UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

224 New Customhouse
Denver 2, Colorado

Ocotber 15, 1954

Memorandum

To: Secretary to the Operating Committee, Defense Minerals Exploration Administration

From: Field Team, Region IV

Subject: Report of Examination, DMEA Docket 3361 (Copper-Lead-Zinc) Arizona-Utah Mines Co., French Lily Mine, Yavapai County, Arizona.

Enclosed are the original and three copies of the report pertaining to the above application.

There is no geologic evidence to indicate that exploration will lead to the discovery of significant ore bodies either at greater depths or laterally along the fault.

We recommend that the application for exploration assistance be denied.

W. H. King

W. H. King

for E. N. Hauschman

A. H. Koschmann

OCT 21 1954

Reviewed by
DMEA OPERATING COMMITTEE
10-25-54
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

October 15, 1954

Memorandum

To: DMEA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Report of Examination, DMEA Docket 3361 (Copper-Lead-Zinc), Arizona-Utah Mines Company, French Lily Mine, Yavapai County, Arizona.

Enclosed are nine copies of the engineering report of examination on the subject docket.

The applicant company requested $271,000.00 to explore the property by sinking the shaft 100 feet and drifting a total of 1800 feet.

The engineer examiner believes that the probability of encountering significant amounts of copper-lead-zinc ore are unfavorable. He recommends that the application be denied. We concur in this recommendation.

W. H. King

W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
10-22-54
(date)

August 25, 1954

Memorandum

To : W. H. King, Chief, Mining Div., Region IV

From : Chief, Mining Methods Br., Mining Div., Region IV

Subject : Final Report, Docket DMEA-3361, Arizona-Utah Mines Co., French Lily Copper-Lead-Zinc Mine, Yavapai County, Ariz.

Enclosed are original and 8 copies of subject report by T. M. Romalo of the Bureau of Mines. A separate report on the geology will be submitted by the Geological Survey.

The report recommends denial of requested Governmental aid because exploration of the deposit cannot reasonably be expected to indicate the presence of other than an insignificant amount of sub-marginal copper-lead-zinc ore.

Sterns did not have an opportunity to review the report because it was completed after he left on vacation.

Brochure is enclosed.

TMRomalo

T. M. Romalo, Mining Engineer
for Walter R. Sterns, Chief
Mining Methods Branch
Mining Division, Region IV

CC W. H. King 8
J. N. Faick 1
DMEA-3361
DF

TMRomalo:frj

Reviewed by
DMEA OPERATING COMMITTEE
10-22-54
(date)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver 2, Colorado

October 12, 1954

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3361, Arizona Utah Mines Company, French Lily Mine (copper-lead-zinc), Yavapai County, Arizona

Enclosed are 9 copies of a geologic report by John H. Feick of the U. S. Geological Survey covering the above docket.

Low grade deposits containing lead zinc and copper sulfides occur in lenticular quartz bodies along a strong fault zone in the pre-Cambrian Yavapai schist. Although the French-Lily fault is a strong persistent structure, ore shoots along it have been small and of poor grade. Feick concludes that there is no geologic evidence to indicate that exploration will lead to the discovery of significant ore bodies either at greater depths or laterally along the fault. He recommends denial of the application for exploration assistance.

E. N. Hawkman
for A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (9)

Reviewed by
DMEA OPERATING COMMITTEE
10-22-54
(date)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Box 4126 University Station
Tucson, Arizona

October 8, 1954

Memorandum

To: A. B. Koschmann

From: J. H. Faick

Subject: Arizona Utah Mines Company, French Lily Mine (Copper-Lead-Zinc), Yavapai County, Arizona, DMEA 3361

Enclosed are original and 8 copies of a report on the above subject. The report recommends denial of the application because unfavorable geological conditions indicate that significant amounts of ore will not be discovered by the project.

J. H. Faick

JHF:ns

Encls. 8 cc Koschmann
cc Storms

Reviewed by
DMEA OPERATING COMMITTEE
10-22-54
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA-3361, Arizona-Utah Mines Company

French Lily Copper-lead-zinc Mine

Yavapai County, Arizona

T. H. Kennedy, Mining Engineer
U. S. Bureau of Mines

J. N. Faick, Geologist
U. S. Geological Survey

August 1954

10-22-54

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By T. M. Romalo[1] and J. N. Faick[2]

The French Lily mine in Yavapai County, Ariz. was examined by the Defense Minerals Exploration Administration in connection with an application for Governmental aid by the Arizona-Utah Mines Co. The application, docketed as DMEA-3361, contained a proposed project designed to explore for ores of copper, lead and zinc mainly below existing mine workings. The total cost of the proposed project, set up in 2 stages, was $271,000.00.

The French Lily mine was worked mainly for gold prior to 1934. During 1934 to 1937 the mine was deepened, some drifting was done, and a flotation mill was installed. The mill was operated about 2 months before operations were terminated and equipment was sold. Little work was done from 1937 to 1945 when the property was acquired by the Cedar-Talisman Consolidated Mining Company. The company re-equipped the mine and mill, did additional development work, and mined and milled about 4,000 tons of ore. Operations were terminated late in 1953. In January 1954, the property was acquired by the Arizona-Utah Mines Company. Operations by the company have been confined to a few rounds of drifting, repair work and pumping operations. Total production from the mine probably does not exceed several carloads of gold ore and a few tons of tons of zinc and copper concentrates.

1/ Mining Engineer, U. S. Bureau of Mines
2/ Geologist, U. S. Geological Survey

The principal mine workings consist of an inclined shaft from which about 3,500 feet of drifting has been done on 5 levels. The lowest level is at 456 feet from the collar of the shaft. The workings follow a shear zone in Yavapai schist that has an average strike of about N. 45° W. and a dip of approximately 45° to the northeast.

In the lower mine workings, the shear zone ranges from a few inches to about 3 feet wide. It is filled with gouge, fractured schist, and quartz stringers and lenses. Ore mineralization, mainly sphalerite, chalcopyrite and gold, is associated with some of the quartz. The most extensively mineralized portions of the zone consist of several quartz lenses up to 1.3 feet thick and a few tens of feet in length.

The mineralized quartz lenses have been essentially mined out. Production from lenses between the third and bottom level of the mine yielded 4,000 tons of mill rock of unknown grade. Of the 4,000 tons, probably less than 2,000 tons was vein material and the remainder was barren wall-rock that was mined in order to meet a milling schedule.

In the area of proposed diamond drilling, 3 quartz veins, each about 0.7 feet wide, have been exposed by a shallow trench. The veins are traceable for about 40 feet. Two of the veins are composed of manganese-stained, white quartz. The quartz of the other vein is brecciated and iron-stained. Many small cavities in the quartz appear to be relicts of sulfides, probably pyrite.

Estimates indicate the mined zone contained about 15 tons of vein material, per feet of depth, assaying about 4.9 percent zinc, 0.7 percent copper, 0.6 percent lead, and 1.1 ounces, silver and 0.30 ounce gold per ton. Vein material of a similar tonnage and grade is assigned to the indicated and inferred reserves below existing mine workings. These reserves are based on the probable depth extension of the mineralized zone with little or no expectable increase in the degree and/or extent of mineralization. For the area of proposed diamond drilling, the inferred reserves of similar grade material has been estimated at 2 tons per feet of depth.

Denial of the requested Governmental assistance is recommended because exploration of the mineralized zones cannot expect to indicate the presence of other than insignificant amounts of sub-marginal copper-lead-zinc ore.

ARIZONA UTAH MINES COMPANY

FRENCH LILY MINE
(Copper-Lead-Zinc)

YAVAPAI COUNTY, ARIZONA

DMEA 3361

GEOLOGY

By
John N. Faick
Geologist, U. S. Geological Survey.

Reviewed by
DMEA OPERATING COMMITTEE
10-22-54
(date)

ARIZONA UTAH MINES COMPANY

FRENCH LILY MINE
(Copper-Lead-Zinc)

YAVAPAI COUNTY, ARIZONA

DMEA 3361

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INTRODUCTION

On behalf of the Defense Minerals Exploration Administration, the French-Lily Mine, near Mayer, in Yavapai County, Arizona, was examined August 10 to 12, 1954 by T. M. Romslo, U.S.Bureau of Mines, and J. N. Faick, U. S. Geological Survey. The examination was made in response to an application for Government aid in exploration for copper-lead-zinc ore which the operators thought might exist below the old mine workings.

The French-Lily mine was worked for relatively shallow gold ores on several occasions prior to 1945 and between 1945 and 1953 the mine supplied about 4,000 tons of mixed ore and waste to the French-Lily mill. The mine is developed by a good usable inclined shaft nearly 500 feet deep and about 3500 feet of drifts on the 85, 162, 251, 349 and 456-foot levels, as measured along the incline from the collar. An old inclined shaft, which lies about 650 feet west of the present shaft, formerly had developed the vein to the No. 2 level but is now inaccessible.

GEOLOGY

The French-Lily mine, which lies about midway between the communities of Cordes and Crown King, Arizona, is situated on the eastern foothills of the Bradshaw Mountains at an altitude of about 3200 feet. The area in which the mine is situated is underlain by a group of rocks which are members of the Yavapai schist series, of the older pre-Cambrian. The dominant rock type, which forms the host rock at the mine, is very dark greenish or nearly black, fine-grained, dense, crystalline material which in places is gradational into coarser-grained, lighter-colored varieties of the same material. The rocks are massive, or gneissoid and are schistose in a few places. The rocks have the appearance of being metamorphosed basalt, diorite, or gabbro, but metamorphosed sediments do not appear to be present in the area. A large biotite-monzonite dike is present near the eastern

edge of the property and undoubtedly other dikes exist but they do not appear to be noteworthy features on the property.

The French-Lily mine is developed on a vein-like deposit of quartz which contains relatively small amounts of metal. The vein is localized along a fault which strikes about N45°E and dips about 45° NE, and is nearly conformable to the obscure banding of the host rock.

On levels 4 and 5 (see Fig. 4) the fault zone ranges in thickness from 0.1 to three feet. Within this zone quartz forms elongate-tabular lens-like masses which are not continuous, but in many places are separated by short zones of barren gouge. Relatively small amounts of pyrite, sphalerite, chalcopyrite and galena are associated with the quartz veins. The individual bodies of quartz vary considerably in thickness but are relatively persistent along the strike; in a few cases obtaining a length of 200 or 300 feet. A few small ore shoots form in the thickest parts of the vein, and in a few places these contain greater than average concentration of sulfide minerals. These ore shoots range from about 0.5 feet to 1.3 feet thick and have a strike length of a few tens of feet. The largest and richest of these ore shoots have been essentially mined out.

Evidence of mineralization has been traced along the French-Lily fault for many hundreds of feet but large, rich or profitable concentrations of ore have not been found at any place along it. About 3000 feet southeast of the French-Lily mine, in an area where the applicants proposed some exploration drilling, a crosscut trench has exposed 3 quartz

veins, each about .7 feet thick. Two of these veins are composed of white quartz strongly stained with manganese oxides. The other vein is thoroughly iron-stained and pitted with leached cavities which indicate the former presence of sulfides. These veins are traceable on the surface for only 40 or 50 feet and apparently are of little significance.

PRODUCTION AND ORE RESERVES

It is believed all of the largest and richest concentrations of ore in the French-Lily deposit have been mined out (see Stopes on Fig. 3 and Fig. 4), and the remaining ore bodies in the developed part of the mine are too small and too low grade to justify mining. An unknown, but probably small amount of oxidized gold ore was produced from the upper workings and about 4,000 tons of low grade material, about half of which was quartz-sulfide vein material, was produced from the lower workings. According to one of the miners who worked in the stopes, the vein material was diluted with as much as 3 feet of barren wall rock in an effort to get sufficient material to run the mill at capacity.

The French-Lily vein is very persistent along both strike and dip, and the mineralogy, texture and structure suggest that it may persist for considerable distances beyond the present mine workings. There is, however, no geological reason to believe the vein at any place is larger or richer than where exposed in the present mine workings.

About 2000 tons of vein material and an equal amount of waste rock were mined from the stopes between 3 and 5 levels (see Fig.4). An unmined pillar containing about 100 tons of ore is present in the floor of No. 4 level. Using production estimates as a basis, it is estimated that the vein contained about 15 tons of ore per foot of depth, and that inferred reserves below level No. 5 are about of this same

order of magnitude. The vein is a type that might reasonably be expected to continue a few hundred feet below level No. 5; therefore, 7 or 8 thousand tons of inferred ore reserves of submarginal grade may be present.

Sampling by the DMEA examiners (see Fig. 4) indicates the mineralized portion of the mined zones contained an average of about 4.9 percent zinc, 0.7 percent copper, 0.6 percent lead and 1.1 ounces of silver and 0.3 ounces of gold per ton. The inferred reserves are probably about the same grade. Samples taken by the DMEA examiners are shown on Fig. 4, and the approximate locations of samples taken by C. H. Dunning, Mining Engineer, who represents the applicant, are shown on Fig. 3.

In the area of the applicant's proposed diamond drilling, about 3,000 feet south of the French-Lily mine, 3 narrow veins are exposed in a shallow trench. The examiners estimate that these veins probably contain about 2 tons of ore per foot of depth, and the grade of ore is probably lower than at the mine. These narrow, discontinuous veins appear to be too small to justify additional exploration.

CONCLUSIONS

Extensive exploration and development of a relatively persistent quartz-sulfide vein at the French-Lily mine resulted in the discovery and mining of minor concentrations of submarginal zinc-copper-lead ore. Undoubtedly small amounts of similar ore would be found by additional exploration but there is no geological reason to expect an increase in the degree or extent of mineralization along the strike of the vein or at greater depths. It is unlikely that this mine will ever be productive, a conclusion with which Mr. Dunning, representing the applicant, seems to be fully in agreement.

RECOMMENDATION

It is recommended that this application for Government aid in exploration be denied because the unfavorable geological conditions indicate that significant amounts of ore will not be discovered by the project.

DMEA-3361, ARIZONA-UTAH MINES COMPANY
FRENCH LILY COPPER-LEAD-ZINC MINE
YAVAPAI COUNTY, ARIZONA

Engineering Report

By T. M. Remsle
Mining Engineer
U. S. Bureau of Mines

August 1954

DMKA-3361, ARIZONA-UTAH MINES COMPANY
FRENCH LILY COPPER-LEAD-ZINC MINE
YAVAPAI COUNTY, ARIZONA

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INTRODUCTION

The French Lily mine in Yavapai County, Ariz. was examined by the Defense Minerals Exploration Administration in response to an application for Governmental aid in an exploration project, pursuant to DMEA Order 1, under the Defense Production Act of 1950, as amended. The application, made by the Arizona-Utah Copper Mines Company, was docketed as DMEA-3361. It proposed an exploration project designed to develop reserves of copper-lead-zinc ore principally below existing mine workings. The estimated total cost of the project, set up in 2 stages, was $271,000.00.

The examination, made to determine if the requested aid would be justified, was carried out August 10 to 12, 1954 by T. M. Romalo, U. S. Bureau of Mines and J. N. Faick, U. S. Geological Survey.

LOCATION, ACCESSIBILITY AND PHYSICAL FEATURES

The French Lily mine is about 60 air miles west of north from Phoenix, Ariz. (figure 1). It may be reached from Phoenix by traveling 62 miles north on State Highway 69 to Cordes, thence 7.5 miles westerly on the winding, graded Crown King road to Cleator, and thence 1.5 miles south on a graded road to the mine. The nearest railroad shipping point is at the Nine Bell siding of the Atchison, Topeka, and Santa Fe Railway. The siding is adjacent to State Highway 69 at about 7 miles north of Cordes.

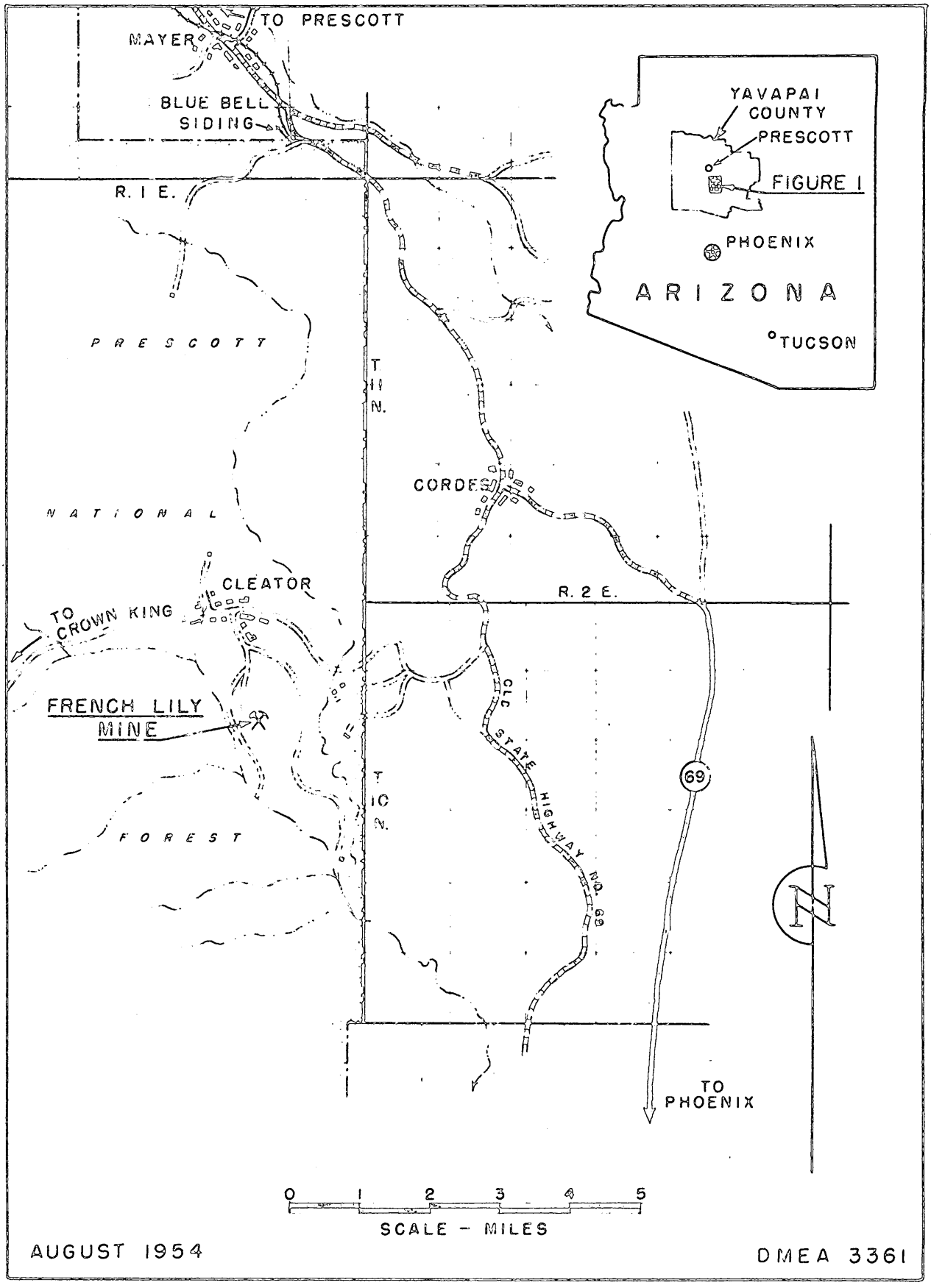


FIGURE 1. - LOCATION MAP - FRENCH LILY MINE
ARIZONA-UTAH MINES COMPANY YAVAPAI COUNTY, ARIZONA

The French Lily mine is situated on the eastern foothills of the Bradshaw Mountains at an altitude of about 3,200 feet. The topography of the mine area is moderately rugged. Vegetation is confined to forage grasses and a light growth of shrubs and cacti. A branch of Poland Creek, an intermittent stream that flows southwesterly, traverses the mine area.

Summers are hot and winters are mild. Precipitation of about 20 inches annually occurs mainly as heavy thunder showers during the summer.

HISTORY AND PRODUCTION

There is no readily available information on the French Lily mine prior to 1922 when the area was visited by Lindgren.[1] At that time the mine was owned by Grove Brothers, of nearby Mayer. The mine had been developed by an incline 190 feet long, with 250 feet of drifts on the second level. It was being worked for gold. One carload of ore had been shipped and some ore was produced in 1923. The mine probably was shut down before 1925.

During 1934 to 1937, Pat Moran operated the mine on a loan from the Reconstruction Finance Corporation. The old shaft was extended to the second level and a new shaft, started by the previous operator, was deepened from the second to the third level. Some drifting was done on both of these levels. A flotation mill was built and operated probably 2 months before all operations were terminated and all major equipment was sold.

1/ Lindgren, Waldemar, Ore Deposits of the Jerome and Bradshaw Mountains quadrangles, Arizona, U.S.G.S. Bul. 782, p. 159.

Late in 1937, Sam Cochran, relocated the property and did a little exploratory work before selling out to John Nezik. Mr. Nezik produced 2 or 3 carloads of gold ore before 1945 when the property was purchased by the Cedar-Talisman Consolidated Mining Company. The company re-equipped the mine and mill, deepened the new shaft to the fourth level and run several hundred feet of drifts. Approximately 4,000 tons of ore was milled. Zinc and copper concentrates yielded a net smelter return of about $50,000.00, according to the applicant. Operations were discontinued late in 1953.

The applicant, the Arizona-Utah Mines Company, purchased the property in January 1954. Since then, operations have been confined to a few rounds of drifting, repair work, and pumping operations.

PROPERTY AND OWNERSHIP

The French Lily mine is located on a property comprising a group of 11 unpatented lode mining claims, probably in secs. 11 and 12, of unsurveyed T. 10 N., R. 1 E., Yavapai County, Ariz. (fig. 3) The property is owned by the Arizona-Utah Mines Company, an Arizona corporation, 33 North LaSalle Street, Chicago, Ill. It is encumbered by a $100,000.00 first mortgage.

PRESENT STATUS

Mine Workings and Equipment

The mine is developed by 2 inclined shafts, approximately 3,500 feet of drifting on 5 levels and several raises and stopes (figure 3). The old shaft and some of the workings from it are inaccessible. The

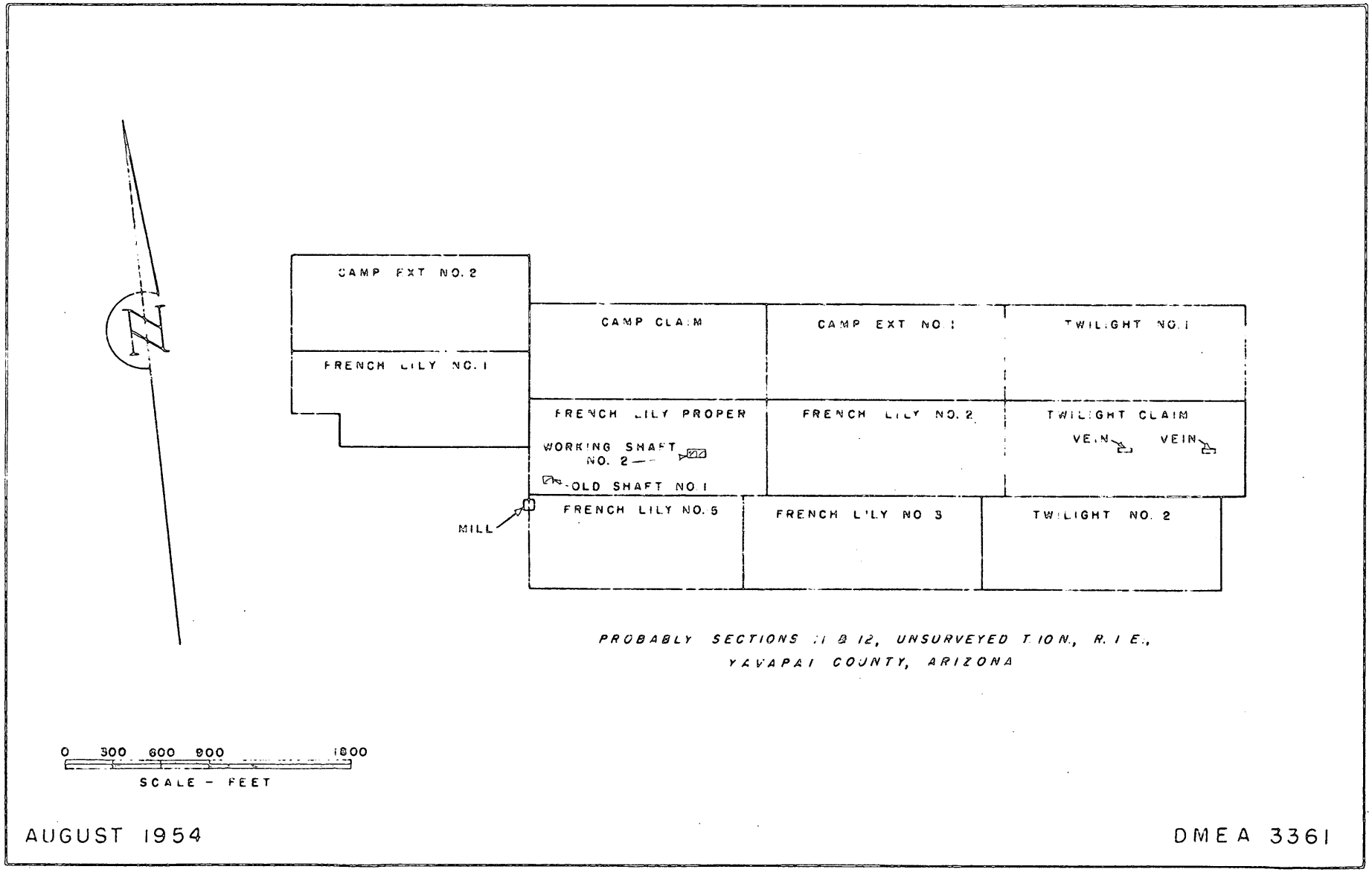
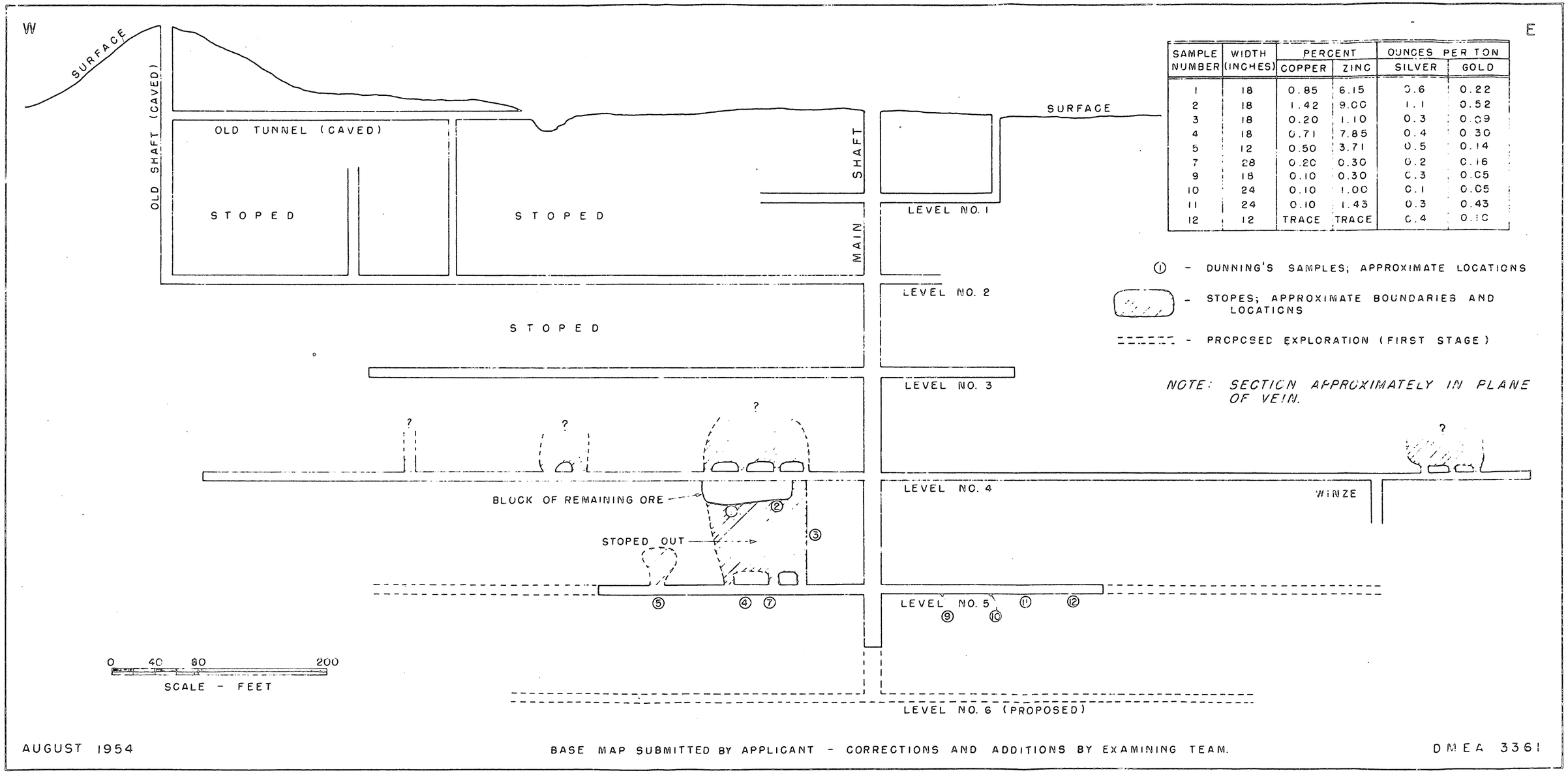


FIGURE 2. - CLAIM MAP - FRENCH LILY MINE

ARIZONA-UTAH MINES COMPANY YAVAPAI COUNTY, ARIZONA



SAMPLE NUMBER	WIDTH (INCHES)	PERCENT		OUNCES PER TON	
		COPPER	ZINC	SILVER	GOLD
1	18	0.85	6.15	0.6	0.22
2	18	1.42	9.00	1.1	0.52
3	18	0.20	1.10	0.3	0.09
4	18	0.71	7.85	0.4	0.30
5	12	0.50	3.71	0.5	0.14
7	28	0.20	0.30	0.2	0.16
9	18	0.10	0.30	0.3	0.05
10	24	0.10	1.00	0.1	0.05
11	24	0.10	1.43	0.3	0.43
12	12	TRACE	TRACE	0.4	0.10

AUGUST 1954

BASE MAP SUBMITTED BY APPLICANT - CORRECTIONS AND ADDITIONS BY EXAMINING TEAM.

DMEA 3361

FIGURE 3. — LONGITUDINAL SECTION OF MINE WORKINGS — FRENCH LILY MINE
ARIZONA-UTAH MINES COMPANY YAVAPAI COUNTY, ARIZONA

new shaft is timbered to 2 compartments with an overall measurement of 6 feet by 9 feet in the clear. It is bottomed at about 30 feet below the lowest level that was designated as the 530 level on the applicant's map. The examining team found the lowest level to be 456 feet from the collar of the shaft. Water enters the mine, mainly from the surface, at an average rate of about 20 gallons per minute. The water level is being maintained below the bottom level by pumping one shift daily. The stopes between levels 3, 4, and 5, are open but were not examined because of unsafe conditions caused by rotting of timber stulls that support the back. The largest stope appears to be about 60 feet long, 80 feet high and about 3 feet wide. The maximum thickness of the vein zone, in this and other stopes mined to widths up to 4 feet, was probably about 2 feet. According to one of the miners of the Cedar-Talisman operation, vein material was diluted with up to 3 feet of barren footwall rock in an attempt to maintain a 3-shift milling schedule.

Surface Plant and Equipment

Structures at the mine consist of a headframe, a 125-ton ore bin, hoist and compressor house, a change room and office. The principal equipment comprises a single drum hoist, powered by a 440-volt motor, and a 435-cubic feet electric-powered compressor. Electricity for power and lighting is furnished by the Arizona Public Service.

The milling plant consists of three 18,000-gallon water storage tanks, the mill building, and 2 small buildings housing a laboratory and office. The mill building, including a 50-ton crude ore bin and a 250-ton fine-ore bin, contains the following installed equipment:

1 Jaw crusher, 24 in. by 36 in., Allis Chalmers;
1 Bucket elevator to fine ore bin;
1 Belt conveyor to a 4 ft. by 6 ft., Allis Chalmers ball mill in closed circuit with a 1.5 ft. by 12 ft. Akins classifier;
14 Denver Equipment Co. flotation cells;
2 Thickeners;
2 Filters.

PROPOSED PROJECT

The proposed work with estimated costs were as follows:

First Stage:

550 level - 600 ft. of drifting @ $30 per foot	$18,000.00	
Sinking shaft from 550 to 650-foot level, 100 ft. @ $150.00 per ft.	15,000.00	
650 level - 1,200 ft. of drifting @ $30.00 per ft.	36,000.00	
Station, ore pockets and pumps	10,000.00	
Manway raise	5,000.00	
Housing for 5 men, office and warehouse	15,000.00	
General exploratory drilling	15,000.00	
Total for 1st stage		$114,000.00

Second stage, to be carried out if results of first stage are favorable:

Deepen shaft from 650 to 1,000 ft., 350 ft. @ $150.00 per ft.	$52,500.00	
Stations on 2 levels	15,000.00	
Drifting, 2,400 ft.	72,000.00	
Raising, 350 ft.	17,500.00	
Total for 2nd stage		$157,000.00
Estimated total cost of project		$271,000.00

GEOLOGY OF THE DEPOSIT

The French Lily deposit occurs in Yavapai Schist that forms extensive outcrops over much of the property. Other outcropping rocks appear to be confined to a few small zones, probably dikes, of biotite-monzonite near the eastern portion of the property.

Ore mineralization is confined to discontinuous stringers and lenses of quartz associated with fractured schist and gouge that fills a shear zone which is approximately parallel to foliation of the schist. At the mine, the shear zone strikes an average of about N. 45° W. and dips about 45° to the ~~north~~ east. A few widely scattered, small iron stained zones on the surface indicated the shear zone may extend southeastward to the area of proposed diamond drilling. In this area, about 3,000 feet from the French Lily mine, 3 quartz veins each about 0.7 feet thick, have been crossent by a shallow trench about 10 feet long. Two of the veins are composed of white quartz strongly stained with manganese oxides. The quartz of the other vein, at the footwall of the zone, is brecciated and thoroughly iron-stained. Many small vugs in the quartz indicate removal of sulfides, probably pyrite, by leaching. The veins are traceable for about 15 feet to the north and 25 feet to the south of the trench.

At the mine, on levels 4 and 5, the shear zone ranges in thickness from about 1 inch to approximately 3 feet. Portions of the zone are composed wholly of gouge. At other places the gouge is associated with fractured schist and barren or mineralized quartz veins.

The most extensively mineralized portions of the zone are lens - like deposits containing quartz-sulfide veins up to 6 inches thick. These deposits, up to 1.3 feet thick and a few tens of feet in length, have been essentially mined out.

Sampling indicates the mineralized portion of the mined zones contained an average of about 4.9 percent zinc, 0.7 percent copper, 0.6 percent lead, and 1.1 ounces of silver and 0.3 ounce of gold per ton.

Assays of samples taken by C. H. Dunning, mining engineer, who recently examined the property for the applicant are shown on figure 3. The assays of samples obtained by the examining team are shown on figure 4.

ORE RESERVES

Essentially all of the most significant concentrations of vein material have been mined-out. Consequently, potential reserves in the mine area are confined to vein material that may occur below existing workings. As little or no increase in the degree or extent of mineralization can be expected, the potential reserves should be similar to the vein material produced from between levels 3 and 5. Here, total production was 4,000 tons of which not over 2,000 tons was vein material containing an estimated 4.9 percent zinc, 0.7 percent copper, 0.6 percent lead, and a silver and gold content of

1.1 ounces and 0.3 ounce per ton, respectively. On this basis, the potential reserves of similar grade vein material is estimated at 15 tons per foot of depth. These reserves do not constitute ore because development costs alone would exceed their value.

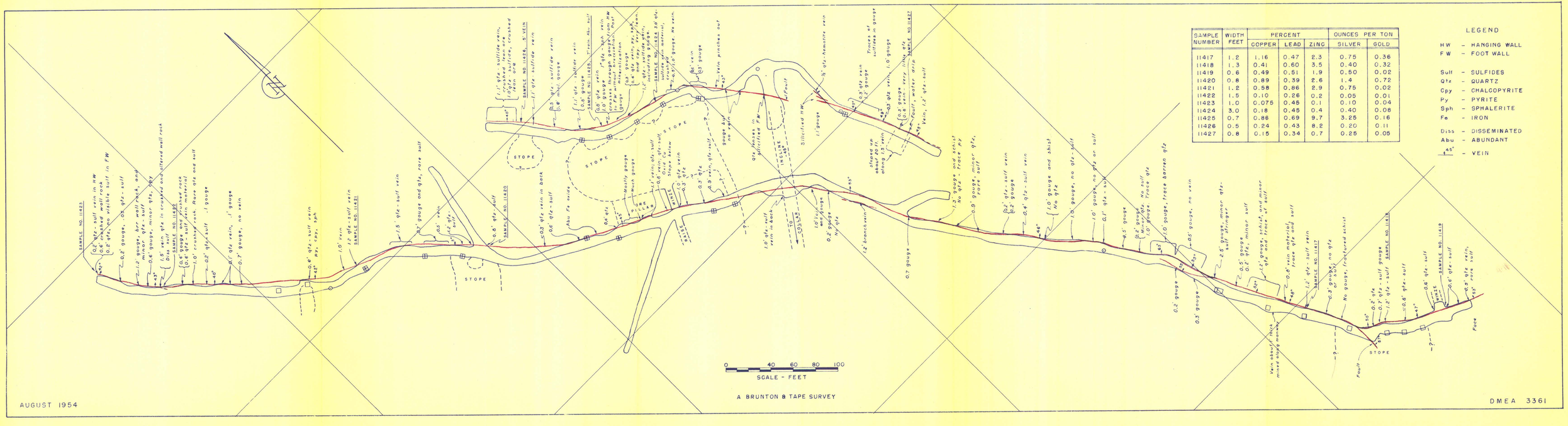
In the area of proposed diamond drilling, the potential reserves have been estimated at 2 tons per foot of depth. There is no reason to believe the degree of ore mineralization would be greater than the estimated grade of reserves at the mine.

CONCLUSIONS

The French Lily deposit has been extensively explored and developed with the result that only minor concentrations of sub-marginal zinc-copper-lead ore have been encountered and essentially mined out. Geological conditions indicate the deposit will persist with depth with no material increase in the degree and/or extent of ore mineralization.

RECOMMENDATION

Denial of the requested assistance on proposed exploratory work at the French Lily mine is recommended because the possibility of encountering significant amounts of copper-lead-zinc ore are unfavorable.



SAMPLE NUMBER	WIDTH FEET	PERCENT COPPER	PERCENT LEAD	PERCENT ZINC	OUNCES PER TON SILVER	OUNCES PER TON GOLD
11417	1.2	1.16	0.47	2.3	0.75	0.36
11418	1.3	0.41	0.60	3.5	0.40	0.32
11419	0.6	0.49	0.51	1.9	0.50	0.02
11420	0.8	0.89	0.39	2.6	1.4	0.72
11421	1.2	0.58	0.86	2.9	0.75	0.02
11422	1.5	0.10	0.26	0.2	0.05	0.01
11423	1.0	0.075	0.45	0.1	0.10	0.04
11424	3.0	0.18	0.45	0.4	0.40	0.08
11425	0.7	0.86	0.69	9.7	3.25	0.16
11426	0.5	0.24	0.43	8.2	0.20	0.11
11427	0.8	0.15	0.34	0.7	0.25	0.05

LEGEND

HW - HANGING WALL
FW - FOOT WALL

Sulf - SULFIDES
Qtz - QUARTZ
Cpy - CHALCOPYRITE
Py - PYRITE
Sph - SPHALERITE
Fe - IRON

Diss - DISSEMINATED
Abu - ABUNDANT

45° - VEIN

FIGURE 4. - GEOLOGIC MAP OF LEVELS 4 AND 5 - FRENCH LILY MINE - YAVAPAI COUNTY, ARIZONA