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File:
Courtland - Gleeson Prof - Cochise Co. Arizona.

Messrs. D. L. Everhart and P. O. Sandvik

J. B. Imswiler

April 18, 1975

Proposal of Bear Creek Mining Company for participation on Courtland-Gleeson Project

This is to summarize and formalize my conversation of April 10 with P. O. Sandvik regarding the proposal submitted by Gordon F. Lister, of Bear Creek Mining Company, for possible IMC participation on the Bear Creek Company Courtland-Gleeson Project.

Bear Creek has spent approximately $1,000,000 on this project since the late 1950's. Quintana Minerals later participated on this project to the extent of drilling three holes at a cost of approximately $250,000 and then withdrew from the joint venture at the end of 1973.

The proposed target outlined by Bear Creek just happens to fall within a center surrounded by nonproductive drill holes. This may or may not be coincidental. One fact which should be considered is that that part of the property known as the Shannon option has been withheld by Bear Creek from the proposed new venture arrangement.

The drilling proposed by Bear Creek would consist of holes in the 3-5,000 ft. range to search for the top of a major porphyry deposit. This hypothetical deposit would probably contain no secondary enrichment, but would rather consist of primary sulfides in the range of anywhere from .2%-.7% copper. In other words, although the project could be a geological success, there is a good chance that the grade could be subeconomic. Based on a review of the work done to date, this project strikes me as being fairly high risk.

In light of the time and money which has been invested in this project to date, it would only seem reasonable that Bear Creek would require a major work commitment which could be on the order of several million dollars from anyone who would be considered as a venture participant. It should also be noted that this proposed deposit is now in the wildcat stage and the cost of holes, even at this point, would probably be on the order of approximately $100,000 per hole while still attempting to discover the top of the deposit.

In the event that success should be achieved, the deep-seated nature

Messrs. D. L. Everhart and P. O. Sandvik

J. B. Imswiler

April 18, 1975

Proposal of Bear Creek Mining Company for participation on the Courtland-Gleeson Project

of this deposit would demand a development drilling program which could perhaps run in the neighborhood of 50-75 million dollars. Total development cost prior to production could easily top several hundred million dollars. While this is certainly a viable project for an established copper mining company, such as Kenecott, it seems to me that this is just a little more than IMC should attempt to take on at this stage of its metals program.

In summary, I would say that we should thank Bear Creek for the invitation but decline at this time. I personally believe that there are better opportunities at a lower cost which would be more in line with our particular program.

J. B. Imswiler

lvj

Make Folder

Messrs. D. L. Everhart and P. O. Sandvik

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J. B. Imswiler

lvj

D. L. Everhart

J. B. Imswiler

May 28, 1975

New Proposal of Bear Creek Mining Company for Participation in the Courtland-Gleeson Project

Enclosed please find a copy of Bear Creek's new proposal on the Courtland-Gleeson Project.

As mentioned in our telephone conversation of yesterday, I had an opportunity to discuss this project further with Gordon Lister last week. While I still consider this to be a high risk venture, the new proposal is much more attractive to IMC than the original proposal. The most attractive features are as follows:

- A commitment of $100,000 for Stage 1 would give us a look at the heart of a major sulfide system. The three holes drilled during this phase should yield sufficient data to make a well-founded decision as to whether to drop out or to continue through Stages 2 and 3.

- If sufficient encouragement is encountered in Stage 1 to warrant Stages 2 and 3, we could drop out after a total expenditure at the end of Stage 3 of $300,000 and retain a 1% Net Smelter Return interest with no further contribution. If the type of deposit that would be required to make a mine is found, this 1% NSR interest could easily amount to at least $1,000,000 per year.

In summary, this is a deep high risk target, but it has a potential high rate of return for a comparatively modest investment. The new proposal gives us the option of retaining some degree of participation after the expenditure of $300,000 or avoiding a high cost development program by trading in our participating interest for a lucrative carried NSR interest. It is quite likely that a

reasonable decision can be made on the extent of our commitment at the end of Stage 1.

Refer to data accompanying original Bear Creek Proposal and memorandum of April 18, 1975, from J. B. Imswiler to D. L. Everhart and P. O. Sandvik for further information.

J. B. Imswiler

cc: P. O. Sandvik

:lvj

July 3, 1975

Mr. G. F. Lister
Senior Geologist
Bear Creek Mining Company
1714 West Grant Road
Tucson, Arizona 85705

Subject: Courtland-Gleeson
Cochise County, Ariz.

Dear Gordon:

This letter is written in response to your original letter of March 21, 1975 on this subject, plus further input and revisions supplied to Bruce Imswiler into May 1975.

We have considered the proposition carefully and have been attracted by the "geologic play" proposed. In fact, I have deferred our response to you until our July 1, 1975 - June 30, 1976 budget and work plans were finally and officially approved. Such approval actually took place on June 29, 1975.

In view of the major thrust and emphasis in our Resource Development program for this year, we must notify you at this time of no further interest, on our part, in the Courtland-Gleeson prospect. Thanks for your patience and professionalism in presenting us this opportunity. We took it seriously.

Best personal regards.

Sincerely yours,

Donald L. Everhart

DLE/mp
cc: Messrs. M. A. Upham
P. O. Sandvik
J. B. Imswiler

HIGHLIGHTS OF DRILLING RESULTS

Drill Holes	Remarks
CG-29, 33, 37 CG-2	Strong alteration and pyrite suggesting outer fringe of the pyritic halo.
CG-29A, 38	Very high molybdenum values (200-300 ppm) indicative of central zone of classic porphyry copper deposit. Similar interpretation for the ratio of copper to total sulfides in 29A. Vertical zoning terminated abruptly by Courtland thrust in 38.
CV-1	Only weak to moderate sulfides, alteration and low to moderate molybdenum. Fringe zone.
CG-34	Thick column of intense alteration and sulfides with moderate molybdenum values (70-110 ppm) suggestive of close-in pyritic halo. Lower metal values at bottom of hole.
JL-4	Best copper values in deeper part. Stopped by drilling problem in short intervals of good grade in altered Copper Belle intrusive below 3,600 feet.
CG-39	Thick interval of moderately altered Copper Belle but only weak Cu-Mo. Hole stopped in fault without exploring other side of fault (Courtland thrust?).
CG-32A	Thick interval of pyritic halo outer fringe, bottomed in pyritic halo that may be inner fringe.
CG-35, CV-3	Only weak to moderate alteration-mineralization to bottom. The holes were too shallow.

None of these holes intersected significant intervals of rock assaying 0.5% copper or greater. However, short intervals of interesting grades were found in several drill holes, e.g.:

JL-4	10 ft. of 1.31% Cu
	10 ft. of 2.60% Cu
	10 ft. of 0.71% Cu
	10 ft. of 0.80% Cu
CG-34	140 ft. of 0.20% Cu
	10 ft. of 0.87% Cu
CG-35	59 ft. of 0.47% Cu
CG-38	63 ft. of 0.32% Cu

MAIN DEEP TARGET

The extensive deep drilling done to search for a concealed copper deposit has accumulated useful information on internal patterns within the sulfide system. The potential of much of the area has been eliminated but the potential of one part of the area has been enhanced.

Based upon the accumulated drilling results it is possible to draw vectors from hole to hole and establish gradients to indicate the probable center of the system. The strongly anomalous molybdenum values in CG-29A, 38 and to a lesser extent CG-34 could be expected to overlie the general vicinity of the copper center in a system with less structural complexity than this one. However, post-mineral movement along the (older ?) thrusts has displaced this upper part of the copper center north of its stem or root zone. On the basis of subsurface geochemical patterns, alteration patterns, sulfide patterns and structural interpretations the copper center is interpreted to be located mainly in Section 31 and the south end of Section 30, in the footwall of the Courtland thrust (Figure 2). Depths to the top of the Main Deep Target are interpreted to be no shallower than 3,000 to 3,500 feet. An exploration program on this deep a target is probably five years ahead of the thinking of most competitors in Arizona.

The target is judged to have a better-than-even chance of containing a sizeable copper center. No secondary enrichment can be expected and the primary grade cannot be predicted. The potential size of the interpreted target may be 200 to 500 million tons; with luck its grade could be similar to San Manuel (0.72% Cu) or better. Alternatively, the grade could turn out to be considerably lower (0.2 to 0.4% Cu).

Aside from the copper grade, the chief risk associated with this target is its dependence upon structural interpretations in an area with complex structure. It is possible that the Courtland thrust has been misidentified in some drill holes and that additional flat faulting has further displaced the copper center.

This target could be explored by drilling two 5,000-foot holes and deepening hole JL-4 and possibly 32A and 39.

DIFFERENT VIEWS ON ORIGIN AND AGE

Geologists who have worked on the project have two different views on the age and origin of the copper mineralization. Both lead to the same target area as the most likely copper center. Therefore it makes little practical difference at this time which proves correct.

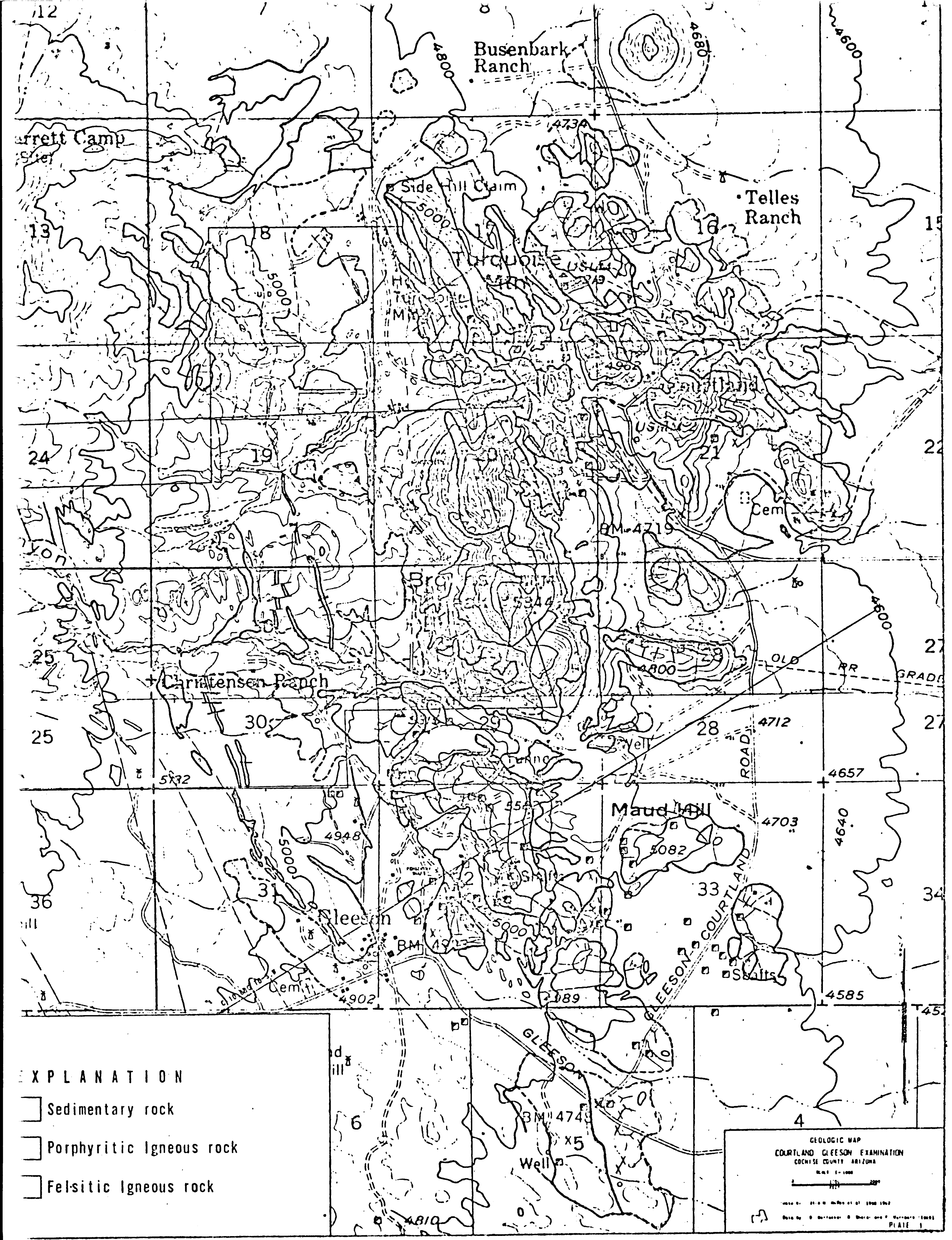
Case I

This view holds that the mineralization is similar in age and related to the Gleeson quartz monzonite (172 million years) and similar in age to the ore at Bisbee. The thrusting or gravity slides are post-mineral in age. The thrust slices have overriden in an east or northeast direction the center of mineralization that remains in the southwestern part of the area. This has always been the classic view for the Courtland-Gleeson project.

Case II

This view holds that the copper mineralization post-dates the thrusts. The copper is related to a much younger, hidden intrusive, of post Bisbee Group age, that is a quartz-rich advanced differentiate allied to the exposed Copper Belle monzonite porphyry. The Copper Belle unit has previously been correlated with the Triassic-Jurassic Gleeson quartz monzonite but the correlation is rejected for this case largely because of its presence within thrust planes that cut the Gleeson quartz monzonite. This view proposes that the apparent tabular nature of the main sulfide body is due to mineralization after the original thrusting. The exploration target is the differentiated stem of a mushroom-shaped intrusive that intruded the main thrust plane. Post-mineral movement on the flat faults is regarded as relatively minor readjustments after the intrusion. The target stem is believed located in the southwest part of the area.

Case II was introduced because it was evident that (a) the flat faults were mineralized, (b) units of the Copper Belle were intruded into the flat faults, (c) units of the Copper Belle occupying the flat fault zones contained anomalous copper, (d) the best copper values seemed associated with quartz porphyries that had affinities with the Copper Belle units. The greatest weakness of Case II is the absence of a Laramide date on the three samples dated.

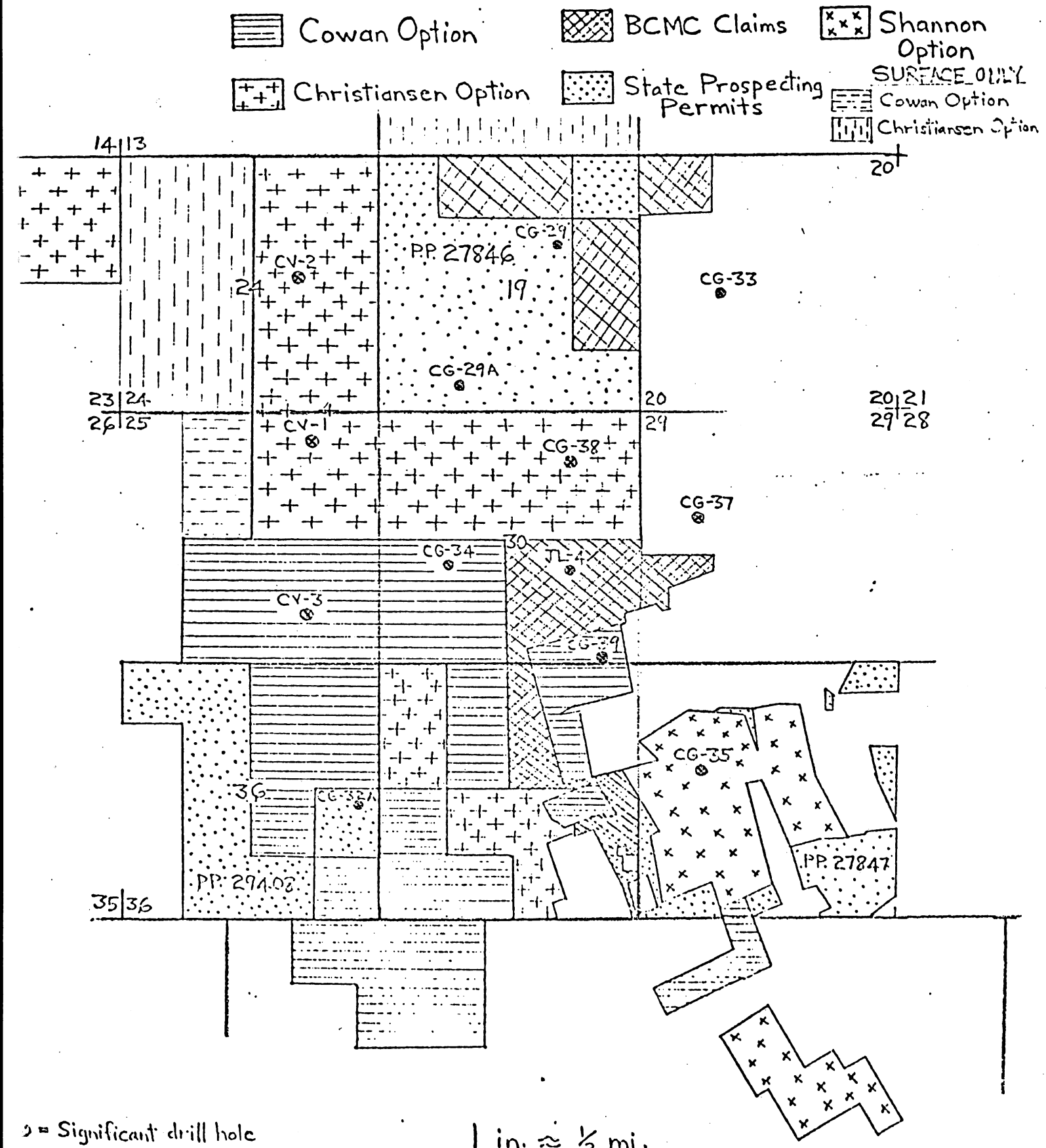

Busenbark Ranch
Telles Ranch
Side Hill Claim
Courtland
BM 4719
Cem
Christensen Ranch
OLD RR GRADE
Maud Hill
Gleeson
GLEESON COURTLAND ROAD
Shafts
GLEESON
Well
EXPLANATION
Sedimentary rock
Porphyritic Igneous rock
Felsitic Igneous rock
GEOLOGIC MAP
COURTLAND GLEESON EXAMINATION
COCHISE COUNTY ARIZONA
PLATE 1

BEAR CREEK MINING COMPANY – TUCSON OFFICE

COURTLAND GLEESON

COCHISE COUNTY, ARIZONA

MINERAL RIGHTS HELD BY BCMC



= Significant drill hole

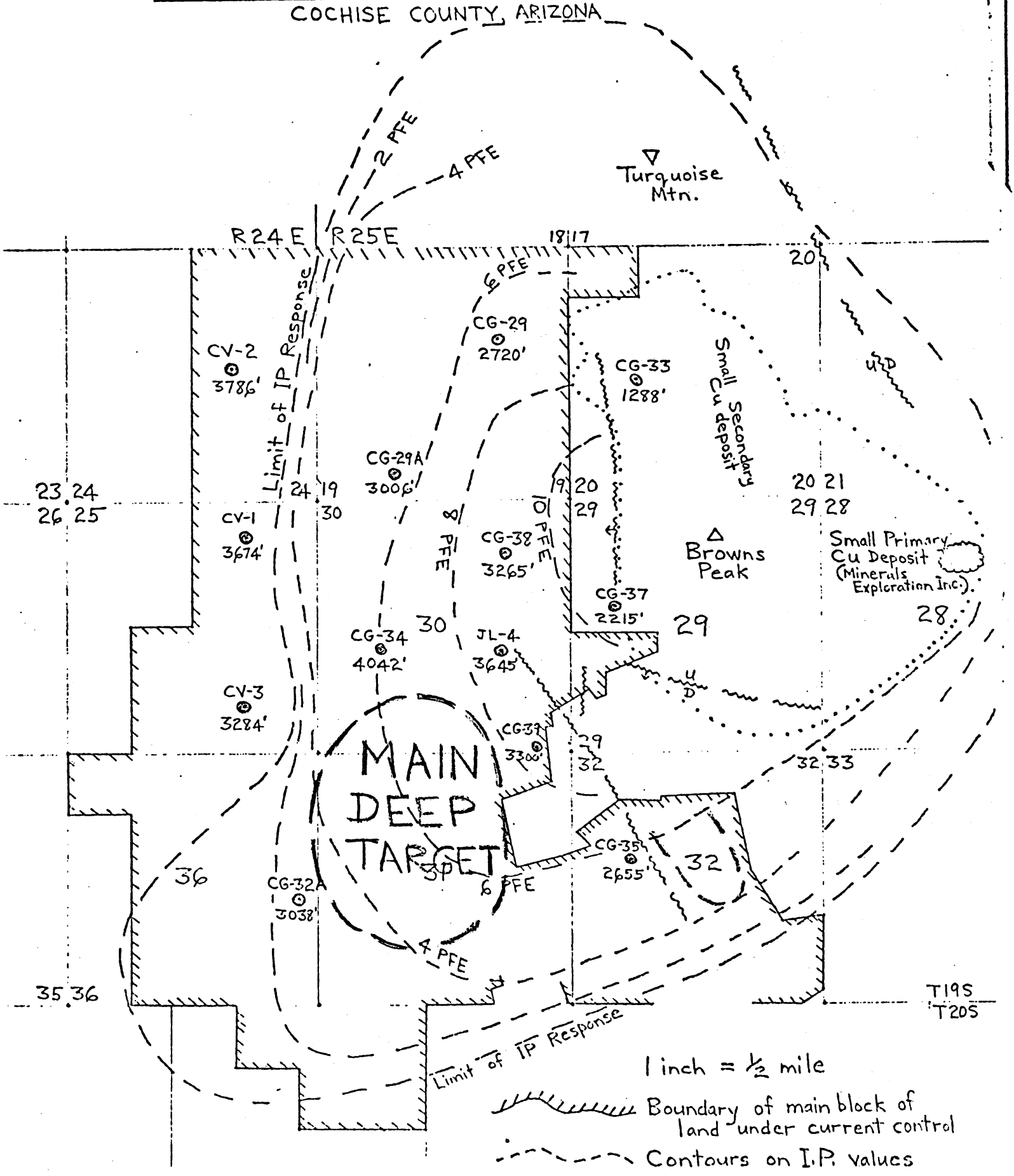
1 in. ≈ ½ mi.

Oct. 1974 GFL

SUMMARY SKETCH – I.P., DRILLING, LAND

COURTLAND GLEESON

COCHISE COUNTY, ARIZONA



1 inch = ½ mile

Boundary of main block of land under current control

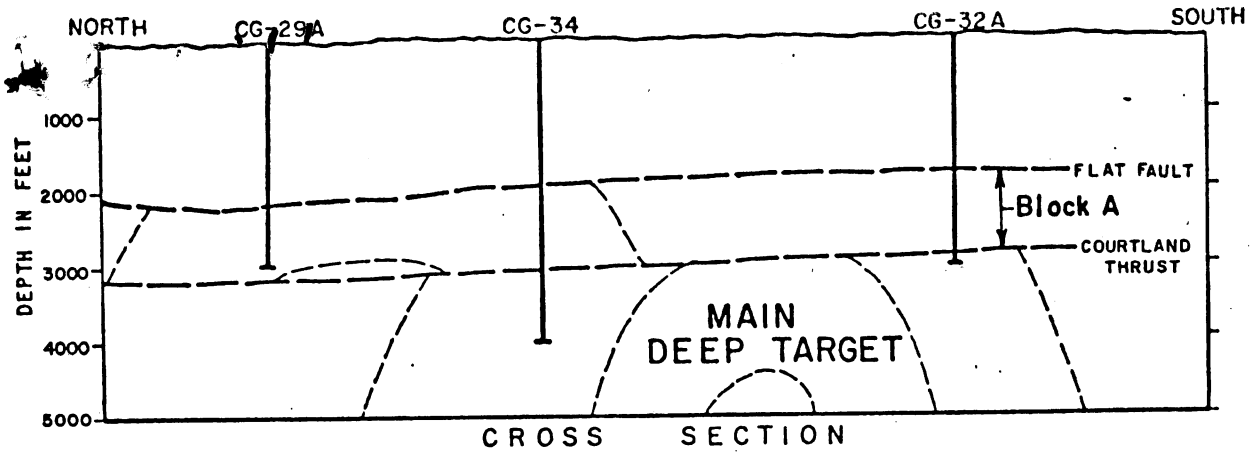
Contours on I.P. values

Area of intense surface mineralization – alteration

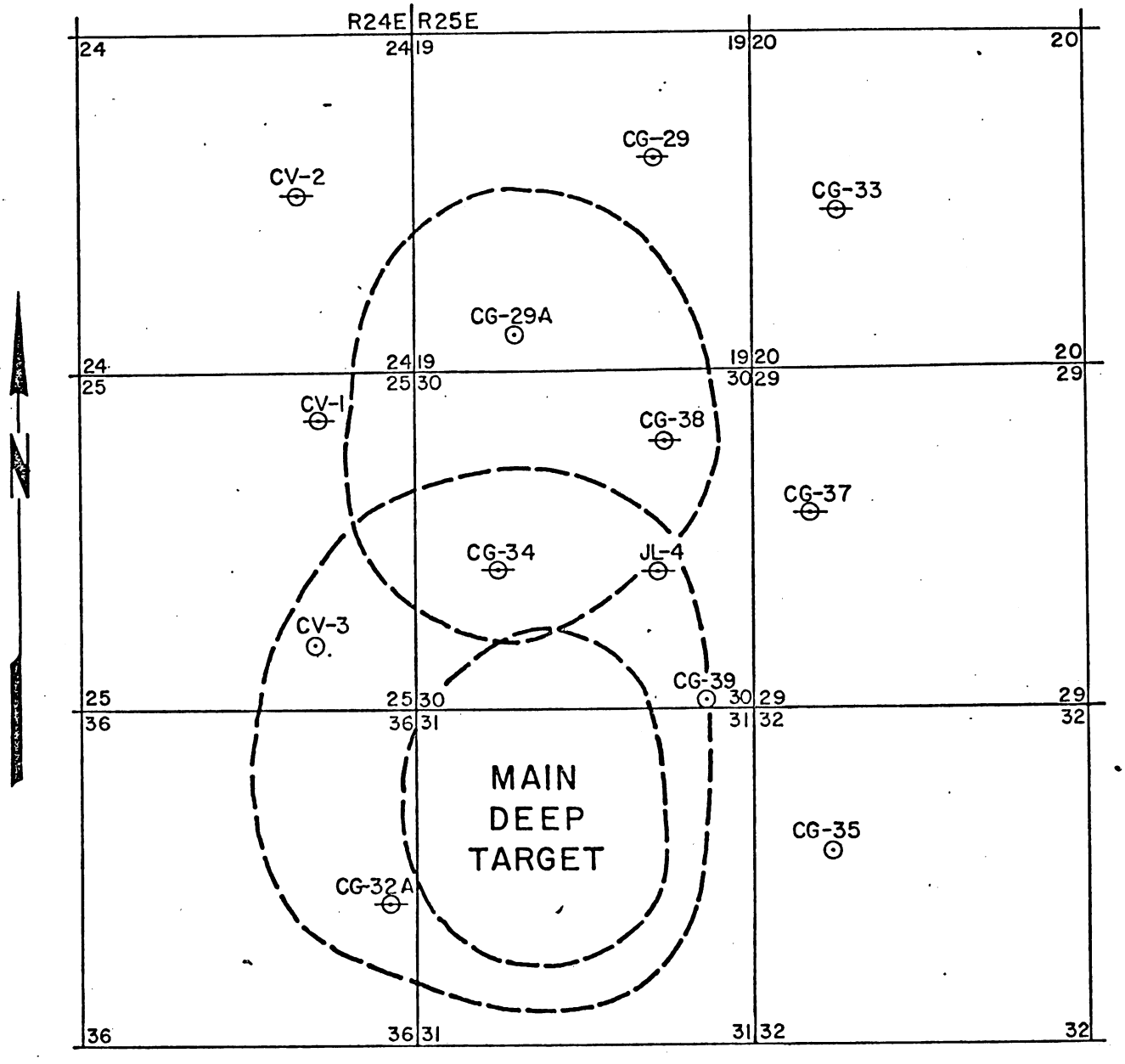
Drill hole and depth

EAR CREEK MINING COMPANY
TUCSON

OCT 29 1974



CROSS SECTION



PLAN VIEW MAP

0 1000' 2000' 3000' 4000'

SCALE: 1"=2640'

Apparent center of mineralization

Main deep target for copper

Drill hole that penetrated the Courtland thrust.

Drill hole that did not penetrate the Courtland thrust.

BCMC TUCSON OFFICE

DEEP TARGET LOCATION

COURTLAND-GLEESON

COCHISE COUNTY, ARIZONA

Data by: G. Lister Jan. 1975

Fig. 2

Copy to JBI - JMcA

Bear Creek Mining Company

Tucson Office

March 21, 1975 FILE: ARIZONA - COCHISE & COURTLAND-GLEESON DIST.

MINING & EXPLORATION

Referred ..... Answered .....

RECEIVED MAR 24 '75

File - Adm. - Com. - Loc. - Opt. - Eqp. - Proc.

Subject .....

Mr. Donald L. Everhart
Division Vice President
Mining and Exploration
International Minerals and Chemical Corp.
IMC Plaza
Libertyville, Illinois 60048

Dear Mr. Everhart:

Subject: Courtland-Gleeson
Cochise County, Arizona

In response to yesterday's telephone conversation, I am enclosing some background data on the Courtland-Gleeson prospect to introduce your representatives to the exploration history and status of this property.

The Main Deep Target is the joint venture opportunity for IMC. Sufficient drilling has been done to narrow down the position of this target in preparation for some meaningful drill tests.

The Shannon property would not be part of the joint venture at this time. Bear Creek plans to drill for a separate shallow target in the Shannon area this spring on its own account.

We have abundant data, reports and core from this prospect available for inspection in Tucson. Please contact me if there are further questions.

Yours very truly,

G. F. Lister
Senior Geologist

GFL:ct
Encls.

Bear Creek Mining Company

Tucson Office

COURTLAND-GLEESON PROJECT
COCHISE COUNTY, ARIZONA
SUMMARY FOR PROSPECTIVE PARTNER

Background

The Courtland-Gleeson area, otherwise known as the Turquoise District, is situated in southeastern Arizona about 16 miles east of Tombstone and 20 miles north of Bisbee. Small-scale mining of copper and lead-zinc deposits took place between 1890 and 1950 but the boom years were 1910 to 1920. More than 25,000 tons of copper were produced from the district, mostly from the Shannon Mines property.

The old mining district is in and near two low ridges that trend north-south near the eastern contact of a large Triassic-Jurassic intrusive of quartz monzonite against Paleozoic calcareous sediments. The ridges stand above a gentle, rocky plain of quartz monzonite that extends eastward from the southern end of the Dragoon Mountains. Geology and mineral deposits of the district are described in U.S.G.S. Professional Paper 281 and Arizona Bureau of Mines Bulletin 123.

History of Exploration Activity

Bear Creek Mining Company became interested in the Courtland-Gleeson area in the late 1950's after a competitor discovered a small magnetic skarn-type copper deposit in Section 28 on the east side of the ridge. Since 1960 Bear Creek has expended more than one million dollars and many years of effort attempting to discover a porphyry copper deposit in the area. No mineralization with economic potential has been encountered to date.

Approximately one-third of Bear Creek's effort was made in the years 1960-62 searching for a shallow deposit. Twenty-eight holes were drilled to a depth of approximately 1,000 feet in the area of exposed sulfide mineralization. None of the holes intersected mineralization of economic interest. These drill holes and the geologic mapping by Bear Creek defined the presence of a gently-dipping major thrust fault under the exposed mineralization. Cretaceous sedimentary and volcanic rocks were encountered below the thrust. As mineralization was believed genetically related to the Triassic-Jurassic pluton, it seemed useless to search below the thrust and the project was abandoned.

The second generation of Bear Creek exploration at Courtland-Gleeson began in 1967 following recognition of the deep potential of the area west of the mineralized ridges. The target concept was a decapitated porphyry copper deposit under the thrust. Mineralization exposed on the ridges was believed to have been thrust eastward from the roots of the deposit. A large amount of property was acquired in 1968 and 1969 to test the concept. An extensive I.P. anomaly was outlined west of the ridge. The depth to the top of the anomaly was interpreted to be approximately 2,000 feet. The I.P. anomaly west and east of the ridge at Courtland-Gleeson covers approximately nine square miles.

1714 WEST GRANT ROAD • TUCSON, ARIZONA 85705 • TELEPHONE: 602-624-5547 • TWX: 910-952-1320

Since 1969 Bear Creek has drilled ten deep holes into the I.P. anomaly west of the ridge. These encountered intense quartz-sericite alteration with strong pyrite mineralization beneath a gently-dipping fault zone that cuts the quartz monzonite. None of the holes intersected significant intervals of rock assaying 0.5% copper or greater. However, short intervals of interesting grades were found in several drill holes:

e.g.	JL-4	10 ft. of 1.31% Cu
		10 ft. of 2.60% Cu
		10 ft. of 0.71% Cu
		10 ft. of 0.80% Cu
	CG-34	140 ft. of 0.20% Cu
		10 ft. of 0.87% Cu
	CG-35	59 ft. of 0.47% Cu
	CG-38	63 ft. of 0.32% Cu

Molybdenum values exceeding 200 ppm for intervals of several hundred feet were found in a few of the holes, e.g., CG-29A and CG-38.

During 1973 Quintana Minerals Corporation conducted exploration on this property as a joint venture partner of Bear Creek. Quintana drilled three deep holes (CV-1, CV-2 and CV-3) on the western fringe of the sulfide system, west of all previous deep drilling. At the end of 1973 Quintana withdrew from the joint venture and abandoned all interest in the property after expending approximately $250,000.

The 1973 drilling did not diminish the potential of the remainder of the sulfide system. In fact, geologic studies by Quintana point towards the main deep target area as the most favorable.

In 1974 the Bear Creek land position was rearranged in order to greatly reduce the land-holding costs. No deep drilling was done in 1974.

Current Exploration Status

An enormous sulfide system has been outlined at Courtland-Gleeson. Drill holes to date have not located a copper center within the system but have tested material that appears to be part of the pyrite halo. Geologists who have worked on the project have two different views on the age and origin of the copper mineralization. Both lead to the same target area as the most likely copper center. Therefore it makes little practical difference at this time which of these proves correct.

Case 1. This view holes that the mineralization is similar in age and related to the Gleeson quartz monzonite (172 million years) and similar in age to the ore at Bisbee. The thrusting or gravity slides are post-mineral in age. The thrust slices have overriden in a northeast direction the center of mineralization that remains in the southwestern part of the area. This has always been the classic view for the Courtland-Gleeson project.

Case II. This view holds that the copper mineralization post-dates the thrusts. The copper is related to a much younger, hidden intrusive, of post Bisbee Group age, that is allied to the exposed Copper Belle monzonite porphyry. The Copper Belle unit has previously been correlated with the Triassic-Jurassic Gleeson quartz monzonite but the correlation is rejected for this case largely because of its presence within thrust planes that cut the Gleeson quartz monzonite. This view proposes that the apparent tabular nature of the main sulfide body is due to mineralization after the original thrusting. The exploration target is the differentiated stem of a mushroom-shaped intrusive that intruded the main thrust plane. Post-mineral movement on the flat faults is regarded as minor readjustments after the intrusion. The target stem is believed located in the southwest part of the area.

Remaining Economic Potential

The sulfide system is copper-bearing at several localities and the area has characteristics similar to other areas with porphyry copper deposits. The system is judged realistically to have a better-than-even chance of containing a sizeable copper center. No secondary enrichment can be expected, but the great size of the sulfide system suggests that its copper center should compare to some of the larger deposits in Arizona. Few such systems remain available for exploration.

Much of the favorable part of the sulfide system has been drilled at approximately one-half-mile centers to depths of about 2,000 to 3,000 feet. Statistical studies of drilling patterns on many known porphyry copper deposits show that important deposits within the area drilled could be missed easily with this drill pattern. The least-tested part of the I.P. anomaly is its southwest quadrant. However, the best copper potential remaining is for a deposit with its top at depths of 3,000 feet or greater.

A strong case can be made for drilling a very deep hole in the sulfide system, perhaps exceeding 5,000 feet. Good arguments can be made for drilling 3500-4000-foot holes and for deepening some of the recent holes, e.g., JL-4 and CG-32A.

Current Bear Creek Objectives

After spending more than $1,000,000 on the Courtland-Gleeson project, Bear Creek is seeking a joint venture partner to help finance further work on the prospect. Such a partner would earn an equity interest in the project by expending exploration funds in further drilling. The type of target requires a significant initial work commitment to be worthy of serious consideration.

Should future exploration be successful in defining the presence of an orebody, both joint venture partners would have the opportunity to participate in its development.

Land Status

Bear Creek controls most of the property covering the western two-thirds of the I.P. anomaly through a combination of Bear Creek lode claims, State leases and purchase options of fee land and patented claims. The land coverage has been reduced in recent years as more was learned about the geometry of the sulfide system. Current land holding costs are shown on the accompanying table.

Gordon F. Lister

November 12, 1974

COURTLAND-GLEESON PROJECT
COCHISE COUNTY, ARIZONA

PURCHASE OPTIONS ON FEE LAND

Owner/Optionor	Expiration Date	Acreage	Cumulative Price
Roy Christiansen et al.	3/27/1978	1,144.38 in fee	$906,570 for fee land as a unit
		750.63 surface rights	$200 per acre or 25% above fair market value for parcels with surface rights, as selected by optionee. ~ 150,000
Robert Cowan	9/28/1977	(I) 1,047.77 in fee (II) 149.091 as patented claims	$650 per acre for selected parcels (minimum 40 acres in size) from I or II. ~ 777,869
		(III) 102.801 surface rights (IV) 80.00 surface rights	$200 per acre or 25% above fair market value for selected parcels (minimum 40 acres in size) from III and IV. 36,560
OMIT ~ Shannon Mining Company	9/1/1976	369.893 as patented claims	$250,000 (minus prior option payments of $12,500)
			~ 2,120,999

COURTLAND-GLEESON EXAMINATION
COCHISE COUNTY, ARIZONA
OPTION PAYMENTS AND WORK REQUIREMENTS FOR 1975

Landowner or Optionor & Type of Agreement	Claims or Acreage Held by BCMC		Acquired	Expires	Option or Rental Payments		1975 Work Requirement	
					Date Due	Amount	Type	Cost
State Prospecting Permits	Acres							
27846	480	19 T19S R25E	6/12/74	6/11/79	6/12/76	$480.00	Assessment	$4,80
27847	129.15	32 T19S R25E	6/12/74	6/11/79	6/12/76	129.00	Assessment	1,29
29408	280	36 T19S R24E	11/5/74	11/5/79	11/5/76	280.00	Assessment	2,80
Bear Creek Claims	33 unpatented lode claims		1968-71			0	Assessment	3,30
Roy Christiansen et al Option Agreement	1,895.01 acres		3/20/70	3/27/78		0	None	
Robert Earl Cowan Option Agreement	1,379.66 acres		9/28/72	9/28/77		0	None	
Shannon Mining Co. Option Agreement	Patented Claims		9/1/71	9/1/76	9/1/75	5,000.00	None	

DRAFT

HIGHLIGHTS OF DRILLING RESULTS

Drill Holes	Remarks
CG-29, 33, 37 CG-2	Strong alteration and pyrite suggesting outer fringe of the pyritic halo.
CG-29A, 38	Very high molybdenum values (200-300 ppm) indicative of central zone of classic porphyry copper deposit. Similar interpretation for the ratio of copper to total sulfides in 29A. Vertical zoning terminated abruptly by Courtland thrust in 38.
CV-1	Only weak to moderate sulfides, alteration and low to moderate molybdenum. Fringe zone.
CG-34	Thick column of intense alteration and sulfides with moderate molybdenum values (70-110 ppm) suggestive of close-in pyritic halo. Lower metal values at bottom of hole.
JL-4	Best copper values in deeper part. Stopped by drilling problem in short intervals of good grade in altered Copper Belle intrusive below 3,600 feet.
CG-39	Thick interval of moderately altered Copper Belle but only weak Cu-Mo. Hole stopped in fault without exploring other side of fault (Courtland thrust?).
CG-32A	Thick interval of pyritic halo outer fringe, bottomed in pyritic halo that may be inner fringe.
CG-35, CV-3	Only weak to moderate alteration-mineralization to bottom. The holes were too shallow.

None of these holes intersected significant intervals of rock assaying 0.5% copper or greater. However, short intervals of interesting grades were found in several drill holes, e.g.:

JL-4	10 ft. of 1.31% Cu
	10 ft. of 2.60% Cu
	10 ft. of 0.71% Cu
	10 ft. of 0.80% Cu
CG-34	140 ft. of 0.20% Cu
	10 ft. of 0.87% Cu
CG-35	59 ft. of 0.47% Cu
CG-38	63 ft. of 0.32% Cu

MAIN DEEP TARGET

The extensive deep drilling done to search for a concealed copper deposit has accumulated useful information on internal patterns within the sulfide system. The potential of much of the area has been eliminated but the potential of one part of the area has been enhanced.

Based upon the accumulated drilling results it is possible to draw vectors from hole to hole and establish gradients to indicate the probable center of the system. The strongly anomalous molybdenum values in CG-29A, 38 and to a lesser extent CG-34 could be expected to overlie the general vicinity of the copper center in a system with less structural complexity than this one. However, post-mineral movement along the (older ?) thrusts has displaced this upper part of the copper center north of its stem or root zone. On the basis of subsurface geochemical patterns, alteration patterns, sulfide patterns and structural interpretations the copper center is interpreted to be located mainly in Section 31 and the south end of Section 30, in the footwall of the Courtland thrust (Figure 2). Depths to the top of the Main Deep Target are interpreted to be no shallower than 3,000 to 3,500 feet. An exploration program on this deep a target is probably five years ahead of the thinking of most competitors in Arizona.

The target is judged to have a better-than-even chance of containing a sizeable copper center. No secondary enrichment can be expected and the primary grade cannot be predicted. The potential size of the interpreted target may be 200 to 500 million tons; with luck its grade could be similar to San Manuel (0.72% Cu) or better. Alternatively, the grade could turn out to be considerably lower (0.2 to 0.4% Cu).

Aside from the copper grade, the chief risk associated with this target is its dependence upon structural interpretations in an area with complex structure. It is possible that the Courtland thrust has been misidentified in some drill holes and that additional flat faulting has further displaced the copper center.

This target could be explored by drilling two 5,000-foot holes and deepening hole JL-4 and possibly 32A and 39.

DIFFERENT VIEWS ON ORIGIN AND AGE

Geologists who have worked on the project have two different views on the age and origin of the copper mineralization. Both lead to the same target area as the most likely copper center. Therefore it makes little practical difference at this time which proves correct.

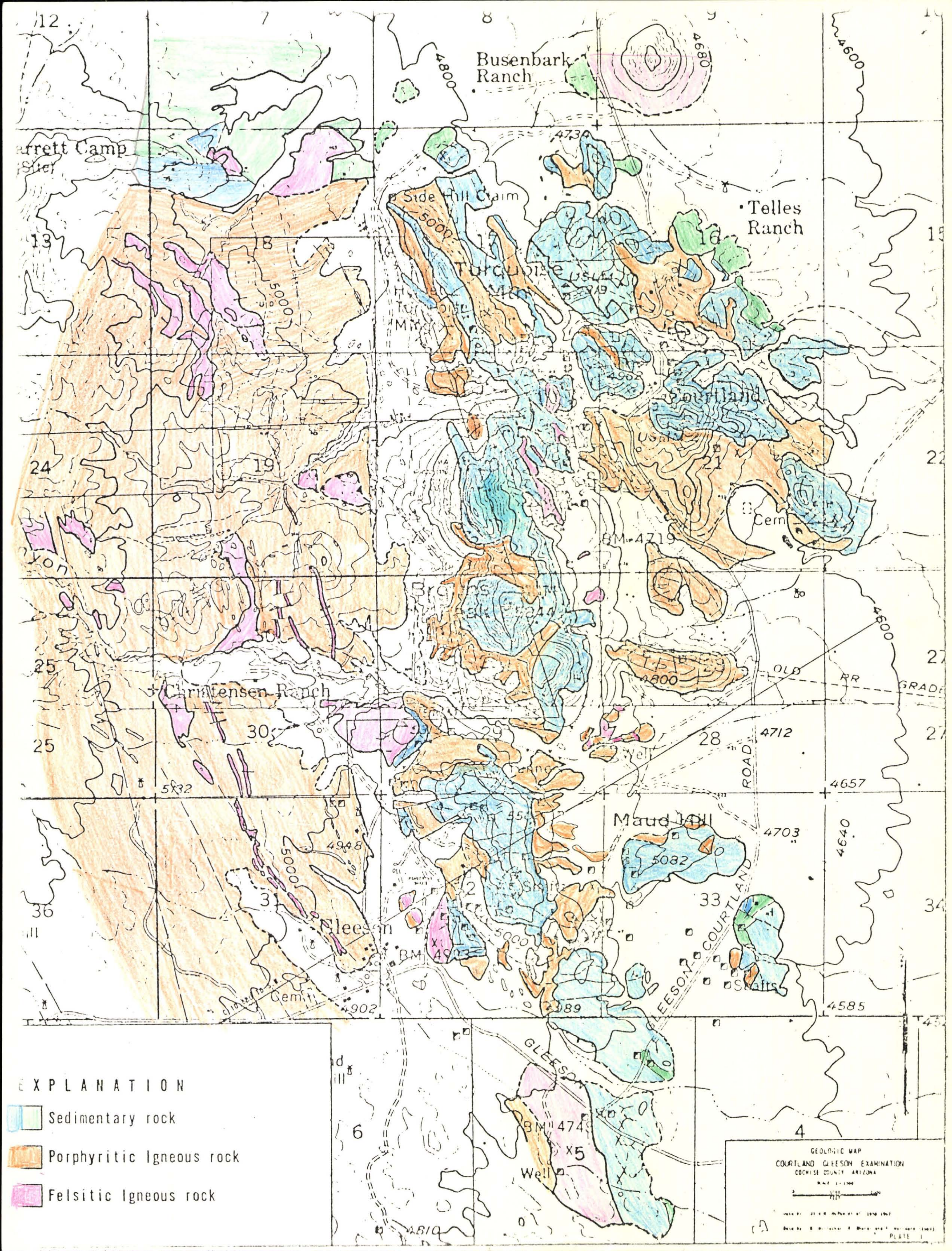
Case I

This view holds that the mineralization is similar in age and related to the Gleeson quartz monzonite (172 million years) and similar in age to the ore at Bisbee. The thrusting or gravity slides are post-mineral in age. The thrust slices have overriden in an east or northeast direction the center of mineralization that remains in the southwestern part of the area. This has always been the classic view for the Courtland-Gleeson project.

Case II

This view holds that the copper mineralization post-dates the thrusts. The copper is related to a much younger, hidden intrusive, of post Bisbee Group age, that is a quartz-rich advanced differentiate allied to the exposed Copper Belle monzonite porphyry. The Copper Belle unit has previously been correlated with the Triassic-Jurassic Gleeson quartz monzonite but the correlation is rejected for this case largely because of its presence within thrust planes that cut the Gleeson quartz monzonite. This view proposes that the apparent tabular nature of the main sulfide body is due to mineralization after the original thrusting. The exploration target is the differentiated stem of a mushroom-shaped intrusive that intruded the main thrust plane. Post-mineral movement on the flat faults is regarded as relatively minor readjustments after the intrusion. The target stem is believed located in the southwest part of the area.

Case II was introduced because it was evident that (a) the flat faults were mineralized, (b) units of the Copper Belle were intruded into the flat faults, (c) units of the Copper Belle occupying the flat fault zones contained anomalous copper, (d) the best copper values seemed associated with quartz porphyries that had affinities with the Copper Belle units. The greatest weakness of Case II is the absence of a Laramide date on the three samples dated.

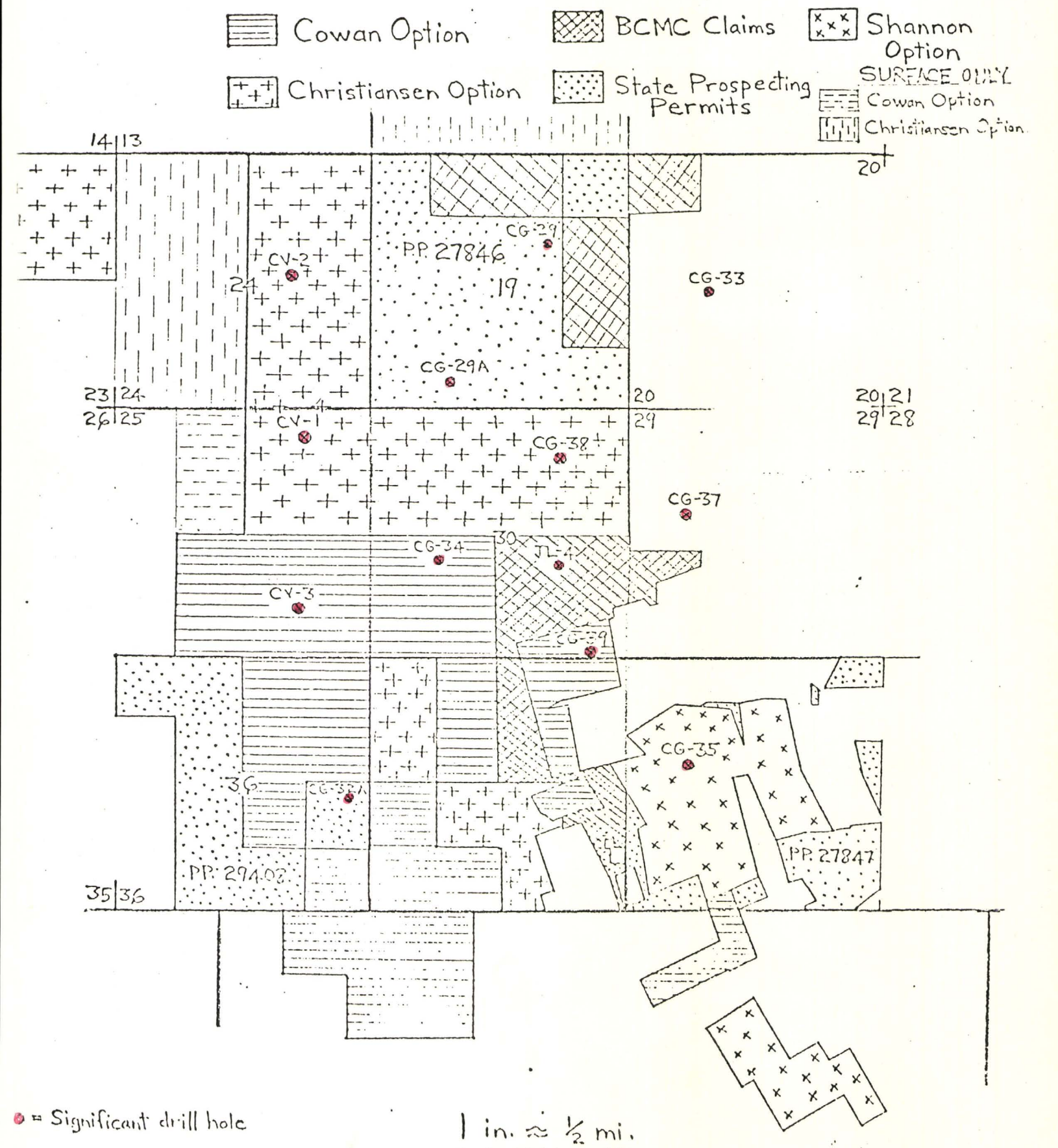

Busenbark Ranch
Telles Ranch
Side Hill Claim
Turquoise Mtn
Courtland
Cem
BM 4719
Maud Hill
Christensen Ranch
Gleeson
OLD RR GRADE
GLEESON-COURTLAND ROAD
Shafts
Well
EXPLANATION
Sedimentary rock
Porphyritic Igneous rock
Felsitic Igneous rock
GEOLOGIC MAP
COURTLAND GLEESON EXAMINATION
COCHISE COUNTY ARIZONA
PLATE 1

BEAR CREEK MINING COMPANY – TUCSON OFFICE

COURTLAND GLEESON

COCHISE COUNTY, ARIZONA

MINERAL RIGHTS HELD BY BCMC



● = Significant drill hole

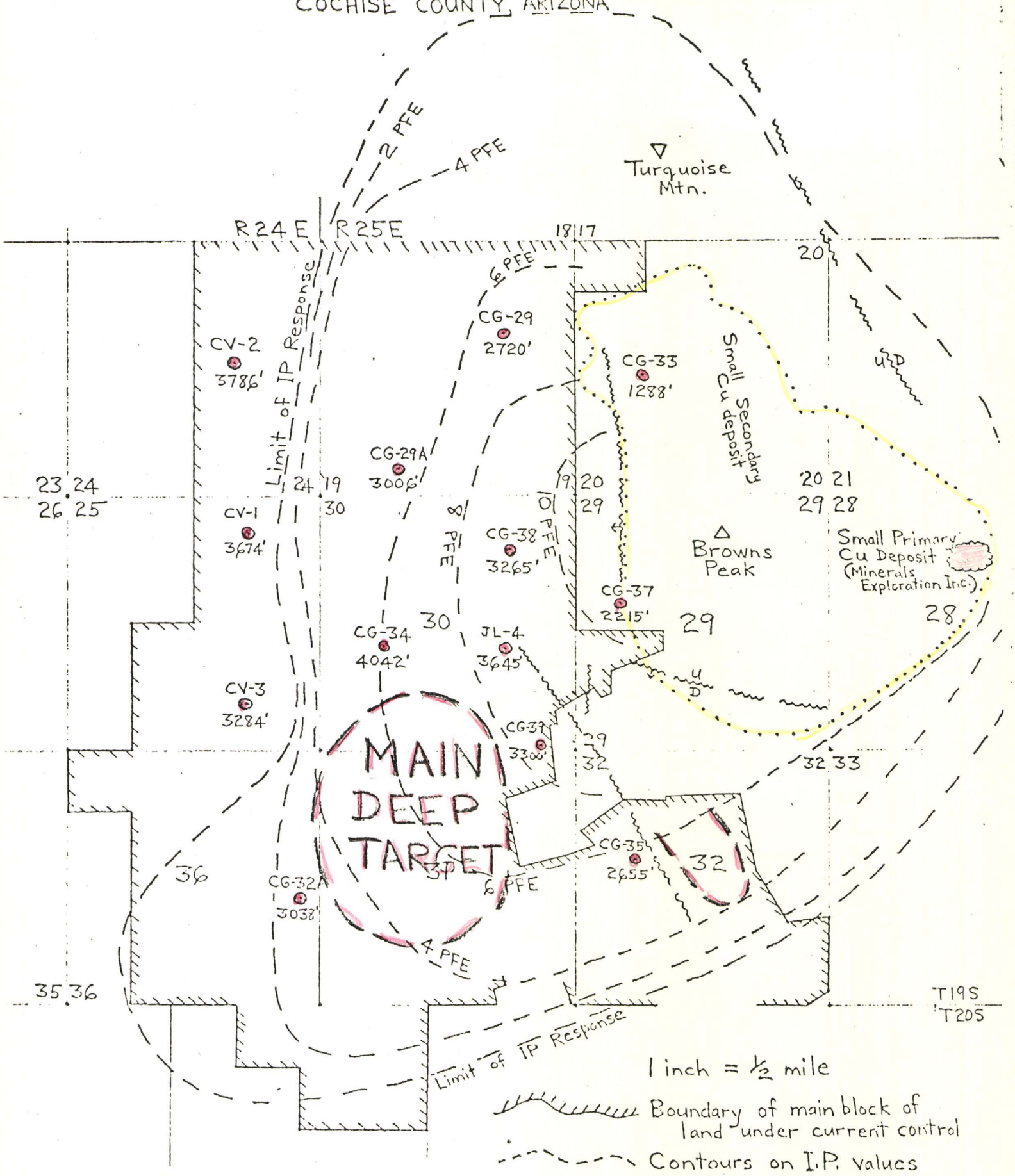
1 in. ≈ ½ mi.

Oct. 1974 GFL

SUMMARY SKETCH – I.P., DRILLING, LAND

COURTLAND GLEESON

COCHISE COUNTY, ARIZONA



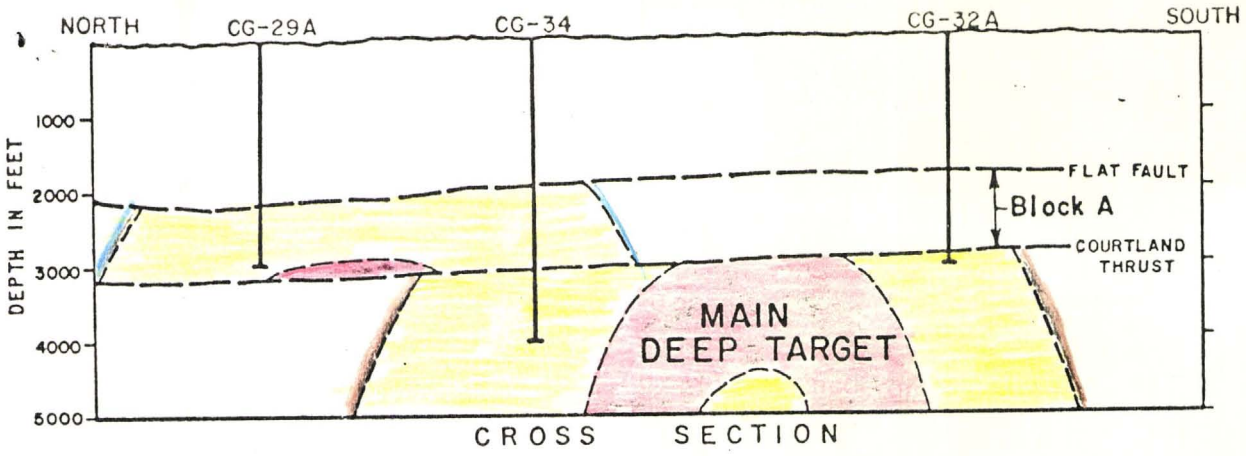
1 inch = ½ mile

Boundary of main block of land under current control

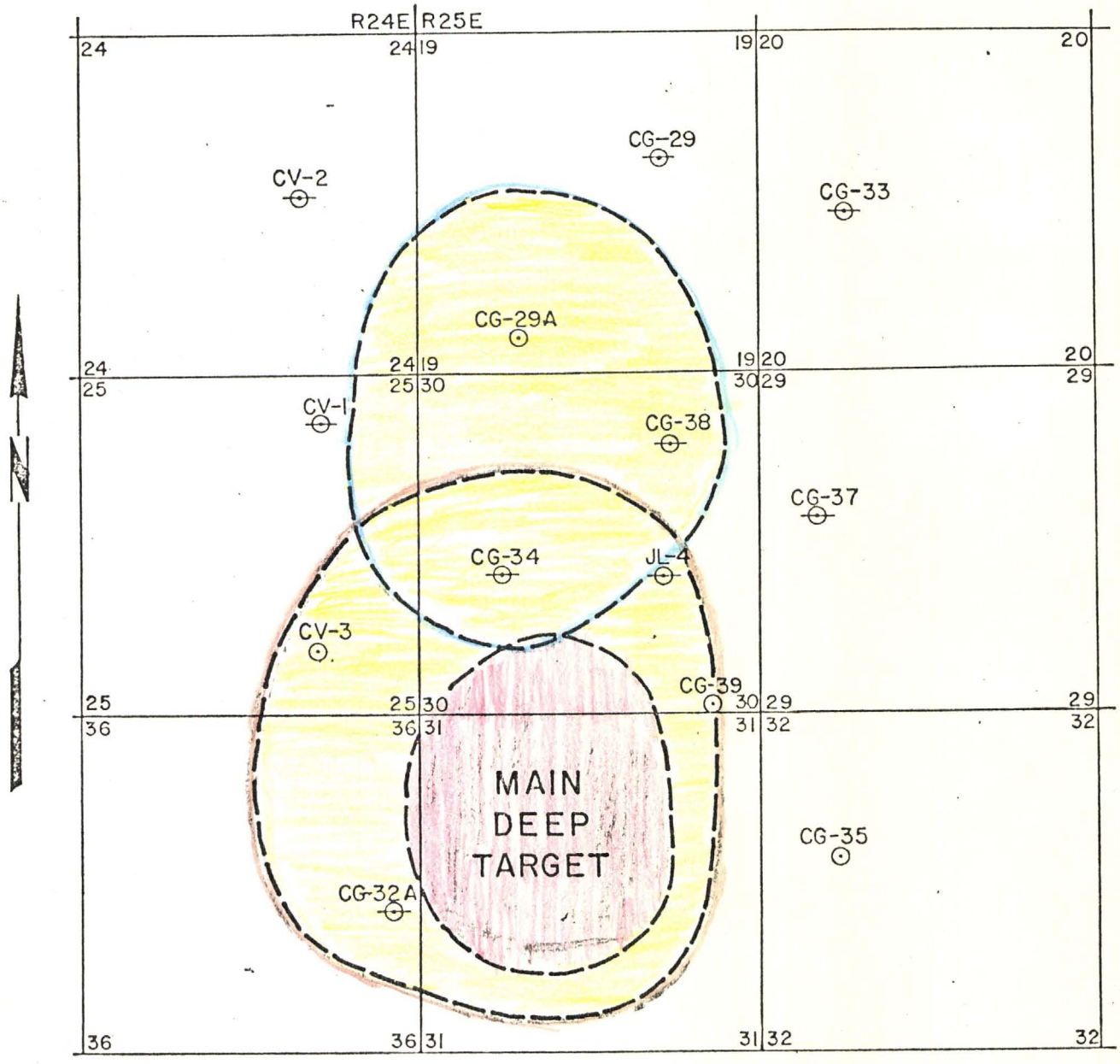
Contours on I.P. values

Area of intense surface mineralization – alteration

EAR CREEK MINING COMPANY
TUCSON



CROSS SECTION



PLAN VIEW MAP

0 1000' 2000' 3000' 4000'

SCALE: 1"=2640'

Apparent center of mineralization

Main deep target for copper

⊙ Drill hole that penetrated the Courtland thrust.

⊙ Drill hole that did not penetrate the Courtland thrust.

BCMC TUCSON OFFICE

DEEP TARGET LOCATION

COURTLAND-GLEESON

COCHISE COUNTY, ARIZONA

Data by: G. Lister Jan. 1975

Fig. 2

D. L. Everhart

J. B. Imswiler

May 28, 1975

New Proposal of Bear Creek Mining Company for Participation in the Courtland-Gleeson Project

Enclosed please find a copy of Bear Creek's new proposal on the Courtland-Gleeson Project.

As mentioned in our telephone conversation of yesterday, I had an opportunity to discuss this project further with Gordon Lister last week. While I still consider this to be a high risk venture, the new proposal is much more attractive to IMC than the original proposal. The most attractive features are as follows:

- A commitment of $100,000 for Stage 1 would give us a look at the heart of a major sulfide system. The three holes drilled during this phase should yield sufficient data to make a well-founded decision as to whether to drop out or to continue through Stages 2 and 3.

- If sufficient encouragement is encountered in Stage 1 to warrant Stages 2 and 3, we could drop out after a total expenditure at the end of Stage 3 of $300,000 and retain a 1% Net Smelter Return interest with no further contribution. If the type of deposit that would be required to make a mine is found, this 1% NSR interest could easily amount to at least $1,000,000 per year.

In summary, this is a deep high risk target, but it has a potential high rate of return for a comparatively modest investment. The new proposal gives us the option of retaining some degree of participation after the expenditure of $300,000 or avoiding a high cost development program by trading in our participating interest for a lucrative carried NSR interest. It is quite likely that a

reasonable decision can be made on the extent of our commitment at the end of Stage 1.

Refer to data accompanying original Bear Creek Proposal and memorandum of April 18, 1975, from J. B. Imswiler to D. L. Everhart and P. O. Sandvik for further information.

J. B. Imswiler

cc: P. O. Sandvik

:lvj

GLEESON JOINT VENTURE

Objective

The immediate objective of the joint venture is the exploration of a deep porphyry copper target area near Gleeson, Arizona. Discovery of a viable copper deposit would result in development of a copper mining operation by the joint venture.

Background

The target area has been defined after previous expenditures of about $1 million. Bear Creek Mining Company (exploration subsidiary of Kennecott Copper Corporation) controls the property covering the target. Bear Creek is seeking partners for a deep test. Exploration must be at an advanced state before September 1977 when land purchase options begin to mature.

Proposed Participation

Participant A (Bear Creek)	40%
Participant B	20%
Participant C	20%
Participant D	20%

Exploration Stages

Stage 1	July 1, 1975 to March 31, 1976
Stage 2	April 1, 1976 to December 31, 1976
Stage 3	January 1, 1977 to June 15, 1977

The length of stages 2 and 3 may be shortened by mutual agreement of all participants but this is not contemplated at present.

Exploration Funding

Participants B, C and D will contribute $100,000 for each 20% interest for a total budget of $300,000 during each stage. In recognition of its prior expenditures Bear Creek will not be required to make contributions for its 40% interest until exploration stage 3 has been completed.

Funding Schedule During Stage 1

Initial payment of $25,000 by each participant. Further payments of $25,000 each on November 1, 1975; January 9, 1976; and March 1, 1976.

Exploration Plans

During Stage 1 two holes will be drilled to depths of 4,000 to 5,000 feet and a third hole will be deepened. Plans for Stages 2 and 3 depend upon results from Stage 1. Hopefully these stages will include grid drilling around a discovery hole.

Dropouts

The initial commitment is $100,000 for Participants B, C and D. These participants can drop out at the end of exploration stages 1 or 2 with no retained interest in the venture. Remaining participants have the option to increase their interests to maintain their proportion relative to the remaining participants. Should a remaining participant decline to increase his interest the unallocated portion would be offered to the other participants in order of A, B, C, and D. Further adjustments in percentage working interest or contributions could be made by mutual agreement of all remaining participants.

Retained Interests

Participants remaining in the joint venture through exploration stage 3 will earn a retained working interest equal to their percentage participation in stage 3. A participant not wishing to proceed beyond exploration stage 3 could exchange the working interest for a royalty interest on the basis of 1% Net Smelter Return royalty from the joint venture for each 20% working interest.

Operator

Bear Creek shall be the operator of the joint venture through exploration stage 3. The provision will be made for possible future changes of operator if plans for further development are not proposed to the partners on a timely basis.

Meetings and Reports

Meetings to review progress will be held by the participants as needed but no less frequently than once per quarter. A written progress report and exploration plans will be furnished participants 30 days prior to a decision date on participation in stages 2 or 3.

July 3, 1975

Mr. G. F. Lister
Senior Geologist
Bear Creek Mining Company
1714 West Grant Road
Tucson, Arizona 85705

Subject: Courtland-Gleeson
Cochise County, Ariz.

Dear Gordon:

This letter is written in response to your original letter of March 21, 1975 on this subject, plus further input and revisions supplied to Bruce Imswiler into May 1975.

We have considered the proposition carefully and have been attracted by the "geologic play" proposed. In fact, I have deferred our response to you until our July 1, 1975 - June 30, 1976 budget and work plans were finally and officially approved. Such approval actually took place on June 29, 1975.

In view of the major thrust and emphasis in our Resource Development program for this year, we must notify you at this time of no further interest, on our part, in the Courtland-Gleeson prospect. Thanks for your patience and professionalism in presenting us this opportunity. We took it seriously.

Best personal regards.

Sincerely yours,

Donald L. Everhart

DLE/mp
cc: Messrs. M. A. Upham
P. O. Sandvik
J. B. Imswiler

Messrs. D. L. Everhart and P. O. Sandvik

J. B. Imswiler

April 18, 1975

Proposal of Bear Creek Mining Company for participation on Courtland-Gleeson Project

This is to summarize and formalize my conversation of April 10 with P. O. Sandvik regarding the proposal submitted by Gordon F. Lister, of Bear Creek Mining Company, for possible IMC participation on the Bear Creek Company Courtland-Gleeson Project.

Bear Creek has spent approximately $1,000,000 on this project since the late 1950's. Quintana Minerals later participated on this project to the extent of drilling three holes at a cost of approximately $250,000 and then withdrew from the joint venture at the end of 1973.

The proposed target outlined by Bear Creek just happens to fall within a center surrounded by nonproductive drill holes. This may or may not be coincidental. One fact which should be considered is that that part of the property known as the Shannon option has been withheld by Bear Creek from the proposed new venture arrangement.

The drilling proposed by Bear Creek would consist of holes in the 3-5,000 ft. range to search for the top of a major porphyry deposit. This hypothetical deposit would probably contain no secondary enrichment, but would rather consist of primary sulfides in the range of anywhere from .2%-.7% copper. In other words, although the project could be a geological success, there is a good chance that the grade could be subeconomic. Based on a review of the work done to date, this project strikes me as being fairly high risk.

In light of the time and money which has been invested in this project to date, it would only seem reasonable that Bear Creek would require a major work commitment which could be on the order of several million dollars from anyone who would be considered as a venture participant. It should also be noted that this proposed deposit is now in the wildcat stage and the cost of holes, even at this point, would probably be on the order of approximately $100,000 per hole while still attempting to discover the top of the deposit.

In the event that success should be achieved, the deep-seated nature

Messrs. D. L. Everhart and P. O. Sandvik

J. B. Imswiler

April 18, 1975

Proposal of Bear Creek Mining Company for participation on the Courtland-Gleeson Project

of this deposit would demand a development drilling program which could perhaps run in the neighborhood of 50-75 million dollars. Total development cost prior to production could easily top several hundred million dollars. While this is certainly a viable project for an established copper mining company, such as Kenecott, it seems to me that this is just a little more than IMC should attempt to take on at this stage of its metals program.

In summary, I would say that we should thank Bear Creek for the invitation but decline at this time. I personally believe that there are better opportunities at a lower cost which would be more in line with our particular program.

J. B. Imswiler

lvj

File:
Courtland-Gleeson Prel - Cochise Co. Arizona.

Messrs. D. L. Everhart and P. O. Sandvik

J. B. Imswiler

April 18, 1975

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Messrs. D. L. Everhart and P. O. Sandvik

J. B. Imswiler

April 18, 1975

Proposal of Bear Creek Mining Company for participation on the Courtland-Gleeson Project

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In summary, I would say that we should thank Bear Creek for the invitation but decline at this time. I personally believe that there are better opportunities at a lower cost which would be more in line with our particular program.

J. B. Imswiler

lvj

Bear Creek Mining Company

Tucson Office

March 11, 1975

Mr. Donald L. Everhart
Division Vice President
Mining and Exploration
International Minerals and Chemical Corp.
IMC Plaza
Libertyville, Illinois 60048

Dear Mr. Everhart:

For many years Bear Creek Mining Company, the domestic exploration subsidiary of Kennecott Copper Corporation, has held a large block of land in the Courtland-Gleeson area of the Turquoise Mining District in Cochise County, Arizona. Since 1968 thirteen holes have been drilled west of the old mines to depths mostly 2200 to 3300 feet to explore for a hidden porphyry copper deposit. This work has outlined a sulfide system, more than nine square miles in area, that is largely covered by an 1800 to 2000-foot-thick layer of unmineralized rock. No sizable area of near-ore grade has been identified yet within the hidden system but the drilling has accumulated useful data on the extent of the system and its internal patterns.

Geochemical and geological vectors within the mineralized zone point to a relatively well-defined target area as the possible copper center of the sulfide system. No holes have been drilled into the target area. The potential size of the interpreted target may be 200 to 500 million tons; its grade could be similar to other large block-caving operations in Arizona. The top of the target area is probably no shallower than 3000 to 3500 feet below the surface.

Through recent renegotiations Bear Creek maintains its control of the property at very low annual holding costs. The next logical step is to drill test the main target area to depths of 4000 to 5000 feet.

In the Arizona copper province few such sulfide systems remain available for exploration. Our company is willing to consider joint venture proposals for further exploration of this prospect. It is anticipated that the partner would earn a 50 percent interest in the property through its expenditure of $650,000 over a period of three years. If your company might be interested in such an exploration venture, further information can be obtained by contacting the undersigned.

Follow-up after contact by DLE

Very truly yours,

Gordon Lister

Gordon F. Lister
Senior Geologist

GFL:ct

1714 WEST GRANT ROAD • TUCSON, ARIZONA 85705 • TELEPHONE: 602-624-5547 • TWX: 910-952-1320

Copy to JBI - JMcA

Bear Creek Mining Company

Tucson Office

March 21, 1975

MINING & EXPLORATION

Referred ..... Answered .....

RECEIVED MAR 24 '75

File - Attn. - Corr. - Loc. - Opt. - Eqp - Proc.

Subject .....

Mr. Donald L. Everhart
Division Vice President
Mining and Exploration
International Minerals and Chemical Corp.
IMC Plaza
Libertyville, Illinois 60048

Dear Mr. Everhart:

Subject: Courtland-Gleeson
Cochise County, Arizona

In response to yesterday's telephone conversation, I am enclosing some background data on the Courtland-Gleeson prospect to introduce your representatives to the exploration history and status of this property.

The Main Deep Target is the joint venture opportunity for IMC. Sufficient drilling has been done to narrow down the position of this target in preparation for some meaningful drill tests.

The Shannon property would not be part of the joint venture at this time. Bear Creek plans to drill for a separate shallow target in the Shannon area this spring on its own account.

We have abundant data, reports and core from this prospect available for inspection in Tucson. Please contact me if there are further questions.

Yours very truly,

G. F. Lister
Senior Geologist

GFL:ct
Encls.

Bear Creek Mining Company

Tucson Office

COURTLAND-GLEESON PROJECT
COCHISE COUNTY, ARIZONA
SUMMARY FOR PROSPECTIVE PARTNER

Background

The Courtland-Gleeson area, otherwise known as the Turquoise District, is situated in southeastern Arizona about 16 miles east of Tombstone and 20 miles north of Bisbee. Small-scale mining of copper and lead-zinc deposits took place between 1890 and 1950 but the boom years were 1910 to 1920. More than 25,000 tons of copper were produced from the district, mostly from the Shannon Mines property.

The old mining district is in and near two low ridges that trend north-south near the eastern contact of a large Triassic-Jurassic intrusive of quartz monzonite against Paleozoic calcareous sediments. The ridges stand above a gentle, rocky plain of quartz monzonite that extends eastward from the southern end of the Dragoon Mountains. Geology and mineral deposits of the district are described in U.S.G.S. Professional Paper 281 and Arizona Bureau of Mines Bulletin 123.

History of Exploration Activity

Bear Creek Mining Company became interested in the Courtland-Gleeson area in the late 1950's after a competitor discovered a small magnetic skarn-type copper deposit in Section 28 on the east side of the ridge. Since 1960 Bear Creek has expended more than one million dollars and many years of effort attempting to discover a porphyry copper deposit in the area. No mineralization with economic potential has been encountered to date.

Approximately one-third of Bear Creek's effort was made in the years 1960-62 searching for a shallow deposit. Twenty-eight holes were drilled to a depth of approximately 1,000 feet in the area of exposed sulfide mineralization. None of the holes intersected mineralization of economic interest. These drill holes and the geologic mapping by Bear Creek defined the presence of a gently-dipping major thrust fault under the exposed mineralization. Cretaceous sedimentary and volcanic rocks were encountered below the thrust. As mineralization was believed genetically related to the Triassic-Jurassic pluton, it seemed useless to search below the thrust and the project was abandoned.

The second generation of Bear Creek exploration at Courtland-Gleeson began in 1967 following recognition of the deep potential of the area west of the mineralized ridges. The target concept was a decapitated porphyry copper deposit under the thrust. Mineralization exposed on the ridges was believed to have been thrust eastward from the roots of the deposit. A large amount of property was acquired in 1968 and 1969 to test the concept. An extensive I.P. anomaly was outlined west of the ridge. The depth to the top of the anomaly was interpreted to be approximately 2,000 feet. The I.P. anomaly west and east of the ridge at Courtland-Gleeson covers approximately nine square miles.

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Since 1969 Bear Creek has drilled ten deep holes into the I.P. anomaly west of the ridge. These encountered intense quartz-sericite alteration with strong pyrite mineralization beneath a gently-dipping fault zone that cuts the quartz monzonite. None of the holes intersected significant intervals of rock assaying 0.5% copper or greater. However, short intervals of interesting grades were found in several drill holes:

e.g.	JL-4	10 ft. of 1.31% Cu
		10 ft. of 2.60% Cu
		10 ft. of 0.71% Cu
		10 ft. of 0.80% Cu
	CG-34	140 ft. of 0.20% Cu
		10 ft. of 0.87% Cu
	CG-35	59 ft. of 0.47% Cu
	CG-38	63 ft. of 0.32% Cu

Molybdenum values exceeding 200 ppm for intervals of several hundred feet were found in a few of the holes, e.g., CG-29A and CG-38.

During 1973 Quintana Minerals Corporation conducted exploration on this property as a joint venture partner of Bear Creek. Quintana drilled three deep holes (CV-1, CV-2 and CV-3) on the western fringe of the sulfide system, west of all previous deep drilling. At the end of 1973 Quintana withdrew from the joint venture and abandoned all interest in the property after expending approximately $250,000.

The 1973 drilling did not diminish the potential of the remainder of the sulfide system. In fact, geologic studies by Quintana point towards the main deep target area as the most favorable.

In 1974 the Bear Creek land position was rearranged in order to greatly reduce the land-holding costs. No deep drilling was done in 1974.

Current Exploration Status

An enormous sulfide system has been outlined at Courtland-Gleeson. Drill holes to date have not located a copper center within the system but have tested material that appears to be part of the pyrite halo. Geologists who have worked on the project have two different views on the age and origin of the copper mineralization. Both lead to the same target area as the most likely copper center. Therefore it makes little practical difference at this time which of these proves correct.

Case I. This view holes that the mineralization is similar in age and related to the Gleeson quartz monzonite (172 million years) and similar in age to the ore at Bisbee. The thrusting or gravity slides are post-mineral in age. The thrust slices have overriden in a northeast direction the center of mineralization that remains in the southwestern part of the area. This has always been the classic view for the Courtland-Gleeson project.

Case II. This view holds that the copper mineralization post-dates the thrusts. The copper is related to a much younger, hidden intrusive, of post Bisbee Group age, that is allied to the exposed Copper Belle monzonite porphyry. The Copper Belle unit has previously been correlated with the Triassic-Jurassic Gleeson quartz monzonite but the correlation is rejected for this case largely because of its presence within thrust planes that cut the Gleeson quartz monzonite. This view proposes that the apparent tabular nature of the main sulfide body is due to mineralization after the original thrusting. The exploration target is the differentiated stem of a mushroom-shaped intrusive that intruded the main thrust plane. Post-mineral movement on the flat faults is regarded as minor readjustments after the intrusion. The target stem is believed located in the southwest part of the area.

Remaining Economic Potential

The sulfide system is copper-bearing at several localities and the area has characteristics similar to other areas with porphyry copper deposits. The system is judged realistically to have a better-than-even chance of containing a sizeable copper center. No secondary enrichment can be expected, but the great size of the sulfide system suggests that its copper center should compare to some of the larger deposits in Arizona. Few such systems remain available for exploration.

Much of the favorable part of the sulfide system has been drilled at approximately one-half-mile centers to depths of about 2,000 to 3,000 feet. Statistical studies of drilling patterns on many known porphyry copper deposits show that important deposits within the area drilled could be missed easily with this drill pattern. The least-tested part of the I.P. anomaly is its southwest quadrant. However, the best copper potential remaining is for a deposit with its top at depths of 3,000 feet or greater.

A strong case can be made for drilling a very deep hole in the sulfide system, perhaps exceeding 5,000 feet. Good arguments can be made for drilling 3500-4000-foot holes and for deepening some of the recent holes, e.g., JL-4 and CG-32A.

Current Bear Creek Objectives

After spending more than $1,000,000 on the Courtland-Gleeson project, Bear Creek is seeking a joint venture partner to help finance further work on the prospect. Such a partner would earn an equity interest in the project by expending exploration funds in further drilling. The type of target requires a significant initial work commitment to be worthy of serious consideration.

Should future exploration be successful in defining the presence of an orebody, both joint venture partners would have the opportunity to participate in its development.

Land Status

Bear Creek controls most of the property covering the western two-thirds of the I.P. anomaly through a combination of Bear Creek lode claims, State leases and purchase options of fee land and patented claims. The land coverage has been reduced in recent years as more was learned about the geometry of the sulfide system. Current land holding costs are shown on the accompanying table.

Gordon F. Lister

November 12, 1974

COURTLAND-GLEESON PROJECT
COCHISE COUNTY, ARIZONA

PURCHASE OPTIONS ON FEE LAND

Owner/Optionor	Expiration Date	Acreage	Cumulative Price
Roy Christiansen et al.	3/27/1978	1,144.38 in fee	$906,570 for fee land as a unit
		750.63 surface rights	$200 per acre or 25% above fair market value for parcels with surface rights, as selected by optionee.
Robert Cowan	9/28/1977	(I) 1,047.77 in fee (II) 149.091 as patented claims	$650 per acre for selected parcels (minimum 40 acres in size) from I or II.
		(III) 102.801 surface rights (IV) 80.00 surface rights	$200 per acre or 25% above fair market value for selected parcels (minimum 40 acres in size) from III and IV.
OMIT — Shannon Mining Company	9/1/1976	369.893 as patented claims	$250,000 (minus prior option payments of $12,500)

COURTLAND-GLEESON EXAMINATION
COCHISE COUNTY, ARIZONA
OPTION PAYMENTS AND WORK REQUIREMENTS FOR 1975

Landowner or Optionor & Type of Agreement	Claims or Acreage Held by BCMC		Acquired	Expires	Option or Rental Payments		1975 Work Requirement	
					Date Due	Amount	Type	Cost
State Prospecting Permits	Acres							
27846	480	19 T19S R25E	6/12/74	6/11/79	6/12/76	$480.00	Assessment	$4,800
27847	129.15	32 T19S R25E	6/12/74	6/11/79	6/12/76	129.00	Assessment	1,292
29408	280	36 T19S R24E	11/5/74	11/5/79	11/5/76	280.00	Assessment	2,800
Bear Creek Claims	33 unpatented lode claims		1968-71			0	Assessment	3,300
Roy Christiansen et al Option Agreement	1,895.01 acres		3/20/70	3/27/78		0	None	
Robert Earl Cowan Option Agreement	1,379.66 acres		9/28/72	9/28/77		0	None	
Shannon Mining Co. Option Agreement	Patented Claims		9/1/71	9/1/76	9/1/75	5,000.00	None	