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A  
GEOLOGICAL  
and  
ECONOMIC APPRAISAL  
REPORT  
of the  
MERLO MICA PROPERTY  
in  
MOHAVE COUNTY, ARIZONA

by

Richard E. Mieritz  
Mining Consultant  
Phoenix, Arizona

January 10, 1976

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INCLUDED EXHIBITS:

- Map No. 1 - Geological Map, Portion of Mohave County, Arizona
- Map No. 2 - Claim Map - Merlo Mica Property
- Map No. 3 - Outcrop Map - Merlo Mica Property

INTRODUCTION:

At the request of and authorization by Mr. Wallace I. Resh, President, Wareco International Resources, Inc., San Diego, California, the writer visited and examined a group of mica mineralized claims located in Sec. 16, T. 19 N., R. 15 W., Mohave County, Arizona. Mr. Resh accompanied the writer to the property on January 6 and 7, 1976.

This report is based on the writer's field examination and observation, on his professional knowledge of and experience on mica mineralization in other areas, on information and factual data provided by Mr. Resh and on information learned from the files of Arizona's Department of Mineral Resources.

PURPOSE of the EXAMINATION:

Wareco Corporation has the opportunity to lease the above mentioned property at reasonable terms if it can be shown that a reasonable size operation can produce a revenue substantially more than mere "dollar swapping."

To accomplish this end result, several factors require much consideration and study, these being:

- (1) Crude material source and potential reserve.
- (2) Type of mining and its economics.
- (3) Method of milling and effective recovery to produce a saleable product to obtain the highest market price, and
- (4) Transportation economics from mine to market.

All the above factors, as well as generalities, are considered in this report in the following paragraphs.

THE PROPERTY:

The property includes eight standard lode size claims in Section 16, T. 19 N., R. 15 W., which are known as:

Mica Hill	Primavera
Mica Hill Ext. 1	Primavera No. 2
Mica Hill Ext. 2	Primavera No. 3
Mica Hill Ext. 3	Missy (position of this claim is
(See Map No. 2.)	questionable)

Section 16 is State Land, thus, these claims are under lease from the State of Arizona as evidenced by the following lease numbers:

M-2419 - 16.68 Ac. - Missy  
3143 - 60.00 Ac. - Primavera, Mica Hill, Mica Hill Ext. 1  
3750 - 20.66 Ac. - Primavera No. 2  
3751 - 20.66 Ac. - Primavera No. 3  
3752 - 20.66 Ac. - Mica Hill Ext. 3  
3753 - 20.66 Ac. - Mica Hill Ext. 2

The writer checked these leases at the office of the State Land Department and all appear to be in good status.

#### PROPERTY ACCESSIBILITY:

Because of some road disrepair (boulders and some erosion gutting) for about a mile from the property, it is not possible to use 2 wheel drive automobiles, consequently, 4 wheel drive is necessary.

From Kingman, County Seat of Mohave County, travel southeast on the new portion of Interstate 40 to the Peacock Mtn. Road off ramp. Having turned right at the off ramp stop sign, travel westward for 2.2 miles to a second stop sign (old State Route 93). Turn left and continue southwesterly for 10.5 miles to Cedar Wash road (marked with sign) (junction on the right). At this point, Cedar Wash road is a one vehicle wide road, travelling westward for 3.2 miles is a junction or fork in the road, after passing a corral and cattle watering trough on the left. This fork is in a flat, small valley type area. Here, take the right fork - northward - and continue for 1.6 miles to the property and specifically the old remaining mill structure. The mill building appears to be located on the Mica Hill Ext. 1 claim.

#### HISTORY:

The claims are of record as far back as year 1952 when a field engineer for the Arizona Department of Mineral Resources visited the property, provided a brief geological description and mentioned the mill building and mill equipment. In year 1964, Mr. Merlo, the present and past owner, obtained the first State Lease on the property.

Over these many years, there have been several attempts at an operation, but none seem to have been successful. There are no official records of any production from the property. The observable tailings or waste dump at the mill area, as well as a few small mine pits, do indicate the production of a few tons of mica product.

Operational failures such as these are usually somewhat mysterious in the fact that it is difficult to determine or learn why the operation failed. Sometimes it could be management disagreement, inadequate know-how, or just uneconomical crude material.

Mica mine-mill operation, at best, is usually a low profit situation and requires a very professional approach and scrutiny.

The failures of previous attempts, for whatever reason they failed, do not provide a very bright picture.

#### DEVELOPMENT:

Much access road work has been done in the past. Such work has opened up or exposed several pegmatite dikes or pods and provides a better than average "look-see" at the type, mode and percentage of mica in the various structures.

Other roads had been constructed to permit access to the few areas which show evidence of being mined to supply the mill with crude material.

The Arizona Department of Mineral Resources field engineer's report indicated the early mill - and subsequent mills - have all been of the "air separation" or dry type of concentration, rather than the wet types such as flotation or wet tabling.

#### GEOLOGY and MINERALIZATION:

The property is in a complex setting of granite, pre-cambrian gneiss, schist and sediments, the latter mostly sandstone. Rock types at the property have no significance mineral-wise and are only mentioned to indicate their presence within the property.

Mineral-wise, the pegmatite dikes, pods, etc. are of importance as most contain clear, white mica - muscovite - ranging from pinhead size up to six inches (book type) paralleling the laminations or cleavage in both directions.

The pegmatites within the property contain quartz, feldspars, mica and some iron oxide along with the usual associated minerals of columbite, wulfenite, scheelite, augite, etc., mostly as traces and of no economic importance.

It does appear there are two types of pegmatites - perhaps of different ages - certainly of different mineral composition. One type is silica or quartz rich with minor feldspar and some mica, usually in the small size (1/8" to 1/4") range. This type usually appears grayish on the surface where exposed to the elements. The other type pegmatite is feldspar rich with minor silica and hosts a greater amount of mica, particularly in the larger size range of 1/2" to the 6" books. In some cases, the mica is up to 1/2" in thickness measured across and perpendicular to the basal plane, cleavage or laminations of the crystal.

This pegmatite is noticeable and distinguished from the first type by its much lighter color - tending toward a white. This type pegmatite could be the source of crude material for a mica operation.

Pegmatites are extremely unpredictable as to direction, shape, size, mineral content and depth. These characteristics make for difficult expectant ascertainment as to potential volume reserve and mica contents, exploration, development and exploitation.

The pegmatites of interest appear to be concentrated in the two ridges northwest and north of the mill building located on the north bank slope of Moss Wash. (See Map No. 3.) The writer attempted to map the outcropping pegmatites, but a time deficiency cut short such mapping. The mapping that was completed and the observations made elsewhere indicate two general trends for the pegmatites, one predominant strike direction approximately N60°W and the minor strike trend is north-south or nearly so. Both strike trend pegmatites contain mica which could be a source of crude material for a mill.

The pegmatites have invaded the previously mentioned rock types and like

any intrusive, some of the pegmatite minerals, including the mica, have dispersed themselves into the matrix of the rock itself. Immediate local conditions dictated to what depth or distance the pegmatite minerals would penetrate the rock. This situation would normally make for an impure or lower grade crude material.

For the most part, the pegmatite intrusives have followed existing rock structure weakness such as schistosity, gneissic laminations and/or fault planes, which normally are quite straightforward. The exception to this condition are the configurations of the pods, pipes, etc. formed by the intense pressure of the intrusion which has caused irregular contacts of many shapes and outlines. Such conditions make for difficult prognostications and operation.

The writer observed the tendency of the mica to concentrate along either wall (hanging or foot) of the pegmatite with a corresponding decrease of mica toward the other wall. It has been indicated by others that the pegmatites at this property would average 12.5%, however, the writer, based on his observations and experience, would estimate the average mica content to be around 10% and even 8% if greater pegmatite widths are considered. The mica content is, of course, a great factor when considering the economics of an operation.

#### CRUDE MATERIAL POTENTIAL:

The fact that pegmatites are irregular, inconsistent and unpredictable makes potential reserve calculations quite difficult and prohibits any individual from stating a positive, concrete tonnage figure.

The property is a raw prospect because it has not been developed by exploration. The only evidence of crude material within the property is the surface expression of the pegmatite structures and the road cuts which partially expose the pegmatite structures at various elevations. These factors, therefore, provide a meager basis and evidence as to a potential reserve. In the writer's opinion, adequate exploration could develop an estimated 500,000 ton crude material reserve with about 10% mica content, which would come from very selected localities within the pegmatite structures.

#### MICA MILLING:

Mica production in the U.S. comes mostly from some eastern states and from some northern-midwestern states. Milling of the pegmatites to concentrate or collect the mica is accomplished using the wet method of flotation or gravity tabling in order to obtain a high, efficient recovery rate and to produce a very high purity, clean product - 95-98% mica with 95 to 98% recovery. The wet method has positive controls.

Arizona has many pegmatite deposits and almost all contain mica in varying percentages. Attempts to operate have been made at the better deposits but all appear to fail after a short period of time. Failure is due to one or more of the reasons previously mentioned.

In the writer's opinion, the greatest cause of the failures is due to the use of dry separation or concentration - the milling phase - which tends to produce a "low grade" or dirty product, which is usually not an acceptable product on the market.

In the writer's opinion, the amenability of the crude material to the proper milling process is priority one. This must be checked out before any funds are expended for exploration or operation.

#### ECONOMICS:

The going market price for high purity scrap mica is \$38.-40.00 a ton, (Buckeye, Arizona). Any mica property in Arizona would have to mine a minimum of 10 tons crude material and mill or treat 10 tons of material to obtain one ton of mica (100% recovery). The one ton of mica must be transported to Buckeye, Arizona.

Using these conditions, the Merlo mica crude material has an "in place" value of \$3.80 to \$4.00 per ton. Operating costs are estimated as follows:

Mining (1 ton)	\$1.25 (drill, blast, move)
Milling (1 ton)	2.00 (wet or dry)
Transportation (Buckeye)	1.50 (0.10 ton concentrate)
State Royalty, 5%	0.19
Lease Royalty, 5%	<u>0.19</u>
Total operating costs	\$5.13/ton crude material
Value of ton crude	<u>\$4.00</u>
Net operating loss	\$1.13

#### CONCLUSIONS:

The fact that the previous article "Economics" has shown that the property cannot be operated at a profit, there is no need to carry forward as regards Exploration Requirements and Costs, Capital Investment, equipment-wise, or Planned Programs, mining and milling-wise.

The writer's single conclusion is that the property and/or an operation should be of no further interest to Wareco Incorporated.

The Merlo pegmatite-micas are not a profitable venture under present day prices of operation and marketability for scrap mica.

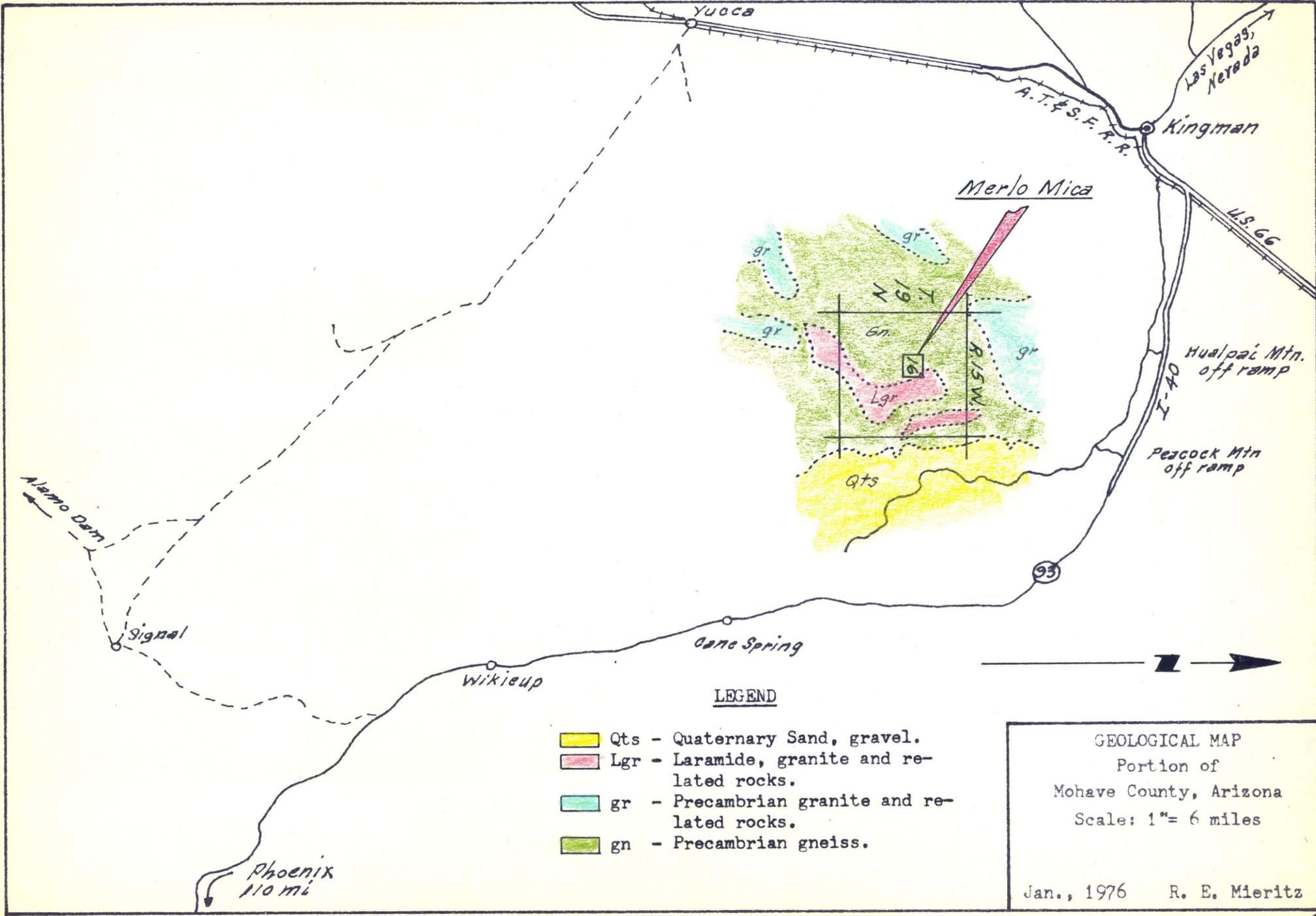
The Merlo pegmatite-micas do not appear to have a sufficient crude material potential to justify and consider a long lived, more refined treatment process to produce the higher valued, very fine ground (powder) mica for paint and other industrial uses.

Respectfully submitted,

January 10, 1976

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R. E. Mieritz  
Mining Consultant  
Phoenix, Arizona



**LEGEND**

- Qts - Quaternary Sand, gravel.
- Lgr - Laramide, granite and related rocks.
- gr - Precambrian granite and related rocks.
- gn - Precambrian gneiss.

**GEOLOGICAL MAP**  
 Portion of  
 Mohave County, Arizona  
 Scale: 1" = 6 miles

Jan., 1976     R. E. Mieritz

Map No. 1

8 9  
17 16

9  
16

S. 89°-50' W.

9 10  
16 15

N. 00°-02' W.

N. 0°-02' W.

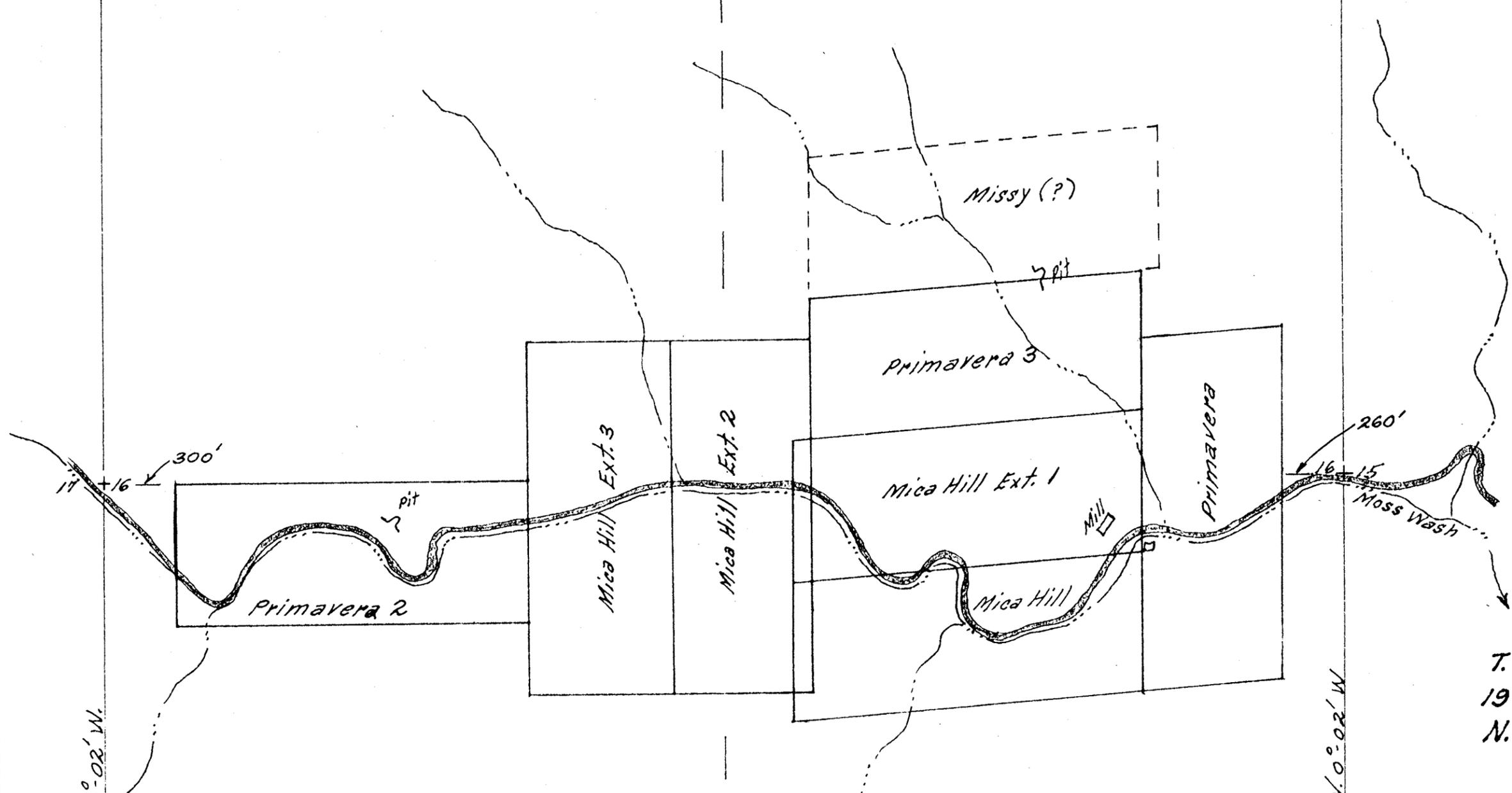
T. 19 N.

17 16  
20 21

16  
21

S. 89°-54' W.

R. 15 W.



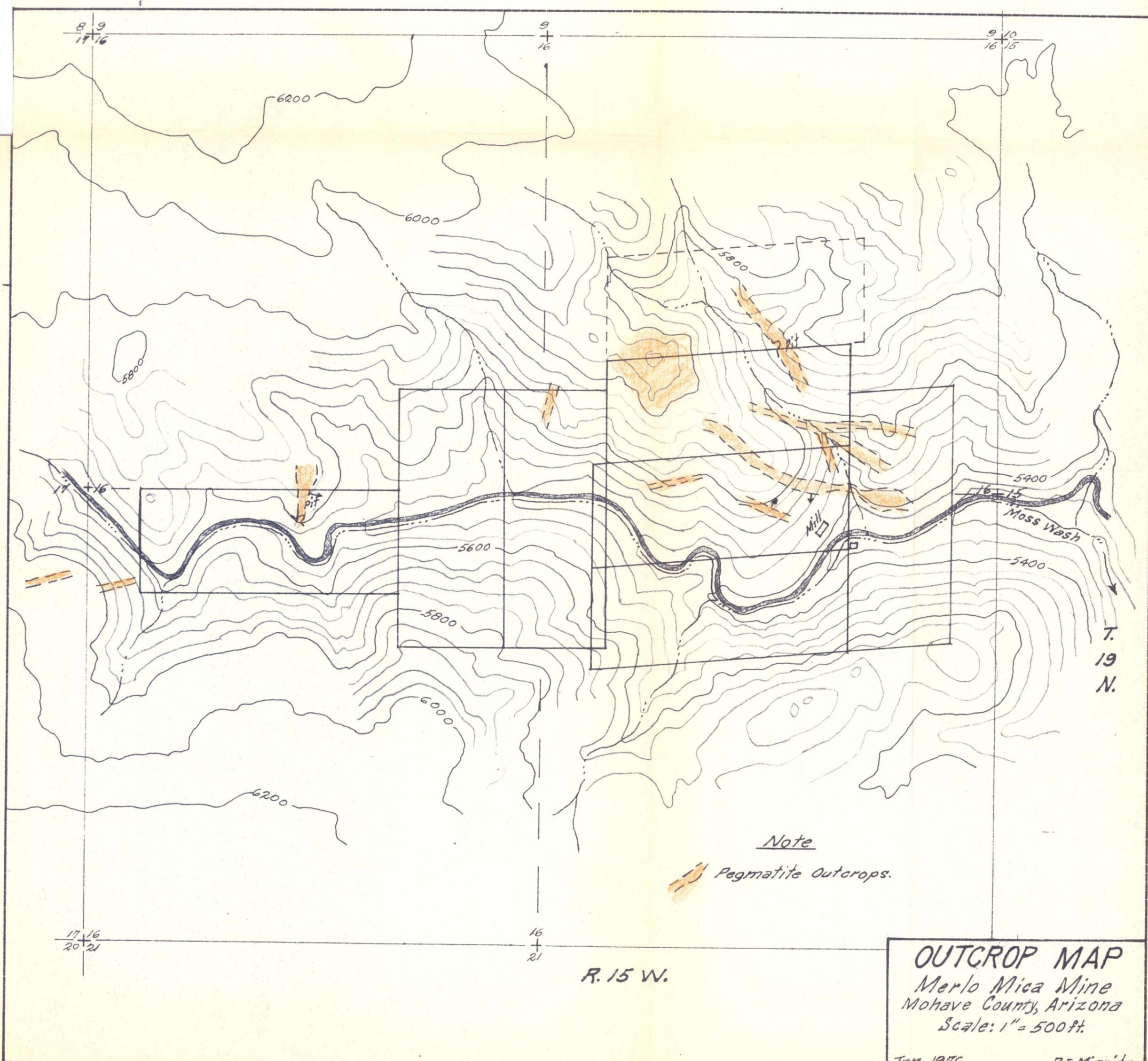
Note:

Claim position and outline taken from survey plat by Housholder, M.E.

**CLAIM MAP**  
 Merlo Mica Mine  
 Mohave County, Arizona  
 Scale: 1" = 500 ft.

Jan. 1976

R. E. Mieritz  
MAP No. 2



Note

 Pegmatite Outcrops.

R. 15 W.

**OUTCROP MAP**  
Merlo Mica Mine  
Mohave County, Arizona  
Scale: 1" = 500 ft.  
Jan. 1976  
R.E. Mieritz  
MAP No. 3



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IF NOT CORRECT PLEASE NOTIFY US PROMPTLY. NO RECEIPT DESIRED.

DATE	DESCRIPTION	AMOUNT
	Advance Retainer - Consultation Fees. <del>XXXX</del> United Mica Mines  <i>Bank of Calif. 90-2653 1222</i>  <i>CR # 1382 1-5-76 Part Pay.</i>	\$350.00

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Kingman - Pt. igneous & metamorphic intruded by  
Tertiary granite

Deposits 150-2000' long. 1' to 100' wide (some  
pipe like. - light color. They follow foliation of gr.  
quad. small -

IC-8298 - Dean Peak - bearing peg. dip.  
Az Calc - N. Mex. - S. Dak. - W. Va. - Wyo.  
U.S.G.M.

T19N R15W Dean Peak  
Sec 16.

6 BR  
4' 00"  
3'  
5'-11"



Area