Building 20 - Federal Center
Denver 25, Colorado

June 27, 1962

Memorandum

To: George C. Selfridge, Chief
Division of Field Operations, OME
Washington 25, D. C.

From: Acting Field Officer, OME, Region III

Subject: OME-6191 (Gold)
Bi-Metals Gold Mining and Milling Company
(Bi-Metals et al. Claims)
Mohave County, Arizona

Enclosed are the original and two copies of the Report of Examination by T. M. Romslo, Mining Engineer.

The field examiner concludes that the proposed exploration would not result in a significant discovery and he recommends that the application be denied. I concur in this recommendation.

Original signed by

Hugh M. Connors

Attachment
HMC/lm
cc OME-6191
Chron
Mineral Resources DFC

UNITED STATES
DEPARTMENT OF THE INTERIOR
STEWART L. UDALL, SECRETARY

OFFICE OF MINERALS EXPLORATION
REGION III

DOCKET NO. OME-6191

BI-METALS GOLD MINING AND MILLING COMPANY

Bi-Metals et al. Claims
Mohave County, Arizona

Gold

Examination Report

By

T. M. Romslo, Mining Engineer, Bureau of Mines

June 1962

OME-6191

BI-METALS GOLD MINING AND MILLING COMPANY
Bi-Metals et al. Claims
Mohave County, Arizona

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OME-6191

BI-METALS GOLD MINING AND MILLING COMPANY
Bi-Metals et al. Claims
Mohave County, Arizona

INTRODUCTION, SUMMARY AND CONCLUSIONS

The Bi-Metals Gold Mining and Milling Company applied for Governmental aid in exploration for gold on the Bi-Metal claim and adjoining claims in Mohave County, Arizona. The application was received by the Office of Minerals Exploration and assigned Docket Number OME-6191, November 2, 1961. On February 19, 1962, the writer examined the property and found that the Applicant's proposal was indefinite as to location, type, and estimated cost of proposed work. The Applicant requested time to re-examine the property and prepare an amended application. The amended application was received May 15, 1962.

The original application suggested that drilling be done to test for extension in depth of the formerly productive Bi-Metal deposit. Under the amended application, churn drilling would be done to test for a lateral extension of the deposit. The proposed project would cost an estimated total $58,100.00.

The Bi-Metal deposit has been worked mainly during four periods. It was first worked from about 1900 to 1907, when several trenches and short adits were excavated and a shallow shaft was sunk. Rockers were used to produce a probably small amount of free gold. The property was next active in 1932 and 1933 when gravels from a small area near the deposit were sluiced and yielded $900.00 in gold. In 1935, a small mill was built on the property and started treating ore from an open

pit. To cessation of operations in September 1937, about 20,000 tons of ore had been mined and milled and about $70,000.00 in gold had been produced. The deposit was last worked from November 1937 to March 1939 by a lessee who selectively mined and shipped about 1000 tons of ore that yielded $19.45 per ton.

The Bi-Metal deposit occurs in an altered pre-Cambrian microline granite. The granite in a mineralized area about 300 feet in diameter is cleaved and sheeted. The structure dips about 45 degrees north, and is almost obscured by an older north-south sheeting. Another system of jointing dips flatly westward. On the south, the boundary of the deposit is marked by basic-dike rock that dips about 45 degrees north beneath the deposit. The other lateral boundaries are indicated by a fading-out of the jointing and the associated iron-staining. At depth, the deposit bottoms out near the 40-foot level where the sheeted granite grades into massive, unaltered granite. Gold, mainly in the free state, occurs in the more highly oxidized granite where it is associated with hematite and other forms of iron. Pyrite, which is abundant in the fresh granite, is probably the source of the gold.

It is concluded from the developed information that the Bi-Metal gold bearing zone probably does not extend into the area of the proposed exploration. Therefore, the proposed exploration would not be expected to result in a significant discovery, and denial of the application is recommended.

LOCATION, ACCESSIBILITY AND PHYSICAL FEATURES

The Bi-Metal, et al., claims are situated Sec. 34, T.21N., R.17W., and Sec. 4, T.20N., R.17W., Gila and Salt River Meridian, Mohave County, Arizona (figs. 1 and 2). They are located about 2.5 miles southeast of Kingman, the county seat of Mohave County. Kingman, is on U. S. Highway No. 66 and is a terminal station of the Atchison, Topeka, and Santa Fe Railroad.

The Bi-Metal Mine may be reached by automobile from Kingman, by traveling southwest 2.2 miles on U. S. Highway No. 66, and then generally southeast for 1.3 miles on a winding dirt road. The dirt road crosses the west bound main track of the Atchison, Topeka, and Santa Fe Railroad, traverses a portion of the proposed project area, and terminates at the mine.

The property lies along the eastern border of Sacramento Valley and the adjacent basal slope of Kingman Mesa. The western part of the property is in a fairly flat area at an average altitude of about 3000 feet (fig. 3). Eastward from the flat area, the surface rises gradually to the mine workings on the lower slope of a foothill and then rises steeply to a height of about 400 feet above the mine.

HISTORY AND PRODUCTION

Gold was first discovered on the Bi-Metal property prior to 1900. Mr. F. C. Schrader[1/] visited the property while making a reconnaissance

1/ F. C. Schrader, Mineral Deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Arizona, U.S.G.S. Bull. 397, pp. 136 and 137, 1909.

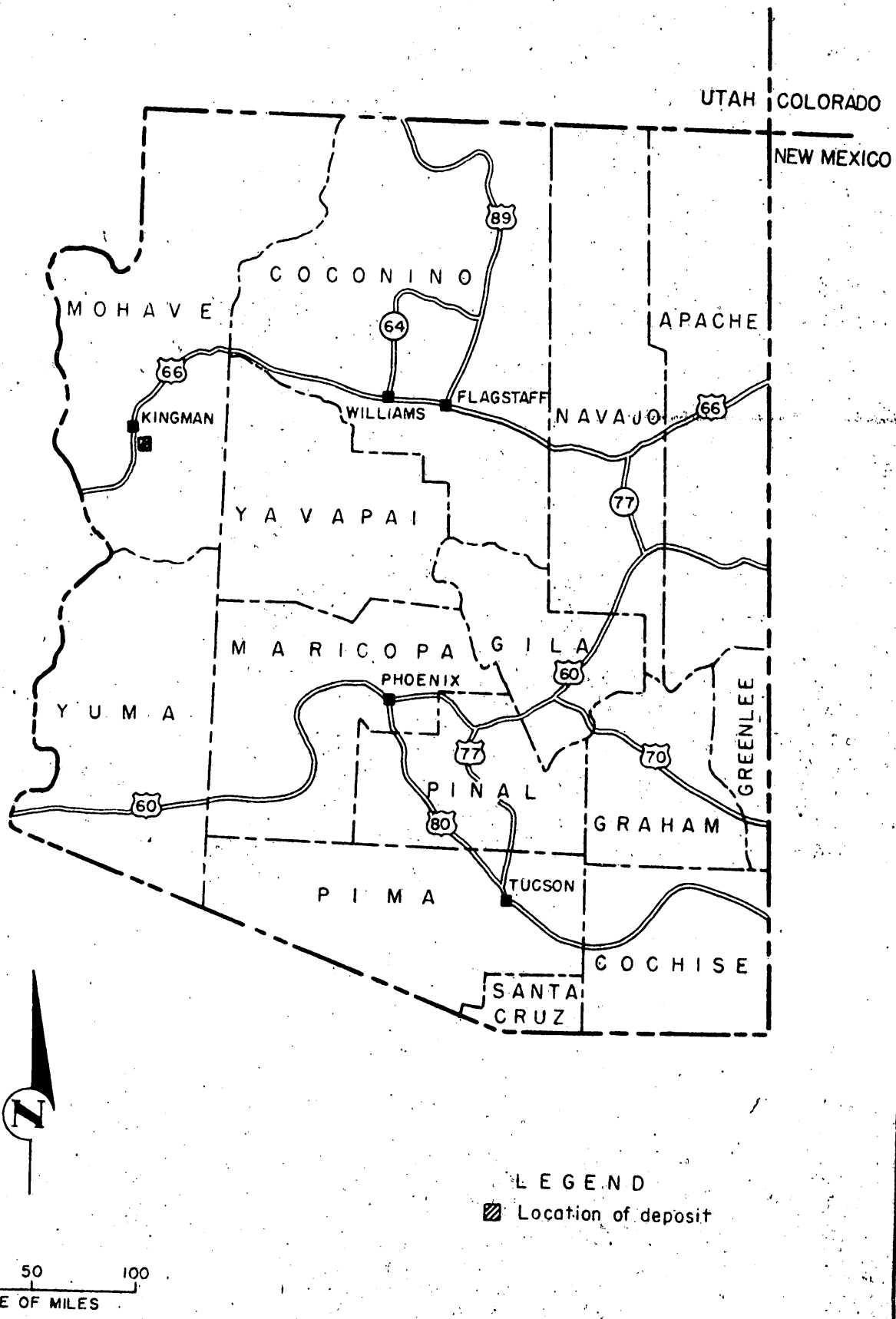


Figure 1 - LOCATION MAP, BI-METALS GOLD MINING AND MILLING CO., MOHAVE COUNTY, ARIZONA, OME-6191 (GOLD)

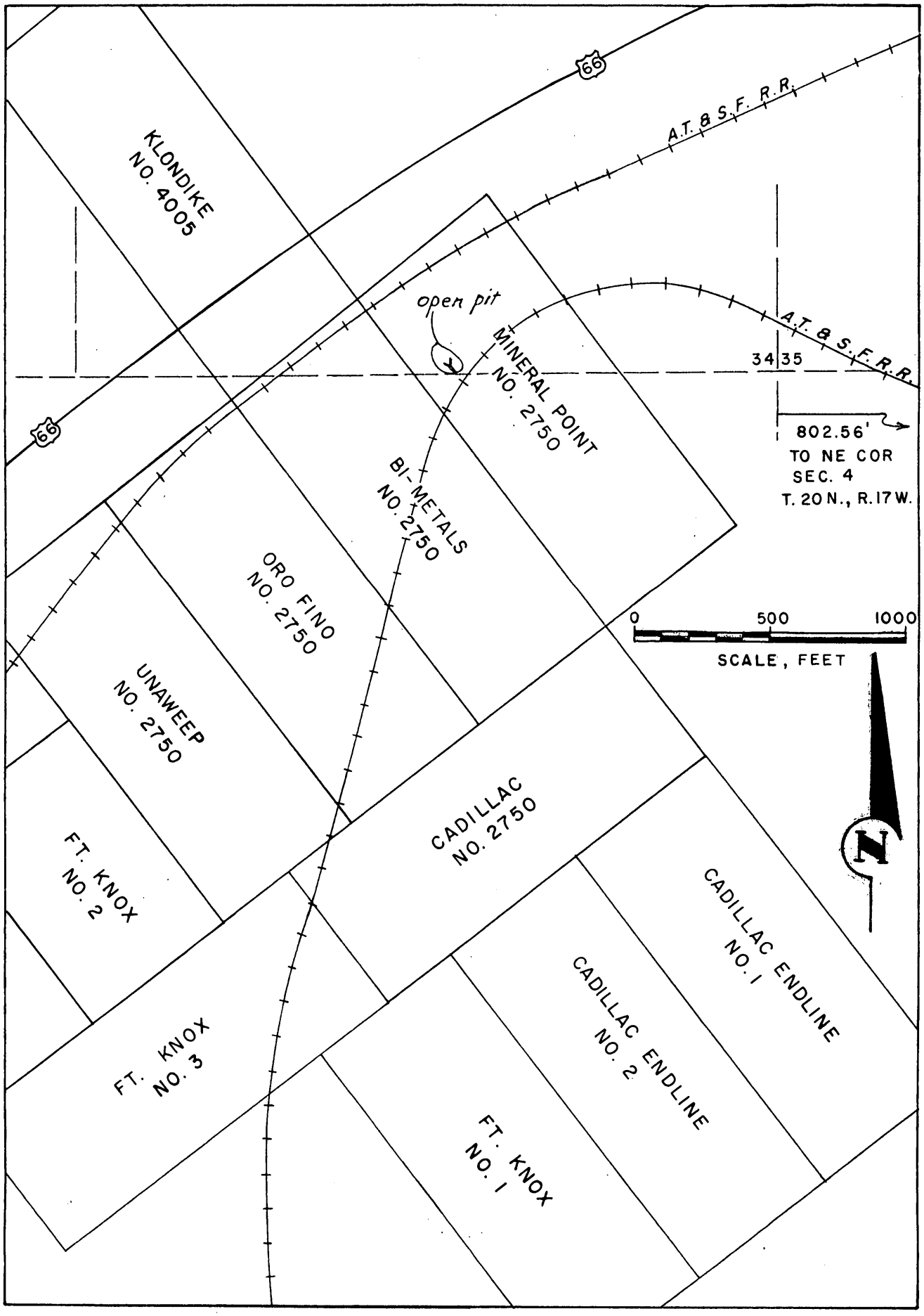


Figure 2 - CLAIM MAP, BI-METALS GOLD MINING AND MILLING CO., MOHAVE COUNTY, ARIZONA, OME-6191 (GOLD)

of mineral deposits in Mohave County during a period extending from October 1906 to February 1907. He reported that the mine was then also known as the McGuire mine, from the name of the owner, and that it had been "developed principally by about 250 feet of open cut, 130 feet of tunneling, and a shaft 80 feet in depth." Also, that the mine "is reported to have produced some gold, more than enough to pay for development, the gold being won principally by the use of rockers."

The property probably was inactive from 1907 to the winter of 1932-33, when Al Lewis mined and sluiced the gravels from a small area near the mine. The gravels ranged in value from $1.00 to $5.00 per cubic yard and yielded about $900.00 in gold.2/

The history of the property from 1933 through 1937 was obtained from Mr. Cyrus Weeks, Kingman, Arizona. The property was inactive in 1933-34. In 1935, the Arizona Gold Mines Company acquired the property, built a 50-ton per day gravity concentrator, and started open-pit mining. About 2000 tons of ore had been mined and milled to early 1936 when mining operations were recessed while the mill was being rebuilt in order to increase gold recovery. The gravity concentration equipment was removed, and amalgamation and flotation equipment was installed. Open-pit mining was renewed, and to the termination of all operations in September 1937, about 20,000 tons of ore had been mined and milled. About $70,000.00 in gold was produced. Run-of-mine ore contained an estimated total $4.75 in gold per ton,

2/ Gold Placers and Placering in Arizona, Arizona Bureau of Mines, Bull. 168, p. 53, 1961.

based on assays of tailings that averaged $1.25 in gold.

Mr. J. H. Dungan reported the property was last worked from November 14, 1937 to March 31, 1939 by a lessee who shipped about 1000 tons of selectively mined ore. Settlement sheets held by Mr. Dungan show the ore averaged about $19.45 in gold per ton.

PRESENT STATUS

The property is inactive.

There is no equipment of any kind on the property.

A small wooden shack, that is located near the open pit, is the only building on the property.

The principal mine workings include an open pit, and a 60-foot deep shaft from which short drifts have been driven on the 40-foot level. (fig. 4) The bottom 20 feet of the shaft is filled with debris. Other mine workings include an inaccessible shaft, reportedly about 100 feet deep, and several pits and trenches.

EXTENT AND OWNERSHIP OF THE PROPERTY

The property comprises a group of 11 lode mining claims, 6 of which are patented claims (fig. 2). It is situated in Sec. 34, T.21N., R.17W., and Sec. 4, T.20N., R.17W., Gila and Salt River Meridian, Mohave County, Arizona.

The Bi-Metal Gold Mining and Milling Company, the Applicant, holds the property by a lease agreement with the owner, Mr. J. H. Dungan. Mr. Dungan, is president and treasurer of the company.

GEOLOGY AND ORE DEPOSIT

F. C. Schrader[3] says:

The country rock containing the deposits is an altered and mineralized pre-Cambrian microcline granite. It occupies an area about 300 feet in diameter and locally seems to change into detrital masses, containing pebbles, cobbles, and bowlders of very dark to very light gray granite and schist ranging up to 2 feet or more in maximum diameter.

The structure, consisting of sheeting and cleavage, dips about 45° N., and has for the most part obliterated or obscured an older and more general north-south sheeting. Another system of jointing also dips westward about parallel with the surface slope, as shown in both the tunnel and the cut.

On the south the boundary of the mineralized area is marked by a dark-gray intrusive dike rock, which cuts the granite, contains inclusions or fragments of it, dips about 45° N. beneath the deposit, and is encountered in the bottom of the shaft. This dike rock is medium grained and consists essentially of a groundmass of plagioclase prisms containing pale-greenish hornblende phenocrysts, of which the largest are about three-fourths of an inch in length. The solutions which mineralized the deposits may have accompanied or closely followed the intrusion of this rock. On the west, toward the railroad, the deposit is obscured by wash and debris. On the east the deposit seems to terminate above the mine at a point about where the slope steepens with overburden talus, but it may extend beneath this talus upward toward the top of the mesa and may possibly connect with a similar deposit about half a mile to the northeast.

The values contained in the deposits consist essentially of fine-grained free gold. As seen in the face of the tunnel and the bottom of the shaft, both the granite and the dark dike rock carry considerable iron pyrites and, according to reports, but very little gold. The same is true of the mineralized granite on the surface to the north and south of the deposit. In the oxidized and mineralized zone, however, this pyrite, particularly in the granite, has weathered out and given rise to the hematite and other forms of iron that so brilliantly stain the rock, and has left cavities or receptacles in which the gold now contained in the deposit seems to have become concentrated. Wherever this oxidized rock is crushed and panned or horned it yields a long string of fine, bright gold, and in some small gullies or lines of

3/ Work cited in footnote 1.

drainage within or at the border of the area, where further concentration by flowing water has taken place, several tablespoonfuls of mostly coarse gold, of which some of the largest nuggets contained about half a dollar each in gold value, are reported to have been panned. The gold is said to be of high grade, worth $19.50 an ounce.

The free gold to which the deposits owe their value seems to have been derived from a considerable thickness of overlying mineralized rock. As this overlying rock became disintegrated and was removed by erosion the fine gold liberated from it gradually worked into the underlying rocks in which it is now found. Below or outside of the oxidized zone of mechanical concentration probably only very low-grade ore occurs.

On the 40-foot level, the contact between sheeted and altered granite and massive, unaltered granite is gradational (fig. 4). North of the shaft, most of the granite is massive and unaltered and contains a few discontinuos, knife-blade thick veinlets of pyrite. A sample obtained in this area by the Applicant, assayed 0.01 ounce gold a ton. The writer's check sample assayed 0.02 ounce gold. South of the shaft, the granite is weakly sheeted and altered, and contains a few very small iron-stained zones. Similar zones in the open-pit area, contained gold, and reportedly were widely distributed mainly as lenses ranging up to 2 feet thick and several feet in diameter. According to Mr. Weeks, the size and the occurrence of the lenses decreased as the pit was deepened and extended laterally. When operations ceased, material exposed in the floor and the face of the pit contained little gold except in a few high-grade pockets. The Applicant's assays of 17 samples taken along the face showed a gold content ranging from 0.04 to 0.35 ounce a ton, and averaging 0.10 ounce. (fig. 3)

In the area of proposed exploration, granite crops out along the open pit, and in the southern part of the area. The granite along the pit is weakly fractured and iron-stained. The Applicant's four samples of this granite each contained a minor amount of gold, ranging from 0.01 to 0.04 ounce a ton. The writer's sample of high-grade material from one of the two shallow pits sampled by the Applicant, assay 0.12 ounce gold a ton. A grab sample of material from the other pit assayed 0.03 ounce gold a ton. The granite exposed in the southern part of the proposed project area is massive and unaltered. It was not sampled.

PROPOSED EXPLORATION

The original application proposed that the open-pit area and the adjoining area be explored in depth by drilling, but contained no specific information concerning the proposed work and estimated costs.

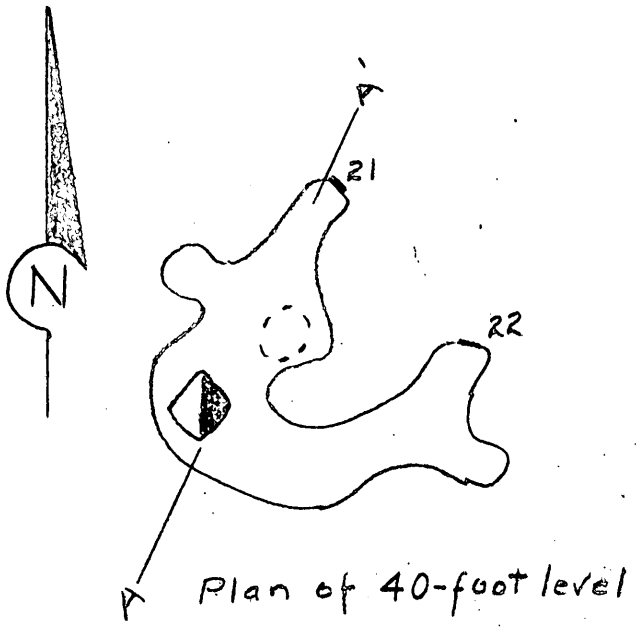
The amended application was submitted following re-examination of the property by the J. T. Jordon Engineering, Inc., Kingman, Arizona. It proposes that exploration by churn drilling be confined to an area adjoining the open pit to the south (fig. 3). The drilling would start at the edge of the pit and proceed southward until the boundaries of the deposit are outlined. The project would cost an estimated total $58,100.00.

Mr. Jordon found, as I had suggested to him during my examination of the property, that a depth extension of the deposit could not be

expected. In his report he said "A series of low dipping shears or faults near the bottom of the shaft appear to form the lower termination of the ore in the shaft area." Also, "It is possible that the aforementioned footwall shear may be a thrust fault which would indicate an ore extension of considerable size lying south of the mine pit." His series of low-dipping shears, actually are zones of sheeting which do not extend into the unaltered granite. That the zones are indicative of a thrust fault, apparently is due to a misinterpretation of facts.

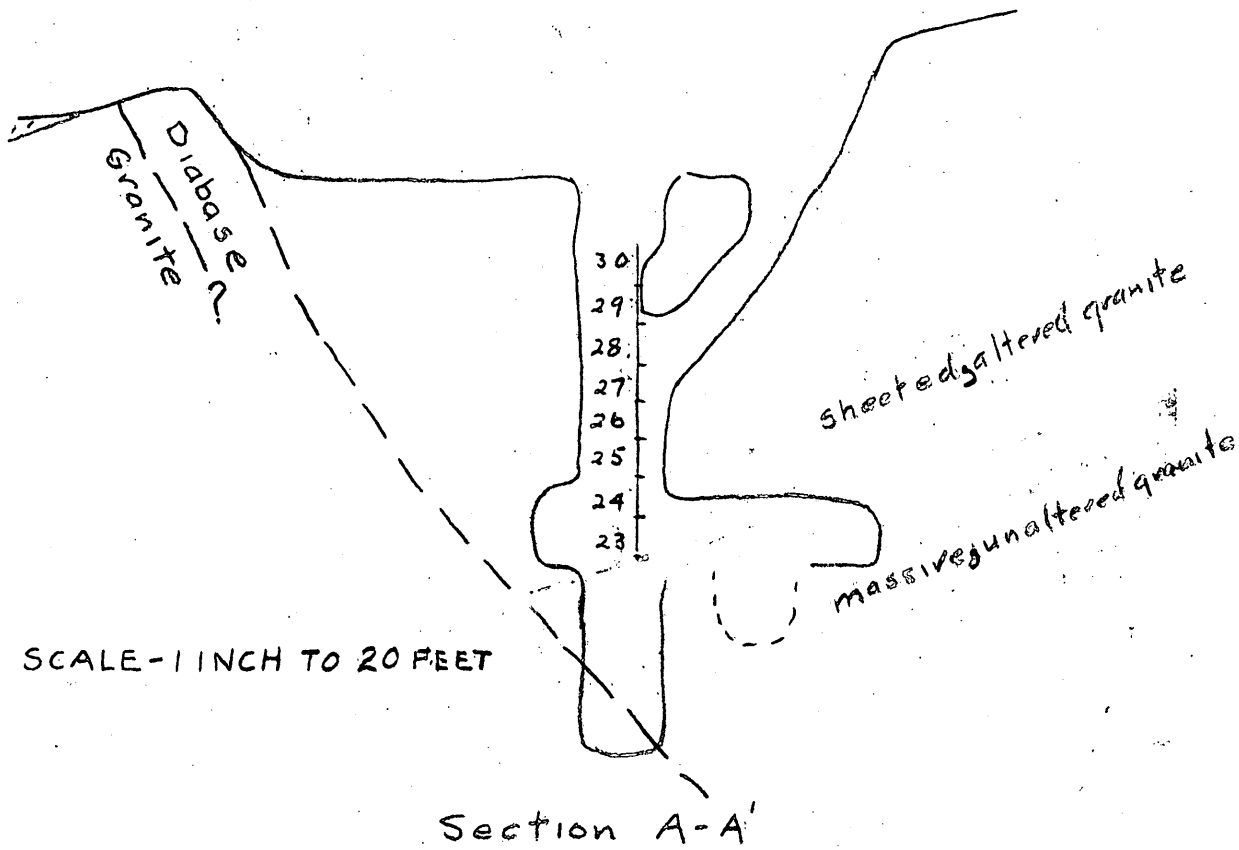
CONCLUSIONS AND RECOMMENDATIONS

It is concluded from the presented information that the Bi-Metal gold bearing zone probably does not extend into the area of the proposed exploration. Therefore, the proposed exploration would not be expected to result in a significant discovery, and denial of the application is recommended.



SCALE- 1 INCH TO 40 FEET

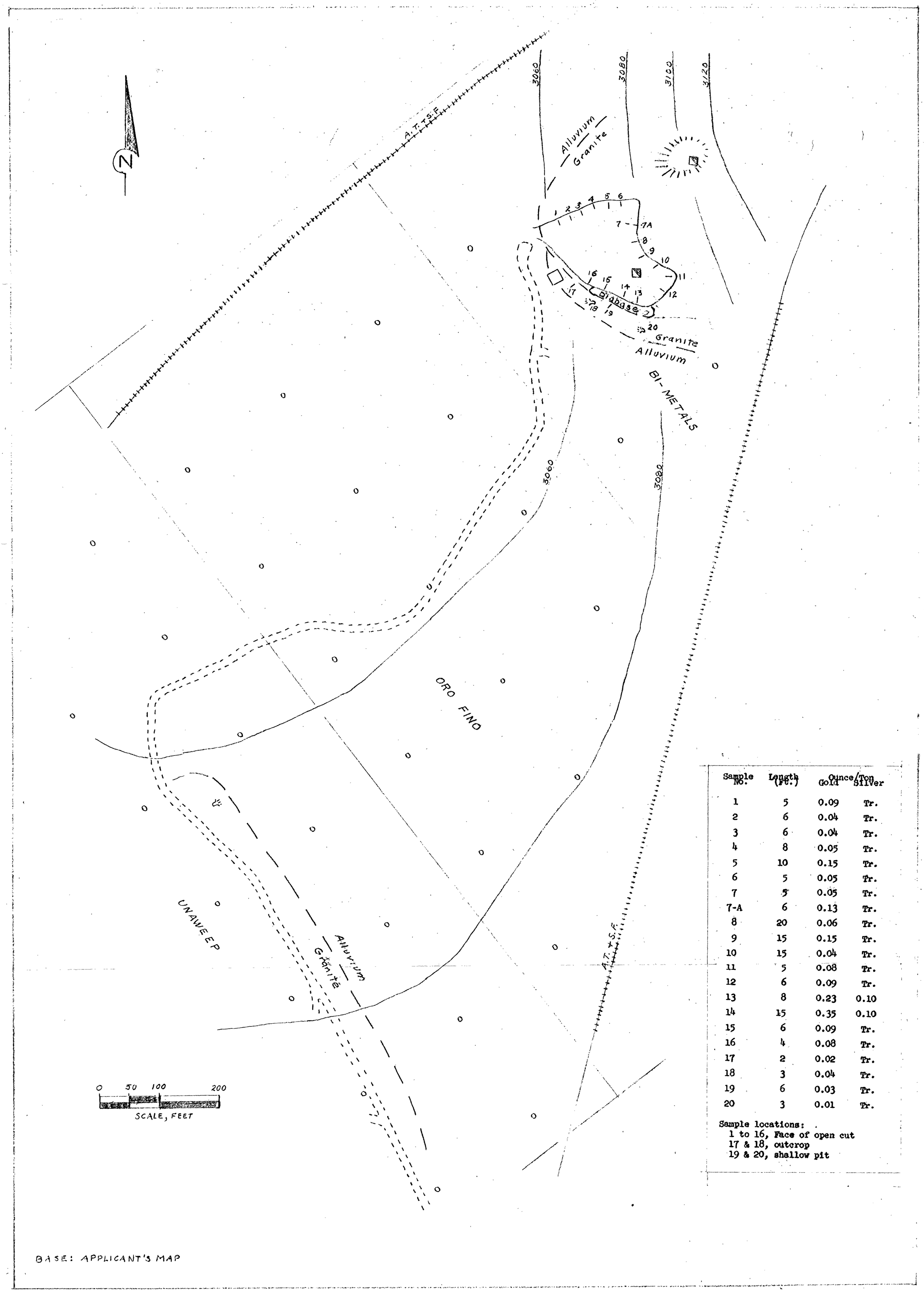
Sample No.	Length (Ft.)	Ounce/Ton Gold	Ounce/Ton Silver
21	3.5	0.01	Tr.
22	3.8	0.33	Tr.
23	4.0	0.24	Tr.
24	4.0	0.20	.10
25	4.0	0.38	.10
26	4.0	0.49	.10
27	4.0	0.56	.10
28	4.0	1.62	.20
29	4.0	0.11	Tr.
30	4.0	0.33	Tr.



BASE: APPLICANT'S MAP

OME-6191 (GOLD)

Figure 4- BI-METALS GOLD MINING AND MILLING CO., MOHAVE COUNTY, ARIZ.



Sample No.	Length (Ft.)	Ounce/Ton Gold	Ounce/Ton Silver
1	5	0.09	Tr.
2	6	0.04	Tr.
3	6	0.04	Tr.
4	8	0.05	Tr.
5	10	0.15	Tr.
6	5	0.05	Tr.
7	5	0.05	Tr.
7-A	6	0.13	Tr.
8	20	0.06	Tr.
9	15	0.15	Tr.
10	15	0.04	Tr.
11	5	0.08	Tr.
12	6	0.09	Tr.
13	8	0.23	0.10
14	15	0.35	0.10
15	6	0.09	Tr.
16	4	0.08	Tr.
17	2	0.02	Tr.
18	3	0.04	Tr.
19	6	0.03	Tr.
20	3	0.01	Tr.

Sample locations:
1 to 16, Face of open cut
17 & 18, outcrop
19 & 20, shallow pit

FIGURE 3 - BI-METALS GOLD MINING AND MILLING CO., MOHAVE COUNTY, ARIZ., OME-6191 (GOLD)