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J.H.Courtright

AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

J. H. C.

MAR 12 1970

February 2, 1970

Mr. J. J. Collins  
ASARCO, New York Office

AUTHORIZATION REQUEST  
TURQUOISE ROOT PROSPECT  
COCHISE COUNTY, ARIZONA

Dear Sir:

This will transmit Mr. B. J. Devere's memorandum of this date proposing an exploration program in the probable Root Area of the Turquoise District.

The known mineralization in the Turquoise District which is confined between two thrust (or gravity slide faults) occurs over an area measuring 1 1/2 by 4 miles. Within this area, Union Oil Company has discovered a small (10,000,000 tons) secondarily enriched porphyry copper deposit. The base of chalcocite in this ore zone terminates on the lower of the above two described flat faults. Early mining in the district was centered on higher grade primary copper mineralization in tactites and lead-zinc replacement deposits occurring in Paleozoic limestones. These deposits also terminated at depth along the lower flat fault.

Detailed surface geology from various sources suggest that the exposed mineralized block moved easterly some three to four miles. We believe that deep exploration drilling in the probable Root Area to the west of Courtland and Gleeson represents a legitimate exploration target. The Root Area could contain chalcocite enrichment of pre-thrust age as well as ore grade primary copper occurring in Calcareous rocks. Bear Creek Mining Company undoubtedly has reached the same conclusion since they have acquired all of the Federal and State land in the proposed Root Area and to date have drilled at least three deep holes. It is rumored that one of these holes penetrated copper mineralization below 1800 feet.

Bear Creek does not control 2480 acres of fee land which largely occurs in the center of the area of interest. Two owner-ships are involved in this fee acreage. We have obtained a verbal agreement from one of the owners covering 1040 acres which provide a five year option to purchase for \$500.00 per acre. We are presently negotiating with the other owner for a purchase option at the same price per acre. First year option payments amount to \$8,000.00. Second year payments would be on the order of \$25,000. Third and fourth year payments would escalate.

Mr. Collins,

2,

2/2/70

The three deep holes (2500 to 3000 feet) as recommended by Mr. Devere would constitute a minimum test of the proposed Root Area. These holes could be drilled at a cost of + \$40,000 each. Total cost of the program as proposed including drilling, road work, site preparation, first year option payments, supervision, and contingencies are estimated at \$150,000. We expect to be able to advise you by telegram on February 4 concerning the outcome of our negotiations for an option on the larger parcel of the fee land. Purchase options covering both parcels of private land would give ASARCO sufficient contiguous property to permit exploration of the Root Zone and probable development of any resulting discovery. I recommend that ASARCO proceed with the proposal as outlined herein. If you agree, please request an authorization in the amount of \$150,000 and an approval in principle to negotiate final purchase option agreements with the owners of the 2480 acres of private land.

Very truly yours,

*W. E. Saegart*

W. E. Saegart

WES:lab

cc: JHCourtright  
WLKurtz  
SIBowditch  
BJDevere

AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

February 2, 1970

TO: W. E. Saegart  
FROM: B. J. Devere

TURQUOISE ROOT PROSPECT  
TURQUOISE MINING DISTRICT  
COCHISE COUNTY, ARIZONA

A recent interpretation of the structural geology and a reported mineralized intercept in a hole drilled by Bear Creek Mining Company has led to the outlining of the possible root source to the porphyry copper mineralization in the Turquoise Mining District. (See attached Geologic Map and Section.)

It is recommended that the fee land (as indicated on the attached Land Status Map) be acquired and a minimum of three deep holes ( $\pm$  3000 feet) be drilled to test the area.

The test would call for an expenditure of \$150,000 which would cover the option cost, exploratory drilling, and contingencies.

The Turquoise Mining District, one of the early districts in Arizona, has been the subject of an extensive search for porphyry copper type mineralization since the late 1940's. The District has been reported on in U.S.G.S. Bulletin 281, "General Geology of Central Cochise County, Arizona", J. Gilluly, and in A.I.M.E. Transaction 235, 1966, "General Geology of the Courtland-Gleeson Area", O. McRae. Exploration has been conducted in the district by ASARCO, Turquoise Prospect 1948, Minerals Exploration Company (Union Oil) 1957 and 1958, Bear Creek Mining Company, 1960-63, 1967 to present.

The geology as interpreted is that the present area of porphyry copper type mineralization has been moved about three miles eastward along a flat gravity slide fault which in turn drew fresh unmineralized rock over the root of the exposed mineralization.

The gravity slide worked as an intricate series of flat faults which are known to exist through drilling and mine workings along the eastern limits of the area.

W. E. Saegart  
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February 2, 1970

Turquoise Root Prospect  
Turquoise Mining District  
Cochise County, Arizona

Minerals Exploration drilling, Section 28, T19S, R24E encountered intercepts up to 257 feet of 1.2% Cu as chalcocite but the majority of the holes encountered chalcocite enrichment of about .5% in intercepts of about 100 feet in thickness.

Minerals Exploration drilled 23 holes in the area of mineralization and in every hole deeper than 150 feet a fault was encountered which cut off the chalcocite enrichment. This would imply that the root source could well be enriched and not just a target for primary mineralization.

In addition to the target of the porphyry itself, the Paleozoic sediments in contact with the porphyry may well contain deposits of tactite and replacement ores of copper, and/or lead and zinc.

The owners of the fee lands have been contacted and options to purchase, over a five-year period, have been discussed. The general terms are as follows:

2480 acres at \$500 per acre, with option payments of \$8,000 in the first year.

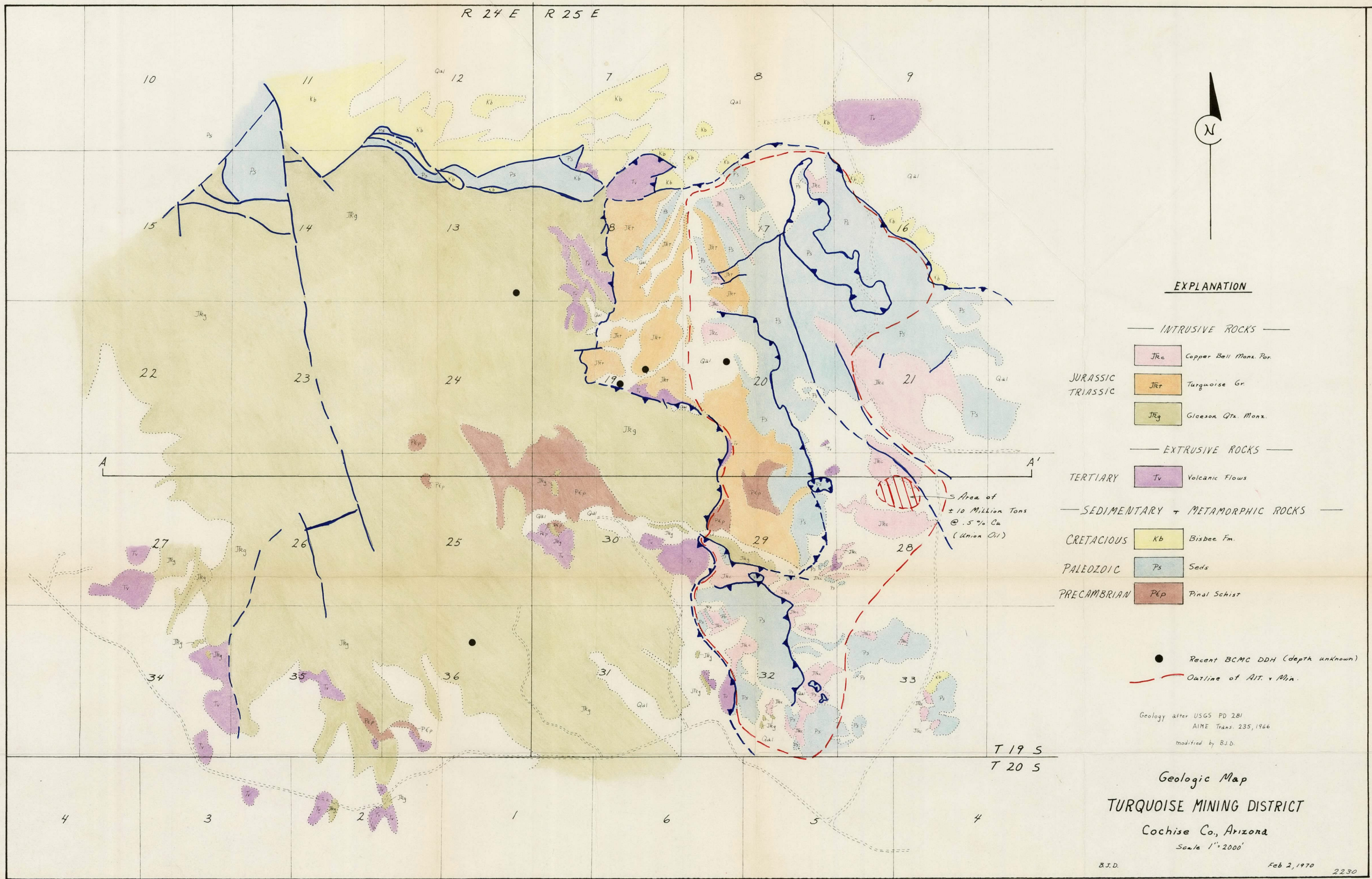
This land is believed to be in the central part of the possible root source and should give ASARCO a good position and possibility to prove up and develop any mineralization discovered.



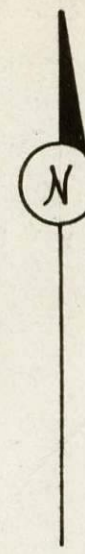
B. J. Devere

BJC/kvs



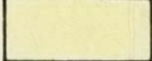
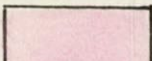
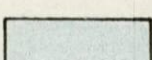
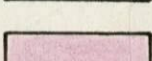
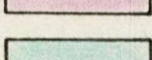
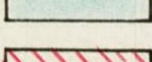


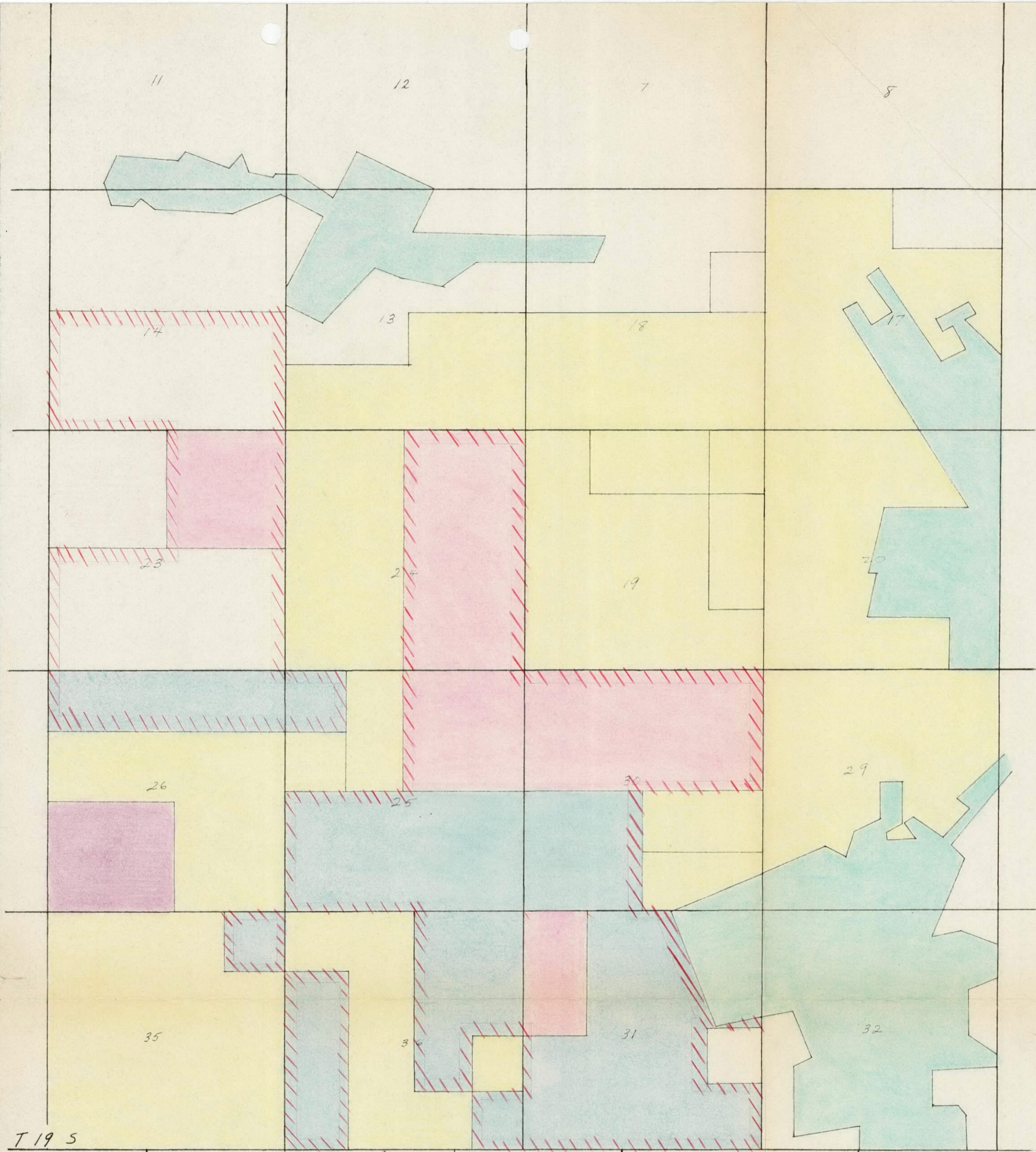




EXPLANATION

STATE LEASE + FEDERAL CLAIMS

-  Bear Creek Mining Co.
-  Christiansen Fee
-  Cowan Fee
-  Kendall Fee
-  Patented Mining Claims (Numerous Owners)
-  ASARCO State Lease Applied For



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T 20 S

**TURQUOISE MINING DISTRICT**

COCHISE COUNTY, ARIZONA

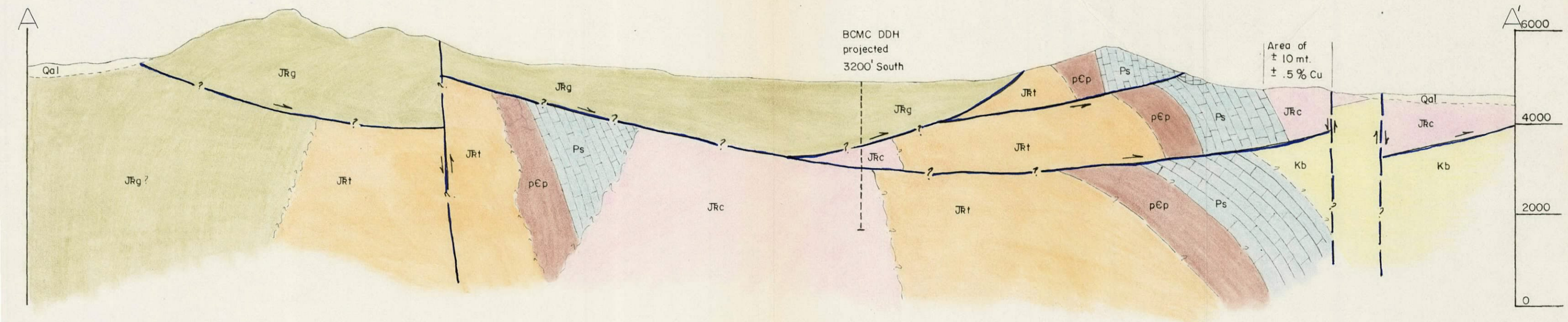
SCALE 1" = 2000'

B.J.D.

Feb. 2, 1970



EXPOSED ZONE OF ALTERATION + MINERALIZATION



GENERALIZED SECTION  
E-W, looking N  
TURQUOISE MINING DISTRICT  
Cochise Co., Arizona

SCALE 1"=2000'

Geology after USGS PD 281  
AIME Trans. 235, 1966

modified by BJD



TURQUOISE MINING DISTRICT  
Cochise County, Arizona

SCALE IN MILES

0 5 10 20 30 40