorado River to points above Needles; and these steamers brought in all kinds of supplies and machinery needed by the miners and transported out ores which were shipped to either Swanson, Wales, or to Selby, California, for treatment at smelters located at those distant points.

GEOLOGY:

Here tuffs and lavas of Tertiary flows, floor a valley that is bordered on the east by andesite ridges and on the west by a sodic granite ridge which in turn is in contact with a high ridge of schist. The entire area of the Silver Mining District is traversed by a number of huge veins and veinlets from which silver-lead ores have been mined and shipped at a profit from superficial workings. It is believed that deeper and intelligently directed work will result in the uncovering of vast ore reserves, concerning which nothing at all is known at the present time. In the past, only outcropping ore shoots have been worked.

The Red Cloud vein is from 35 to 40 feet wide, and occurs between granite on the foot and andesite on the hanging wall. The high grade silver-lead ore was mined out years ago, at varying widths from four to twelve feet from the hanging wall vein. There are now 40,000 tons of ore blocked out in the mine, along said vein, from the surface down to the 430 foot level. Some 460 assays, shown on the mine map, show the ore to average around 10 ounces of silver per ton and six per cent lead and a showing of wulvenite and vanadinite; also zinc.

From Report of Elgin Bryce Holt con't.

FOOT WALL VEIN:

This vein is exposed on the surface, showing a goodly grade of milling ore and has an indicated width of from 8 to 12 feet. But this vein has never been prospected by cross-cutting anywhere in the various levels of the mine, except in two places and these cross-cuts did not reach the foot wall granite. The middle portion of the 40 foot vein is mainly calcite. Hence, if the foot wall vein extends to depths, a large tonnage of milling ore could be picked up easily by means of short cross-cuts at the various levels of the mine. By all means this work should be done.

OXIDIZED ORE:

All ore so far exposed in the mine to the 500 foot level, is oxidized material, with residual bunches of galena, carrying values in silver up to 400 ounces per ton.

SULPHIDE ORE:

Engineers and geologists who have examined this property, agree that below the water level in the mine extensive bodies of sulphide ore should exist, carrying excellent values in silver, lead and zinc. This is attested by the fact that the oxidized ore zone above water level shows extensive leaching action caused by the rise and fall of the water level in the mine through the ages. In this way, the lower portion of the oxidized ore zone was robbed of its values which migrated downward and no doubt deposited as enriched sulphides below the original water level, wherever that may be. Anyhow, it is my firm opinion and belief that deeper work on vein should result in uncovering sulphide ore of great importance, in which event both shipping as well as milling ores may be expected.

However, we must bear in mind the important fact that such ores as are now available for sampling are merely the second grade ores that were left in place by the old-timers because such ores could not then be mined profitably.

Red Cloud now has 40,000 tons of oxidized ore, of milling grade, now ready to be stoped in the old mine workings, as above set forth, with excellent possibilities that new ores will be found by extending some of the levels in the mine on vein each way from the shaft, or into areas that have never been explored at all. Also such work should result in the discovery of high grade shoots of ore of the same tenor as were formerly found and mined out.

The Red Cloud vein is traceable on the surface, at intervals, in a northwesterly direction, from the Red Cloud workings, for a distance of approximately 10,500 feet; said vein transversing the following mining claims: Red Cloud, Gladys, M. J. B., New Black Eagle, New Cochise, New South Geronimo, New North Geronimo.

A fact of considerable importance at this time, when our country is in need of strategic metals is the presence of wulfenite (lead molybdate) and vandinite, which occur throughout the entire workings. They are found across the whole width of the vein and in the foot wall granite. Both of these metals can be recovered by ordinary ore dressing methods. As a matter of fact, Red Cloud ores contain four strategic metals: lead, zinc and the two just mentioned.

Original Report Signed
Elgin Bryce Holt

SUMMARY OF REPORT OF HERSEY & WHITE

Consulting Engineers

Crocker Building — *San Francisco*
October 27, 1938 — *BY: Oscar H. Hershey, Geologist.*

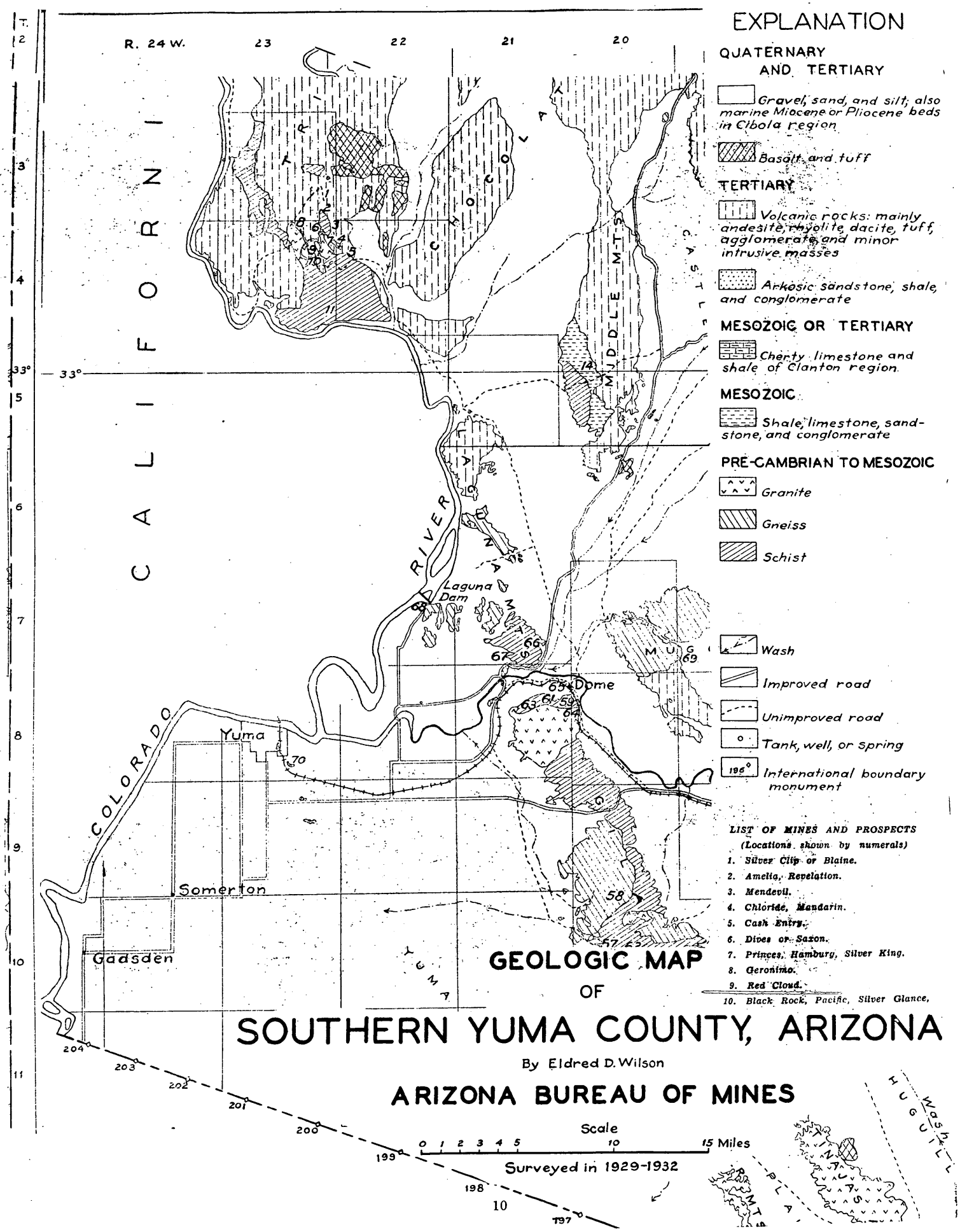
SUBJECT: Red Cloud Mine

From a study of the formation at the surface, I am of the opinion that the throw on the Red Cloud fault has been about 500 feet. The portion of the vein east of the fault immediately under the tuffs represents a higher portion than that in the mine workings. The predominant strike on the Red Cloud Fault gouge rake northward 65°. It is probable that the movement has been downward and northward. For this reason plenty of ground should be secured in a northward direction for the vein may extend much beyond the present workings on it.

Now, as I have analyzed the showing on the Red Cloud claim, it ought to be clear that what is in sight may be a very small part of the ore that the mine under further development may be made to produce. Certainly a lot of good ore has been cut off and dragged down by the Red Cloud fault. It is not beyond reach. It probably largely remains below the zone of oxidation and should be easily concentrated lead-silver ore. It should make high-grade concentrate. I took a specimen of galena for assay. It ran 75.4% lead and 237.3 ozs. silver per ton.

The vein is so strong where much of its width remains under the fault that it is likely that it runs a long distance under the Tertiary tuffs and may have many more shoots of ore than those in sight in the mine or may have continuous ore for hundreds of feet. Perhaps I am drawing too strongly on my imagination, but I can see a chance of developing one of the important lead-silver mines of the United States.

Original Report Signed
Oscar H. Hershey



GEOLOGIC MAP OF SOUTHERN YUMA COUNTY, ARIZONA

By Eldred D. Wilson

ARIZONA BUREAU OF MINES

Description of claims and mines are reprinted from Arizona Bureau of Mines Bulletin No. 134 and 158

GEOLOGY AND MINERAL DEPOSITS OF SOUTHERN YUMA COUNTY ARIZONA

By Eldred D. Wilson

STRUCTURE

In the Silver district, the lamination of the schists strikes generally northward and dips at various angles. The granite has been broken along several systems of joints, the major ones of which trend parallel to the ridges. The volcanic rocks generally strike north-northwest and dip at low angles.

Faults of considerable magnitude have affected all of the formations, and in places separate the volcanic rocks from the granite and schists. As indicated by Plate 5, the principal faults strike north-northwest, dip steeply, and are grouped into three roughly parallel zones. Thus, the ridge of pre-Cambrian and Tertiary rocks that separates the Dives from the Mendevil claim is a horst, and the lower, valley-like area of volcanic tuffs and flows that separates the Dives from the Red Cloud claim is a graben. Several systems of minor faults and fractures are present.

DIVES OR SAXON MINE

The Dives claim, formerly known as the Saxon and now held by the Neal Mining Company, is about 1½ miles northeast of the Red Cloud mine. This claim has produced one or two car loads of high-grade silver ore.

In this vicinity, a fault zone separates andesitic and rhyolitic lavas, breccias, and tuffs on the west from schist and granite on the east. The main fault, which strikes N. 20° W. and dips 60° SW., is joined near the center of the claim by a branch fault that strikes N. 10° W. These faults contain veins of similar character, but the main one is wider, longer, and more strongly mineralized. This vein, which is traceable southward for some 2,000 feet, is about ten feet wide in the vicinity of the intersecting vein, but narrows southward. It is a few feet from the schist and granite in tuff and breccia which show considerable chloritization and carbonatization. The vein consists mainly of limonite, hematite, pyrolusite, barite, manganiferous calcite, and finely crystalline quartz, together with minor amounts of gypsum. Crystalline to sandy cerussite and smithsonite, locally with yellow lead oxide, occur in vugs and irregular masses. The richer portion, which is some 300 feet long and from a few inches to 1½ feet wide, occurs near the hanging wall of the wider portions of the vein. It is

notably limonitic at the surface, and the mined portions of it were probably rich in silver chloride.

Workings on the Dives claim consist of an 86-foot vertical shaft with a 45-foot crosscut and several pits and short tunnels. The shaft and crosscut did not reach the main vein. All of the ore mined was from shallow surface cuts.

HAMBURG CLAIMS

The Hamburg claim, held by the Neal Mining Company, joins the Princess on the south. During 1880-81, it was held by Mr. Wm. P. Blake [91] and associates who sank a sixty-foot inclined shaft on the vein, but, so far as known, mined no ore from it.

The geology and ore occurrences on this claim are similar to those of the Princess, and the vein occurs within the same fault zone. At the surface, this vein consists of dark-gray, ferruginous calcite, up to about eight feet thick, containing irregular bunches of hematite and coarse-grained, vitreous quartz. The dump shows masses of hematite and limonite, with smaller bodies of crystalline cerussite partly altered to yellow lead oxide. Some red lead oxide occupies vugs. Blake [92] mentions also the occurrence of vanadinite and wulfenite in this vein.

On the Hamburg No. 2 claim, which joins the Hamburg on the south, the fault zone contains several baritic veins up to ten inches thick. Near the southern end of the claim, one of these veins is six feet wide. It is about 75 percent barite, and the remainder consists of calcite, a little limonite, and a few scattered crystals of wulfenite.

GERONIMO CLAIMS

The South Geronimo and North Geronimo claims, held by the Neal Mining Company, are about 1¼ miles northwest of the Red Cloud mine, west of the road to the Clip mine.

On the South Geronimo claim, bedded rhyolite tuffs and andesitic flows are faulted against granite, as indicated by Plate 5. Two veins, one a few feet and the other about fifty feet wide, occur within this fault zone which here strikes N. 27° W. and dips 65° NE. A tunnel on the wider vein shows it to contain abundant hematite, together with manganiferous calcite, flinty quartz, and irregular bunches of smithsonite, cerussite, yellow lead oxide, wulfenite, and vanadinite. A few hundred feet farther northwest, in the vicinity of a transverse fault, an old shaft, perhaps 100 feet deep, was sunk on the vein. Farther south, a tunnel and a winze in the granite showed comparatively little mineralization, except for manganese stain.

The North Geronimo claim is on rhyolite tuffs and andesitic flows, cut by a northward-trending fault zone that dips 35° E. An irregular vein, up to a few feet in maximum width, occurs

[92] Work cited, p. 25.

within this fault zone. Near the northern end of the claim, it has been prospected by an eighty-foot shaft with two short drifts on the 25-foot level. These workings show the vein to consist of hematite and limonite together with finely crystalline fluorite which is coated with vuggy manganiferous calcite and coarsely crystalline quartz. The vugs contain abundant crystals of wulfenite and vanadinite. A few streaks and bunches of galena, partly altered to anglesite, cerussite, and yellow oxide, occur near the footwall.

According to Mr. Robert Morgan,[93] the vein, as exposed by these workings, contains an average of six percent lead and eight ounces of silver per ton.

RED CLOUD MINE

Situation: The Red Cloud mine is in the northeastern portion of the Red Cloud claim, about a mile northwest of the Black Rock shaft.

History and production: This claim was one of the earliest locations in the district. According to Hamilton,[94] the early operators took more than $30,000 worth of silver ore from the croppings. Hamilton[95] also states that, prior to 1881, the mine was purchased by the Red Cloud Mining Company, of New York, which sank an incline following the dip of the vein for 274 feet and erected a twenty-ton furnace at the Colorado River. This smelter was operated intermittently for about three years, but without great success. In 1885, the claim was surveyed for patent for Messrs. Horton and Knapp. Later, it was acquired by Messrs. Hubbard and Bowers who, in 1889, shipped $32,850 worth of dry concentrates.

After 1899, the mine was practically idle until 1917 when the Red Cloud Consolidated Mines Company acquired it and installed a small dry-concentrator. This mill burned down before making more than a few test runs. Several years later, the E. R. Boericke Company obtained a short option on the claim, ran some drifts, sank several drill holes, and installed the present surface equipment, but attempted no production. In 1928, the Neal Mining Company acquired control of the Red Cloud and 45 other claims in the district.

Local geology: Here, the Tertiary tuffs and lavas floor a flat-bottomed valley that is bordered by ridges of lava, tuff, and sodic granite. The northwestward-trending channel of Red Cloud Wash dissects this area, and, some 1¼ miles farther downstream, cuts southwestward through the ridges toward the Colorado River. The Red Cloud mine is approximately 1,070 feet above sea level, and the granite ridge westward rises to a maximum of some 800 feet higher.

[93] Oral communication.
[94] Hamilton, P., Resources of Arizona, 1884 ed., p. 238.
[95] Hamilton, P., Resources of Arizona, 1881 ed., p. 73.

Although the principal lead production of the Silver and Eureka districts has come from the Red Cloud and Black Rock mines, lead mineralization occurs also in most of the other mines and prospects of the area, as described in Arizona Bureau of Mines Bulletin No. 134.[1]

Nonsulfide zinc appears to be more abundant than lead in some of the deposits.

RED CLOUD MINE

History and production: The Red Cloud claim was one of the earliest locations in the Silver district. According to Hamilton,[4] early operators took more than $30,000 worth of silver ore from the croppings. Hamilton[5] also states that prior to 1881 the mine was purchased by Red Cloud Mining Company, of New York, which sank an incline following the dip of the vein for 274 feet and erected a furnace of 20 tons daily capacity at the Colorado River. This plant was operated intermittently for about three years. In 1885 the claim was surveyed for patent for Horton and Knapp. Later it was acquired by Hubbard and Bowers who in 1889 shipped dry concentrates which yielded 300,000 pounds of lead and 22,500 ounces of silver, valued at $32,850.

As indicated in the table on page 88, most of the production from this mine was made during 1879-89, but the amount is not known.

In 1917 the Red Cloud Consolidated Mines Company acquired the property and installed a small dry concentrator. This mill burned down before making more than a few test runs.

During 1925-26, E. R. Boericke (Primos) Company ran exploration workings on the 500 level and diamond drilled at least two holes from that level, but attempted no production.

In 1928, Neal Mining Company acquired control of the Red Cloud, together with forty-five other claims in the district, and carried on extensive sampling.

For a few months during 1941, Penn Metals, Inc., operated a newly constructed flotation plant at the mine. It treated approximately 3,300 tons of dump material which yielded 27,786 ounces of silver, 315,000 pounds of lead, 9 ounces of gold, and 500 pounds of copper, in all valued at $38,088.[6]

During 1948, George Holmes and Walter Riley diamond drilled a hole from the 500 level.

In 1950 the Red Cloud and numerous other claims in the district were acquired by Red Cloud Mining and Milling Company.

Vein and workings: The Red Cloud mine is at an altitude of approximately 750 feet. Its vein occurs within a fault zone which here strikes about N. 15 degrees W. and dips 35 to 60 degrees E. Irregular shafts, drifts, and stopes have followed it for a length of some 560 feet and to a depth of approximately 535 feet on the incline, as shown by Figure 20. Most of the upper workings were run before 1885 by hand drilling; the ore was sorted and screened underground and dragged up inclines with rawhide buckets. Stopes were supported by pillars, dry-wall backfills, cottonwood timbers, and willow laggings which are still fairly intact. A more vertical shaft approximately 200 feet deep reached the vein at the

ward from this stope, for a length of about fifty feet, with a width of from four to six feet and a depth of from five to twenty feet.

A few hundred feet west of these workings, a similar vein occurs within a fracture zone that strikes northwest and dips 50° NE. It has been prospected by a short tunnel connecting with a shallow winze, and a surface stope that is up to thirty feet long, six or eight feet wide, and 35 feet deep. This vein is more extensively iron stained than the other vein.

REVELATION CLAIM

The Revelation No. 2 claim, held by Mr. H. L. Duty, of Yuma, joins the Amelia on the south.

Here, andesitic and trachytic lavas are separated from granite and schist on the west by a fault zone that strikes north-northwest and dips about 80° E. A vein, with a width of from twenty to forty feet, occupies this fault zone for a length of some 500 feet. It consists mainly of manganiferous calcite, barite, vuggy quartz, and brecciated wall rock, together with irregular masses of hematite and small, cellular bodies of cerussite and smithsonite. The vein walls show considerable chloritization.

Workings on this claim consist of a few shallow cuts.

MENDEVIL CLAIM

The Mendevil claim, 3,000 feet south-southeast from the Revelation No. 2 claim, was surveyed for patent in 1887 for Mr. S. S. Draper, but, so far as is known, has never produced any ore. It is now held by Messrs. W. D. Riley, A. B. Ming, and R. A. McPherson, of Yuma.

Here, as shown by Plate 5, a fault zone continues from the Revelation claims and separates lavas and tuffs from granite and schist on the west. Microscopic examination of the lava at this point shows it to be andesite and to consist of zoned phenocrysts of plagioclase, up to 0.15 inch in diameter, set in a dense, feldspathic groundmass. The fault zone, which strikes N. 10° W. and dips steeply northeast, contains veins, up to several feet wide, of manganiferous calcite, barite, and quartz. In places, the barite forms veins up to two feet wide. Certain vugs within the calcite contain cerussite and yellow lead oxide. The vein walls are somewhat chloritized.

This vein zone continues for some 1,600 feet south and 2,000 feet north of the Mendevil claim. Workings on it consist of a few shallow cuts. According to Mr. W. D. Riley,[89] certain portions of it contain five percent lead and fifteen ounces of silver per ton.

CHLORIDE, MANDARIN, AND CASH ENTRY CLAIMS

The Chloride, Mandarin, and Cash Entry claims, held in 1930 by the Neal Mining Company, are in the southeastern portion of

[89] Personal communication.

the area mapped on Plate 5. Considerable prospecting has been done on these claims, but, so far as known, no ore has been produced from them.

Plate 6.—Banded quartz-fluorite-barite vein in fault fissure on Chloride claims.

In this vicinity, trachytic to andesitic lavas, tuffs, and breccias and the underlying granite have been eroded into rugged, steep-sided ridges. These rocks have been extensively faulted and fractured. The major faults, as indicated by Plate 5, strike northward and northwestward, but many unmapped, minor faults strike in other directions. The principal jointing in the granite strikes S. 70° W. and dips steeply southeast.

On the Chloride No. 1 claim, the principal fault strikes N. 10° W., dips from 60° to 70° SW., and appears to have a throw of from 35 to 55 feet. It contains a vein (see Plate 6) that is from

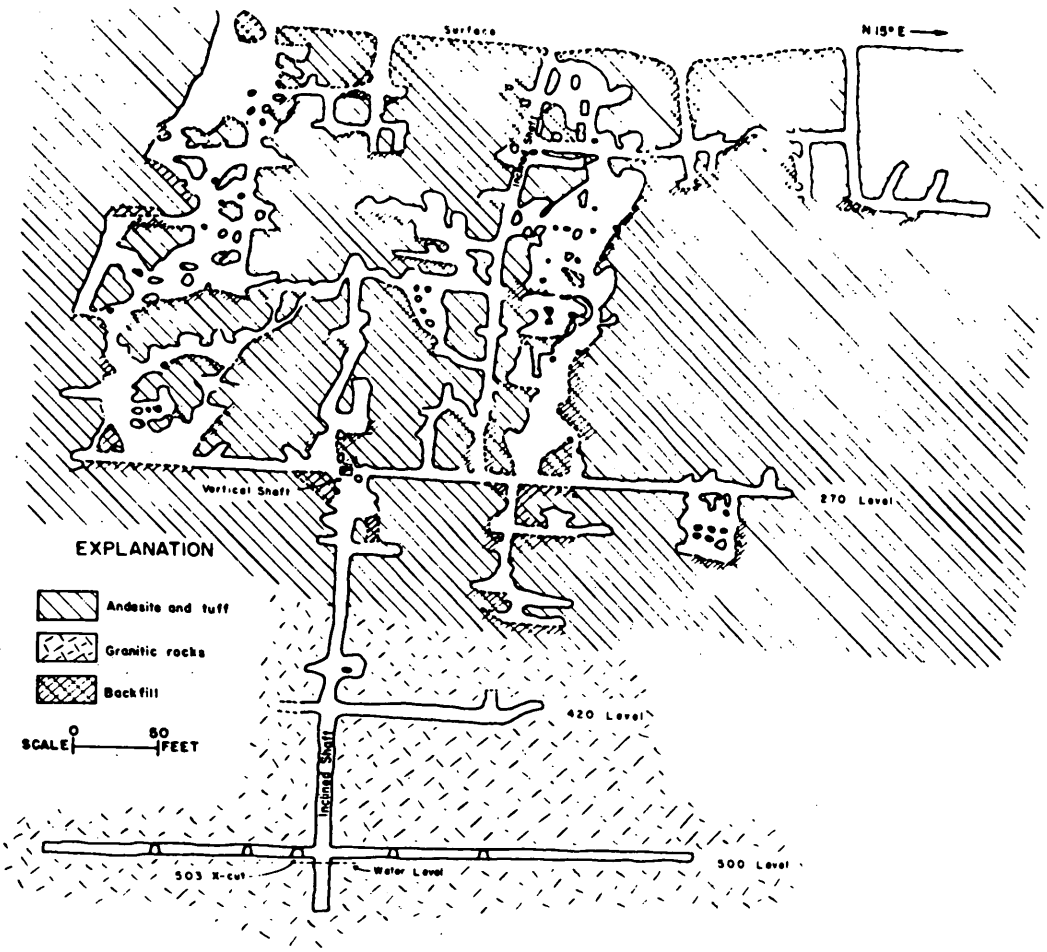


Figure 20.—Red Cloud mine, longitudinal section on vein, looking west. (Location of workings in part from map by B. McDougall, 1918.)

270 level of the incline. The 500 level, immediately above the present water table, is reported to have been run about 1925.

The vein is made up chiefly of limonite, hematite, quartz, fluorite, and calcite, together with considerable amounts of gouge and brecciated wall rocks, all more or less stained by pyrolusite. The quartz forms irregular, finely crystalline, vuggy masses which in places are cut by veinlets or coarser-grained quartz. Commonly the quartz is interbanded with gray to purple fluorite which ranges in texture from dense to crystals ⅛ inch in diameter. The calcite is mostly a coarsely crystalline, dark-gray manganiferous variety, but some later white calcite also occurs. The limonite and hematite, which occupy cavities and vugs within the other gangue minerals, are locally intermingled with irregular, cellular masses and vug-linings of cerussite, smithsonite, willemite, pyrolusite, vanadinite, wulfenite, and malachite. In places there are nodules of argentiferous galena, partly altered to black anglesite and pale-yellowish cerussite. Cerargyrite is present as small disseminated masses and streaks within the oxidized minerals.

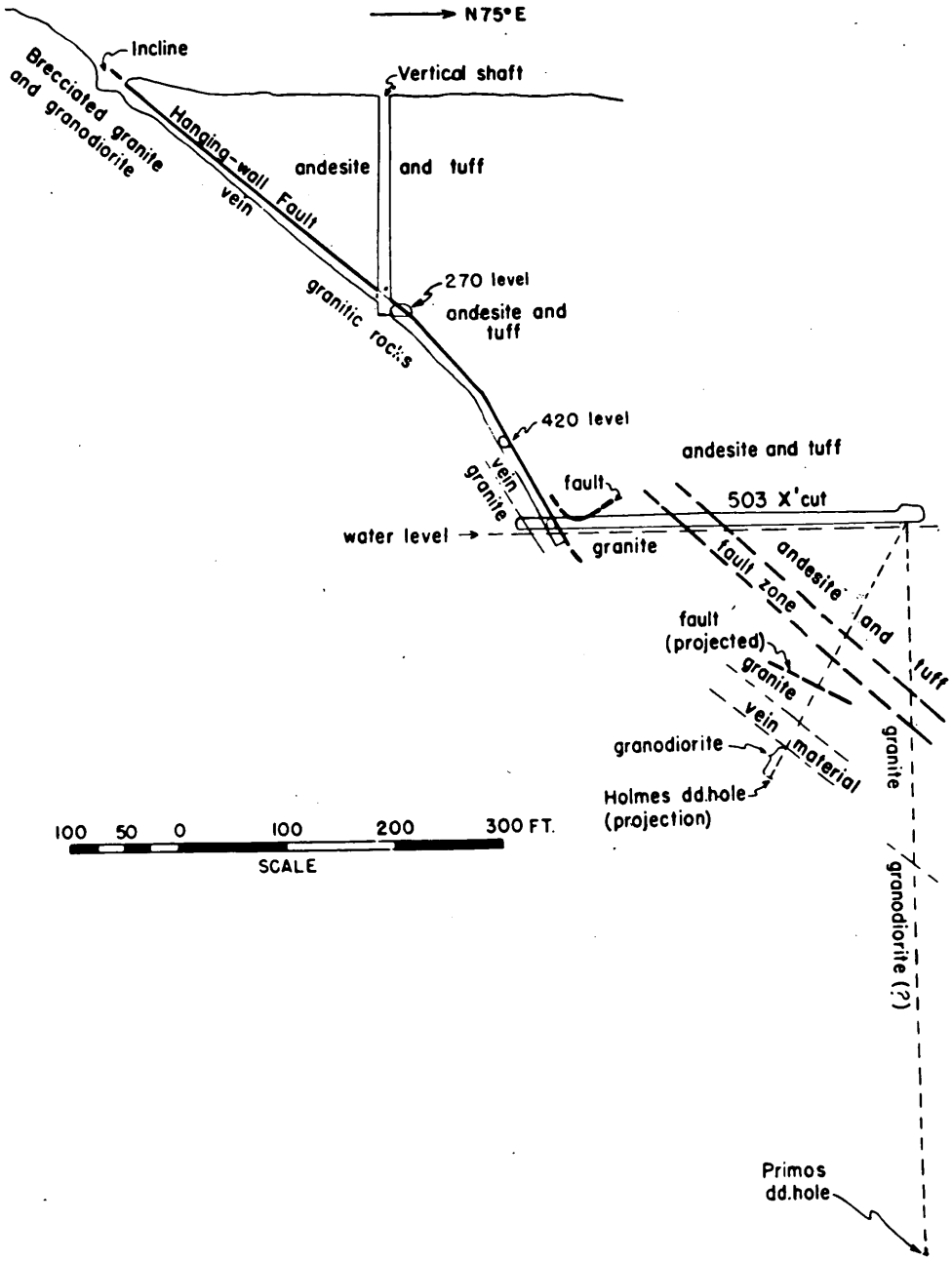


Figure 21.—Cross section through Red Cloud mine, looking north. (Data for workings and drill holls furnished by L. C. White, 1951.)

Except in the 500-level crosscuts, the vein walls are largely concealed behind fault gouge and breccia. The limited exposures indicate that the hanging wall from the surface down to approximately 360 feet on the incline is andesitic breccia and tuff. From there to the 500 level, the hanging wall consists largely of brecciated granitic and volcanic material, and in the 503 cross-cut it is granite with faulted volcanics locally above (Fig. 21).

The footwall consists of the "granite" described on previous pages. Here this rock is brecciated and faulted for widths ranging from a few feet to 100 feet or more. Where exposed on the

surface immediately west of the mine workings, the breccia is largely cemented by calcite and quartz, together with other vein minerals.

As indicated by stoping, the vein contained two principal ore shoots, each from 1½ to 6 feet wide, near or adjacent to the hanging wall. The northern shoot was from 25 to 100 feet long by 410 feet deep, and the southern from 35 to 110 feet long by 300 feet deep (Fig. 20). In the vicinity of these ore shoots, the vein shows relatively more iron and manganese mineralization, and its walls are intersected by northeast fissures.

According to Robert Morgan[7], sampling by the Neal Mining Company indicated that the unmined portions of the vein exposed in the workings above a depth of 360 feet on the incline contained an average of approximately 6 per cent lead and 10 ounces of silver per ton, but below that level the lead and silver contents were somewhat less.

It is estimated that the unmined material exposed in the workings contains more zinc than lead. This zinc, however, is in nonsufide minerals.

The portion of the vein between the stopes and the footwall seems to be relatively low in lead and silver, but it has not been sufficiently explored to determine its over-all grade. Strong nonsulfide zinc mineralization is apparent near the footwall in the 500-level crosscuts.

Oxidation extends for an unknown distance below the present water level and was present in the Holmes-Riley drill core for more than 200 feet below the 500-level (Fig. 21).

An interesting possibility regarding the Red Cloud vein structure was suggested by Hershey.[8] He postulated that a post-mineral fault, coinciding in places with the hanging wall, displaced portions of the vein laterally and downward.

Riho Vein

The Riho vein is south of the Papago mine, as indicated on Figure 19.

This ground, formerly known as the Pecheco, was worked during the early days but has remained essentially idle for several decades. A few years ago, George Holmes and Walter Riley relocated three claims on the vein and built two access roads leading from Black Wash. In 1951 the property was held by Red Cloud Mining and Milling Company.

Here the prevailing rock is deformed schist, intruded by dikes of acidic to basic composition and invaded on the west by granite.

On the south claim, the vein strikes N. 30 to 40 degrees west and dips almost vertically. Northward it pinches out and branches but is traceable intermittently into the north claim where it strikes N. 15 degrees W. and dips 45 to 60 degrees east.

The vein material consists largely of calcite and white quartz, together with a little barite and nodular masses of cerussite and galena. The calcite is mainly massive and white, but in part gray and manganiferous. The quartz is fine-grained and banded to

vuggy. In places the vein shows iron and copper stains.

Workings on the south claim include several pits, open cuts, shafts, and stopes. Apparently the shafts do not exceed 50 feet in depth, and the visible stopes are 2 to 4 feet wide.

At the north claim the vein has been stoped from several adits throughout a vertical range of approximately 75 feet on the north side of a deep, narrow ravine. These workings are now largely caved or filled but apparently extended for about 150 feet horizontally, to where the vein terminates at a steeply northeastward-dipping fault that strikes N. 65 degrees W. The stopes along the outcrop are 2 to 4 feet wide.

CHAPTER IX.—SILVER AND EUREKA DISTRICTS

By Eldred D. Wilson

INTRODUCTION

The foregoing description has been modified from material published in Arizona Bureau of Mines Bulletin 134.[1] During early 1951, several of the mines were revisited, and some additional structural features of the area were mapped.

Useful information was supplied by L. C. White, George Holmes, Kenneth Holmes, Walter Riley, and Lincoln A. Stewart. George H. Roseveare, Metallurgist of the Arizona Bureau of Mines, cooperated in part of the field work. Acknowledgements are due Luke Walker and associates, of Red Cloud Mining and Milling Company, for accommodations and data.

PHYSICAL FEATURES

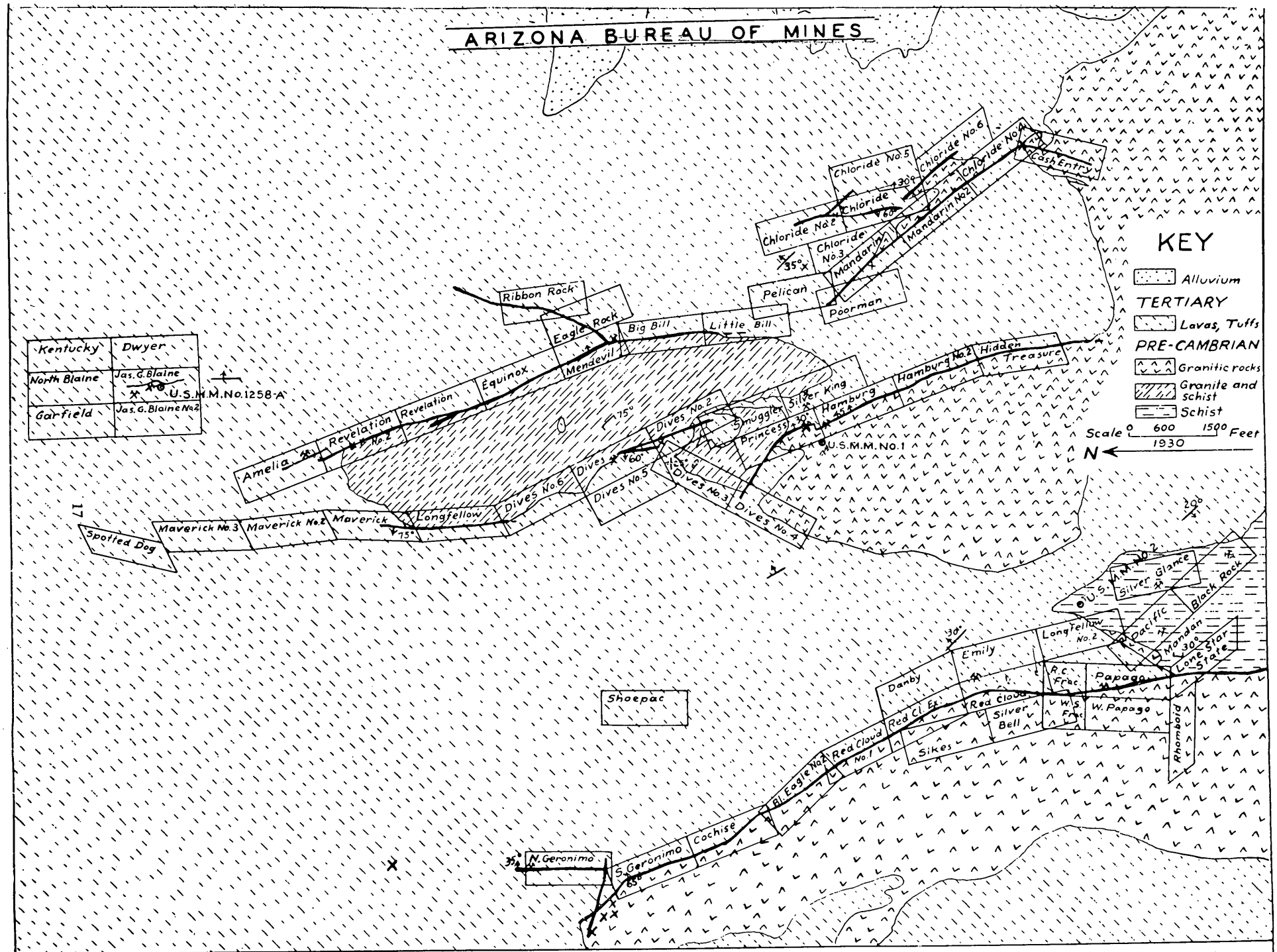
The Silver and Eureka districts of southwestern Yuma County are in T.3 and 4.S., R. 22 and 23 W., within the southern part of the Trigo Mountains. The area is bounded on the east by Yuma Wash and on the west and south by a bend in the Colorado River.

Water has been found in only one of the mines, the Red Cloud, where it stands at a depth of about 400 feet below the surface. Near the river, water is obtainable from shallow wells.

By road, the Silver district is some 58 miles from Yuma or 36 miles from Dome, a station on the Southern Pacific railway.

REFERENCES, SILVER AND EUREKA DISTRICTS

1. Eldred D. Wilson, Geology and mineral deposits of southern Yuma County, Arizona: Univ. Ariz., Ariz. Bur. Mines Bull. 134, pp. 50-72 (1933).
2. Based partly on unpublished notes of J. B. Tenney.
3. R. W. Raymond, Statistics of mines and mining in the States and Territories west of the Rocky Mountains. Washington (1872).
4. P. Hamilton, Resources of Arizona, 1884 ed., San Francisco.
5. P. Hamilton, Resources of Arizona, 1881 ed., p. 73.
6. U.S. Bur. Mines, Minerals Yearbook for 1941.
7. Oral communication (1930).
8. Oscar H. Hershey, Private report to O. C. Chase (Oct. 27, 1938).



BULLETIN 134, PLATE 5 - GEOLOGIC MAP OF SILVER DISTRICT, ARIZONA, By Eldred D. Wilson

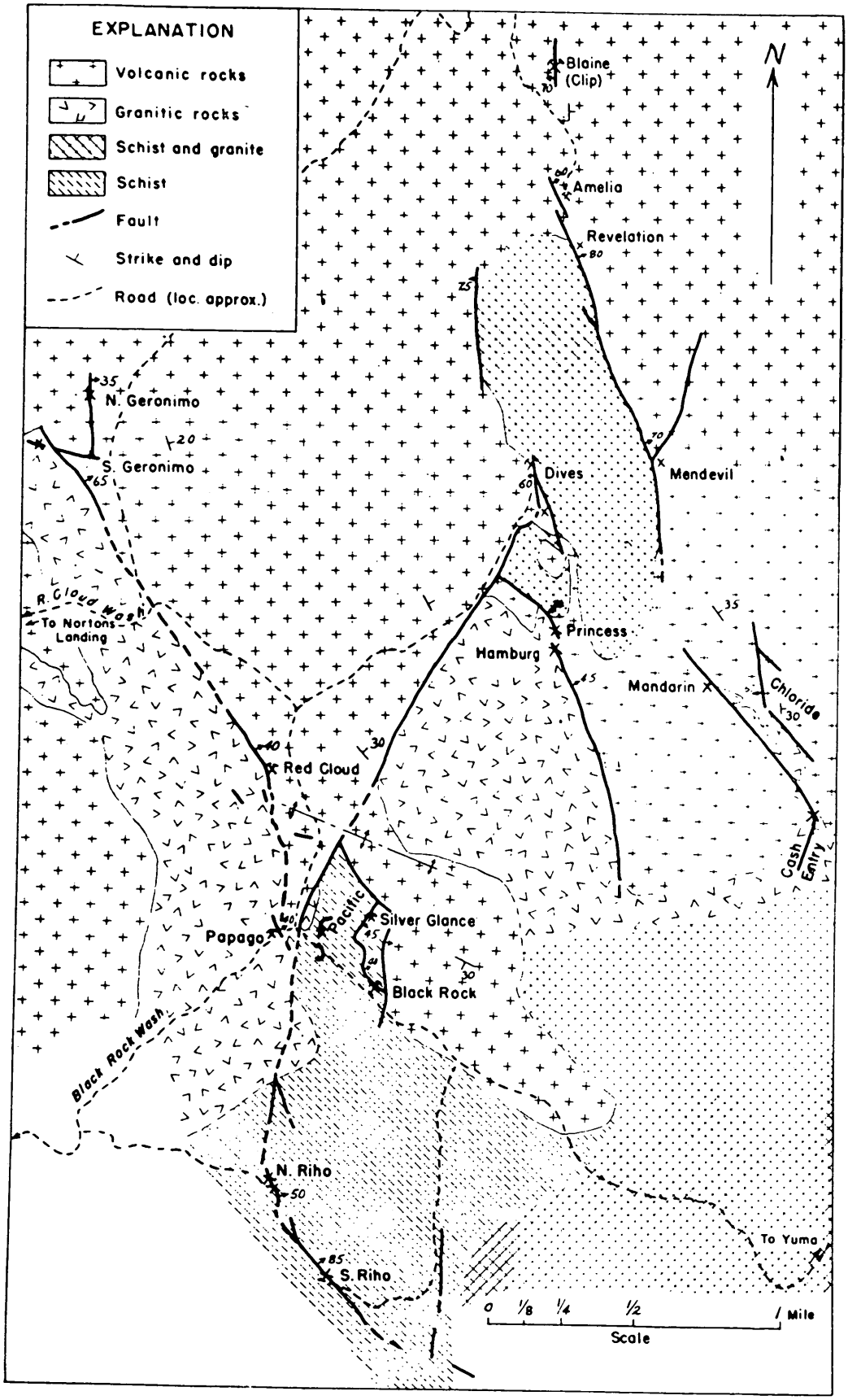


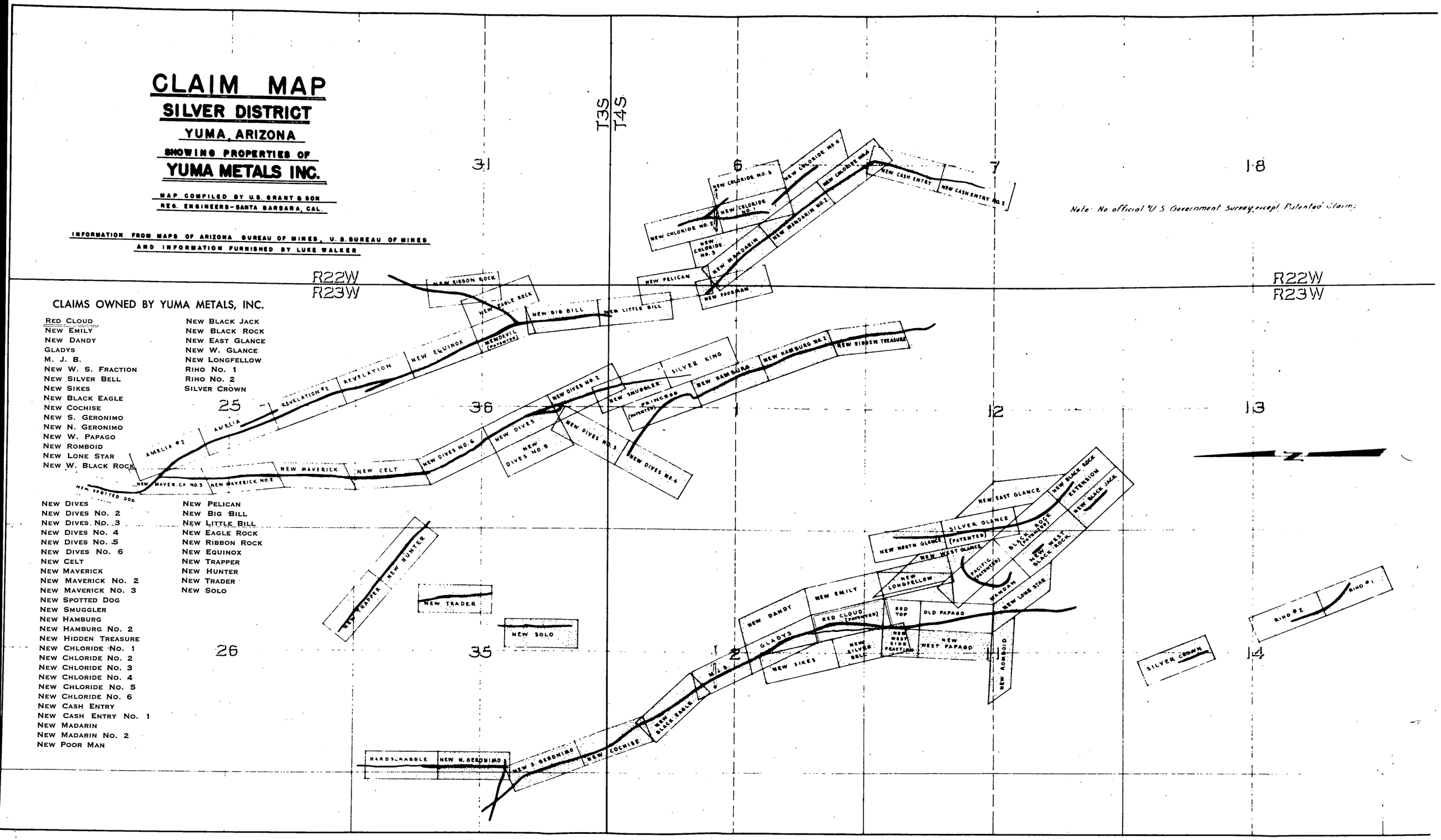
Figure 19.—General geologic map of silver district.

CLAIM MAP
SILVER DISTRICT
YUMA, ARIZONA
SHOWING PROPERTIES OF
YUMA METALS INC.

MAP COMPILED BY U.S. GRANT & SON
REG. ENGINEERS-SANTA BARBARA, CAL.

INFORMATION FROM MAPS OF ARIZONA BUREAU OF MINES, U.S. BUREAU OF MINES
AND INFORMATION FURNISHED BY LUKE WALKER

Note: No official U.S. Government Survey, except Patented claims



CLAIMS OWNED BY YUMA METALS, INC.

Red Cloud
New Emily
New Dandy
Gladys
M. J. B.
New W. S. Fraction
New Silver Bell
New Sikes
New Black Eagle
New Cochise
New S. Geronimo
New N. Geronimo
New W. Papago
New Romboid
New Lone Star
New W. Black Rock

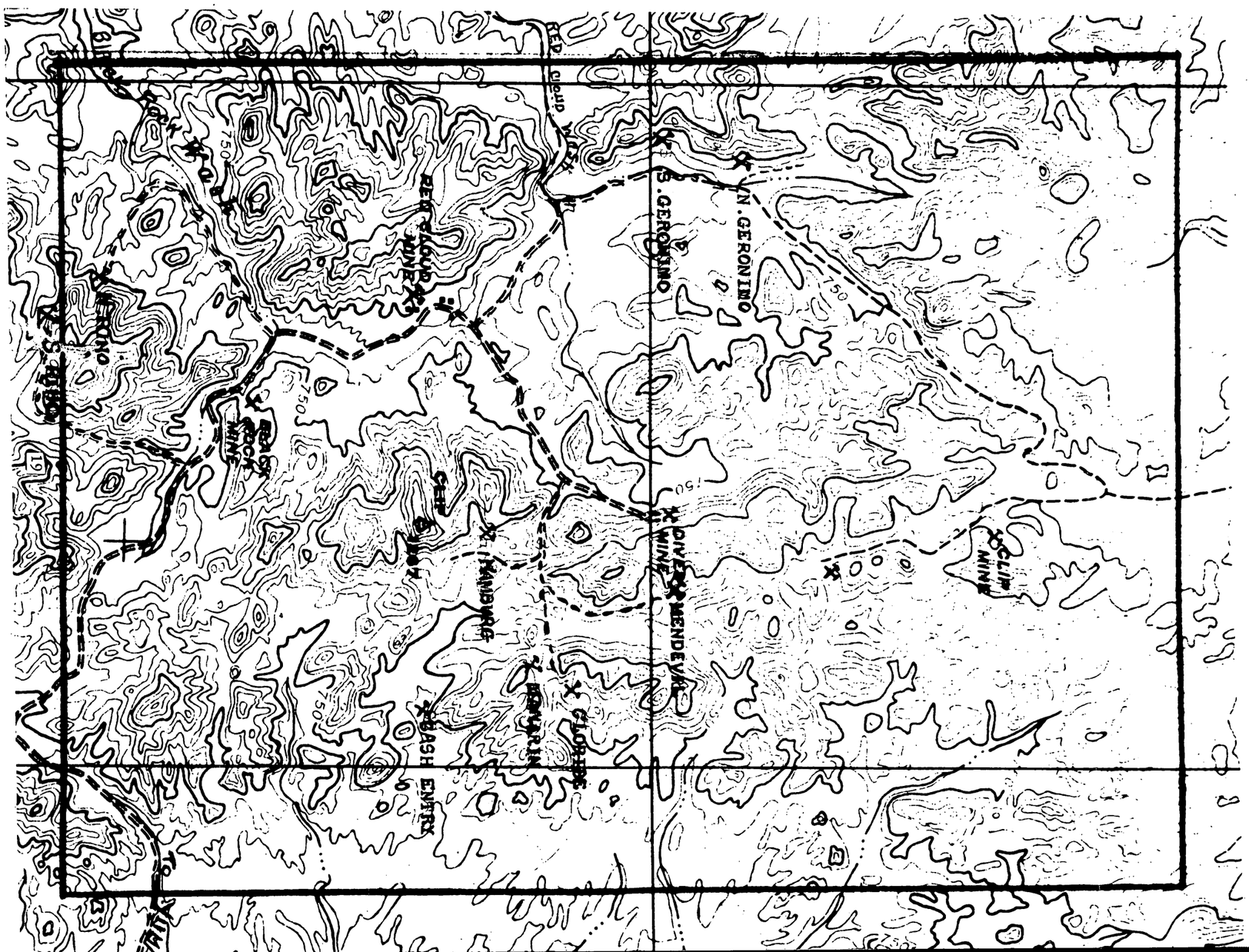
New Black Jack
New Black Rock
New East Glance
New W. Glance
New Longfellow
Riho No. 1
Riho No. 2
Silver Crown

New Dives
New Dives No. 2
New Dives No. 3
New Dives No. 4
New Dives No. 5
New Dives No. 6
New Celt
New Maverick
New Maverick No. 2
New Maverick No. 3
New Spotted Dog
New Smuggler
New Hamburg
New Hamburg No. 2
New Hidden Treasure
New Chloride No. 1
New Chloride No. 2
New Chloride No. 3
New Chloride No. 4
New Chloride No. 5
New Chloride No. 6
New Cash Entry
New Cash Entry No. 1
New Madarin
New Madarin No. 2
New Poor Man

New Pelican
New Big Bill
New Little Bill
New Eagle Rock
New Ribbon Rock
New Equinox
New Trapper
New Hunter
New Trader
New Solo

PRODUCTION OF SILVER, LEAD, AND ZINC, SILVER DISTRICT

Years	Tons ore	Silver Ounces	Silver Value	Lead Pounds	Lead Value	Zinc Pounds	Zinc Value	Total Value	Remarks
1879-80	?	?	?	?	?	.....	.....	$ 6,000	Census report
1880	?	30,000	$ 34,500	300,000	$ 15,000	.....	.....	49,500	Red Cloud
1881-85	?	270,000	302,400	800,000	36,000	.....	.....	338,400	Red Cloud, Black Rock, Pacific, Engineer, Emma, Silver Plume, Remmnant
1883	?	146,000	160,600	.....	.....	.....	.....	160,000	Clip or Blaine
1884-87	?	914.000	950,000	.....	.....	.....	.....	950,000	Clip or Blaine
1887	?	124,200	121,716	400,000	18,000	.....	.....	139,716	Red Cloud, Black Rock (Mint report)
1888	?	13,248	12,453	104,345	4,591	.....	.....	17,044	Red Cloud
1889	?	22,500	21,150	300,000	11,700	.....	.....	32,850	Red Cloud concs.
1890-1928	.....	.....	.....	.....	.....	.....	.....	.....	No production rptd.
1929	700	7,000	3,731	.....	.....	.....	.....	3,731	Clip
1930-33	.....	.....	.....	.....	.....	.....	.....	.....	No production rptd.
1934-37	286	580	442	21,414	1,145	.....	.....	1,587	Mainly Red Cloud.
1938-40	.....	.....	.....	.....	.....	.....	.....	.....	No production rptd.
1941	3,300	27,786	19,759	315,000	17.955	.....	.....	37,714	Red Cloud
1942-46	.....	.....	.....	.....	.....	.....	.....	.....	No production rptd.
1947-49	1,867	3,887	3,518	88,300	14,773	14,200	1,761	20,052	Mainly Red Cloud dump in 1949
1879-1949	?	1,559,201	$1,630,269	2,329,059	$119,164	14,200	$1,761	$1,757,194	



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
P. O. DRAWER "B"
BOULDER CITY, NEVADA

Luke Walker
798 Hope Avenue
Santa Barbara, California

My dear Mr. Walker:

We have your letter of June 28 asking for the analysis and test results of the sample of ore from your Red Cloud Mine near Yuma, Arizona.

Mineralogical examination shows the mineral constituents to be willemite, calamine (minor), wulfenite, flourite (abundant), limonite, quartz, and calcite. Spectrographic analysis showed the following elements to be present: Fe, Zn, Ca, Si, Al, Pb, Mo, Ba, Mn, Mg, Cu, Ag, As, Ti, Be, V. Chemical analysis of the main constituents in percent:

Zn - 12.4	SiO_2 - 41.4	CO_2 - 1.7
Pb - 1.43	CaO - 22.4	Mo - 0.2
Fe - 3.26	MgO - 0.5	Al_2O_3 - 0.8

ANALYSIS: Red Cloud Ores

By: American Smelter and Refining Company, of concentrate from Test No. 5 Denver Equipment Company sample submitted to El Paso:

Assay

Au	Ag	Pb	Cu	Ins	Fe	CaO	Zn	S	As	Sb	Bl
.01 oz	57.9 oz	57.2%	0	13.8%	1.7%	4.4%	2.5%	1.7%	.25%	.25%	0.0

AMERICAN Cyanamid COMPANY

MINERAL DRESSING DIVISION

30 ROCKEFELLER PLAZA
NEW YORK 20, NEW YORK

TELEPHONE CIRCLE 7-0100
CABLE ADDRESS LIMENITRO

Portion of the sample was subjected to a combined Superpanner test and heavy liquid separation. The products from this test were assayed for lead, zinc and silver.

The remainder of the submitted sample was examined under a Greenough binocular microscope and a petrographic microscope in order to identify the mineral constituents.

Head Sample Assays:

The results of the head sample assays of the submitted tailing are given in Table I.

Table I
Assays

Silver	5.85 Ag oz/Ton
Lead	0.56 % PB
Zinc	7.16 % ZN

Mineralogy:

The following mineral constituents were identified in the sand tailing:

Quarts	Willemite	
cargonate (Calcite or dolomite)		Argentojarosite
Hematite	limonite	
fluorite	chlorite	
barite	biotite	
crocoite		

Summary:

1. The following mineral constituents were identified in the submitted sand tailing: quartz, carbonate (Calcite or dolomite), hematite, fluroite, barite, crocoite, willemite, argentojarosite, limonite, chlorite, and biotite.

2. The silver-bearing minerals identified in the sample were argentojarosite, crocoite, and willemite. Small amounts of crocoite and willemite, removed from the samples with a needle, each gave positive microchemical tests for silver. The bulk of each of the silver-bearing minerals occurred as apparently-free grains.

3. In the combined Superpanner and heavy liquid separation, the panner concentrate, comprising about 4% of the sample, contained about 15% of the silver and 55% of the lead. The heavy liquid concentrate, which composed approximately 41% of the sample, carried about 71% of the total silver and 97% of the zinc. The tailing, composing 54% of the sample, contained only 13% of the total silver, 20% of the lead and nearly 3% of the zinc.

AMERICAN CYANAMID COMPANY

/s/ W. D. Davis
Microscopical Department

ESTABLISHED 1916

EISENHAUER LABORATORIES

ENGINEERING DIVISION
316 SOUTH SAN PEDRO STREET
LOS ANGELES 13, CALIFORNIA

ED. EISENHAUER, JR.
L. C. PENHOEL

PHONE: VANDIKE 9328

Subject: Mill test of ore from Red Cloud Mine, Yuma Arizona

Flotation Tests

Marked	Gold Ozs.	Gold Value	Silver Ozs.	Silver Value	Silver %	Lead Distrib. by weight
Heads	Trace		7.20	$5.11	4.30	100.00%
Concentrates	.02	$.70	41.20	29.24	34.35	8.80%
Middlings	.005	.18	23.00	16.35	13.72	7.80%
Tailings	Trace		2.12	1.51	.25	83.40%

Ph Concentration 8.9
W/S Ratio 3 to 1

Ratio of Concentration
11.4 to 1

Indicated Extraction

Silver	70.4%
Lead	94.2%

Distribution by Value

	Silver	Lead	Total Value Distribution:
Concentrates	50.44%	70.28%	66.66%
Middlings	24.96%	24.88%	31.48%
Tailings	24.60%	4.84%	1.86%

Reagents Used:

Sodium Sulphide	14 lbs per ton ore
Sodium Acid Sulphate	12 " " " "
Aerofloat # 31	1/20 " " " "
Ethyl Xanthat	1/20 " " " "
Dupont Frother	1/10 " " " "

The ore was milled in a ball mill for twenty-five (25) minutes with the addition of the sodium sulphide, sodiumacid, sulphate and one-half the amount of the Aerofloat, the pulp then being - 80 mesh. At the end of this period the ore was then floated in a Denver Sub-A Flotation cells The concentrates were pulled after seven minutes and the middlings after an additional ten minutes.. The froth was good although the concentrates were slightly dirty. However, the concentrates could be very easily cleaned and the grade could easily be brought to 60%. A screen analysis of the tailings showed that 67% of the total silver values were in the plus 100 mesh material. It is therefore suggested that the ore be milled to 120 mesh before flotation.

Respectfully submitted,
Signed:

Ed Eisenhauer, Jr.
Metallurgist.

UNIVERSITY OF ARIZONA

ARIZONA BUREAU OF MINES

ORE TESTING SERVICE

Ore No. 1130 Test No. 2

Conditions and Reagents

Point of Addition	Conditions			Reagents Pounds Per Ton									
	Time Mins.	% Solids	pH	Soda Ash	A-31	Z-5	M1BL	425	Na_2S	Cysy.			
Ball mill	25	60		5.0	0.05								
Conditioner	5	25	8.4			0.1	0.08						
Rougher #1	6												
Conditioner	2				0.1	0.5		1.0					
Rougher #2	12								1.0	0.1			
Cleaner	6									0.1			

Remarks:

Metallurgical Products

Product	Tons in 100 Tons Feed	oz. per ton Assays						% of Total					
		Silver	Lead					Silver	Lead				
Heads	100.0	16.48*	4.29*					100.0	100.0				
Concentrate #1	1.7	340.4	16.8					35.1	6.7				
#2	7.1	55.8	49.4					24.0	81.7				
Cleaner Tailing	8.4	14.4	2.6					7.2	4.7				
Tailing	82.8	6.7	0.36					33.7	6.9				
Combined concentrate	8.8	109.9*	42.6*					59.1	88.4				

Remarks: *calculated

METALLURGICAL RESULTS OBTAINED ABOVE SHOULD BE CONSIDERED AS ONLY APPLICABLE TO MATERIAL CONFORMING TO THE CHARACTER OF THE SAMPLE UPON WHICH THE TESTS WERE MADE.

FLOTATION TEST DATA

DENVER EQUIPMENT COMPANY — ORE TESTING DIVISION — DENVER, COLORADO

SAMPLE IDENTIFICATION: Head Ore crushed minus 10 mesh

REPORT NO. 1097-P TEST NO. 5

	PRODUCT	Percent Weight	ASSAYS Oz./ton Ag	% Pb	% Zn				PERCENT RECOVERY Ag	Pb	Zn		
	Head Assay		8.2	5.2	4.65								
	Calculated Assay	100.0	7.78	5.17	4.1				100.0	100.0	100.0		
1	Rgr. Flot. Conc't. #1	7.4	57.3	56.2	2.2				54.5	80.5	4.0		
2	" " " #2	2.20	37.1	17.5	5.8				10.5	7.3	3.1		
3	Scavenger Conc't.	1.34	17.3	10.3	5.5				3.0	2.7	1.8		
4	Flotation Tailing	89.06	2.8	0.55	4.19				32.0	9.5	91.1		

Grinding and Treatment

Operation	Time Min.	Percent Solids	pH	Reagents: Pounds per ton heads—(2) NaS	NHS	A31	Z8				
Grinding (1)	25	67		1.40	1.20	.05					
Rgr. Flot. Conc't. #1	12	25					.05				
" " " #2	12	25	9.7			.05	.05				
Scavenger Conc't.	5	22.5	9.3			.05	.04				

Grinding (1)

Time, minutes 25

Classification, mesh none

Sands reground, minutes –

(2) Reagent Symbols:

NaS - Sodium Sulphide
NHS - Sodium Acid Sulphate
A31 - Aerofloat #31
Z8 - Butyl Xanthate

NOTES: Flotation performed in Denver "Sub-A" (Fahrenwald) Laboratory Flotation Machine.

Screen Analysis - Flot. Tailing

Mesh	% Wt.	% Pb.
+100	6.2	0.62
+150	13.0	0.49
+200	15.0	0.53
-200	65.8	0.62
Average		.59

SUMMARY OF RESULTS Test 5

DENVER EQUIPMENT COMPANY — ORE TESTING DIVISION — DENVER, COLORADO

SAMPLE IDENTIFICATION

REPORT NO. 1097-P

PRODUCT	Percent Weight	ASSAYS Oz./ton Ag	% Pb	% Zn				PERCENT RECOVERY Ag	Pb	Zn		
Calculated Head Assay		7.78	5.17	4.1				100.0	100.0	100.0		
24 minute Rgr. Conc't. 1 and 2 combined	9.6	52.7	47.4	3.0				65.0	87.8	7.1		
24 minute Rgr. Tailing 3 and 4 combined	90.4	3.0	.694	4.2				35.0	12.2	92.9		
Total Flot. Conc't. 1, 2, and 3 combined	10.94	48.4	42.8	3.3				68.0	90.5	8.9		
Final Flot. Tailing	89.06	2.8	.55	4.19				32.0	9.5	91.1		

REMARKS:

The above tables show the products reported on page D-7 combined according to stage of removal as shown.

To Yuma Metals, Inc.
Yuma, Arizona
c/o Luke Walker
798 Hope Ave.
Santa Barbara, California

From: A. L. Poarch
P. O. Box 1950
Prescott, Arizona
June 11, 1952

Dear Sir:

In view of concentrated and vast work that is being carried on by U. S. Bureau of Mines and nearly all Schools of Mines, as well as individual mining companies, to perfect the leaching and the Electrolytic process of recovering zinc from oxidized ore, I suggest that your mill be designed to store the zinc values in the tails.

This I think is advisable, especially in your case, because:

1. You have already worked out the metalurgy so that the zinc can be depressed to a point where practically all zinc will go to the tails.

2. You have an exceptionally good place to store the tails with ample capacity.

3. Your Company is financially able to stockpile the zinc values until such time as the above mentioned processes have been entirely perfected. This will enable you to realize much more from your zinc and within a reasonably short time.

After studying your many ore tests covering all methods of recovery, they disclose that Selective Floatation is the most effective and economical method. In my opinion there is no use to waste further time and money in the attempt to better your very good lead and silver recoveries. It can be safe to assume that the following economies can be realized from these ores, based on previous recoveries made by this writer and others, using present market prices and costs.

"A" Projection: Using the Basic recoveries as made by Denver Engineering Co. of 90.5% of the lead and 68% of the silver; Ed Eisenbauer, Jr. 94.2% of the lead, 70.4% of the silver; University of Arizona, (G. H. Rosevere), 88.4% of the lead and 59.1% of the silver, and this writer's recovery of 88% of the lead and 78% of the silver.

The above recoveries give an average of 90% plus, of the lead and 68% plus of the silver.

The various ratios of concentration have been from 8 to 12 to 1. For the purpose of this writing the figure 8:1 will be used, along with the corresponding grades of concentrates.

AVERAGE OF ORES AS INDICATED: by 460 Assays on MAP

Lead per cent, per ton	6.07
Silver ozs.	10.15
Gold Ozs.	.02

Gross value of ores:

Lead; 6.07%=121.4#/T x 16¢	19,424
Silver 10.15 ozs. x .905	9.185
Gold .02 ozs. x $35.00	.70
Total, lead, silver, gold	29.315

"B" Basic Recoveries

Lead:

121.4 #/Ton recoverable -- 6.07%
Recovery 5.463%--109.26# 90% recovered.
Distribution: 43.7% in lead concentrate -- 874.08#
(8.1 concentration)

Silver:

10.15 ozs. recoverable in ore
Recovery: 6.90 oz /T -- 68% recovered
Distribution: 55.2 oz in concentrate

Gold:

.02 ozs. recoverable in ore
Recovery: .0166 ozs. /T-83% recovered
Distribution: .1328 ozs. in concentrates

"C" Payment Schedule

Concentrates to lead smelter (dry weight)
Deduct from wet lead assay 1.5 units (30#) and pay for 90% of the remaining lead at market price quotation (16¢) less a deduction of .02¢ per pound accounted for.

Lead payment:		
43.7% -- 874.08# pay for 90%; 786.672# at 16¢	$125.867	
Less 02¢ per pound of payable lead 15.73	110.137	
Total payable lead		110.137
Silver schedule:		
Pay for 95% at market price (.905¢ oz)		
less .015¢ per oz of payable silver		
Silver Payment:		
55.2 oz / T pay for 95% -- 52.44 ozs. @ .89¢		$46.6716
Gold Schedule:		
Of /03 ozs or over, pay for 92.57% at net realized price or equivalent of paying for 100% at $32.3185		4.2918
Total gross value of concentrates		$161.10
Less U. S. Tax on Bullion (.02%)		3.21
		$157.89
Less the following deductible charges:		
Base charge on concentrates	$11.00	
Freight from Blaisdelle to A.S. & R. Ry.	12.38	$23.38
Final net to shipper (1 ton of concentrates)		$134.51

Mill to be located at Red Cloud Mine.

1. *Operating costs T/Day for concentrate Plant (100 ton Minimum).*

Plant designed and in accordance with results of laboratory work and duplicating conditions as nearly as possible.

Grinding-crusher jaws, rolls, balls and liners	$ .40
Reagents total used	.885
Labor, (min) 6 @ 14.00 (incl. Insurance)	.84
Power, Diesel or Gasoline @.30¢ kwh gen.	.60
Depreciation, Taxes, and etc.	.28
Misc. Assay and etc.	.40
Total T/Treated	$3.405

These costs will decrease in proportion as tonnages are increased, as same labor can be used up to approximately 100 T/Day and other costs will be averaged in direct percentages.

2. *Other charges to be used as a basis for determining an eventual net worth of these ores:*

Mining, including labor, supplies and equipment depreciation, as well as chargeable development based on 100 T/Day minimum, mined and hoisted	$4.25	
Hauling concentrates to R. R. (Using 8.1 concentration ratio) crude tons charge	.40	
Contingency $25.00 per day, per ton	.25	$4.90
Total estimated costs		$8.305
Realized net on crude ore Ration 8.1 per ton		16.81
Less total operating costs and other expenses as attached (~~next page~~ above)		8.305
Final net profit per ton of crude ore from recovery of lead and silver. Zinc to be stored in tailings.		$8. 505

Signed

ARCHIE L. POARCH

AMERICAN SMELTING AND REFINING COMPANY
SOUTHWESTERN ORE PURCHASING OFFICE
810 VALLEY BANK BUILDING
TUCSON, ARIZONA

REED F. WELCH
MANAGER

May 22, 1952

Mr. Luke Walker, Secy.-Treas.
Yuma Metals, Inc.
c/o Hotel Adams
Phoenix, Arizona

Dear Sir:

In response to your telephone call this morning from Phoenix I show below the per ton outcome in carlots, based on present 15-cent lead price, for concentrates with assays shown below. Your letter to me under date April 30th indicates you expect to produce such concentrates by treating ore from the Red Cloud Mine, Silver Mining District, Yuma County, with head assays: Silver 10.15 ozs., Lead 6%, Gold .02 oz.

	Gold-oz	Silver-oz	Lead-%
Assays-Concts.	0.1328	55.2	43.7

Payments:	Gold .1328 oz. @ $32.3185		$ 4.29
	Silver 95%= 52.44 oz @ .885		46.41
	Lead 90% dry = 759.6 lb.@ .13		98.75
	Total payments		149.45
Deductions:	Base less lead credit	9.78	
	Bullion freight tax	.27	10.05
F.o.b. El Paso Plant			139.40
Less Freight, tax, switch, est.10% H20			12.38
Net per ton concentrates, Blaisdell			127.02
" " " crude ore (ratio 8 to 1)			15.88

(Notice this is on lead @ 15¢, at 16¢ it would be about 76¢ more)

Yours very truly,

REED F. WELCH

By A.C. Stipp

Enc.-ex cc

ESTIMATED VALUE OF RED CLOUD MINE
(Other Mines and Claims Not Considered)

In the Red Cloud Mine there are 30,000 to 40,000 tons of ore blocked out from 10,000 to 20,000 in the dump. Using 50,000 tons total and $8.505 net profit on lead and silver as per Poarch's statement, pages 29-30-31, this would be a net profit from lead and silver of $425,250.00 from the now blocked out ore.

The assay value of the zinc is 10% or 200 # per ton, or gross value of $27.00. Using Denver Equipment Ore Test No. 5, pages 27 and 28, 91.1% at 13½¢ per lb. is $24.59 per ton will be depressed in floatation and go in the tails to be stored for later processing. All mining and grinding expense have been charged to lead and silver. Therefore, zinc should net $12.00 per ton or $600,000 from now blocked out ore.

A 100 mill would handle about 50,000 tons of ore in 500 working days, netting each day from lead and silver $850.50 and storing $2459.00 gross value of zinc each day.

It is expected our exploration program will find 200,000 to 500,000 tons of new ore. If only 300,000 tons are found, the above profit figures would be seven times as large. Making a profit on lead and silver of $2,976,750 less $200,000.00 exploration work and $100,000 development work, $100,000 to complete and install mill and $100,000 contingent on these three items, leaving a net profit of $2,576,750.00 on lead and silver. 300,000 tons of ore would store in the tails 54,600,000 pounds of zinc, a fair recovery less expense would amount to 3,000,000.00.

The assay map back of book shows 1.79% Molybdenum Trioxide or 1.2% Molydbenum or a gross value of $24.00 per ton. The process for recovering this Molydbenum (which we have) from Wulfenite has been worked out, and was used by St. Anthony Mine at Tiger, Arizona for years. This item could well be quite profitable as all mining cost and most of mill cost has been charged to the lead and silver.

If 500,000 tons of ore are found, the net amount would probably double because in this calculation we are using the average value, as per assay map enclosed, which is 6.07% lead and 10.15 ozs. of silver. These assays were taken after the old-timers had mined out all of the higher grade ore and left this value ore as not profitable for them to mine by their hand methods. New ore found, therefore, should be a higher grade.

Above figures are based on one claim (Red Cloud) Yuma Metals, Inc. owns 61 other claims. The values of the Yuma Metals, Inc. properties are assured by modern economical methods with up-to-date machinery and the latest recovery technique on their ores which carry high values per tons, plus the present price of metals. Lead and zinc are a good price and about in line with other prices. Price of Molybdenum ore, (90% per M.O.S. 2) is $1.00 per pound F.O.B. Climax, Colorado. Silver is $.905 per oz paid by U.S.A. for newly mined silver.

Previously, only three ore veins in Silver District have been mentioned. There are really five. The Riho vein was undiscovered when Holt's and Morgan's reports were written. The fifth vein, according to Mr. Hershey, is the Papago vein which is west and parallels the Red Cloud vein probably merging somewhere one-half mile or more north of the Red Cloud Claim. This vein out crops just west of Red Cloud and north in several places.

SUMMARIZING: Mines in the Silver District from discovery (1870's) were very profitable (despite the hand methods) until isolated in 1889. They were then considered only Silver producers.

After 1889 only feeble attempts were made to operate any of the mines until in the 1920's when the District was again accessible over a bad road. About this time, lead became important in the ore.

In 1924, a program for development was started and considerable work done before closing down when lead and silver prices declined.

During this time, it was learned there was Molybdenum, vanadinite and zinc in the ore. However, not until 1938 was it determined the amount of Molybdenum when 51 samples were taken averaging 1.79% or 35.8# per ton. Not until 1950 was the zinc considered important or the value estimated. This was when the U. S. Bureau of Mines made an examination of Red Cloud and surrounding properties, taking many samples and assaying them for zinc.

Besides the low price and inaccessibility, there were two other important reasons why the silver District has not sooner taken its place among the important mines of Arizona.

First, until not too long ago, there was no water in the district. Dry methods obtain poor recoveries. (Only water now in Red Cloud Mine)

Second, metallurgy to recover the value have only recently been worked out. The present owners have worked constantly for three years on this problem. First, to find out the best method then to perfect the method which is floatation. Our recovery on the lead and silver is now very good as shown on pages 25-26-27-28. These two reasons are also why the oldtimers only took the very high grade ore.

A COMPARISON: Red Cloud ore to a now profitable mine (that was sold for afew hundred dollars at tax sale in 1936) is the Iron King Mine owned by Shattuck-Denn Mining Corporation, Vavapai County, Ariz.

The standing of this mine among Arizona mines in 1948 was:

Second in zinc production
Third in Lead production
Fourth in Silver production

From 1938 to 1948 inclusive, the mine produced and milled 1,080,853 tons of ore.
The average assay value of Iron King Ore in 1948 was:

	Gold	Silver	Lead	Zinc	Molybdenum
IRON KING MINE	.128 oz.	3.98 oz.	2.076%	6.2%	none
RED CLOUD MINE	.027 "	10.15 "	6.07%	10.0%	1.2%
CASELTON MINE	.06 "	4.00 "	4.00%	10.0%	none

Above is the average assay value of Caselton Mine, November, 1950.

Production from Combined Metals Caselton Mine has been continuous since 1923, and the mill has a record of uninterrupted operation since 1941. It is estimated that 1,925,000 tons of ore has been mined since operations began, of which 900,000 tons was treated in the Caselton Mill. In addition an estimated 700,000 tons of custom ore has been milled.

Information on Iron King Mine taken from U. S. Bureau of Mines Information Circular #7539, dated January, 1950.
Caselton Mine from U. S. Bureau of Mines Inform. Cir. #7586, Nov. 1950.

Gross ore value of Mines above is:(using 90.5¢ per oz. for silver, 16¢ for lead and 15¢ for zinc.)

	Gold	Silver	Lead	Zinc	Molybdenum
IRON KING MINE	$4.48	$3.60	$ 6.63	$18.60	none
RED CLOUD MINE	.94	$9.18	$20.16	$30.00	$24.00
CASELTON MINE	$2.10	$3.62	$12.80	$30.00	none

.....

The information herein contained is so technical that we do not guarantee it. However, we have used most reliable sources and believe same to be authentic.

The sources which we appreciate using are:

Robert Morgan	Mining Engineer
Elgin BryceHolt	Mining Engineer
Oscar H. Hershey	Geologist
University of Arizona (Eldred D. Wilson)	Geological Division
University of Arizona (G. H. Roseveare)	Ore Dressing Division
U. S. Bureau of Mines	Boulder City
U. S. Bureau of Mines	Pittsburg, Pa.
American Smelter & Refining Co.	El Paso, Texas
American Cyamimid Co.	New York, New York
Ed Eisenhauer, Jr.	Los Angeles, California
A. L. Poarch	Prescott, Arizona
A. W. McDougal	
Will M. Neil	

YUMA METALS, INC.

Dated June 25, 1952.

FUTURE PLANS

We have purchased a good portion of a 100 Ton Floatation Mill to be erected at the Red Cloud Mine, when same is advisable. This Mill will serve as a pilot Mill and be so placed that an additional mill can be built along side if and when it is necessary.

We also have an exploration program that is outlined on the following pages. We have asked for help on this from D.M.E.A., U.S. Department of Interior.

This program is quite small considering all the properties we own, and is only to explore the Red Cloud Mine. However, it will be a start and the results will undoubtly justify us building the Mill.

At present we will proceed on a step by step basis as suggested on page 6 by Robert Morgan, which will take only a moderate investment.

EXPLORATION PROGRAM

The proposed work is as follows:

Item 3. Construct camp and mine buildings.

Rehabilitate headframe, 200 ft. vertical shaft, and connecting 250 ft. inclined shaft, to make accesible the workings of the mine for the following exploratory work:

Maximum of 6,000 feet of diamond drill holes from the hanging wall crosscut on the 500 ft. level, to explore the vein below this bottom level;

Maximum of 1,650 feet of drifiting on various levels of the mine to explore extensions of the mine.

The total cost of this exploratory work is estimated at $171,000.00.

The work can be started 30 days after notification to proceed and will be completed within 1 year after starting date.

DRIFTING

Exploratory drifting to be done, location, and footage as follows (see fig._____)

Drifts		Estimated footage
160–ft. level	North from stope face	150
270–ft. level	North from end of drift	50
270–ft. level	South from end of drift	200
420–ft. level	South from shaft	300
500–ft. level	North from end of drift	200
500–ft. level	South from end of drift	500

Crosscuts

Drive crosscuts through the vein to the footwall as needed, to determine thickness and value.

500–ft. level	Total	100
270–ft. level		100
160–ft. level		50
	Total drifting	1,650

Time required at average advance of 4 ft. per shift 1,650 + (4 x 2) = 206 days

Calculation of direct cost of drifting:

Work to be conducted 6 days per week.
Wages based on average days pay including overtime.
Assume 25 working days per month, 2 shifts per day, and 4 feet advance per foot.

		Per shift	Per foot
Labor	1 miner	$16.25	
	1 mucker	13.00	
	1 top lander	14.00	
	½ hoist-compressor man 360 + 50	7.20	
	½ assayer-sampler 350 + (50 x 2)	3.50	
	Payroll taxes	8.10	
		$62.05	$15.51
	½ compressor rental 125 + (2 x 50)	1.25	.31
	½ Diesel fuel 4.00 + 2	2.00	.50
	Explosives		
	Mine track, splice bars, bolts, spikes		1.00
	Ties		.25
	Pipe, air and water		.43
	Pipe, ventilating		.90
	Drill steel and bits		.55
	Air & water hose, fittings, repair parts, etc.		.60
			22.55
	Contingency		4.45
		Cost per foot	$27.00

Exploratory diamond drilling to be done to cut the vein in various planes below the 500 ft. level (See Fig. _____)

From Astation 100 ft. east of shaft	Estimated footage
1 hole inclined at 60° at right angle to vein	150
2 holes, fanned 45° right and left at -55°	350
1 hole vertical	250
2 holes, fanned 45° right and left at − 50°	700

From station at end of crosscut

1 hole inclined at 70° at right angles to vein	450
1 hole pointing southwest at − 50°	550
Deepen Riley hole, if possible	150
1 hole, vertical (1 to duplicate Primos hole)	800
2 holes, fanned right and left if above hole is successful	2,000
	5,400
Add for contingency	600
Total	6,000

Calculated cost of diamond drilling, 6,000 feet

Assume 15 ft. advance/shift. 6,000 + 15 = 400 @1 shift/day
Work 2 shifts per day = 200 days
Work 25 days per month, 200 + 25 = 8 months to complete
Drillers aver. daily (Inc. overtime) 20.30 x 25 = 507.50/mo.
Helpers " " " " 13.00 x 25 = 325.00/mo.

	Cost for 8 months	
Rental of drill @425/mo		$3,400.00
Labor 2 drillers @507.50	$8,120	
2 helpers @325.00	5,200	
½ of 2 hoist-compressor men @360/mo	2,880	
½ of Assay-sampler @350/mo	1,400	
	17,600	
Payroll taxes 15%	2,640	20,240.00
Core boxes & splitter		400.00
Replacement parts, bits, casing, Cement, etc.		5,000.00
½ Diesel fuel oil for compressor		800.00
Contingency (18.6%)		5,660.00
Total drilling cost		36,000.00
Cost per foot		$6.00/foot

Item 5. Rehabilitation of working shaft (including labor)

Install footing and repair headframe	$1,000	
Timber and install guides in 200-ft. vertical shaft @$25/ft.	5,000	
Repair timbers, ladders, and skidway in 250-ft. inclined shaft @$14/ft.	3,500	
Recondition and enlarge 250-ft. level station	250	
Retimber 500-ft. shaft section	250	
		$10,000
Install 300 ft. of 3-inch airline in shaft		500
Move assay office from river camp to mine site		300
TOTAL		$10,800

Item 6. Construct light frame buildings (includes labor)

Combination boarding and bunk house	$9,000	
Combination office and ware house	3,600	
Furnishings, plumbing, etc. for avove 2 buildings	5,000	
Compressor and generator shed	1,800	
Hoist house	600	
		$20,000

Item 7 (a). Operating equipment to be rented.

Underground diamond drill machine $425/mo. Calculated in cost per foot of drilling

7 (b) To be purchased.

40 H. P. electric hoist	$5,000
Bucket, cable and crosshead	500
Mine pump and pipe installation in shaft	1,600
Telephones, hoist house to mine levels	275
Ventilating fan with motor	500
60–KW Diesel generator (2nd hand) installed	4,500
Diesel oil storage tank, installed	1,500
Water storage tank, installed	1,100
Arc welder and accessories	600
2 jackhammer type machines and pneumatic pushers	1,000
Bit grinder and spare grinding wheel	400
Miscellaneous small tools, hardware and repair parts	5,000
3 mine cars	600
	$22,575.00

The following items calculated in cost per foot of drifting, or job work:

Mine rail, plates, bolts, spikes	$1,600
Drill steel with attached bits	900
Ventilating pipe and tubing	1,500
Water and air pipe 2", 1" & 3/4"	700
Mine Timber & ties	700
Air & water hose, couplings, oil, repair parts, etc.	1,000

7 (c) To be furnished by applicant.

	Monthly depreciation
Chevrolet truck, 4 x 4, equipped with boon and hoist	$100
Army jeep	50
Compressor, Sullivan 310 cfm portable Diesel powered $125	
Depreciation for 12 months	$1,800

Calculated in cost per foot of drifting and drilling

8. Schedule of labor.

	Per day	
	Base Pay	Aver. with overtime
2 miners	$15.00	$16.25
2 muckers	12.00	13.00
2 diamond drillers	18.75	20.30
2 diamond drillers Helpers	12.00	13.00
2 top landers	13.00	14.00
1 surface utility man	14.00	15.15
1 general surface laborer	12.00	13.00
	Per month	For 12 months
1 Cook	$300	
1 truck driver-mechanic	360	
2 hoist-compressor men	360	
1 assayer-sampler	350	
1 Part time bookkeeper	100	
1 Engineer-manager	600	

Calculated in cost per foot of drifting, drilling, or job.

Item 9. Assay supplies, reagents, etc.	$2,000
Road repairs Rental of dozer and necessary hand labor	2,000
Gas, diesel fuel, repair parts, etc. for equipment not used in cost per foot basis	5,000
Recondition and rehabilitate mine levels, exclusive of shaft work	1,350

Summary of estimated costs.

Construct mine and camp buildings $20,000 incl. labor

Summary of estimated costs.

Construct mine and camp buildings		$20,000 incl. labor
Rehabilitate shaft		$10,000 " "
Move Assay Office		300 " "
Purchase and install 3 inch air line		500 " "
Drifting		45,000 " "
Drilling		36,000 " "
Road repairs		2,000 " "
Clean out mine levels		1,350 " "
Purchase equipment		23,575 " "
Assay supplies and reagents		2,000 " "
Gas, diesel fuel, oil, repair parts		5,000 " "
Rental (depreciation)		1,800 " "
Supervision 600/mo x 12	7,200	
Cook, 300/mo x 12	3,600	
Truck driver-machanic 600/mo x 12	4,320	
Part time bookkeeper 100/ mo x 12	1,200	
Surface labor – Utility man (14.00/day)		
15.15 x 200 days	3,030	
Laborer (12.00/day)		
13.00 x 200 days	2,600	
Payroll taxes: Sup. @15%		
Remainder @7%	2,112	
Total labor		24,062
		$171,587

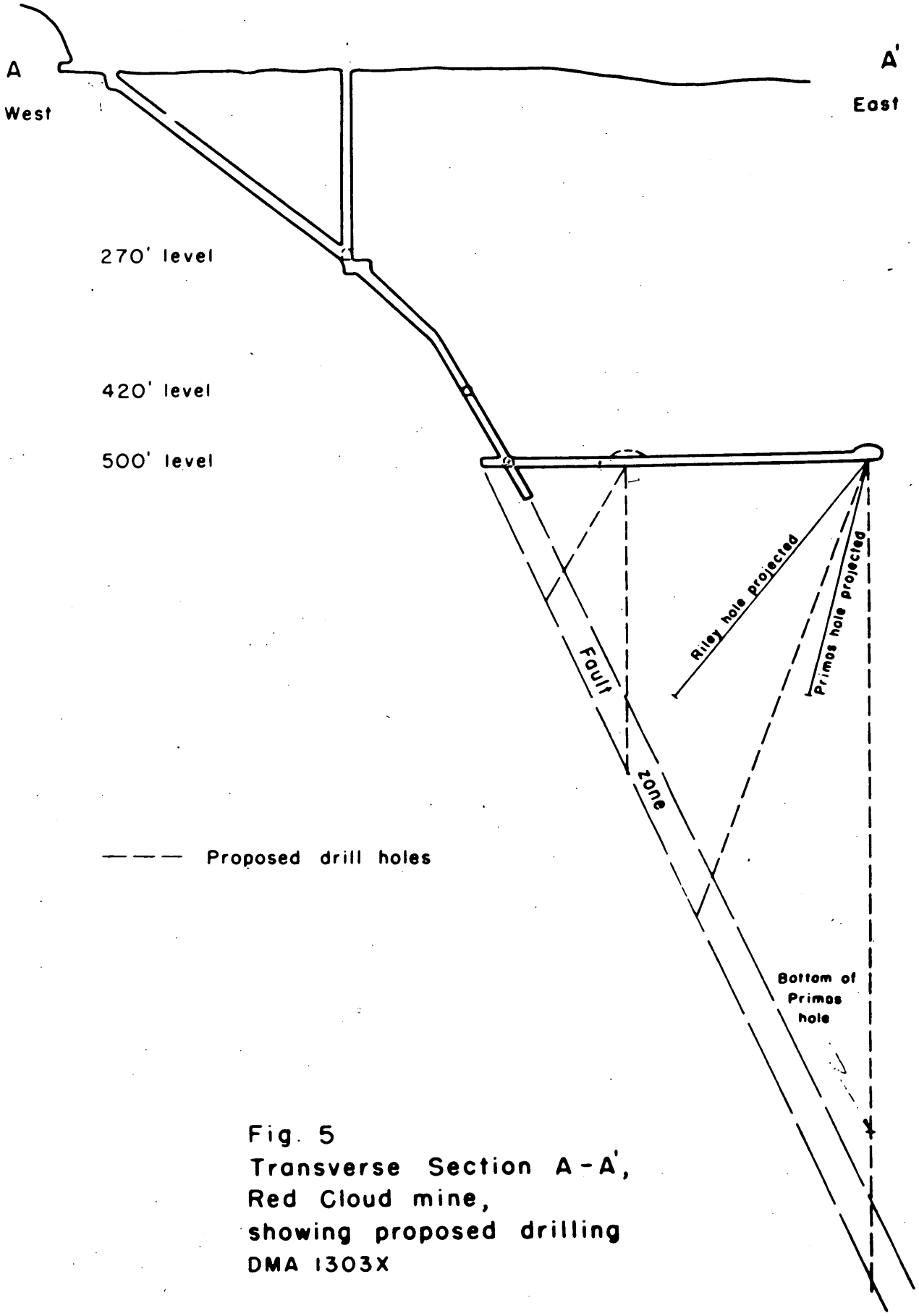


Fig. 5
Transverse Section A-A',
Red Cloud mine,
showing proposed drilling
DMA 1303X

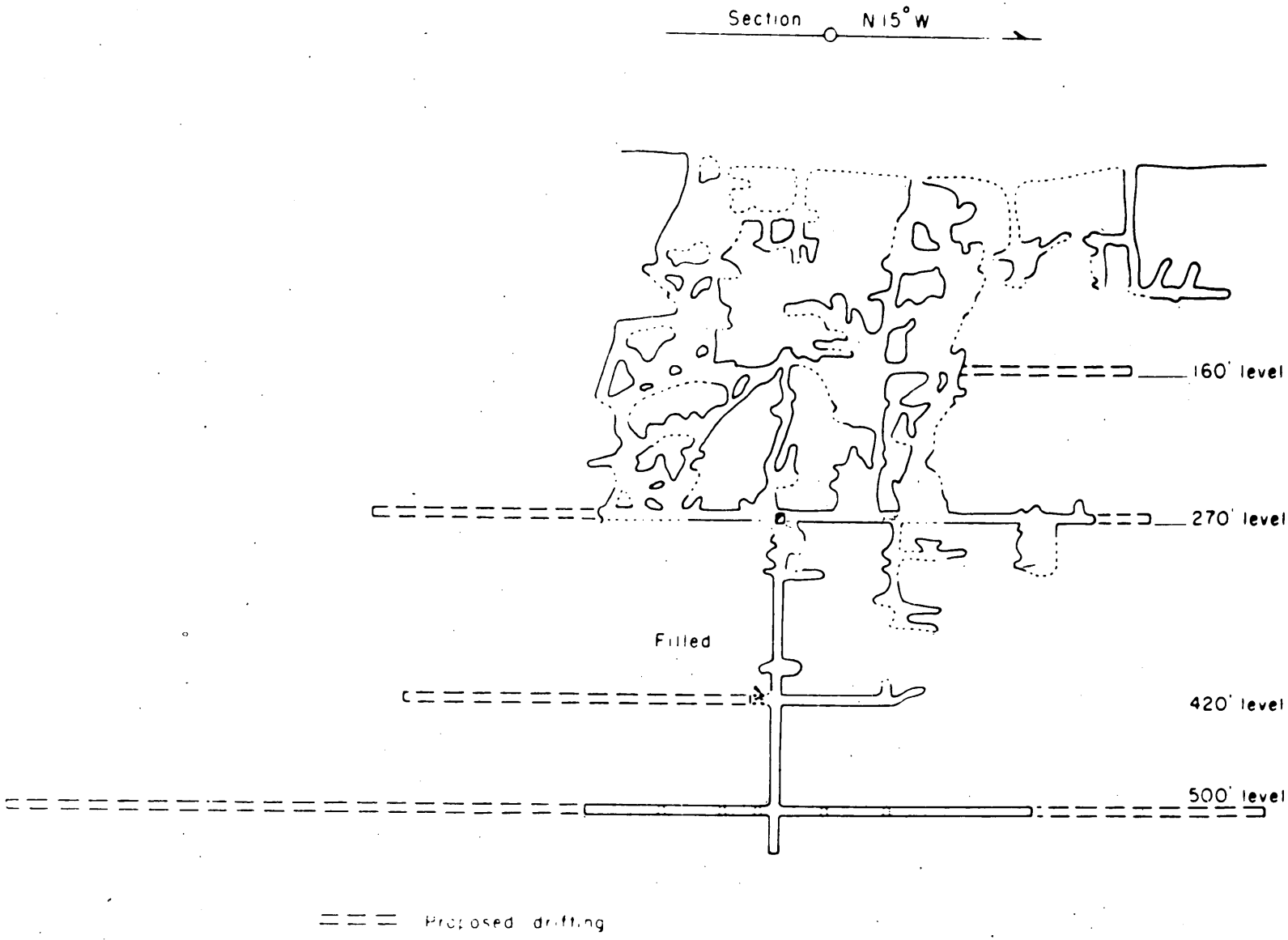


Fig 3 Longitudinal Section on Red Cloud vein, showing proposed drifting

DMA 1303X

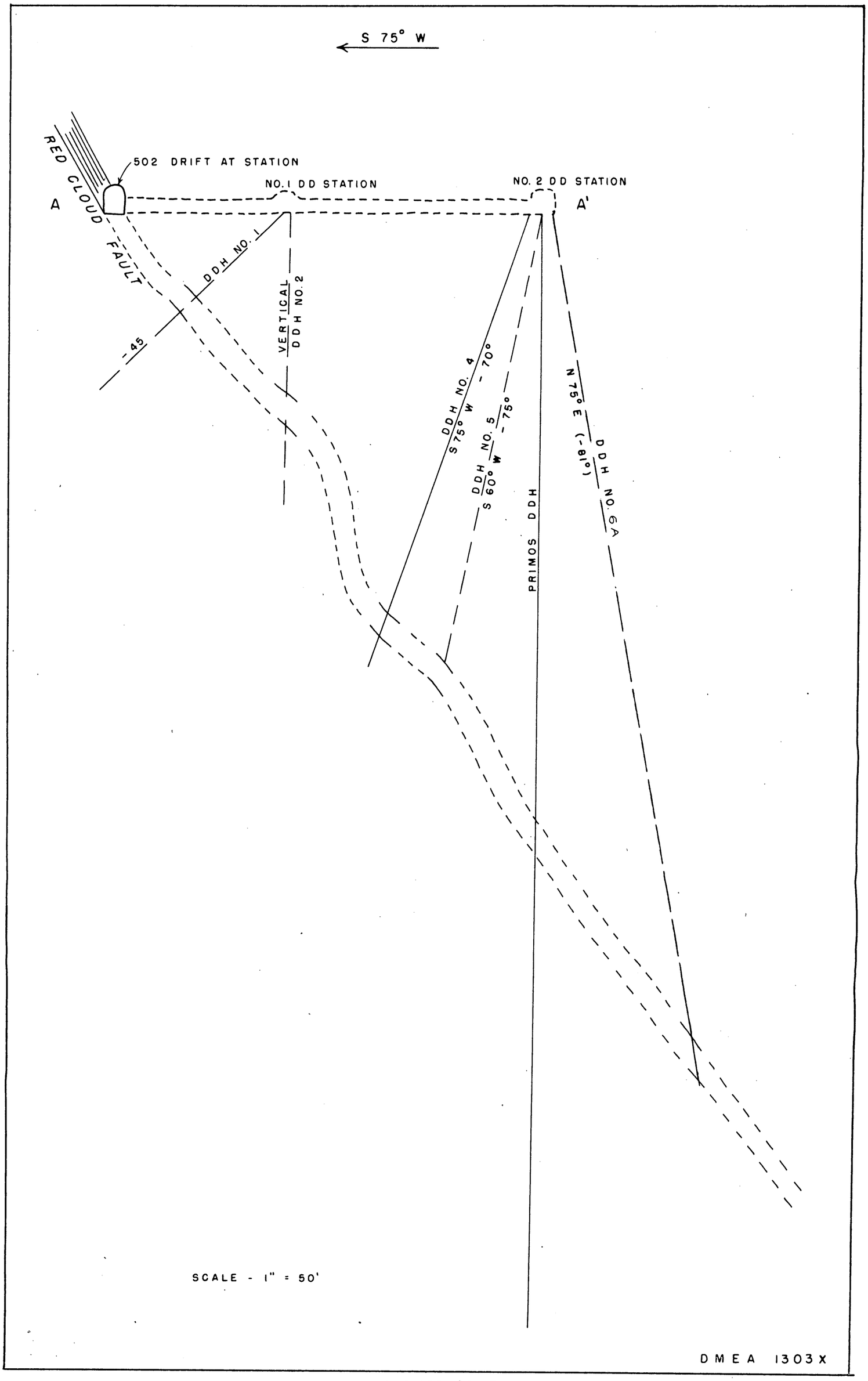


FIGURE NO. 5

SECTION ON A-A' N 75° W - RED CLOUD MINE - YUMA METALS, INC.

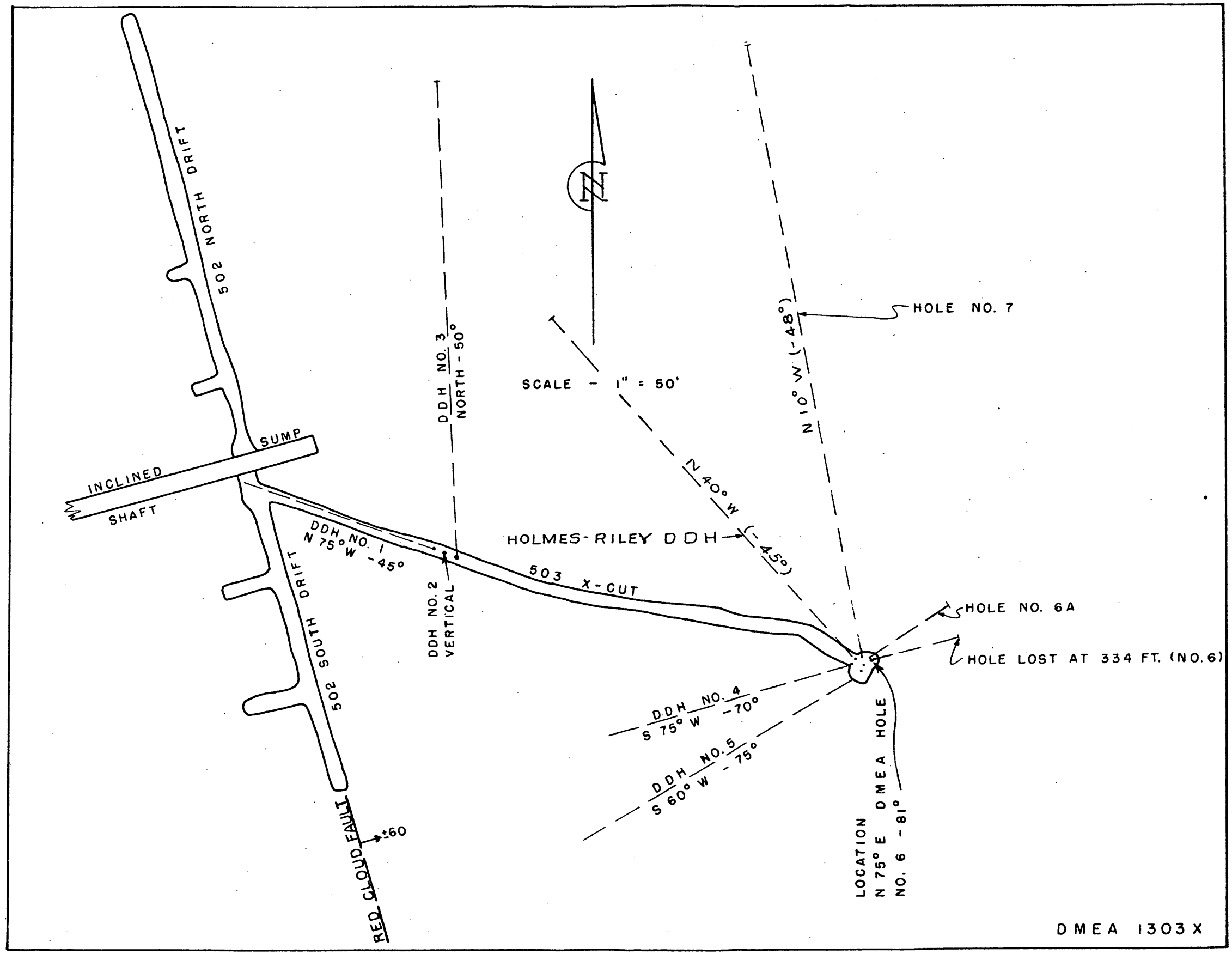


FIG. 4 500 LEVEL - RED CLOUD MINE - YUMA METALS, INC.

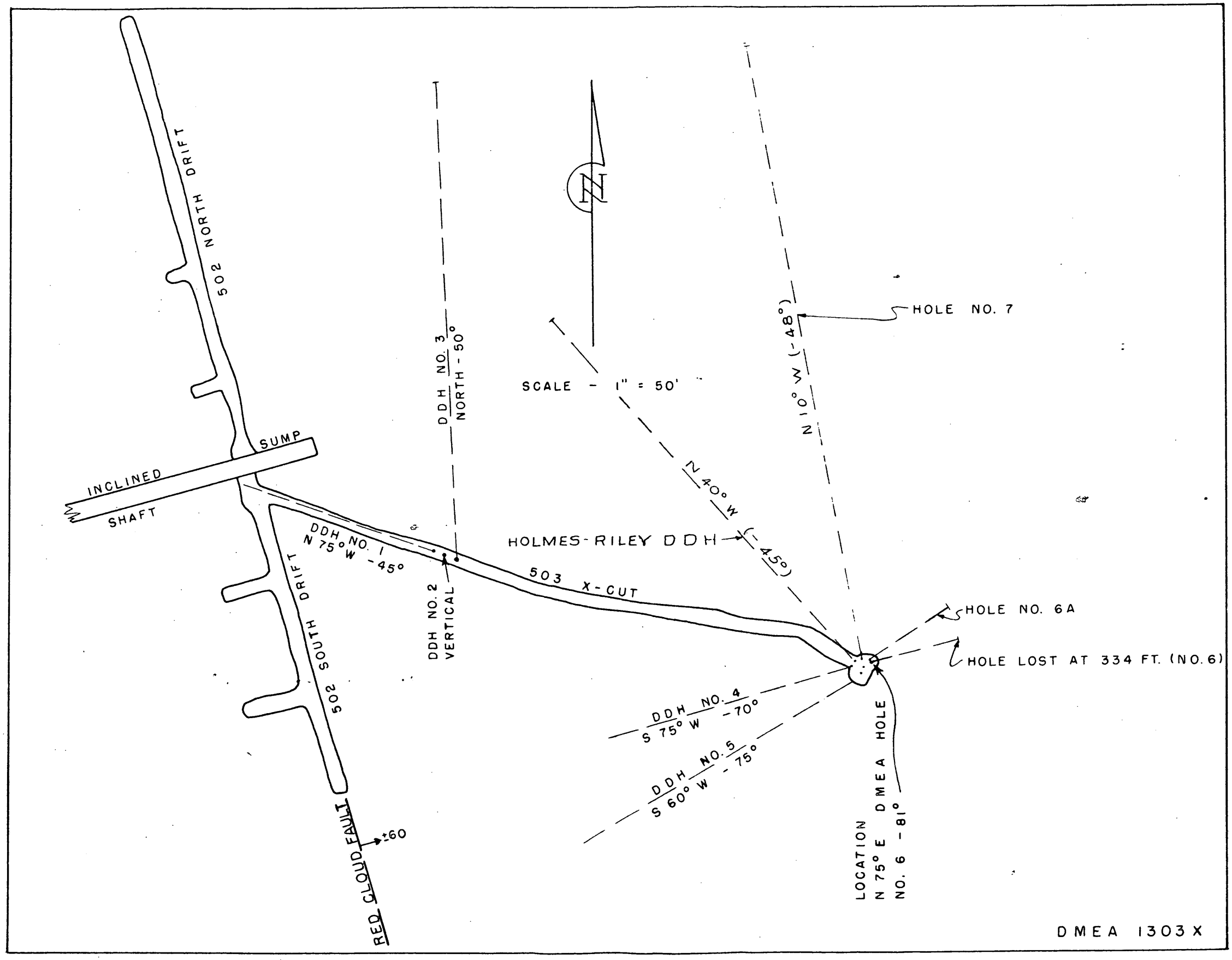


FIG. 4 500 LEVEL - RED CLOUD MINE - YUMA METALS, INC.

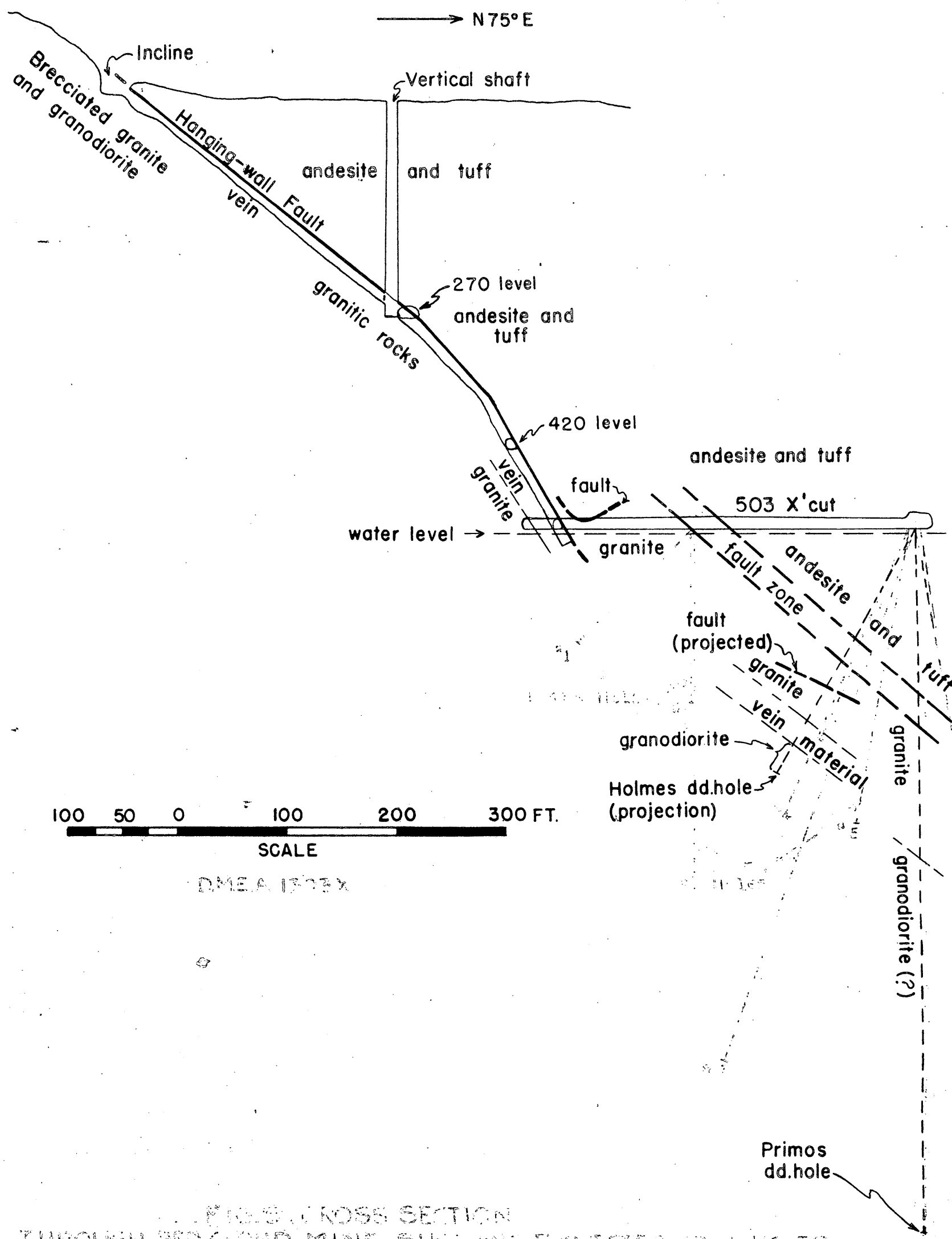
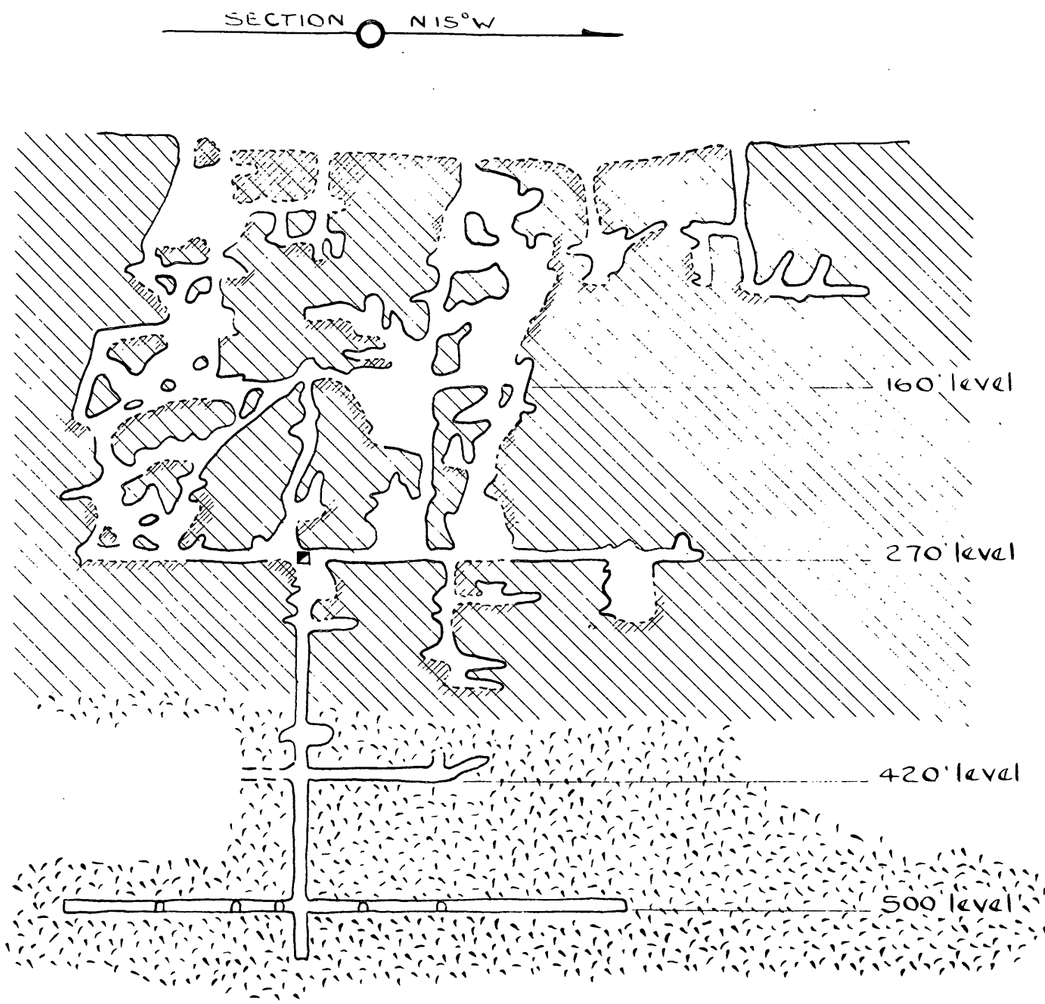


FIGURE 4 CROSS SECTION THROUGH RED CLOUD MINE, SHOWING PROJECTED DRILL HOLES



Legend

- Andesite and tuff
- Granitic rocks
- Backfill

Section on plane of vein, facing West.

SCALE 1"=100'

FIG. 4A. LONGITUDINAL SECTION ON RED CLOUD VEIN

D.M.E.A. 1303X

From: A.B.M. Bull. 158, Fig 20, 1951

The original primary ore minerals in the vein are almost entirely converted to oxides by processes of supergene alteration, and residual grains, nuggets or pods of galena are the only sulfides that have been spared from the oxidation process. The primary minerals have been oxidized to such an extent that all traces of them have been destroyed and apparently all the primary silver minerals were converted to cerargyrite. Processes of oxidation have extended to considerable depths and evidence of it is obtained in the diamond drill holes extending below 500 level.

Zinc is present throughout the mine but apparently increases from the outcrop downward toward the lowest workings and reaches a maximum concentration near 500 level. The zinc mineral willemite, which fluoresces green under an ultra violet light, is an easily recognized constituent in most of the ore, but it is probable that smithsonite and hemimorphite are also present because there doesn't appear to be enough willemite to account for all the zinc in the ore as indicated by assay.

The Red Cloud Mine was sampled by the U. S. Bureau of Mines in 1950 prior to initiation of the DMEA application, and 10 samples indicated that about 9 percent zinc could be expected in the ore in the hanging wall portion of the vein, and that the footwall portion has a somewhat higher zinc content. A sample taken in the footwall portion of the vein at the surface assayed 5 percent zinc, and a similar sample taken on 110 level, in the only crosscut which penetrates the footwall zone in the upper part of the mine, contained

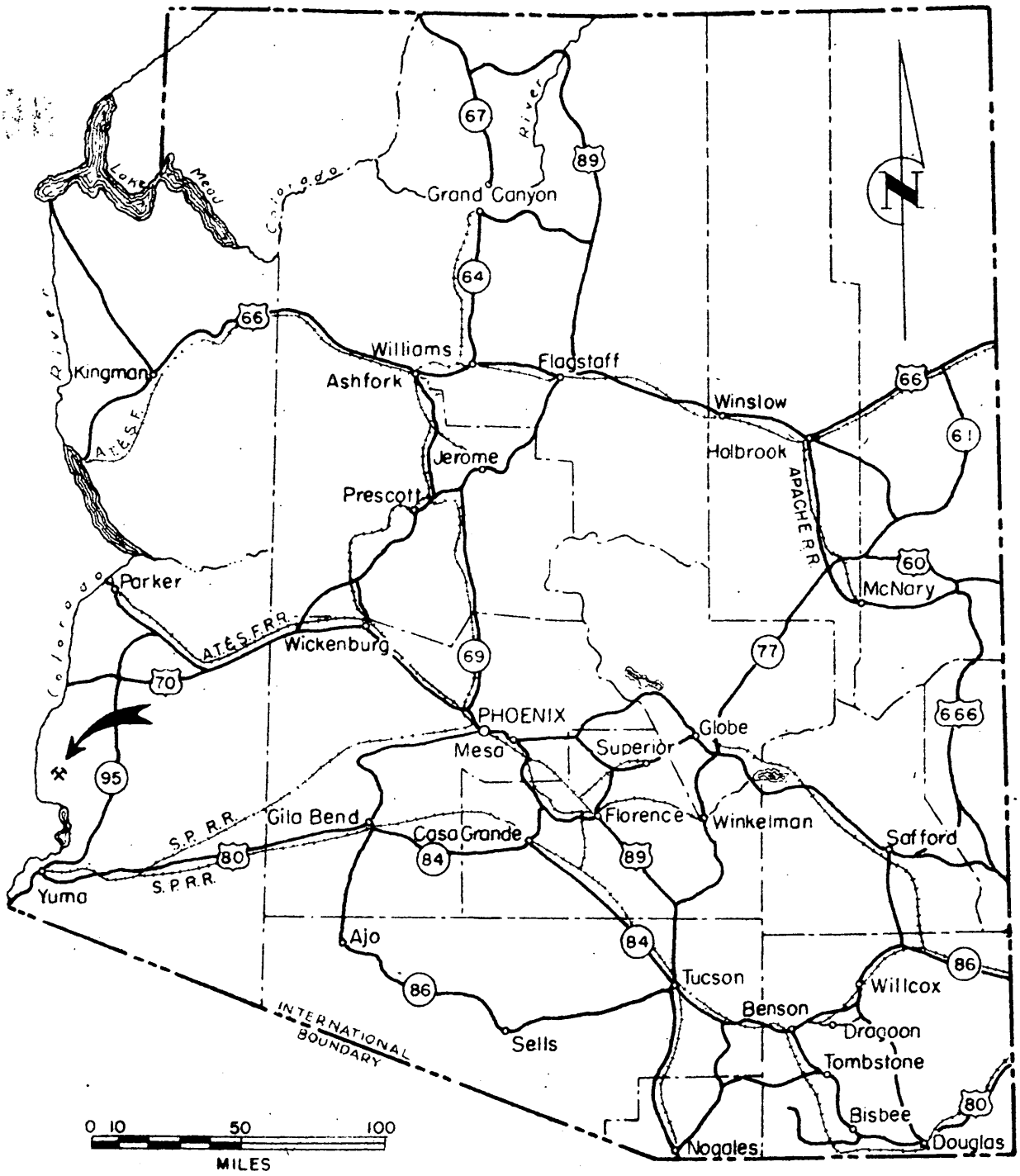


FIG. 1 - LOCATION MAP
RED CLOUD MINE
YUMA COUNTY, ARIZ.
DMA 1303X

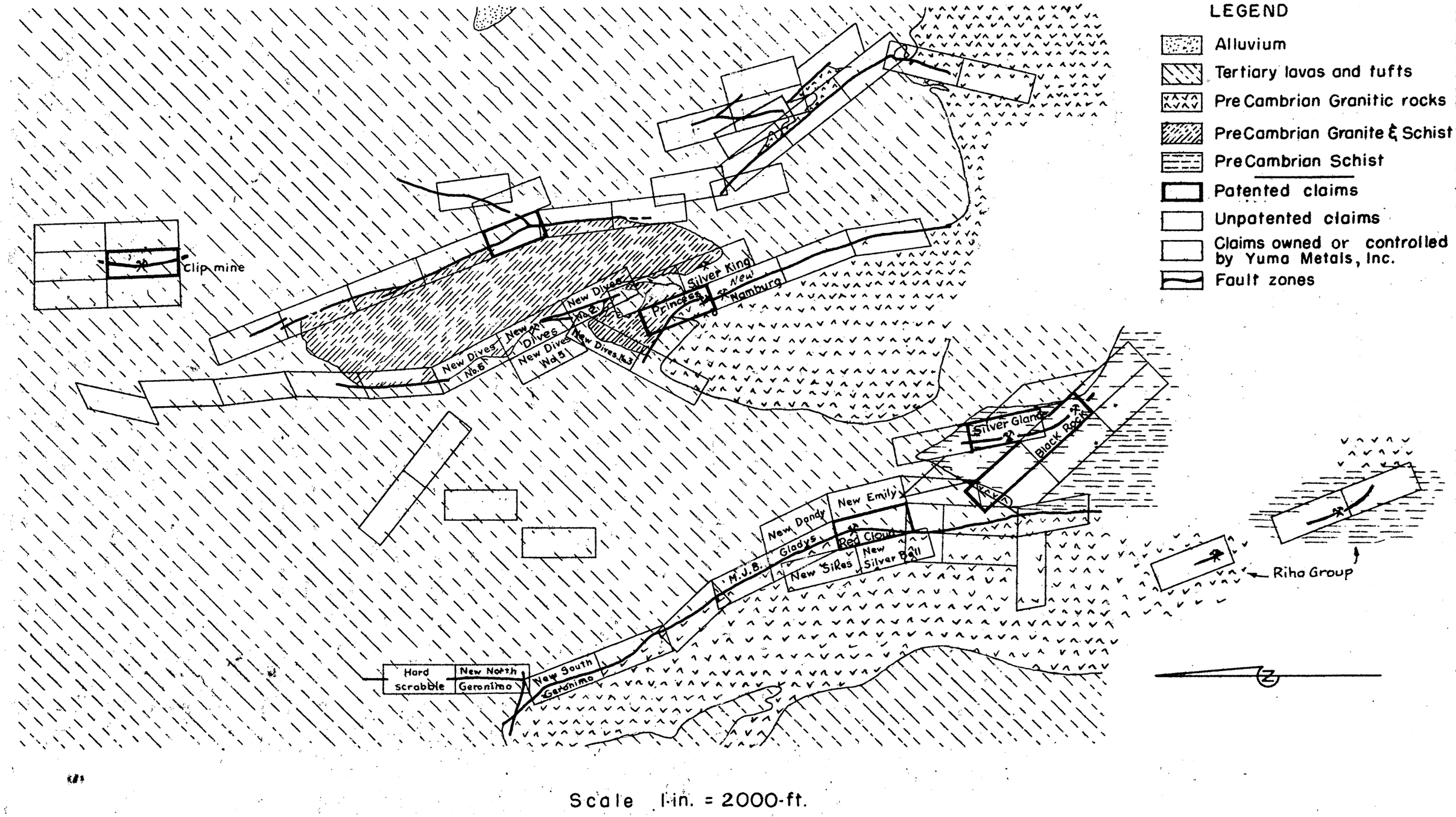
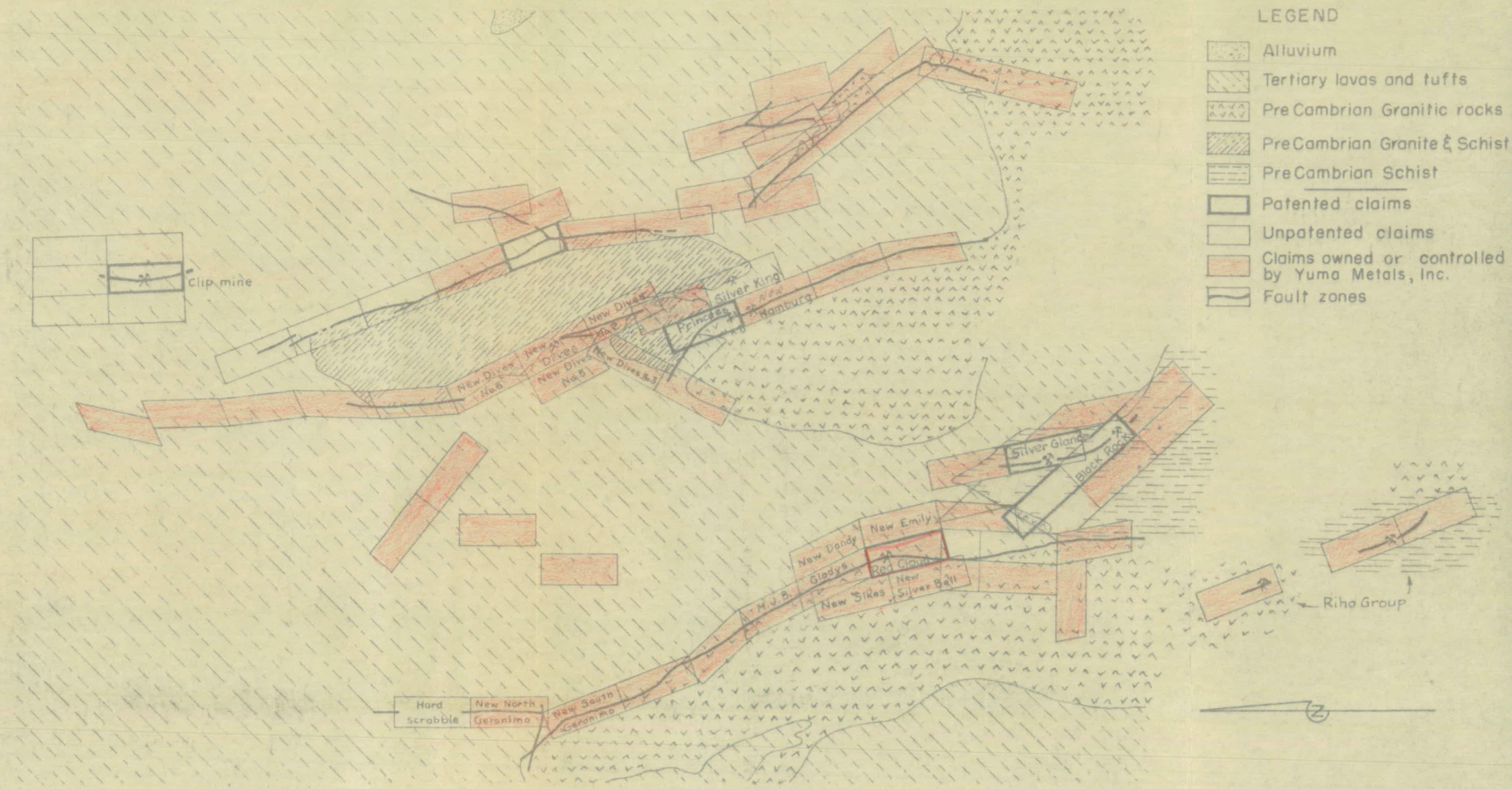


Figure 2 - Geologic and claim map of Silver District, Yuma County, Ariz. (Modified after Eldred D. Wilson.)



Scale 1-in. = 2000-ft.

DMA 1303 X

Figure 6- Geologic and claim map of Silver District, Yuma County, Ariz. (Modified after Eldred D. Wilson)

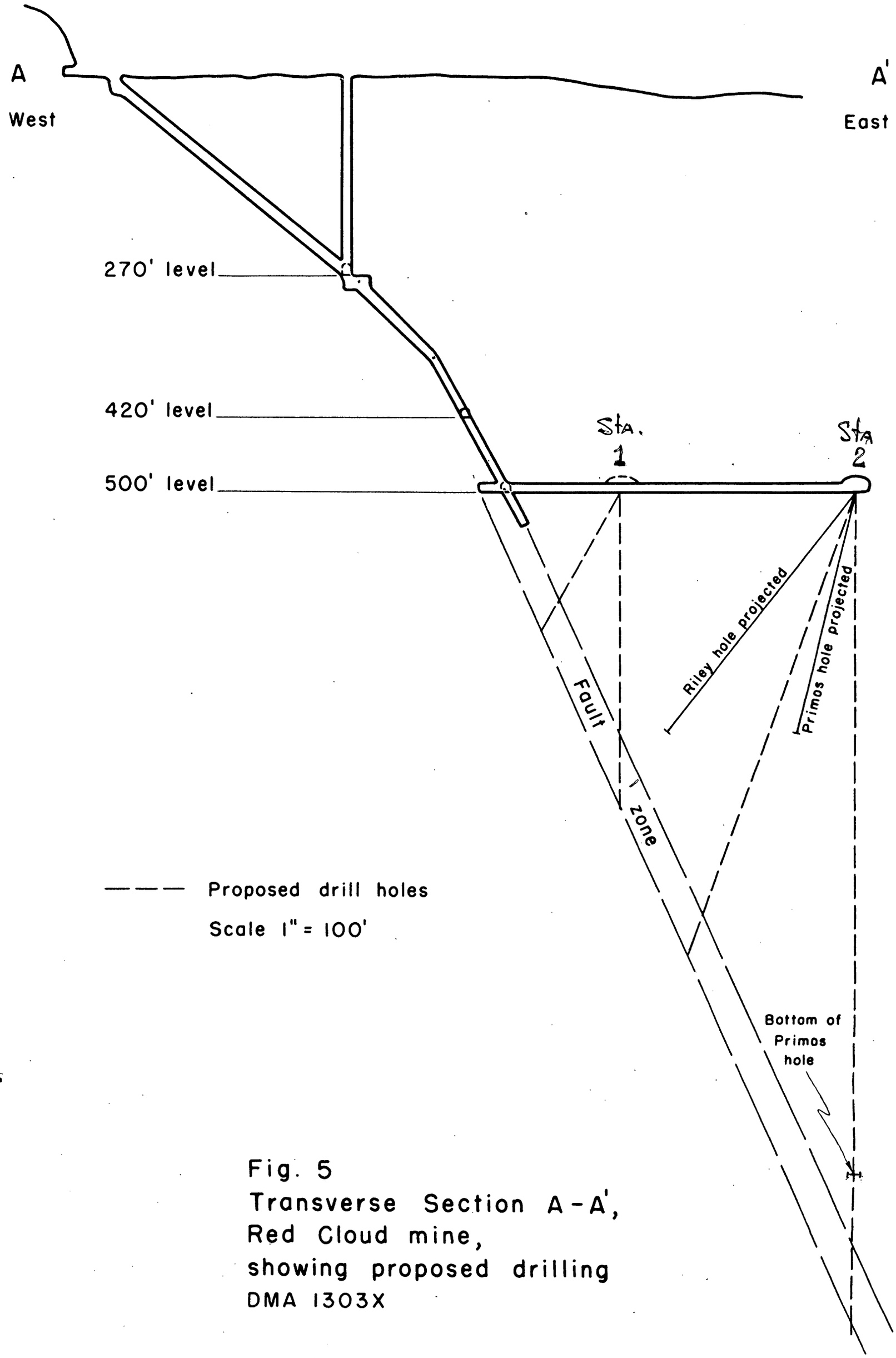


Fig. 5
Transverse Section A-A',
Red Cloud mine,
showing proposed drilling
DMA 1303X

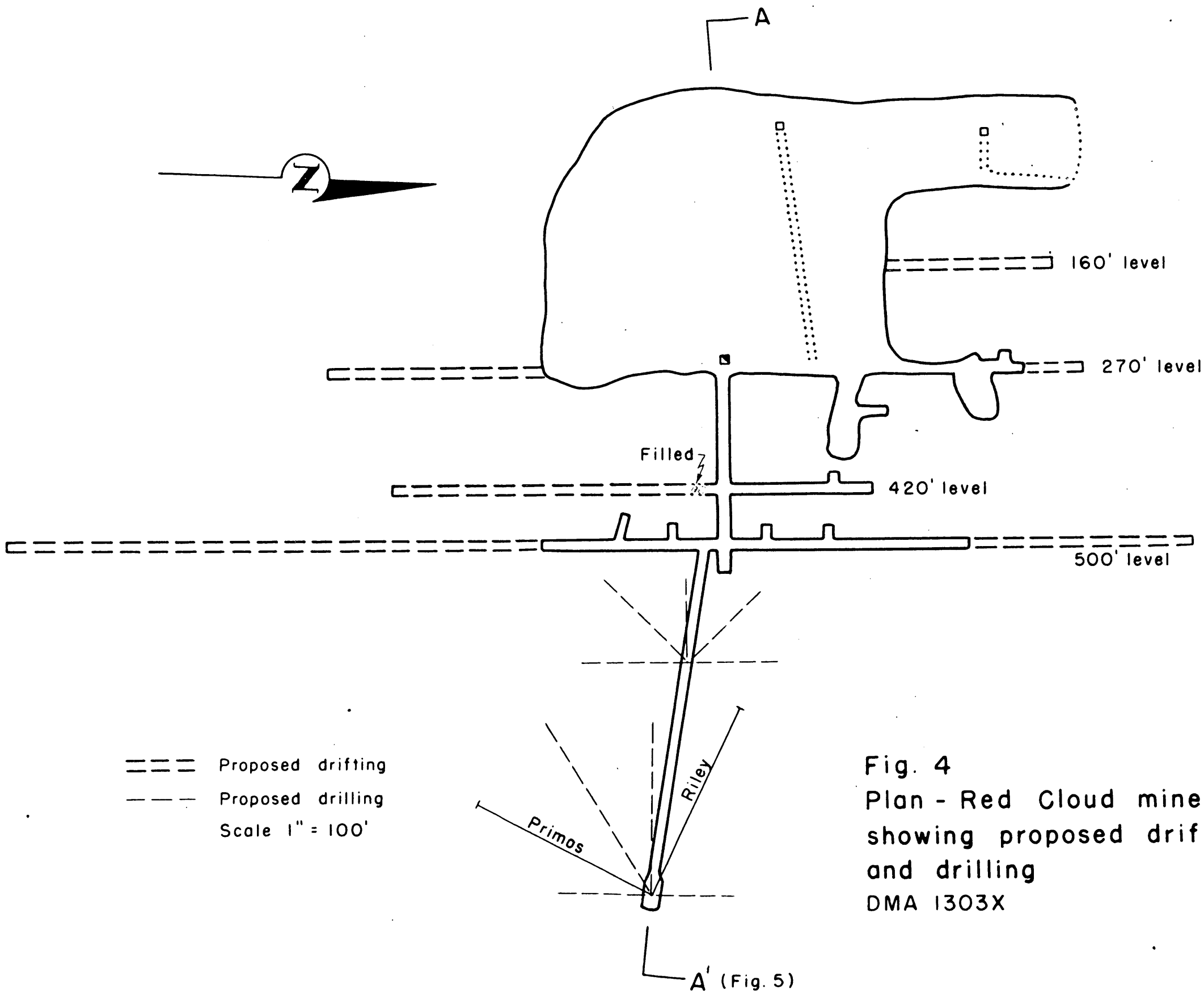


Fig. 4
Plan - Red Cloud mine, showing proposed drifting and drilling
DMA 1303X

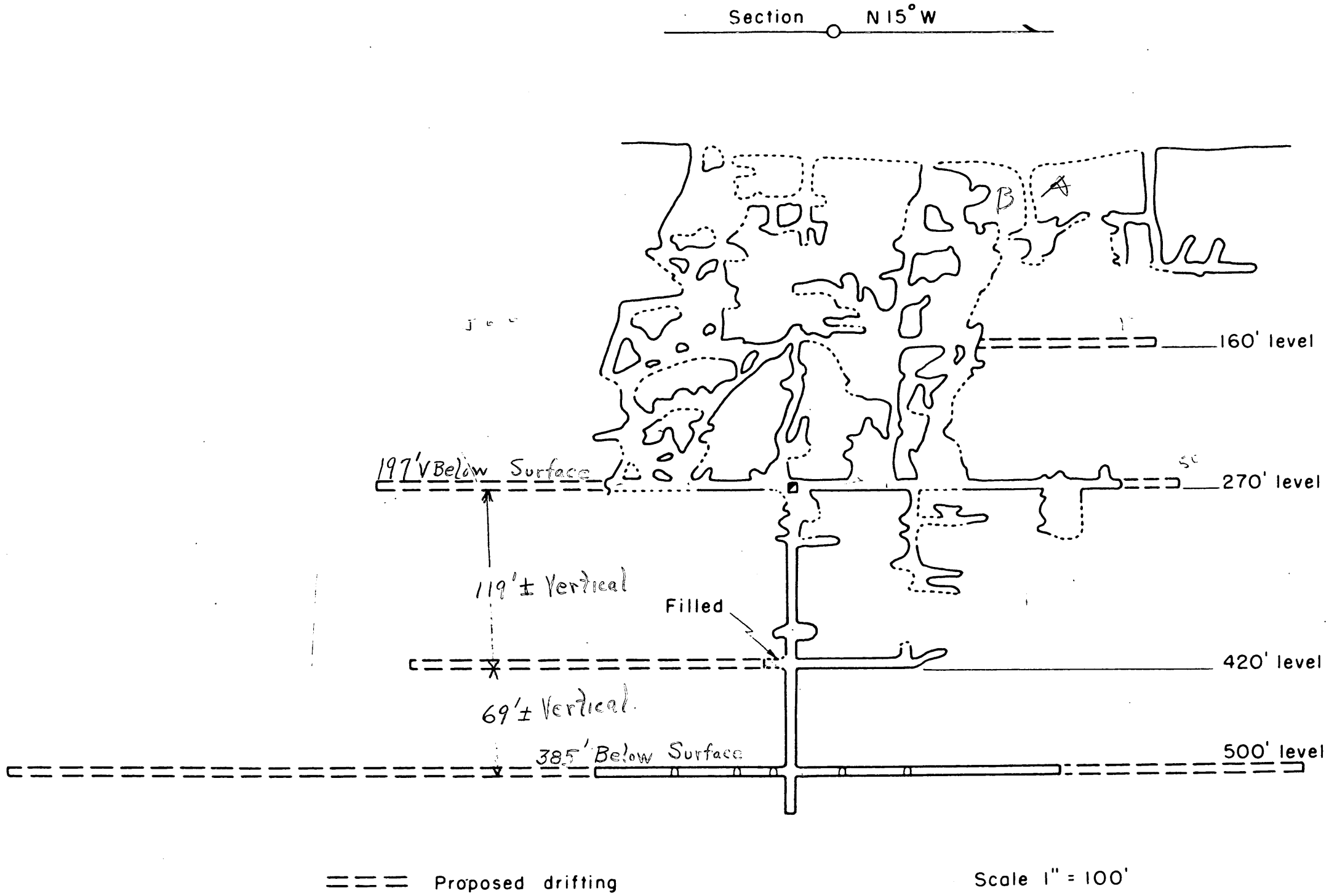


Fig. 3 Longitudinal Section on Red Cloud vein, showing proposed drifting

DMA 1303X

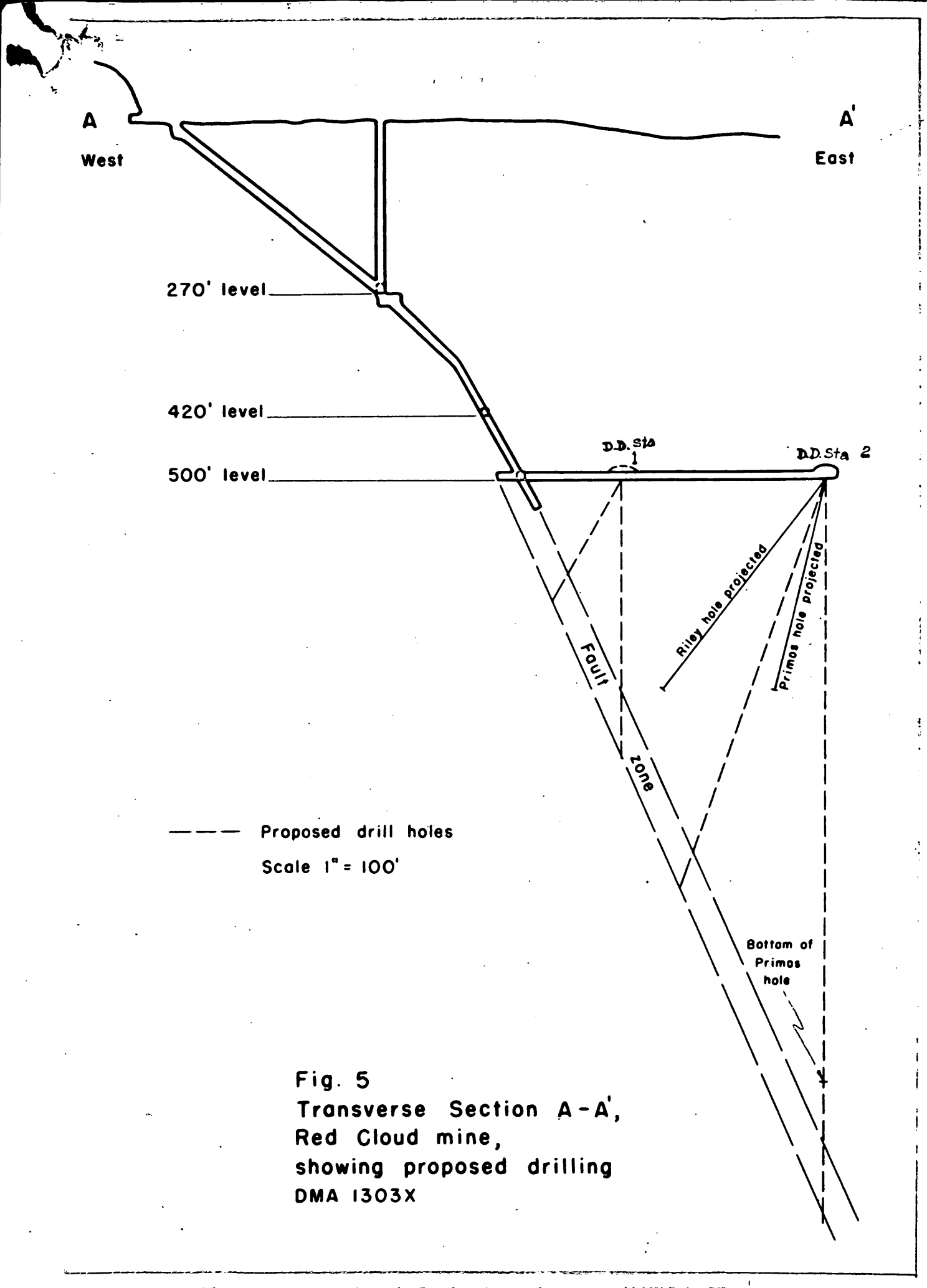
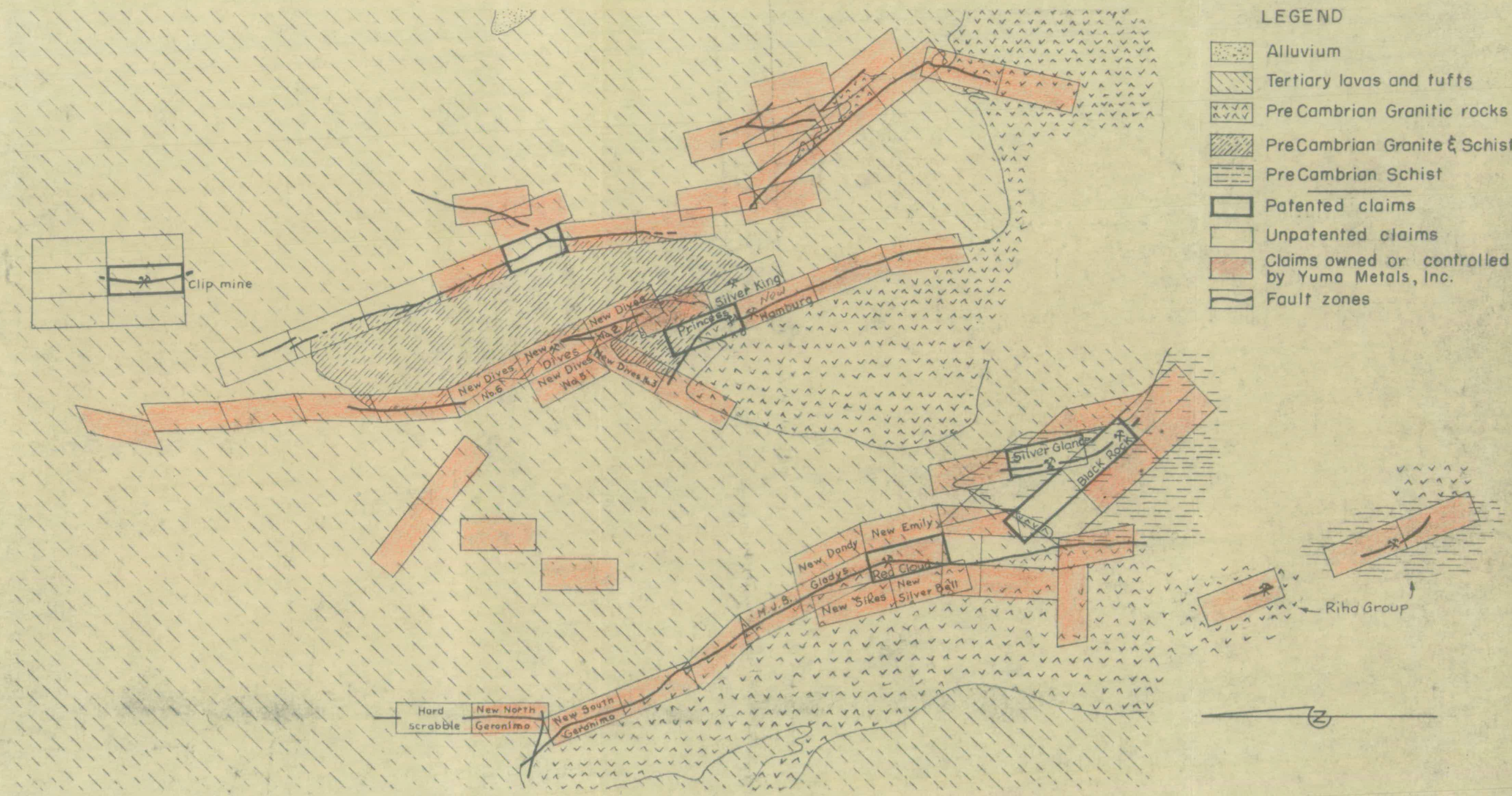


Fig. 5
Transverse Section A-A',
Red Cloud mine,
showing proposed drilling
DMA 1303X



Scale 1-in. = 2000-ft.

DNIA 1303 X

Figure 6 - Geologic and claim map of Silver District, Yuma County, Ariz. (Modified after Eldred D. Wilson.)

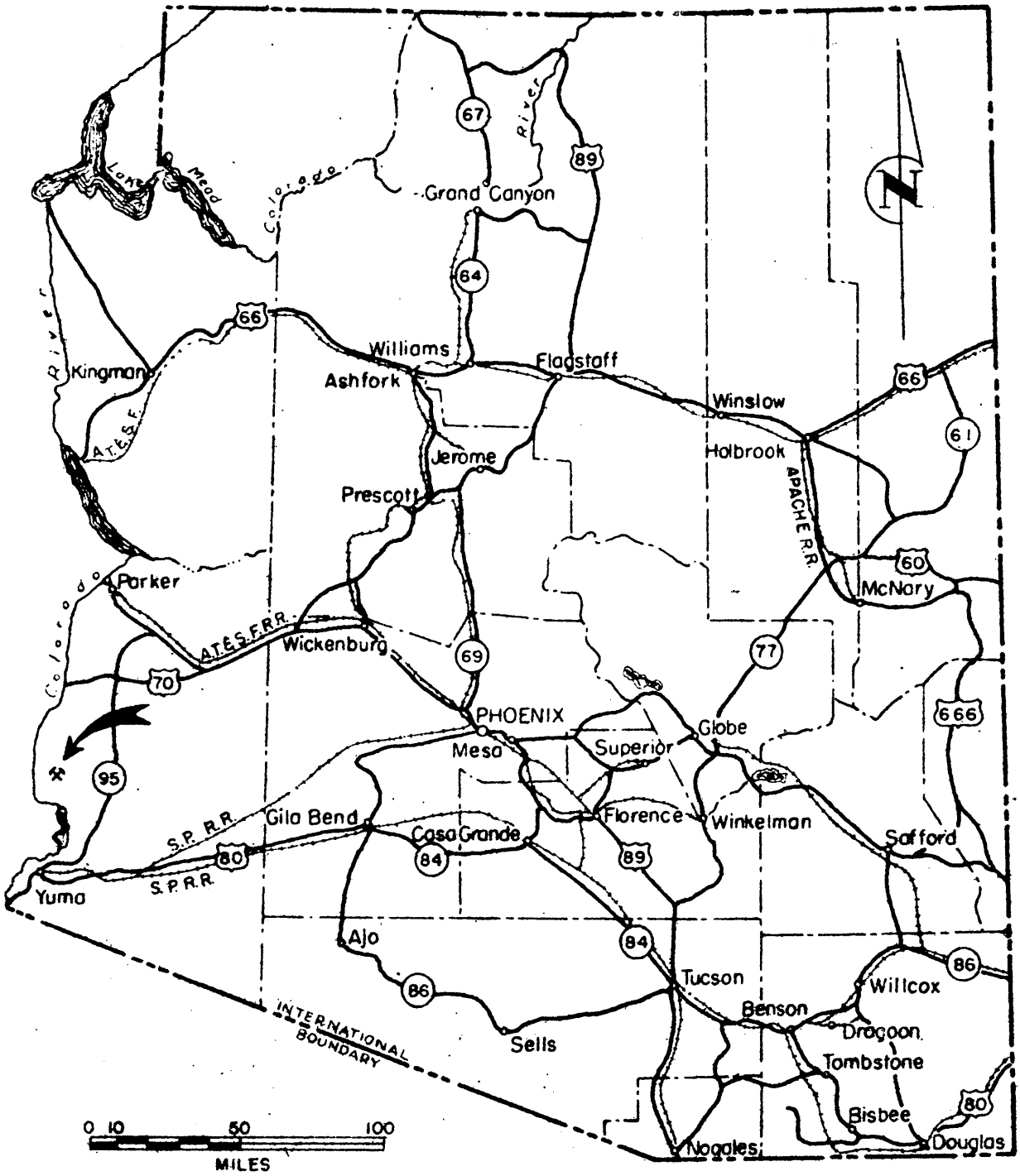


FIG. 1 - LOCATION MAP
RED CLOUD MINE
YUMA COUNTY, ARIZ.
DMA 1303X

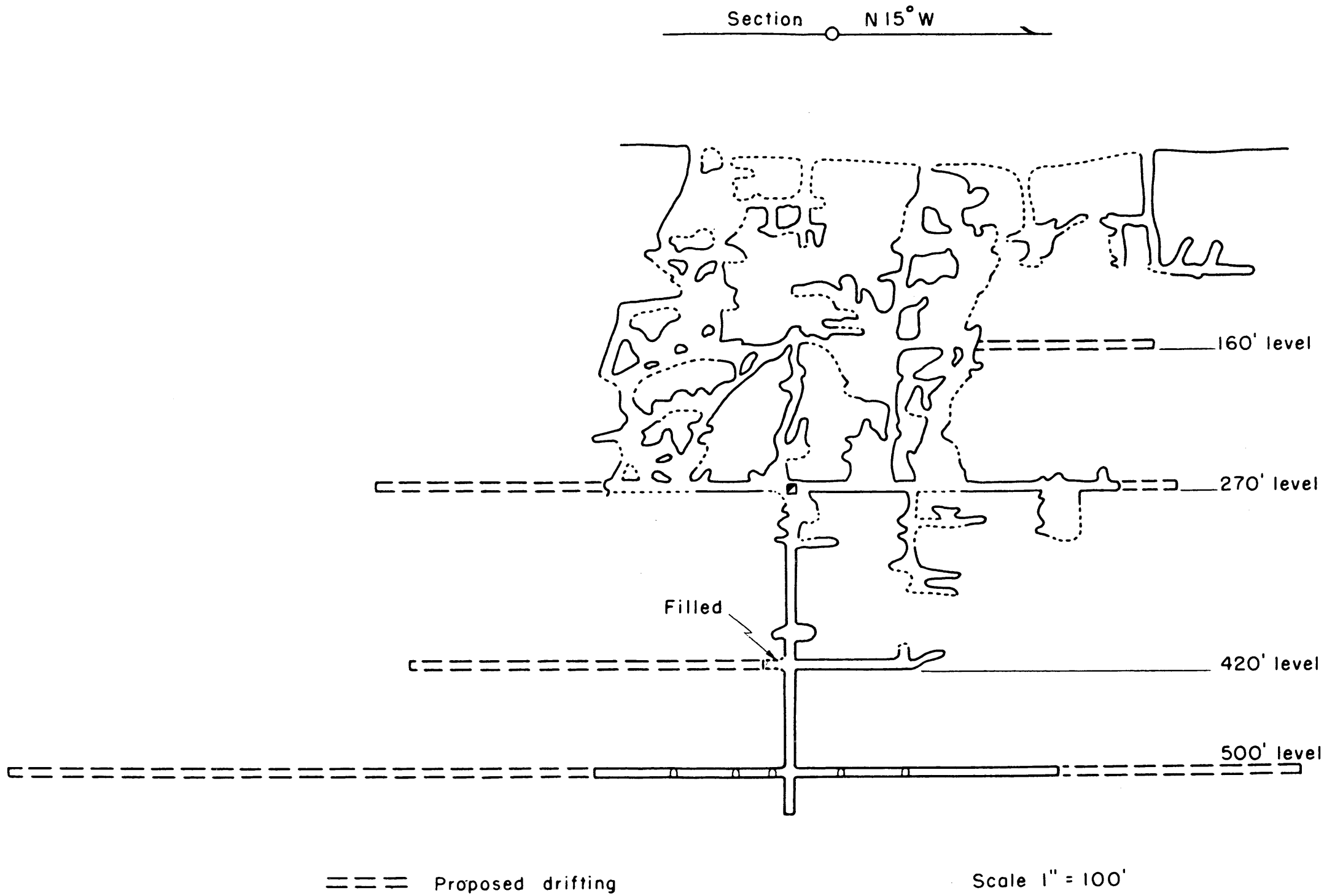


Fig. 3 Longitudinal Section on Red Cloud vein, showing proposed drifting

DMA 1303X

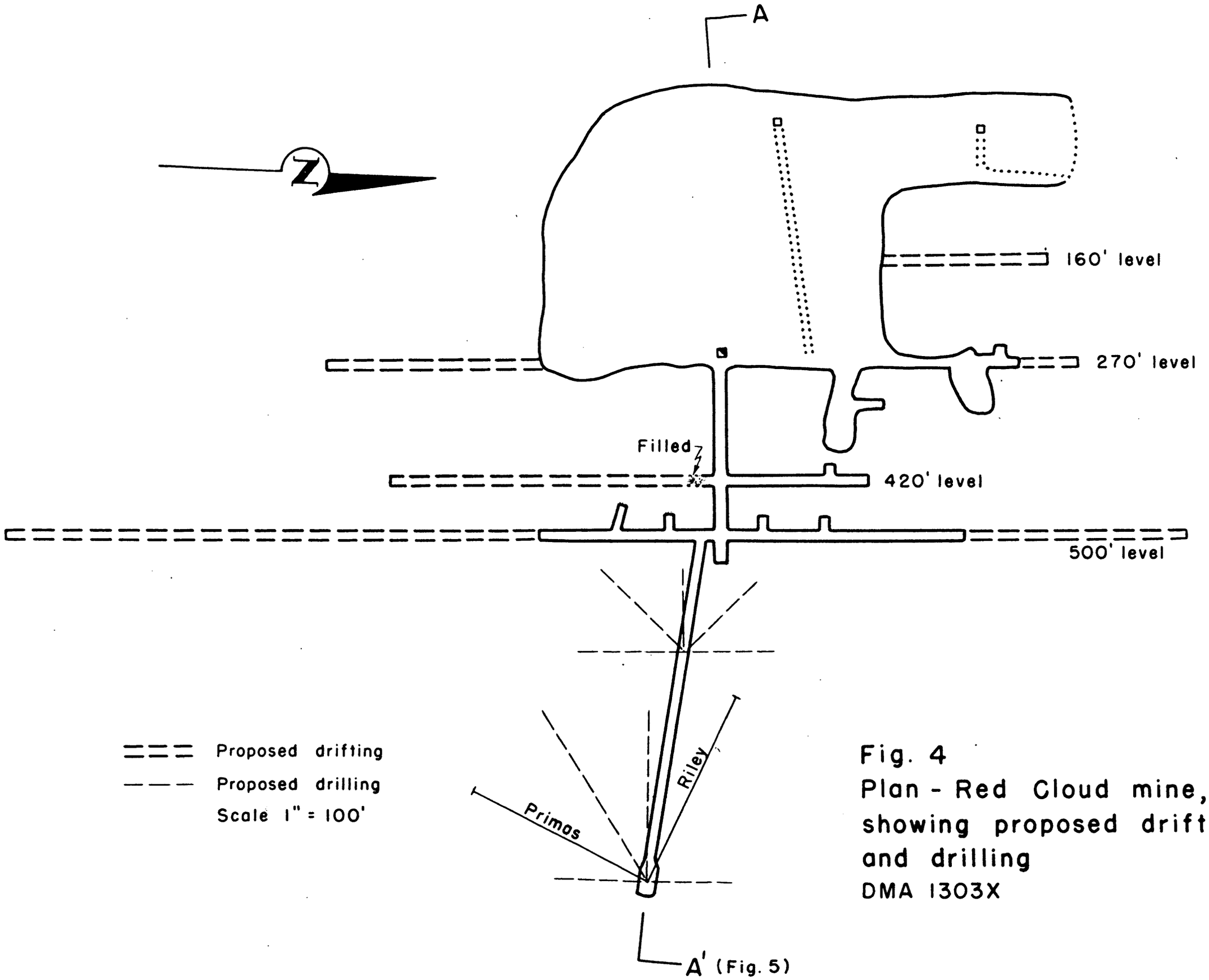


Fig. 4
Plan - Red Cloud mine, showing proposed drifting and drilling
DMA 1303X

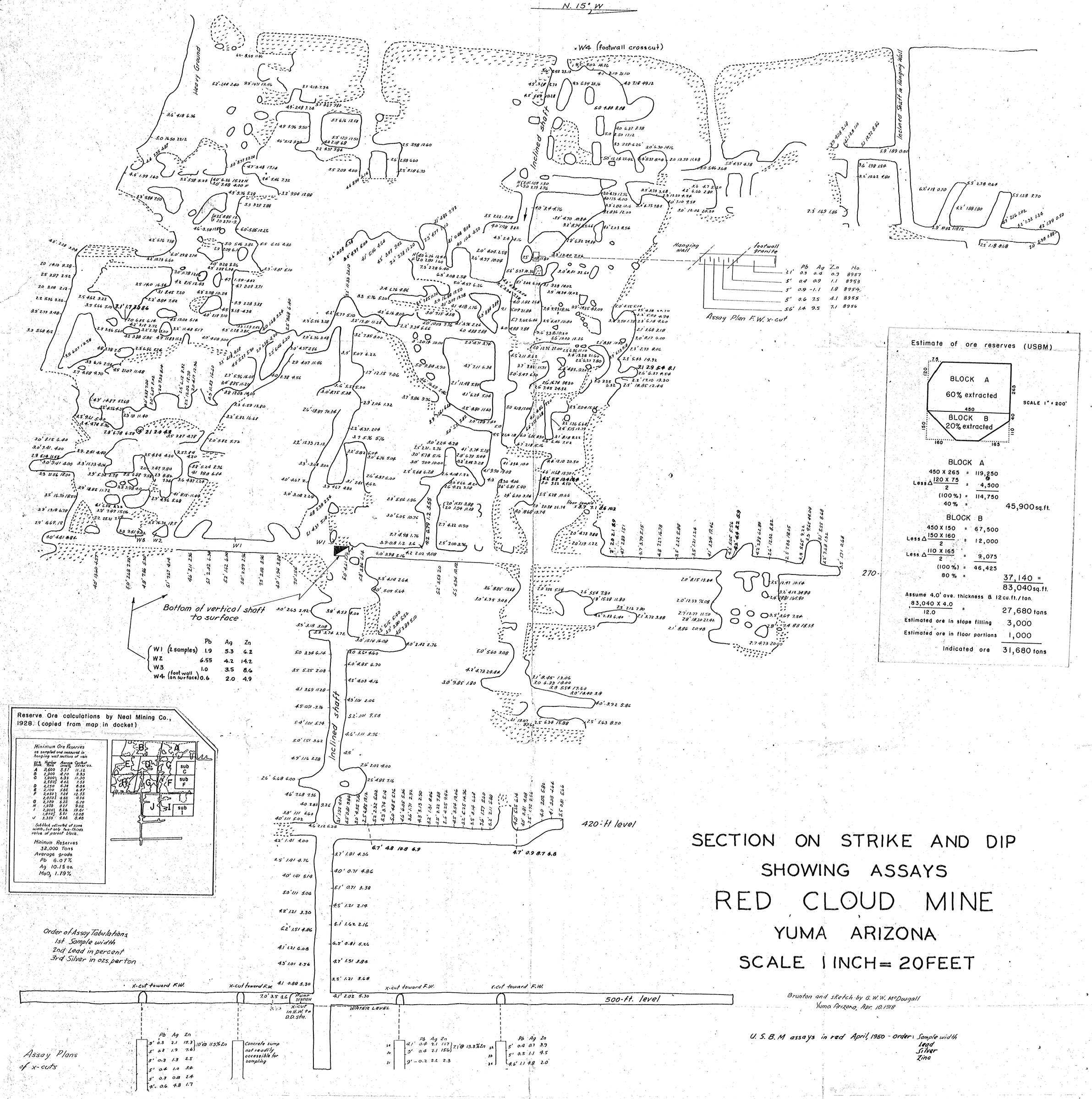


Figure 2.- Red Cloud assay map, section on vein, (after McDougall with addition of lower level.)

Bureau assays, and estimates of ore

Silver Restored

dma 1303X

CLAIM MAP

SILVER DISTRICT

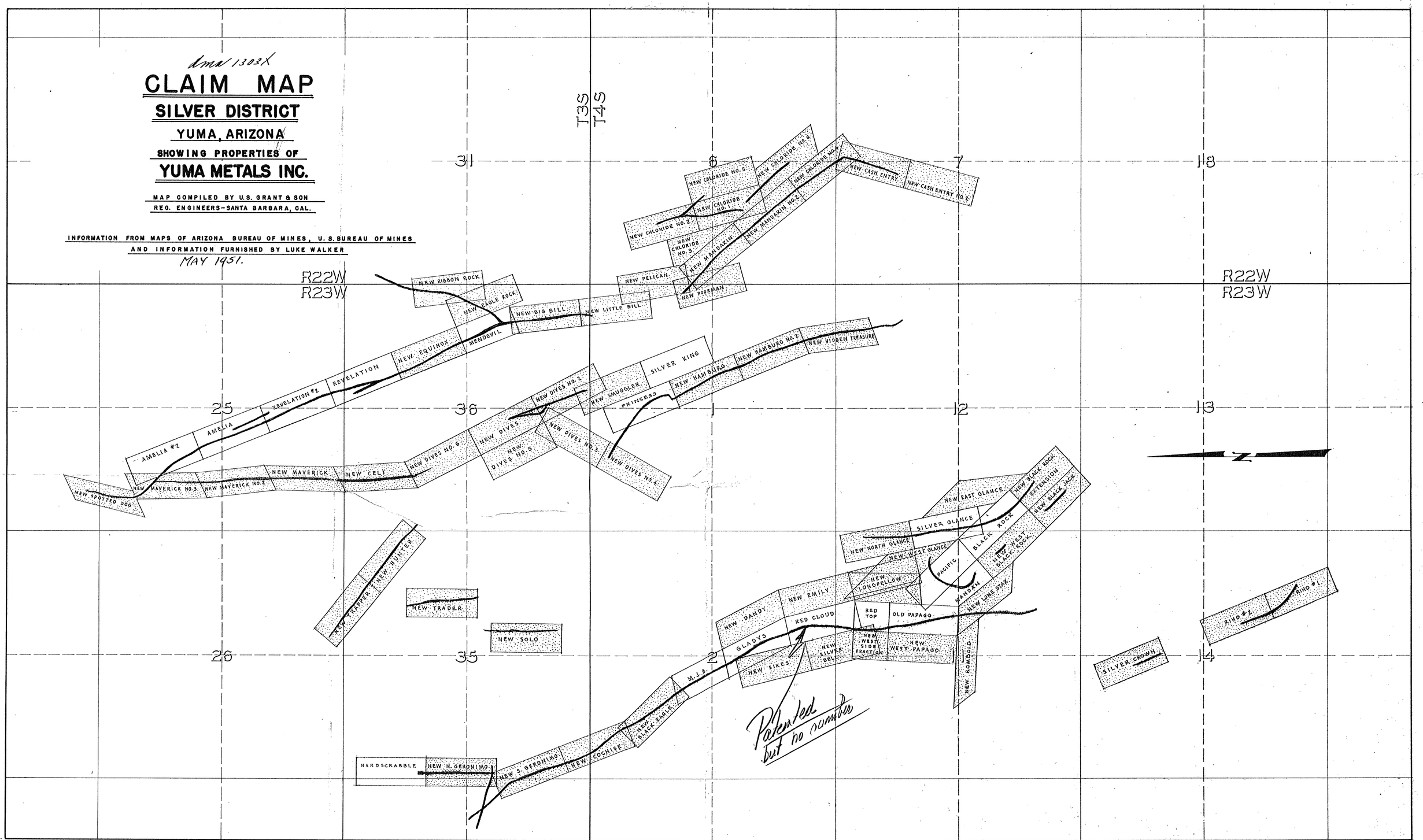
YUMA, ARIZONA

SHOWING PROPERTIES OF

YUMA METALS INC.

MAP COMPILED BY U.S. GRANT & SON
REG. ENGINEERS-SANTA BARBARA, CAL.

INFORMATION FROM MAPS OF ARIZONA BUREAU OF MINES, U.S. BUREAU OF MINES
AND INFORMATION FURNISHED BY LUKE WALKER
MAY 1951.



CLAIM MAP

SILVER DISTRICT

YUMA, ARIZONA

SHOWING PROPERTIES OF

YUMA METALS INC.

MAP COMPILED BY U.S. GRANT & SON
REG. ENGINEERS-SANTA BARBARA, CAL.

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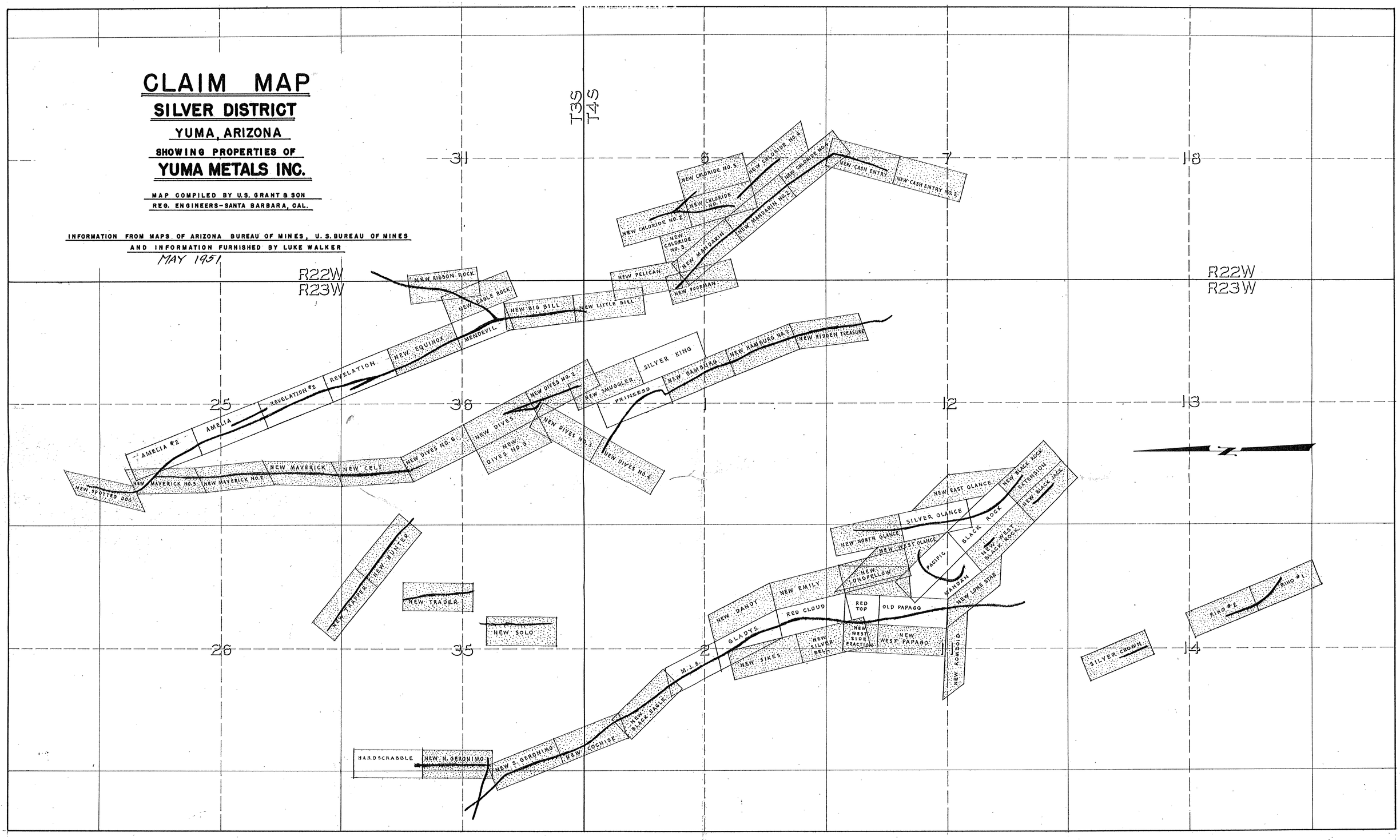
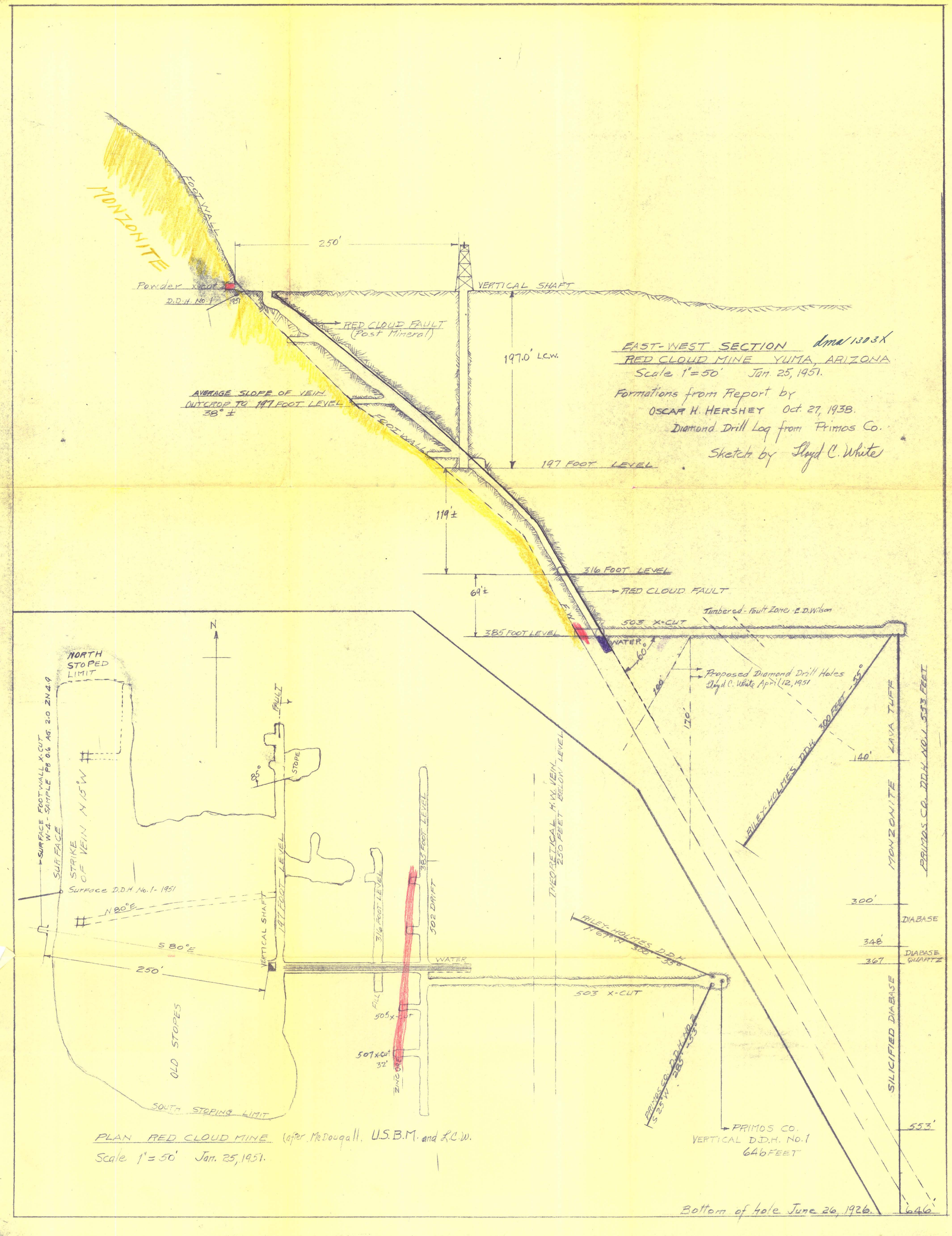
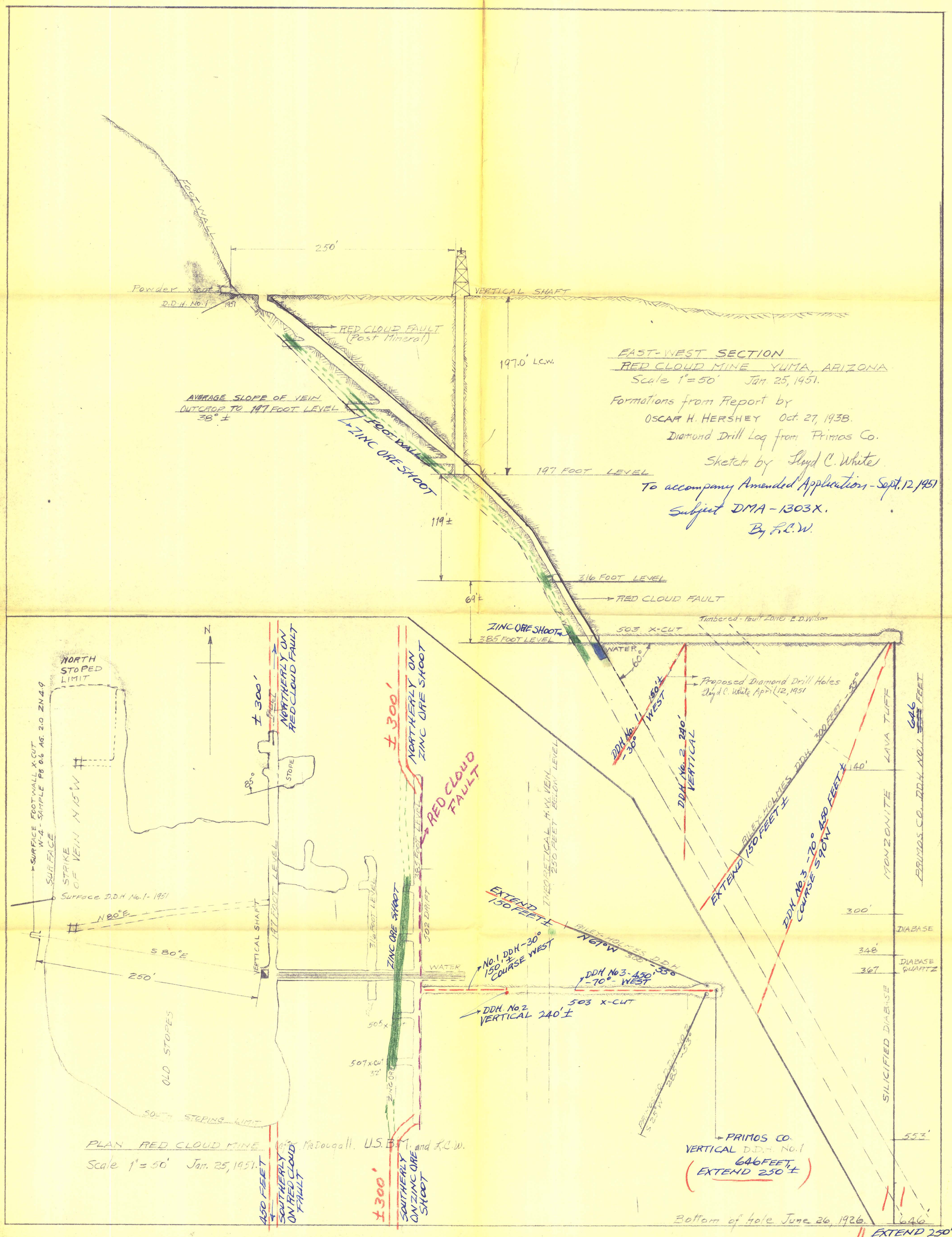
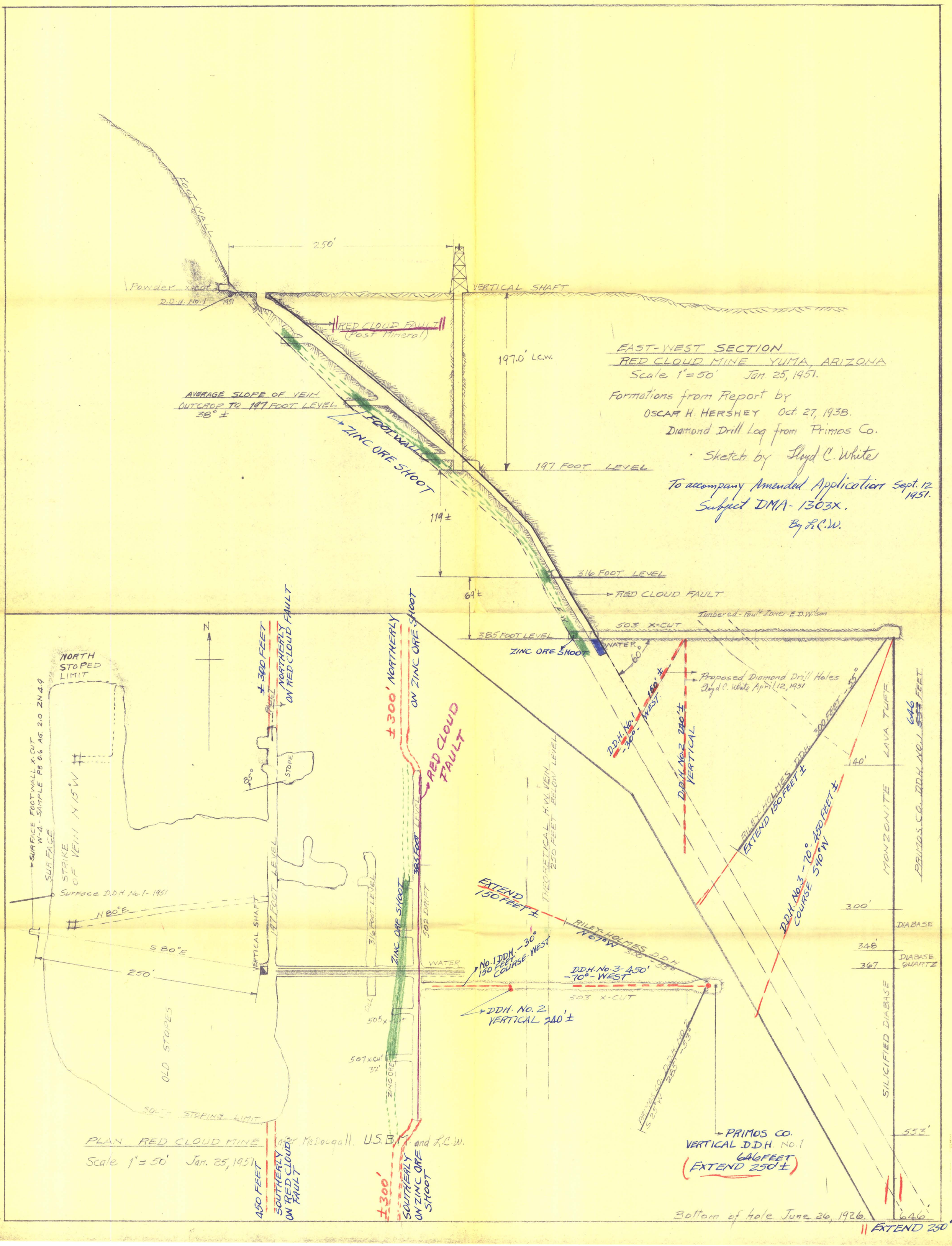




PLAN RED CLOUD MINE (after McDougall, U.S.B.M. and L.C.W.
Scale 1" = 50' Jan. 25, 1951.


FOOT WALL
250'
Powder x-cut
D.D.H. No. 1 1951
VERTICAL SHAFT
RED CLOUD FAULT (Post Mineral)
197.0' L.C.W.
EAST-WEST SECTION
RED CLOUD MINE YUMA, ARIZONA
Scale 1"=50' Jan. 25, 1951.
Formations from Report by
OSCAR H. HERSHEY Oct. 27, 1938.
Diamond Drill Log from Primos Co.
Sketch by Lloyd C. White
To accompany Amended Application - Sept. 12, 1951
Subject DMA-1303X.
By L.C.W.
AVERAGE SLOPE OF VEIN
OUTCROP TO 197 FOOT LEVEL
38° ±
FOOT WALL
ZINC ORE SHOOT
197 FOOT LEVEL
119'±
316 FOOT LEVEL
69'±
RED CLOUD FAULT
Timbered - Fault Zone E.D. Wilson
ZINC ORE SHOOT
385 FOOT LEVEL
503 X-CUT
WATER
60°
Proposed Diamond Drill Holes
Lloyd C. White April 12, 1951
DDH No. 1 -30° 150'± WEST
DDH No. 2 240' VERTICAL
DDH No. 3 300 FEET -55°
EXTEND 150 FEET ±
DDH No. 3 -70° 450 FEET ± COURSE S 90° W
LAVA TUFF
MONZONITE
PRIMOS CO. DDH NO. 1 646 FEET
40'
300'
DIABASE
348'
DIABASE QUARTZ
367
SILICIFIED DIABASE
553'
646
EXTEND 250'
N
NORTH STOPED LIMIT
SURFACE FOOTWALL X-CUT W-4 - SAMPLE PB 0.6 AG. 2.0 ZN 4.9
STRIKE OF VEIN N 15° W
SURFACE
Surface D.D.H. No. 1 - 1951
N 80° E
S 80° E
250'
VERTICAL SHAFT
197 FOOT LEVEL
OLD STOPES
SOUTH STOPING LIMIT
± 300'
NORTHERLY ON RED CLOUD FAULT
FAULT
85°
STOPE
± 300'
NORTHERLY ON ZINC ORE SHOOT
RED CLOUD FAULT
385 FOOT LEVEL
316 FOOT LEVEL
ZINC ORE SHOOT
502 DRIFT
WATER
505 x-cut
507 x-cut 32'
ZINC ORE
THEORETICAL H. VX. VEIN 250 FEET BELOW LEVEL
EXTEND 150 FEET ±
RILEY-HOLMES DDH N 67° W 300' -55°
No. 1, DDH -30° 150'± COURSE WEST
DDH No 3 - 450' -70° - WEST
503 X-CUT
DDH No 2 VERTICAL 240'±
PRIMOS CO. DDH No 2 S 25° W 265' -53°
PRIMOS CO. VERTICAL D.D.H. No. 1 646 FEET (EXTEND 250'±)
Bottom of hole June 26, 1926.
PLAN RED CLOUD MINE after McDougall, U.S.B.M. and L.C.W.
Scale 1"=50' Jan. 25, 1951.
450 FEET
SOUTHERLY ON RED CLOUD FAULT
± 300'
SOUTHERLY ON ZINC ORE SHOOT


FOOT WALL
250'
Powder x-cut
D.D.H. No. 1
1951
VERTICAL SHAFT
RED CLOUD FAULT
(Post Mineral)
197.0' L.C.W.
AVERAGE SLOPE OF VEIN
OUTCROP TO 197 FOOT LEVEL
38° ±
FOOT WALL
ZINC ORE SHOOT
197 FOOT LEVEL
119'±
316 FOOT LEVEL
69'±
RED CLOUD FAULT
Timbered - Fault Zone E.D. Wilson
50.3 X-CUT
385 FOOT LEVEL
ZINC ORE SHOOT
WATER
60°
Proposed Diamond Drill Holes
Lloyd C. White April 12, 1951
D.D.H. No. 1
-30° - WEST
150'±
D.D.H. No. 2
VERTICAL
220'±
300 FEET
-55°
40'
LAVA TUFF
MONZONITE
PRIMOS. CO. DDH. NO. 1
646 FEET
RILEY-HOLMES DDH.
EXTEND 150 FEET ±
D.D.H. No. 3 - 70° - 450 FEET ±
COURSE S 40° W
300'
DIABASE
348'
DIABASE QUARTZ
367'
SILICIFIED DIABASE
553'
646'
EXTEND 250'
EAST-WEST SECTION
RED CLOUD MINE YUMA, ARIZONA
Scale 1" = 50' Jan. 25, 1951.
Formations from Report by
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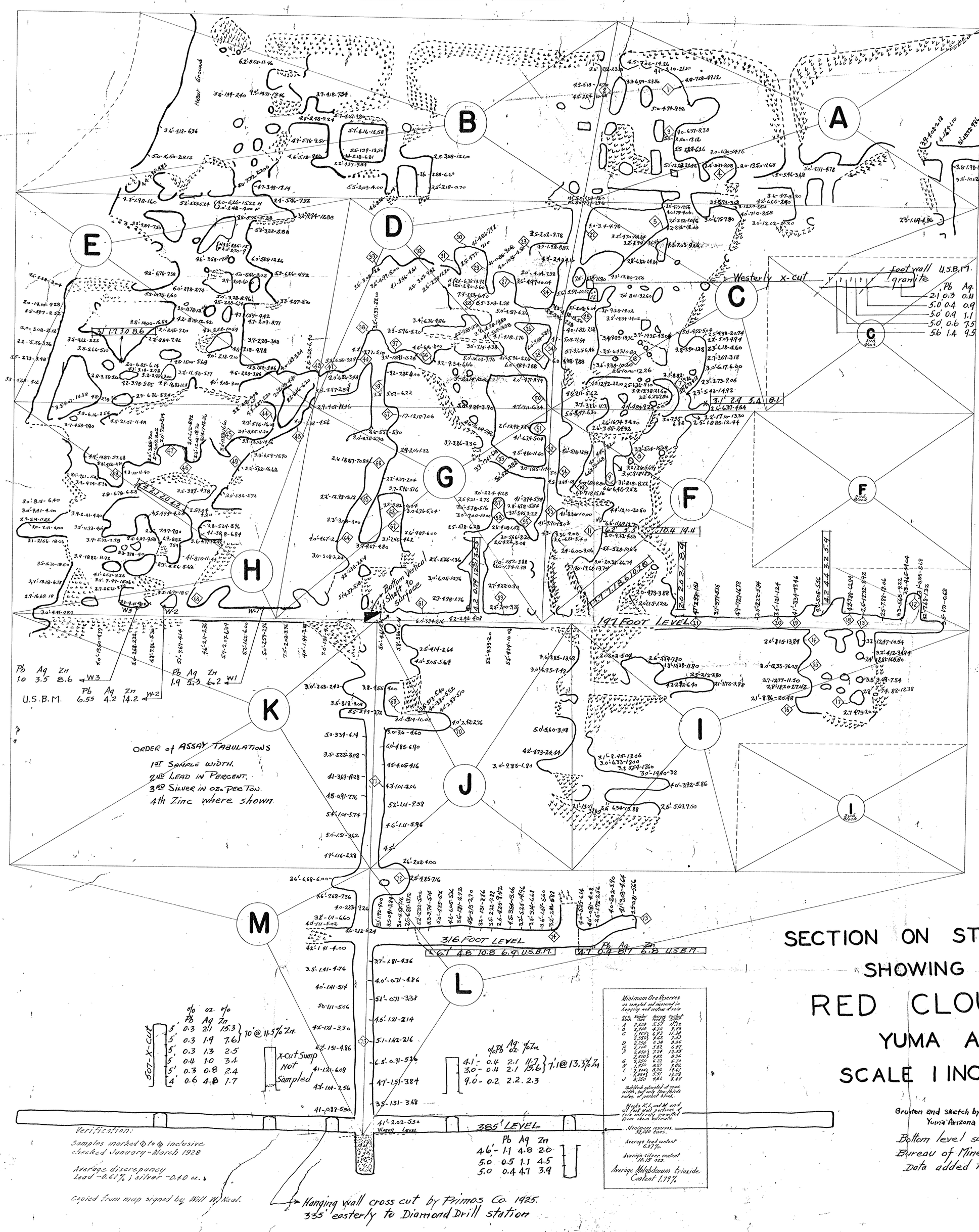
Diamond Drill Log from Primos Co.
Sketch by Lloyd C. White
To accompany Amended Application Sept. 12 1951.
Subject DMA-1303X.
By L.C.W.
N
NORTH STOPED LIMIT
SURFACE FOOT WALL X-CUT
W-4 - SAMPLE PB 0.6 AG. 2.0 ZN 4.9
SURFACE
STRIKE OF VEIN N 15° W
Surface D.D.H. No. 1 - 1951
N 80° E
S 80° E
250'
VERTICAL SHAFT
197 FOOT LEVEL
316 FOOT LEVEL
OLD STOPES
SOUTH STOPING LIMIT
±300 FEET
NORTHERLY ON RED CLOUD FAULT
STOPE
85°
±300' NORTHERLY ON ZINC ORE SHOOT
RED CLOUD FAULT
385 FOOT LEVEL
ZINC ORE SHOOT
302 DRIFT
WATER
FILL
505 x-cut
507 x-cut
32'
ZINC ORE
THEORETICAL H.W. VEIN 250 FEET BELOW LEVEL
EXTEND 150 FEET ±
RILEY-HOLMES DDH.
N 67° W
No. 1 DDH. -30° 150 FEET COURSE WEST
DDH. No. 3 - 450' -70° - WEST
503 X-CUT
DDH. No. 2 VERTICAL 240'±
PRIMOS CO. DDH. NO. 2
S 25° W 283' -53°
PRIMOS CO. VERTICAL D.D.H. No. 1 646 FEET
(EXTEND 250'±)
Bottom of hole June 26, 1926.
PLAN RED CLOUD MINE after McDougall, U.S.B.M. and L.C.W.
Scale 1" = 50' Jan. 25, 1951
450 FEET
SOUTHERLY ON RED CLOUD FAULT
±300'
SOUTHERLY ON ZINC ORE SHOOT

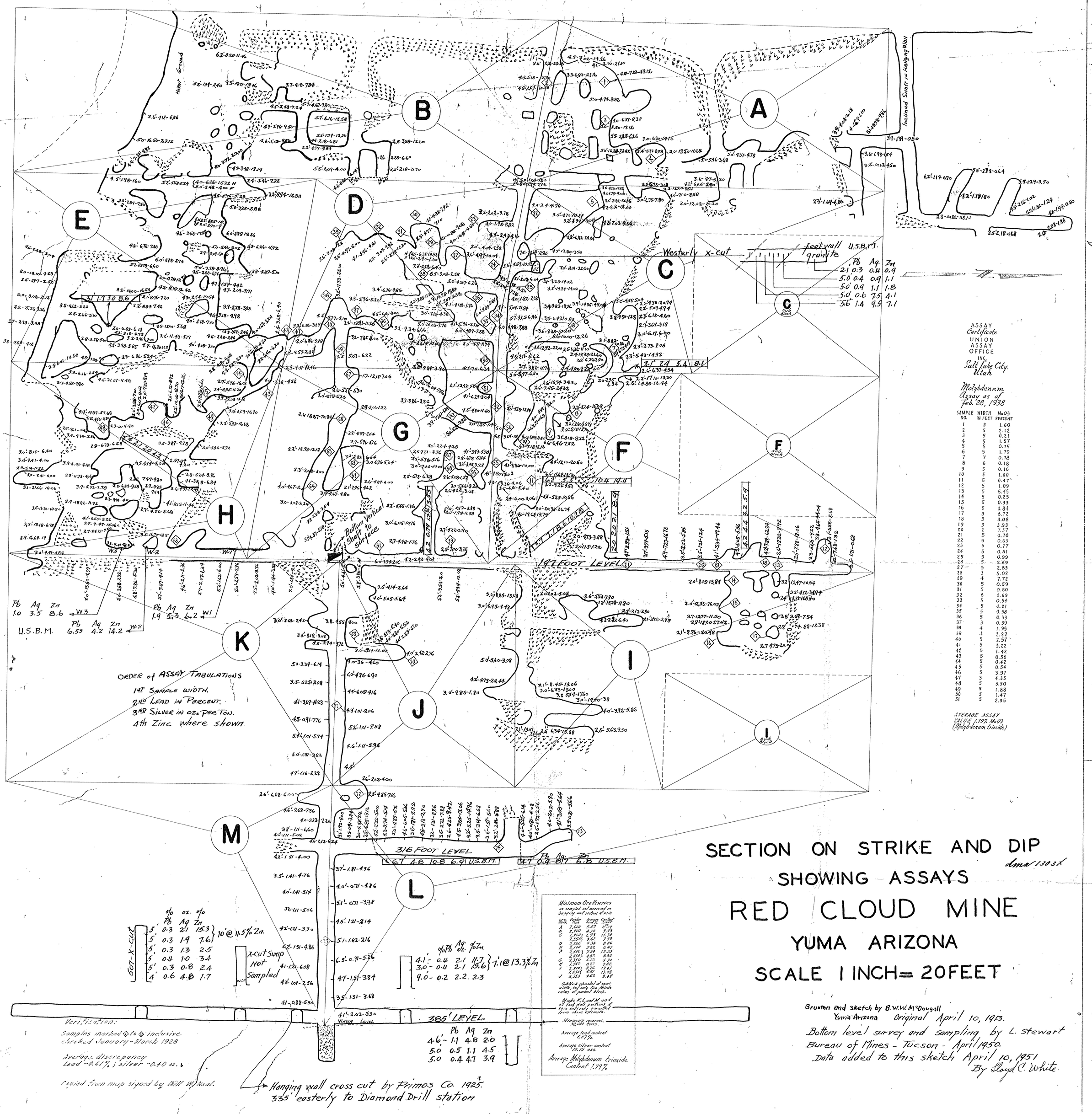


ASSAY Certificate
UNION ASSAY OFFICE INC.
Salt Lake City, Utah

Molybdenum Assay as of Feb. 28, 1938

SAMPLE NO.	WIDTH IN FEET	MoO3 PERCENT
1	5	1.60
2	5	2.12
3	5	0.21
4	5	1.57
5	5	0.75
6	5	1.79
7	7	0.78
8	6	0.18
9	5	0.16
10	5	1.00
11	5	0.47
12	5	1.09
13	5	6.45
14	5	0.25
15	5	0.93
16	5	0.84
17	3	8.72
18	3	3.08
19	3	3.93
20	2	7.37
21	5	0.70
22	5	0.63
23	5	0.77
24	5	0.51
25	5	0.99
26	5	2.69
27	3	2.83
28	3	5.02
29	4	7.72
30	5	0.59
31	5	0.80
32	6	2.69
33	5	0.54
34	5	0.21
35	5	0.58
36	5	0.33
37	3	0.39
38	4	1.93
39	4	2.22
40	5	2.57
41	5	3.22
42	5	1.42
43	5	0.56
44	5	0.42
45	5	0.54
46	5	3.97
47	3	4.35
48	5	3.50
49	5	1.88
50	5	1.47
51	5	2.35

AVERAGE ASSAY VALUE 1.79% MoO3 (Molybdenum trioxide)



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UNION ASSAY OFFICE INC.
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Molybdenum Assay as of Feb. 28, 1938

SAMPLE NO.	WIDTH IN FEET	MoO3 PERCENT
1	5	1.60
2	5	2.12
3	5	0.21
4	5	1.57
5	5	0.75
6	5	1.79
7	7	0.78
8	6	0.18
9	5	0.16
10	5	1.00
11	5	0.47
12	5	1.09
13	5	6.45
14	5	0.25
15	5	0.93
16	5	0.84
17	3	3.72
18	3	3.08
19	3	3.93
20	2	7.37
21	5	0.70
22	5	0.63
23	5	0.77
24	5	0.51
25	5	0.99
26	5	2.69
27	3	2.83
28	3	5.02
29	4	7.72
30	5	0.59
31	5	0.80
32	6	2.69
33	5	0.54
34	5	0.21
35	5	0.58
36	5	0.33
37	3	0.39
38	4	1.93
39	4	2.22
40	5	2.57
41	5	3.22
42	5	1.42
43	5	0.56
44	5	0.42
45	5	0.54
46	5	3.97
47	3	4.35
48	5	3.50
49	5	1.88
50	5	1.47
51	5	2.35

AVERAGE ASSAY VALUE 1.79% MoO3 (Molybdenum trioxide)

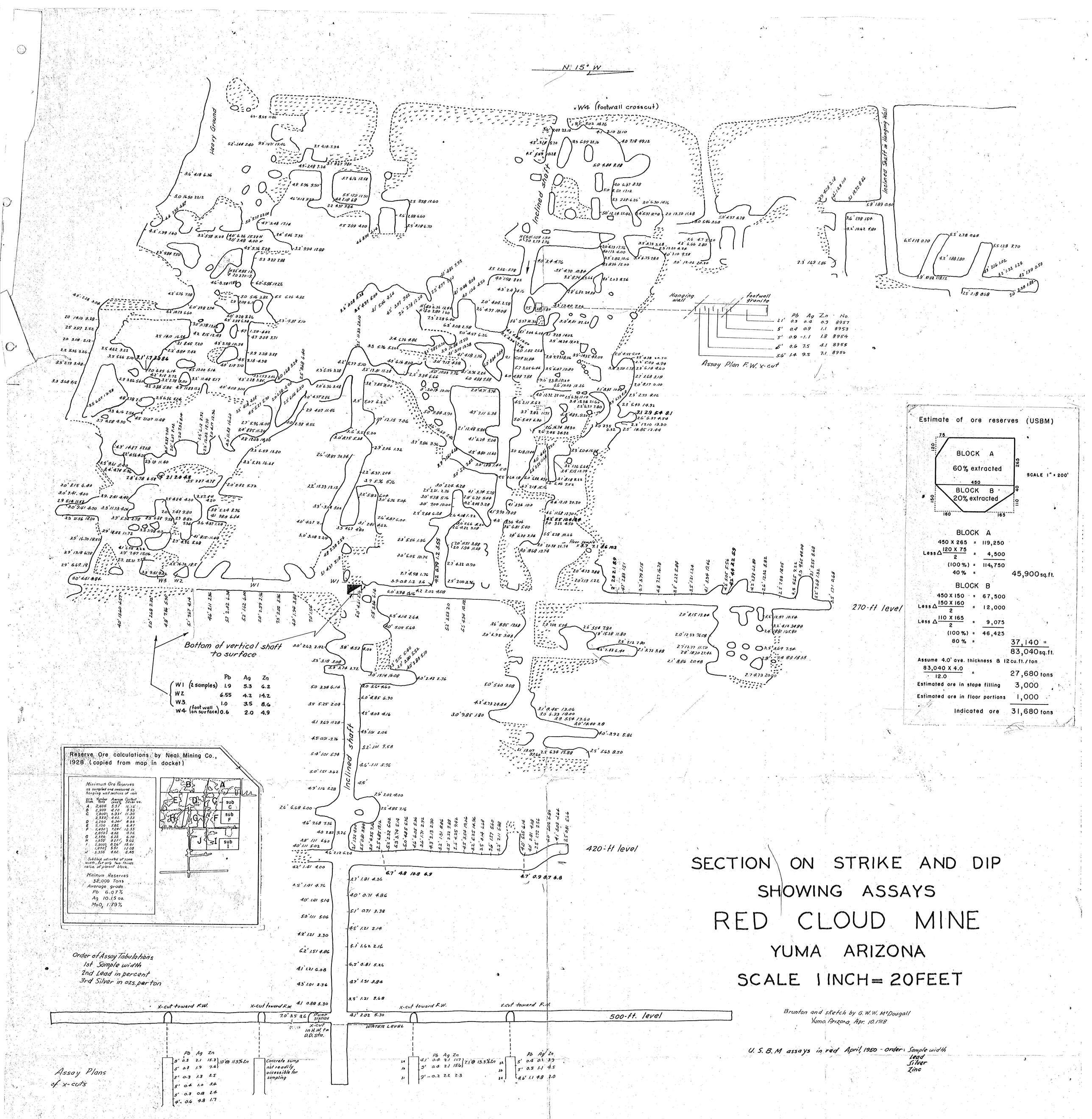
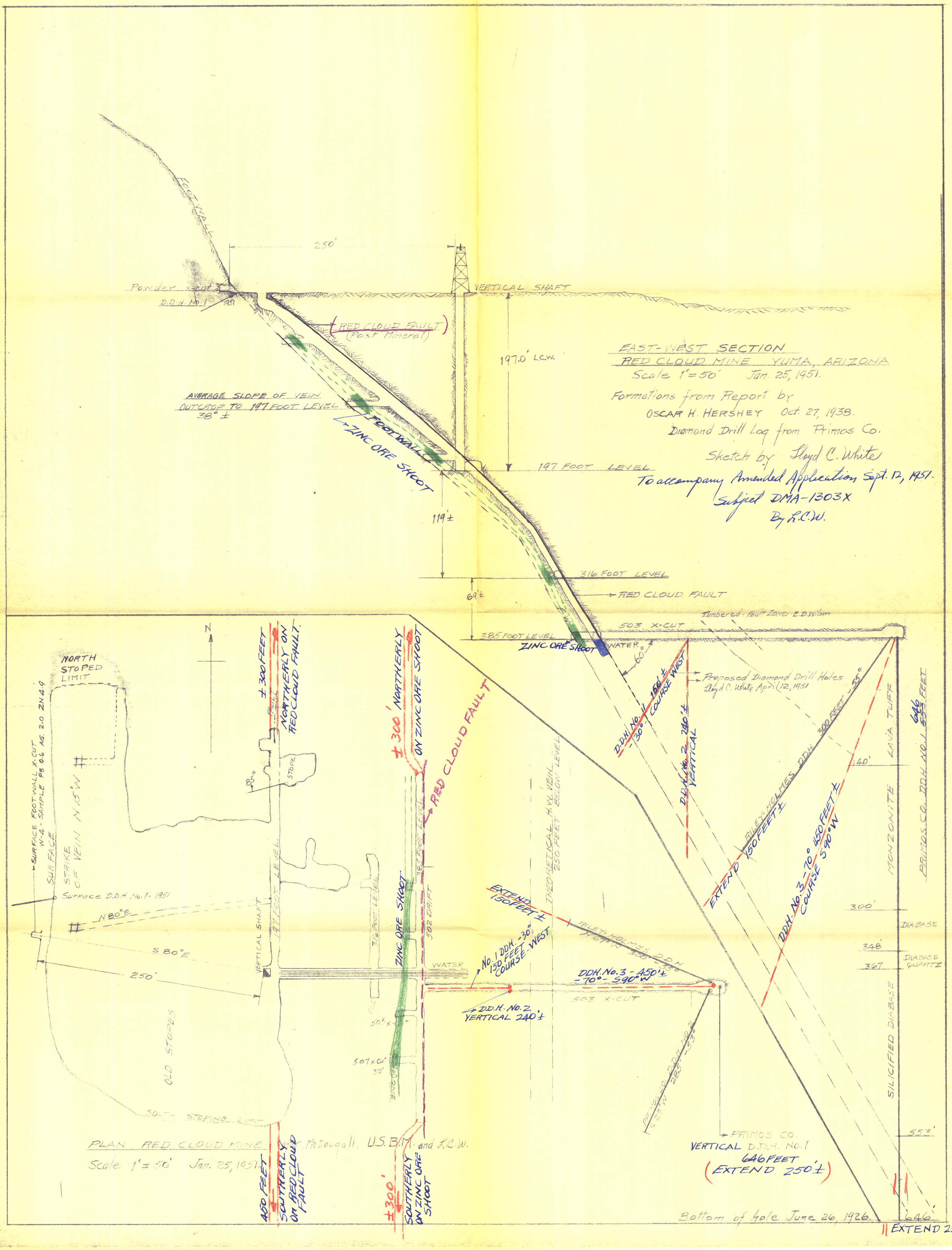
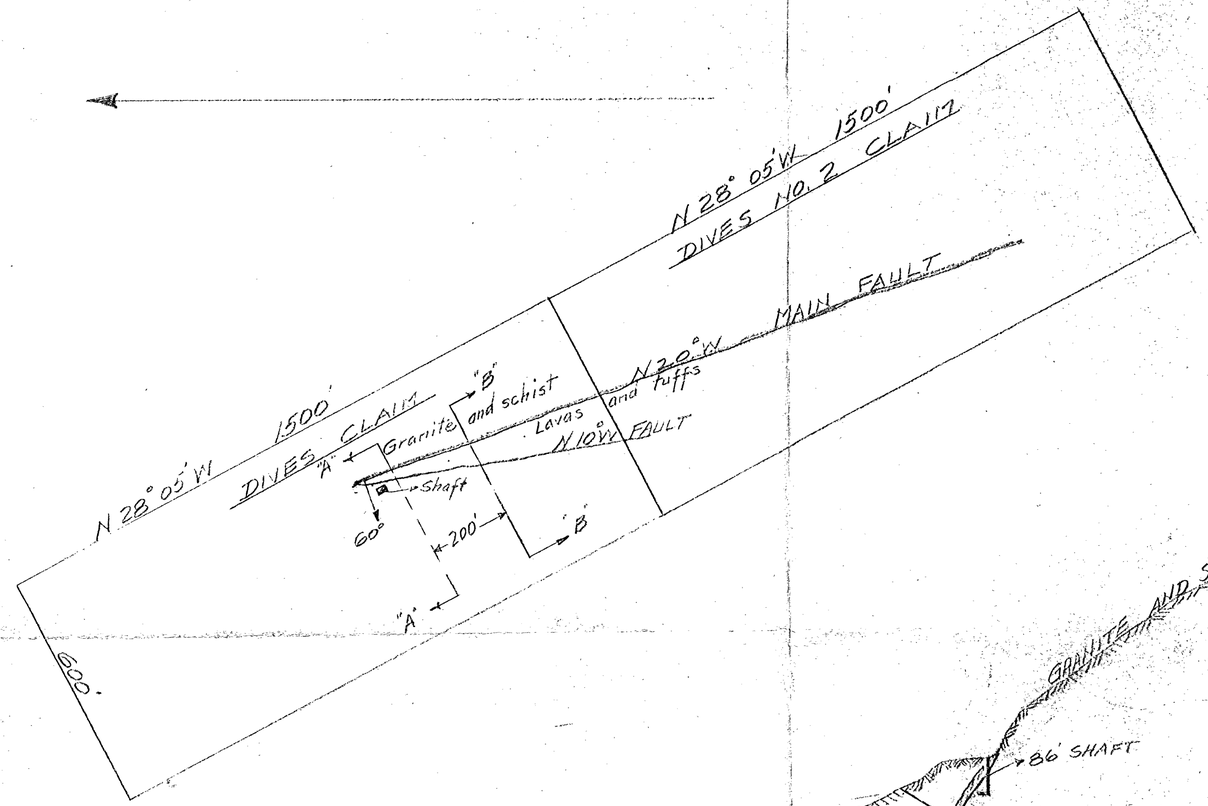


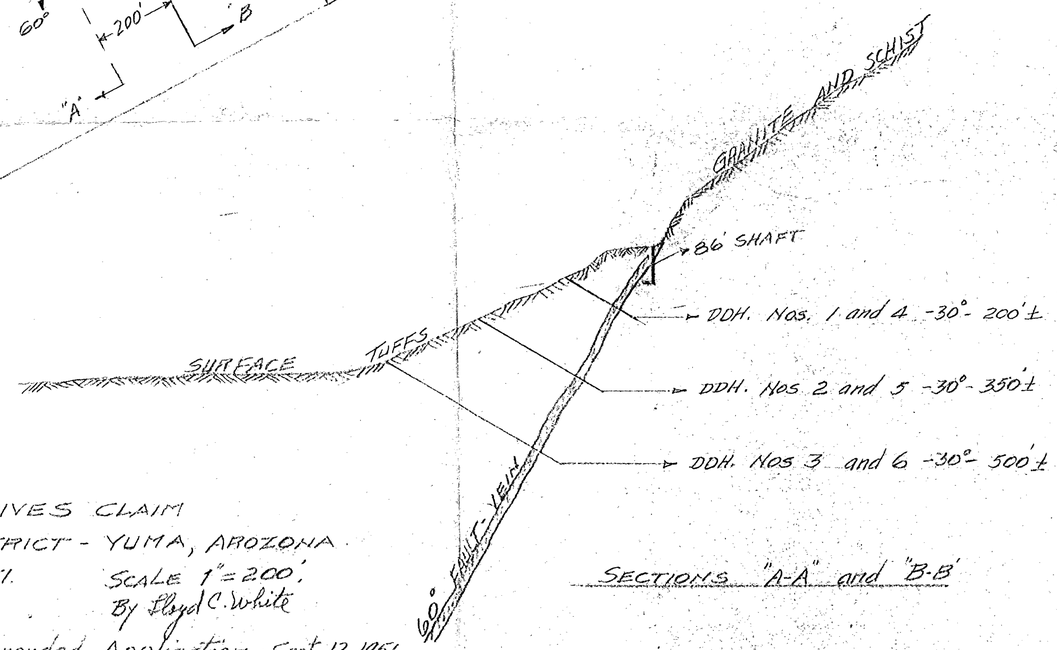
Figure 2.- Red Cloud assay map, section on vein, (after McDougall with addition of lower level.)

Bureau assays, and estimates of ore reserves

Silver District


FOOT WALL
250'
Powder x-cut
D.D.H. No. 1 1951
VERTICAL SHAFT
RED CLOUD FAULT
(Post Mineral)
197.0' L.C.W.
EAST-WEST SECTION
RED CLOUD MINE YUMA, ARIZONA
Scale 1"=50' Jan. 25, 1951.
Formations from Report by
OSCAR H. HERSHEY Oct. 27, 1938.
Diamond Drill Log from Primos Co.
Sketch by Floyd C. White
To accompany Amended Application Sept. 12, 1951.
Subject DMA-1303X
By R.C.W.
AVERAGE SLOPE OF VEIN
OUTCROP TO 197 FOOT LEVEL
38° ±
FOOTWALL
ZINC ORE SHOOT
197 FOOT LEVEL
119'±
316 FOOT LEVEL
69'±
RED CLOUD FAULT
Timbered - Fault Zone - E.D. Wilson
503 X-CUT
385 FOOT LEVEL
ZINC ORE SHOOT
WATER
60°
Proposed Diamond Drill Holes
Floyd C. White April 12, 1951
D.D.H. No. 1 150'± -30° COURSE WEST
D.D.H. No. 2 240'± VERTICAL
DDH. 300 FEET -55°
LAVA TUFF
646 FEET
40'
MONZONITE
PRIMOS CO. DDH. NO. 1
RILEY-HOLMES DDH
EXTEND 150 FEET ±
EXTEND 150 FEET ±
DDH. No. 3 -70° 450 FEET ± COURSE S 90° W
300'
DIABASE
348'
DIABASE QUARTZ
367'
SILICIFIED DIABASE
557'
646'
EXTEND 250'
NORTH STOPED LIMIT
SURFACE FOOTWALL X-CUT
W-4 - SAMPLE PB 0.6 AG. 2.0 ZN 4.9
SURFACE
STRIKE OF VEIN N 15° W
Surface D.D.H. No. 1 - 1951
N 80° E
S 80° E
250'
OLD STOPES
SOUTH STOPING LIMIT
VERTICAL SHAFT
197 FOOT LEVEL
316 FOOT LEVEL
ZINC ORE SHOOT
302 DRIFT
WATER
STOPE
85°
N
± 300 FEET NORTHERLY ON RED CLOUD FAULT
± 300' NORTHERLY ON ZINC ORE SHOOT
RED CLOUD FAULT
THEORETICAL H. W. VEIN 250 FEET BELOW LEVEL
EXTEND 150 FEET ±
RILEY-HOLMES DDH
No. 1 DDH. -30° 150 FEET COURSE WEST
DDH. No. 3 - 450'± -70° - S 90° W
503 X-CUT
DDH. No. 2 VERTICAL 240'±
505 X-CUT
507 X-CUT 32'
ZINC ORE
PRIMOS CO. DDH. NO. 2 S 25° W 285' -53°
PRIMOS CO. VERTICAL D.D.H. No. 1 646 FEET (EXTEND 250'±)
PLAN RED CLOUD MINE
Scale 1"=50' Jan. 25, 1951
McDougall, U.S.B.M. and R.C.W.
450 FEET SOUTHERLY ON RED CLOUD FAULT
± 300' SOUTHERLY ON ZINC ORE SHOOT
Bottom of hole June 26, 1926.





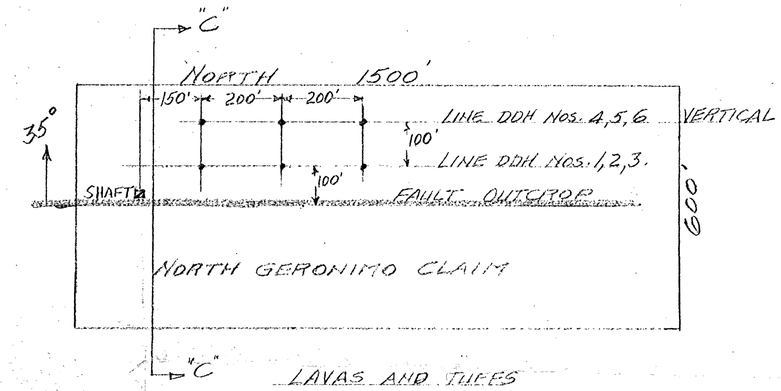
Sketch DIVES CLAIM
SILVER DISTRICT - YUMA, ARIZONA
SEPT. 12, 1951. SCALE 1" = 200'.
By Floyd C. White

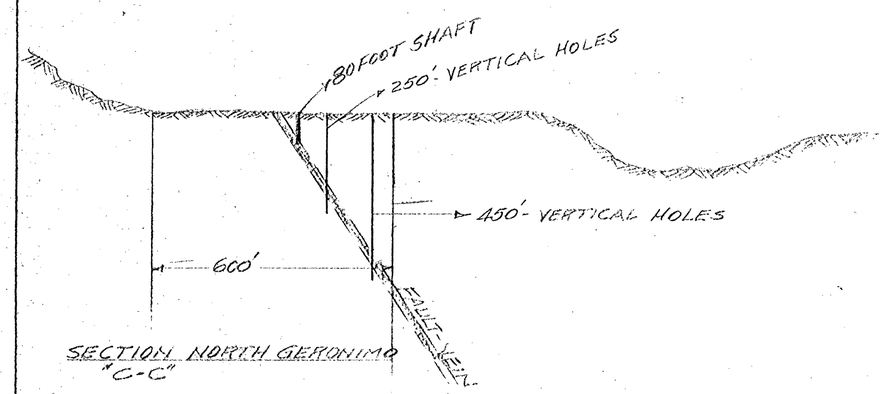
To accompany Amended Application - Sept. 12, 1951

SUBJECT: DMA - 1303X

SECTIONS "A-A" and "B-B"

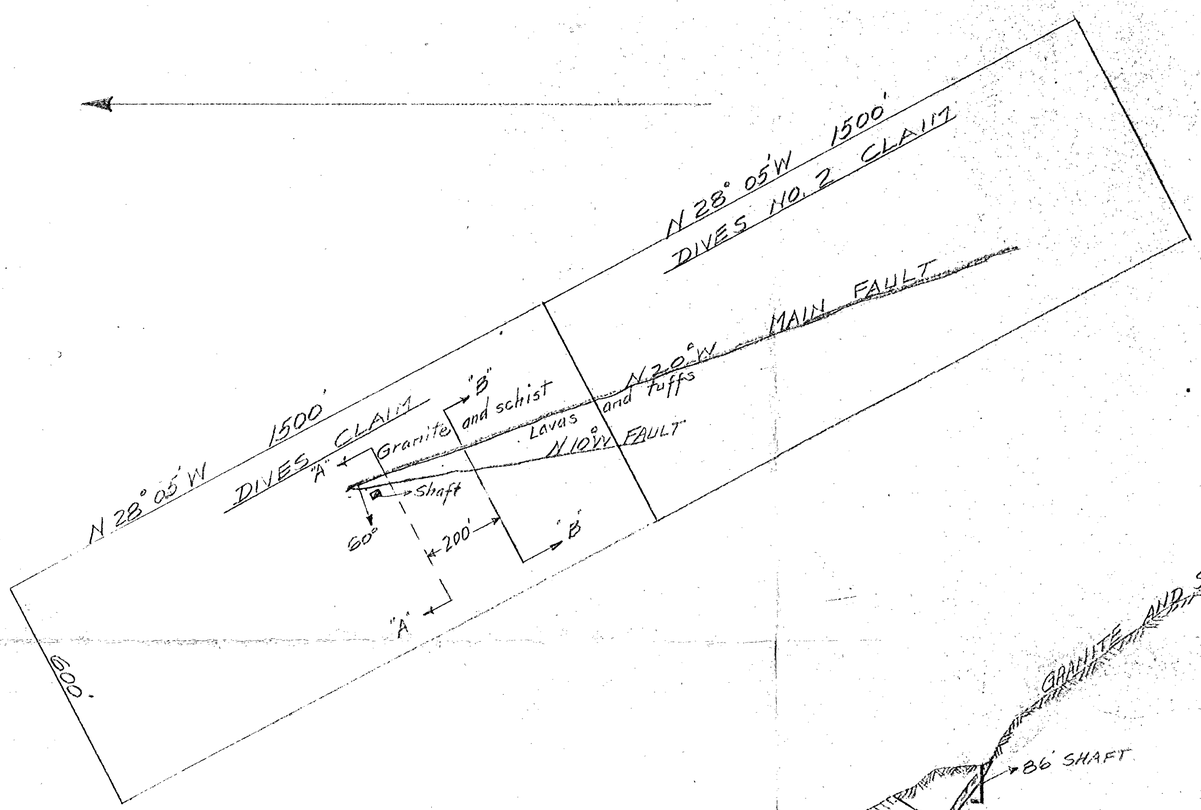
Inclination and depth of holes Nos. 3, 4, 5 and 6 determined after holes Nos. 1 and 2 are drilled.

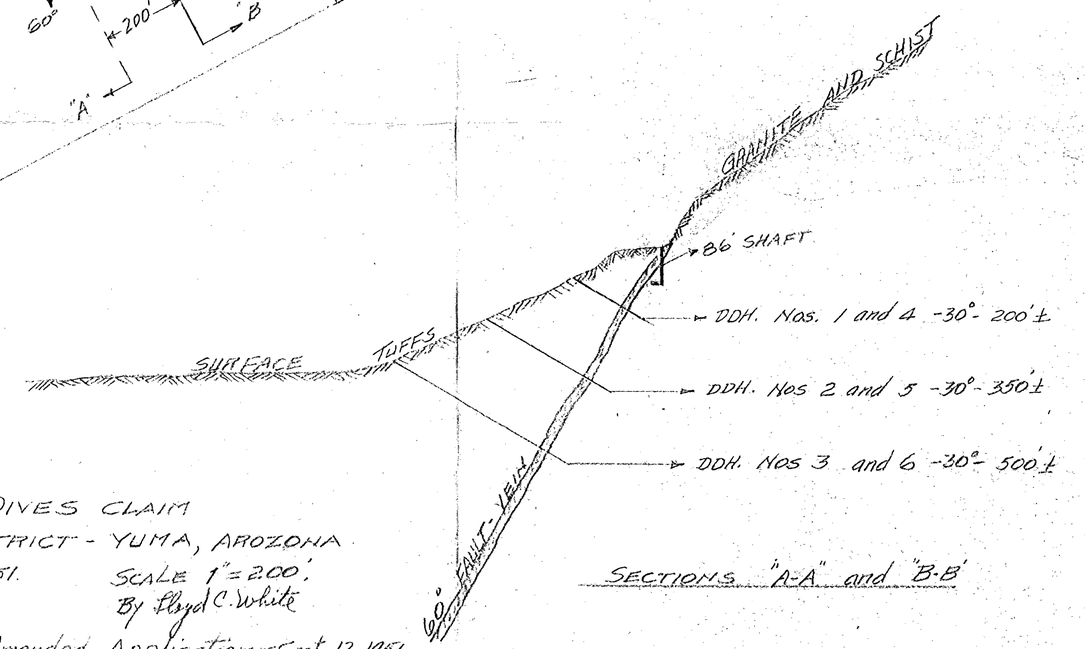




SECTION NORTH GERONIMO "C-C"

SUBJECT: DMA - 1303X





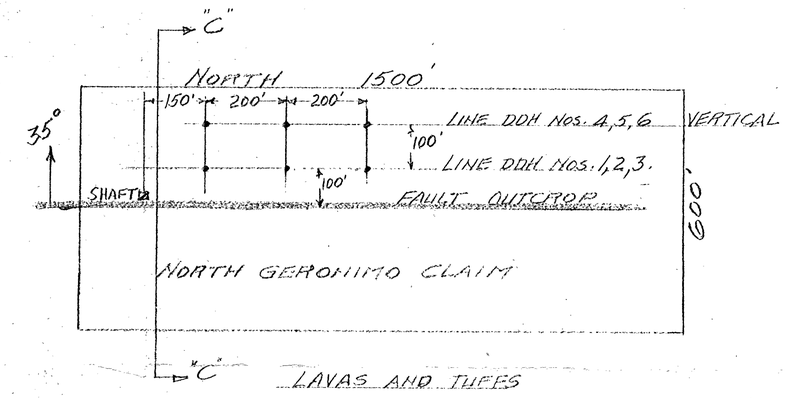
SECTIONS "A-A" and "B-B"

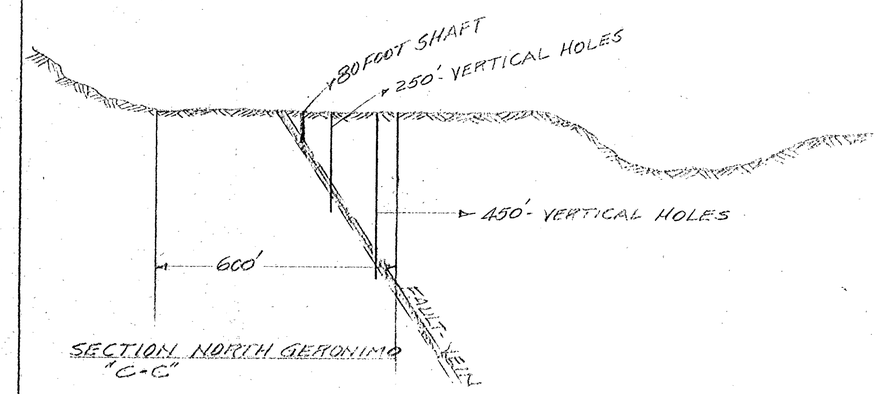
Sketch DIVES CLAIM
SILVER DISTRICT - YUMA, ARIZONA
SEPT. 12, 1951. SCALE 1" = 200'.
By Floyd C. White

To accompany Amended Application - Sept. 12, 1951

SUBJECT: DMA - 1303X

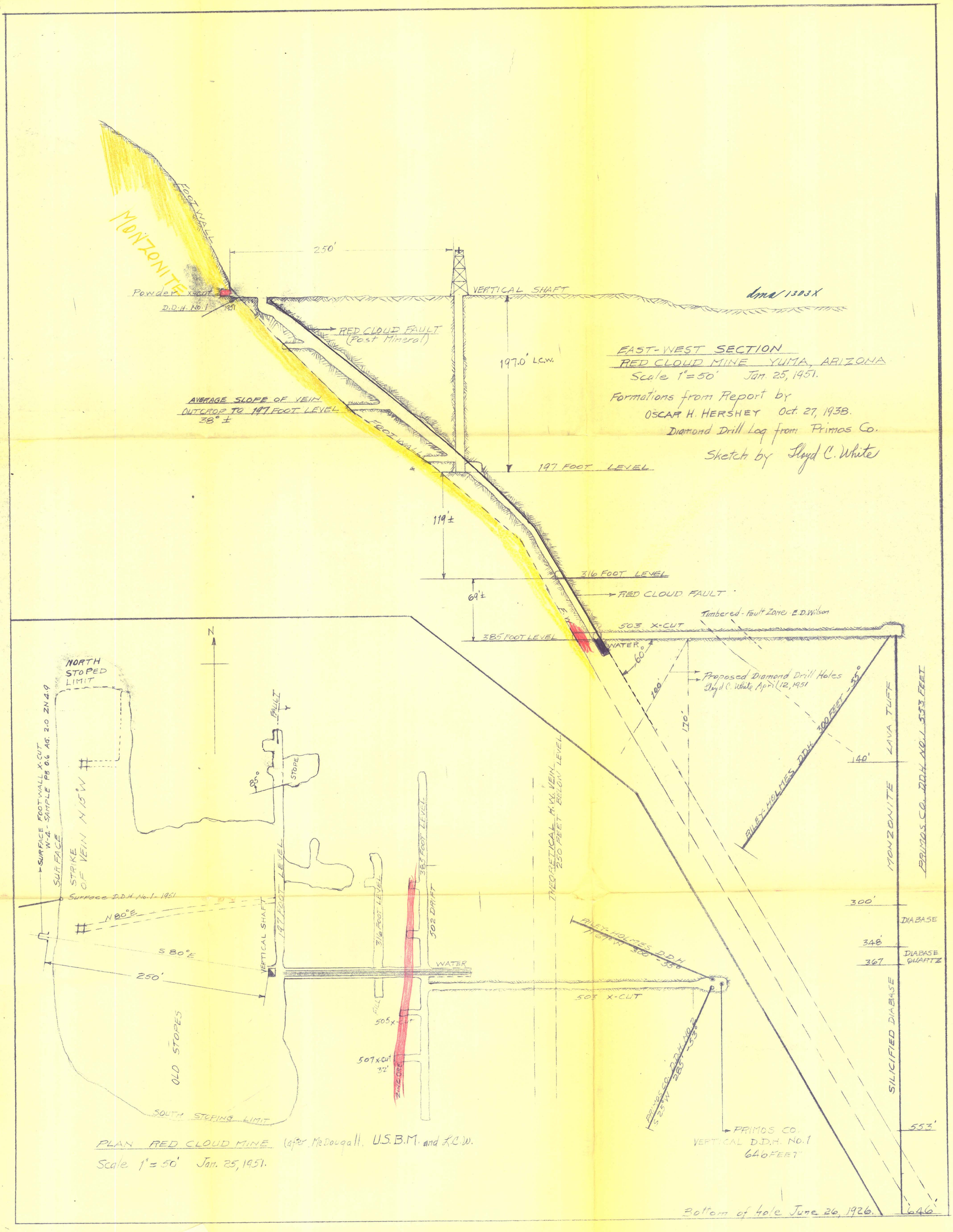
Inclination and depth of holes Nos. 3, 4, 5 and 6 determined after holes Nos. 1 and 2 are drilled.





SECTION NORTH GERONIMO "C-C"

SUBJECT: DMA - 1303X



EAST-WEST SECTION
RED CLOUD MINE YUMA, ARIZONA
Scale 1" = 50' Jan. 25, 1951.
Formations from Report by
OSCAR H. HERSHEY Oct. 27, 1938.
Diamond Drill Log from Primos Co.
Sketch by Floyd C. White

PLAN RED CLOUD MINE (after McDougall, U.S.B.M. and F.C.W.
Scale 1" = 50' Jan. 25, 1951.

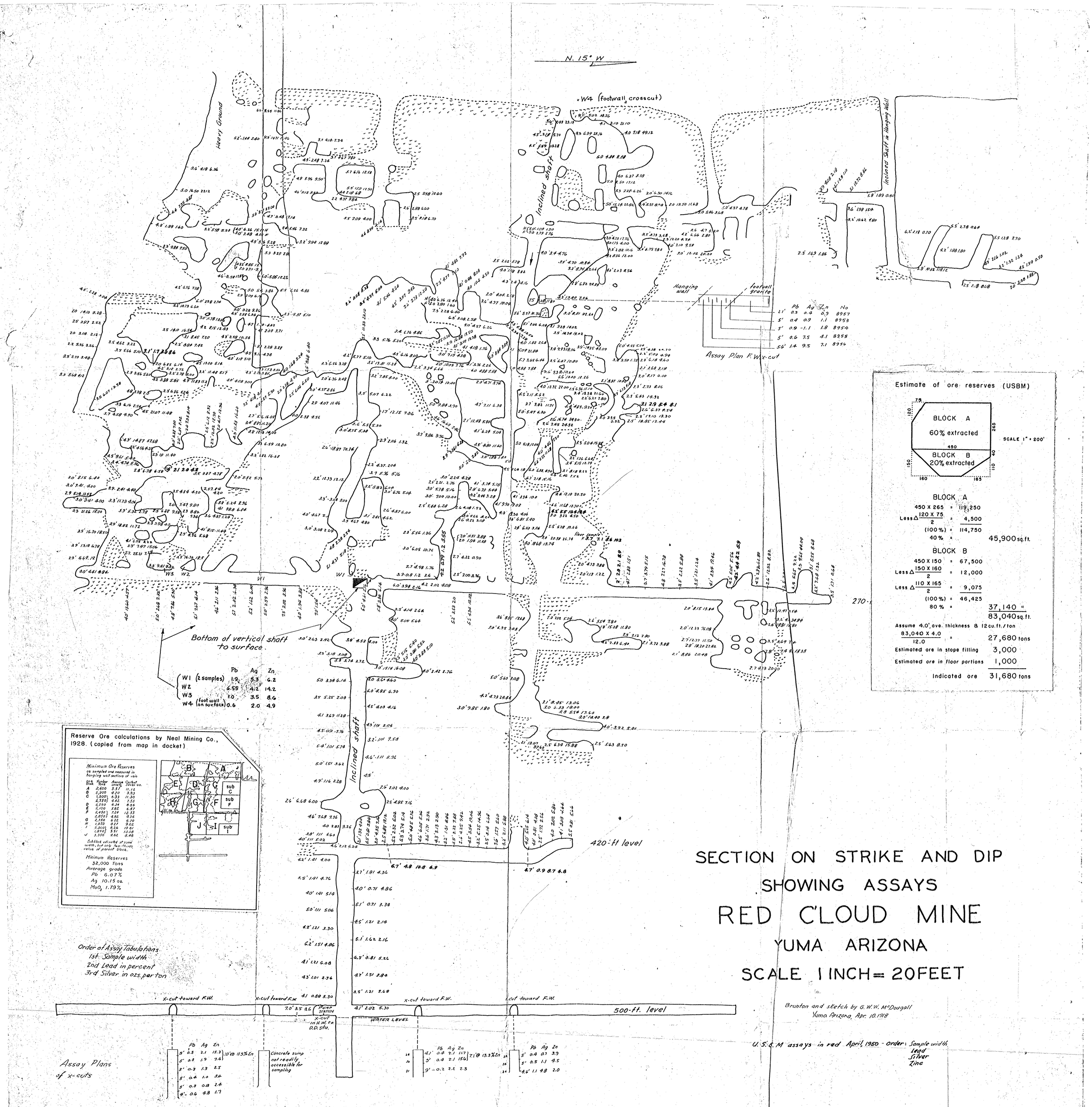
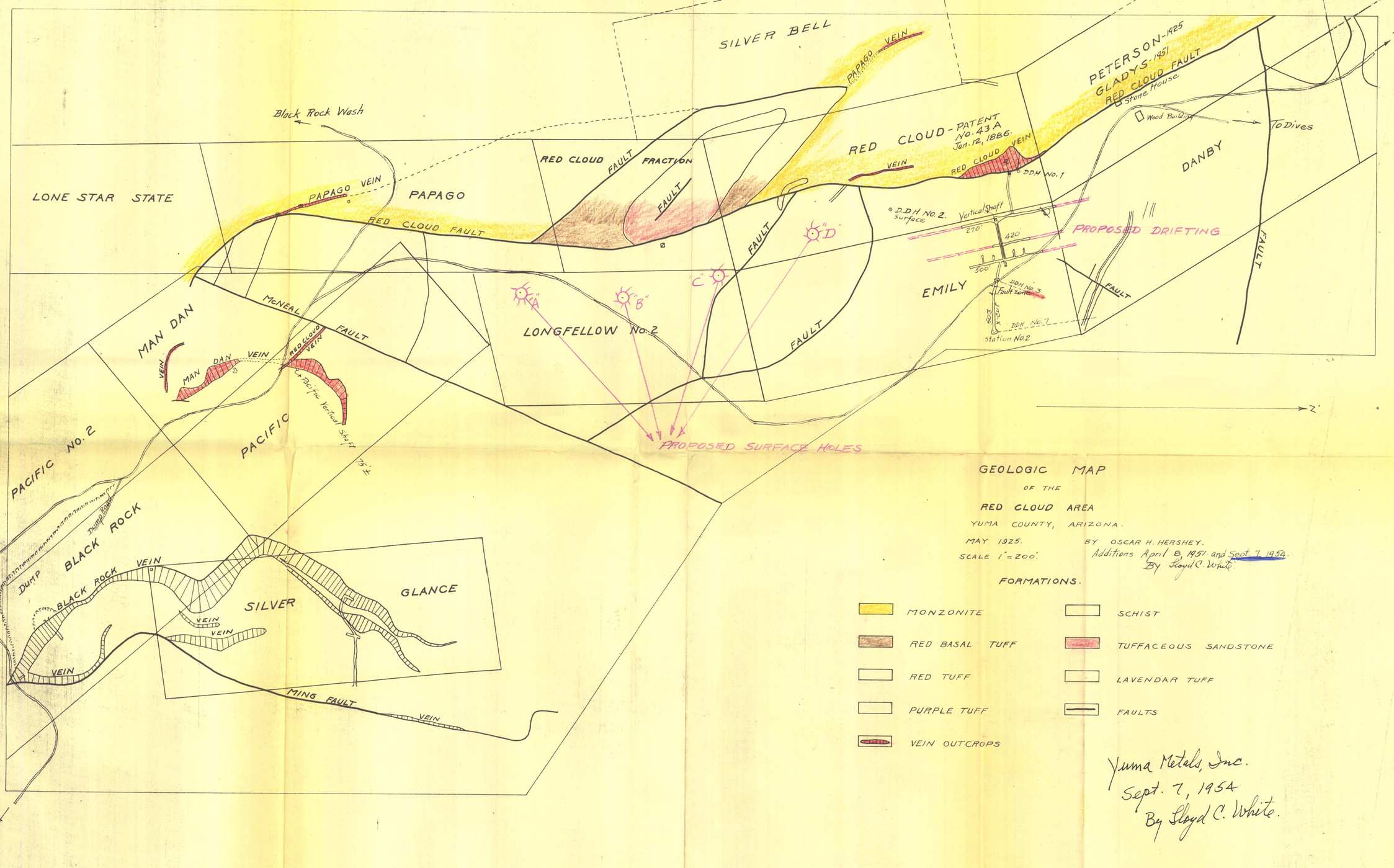


Figure 2.- Red Cloud assay map, section on vein, (after McDougall with addition of lower level.)

Bureau assays, and estimates of ore reserves

Silver Dollar



GEOLOGIC MAP

OF THE

RED CLOUD AREA

YUMA COUNTY, ARIZONA.

MAY 1925. BY OSCAR H. HERSHEY.

SCALE 1" = 200'. Additions April 8, 1951. and Sept. 7, 1954. By Lloyd C. White.

FORMATIONS.

- MONZONITE
- RED BASAL TUFF
- RED TUFF
- PURPLE TUFF
- VEIN OUTCROPS
- SCHIST
- TUFFACEOUS SANDSTONE
- LAVENDAR TUFF
- FAULTS

Yuma Metals, Inc.
Sept. 7, 1954
By Lloyd C. White.

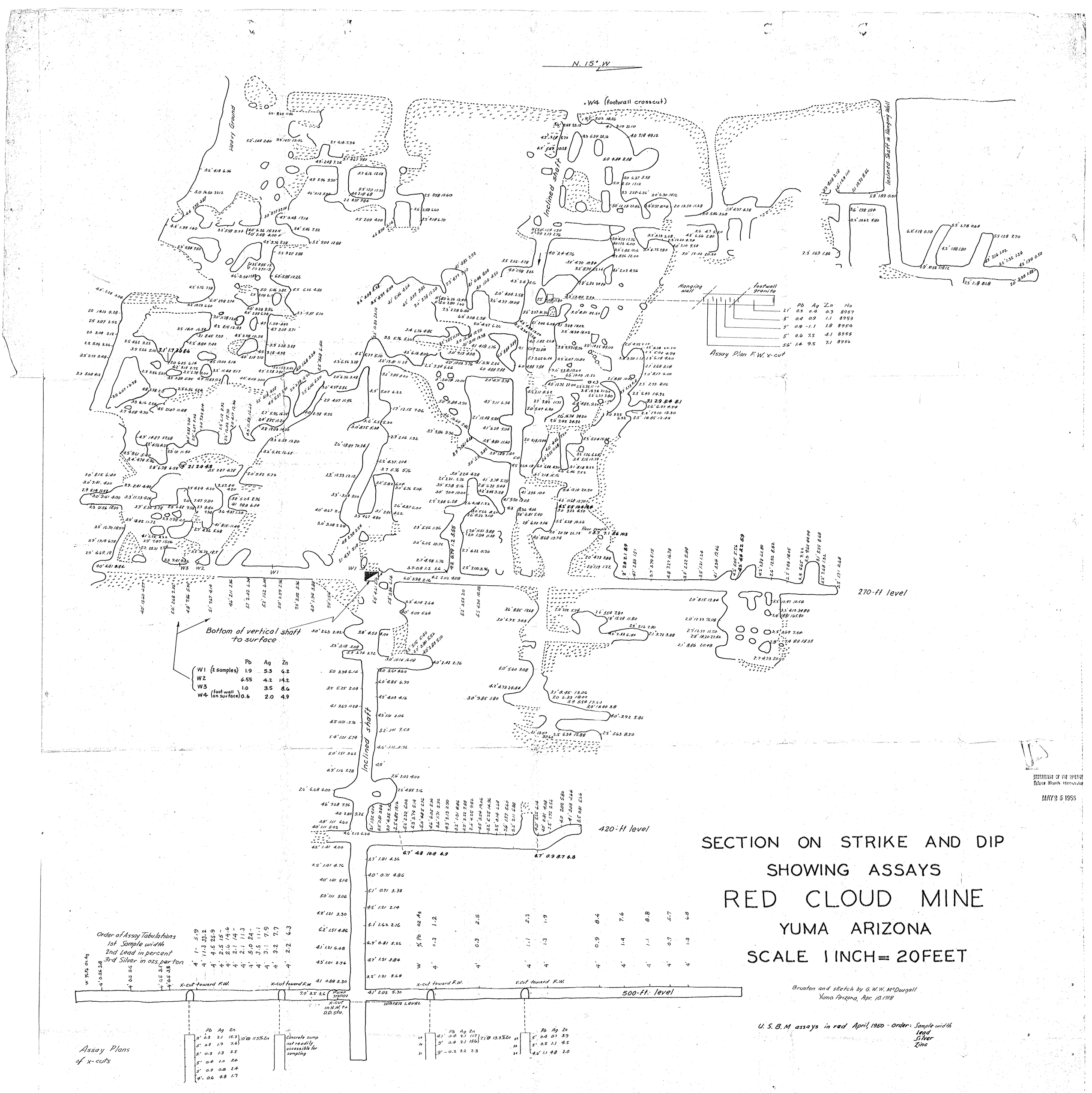
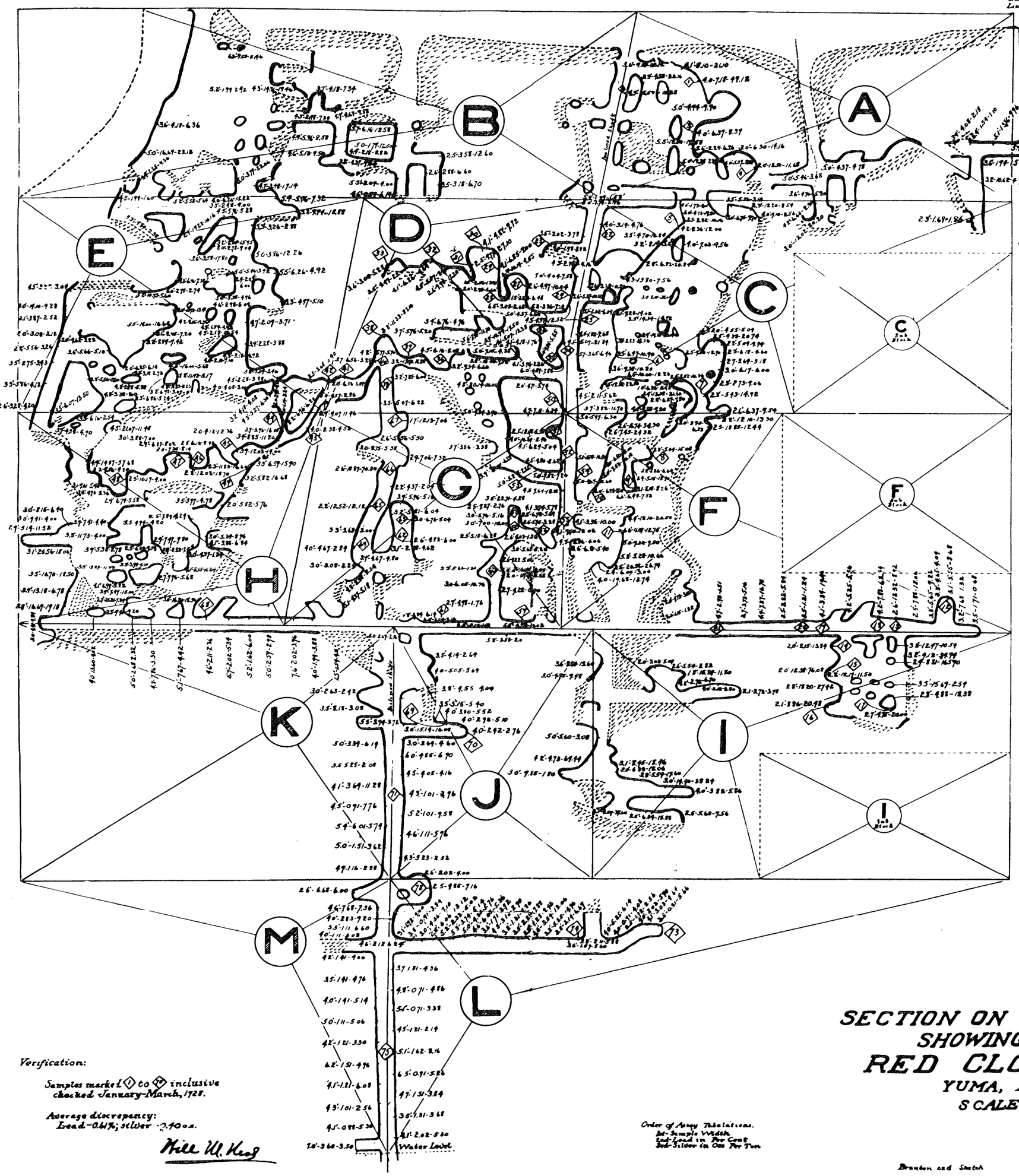


Figure 3.- Red Cloud assay map, section on vein, (after McDougall with addition of lower level.)

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
MAY 25 1955



ASSAY
Certificate
UNION
ASSAY
OFFICE
INC.
Salt Lake City, Utah

Molybdenum Assay as of Feb. 28, 1938

SAMPLE NO.	WIDTH IN FEET	MoO3 PERCENT
1	5	1.60
2	5	2.12
3	5	0.21
4	5	1.57
5	5	0.75
6	5	2.79
7	7	0.78
8	6	0.18
9	5	0.16
10	5	1.00
11	5	0.47
12	5	1.09
13	5	6.45
14	5	0.25
15	5	0.93
16	5	0.84
17	3	8.72
18	3	3.08
19	3	3.93
20	2	7.37
21	5	0.70
22	5	0.63
23	5	0.77
24	5	0.51
25	5	0.99
26	5	2.69
27	3	2.83
28	3	5.02
29	4	7.72
30	5	0.59
31	5	0.80
32	6	2.69
33	5	0.54
34	5	0.21
35	5	0.58
36	5	0.33
37	3	0.39
38	4	1.93
39	4	2.22
40	5	2.57
41	5	3.22
42	5	1.42
43	5	0.56
44	5	0.42
45	5	0.54
46	5	3.97
47	3	4.35
48	5	3.50
49	5	1.88
50	5	1.47
51	5	2.35

AVERAGE ASSAY VALUE 1.79% MoO3 (Molybdenum trioxide)

Minimum Ore Reserves

as sampled and measured in hanging wall section of vein

Ore Block	Number Tons	Average Lead %	Content Silver oz.
A	2,600	5.57	11.12
B	2,900	4.70	9.93
C	1,900	6.73	11.30
	*2,350	4.62	7.53
D	2,250	6.34	8.86
E	2,100	5.82	6.97
F	2,450	7.24	12.55
	*2,850	4.82	8.36
G	2,350	6.22	6.70
H	1,950	8.27	9.02
I	2,900	8.26	19.61
	*1,850	5.51	13.08
J	3,350	4.62	8.48

*Sub-block estimated at same width but only two-thirds value of parent block

Blocks K, L and M and all foot wall portions of vein entirely omitted from above estimate.

Minimum reserves, 32,000 tons.

Average lead content, 6.07%.

Average silver content, 10.15 ozs.

Average Molybdenum trioxide Content 1.79%

Verification:

Samples marked 1 to 72 inclusive checked January-March, 1928.

Average discrepancy: Lead-0.61%; silver -2.40 oz.

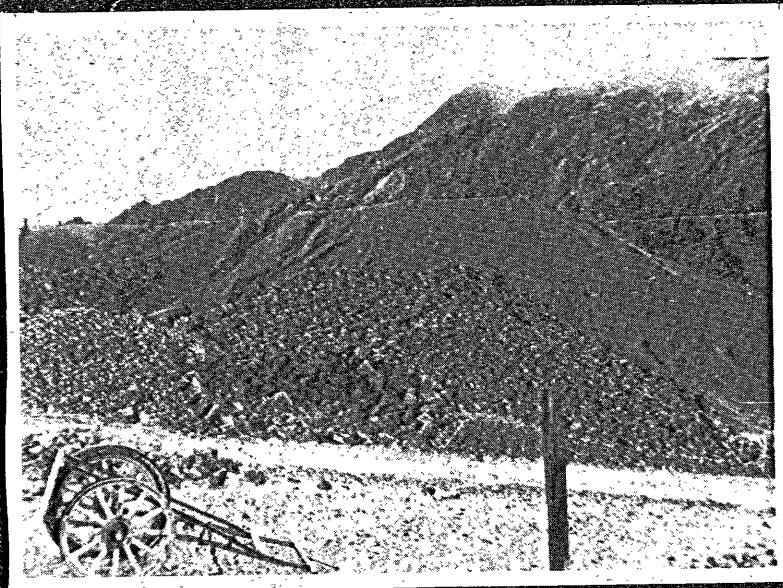
Will W. Hess

Order of Assay Tabulations.
1st-Sample Width.
2nd-Lead in Per Cent
3rd-Silver in Ozs Per Ton

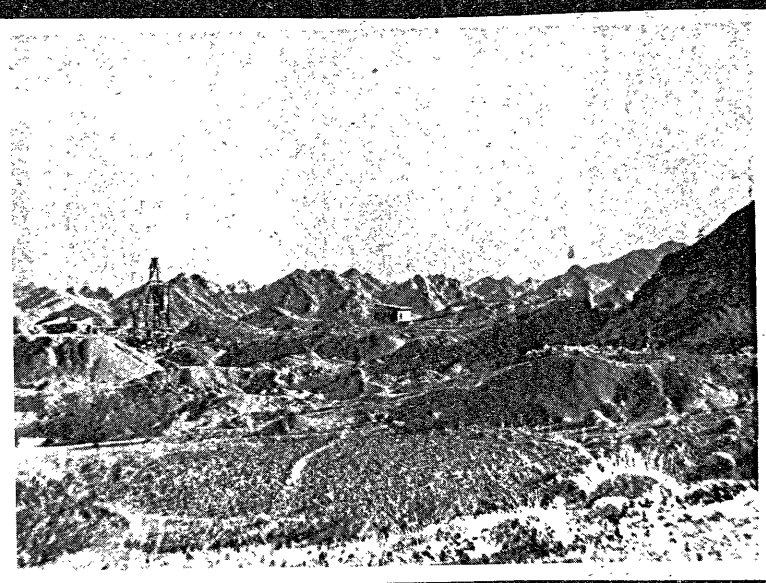
SECTION ON STRIKE AND DIP SHOWING ASSAYS
RED CLOUD MINE
YUMA, ARIZONA
SCALE 1" = 20'

Drawn and Sketch by B. W. W. McDougall
Yuma, Arizona, April 30, 1928

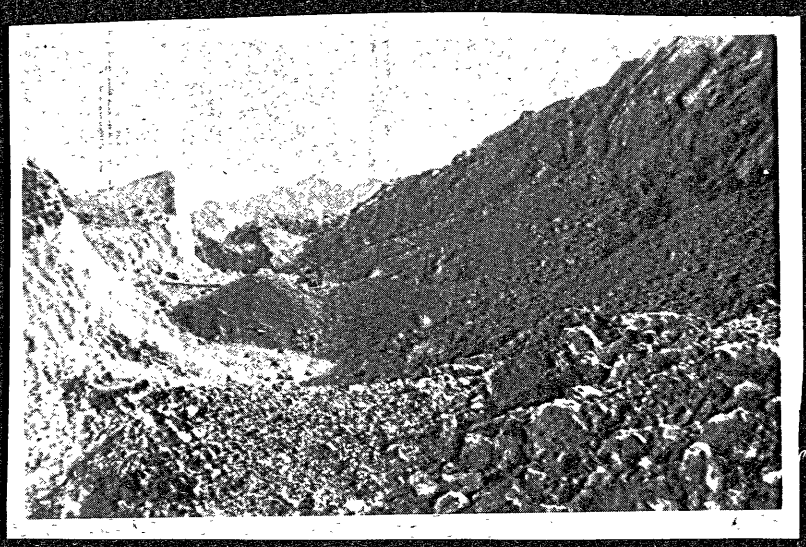
PROPERTIES OF *Yuma Metals, Inc.*



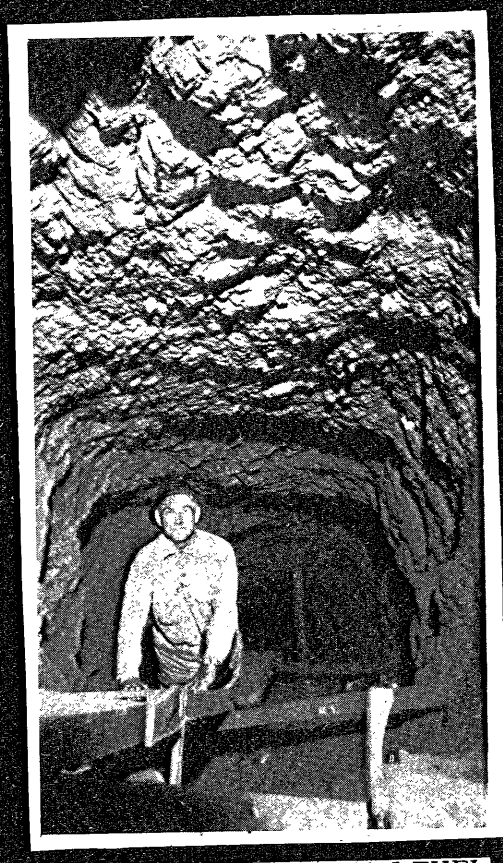
PART OF DUMP AT INCLINE SHAFT



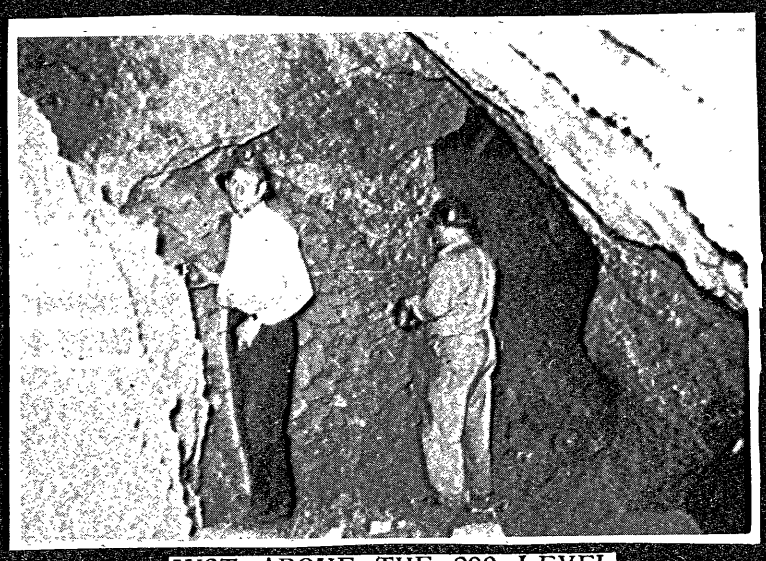
HEAD FRAME AT ~~MOITH~~ VERTICAL SHAFT



OPEN CUT ON VEIN SHOWING WIDTH



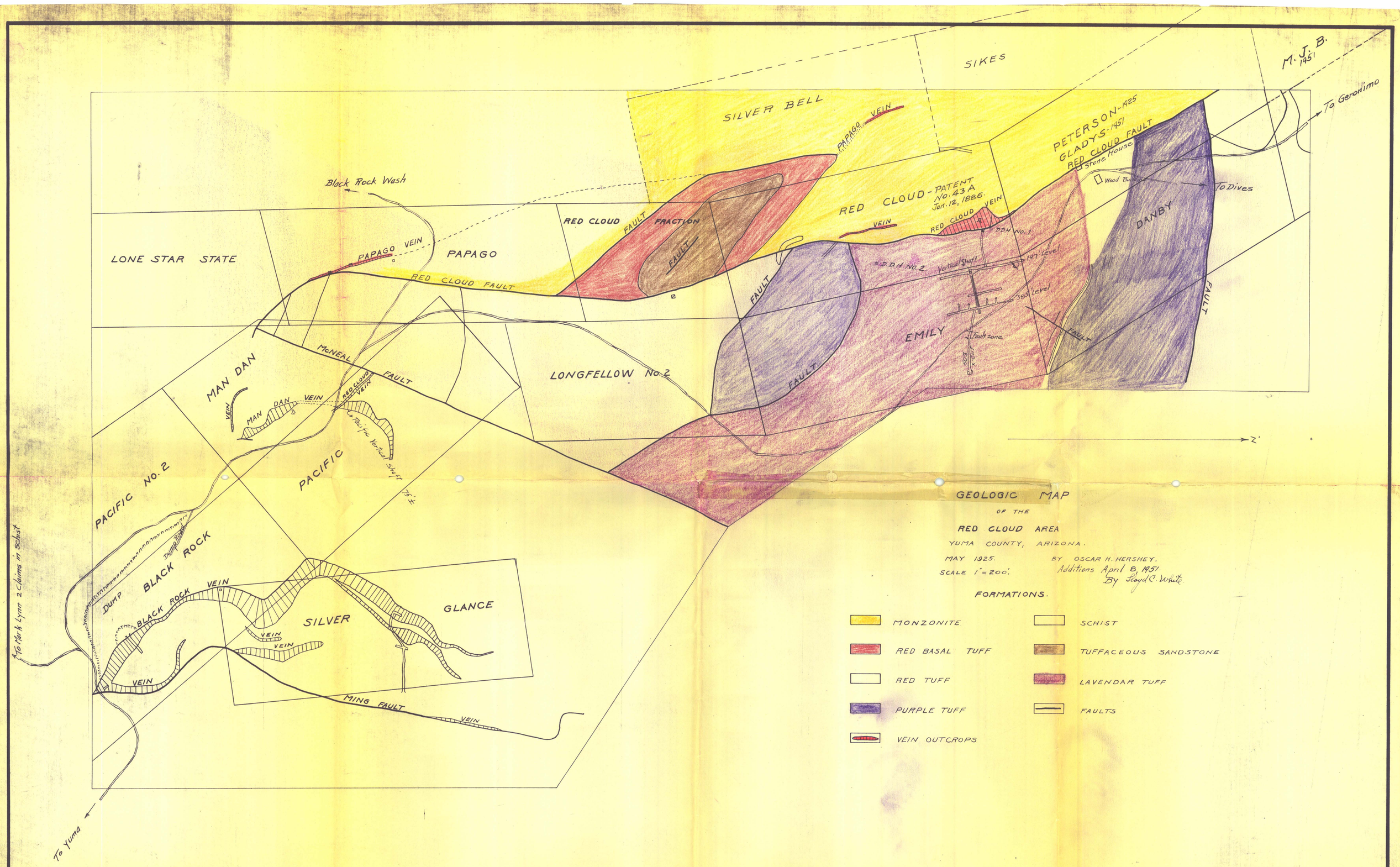
DRIFT ON 500 FOOT LEVEL



JUST ABOVE THE 290 LEVEL

ABOVE PICTURES WERE TAKEN AT

Red Cloud Mine



GEOLOGIC MAP
OF THE
RED CLOUD AREA
YUMA COUNTY, ARIZONA.
MAY 1925. BY OSCAR H. HERSHEY.
SCALE 1" = 200'. Additions April 8, 1951.
By Floyd C. White

FORMATIONS.

- MONZONITE
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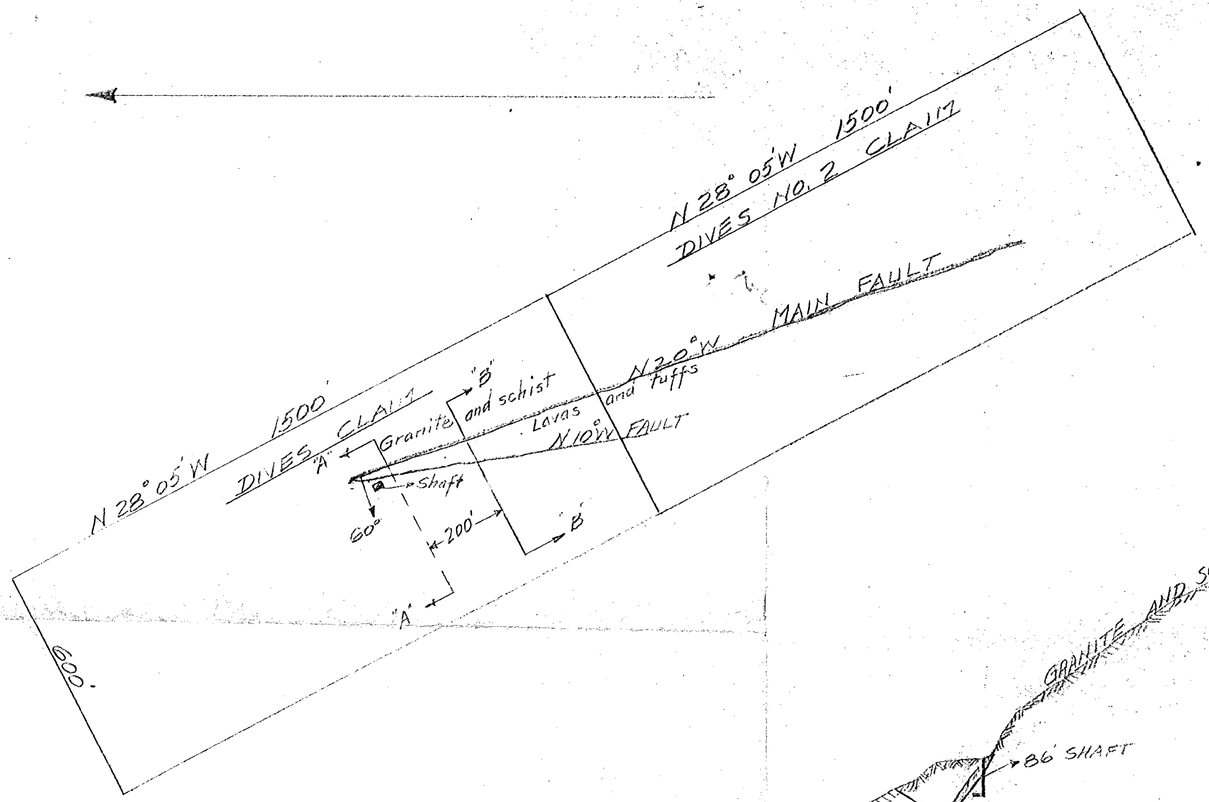
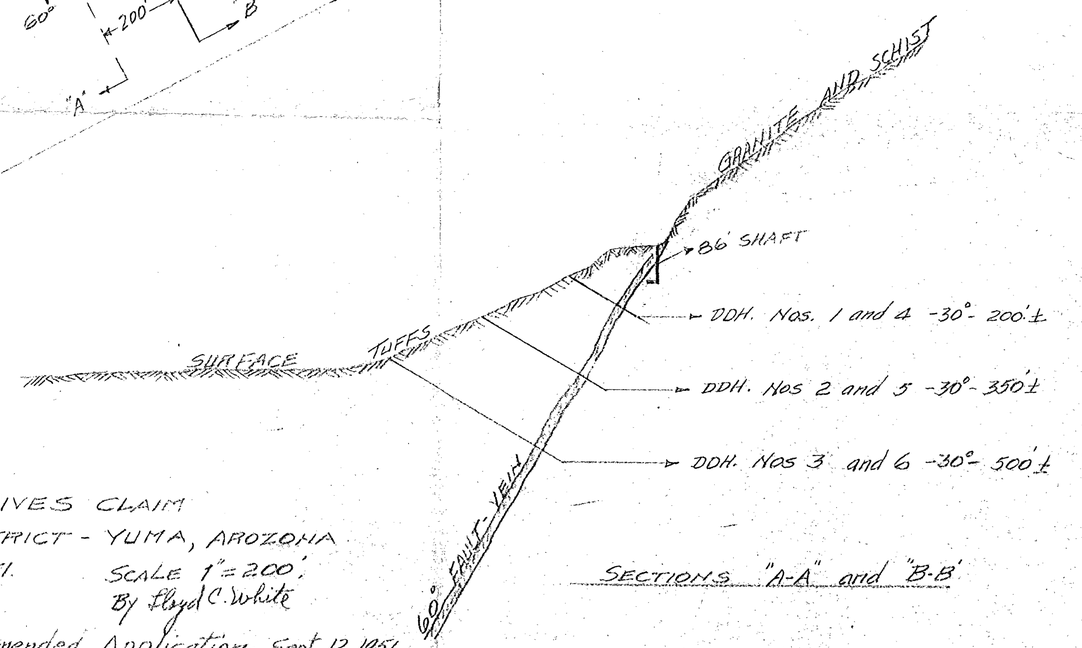
- RED TUFF
- PURPLE TUFF
- VEIN OUTCROPS
- SCHIST
- TUFFACEOUS SANDSTONE
- LAVENDAR TUFF
- FAULTS

Ama/1323X





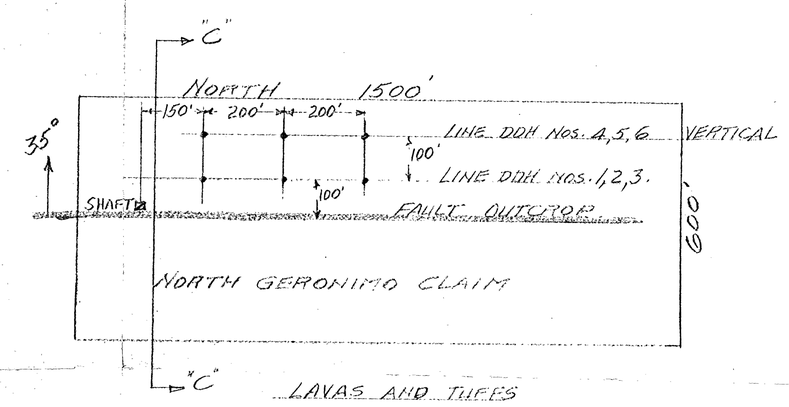
SECTIONS "A-A" and "B-B"

Sketch DIVES CLAIM
SILVER DISTRICT - YUMA, ARIZONA
SEPT. 12, 1951. SCALE 1" = 200'.
By Floyd C. White

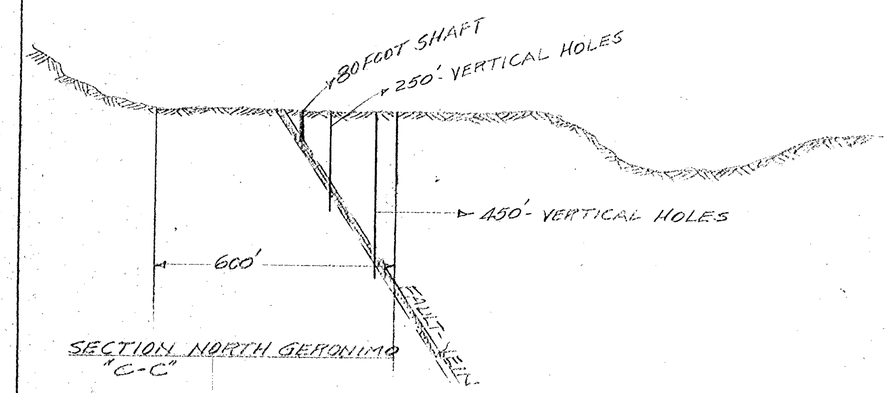
To accompany Amended Application - Sept. 12, 1951

SUBJECT: DMA - 1303X

Inclination and depth of holes Nos. 3, 4, 5 and 6 determined after holes Nos. 1 and 2 are drilled.

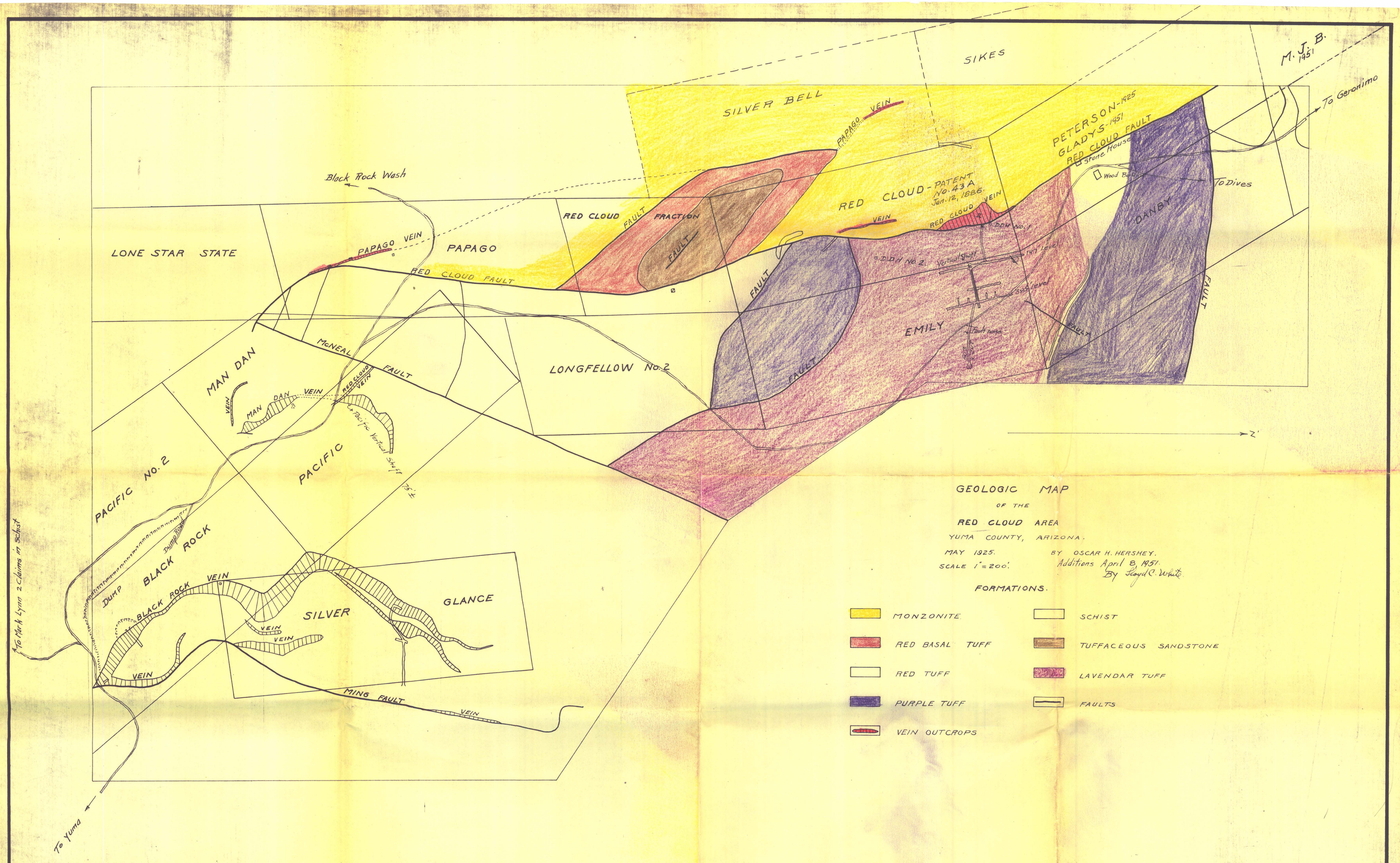


LAVAS AND TUFFS



SECTION NORTH GERONIMO "C-C"

SUBJECT: DMA - 1303X



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dmd 1303X