



CONTACT INFORMATION
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MAKE new file

Pima oxide (Cranberry)

September 24, 1969

R. M. Barnhill, President
Lomas De Cobre, Inc.
7081 E. Katchina Court
Tucson, Arizona

Dear Robert:

Attached please find a resume of my opinions and recommendations concerning your property located approximately seven miles N.W. of Arivaco, Arizona.

I have visited the area twice in your presence, once on March 15, 1969, and again on August 23, 1969. On these occasions I reviewed all available data concerning property ownership, assay data and production.

As you are aware, data covering past development work, production, and related records are limited. Keeping this in mind, the property must be considered as a "potential".

I hope that this information will be of some help to you.

Sincerely,



Lawrence G. Dykers
B.S. Mining Engineering
New Mexico Institute of
Mining & Technology-1962

tjw

LOMAS DE COBRE

W. $111^{\circ}-26'$ / N. $31^{\circ}-37'$

Sec. 4~~10~~ of T21S, R9E

History-General Area:

The property lies on the west flank of the San Luis Mountains and on the northwest point of Cobre Ridge. It is located about seven miles northwest of Arivaca and one half mile south of the Figueroa Ranch. The property is reached by way of a well maintained dirt road from Arivaca.

The general mining district in the San Luis Range and the Las Guijas Mountains to the north, have been noted for sporadic production of copper from numerous small deposits. Most of these copper deposits have mineral association with gold and silver, and are highly siliceous in nature.

Geology:

The area in general is characterized by cretaceous sediments that have been intruded by granitic and andesitic flows, plugs, dykes, and sills. In the property area itself, the deposit is capped by a dacite(?) flow and/or recent alluvium.

The copper bearing deposit is in a re-silicified arkosic sandstone (Amole), that is cut on the north by a andesite-diorite dyke work. The sandstone unit strikes S.S.W. and dips about forty degrees east. A similar structure has been noted on the Coppa and Santa Lucia claims.

To the south of the deposit outcrop, a major fault striking N.W. has been noted. Many small faults and dykes near and within the exposed deposit seems to parallel this structure.

Property:

The present property consists of some one hundred sixty acres comprised of two state mineral leases, four state prospecting permits and one state commercial lease. The commercial lease and one prospecting permit are located in Section 4--the remainder are located in Section 10. See Fig. 1.

LOMAS DE COBRE

Mineralogy:

The deposit is characterized by major copper mineral of Chrysocolla and Malachite. The minor gold values seem to be associated with re-silicification. The mineralogic origins of the silver values have not been identified.

Spatial Geometry:

The copper bearing outcrop is exposed along a two hundred foot long zone and is about twenty-five feet wide. The "ore" zone dips at a forty degree. See Fig. 2. The deposit has been developed by a side hill trench and drop cut to a depth of about thirty-five feet. Several wagon drill holes have been drilled in the center and to the east of the outcrop.

Assays:

Data on some two dozen samples are available in one form or another. These assays range from 0.43% Cu. to 12.38% Cu., with average being about 1.5% to 2.0%. Gold and silver values in the order of 1.75 oz. per ton, and 64.87 oz. per ton have been noted.

Reserves:

There is on a leach pad some seventy-five tons of material @ 1.30% Cu. and about ten thousand tons of dump material between 0.5-1.0% Cu. Proven(?) reserves exposed in the cut amount to some five to seven thousand tons, averaging 1.5% Cu. The later reserves are exposed in a pit measuring some two hundred feet by fifty feet by twenty-five deep in the center of the deposit outcrop.

Judging from the nature of the deposit itself and from like deposits in the area, a maximum of seventy-five thousand to one hundred thousand tons of "Ore" is about all which could be available. This "potential" ore would have to come from an extension of the deposit down dip to the east, from an offset south of the andesite-diorite dyke and less likely from a smaller deep extension on the north limit of the deposit.

Recommendations:

A series of six to ten drill holes should prove the "potential" of the deposit by testing the lateral extension down dip. These holes can be drilled by either air rotary or chip with adequate sampling

LOMAS DE COBRE

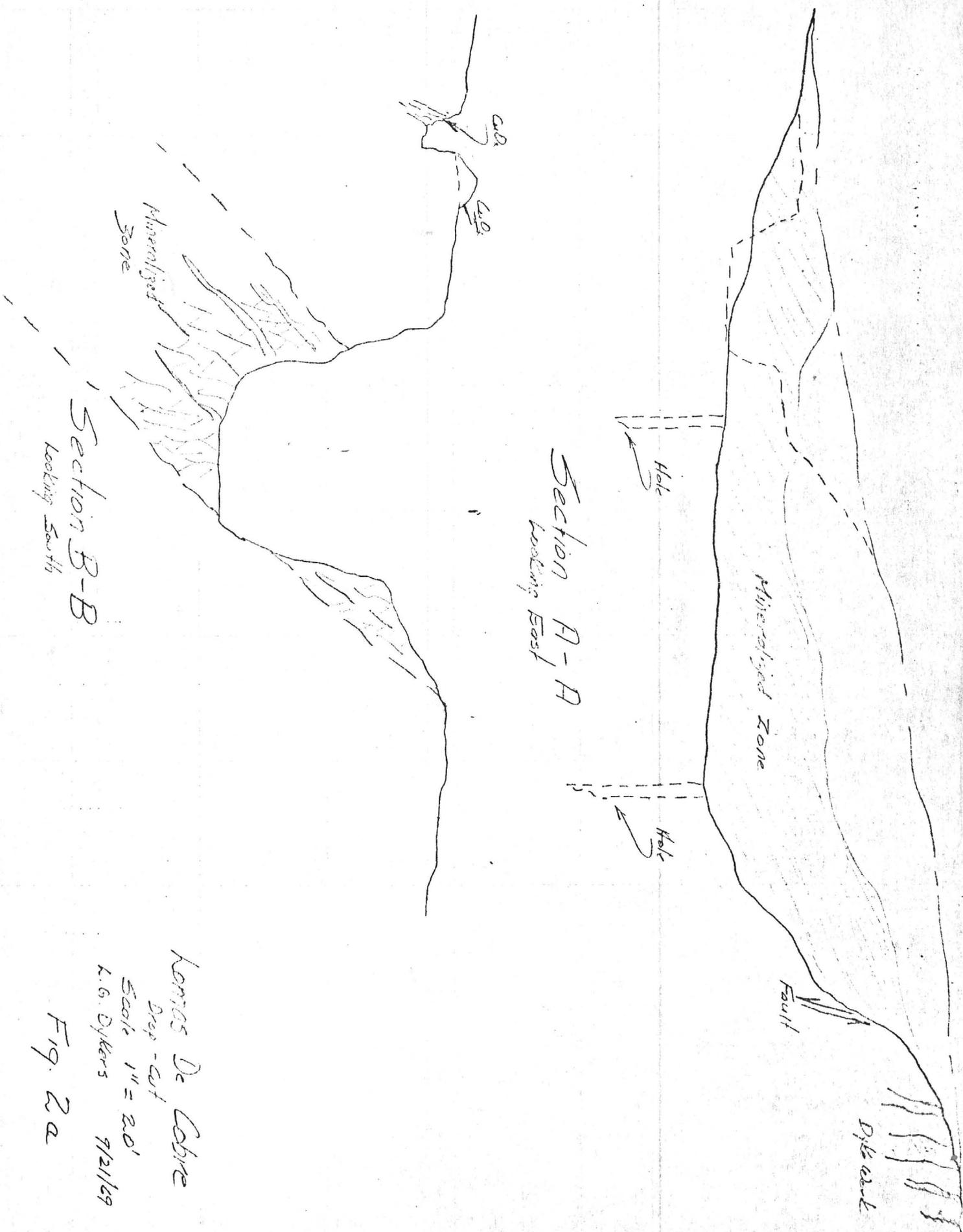
for assays. A maximum depth of two hundred feet for the down dip holes would be required. The holes in the north and south extension areas would be somewhat less. Five thousand dollars should cover the cost of this drilling if not done by diamond coring. See Fig. 3.

The whole surrounding area should be investigated for potential production to supplement property ore for future plant feed.

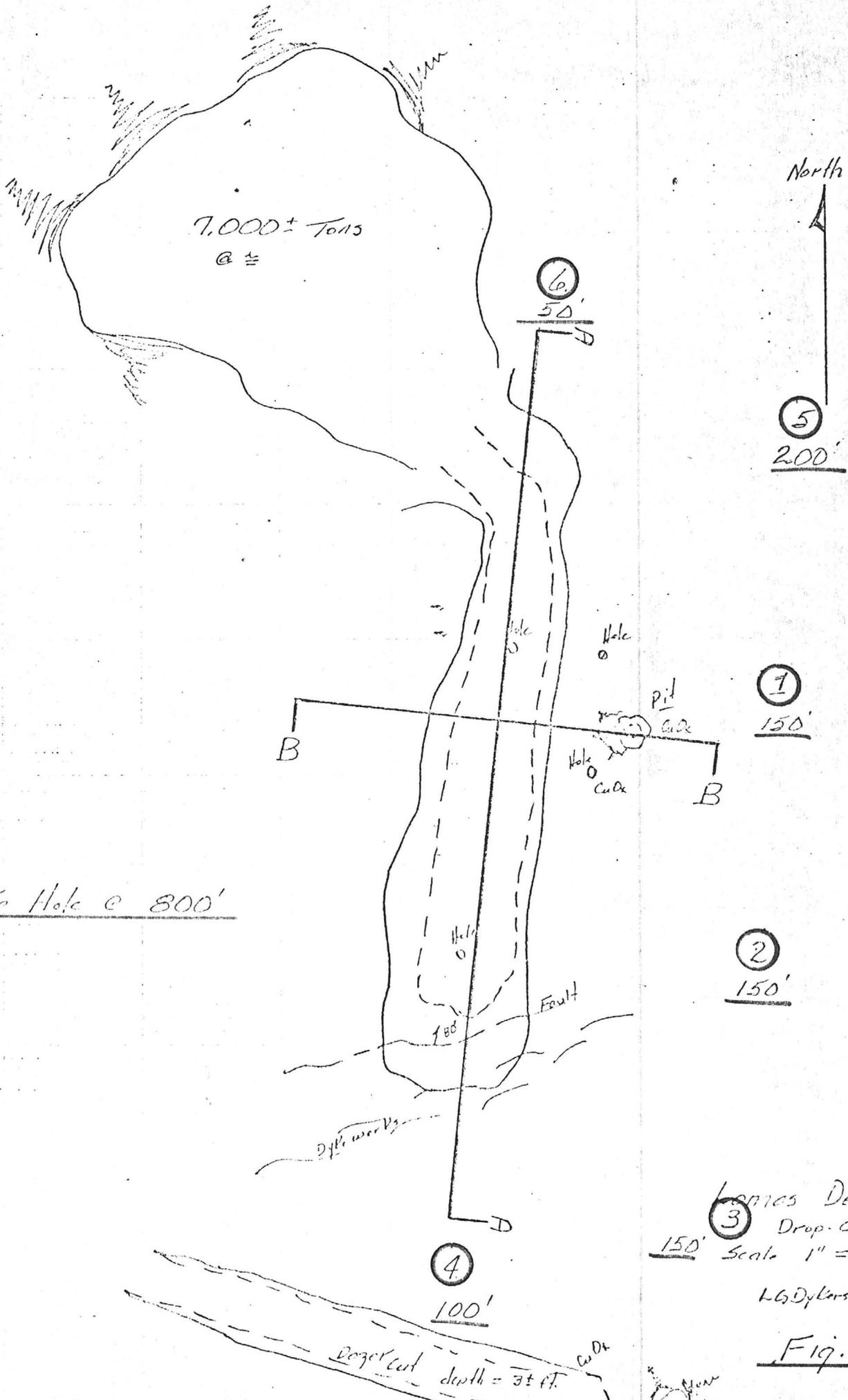
The potential of the San Luis area as a whole seems favorable for supporting a small scale copper leach plant.

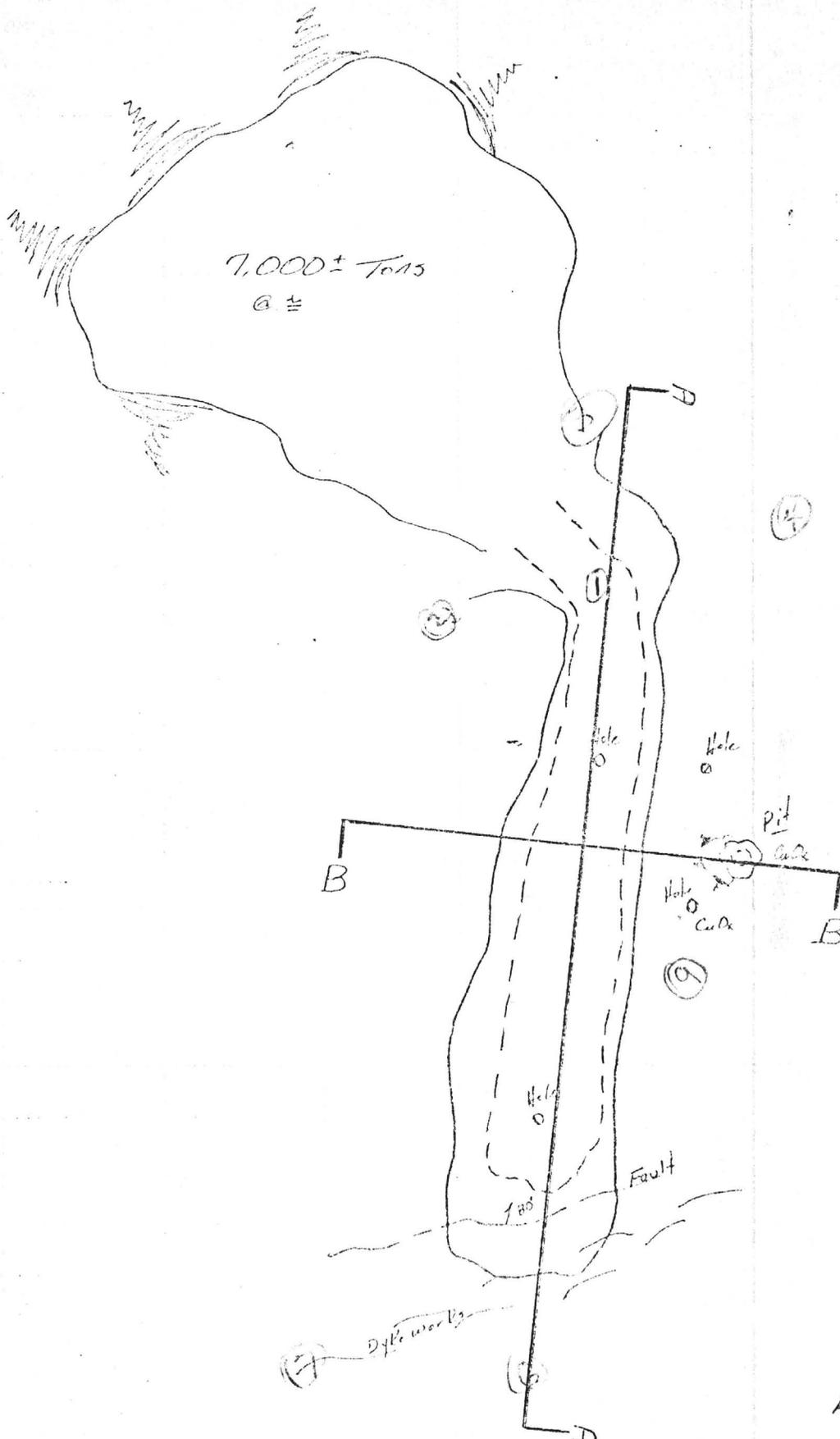
Due to the lack of extensive data concerning the Lomas De Cobre property and surrounding areas, the concepts set out here must be considered as my personal and professional opinions—based on available data.


Lawrence G. Dykers



Komros De Cabre
 Deep-cut
 Scale 1" = 20'
 K. G. Dykers 7/21/29
 Fig. 2a

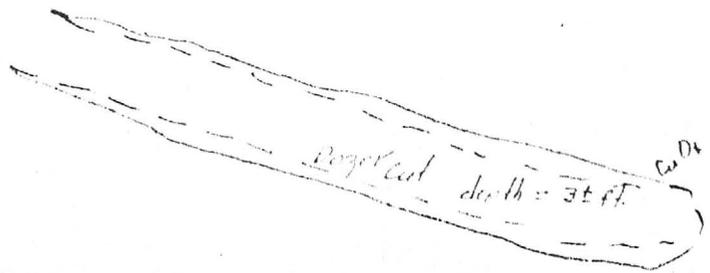




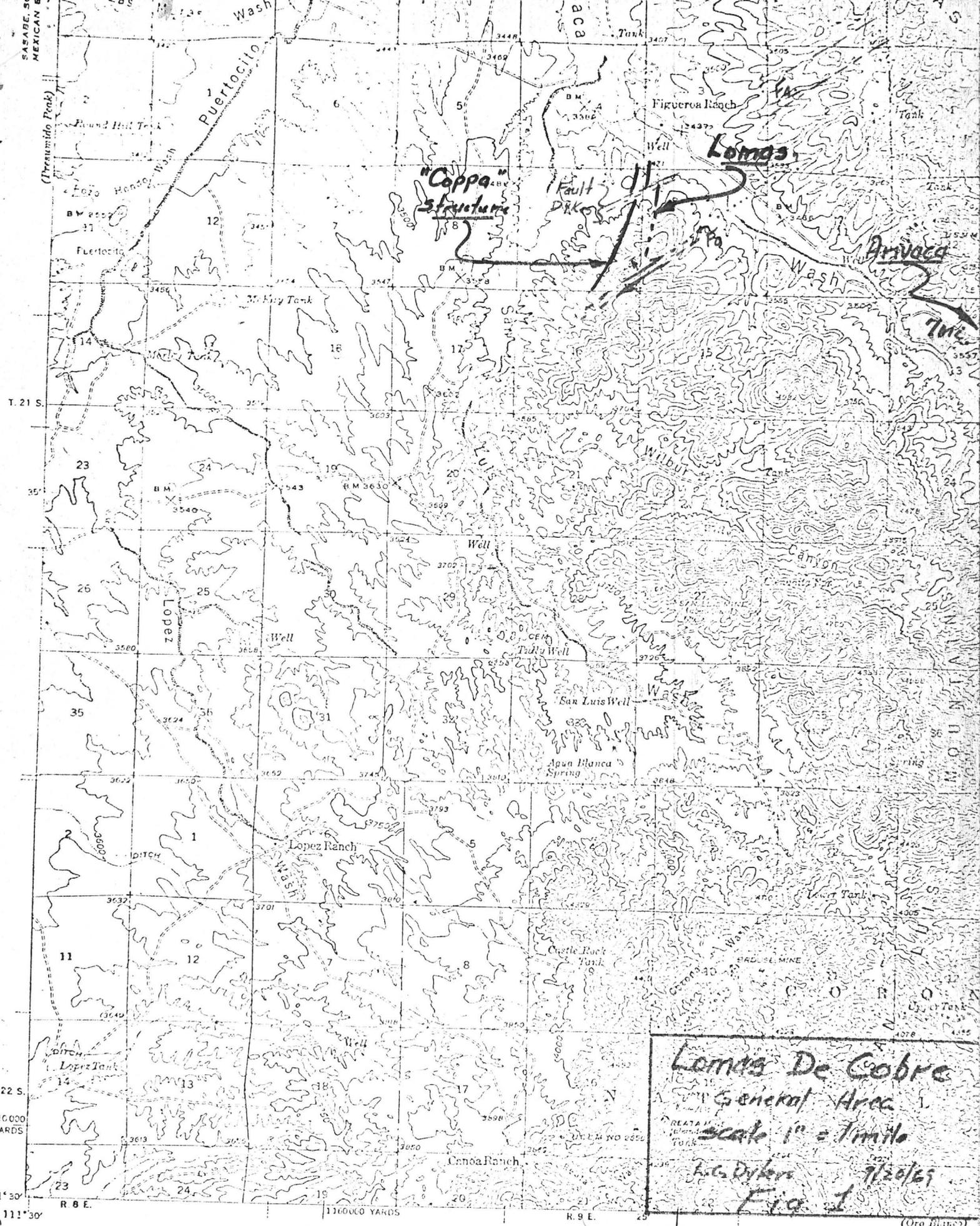
Lopez De Cobres
 Drop cut
 Scale 1" = 50'

L.G. Dykers 9/21/69

Fig. 2



SASABE, SI
MEXICAN B



*Lomas De Cobre
General Area
Scale 1" = 1 mile
L. C. Dykers 7/20/69
Fig. 1*

Topography by S. C. Kain
Surveyed in 1940-41

(Oro Blanco)
SCALE 1:62500



MATERIAL ON LOAN
TO ESSEX

File
Cranberry Mine

400B

9-24-70

FROM Bob BARNHILL

- ① LOMAS de Cobre Inc.
Report
MARCH 18, 1969
- ② 4 assay reports
- ③ Section MAP main Pit
- ④ The Glass Report
Aug. 15, 1967

[Faint signature]

LOMAS de COBRE, INC.

March 18, 1969

Objectives:

To utilize Chemistry and Chemical Engineering to mine, recover, and process minerals at a profit.

Primarily, Lomas de Cobre will concentrate on Copper recovery from Oxide ore bodies, converting the oxide copper to copper metal in powder form. Since most oxide ore bodies are relatively small by nature, and by themselves may not be economical to operate, This company will attempt to put many such properties into production utilizing a central powder processing facility to handle copper crystal slurries from each property.

Secondary recovery processes will be investigated at each property in an attempt to recover other valuable minerals; i.e., Silver, Silica. Since each ore body has its own set of characteristics and minerals, each will have to be investigated separately as to the feasibility of secondary mineral recovery.

Economics of each property will be based on the copper values to be recovered alone in justifying putting a given property into production.

Properties:

Lomas de Cobre presently owns property consisting of approximately 140 acres of State lease land located 5 miles west of Arivaca, Arizona. This property has equipment to crush and vat leach approximately 100 TPD of oxide ore. Some repair work will be necessary to put this plant into production using the present Lomas de Cobre processes.

Ore reserves are estimated at 100,000 tons of 1.5% oxide copper ore. Additional copper showings in the area are visible, however, tonnage and grade are unknown at this time and will require additional exploration and drilling to determine these values. Additional ore will be developed as the original ore body is being processed to extend the life of the property if economically feasible.

March 18, 1969

Lomas de Cobre has been approached by several people to investigate other properties in the Arivaca area, The Bincon Mtn. area, and the Casa Grande area as potential prospects for the Lomas de Cobre process. As the company grows, many properties are expected to be offered to Lomas de Cobre. Each will be investigated thoroughly, to determine compatibility with known processes.

Processes:

The process to be utilized at the Arivaca property will use a combination of vat leaching and electrolytic methods of winning copper from ore. A secondary recovery of copper will utilize a heap leach system to increase the recovery efficiencies and help reduce the crushing costs.

Copper ore will be crushed to minus 1" in size and then placed in a leach vat containing a special leaching solution. Copper values will then be taken into solution. The solution will be filtered and passed to an electrolytic cell where copper crystals are attracted from the solution. The copper crystal slurry will then be dried and sintered into a copper powder pure enough for sale directly to fabricators. The solutions are then re-cycled in the system with little loss of leach solution.

The leach solution will also be passed over leach vat waste material to recover copper remaining after the initial vat leach. The solutions from this secondary recovery operation will be combined with the primary leach solution for process through the electrolytic cells.

Until sufficient capital has been generated by this property, or until additional financing is obtained, the initial copper production will be sold to smelters as cement copper. Copper powder will be produced as soon as economically feasible.

Waste material from the secondary recovery operation will be offered for sale as smelter flux in an effort to recover the Silver values and produce additional revenue from the available Silica.

March 18, 1969

Attachments:

Figure 1 is a simplified block flow diagram of the process described above.

Table I is an estimate of the costs required to operate the property described above.

Table II is the estimated value of the known ore body at the above property.

Table III is the estimated cash flow expected for the life of the present known ore body at 100 TPD operation.

R. M. Barnhill

Figure 1.

Simplified Flow Diagram

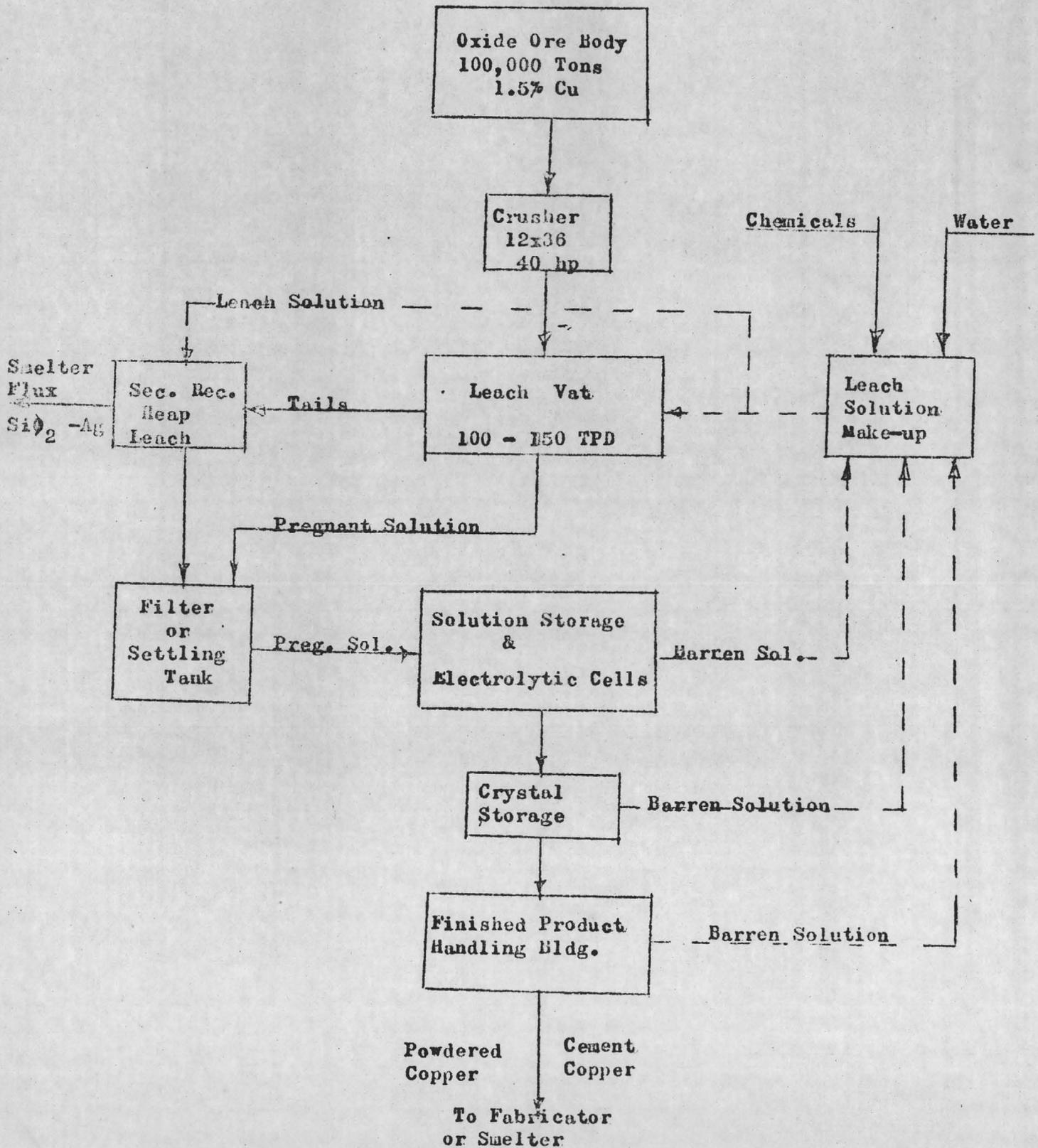


Table I
Estimated Mining Costs

Initial costs:

Exploration - R&D	\$18,200
Rework Plant	\$ 5,000
Storage Tanks	\$ 5,000
Pumps	\$ 5,000
Pipe & Fittings	\$ 2,000
Water Supply	\$ 1,000
Trucks	\$ 4,500
Buildings	\$10,000
Fuel Storage	\$ 500
Conveyor - Crusher	\$ 500
Anodes - Cathodes	\$ 4,000
Tools	\$ 2,500
Electrical hook up	\$ 800
Total	\$59,000

Continuing Costs:

	<u>\$/ month</u>
Contract Mining & Crushing (2200 TPM)(\$2/t)	\$ 4,400
5 KW generator \$220 (0.50/hr)	\$ 120
Compressor \$120 (0.50/hr.)	\$ 600
Loader \$300 (1.50/hr.)	\$ 1,250
Operating costs	\$ 640
Petroleum Products	\$ 150
Chemicals	\$ 250
Water	\$ 77
Shipping	\$ 330
Maintenance	\$ 200
Travel	\$ 250
Labor (3,M,G)	\$ 3,000
Total op. costs	\$11,276
Total Op. Costs per year	\$135,000
Total Op. Costs plus 15% overhead	\$155,000/yr.

TABLE II
Estimated value - Ore Body

Tons Mined/ Month	2200 tons
Grade	1.5% <i>170</i>
Leach Efficiency	75%
Recoverable Cu/month	25 tons / mo. <i>100</i>
Cu value \$/ton	\$800/ton <i>100</i>
\$ return/ month	\$20,000/ mo.
\$ return / year	\$240,000 / yr.
Total value 100,000 tons	\$900,000

Table III
Estimated Cash flow at 100 TPD

<u>Operation</u>	<u>Time</u>	<u>Tons</u>	<u>Expense</u>	<u>Return</u>	<u>Net</u>
Rework plant	0-2 mo.	—	\$59,000	—	-\$59,000
100 TPD	2 - 12 mo.	22,000	\$155,000	\$200,000	-\$14,000
100 TPD	12 - 24 mo.	26,400	\$155,000	\$240,000	\$71,000
100 TPD	24 - 36 mo.	26,400	\$155,000	\$240,000	\$156,000
100 TPD	36 - 48 mo.	26,400	\$155,000	\$240,000	\$241,000
	4 yrs.	101,200	\$679,000	\$920,000	\$241,000
					Royalties (approx. 10%)
					-\$24,100
					Net return before taxes
					\$216,900

SOUTHWESTERN ASSAYERS & CHEMISTS, Inc.

REGISTERED ASSAYERS

FELIX K. DURAZO
WIL WRIGHT
ARIZONA REG. NO. 5875

P. O. BOX 7517
TUCSON, ARIZONA 85713

710 E. EVANS BLVD.
PHONE 602-294-5811

Mister Jim Glass

JOB# 001418
RECEIVED 8-14-67
REPORTED 8-15-67

SAMPLE NUMBER	GOLD OZ.*	SILVER OZ.*	LEAD %	COPPER %	ZINC %	MOLYBDENUM %
# 1				1.38		
#2				2.35		
# 3				1.85		
# 4				2.39		



CHARGE Bill with Gold and Silver Report

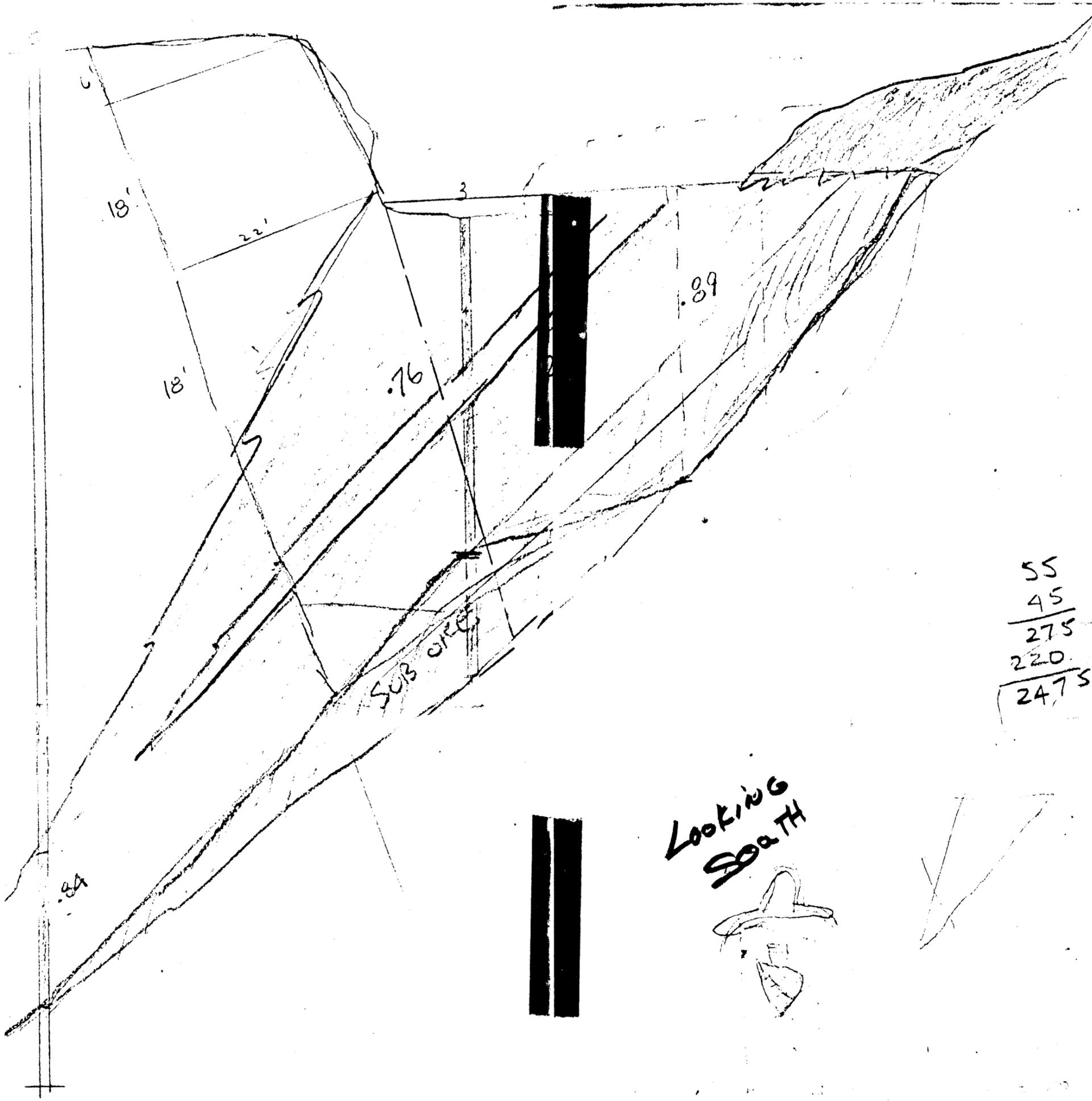
* Gold and Silver reported in troy oz. per 2,000 lb. ton.

INVOICE

HAWLEY & HAWLEY
 ASSAYERS AND CHEMISTS, INC.
 1700 W. GRANT RD. • BOX 5936 • 622-4836
 TUCSON, ARIZONA 85703

BRANCHES
 DOUGLAS, ARIZONA
 HAYDEN, ARIZONA
 EL PASO, TEXAS
 AMARILLO, TEXAS

IDENTIFICATION		GOLD OZS	SILVER OZS	LEAD %	COPPER %	ZINC %	MO. %	IRON %
Sample		0.350	64.87		13.60			
Au 3.50 Cu 1.75 Ag Prop. 1.10 TOTAL 6.35 Balance Due 5.10		1.25						
CC: Denton Enterprises		REMARKS:						
ADD: 3524 N. Postman		ANALYSIS CERT. BY						
CITY: Tucson, ARIZONA		PREPARATION						
ACC: INDIAN INDUSTRIES		DATE SPL. RECEIVED	DATE COMPL.	ANL.		S		
		6-10-57	7-10-57	TUC 33047		S 600 40710		



52
 35

 260
 156

 1820

910 sq. ft
 91000
 15000 tons

150
 60

 9000

55
 45

 275
 220

 24750 sq. ft.

150' x 30'

 19

15000 tons





THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

ARIZONA BUREAU OF MINES

August 15, 1967

Mr. James Glass
4409 E. Patricia
Tucson, Arizona

Re: Ore Test #1934

Dear Mr. Glass:

The sample you delivered to the Arizona Bureau of Mines assayed 1.64 per cent copper. The sample was crushed to pass rolls set at $\frac{1}{2}$ inch and the ore leached with sulphuric acid. The data is given on the following sheet.

The copper leached over night was 34.8 per cent of the copper in the charge. The leach was combined for 48 hours with additional copper dissolved. The total copper dissolved was 69.4 per cent of the total copper. The tailing assayed 0.545 per cent copper. It was noted there was green copper minerals which had not been leached because the acid did not penetrate to the core of the pebbles.

The acid consumption was 68 pounds per ton or 2.9 pounds of acid per pound of copper dissolved.

Yours very truly,

George H. Roseveare
Metallurgist

GHR:csf

Silver

5.62 oz. / ton

Gold

0.02 g / ton

UNIVERSITY OF ARIZONA
ARIZONA BUREAU OF MINES
ORE TESTING SERVICE

Ore No. 1934

Test No. 1

Conditions and Reagents

Point of Addition	Conditions			Reagents Pounds Per Ton												
	Time Mins.	% Solids	pH	Acid percent added												
Solution No. 1				5.0												
2				2.5												
3				2.1												
4				Ferric Sulphate plus acid												

Remarks:

Metallurgical Products

Product	Tons in 100 Tons Feed	Assays %				% of Total			
		Cu	Acid Gr/L			Cu			
Heads	100.0	1.69 ^x				100.0			
Solution #1	36.0	1.64	3.8			34.8			
2	49.5	0.77	11.6			22.5			
3	31.0	0.50	5.9			9.1			
4	11.3	0.45	4.0			3.0			
Tailing	95.0	0.545	---			30.6			
Assay Head		1.63							

Remarks:

Calculated

Acid Consumption

ELECTROLYTIC METALLURGICAL CORP.

2514 East Speedway Blvd.,

Tucson, Arizona.

14.0 liters of solution

Acid 40.0 grams per liter

4000.0 grams of ore at 1.34% Cu.

53.60 grams of copper in 4000.0 grams.

<u>Leach Time</u> <u>Hours</u>	<u>Cu. in Solution</u> <u>Grams/liter</u>	<u>Total Cu.</u> <u>In Solution</u>	<u>% Recovery</u>
6.0	1.94	27.16	50.67
21.0	2.72	38.02	70.93
24.0	2.79	39.06	72.87
31.0	3.18	44.52	83.06
45.0	3.34	46.76	87.24
68.0	3.49	48.86	91.16

Acid consumption was 42.45 pounds per ton. This is very close to the amount of acid required to dissolve the copper.

Geo. E. ...

AMERICAN SMELTING AND REFINING COMPANY
HAYDEN ARIZONA PLANT

SHIPPER Leaham Enterprises *Large block* DATE 1-23-67
 ADDRESS 3934 N. Fontana, Tucson, Ariz. SMELTER LOT 758
 SHIPPING POINT Tucson SHIPPERS LOT 1
 NAME OF MINE Miller Property CLASS OF MATERIAL Crude
 TERMS - CONTRACT _____ SCHEDULE (Rates Subject to Change Without Notice) 244

DATE RECEIVED	CAR		WEIGHT					SETTLEMENT DATE	
	NUMBER	INITIAL	GROSS	TARE	WET	% H ₂ O	DRY	METAL QUOTATIONS	
12-27	66	ASR	130340	57100	73240	3.8	70457	Silver	1.289
								Less	.025
								Net	1.264
								Copper	.36344
								Less	.03800
								Net	.32544
					73240		70457		

	ASSAY CONTENT PER TON			ANALYSIS										
	GOLD OUNCES	SILVER OUNCES	COPPER PERCENT	INSOL %	SiO ₂ %	Fe %	MN %	CaO %	ZN %	S %	Al ₂ O ₃ %	AS %	BB %	Bi %
S	0.025	4.62	2.71	88.0	71.3	2.2		0.3			10.6			
Shipper	0.045	5.15	2.79											
Umpire	-	5.0	-	<u>Black & Decker 1-16-67</u>										
Metallics														
Settle	0.035	5.0	2.75											

PAYMENT VALUE PER TON				FREIGHT	DEDUCTIONS		CHARGE	CREDIT
PAY CONTENT	PRICE	AMOUNT	VALUE	VALUE	Base Charge			
Gold					(15.00)		2.00	
Lead	7.43%	0.0323995	34.9125	1.13				
Silver - Less								
2.5 Oz.	%	4.5	1.264	5.69				
Copper - Less								
8 lbs.	5%	44.65	3.2544	14.53				
Gross Value				21.35				
Deductions				2.64				
Freight Valuation			X X X			Per Wet Ton	CHARGE	CREDIT
Net Value			18.71	@ 35.2235		Dry Tons		659.13
Less Freight On	36.6200	Wet Tons @ \$		Per Ton				
" Weighing		Cars @		Per Car				
" Hauling								
" Representation	20.50	Umpires -		Sampling			20.50	
" Royalty								
" amount paid				1-18-67			616.32	
" Withheld Pending Return Of Silver Affidavit								
Toll Metals								
					Due Date			
					Balance Due	Shipper	22.31	
Checked:		Correct:			Approved:	Duan		

AMERICAN SMELTING AND REFINING COMPANY
HAYDEN ARIZONA PLANT

SHIPPER Draharr Enterprises DATE 7-31-67
 ADDRESS 3934 N. Fontana Tucson, Ariz. SMELTER LOT 408
 SHIPPING POINT Tucson, Ariz. SHIPPERS LOT 2
 NAME OF MINE Moose CLASS OF MATERIAL Crude
 TERMS - CONTRACT _____ SCHEDULE (Rates Subject to Change Without Notice) 244

DATE RECEIVED	CAR		WEIGHT					SETTLEMENT DATE
	NUMBER	INITIAL	GROSS	TARE	WET	% H ₂ O	DRY	METAL QUOTATIONS
7-6	440187	SP X	143060	50160	92900	5.6	87698	Silver 1.65331 Less .025 Net 1.62831
								Copper .38227 Less .038 Net .34427
					92900		87698	

	ASSAY CONTENT PER TON			ANALYSIS										
	GOLD OUNCES	SILVER OUNCES	COPPER PERCENT	INSOL %	SiO ₂ %	Fe %	MN %	CAO %	ZN %	S %	AL ₂ O ₃ %	AS %	SB %	BI %
Smelter	0.015	3.16	1.94	90.2	76.1	1.6		0.8			10.8			
Shipper	0.035	3.51	2.15											
Umpire	0.020	—	—	Asst. to Shipper 7-24-67										
Metallics														
Settle	No Pay	3.335	2.045											

PAYMENT VALUE PER TON				FREIGHT	DEDUCTIONS		CHARGE	CREDIT
	PAY CONTENT	PRICE	AMOUNT	VALUE				
Gold						Base Charge "15.00"	(2.00)	
						(Incl. Escalator Clauses)		
Silver - Less						Additional Treatment		
0.5 Oz. %	2.835	1.62831	4.62	4.62		Acc. Value Over 384 @ 10%	04	
Copper - Less						SiO ₂		
8 Lbs. 5 %	31.255	.34427	10.76	3.19		CaO		
Gross Value			15.38	7.81		Net Deductions	2.04	
Deductions			2.04	2.00				
Freight Valuation			X X X	5.81				
Net Value			13.34	@ 43.8490				584.95
Less Freight On	46.4500	Wet Tons @ \$ 1.79					83.15	
" Weighing	1 Cars @ 4.47	Per Car					4.47	
" Hauling								
" Representation	22.50	Umpires 7.16					29.66	
" Royalty								
" 20% to Gov's equipment Rental							93.53	
" Withheld Pending Return Of Silver Affidavit								
Toll Metals								
					Due Date			
					Balance Due Shipper		374.14	

Checked: [Signature] Correct: [Signature] Approved: _____

8-58

SCRAP IRON
STEEL
METAL

TELEPHONE
602-622-1823
602-624-8593

W. Jacobs

Jacobs Metals Company

GOOD NAME IN METALS SINCE 1938
701 E. 36TH ST. P.O. BOX 7777
TUCSON, ARIZONA, 85714

August 8, 1967

Mr. Larry Drake:
1524 N. Fontana
Tucson, Arizona 85710

Gentlemen:

Your bank brought to our attention that you will soon be suppliers of Scrap Copper.

We are definitely in the market for this item, and would be glad to purchase your full production on a firm price basis; price issued every 30 days, and firm throughout the 30 day period.

We would like to obtain a price idea from you, in addition we would like have samples of the material to assay, so we may in turn issue you a firm price for the first 30 day period.

We can handle any quantities, providing we know that each delivery would develop into carload quantities in a short period of time.

Payments would be made on each delivery; after determining moisture and Cu content.

I trust that you will choose us as your agent; or sell your production to the undersigned.

We honor our obligations to the letter, and we assure you of purchasing the full production once negotiations are terminated.

I remain

42
Yours truly,
for JACOBS METALS CO.

Fred Jacobs
Fred Jacobs

A.C.M.

CORPORATION

POST OFFICE BOX 98
U.S. HIGHWAY 60
AGUILA, ARIZONA 85320
(602) 685-2344

2318 W. WHITTIER BLVD.
LA HABRA, CALIFORNIA 90631
(213) 697-3521

August 8, 1967

Mr. Larry Drake
Cranberry Mines
3934 N. Fontana
Tucson, Arizona

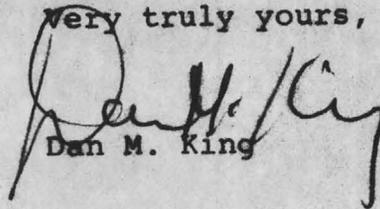
40,000 - lbs
36,000 - 10% 1420
25,000 lbs Cu - 70% Cu
= \$10,500 on receipt of truck
pay \$8,000 80%
balance on setting away -

Dear Sir:

Confirming our telephone conversation of this morning, we will be able to offer a continuing market for your proposed production of cement copper.

In addition, we may be able to provide some useful information for you on precipitation of your pregnant solutions, when you are on stream.

Very truly yours,


Dan M. King

dmk/es

cc: C.W.Pilz

- Con Pilz - Gila -
685-2344

- side dump gondola -
\$5/ton to Gila.

dry base -
421 lbs. less 1.3 units
per ton dry ash

87 mi.
132

PRELIMINARY FEASIBILITY STUDY

CRANBERRY MINING LTD.

ARIVACA MINING DISTRICT

PIMA COUNTY

ARIZONA, U.S.A.

Tucson
August 15, 1967

James R. Glass
Consulting Geologist

James R. Glass

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ASARCO Liquidation Sheets

Assay Reports

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INTRODUCTION

The leaching of low grade copper oxide ores has been successfully carried out for over 75 years in the southwestern part of the United States. This process involves passing a weak solution of sulphuric acid over rock containing copper oxide, thereby causing the copper to go into solution. The pregnant copper solution is then passed over metallic iron which causes the copper to precipitate out of solution.

The low grade copper oxide ore bodies which are intimately associated with and in many cases cap porphyry sulphide ore bodies of the southern part of the U.S. are particularly amenable to this type of metallurgical extraction.

The copper mineralization found to date on the ground optioned to Cranberry Mines Ltd. consists of masses of this copper oxide material impregnating the highly siliceous host rock.

SUMMARY & CONCLUSIONS

Based on the preliminary data available, an investment of \$57,000 U.S. is required to set up and put in to operation a 250 ton per day mining and leaching plant. Operating costs would be \$7.00 per ton.

Preliminary sampling has indicated the following tonnage of ore:

	5000 tons	1.5% Cu.
	10,000 tons	2.8% Cu.
	42,000 tons	2.0% Cu.
Total	57,000 tons	2.1% Cu.

During the one year period it would require to mine and leach this copper ore, an operating profit, before taxes, of \$5.00 per ton mined, or \$300,000 can be reasonably projected.

If the American Smelting and Refining Corporation smelter at Hayden will buy the tailings for flux material, the cash flow will be improved considerably, since bulk sampling has indicated a silica content of approximately 70% and a contained gold-silver value of \$7.00 per ton.

Property payments of \$15,000 during the year will be taken out of profits.

A royalty of 5% of net smelter returns must be paid to the state. Therefore, a profit before taxes of \$218,000 should be realized.

ORE RESERVES

By removing the barren cap rock with a bulldozer, an undulating, but essentially a flat lying copper oxide ore zone 200 feet long and 75 feet wide has been exposed. A shaft, sunk to a depth of 35 feet has proved ore to exist to this depth.

The middle portion of this zone which measures 100 feet by 25 feet by 35 feet has a calculated copper content of 2.80%. The remaining portion of the ore zone has a

calculated copper content of 2.0%.

An ore dump containing approximately 5,000 tons of material has a calculated copper content of 1.5%.

The value of this ore as calculated from three bulk shipments totalling 112 tons, from ^{four} twenty pound chip samples, from two sixty pound composite samples and from two ten pound chip samples indicates the following tonnage and grade:

5,000 tons.....dump.....	1.5%Cu.
10,000 tons.....middle section.....	2.8%Cu.
42,000 tons.....outside section.....	2.0%Cu.
Total - 57,000 tons.....	2.1%Cu.

Two chip samples taken across a high grade section, two feet wide located at the bottom of the shaft, returned assays of 0.350 oz. Au., 64.87 oz. Ag., 13.60% Cu. and 0.03 oz. Au., 59.80 oz Ag., 12.25% Cu., or a calculated dollar value of more than \$200 per ton of material.

The ore zone is open on all four sides and at depth.

A trench located approximately 250 feet N10W of the pit, the direction believed to be the strike of the mineralization, contains visible oxide copper, although it must be noted that copper has not been seen in bedrock at this location.

Copper in bedrock has been seen over a strike length of approximately 1500 feet and in one location the mineralization in the surface material was seen over a width of more than 200 feet. This evidence indicates that an ore body of very

much larger proportions may exist in the area. Investigations of these copper bearing zones will be carried out in the future.

METALLURGY

Composite samples of the ore were sent to three metallurgists whose findings are included in the appendix of this report. All of them indicate that a copper recovery of approximately 70% can be made in a short time with an acid consumption of 70-90 pounds of 93% sulphuric acid per ton of ore. All of them noted that a higher recovery could be obtained by crushing the ore finer than $\frac{1}{2}$ " or by leaching it for a longer period.

PURCHASE OF CONCENTRATES

Two ore buying organizations were approached regarding sales contracts of any copper concentrate produced by Cranberry Mining Ltd.

The A.C.M. Corporation of La Habra, California and Jacobs Metals Company of Tucson, Arizona both sent letters of intent to buy any quantity of cement copper which could be produced. Since all the smelters are currently shut down, no sales contract or letter of intent could be acquired from them, although there is no doubt they will be willing to buy our product. The letters from the two ore buyers are included in the appendix of this report.

MINING & MILLING

It is planned to open pit the ore body. Because of the stripping of waste already done, the ore to waste ratio will be 8:1 on the 52,000 tons of ore.

The ore will be hauled from the pit in trucks and leached in large cement tanks, the copper precipitated in cement launders and the tanks unloaded with rubber tire loaders.

Water for the leaching will be acquired from a well which has been dug on the northern portion of the property.

Trucking contractors will haul the acid and iron from Tucson to the mine site and the concentrates from the mine site to Tucson.

CAPITAL COSTS

<u>Mining Equipment</u>	<u>Lease/month</u>	<u>Buy</u>
✓ 1 Wagon drill	\$ 600 (buy 500)	3,000
✓ 1 T.D. 14 loader	\$ 500* 500	
✓ 2 10 ton trucks	\$ 400 7300	10000
✓ 2 rubber tire loaders	\$ 500 400	1400
✓ 1 Bulldozer	\$ 1000* 400	5000
1 Jeep	\$ 100* 100	1100
1 Pick-up	\$ 100 20	1000
Drill, steel & bits		\$ 500
	+ \$ 400	
	+ 7000	
	+ 2000	
	+ 1000	
<u>Surface Plant</u>		
✓ 1 Jaw crusher with motor		\$1,000 W
✓ 2 Acid pumps		500 W
1 100 K.W. diesel power plant	\$ 600	2000 W
2 Compressors		1,000
Pipe & fittings	600	1,000 W
Tool sheds		1,200 W
Tanks	6000	12,000 W
Water supply		1,700 W
Housing		2,000
Machine shop		2,500 W
Property payments		8,000
Administration & legal		5,000
Operating Expenses		<u>16,800</u>
		\$ 57,000 65000

* Initial payments made on lease purchase contract.

PROJECTED CASH FLOW FROM SMELTER RETURNS

<u>Operation</u>	<u>Time in Months</u>	<u>Tons Milled</u>	<u>Expense</u>	<u>Return</u>	<u>Net</u>
Mill set up	0 - 2		\$57,000		-\$ 57,000
Milling at 100 t.p.d.	2 - 3	2500		\$ 7,500	- 49,500
"	3 - 4	2500		7,500	- 42,000
250 t.p.d.	4 - 5	6000		55,000	+ 13,000
"	5 - 6	6000		55,000	+ 63,000
"	6 - 7	6000	\$15,000	30,000	78,000
"	7 - 8	6000		30,000	108,000
"	8 - 9	6000		30,000	138,000
"	9 - 10	6000		30,000	168,000
"	10 - 11	6000		30,000	198,000
"	11 - 12	6000		30,000	<u>228,000</u>
					\$ 300,000

*Reserve =
AS/ton assumed
0.179 1/2% w/ EXTRACT
22.1%*

184/1000 Cost

57,000



THE UNIVERSITY OF ARIZONA

TUCSON, ARIZONA 85721

ARIZONA BUREAU OF MINES

August 15, 1967

Mr. Jim Glass
4409 E. Patricia
Tucson, Arizona

Re: Sample #51987
Cramberry Ore Test

Dear Mr. Glass:

Due to circumstances beyond our control, we were unable to get a metallurgical balance on the Cramberry ore test. However, some of the results may be useful in future testing, which are as follows:

Fifty pounds of minus $1\frac{1}{2}$ inch copper-bearing rock was acid leached. The copper minerals detected were chrysocolla, malachite, tenorite and cuprite (?).

The ore which assayed 2.42% copper was leached using 52 pounds of 4% sulfuric acid solution. The pH after 15 minutes of leaching was 1.

After 4 hours preg. solution assayed 0.42% Cu
After 4 hours washed tail assayed 2.73% Cu
After 4 hours $\frac{1}{2}$ pound acid added
After 14 hours preg. solution assayed 0.96% Cu
After 14 hours unwashed tail assayed 0.69% Cu

It was observed that chrysocolla and malachite on the surface leached rapidly providing the mineral layers were not too thick.

It is estimated that acid consumption on the type ore submitted would be between 80 and 100 pounds of acid per ton of ore and that the recovery of copper from the ore would be between 65 and 70%.

I hope the above information will be of help to you.

Yours very truly,

Robert T. O'Haire

Robert T. O'Haire
Assistant Mineralogist

RTO:csf