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## HEINRICHS GEOEXPLORATION COMPANY

P. O. BOX 5964. TUCSON. ARIZONA 85703. 806 WEST GRANT ROAD. PHONE: (602) 623-0578

January 1982

### SE Property Summary Sheet

The SE property is in the Middle Camp-Oro Fino mining district in the Dome Rock Mountains in Yuma County, Arizona. The property is on Interstate 10, about eight miles west of Quartzsite, Arizona and about thirteen miles east of Blythe, California. The property consists of 58 lode claims, located in sections 31 and 32 T4N R20W, sections 5 and 6 T3N R20W, and section 36 T4N R21W, totalling about 1120 acres and a state prospecting permit on the east half of section 36 T4N R21W. This area is shown on the Middle Camp Mountain and La Paz Mountain USGS 7 1/2 minute topographic maps. The claims bear US BLM Serial Numbers AMC 105414 through AMC 105471. They were staked in 1980.

Ownership rests with four Arizona residents, each with a one quarter undivided interest. They are Walter E. Heinrichs, Jr., William C. Hirt, James D. Loghry, and Richard J. Lundin, all of Tucson, Arizona.

Exploration targets include porphyry copper-molybdenum and/or gold deposits. During the period 1962-1975, mapping, sampling and rotary diamond exploration drilling totalling approximately 18,500 feet was done by several concerns, one of them a major oil and mining company. Results of some of this work are available to interested parties. We feel that the mineralization disclosed thus far warrants further investigation.

Further information may be obtained by contacting any of the four owners at the above address.

January 1982

SE Property Data and Reports  
(in approximate chronological order)

1. McPhar Geophysics IP and Resistivity Survey Location Map (Fig.3), undated but probably between 1962 and 1971.
2. Report titled "Base Metal Distribution at Sugarloaf Peak, Quartzsite Mining District, Yuma County, Arizona" dated August 1971, text 4 pp., with drill hole data including core logs, drill chip logs, and metal ratio graphs for drill holes DDH S-1, DDH S-2, DDH S-3, DDH SL-4, DDH SL-5, DDH SL-6, RH SL-7, RH S-8, RH S-10, RH SL-13, and DDH SL-15 (these are partly rotary and partly core holes), accompanied by map titled "Generalized Alteration - Sugarloaf Peak Area", dated August 1971 (two copies, one with outline of claim block), and also by another map (undated) entitled "Dome Rock Mtns Quad" which shows the location of the S and SL holes.
3. Assay logs for RH V-1 through RH V-15 (all rotary drill holes except for three feet of NX core on hole RH V-15), drilled in 1972.
4. Report titled "Exploration Potential of the Sugarloaf Peak Area, Quartzsite Mining District, Yuma County, Arizona" dated May 25, 1973, 12 pp., with 3 pp. cover letter, accompanied by maps:
  - a. "Alteration Map - Sugarloaf Peak Prospect", May 25, 1973.
  - b. Molybdenum Geochemical Values, Lead Geochemical Values, and Mo/Pb Ratio Maps, all of the Sugarloaf Peak Prospect, dated May 1973.
  - c. Cross Section through Sugarloaf Peak, dated May 1973.
  - d. Magnetometer Survey Profiles, dated May 1973.
5. Assay and Core Logs for DDH Q-1 through Q-6 (NX core holes drilled in 1974-1975).
6. Map titled "Quartzsite Geology and Alteration" dated February 1975 showing location of Q holes.
7. Map titled "Quartzsite Project, Yuma County, Arizona", dated May 30, 1975 showing location of Q holes.
8. Undated Map showing drill hole locations and claim block outline.
9. Geologic Map of the Central Dome Rock Mountains by W. J. Crowl, 1975 (University of Arizona thesis).
10. SE Property Map 1982



## HEINRICHS GEOEXPLORATION COMPANY

P. O. BOX 5964, TUCSON, ARIZONA 85703, 806 WEST GRANT ROAD, PHONE: (602) 623-0578

February 9, 1982

### SE Property Geological Synopsis

The SE property is in the Middle Camp - Oro Fino Mining District in Yuma County, Arizona. Past production from the district includes over 12,000 ounces of gold with 1500 ounces of contained silver from placer operations and minor production of lead, zinc, copper, gold and silver from several small lode mines.

The dominant rocks exposed within the district in the Dome Rock Mountains are Precambrian schist and granite. In the SE property area, these rocks have been intruded by a stock of probable Laramide age. Extrusion of a Tertiary quartz porphyry flow followed; outcrops of this rock are found capping Sugarloaf Peak and scattered north of I-10. Late Tertiary gravels and Quaternary alluvium lap up onto the mountains.

Porphyry copper-type alteration is well developed within the property; alteration types include propylitic, pyritic, phyllic, and potassic. The original geometric relations between the various alteration zones have been obscured by structural dislocations along faults.

Surface geochemical sampling has disclosed anomalous lead, zinc, molybdenum, bismuth, and tin values.

Primary copper mineralization (disseminated chalcopyrite now partially oxidized to various copper oxide minerals) is found on the surface in the Hancock Wash area (Hancock Wash is the large wash in the south half of section 31 T4N R20W). This mineralization is associated with a block of exposed potassic alteration.

A minimum of 18,500 feet of recorded rotary and core drilling has been carried out in the Sugarloaf Peak area by various companies; data from some of this drilling is available in addition to other reports and maps and is included in the larger body of text which is available on request. The reader's attention is drawn to DDH Q-1 through Q-6. These holes were drilled in the Hancock Wash area intercepting schist and quartz monzonite (a phase of the

Laramide (?) intrusive). DDH Q-1, which was drilled mostly in schist, had intercepts of 200 feet of about 0.6% copper from the surface to a depth of about 200 feet; the copper is in the form of brochantite, chrysocolla, and malachite, partly disseminated and partly on fractures, and also disseminated and veinlet chalcopyrite. There is a further 30 feet of approximately 0.6% copper (disseminated chalcopyrite - bornite) at 400 - 430 feet. The mineralization in Q-1 is associated with sericite and biotite alteration.

DDH Q-3 intercepted 203 feet of 0.43% copper mineralization, mostly in quartz monzonite, from about 190 feet to about 400 feet of depth. The mineralization is in the form of chalcopyrite associated with phyllic alteration (quartz-sericite-pyrite).

Significant amounts of molybdenum are associated with copper mineralization intercepted in DDH Q-1 and Q-3, and probably elsewhere as well.

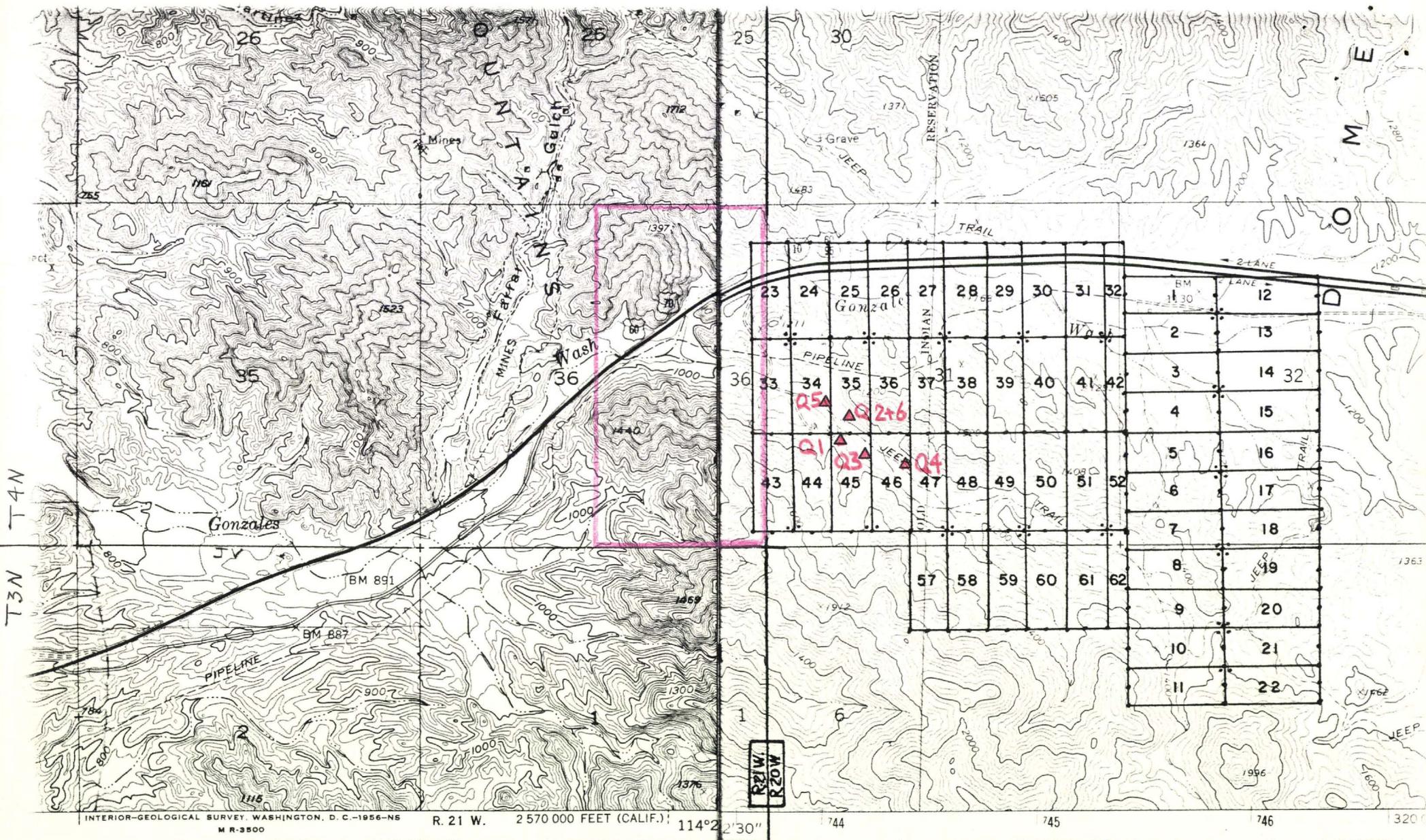
In DH Q-6 was found 50 feet of 0.2% copper in a faulted block of quartz monzonite. The mineralization is chalcopyrite associated with quartz-sericite-pyrite alteration and some tourmaline.

Tourmaline was noted in all of the Q holes, but most strongly in holes Q-2, Q-4, and Q-6, both disseminated and in veinlets.

Many of the earmarks of economic porphyry copper deposits found elsewhere in the Southwest are present in the Sugarloaf Peak area. These include the Pb-Zn-Mo geochemical anomalies, the well developed and widespread alteration zoning, presence of abundant alunite and tourmaline, and outcrops of disseminated copper mineralization in a potassic alteration zone. All these favorable geological characteristics indicate that more work is warranted to test for the presence of economic quantities of disseminated copper - molybdenum mineralization in the Sugarloaf Peak area.

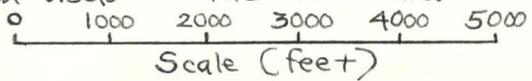
Recent geochemical sampling and mapping (Jan.-Feb. 1982) have revealed the presence of anomalous gold values in host rocks favorable for lode gold mineralization. These results suggest the possibility of a stockwork gold deposit and/or Goldfield, Nevada - type mineralization which could have acted as a source for the placer gold mined in the early days of the district. More work is needed to define the areas of gold anomalism, favorable host rocks and to determine if potential economic targets for gold mineralization exist.

William C. Hirt  
Geological Engineer  
and Metallurgist



SE PROPERTY  
Yuma County, Arizona

The property is comprised of lode mining claims and Arizona state prospecting permit #83801 on the E 1/2 sec. 36 T4N R21W.  
Base map from USGS La Paz Mtn. and Middle Camp Mtn. 7 1/2 min. quads.



▲ Drill hole



July 1982



## HEINRICHS GEOEXPLORATION COMPANY

P.O. BOX 5964. TUCSON, ARIZONA 85703. 806 WEST GRANT ROAD. PHONE: (602) 623-0578

October 20, 1982

SE Claims and State Prospecting Permit No. 83801

### Lease-option Terms and Conditions

Purchase price: \$10,000,000 or \$5,000,000 plus perpetual NSR or equivalent royalty in the amount of 4% on Federal lands and 2% on state lands. All payments, including production royalties, apply towards the purchase price. Payments toward the purchase price must be structured as capital gains, not advance royalties or rentals. If either of the above alternative purchase prices are acceptable to the optionees, the owners require no term to the agreement; if not acceptable and the optionees offer a reduced price, the owners insist on a 5 year term to the agreement.

### Payment Schedule

<u>Year</u>	<u>Amount</u>
1	\$6,000 in advance for the first 6 months. \$7,500 in advance for the second 6 months.
2	\$18,000 in advance
3	\$21,000 in advance
4 and beyond	\$24,000 in advance

Annual labor must be performed by optionee if the claims are held beyond Feb. 1 of any year. Except for the 1981-82 year, labor must be physical labor (dozing, drilling, mining, etc.) on the federal claims, and must be at least \$7800 per year except for the 1982-1983 assessment year when the amount shall be at least \$5800.

For the state prospecting permit, annual assessment labor is \$3200 per year for the period ending March 16, 1984 and \$6400 per year for the period ending March 16, 1987. The annual rental for the period March 16, 1984 - March 16, 1987 is \$320. If option is held beyond 15 September in any given year, these obligations must be assumed by optionees.

Sixty days notice is required before dropping the lease or option.

MINERAL ENGINEERING CONSULTANTS AND CONTRACTORS. GEOPHYSICAL, GEOLOGICAL AND ECONOMIC APPRAISALS.

Area of interest: There will be an area of interest extending one mile from the exterior boundary of the claim/prospecting permit block. Any claims staked by either party or prospecting permits acquired shall be subject to the terms of the agreement.

Data: All factual data acquired and developed by the optionees shall be released to the owners when and if the lease is dropped. Information or reports shall be made available to the owners periodically during the term of the lease. The owners will hold these data confidential.

BLUESTONE RESOURCES, Inc.

4223 E. Grant Road, No. 3

Tucson, AZ 85712

(602) 795-8380

FAX (602) 795-8389

Frank- FYI

2 November 1989

Mr. Ronald R. Short, General Manager  
A.P. Budge (Mining) Limited  
4301 North 75th Street, Suite 101  
Scottsdale, AZ 85251-17307

Dear Mr. Short:

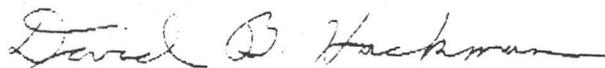
Thank you for your FAX of November 1, outlining your counter-proposal for joint venture operation of the Stray Elephant property.

After carefully reviewing your proposal, it would appear that your ideas and ours of an equitable arrangement are so different that the labor of preparing another formal counter-proposal is not justified.

However, the offer isn't closed: if you care to submit another proposal more along the lines of our proposal of October we will be glad to review it.

Thanks for your consideration.

Yours very truly,  
Bluestone Resources, Inc.



David B. Hackman, President



## A.F. Budge (Mining) Limited

November 1, 1989

4301 North 75th Street  
Suite 101  
Scottsdale, AZ 85251-3504

(602) 945-4630  
FAX (602) 949-1737

David B. Hackman  
President  
Bluestone Resources, Inc.  
4228 East Grant Road, #3  
Tucson, AZ 85712

Re: Stray Elephant Project near Quartzsite, Arizona

Dear Mr. Hackman:

Thank you for your proposal concerning the referenced project. After reviewing all the available information which your group has provided, we would like to make the following counter-proposal:

Budge would enter into a joint venture agreement with Bluestone Resources for production of copper from the Stray Elephant project, subject to the following:

1. Budge would manage and fund the initial exploration of the Stray Elephant project; after expenditures of \$250,000 Budge would receive a 51% interest in the venture and the property.
2. Following the completion of Phase I, venture partners would contribute to the development of the property, based on their respective interest levels, i.e. 51-49. If one partner is unable or unwilling to fund its share of the development costs, that partner's interest would be reduced proportionately, and according to a generally accepted dilution formula designed for such venture agreements. If a venture partner has been reduced to a funding level of 15%, that interest shall be immediately converted to 10% net profits interest and no further participation will be expected from that partner.
3. Development plans would be developed jointly by both venture partners and acted upon by management committee comprised of representatives from both parties. Final decisions would be made by the partner having the majority interest.
4. The majority partner would recover its initial investment from 100% of the cash flow; during this time, the minority interest party would receive a negotiable, fixed sum annually; after payback, partners would receive their proportionate share, based on contribution level, of the net profits generated from the operation.

D. Hackman  
November 1, 1989  
Page 2

We feel this would be a more equitable arrangement, based on the investment Budget would be making for the possible development of this property.

If these terms are agreeable to Bluestone Resources, please advise, and we will instruct our legal council to prepare a formal agreement for execution.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Ronald R. Short", with a long horizontal flourish extending to the right.

Ronald R. Short  
General Manager

BLUESTONE RESOURCES, Inc.  
4229 East Grant Road. #3  
Tucson, AZ 85712  
Tel 602 795-8380  
Fax 602 795-8389

Ms. Carol O'Brien  
A.F. Budge (Mining) Limited  
4301 N. 75th Street  
Scottsdale, AZ 85251

Dear Carol:

Enclosed is our summary report for the Stray Elephant Project near Quartzsite, AZ.

It is our understanding that should Budge Mining choose to enter into a joint venture agreement with Bluestone Resources for the production of copper from the Stray Elephant Project: (1) policy decisions regarding the operation would be made jointly, (2) Bluestone Resources would operate the property, (3) Budge Mining would recover its investment and interest from 75% of the cash flow, and (4) the remainder of the cash flow would be divided equally between the parties.

If you have any questions or comments please feel free to call.

Yours very truly,  
BLUESTONE RESOURCES, Inc.

*Dave*

David B. Hackman, President

## STRAY ELEPHANT PROJECT

### Executive Summary

The Stray Elephant copper property is located 7-8 miles west of Quartzsite, Arizona and approximately 1/4 mile south of Interstate 10 (Figure 1). There are 78 claims largely in sections 31 and 32, T4N, R20W, and section 4, 5 and 6, T3N, R20W. The claims are in the Middle Camp - Oro Fino mining district in the south Dome Rock Mountains, La Paz County, Arizona (Figure 2).

The property has easy access from Interstate 10 at the Dome Rock Interchange for both east and west travel. There is an additional entrance for east access to Interstate 10 approximately 1/4 mile north of the mineralized area known as "outcrop hill". Electricity is available from a light power line on the northern side of Interstate 10. The closest heavy duty power line is three miles to the west of the property. A water supply will have to be obtained from wells that will be drilled on the eastern portion of the property. There is water available at the Beacon service station and Ryder factory at Tom Wells Road, 4.6 miles to the west of the property.

The property was originally located in 1906 and has had only minor amounts of ore mined for direct shipment to various smelters. An adit and winze were driven in the 1920's into the base of outcrop hill. Outcrop hill is in the northern portion of the claim group and has the most drilling information. The reserves in the outcrop hill zone are estimated to be 3.7 million tons of 0.60% copper (Loghry, 1989). The southern zone has only one drill hole of significance and will need extensive drilling to further define the ore reserves which have the potential to be in the range of 5-6 million tons.

The Stray Elephant copper mineralization is localized in shear zones within a Mesozoic schist intruded by a quartz monzonite pluton. The northwest portion of the 4200 foot long zone of copper mineralization is exposed on outcrop hill. Most of the copper is contained in chrysocolla with minor amounts of cuprite, chalcocite, and chalcopyrite. The southeast portion of the deposit outcrops locally but most of the potential in this area is below leached outcrops or under alluvium.

The exploration program will consist of making a new topographic map at a scale of 1 :1200, geologic mapping of the surface, and diamond core drilling. Core drilling will define the copper distribution and structural characteristics of the ore better than rotary drilling. The core will be used for bottle roll and column leach tests.

Bluestone Resources (Table 1) currently has an option from the property owners to explore and develop the Stray Elephant Copper Property. The plan of operations at this time is to finish the drilling program in the outcrop hill area, to develop a mining plan and finalize ore reserves in this area. Outcrop hill has the least amount of preproduction stripping and has several high grade copper oxide zones. Approximately four months of drilling will be necessary to complete the analysis of the northwestern part of the ore body. Permitting will proceed at the same time as the drilling program, as the permitting process is expected to take six to eight months for final approval. Basic engineering will start at the same time as the drilling program and continue directly into the detailed engineering-construction phase.

The production of copper sulfate pentahydrate crystals is currently planned at Stray Elephant. The ore is to be mined at 3000 tons per day, five days per week, using contract mining. The ore is to be leached using strong acid technology followed by solvent extraction-crystallization (Figure 3).

*is this based on the work?*

The ore reserves at this time are approximately 3.7 million tons in the northwest portion of the deposit, however, there is an additional potential for 5-6 million more tons undetermined grade in the southeast portion of the deposit. At the fixed mining rate of 15,000 tons of ore per week the known reserves will take 4.74 years to mine. The recoveries from the leaching area are shown in table 2 with an assumed final recovery of 89 to 90% of the total contained copper. This final recovery is after 6-7 rinse cycles of 91 days per rinse cycle (546-637 days) for each 15,000 ton pad. The layout for heap levels one and two are illustrated in Figures 4a and 4b.

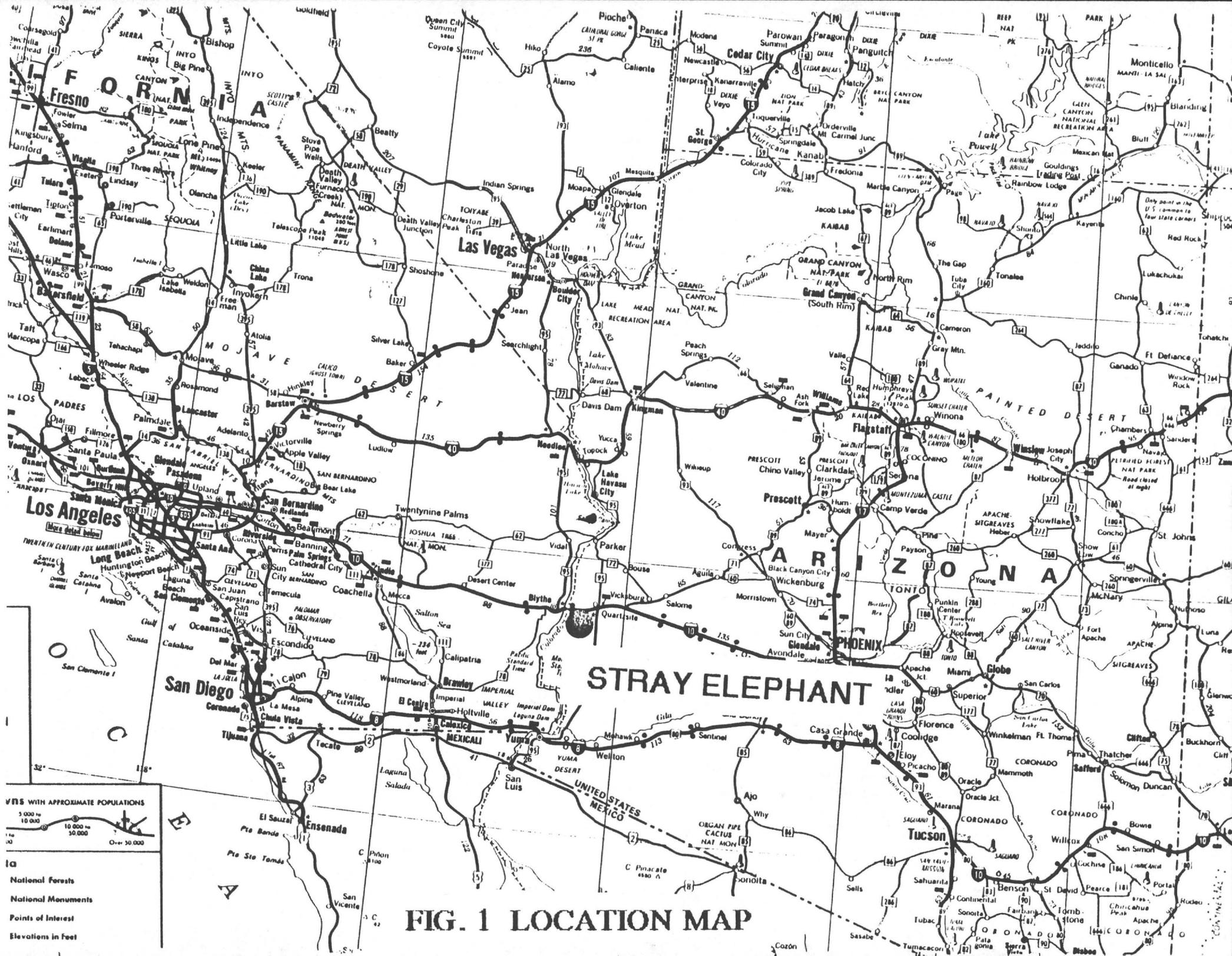
The leach area will be actively rinsed 365 days per year and the solvent extraction circuit is designed to operate under the same schedule. Crystallization can be stopped for holidays or other necessary down-time as the system will be designed for batch processing.

The total for land, exploration, and capital cost should not exceed \$2,000,000 (Table 3). All of these funds are expected to be expended in a one-year period, which is anticipated to be required for exploration, permitting and development of the mine and metallurgical plant.

The operating costs are listed in Table 4. These costs are believed to be conservative and it is expected that leaching acid can be obtained without cost. Therefore, total operating costs are expected to be no more than \$0.4517 per pound of contained copper.

Tables 5a and 5b illustrate the cash flow anticipated for the Stray Elephant project. Don Nickerson, one of our associates, can market five tons of copper sulfate (1.25 tons of contained copper) per day at a minimum price of \$1.20 per pound of contained copper, F.O.B. plant site. He believes he can achieve substantial additional market penetration with time. In the meantime the remaining copper sulfate can be sold to the Cyprus Miami smelter for the COMEX price minus \$0.20.

The difference between the two cases illustrated in Tables 5a and 5b is the difference in the COMEX copper price, \$0.85/lb-Cu in Table 5a and \$1.30/lb-Cu in Table 5b. Even at a copper price of \$0.85/lb.-Cu the project has a satisfactory rate of return without further penetration of the copper sulfate market.



**VNS WITH APPROXIMATE POPULATIONS**

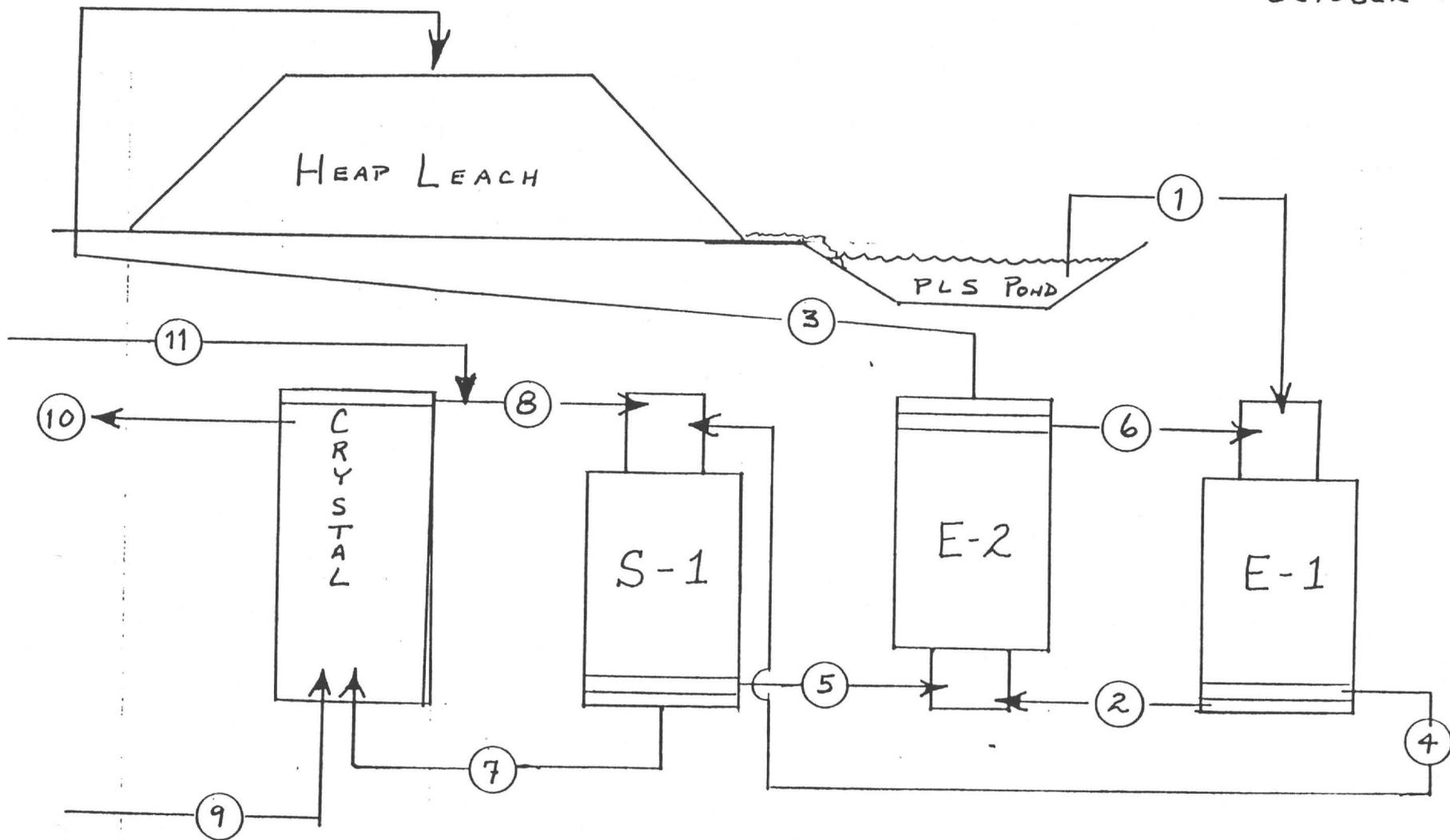
3 000  
10 000  
10 000  
Over 30 000

**Legend:**

- National Forests
- National Monuments
- Points of Interest
- Elevations in Feet

**FIG. 1 LOCATION MAP**

Figure 3



Nº OF STREAM	1	2	3	4	5	6	7	8	9	10	11
DESCRIPTION	PLS	E-1 AQ.	RAFFINATE	LOADED ORGANIC	STRIPPED ORGANIC	SEMI-LOADED ORGANIC	SX STRIP LIQUOR	SX STRIPPING LIQUOR	SULFURIC ACID	WASHED CRYSTALS	WASH LIQUOR
FLOW, GPM	500	500	500	500	500	500	171	171	1.94	—	3.34
Cu, g/L	3.66	1.28	0.24	7.72	4.30	5.34	50.0	40.0	0	25.45%	40.0
Cu, TPD	10.98	3.84	0.72	23.16	12.90	16.02	51.30	41.04	21.29*	10.26	0.80

\* 93% ACID

STRAY ELEPHANT

LEACH PADS

LEVEL ONE

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

Figure 4a

STRAY ELEPHANT  
LEACH PADS  
LEVEL TWO

21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40

Figure 4b

Table 1

BLUESTONE, INC.

Names and addresses of shareholders

- |  |   |
|--|---|
| 1) Paul A. Hodges<br>8800 East Calle Boliver<br>Tucson, AZ 85715       | 5) Donald Richard Nickerson<br>10192 John Day Drive<br>Huntington Beach, CA 92646 |
| 2) David B. Hackman<br>8120 East SABino Drive<br>Tucson, AZ 85715      | 6) Larry Don LeCompte<br>589 North Sutherland<br>Globe, AZ 85801                  |
| 3) Willis R. Dortch<br>4415 East Grant, A107<br>Tucson, AZ 85712       | 7) Geprge William Sites<br>P.O. Box 1454<br>Claypool, AZ 85532                    |
| 4) Mike Sierakoski<br>11527 N. Lone Mountain Place<br>Tucson, AZ 85737 |   |

Table 2

## PRODUCTION SCHEDULE - STRAY ELEPHANT PROJECT

Year	Quarter	Rinsing Pads	Mined Tons (M)	% Cu Ext.	Cum. Tons Ext. Cu	Avg. TPD Cu
1	1	1 - 9	135	69	447.12	7.1
	2	10 - 22	330	80	1584	10.3
	3	23 - 35	525	81	2551.5	10.4
	4	36 - 48	720	81	3499.2	10.4
2	5	49 - 61	915	82	4501.8	10.5
	6	62 - 74	1110	82	5461.2	10.5
	7	75 - 87	1305	83	6498.9	10.7
	8	88 - 100	1500	83	7470	10.7
3	9	101-113	1695	84	8542.8	10.8
	10	114-126	1890	84	9525.6	10.8
	11	127-139	2085	85	10633.5	10.9
	12	140-152	2280	85	11628	10.9
4	13	153-165	2475	86	12771	11.1
	14	166-178	2670	86	13777.2	11.1
	15	179-191	2865	87	14955.3	11.2
	16	192-204	3060	87	15973.2	11.2
5	17	205-217	3255	88	17186.4	11.3
	18	218-230	3450	88	18216	11.3
	19	231-243	3645	89	19464.3	11.4
	20	244-256	3840	89	20505.6	11.4

TABLE 3

October 1989

PRELIMINARY CAPITAL COST ESTIMATE  
STRAY ELEPHANT COPPER PROJECT

ITEM -----	COST -----
Property down payment & preproduction	\$ 64,000
Air photo & topographic map	\$ 25,000
Drilling, geology, & testing	\$ 150,000
Water well, pumps & piping	\$ 50,000
Permitting	\$ 75,000
Contract mining @ \$ 1.25/ton	\$ 250,000
Primary jaw crusher & screens	\$ 250,000
Leach pad liner and preparation	\$ 300,000
PLS pond liner, dbl. lined 60 mil	\$ 50,000
PLS pumps & pipe line to SX	\$ 50,000
Solvent Extraction 2 Ext. x 1 Strip Concrete lined with HDPE, FRP mixers, SS impellers & shafts	\$ 65,000
Reagent, LIX 984 or 622	\$ 75,000
Diluent (high flash point kerosene)	\$ 20,000
Electrical power, substation, etc.	\$ 50,000
Offices, change room, warehouse	\$ 25,000
Crystallization Pads, liquid-solid sep., washing, drying, pumps, shipping, acid tank	\$ 150,000
Construction payroll	\$ 100,000
Engineering - detailed	\$ 50,000
Road construction	\$ 50,000
Contingency	\$ 151,000
	-----
TOTAL	\$ 2,000,000

## DIRECT OPERATING COSTS FOR STRAY ELEPHANT PROPERTY (EST.)

BASIS: 3000 TONS PER DAY MINED ORE TO LEACH, 5 DAYS PER WEEK  
 AVERAGE GRADE OF 0.60 % COPPER, 80 % RECOVERY  
 20,000 POUNDS PER DAY OF COPPER PRODUCED  
 CRUSHING TO MINUS 4" FOR LEACH  
 CURE AND RINSE FLOWRATES @ .0025 GPM

ITEM	COST	COMMENTS
-----	-----	-----
MINING	\$ 0.134	\$ 1.25 PER TON
CRUSHING	\$ 0.031	\$ 0.30 PER TON
PAD PREPARATION	\$ 0.010	CAT AND DRIVER, SUPPLIES
SULFURIC ACID	\$ 0.120	8#/#CU, \$30 PER TON
LIX 622	\$ 0.018	0.003#LIX/#CU
KEROSENE	\$ 0.003	60 GALLONS/DAY
SX LABOR	\$ 0.018	\$ 15/HOUR
POWER	\$ 0.0075	\$ 150/DAY
CRYSTAL ACID	\$ 0.024	13.5 TONS/DAY
CRYSTAL WATER	\$ 0.0025	\$ 50/DAY
DRYING, L-S SEP.	\$ 0.010	\$ 200/DAY
FREIGHT - S.MAN.	\$ 0.0517	\$ 25.83/TON CRYSTAL
MISC. LABOR	\$ 0.018	\$ 15/HOUR
MAINT.	\$ 0.016	\$ 20/HOUR
ANALYTICAL	\$ 0.006	\$ 120/DAY
-----		
SUBTOTAL	\$ 0.4697	
ADMINISTRATION	\$ 0.050	\$ 1000/DAY
-----		
SUBTOTAL	\$ 0.5197	
CONTINGENCY	\$ 0.0520	10 %
-----		
TOTAL	\$ 0.5717 PER POUND OF COPPER	

NOTE: IF LEACHING ACID IS AVAILABLE AT NO COST, THE DIRECT OPERATING COSTS ARE REDUCED TO \$ 0.4517 PER POUND OF COPPER.

TABLE 3a -- STRAY ELEPHANT - COPPER HEAP LEACH PROJECT

Joint Venture		Budge Mining Co. Bluestone Resource		50% 50%		COPPER SALES		
						Market	% Product	Price
RESERVES		OPERATING SCHEDULE				Sulfate	15%	\$1.20
Tons	Grade	Mine	250	da/yr	Smelter	85%	\$0.65	
3700000	0.60%	Plant	365	da/yr	Tank Hous	0%	\$0.65	
Mining Cost (\$/ton)	Operating Cost (\$/lb)	Copper Price (\$)	Smelter Charge (\$/lb)	Royalty (%NSR)	Income Tax	Loan Interest Rate	Loan Recovery Rate	
\$1.25	\$0.45	\$0.85	\$0.20	4%	34%	15%	75%	
=====								
Year	0	1	2	3	4	5		
Du Prod(tons)		3499	3971	4158	4345	4532		
Gross Val		5126	5817	6091	6366	6640		
Royalty		205	233	244	255	266		
Gross Inc		4921	5585	5848	6111	6374		
Op Cost		3161	3587	3756	3925	4095		
Depr		400	400	400	400	400		
Pratx Inc		1360	1597	1691	1786	1880		
Depl		680	799	846	893	940		
Inc Tax		462	543	575	607	639		
Profit		898	1054	1116	1179	1241		
Depr		400	400	400	400	400		
Depl		680	799	846	893	940		
Cap Exp								
Expl	0							
Dev	0							
Total	2000							
NCF	-2000	1978	2253	2362	2471	2581		
DCF-ROI	104%							
Budge Inv	-2000							
Loan Int		300	111	0	0	0		
Cap Rec		1258	742	0	0	0		
Op Inc		210	700	1181	1236	1290		
Budge NCF	-2000	1768	1553	1181	1236	1290		
DCF-ROI	73%							
Bluestn NCF		210	700	1181	1236	1290		

TABLE 5b -- STRAY ELEPHANT - COPPER HEAP LEACH PROJECT

Joint Venture	Budge Mining Co.		50%		COPPER SALES		
	Bluestone Resource		50%		Market	% Product	Price
RESERVES		OPERATING SCHEDULE			Sulfate	15%	\$1.20
Tons	Grade	Mine	250	da/yr	Smelter	85%	\$1.10
3700000	0.60%	Plant	365	da/yr	Tank Hous	0%	\$1.10
Mining Cost (\$/ton)	Operating Cost (\$/lb)	Copper Price (\$)	Smelter Charge (\$/lb)	Royalty (%NSR)	Income Tax	Loan Interest Rate	Loan Recovery Rate
\$1.25	\$0.45	\$1.50	\$0.20	4%	34%	15%	75%
=====							
Year	0	1	2	3	4	5	
Cu Prod(tons)		3499	3971	4158	4345	4532	
Gross Val		7803	8855	9272	9690	10107	
Royalty		312	354	371	388	404	
Gross Inc		7491	8501	8901	9302	9703	
Op Cost		3161	3587	3756	3925	4095	
Depr		400	400	400	400	400	
Pretx Inc		3930	4513	4745	4977	5208	
Depl		1124	1275	1335	1395	1455	
Inc Tax		1336	1535	1613	1692	1771	
Profit		2594	2979	3132	3285	3438	
Depr		400	400	400	400	400	
Depl		1124	1275	1335	1395	1455	
Cap Exp							
Expl	0						
Dev	0						
Total	2000						
NCF	-2000	4117	4654	4867	5080	5293	
DCF-ROI	215%						
Budge Inv	-2000						
Loan Int		300	0	0	0	0	
Cap Rec		2000	0	0	0	0	
Op Inc		909	2327	2433	2540	2646	
Budge NCF	-2000	3209	2327	2433	2540	2646	
DCF-ROI	142%						
Bluestn NCF		909	2327	2433	2540	2646	

10-10-1989

ISOTHERM POINT CALCULATIONS AND GRAPHICS/McCABE-THIELES  
ISOCALC I PROGRAM-HENKEL CORP.-CU/H2SO4 SYSTEM  
(Ver. 1.06/RBS)

Client Name/Project:STRAY ELEPHANT

Choose from the following reagents: LIX 84, LIX 622, LIX 684, LIX 984,  
LIX 860, or other.

What is reagent to be predicted (USE CAPS PLEASE!)?-LIX 622

What is copper content of stripped organic-g/l?- 4.304

What is volume pct. of reagent tested?- 16

What is copper content of aqueous solution tested-g/l?- 3.66

What is pH of solution tested?- 1.9

What is total sulfate content of solution tested-g/l?- 15

Do you want to calculate the SO4= activity as a %, Y or N?N

What is the assumed activity of the SO4= ion, % ?- 40

What are other parameters of circuit?O/A = 1/1 *50/139 H2SO4*

The MAX LOAD for 16 pct. LIX 622 is 8.969 g/l Cu.

O/A= 10

ORG.= 4.658g/l Cu; AQ.= 0.120g/l Cu.

O/A= 5

ORG.= 5.006g/l Cu; AQ.= 0.149g/l Cu.

O/A= 2

ORG.= 5.994g/l Cu; AQ.= 0.280g/l Cu.

O/A= 1.5

ORG.= 6.483g/l Cu; AQ.= 0.392g/l Cu.

O/A= 1

ORG.= 7.266g/l Cu; AQ.= 0.698g/l Cu.

O/A= .5

ORG.= 8.295g/l Cu; AQ.= 1.664g/l Cu.

O/A= .2

ORG.= 8.779g/l Cu; AQ.= 2.765g/l Cu.

O/A= .1

ORG.= 8.887g/l Cu; AQ.= 3.202g/l Cu.

Time began:15:29:06; Time ended:15:31:32

Iterations= 835

What is O/A ratio in extraction? 1

What is mixer efficiency across extraction-X? 94

How many stages are in extraction (1-3)? 2

The Materials Balance across the circuit is as follows (g/l Cu):

Aq. Feed----	E-1 Aq.-----	E-2 Aq. (Raff.)
3.660	1.285	0.245

E-1 Org. (L.O.) <----	E-2 Org. <----	Stp. Org.
7.683	5.308	4.304

The expected recovery is 93.30%.

The loaded organic is 85.66% of max load.

The net transfer is 0.211 g/l Cu per 1 vol. % of LIX 622.

15:34:31 15:37:05



**Stauffer Chemical Company**

10777 NORTHWEST FREEWAY  
SUITE 650  
HOUSTON, TX 77092  
MAILING ADDRESS  
P.O. BOX 1381  
HOUSTON, TX 77251  
TEL: (713) 688-9311

September 11, 1989

David B. Hackman,  
J. Michael Serakoski, et al  
c/o Sage Associates  
3-4228 East Grant Road  
Tucson, Arizona 85712

Dear Sirs:

This letter is to confirm our interest in evaluating further the use of our "acid" for leaching on your Arizona property. We are looking forward to further discussions and testing.

Sincerely,

STAUFFER CHEMICAL COMPANY

A handwritten signature in black ink, appearing to read 'R. L. Dixon'.

R. L. Dixon

RLD:hb

cc: Larry D. LeCompte  
Cyprus Miami  
P. O. Box 4444  
Claypool, Arizona 85532



# CAL-CHEM METALS, INC.

10192 JON DAY DRIVE  
HUNTINGTON BEACH, CA 92646-5408  
(714) 962-6640 • TWX 910-395-1765  
FAX: (714) 963-7605

October 18, 1989

Mr. J.M. Sierakoski  
SAGE

## COPPER SULFATE OVERVIEW

1. U. S. Production	<u>Gross Weight (1988)</u>	<u>As Copper</u>
1st Quarter	7,939 MT	2,012 MT
2nd Quarter	8,909 MT	2,247 MT
3rd Quarter	9,405 MT	2,372 MT
4th Quarter	<u>7,931 MT</u>	<u>1,999 MT</u>
TOTAL	34,184 MT	8,630 MT
	<u>1987</u>	
1st Quarter	7,834 MT	1,971 MT
2nd Quarter	8,088 MT	2,037 MT
2. U.S. Imports of Copper Sulfate		
1988		10,992 MT
1989	1st Quarter	4,059 MT
	2nd Quarter	2,861 MT

3. 1988 U.S. Consumption of Copper Sulfate was approximately 45,176 Metric Tons or 99,595,010 lbs. Assuming 25% copper content, this is 11,294 Metric Tons and 24,898,752 as copper.

The first half of 1989 shows total consumption of 22,842 Metric Tons of Copper Sulfate or 50,357,473 lbs. Assuming 25% copper content this is 5,710 Metric Tons and 12,589,368 pounds as copper.

4. Imports from Yugoslavia for the first half of 1989 have been 1,965.9 MT at a CIF value of .29 per pound of material. To that, you need add 5% duty plus receiving cost and inland freight. Duty will be approximately \$0.012 lbs of material based on customs value.

Page 2

Mr. J.M. Sierakoski  
October 18, 1989

Imports from the USSR for the first half of 1989 have been 1,534.4 MT at a CIF value of \$.301 per pound of material. This also has a 5% duty. This duty is approximately \$.013 lbs of material based on customs value.

Imports from Canada for the first half of 1989 have been 920.7 MT at a CIF value of \$.36 lbs. Mexico is a duty free country.

U.S. producers are selling product to their major consumers and largest distributors at \$.52 to \$.56 per pound less 5%. Naturally there are exceptions. Canada producers are at \$.36 to \$.40 per pound delivered to their largest U.S. customers and distributors.

Quality product is the name of the game along with proper sizing and packaging and free flowing characteristics. A new producer in the U.S. with quality comparable to U.S. producers could market approximately 5 to 10% of the U.S. Consumption within 12 months or 3,000 to 4,500 MT of copper sulfate. This is 750 MT to 1,125 MT as copper per year. There could very likely need to be price concessions the first year as inducement to purchase a product from a new company.

5. Cal-Chem Metals, Inc. suggests it can penetrate the U.S. market by 5 to 10% within 12 months selling to the animal feed and agricultural markets primarily and secondarily to the plating, woodtreating, ceramic and other industrial markets. Cal-Chem Metals would charge a 5% commission fee for this service.

Value added to the copper sulfate sales value versus the COMEX value indicates we should expect to sell at \$.40/lb minimally to as high as \$.50/lb.

Current COMEX:		\$1.30 lb/copper	
Current Copper Sulfate	minimum:	\$1.60 lb/copper	\$.40 lb/CuSO <sub>4</sub>
	to as high as:	\$2.00 lb/copper	\$.50 lb/CuSO <sub>4</sub>

The reason the minimum price is \$.40 per pound versus the import price on the communist block country import price of \$.31 is that most of the communist block country imports are sold as feed stocks to copper producers who upgrade the material to U.S. quality standards and also use it to produce other copper chemicals such as copper hydroxide. The real market shows that U.S. distributors price is in the range of \$.36 to \$.40 lb of material FOB their plant.

Once we have samples of the quality we expect to produce we can test the market on pricing and volumes.

Best Regards,



Donald R. Nickerson  
DRN:rdn

## CAL-CHEM METALS INC

A California Corporation started June 30, 1980 by Donald R. Nickerson founder and president. Cal-Chem Metals Inc. acts as a marketing agent for Adelaide Chemical Company. Adelaide Chemical Company has a copper oxide production facility in Burra, South Australia. CCM markets approximately 3,000 MT per year of copper oxide for Adelaide Chemical. Cal-Chem Metals also purchases and sells various copper by-product streams and copper chemicals separate from its involvement with Adelaide Chemical.

Cal-Chem Metals Inc. acts as agent for TOP Australia Ltd. of Adelaide South Australia. Responsibilities are for monitoring TOP's purchases of high analysis fertilizer such as a Di-Ammonium Phosphate, Mono-Ammonium Phosphate and Triple Super Phosphate. Monitoring responsibilities are to utilize local analytical labs in the Tampa, Florida and New Orleans areas for product inspection, visually and analytically. TOP imports approximately 20-30,000 metric tons per year of high analysis fertilizers from the U.S. and Canada.

Donald R. Nickerson, president of Cal-Chem Metals Inc is a business graduate from the University of Minnesota and has been in marketing most of his career. His last two employers were Philip A. Hunt Chemical Corporation where he was Regional Manager for the South Eastern United States in their Graphic Arts Division. This established exposure to the copper recovery business in the Midwest and South Eastern portions of the United States. His responsibilities were for thirteen salesman and to increase sales by a minimum of 15% per year. After six years he left P.A. Hunt Chemical and joined Southern California Chemical, now owned by CP Chemical Company. He started as area sales manager for the south, stationed in Dallas. After six months, sales were increased to the point where it became economical to set up a blending plant in Garland, Texas. After two years and expansion of two additional plants, one in Union, Illinois, the other in Bayonne, New Jersey, Nickerson was promoted to Vice-President of Marketing and transferred to California. Nickerson was promoted to Vice-President and General Manager in June of 1972. He was with Southern California Chemical for twelve years. The main products sold to the printed circuit board Manufacturers were etchants to dissolve copper. The customers of these etchants required the suppliers to take the etchant back. The primary etchants were ammoniacal. The spent etchants returned to Southern California Chemical were used as feed stocks to produce Copper Chemicals such as Copper Oxide, Copper Sulfate and Copper Oxychlorides. Due to the recovery business, Nickerson received invaluable experience and exposure to the markets for Copper chemicals and also to the U.S. and international producers of copper chemicals.

Cal-Chem Metals, Inc. is responsible for Australian Copper Oxide sales of over \$7,000,000. In addition to this Cal-Chem Metals Inc markets over \$1,000,000 in other copper products.

BLUESTONE RESOURCES, Inc.  
4228 East Grant Road, #3  
Tucson, AZ 85712  
Tel 602 795-8380  
Fax 602 795-8389

Ms. Carol O'Brien  
A.F. Budge (Mining) Limited  
4301 N. 75th Street  
Scottsdale, AZ 85251

Dear Carol:

Enclosed is our summary report for the Stray Elephant Project near Quartzsite, AZ.

It is our understanding that should Budge Mining choose to enter into a joint venture agreement with Bluestone Resources for the production of copper from the Stray Elephant Project: (1) policy decisions regarding the operation would be made jointly, (2) Bluestone Resources would operate the property, (3) Budge Mining would recover its investment and interest from 75% of the cash flow, and (4) the remainder of the cash flow would be divided equally between the parties.

If you have any questions or comments please feel free to call.

Yours very truly,  
BLUESTONE RESOURCES, Inc.



David B. Hackman, President

Tables 5a and 5b illustrate the cash flow anticipated for the Stray Elephant project. Don Nickerson, one of our associates, can market five tons of copper sulfate (1.25 tons of contained copper) per day at a minimum price of \$1.20 per pound of contained copper, F.O.B. plant site. He believes he can achieve substantial additional market penetration with time. In the meantime the remaining copper sulfate can be sold to the Cyprus Miami smelter for the COMEX price minus \$0.20.

The difference between the two cases illustrated in Tables 5a and 5b is the difference in the COMEX copper price, \$0.85/lb-Cu in Table 5a and \$1.30/lb-Cu in Table 5b. Even at a copper price of \$0.85/lb.-Cu the project has a satisfactory rate of return without further penetration of the copper sulfate market.

Bluestone Resources (Table 1) currently has an option from the property owners to explore and develop the Stray Elephant Copper Property. The plan of operations at this time is to finish the drilling program in the outcrop hill area, to develop a mining plan and finalize ore reserves in this area. Outcrop hill has the least amount of preproduction stripping and has several high grade copper oxide zones. Approximately four months of drilling will be necessary to complete the analysis of the northwestern part of the ore body. Permitting will proceed at the same time as the drilling program, as the permitting process is expected to take six to eight months for final approval. Basic engineering will start at the same time as the drilling program and continue directly into the detailed engineering-construction phase.

The production of copper sulfate pentahydrate crystals is currently planned at Stray Elephant. The ore is to be mined at 3000 tons per day, five days per week, using contract mining. The ore is to be leached using strong acid technology followed by solvent extraction-crystallization (Figure 3).

The ore reserves at this time are approximately 3.7 million tons in the northwest portion of the deposit, however, there is an additional potential for 5-6 million more tons undetermined grade in the southeast portion of the deposit. At the fixed mining rate of 15,000 tons of ore per week the known reserves will take 4.74 years to mine. The recoveries from the leaching area are shown in table 2 with an assumed final recovery of 89 to 90% of the total contained copper. This final recovery is after 6-7 rinse cycles of 91 days per rinse cycle (546-637 days) for each 15,000 ton pad. The layout for heap levels one and two are illustrated in Figures 4a and 4b.

The leach area will be actively rinsed 365 days per year and the solvent extraction circuit is designed to operate under the same schedule. Crystallization can be stopped for holidays or other necessary down-time as the system will be designed for batch processing.

The total for land, exploration, and capital cost should not exceed \$2,000,000 (Table 3). All of these funds are expected to be expended in a one-year period, which is anticipated to be required for exploration, permitting and development of the mine and metallurgical plant.

The operating costs are listed in Table 4. These costs are believed to be conservative and it is expected that leaching acid can be obtained without cost. Therefore, total operating costs are expected to be no more than \$0.4517 per pound of contained copper.

## STRAY ELEPHANT PROJECT

### Executive Summary

The Stray Elephant copper property is located 7-8 miles west of Quartzsite, Arizona and approximately 1/4 mile south of Interstate 10 (Figure 1). There are 78 claims largely in sections 31 and 32, T4N, R20W, and section 4, 5 and 6, T3N, R20W. The claims are in the Middle Camp - Oro Fino mining district in the south Dome Rock Mountains, La Paz County, Arizona (Figure 2).

The property has easy access from Interstate 10 at the Dome Rock Interchange for both east and west travel. There is an additional entrance for east access to Interstate 10 approximately 1/4 mile north of the mineralized area known as "outcrop hill". Electricity is available from a light power line on the northern side of Interstate 10. The closest heavy duty power line is three miles to the west of the property. A water supply will have to be obtained from wells that will be drilled on the eastern portion of the property. There is water available at the Beacon service station and Ryder factory at Tom Wells Road, 4.6 miles to the west of the property.

The property was originally located in 1906 and has had only minor amounts of ore mined for direct shipment to various smelters. An adit and winze were driven in the 1920's into the base of outcrop hill. Outcrop hill is in the northern portion of the claim group and has the most drilling information. The reserves in the outcrop hill zone are estimated to be 3.7 million tons of 0.60% copper (Loghry, 1989). The southern zone has only one drill hole of significance and will need extensive drilling to further define the ore reserves which have the potential to be in the range of 5-6 million tons.

The Stray Elephant copper mineralization is localized in shear zones within a Mesozoic schist intruded by a quartz monzonite pluton. The northwest portion of the 4200 foot long zone of copper mineralization is exposed on outcrop hill. Most of the copper is contained in chrysocolla with minor amounts of cuprite, chalcocite, and chalcopyrite. The southeast portion of the deposit outcrops locally but most of the potential in this area is below leached outcrops or under alluvium.

The exploration program will consist of making a new topographic map at a scale of 1 :1200, geologic mapping of the surface, and diamond core drilling. Core drilling will define the copper distribution and structural characteristics of the ore better than rotary drilling. The core will be used for bottle roll and column leach tests.

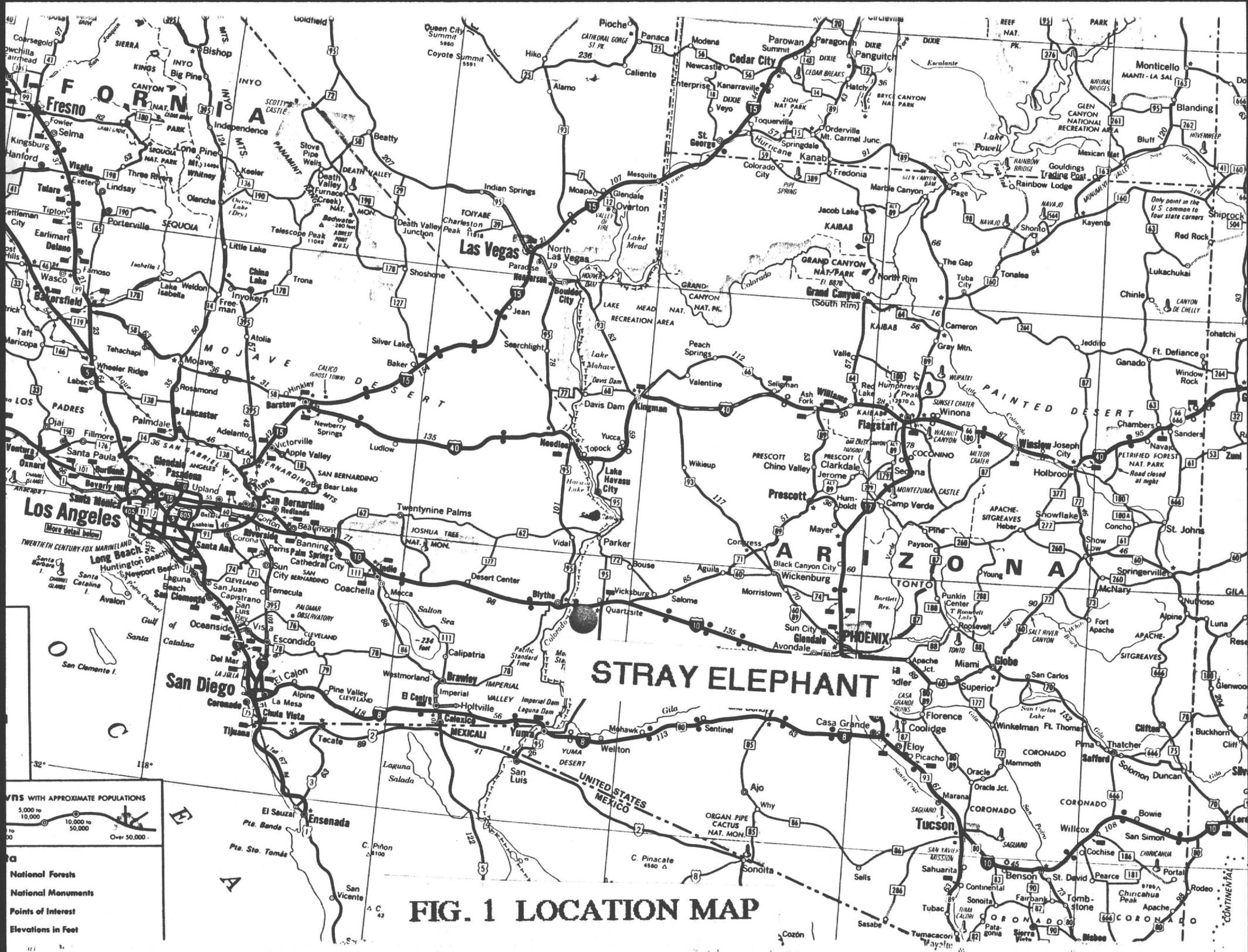
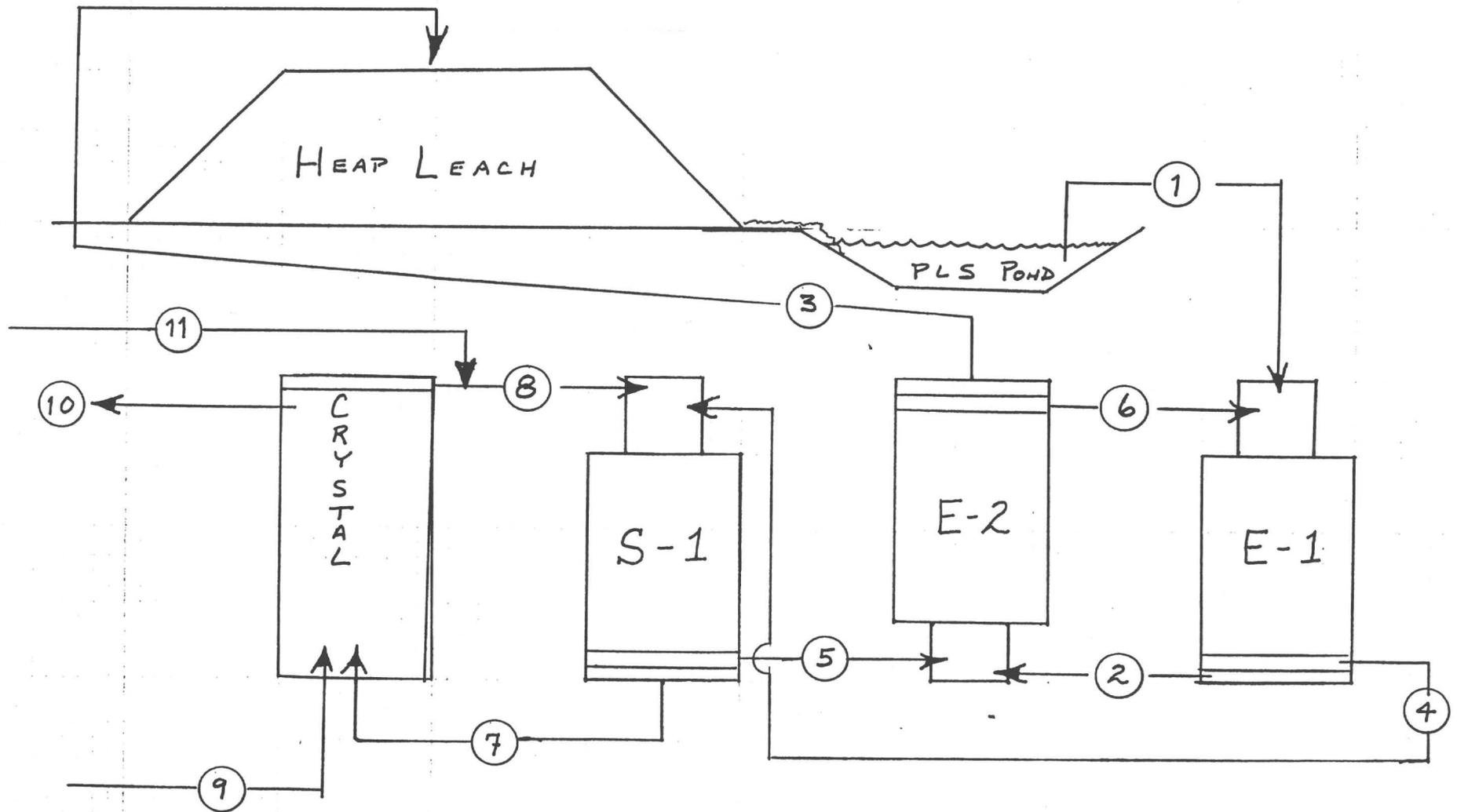


Figure 3



Nº OF STREAM	1	2	3	4	5	6	7	8	9	10	11
DESCRIPTION	PLS	E-1 AQ.	RAFFINATE	LOADED ORGANIC	STRIPPED ORGANIC	SEMI-LOADED ORGANIC	SX STRIP LIQUOR	SX STRIPPING LIQUOR	SULFURIC ACID	WASHED CRYSTALS	WASH LIQUOR
FLOW, GPM	500	500	500	500	500	500	171	171	1.94	—	3.34
CU, g/L	3.66	1.28	0.24	7.72	4.30	5.34	50.0	40.0	0	25.45%	40.0
CU, TPD	10.98	3.84	0.72	23.16	12.90	16.02	51.30	41.04	21.29*	10.26	0.80

\* 93% ACID

STRAY ELEPHANT

LEACH PADS

LEVEL ONE

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

Figure 4a

STRAY ELEPHANT  
LEACH PADS  
LEVEL TWO

21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40

Figure 4b

Table 1

BLUESTONE, INC.

Names and addresses of shareholders

- |  |   |
|--|---|
| 1) Paul A. Hodges<br>8800 East Calle Boliver<br>Tucson, AZ 85715       | 5) Donald Richard Nickerson<br>10192 John Day Drive<br>Huntington Beach, CA 92646 |
| 2) David B. Hackman<br>8120 East SAbino Drive<br>Tucson, AZ 85715      | 6) Larry Don LeCompte<br>589 North Sutherland<br>Globe. AZ 85801                  |
| 3) Willis R. Dortch<br>4415 East Grant, A107<br>Tucson, AZ 85712       | 7) Geprge William Sites<br>P.O. Box 1454<br>Claypool, AZ 85532                    |
| 4) Mike Sierakoski<br>11527 N. Lone Mountain Place<br>Tucson, AZ 85737 |   |

Table 2

## PRODUCTION SCHEDULE - STRAY ELEPHANT PROJECT

Year	Quarter	Rinsing Pads	Mined Tons (M)	% Cu Ext.	Cum. Tons Ext. Cu	Avg. TPD Cu
1	1	1 - 9	135	69	447.12	7.1
	2	10 - 22	330	80	1584	10.3
	3	23 - 35	525	81	2551.5	10.4
	4	36 - 48	720	81	3499.2	10.4
2	5	49 - 61	915	82	4501.8	10.5
	6	62 - 74	1110	82	5461.2	10.5
	7	75 - 87	1305	83	6498.9	10.7
	8	88 - 100	1500	83	7470	10.7
3	9	101-113	1695	84	8542.8	10.8
	10	114-126	1890	84	9525.6	10.8
	11	127-139	2085	85	10633.5	10.9
	12	140-152	2280	85	11628	10.9
4	13	153-165	2475	86	12771	11.1
	14	166-178	2670	86	13777.2	11.1
	15	179-191	2865	87	14955.3	11.2
	16	192-204	3060	87	15973.2	11.2
5	17	205-217	3255	88	17186.4	11.3
	18	218-230	3450	88	18216	11.3
	19	231-243	3645	89	19464.3	11.4
	20	244-256	3840	89	20505.6	11.4

TABLE 3

October 1989

PRELIMINARY CAPITAL COST ESTIMATE  
STRAY ELEPHANT COPPER PROJECT

ITEM -----	COST -----
Property down payment & preproduction	\$ 64,000
Air photo & topographic map	\$ 25,000
Drilling, geology, & testing	\$ 150,000
Water well, pumps & piping	\$ 50,000
Permitting	\$ 75,000
Contract mining @ \$ 1.25/ton	\$ 250,000
Primary jaw crusher & screens	\$ 250,000
Leach pad liner and preparation	\$ 300,000
PLS pond liner, dbl. lined 60 mil	\$ 50,000
PLS pumps & pipe line to SX	\$ 50,000
Solvent Extraction 2 Ext. x 1 Strip Concrete lined with HDPE, FRP mixers, SS impellers & shafts	\$ 65,000
Reagent, LIX 984 or 622	\$ 75,000
Diluent (high flash point kerosene)	\$ 20,000
Electrical power, substation, etc.	\$ 50,000
Offices, change room, warehouse	\$ 25,000
Crystallization Pads, liquid-solid sep., washing, drying, pumps, shipping, acid tank	\$ 150,000
Construction payroll	\$ 100,000
Engineering - detailed	\$ 50,000
Road construction	\$ 50,000
Contingency	\$ 151,000
	-----
TOTAL	\$ 2,000,000

Table 4

September 14, 1989

## DIRECT OPERATING COSTS FOR STRAY ELEPHANT PROPERTY (EST.)

BASIS: 3000 TONS PER DAY MINED ORE TO LEACH, 5 DAYS PER WEEK  
 AVERAGE GRADE OF 0.60 % COPPER, 80 % RECOVERY  
 20,000 POUNDS PER DAY OF COPPER PRODUCED  
 CRUSHING TO MINUS 4" FOR LEACH  
 CURE AND RINSE FLOWRATES @ .0025 GPM

ITEM	COST	COMMENTS
-----	-----	-----
MINING	\$ 0.134	\$ 1.25 PER TON
CRUSHING	\$ 0.031	\$ 0.30 PER TON
PAD PREPARATION	\$ 0.010	CAT AND DRIVER, SUPPLIES
SULFURIC ACID	\$ 0.120	8#/#CU, \$30 PER TON
LIX 622	\$ 0.018	0.003#LIX/#CU
KEROSENE	\$ 0.003	60 GALLONS/DAY
SX LABOR	\$ 0.018	\$ 15/HOUR
POWER	\$ 0.0075	\$ 150/DAY
CRYSTAL ACID	\$ 0.024	13.5 TONS/DAY
CRYSTAL WATER	\$ 0.0025	\$ 50/DAY
DRYING, L-S SEP.	\$ 0.010	\$ 200/DAY
FREIGHT - S.MAN.	\$ 0.0517	\$ 25.83/TON CRYSTAL
MISC. LABOR	\$ 0.018	\$ 15/HOUR
MAINT.	\$ 0.016	\$ 20/HOUR
ANALYTICAL	\$ 0.006	\$ 120/DAY
-----		
SUBTOTAL	\$ 0.4697	
ADMINISTRATION	\$ 0.050	\$ 1000/DAY
-----		
SUBTOTAL	\$ 0.5197	
CONTINGENCY	\$ 0.0520	10 %
-----		
TOTAL	\$ 0.5717	PER POUND OF COPPER

NOTE: IF LEACHING ACID IS AVAILABLE AT NO COST, THE DIRECT OPERATING COSTS ARE REDUCED TO \$ 0.4517 PER POUND OF COPPER.

TABLE 5a -- STRAY ELEPHANT - COPPER HEAP LEACH PROJECT

Joint Venture		Budge Mining Co. Bluestone Resource		50% 50%		COPPER SALES		
						Market	% Product	Price
RESERVES		OPERATING SCHEDULE				Sulfate	15%	\$1.20
Tons	Grade	Mine	250	da/yr	Smelter	85%	\$0.65	
3700000	0.60%	Plant	365	da/yr	Tank Hous	0%	\$0.65	
Mining Cost (\$/ton)	Operating Cost (\$/1b)	Copper Price (\$)	Smelter Charge (\$/1b)	Royalty (%NSR)	Income Tax	Loan Interest Rate	Loan Recovery Rate	
\$1.25	\$0.45	\$0.85	\$0.20	4%	34%	15%	75%	
=====								
Year	0	1	2	3	4	5		
Cu Prod(tons)		3499	3971	4158	4345	4532		
Gross Val		5126	5817	6091	6366	6640		
Royalty		205	233	244	255	266		
Gross Inc		4921	5585	5848	6111	6374		
Op Cost		3161	3587	3756	3925	4095		
Depr		400	400	400	400	400		
Pretx Inc		1360	1597	1691	1786	1880		
Depl		680	799	846	893	940		
Inc Tax		462	543	575	607	639		
Profit		898	1054	1116	1179	1241		
Depr		400	400	400	400	400		
Depl		680	799	846	893	940		
Cap Exp								
Expl	0							
Dev	0							
Total	2000							
NCF	-2000	1978	2253	2362	2471	2581		
DCF-ROI	104%							
Budge Inv	-2000							
Loan Int		300	111	0	0	0		
Cap Rec		1258	742	0	0	0		
Op Inc		210	700	1181	1236	1290		
Budge NCF	-2000	1768	1553	1181	1236	1290		
DCF-ROI	73%							
Bluestn NCF		210	700	1181	1236	1290		

TABLE 5b -- STRAY ELEPHANT - COPPER HEAP LEACH PROJECT

Joint Venture	Budge Mining Co.		50%		COPPER SALES		
	Bluestone Resource		50%		Market	% Product	Price
RESERVES		OPERATING SCHEDULE			Sulfate	15%	\$1.20
Tons	Grade	Mine	250	da/yr	Smelter	85%	\$1.10
3700000	0.60%	Plant	365	da/yr	Tank Hous	0%	\$1.10
Mining Cost (\$/ton)	Operating Cost (\$/lb)	Copper Price (\$)	Smelter Charge (\$/lb)	Royalty (%NSR)	Income Tax	Loan Interest Rate	Loan Recovery Rate
\$1.25	\$0.45	\$1.30	\$0.20	4%	34%	15%	75%
=====							
Year	0	1	2	3	4	5	
Cu Prod(tons)		3499	3971	4158	4345	4532	
Gross Val		7803	8855	9272	9690	10107	
Royalty		312	354	371	388	404	
Gross Inc		7491	8501	8901	9302	9703	
Op Cost		3161	3587	3756	3925	4095	
Depr		400	400	400	400	400	
Pretx Inc		3930	4513	4745	4977	5208	
Depl		1124	1275	1335	1395	1455	
Inc Tax		1336	1535	1613	1692	1771	
Profit		2594	2979	3132	3285	3438	
Depr		400	400	400	400	400	
Depl		1124	1275	1335	1395	1455	
Cap Exp							
Expl	0						
Dev	0						
Total	2000						
NCF	-2000	4117	4654	4867	5080	5293	
DCF-ROI	215%						
Budge Inv	-2000						
Loan Int		300	0	0	0	0	
Cap Rec		2000	0	0	0	0	
Op Inc		909	2327	2433	2540	2646	
Budge NCF	-2000	3209	2327	2433	2540	2646	
DCF-ROI	142%						
Bluestn NCF		909	2327	2433	2540	2646	

10-10-1989

ISOTHERM POINT CALCULATIONS AND GRAPHICS/McCABE-THIELES  
ISOCALC I PROGRAM-HENKEL CORP.-CU/H2SO4 SYSTEM  
(Ver. 1.06/RBS)

Client Name/Project:STRAY ELEPHANT

Choose from the following reagents: LIX 84, LIX 622, LIX 684, LIX 984,  
LIX 860, or other.

What is reagent to be predicted (USE CAPS PLEASE!)?-LIX 622

What is copper content of stripped organic-g/l?- 4.304

What is volume pct. of reagent tested?- 16

What is copper content of aqueous solution tested-g/l?- 3.66

What is pH of solution tested?- 1.9

What is total sulfate content of solution tested-g/l?- 15

Do you want to calculate the SO4= activity as a %, Y or N?N

What is the assumed activity of the SO4= ion, % ?- 40

What are other parameters of circuit?O/A = 1/1 50/139 H<sub>2</sub>SO<sub>4</sub>

The MAX LOAD for 16 pct. LIX 622 is 8.969 g/l Cu.

O/A= 10

ORG.= 4.658g/l Cu; AQ.= 0.120g/l Cu.

O/A= 5

ORG.= 5.006g/l Cu; AQ.= 0.149g/l Cu.

O/A= 2

ORG.= 5.994g/l Cu; AQ.= 0.280g/l Cu.

O/A= 1.5

ORG.= 6.483g/l Cu; AQ.= 0.392g/l Cu.

O/A= 1

ORG.= 7.266g/l Cu; AQ.= 0.698g/l Cu.

O/A= .5

ORG.= 8.295g/l Cu; AQ.= 1.664g/l Cu.

O/A= .2

ORG.= 8.779g/l Cu; AQ.= 2.765g/l Cu.

O/A= .1

ORG.= 8.887g/l Cu; AQ.= 3.202g/l Cu.

Time began:15:29:06; Time ended:15:31:32

Iterations= 835

What is O/A ratio in extraction? 1

What is mixer efficiency across extraction-%? 94

How many stages are in extraction (1-3)? 2

The Materials Balance across the circuit is as follows (g/l Cu):

Aq. Feed---->E-1 Aq.---->E-2 Aq. (Raff.)

3.660

1.285

0.245

E-1 Org. (L.O.) (<---- E-2 Org. (<----Stp. Org.

7.683

5.308

4.304

The expected recovery is 93.30%.

The loaded organic is 85.66% of max load.

The net transfer is 0.211 g/l Cu per 1 vol. % of LIX 622.

15:34:31 15:37:05



**Stauffer Chemical Company**

10777 NORTHWEST FREEWAY  
SUITE 650  
HOUSTON, TX 77092  
MAILING ADDRESS  
P.O. BOX 1381  
HOUSTON, TX 77251  
TEL.: (713) 688-9311

September 11, 1989

David B. Hackman,  
J. Michael Serakoski, et al  
c/o Sage Associates  
3-4228 East Grant Road  
Tucson, Arizona 85712

Dear Sirs:

This letter is to confirm our interest in evaluating further the use of our "acid" for leaching on your Arizona property. We are looking forward to further discussions and testing.

Sincerely,

STAUFFER CHEMICAL COMPANY

A handwritten signature in cursive script, appearing to read 'R. L. Dixon'.

R. L. Dixon

RLD:hb

cc: Larry D. LeCompte  
Cyprus Miami  
P. O. Box 4444  
Claypool, Arizona 85532



# CAL-CHEM METALS, INC.

10192 JON DAY DRIVE  
HUNTINGTON BEACH, CA 92646-5408  
(714) 962-6640 • TWX 910-395-1765  
FAX: (714) 963-7605

October 18, 1989

Mr. J.M Sierakoski  
SAGE

## COPPER SULFATE OVERVIEW

1. U. S. Production	<u>Gross Weight (1988)</u>	<u>As Copper</u>
1st Quarter	7,939 MT	2,012 MT
2nd Quarter	8,909 MT	2,247 MT
3rd Quarter	9,405 MT	2,372 MT
4th Quarter	<u>7,931 MT</u>	<u>1,999 MT</u>
TOTAL	34,184 MT	8,630 MT

### 1987

1st Quarter	7,834 MT	1,971 MT
2nd Quarter	8,088 MT	2,037 MT

## 2. U.S. Imports of Copper Sulfate

1988		10,992 MT
1989	1st Quarter	4,059 MT
	2nd Quarter	2,861 MT

3. 1988 U.S. Consumption of Copper Sulfate was approximately 45,176 Metric Tons or 99,595,010 lbs. Assuming 25% copper content, this is 11,294 Metric Tons and 24,898,752 as copper.

The first half of 1989 shows total consumption of 22,842 Metric Tons of Copper Sulfate or 50,357,473 lbs. Assuming 25% copper content this is 5,710 Metric Tons and 12,589,368 pounds as copper.

4. Imports from Yugoslavia for the first half of 1989 have been 1,965.9 MT at a CIF value of .29 per pound of material. To that, you need add 5% duty plus receiving cost and inland freight. Duty will be approximately \$0.012 lbs of material based on customs value.

Page 2

Mr. J.M. Sierakoski  
October 18, 1989

Imports from the USSR for the first half of 1989 have been 1,534.4 MT at a CIF value of \$.301 per pound of material. This also has a 5% duty. This duty is approximately \$0.013 lbs of material based on customs value.

Imports from Canada for the first half of 1989 have been 920.7 MT at a CIF value of \$0.36 lbs. Mexico is a duty free country.

U.S. producers are selling product to their major consumers and largest distributors at \$0.52 to \$0.56 per pound less 5%. Naturally there are exceptions. Canada producers are at \$0.36 to \$0.40 per pound delivered to their largest U.S. customers and distributors.

Quality product is the name of the game along with proper sizing and packaging and free flowing characteristics. A new producer in the U.S. with quality comparable to U.S. producers could market approximately 6 to 10% of the U.S. Consumption within 12 months or 3,000 to 4,500 MT of copper sulfate. This is 750 MT to 1,125 MT as copper per year. There could very likely need to be price concessions the first year as inducement to purchase a product from a new company.

5. Cal-Chem Metals, Inc. suggests it can penetrate the U.S. market by 5 to 10% within 12 months selling to the animal feed and agricultural markets primarily and secondarily to the plating, woodtreating, ceramic and other industrial markets. Cal-Chem Metals would charge a 5% commission fee for this service.

Value added to the copper sulfate sales value versus the COMEX value indicates we should expect to sell at \$0.40/lb minimally to as high as \$0.50/lb.

Current COMEX:		\$1.30 lb/copper	
Current Copper Sulfate	minimum:	\$1.60 lb/copper	\$.40 lb/CuSO <sub>4</sub>
	to as high as:	\$2.00 lb/copper	\$.50 lb/CuSO <sub>4</sub>

The reason the minimum price is \$0.40 per pound versus the import price on the communist block country import price of \$0.31 is that most of the communist block country imports are sold as feed stocks to copper producers who upgrade the material to U.S. quality standards and also use it to produce other copper chemicals such as copper hydroxide. The real market shows that U.S. distributors price is in the range of \$0.36 to \$0.40 lb of material FOB their plant.

Once we have samples of the quality we expect to produce we can test the market on pricing and volumes.

Best Regards,



Donald R. Nickerson  
DRN:rdn

## CAL-CHEM METALS INC

A California Corporation started June 30, 1980 by Donald R. Nickerson founder and president. Cal-Chem Metals Inc. acts as a marketing agent for Adelaide Chemical Company. Adelaide Chemical Company has a copper oxide production facility in Burra, South Australia. CCM markets approximately 3,000 MT per year of copper oxide for Adelaide Chemical. Cal-Chem Metals also purchases and sells various copper by-product streams and copper chemicals separate from its involvement with Adelaide Chemical.

Cal-Chem Metals inc. acts as agent for TOP Australia Ltd. of Adelaide South Australia. Responsibilities are for monitoring TOP's purchases of high analysis fertilizer such as a Di-Ammonium Phosphate, Mono-Ammonium Phosphate and Triple Super Phosphate. Monitoring responsibilities are to utilize local analytical labs in the Tampa, Florida and New Orleans areas for product inspection, visually and analytically. TOP imports approximately 20-30,000 metric tons per year of high analysis fertilizers from the U.S. and Canada.

Donald R. Nickerson, president of Cal-Chem Metals Inc is a business graduate from the University of Minnesota and has been in marketing most of his career. His last two employers were Philip A. Hunt Chemical Corporation where he was Regional Manager for the South Eastern United States in their Graphic Arts Division. This established exposure to the copper recovery business in the Midwest and South Eastern portions of the United States. His responsibilities were for thirteen salesmen and to increase sales by a minimum of 15% per year. After six years he left P.A. Hunt Chemical and joined Southern California Chemical, now owned by CP Chemical Company. He started as area sales manager for the south, stationed in Dallas. After six months, sales were increased to the point where it became economical to set up a blending plant in Garland, Texas. After two years and expansion of two additional plants, one in Union, Illinois, the other in Bayonne, New Jersey, Nickerson was promoted to Vice-President of Marketing and transferred to California. Nickerson was promoted to Vice-President and General Manager in June of 1972. He was with Southern California Chemical for twelve years. The main products sold to the printed circuit board Manufacturers were etchants to dissolve copper. The customers of these etchants required the suppliers to take the etchant back. The primary etchants were ammoniacal. The spent etchants returned to Southern California Chemical were used as feed stocks to produce Copper Chemicals such as Copper Oxide, Copper Sulfate and Copper Oxychlorides. Due to the recovery business, Nickerson received invaluable experience and exposure to the markets for Copper chemicals and also to the U.S. and international producers of copper chemicals.

Cal-Chem Metals, Inc. is responsible for Australian Copper Oxide sales of over \$7,000,000. In addition to this Cal-Chem Metals Inc markets over \$1,000,000 in other copper products.

PAUL A. HODGES  
8800 EAST CALLE BOLTIVAR  
TUCSON, ARIZONA 85715  
TEL: (602) 885-9188

EDUCATION

Colorado School of Mines, Golden, Colorado  
Engineer of Mines degree, 1951  
Tau Beta Pi

PROFESSIONAL ACTIVITIES

- . Registered Professional Engineer, Arizona
- . Society of Mining Engineers of AIME

BUSINESS HISTORY

1983 to                      Compañía Minera San José  
1988                              Santiago, Chile

Compañía Minera San José managed the affairs of St. Joe Minerals in Chile which include the operations of 83% owned Compañía Minera El Indio and various exploration projects. The El Indio operations consist of a gold/silver/copper mine and treatment plant, the Tambo area mines being developed to both feed higher grade ore to the El Indio plant and lower grade material to heap leaching operations.

1984 to                      PRESIDENT  
1988

1983 to                      VICE PRESIDENT OPERATIONS  
1984

---

1982 to                      SELF-EMPLOYED CONSULTANT  
1983                              Tucson, Arizona

---

1979 to                      CONSULTANT  
1982                              Mining Group  
                                    Golder Associates, Inc.  
                                    Denver Colorado

## PAUL A. HODGES

Golder Associates, with 500 engineers, is a firm of consulting mining and geotechnical engineers. It has offices in the U.S., Canada, England and Australia.

Mr. Hodges joined Golder to establish and head up the mining group in Denver. At its peak the group had a professional staff of 15 to 18.

He participated in numerous consulting assignments including feasibility studies and planning, design and review of base metal and energy mineral projects and operations in North America, South America, Europe and Africa.

He was involved in one project for St. Joe International to update five year old feasibility studies for Pachon S.A. Minera (Argentina).

---

1974 to                    Anamax Mining Company  
1979                      Twin Buttes Operations  
                              Sahuarita, Arizona

Anamax, which operated one of the largest open pit copper mines in the U.S. (capacity 500,000 tons per day), was a joint venture of Anaconda and Amax. It was originally an Anaconda operation with Anaconda leasing the property from Banner Mining Company. In 1973 Banner was acquired by Amax, and the joint venture with Anaconda was announced in 1974. Under a non-profit partnership arrangement, each partner took 50% of the output.

1977 to                    PRESIDENT  
1979

He reported to an operating committee consisting of four representatives from Amax and four from Anaconda.

In this and his prior position he was responsible for drastically reducing personnel (from 2300 to 1500) while raising productivity of the mine, improving copper and molybdenum recoveries in the concentrator, and overseeing the construction and start-up of the oxide leach-solvent extraction-electrowinning plant.

His staff included the vice president-operations, the director-industrial relations and the controller.

1975 to                    VICE PRESIDENT-OPERATIONS  
1977

He was responsible for all mining, concentrator and oxide leach operations and for all maintenance at Twin Buttes.

1974 to                    VICE PRESIDENT-ENGINEERING  
1975                        & CONSTRUCTION

1963 to                    The Rio Tinto-Zinc Corporation Ltd. (RTZ)  
1973                        London, England

The RTZ Group is a British-based international group of mining and industrial companies with interests in almost every major metal and fuel. In addition to its original activities in lead, zinc, copper, uranium and aluminum, the group has diversified into iron ore, borax, oil, specialty steels, tin smelting, hydro-electric power, and aluminum products. RTZ itself coordinates, where appropriate, the group's activities and plays a major role in the raising of large-scale finance.

1968 to                    DIRECTOR OF MINING OPERATIONS  
1973                        Rio Tinto Management Services  
                                 Johannesburg, South Africa

As a planner, consultant, and project manager, he was involved in RTZ mining projects throughout the world. Many of these projects today are major producing operations.

Some of his activities:

- Long-range pit planning for Palabora Mining Company
- Mine planning and cost estimating for the Rossing Uranium project and other exploration projects in southern Africa that appeared to have open pit possibilities.
- Project manager of the Letseng-la-Terai diamond project in Lesotho.
- Open pit consultant for RTZ in London and various of its worldwide subsidiaries in project studies of Bougainville (Solomon Islands), Lornex (Canada), Cerro Colorado (Spain), Udokan (URSS) and Coed-y-Brenin (Wales).

1963 to  
1968

GENERAL MINE SUPERINTENDENT  
Palabora Mining Company, Ltd.  
Palabora Operations  
Phalaborwa, Trvl., South Africa

Palabora, 38.9% owned by The RTZ Group, is an open pit copper mine with ore capacity of 93,000 metric tons per day. Operations include a concentrator, heavy minerals plant, smelter and refinery. Current employment exceeds 3,500.

He was responsible for the start-up of this major mine, which opened in 1964. He was involved from pre-production into full-scale production and through several expansion phases. He was responsible for the selection and purchase of the equipment, the design of the maintenance facilities, and the hiring and training of the operating and maintenance staff.

Having successfully gotten the mine into operation and trained an effective South African management team, he decided to move to Johannesburg where he could "keep an eye" on Palabora while consulting with Rio Tinto Management Services.

---

1953 to  
1963

MINE SUPERINTENDENT  
Anaconda Company  
Chuquicamata, Chile

Reporting to the general manager, he directed a work force of 2,000 employees and was responsible for operations, engineering, geology and maintenance and repairs for this 160,000 tons per day copper mining operation.

He began as a mining engineer and, in a series of more responsible operating positions, worked his way up to the position of mine superintendent.

He left Chuquicamata for the opportunity of starting up a new mining operation in South Africa.

---

1951 to  
1953

JUNIOR ENGINEER  
ASARCO Inc.  
New Mexico and Arizona

He began as a trainee at the Groundhog underground copper mine in New Mexico and then, as a junior engineer, worked in the preproduction development of the Silver Bell open pit copper mine in Arizona.

July 15, 1989

Name: Joseph Michael Sierakoski

Address: 11527 N. Lone Mountain Place, Tucson, Arizona 85737

Home phone: 602 - 297 - 7852

Present Position: Director Marketing and Technical Service -  
Latin America for Henkel Corporation

Metallurgical Consultant - part time

Education: High School - Bagdad High School, Bagdad, Arizona  
1961 - 1965

College - University of Arizona, Tucson, Arizona  
1965 - 1970

Bachelor of Arts in Psychology 1969

Bachelor of Science in Chemistry 1970

Minors in Mathematics-Physics, Zoology

Languages- Two years of Spanish in High School, two  
years of German and one year of French in  
college, two and a half weeks of Spanish  
and one half week of Portuguese in Berlitz  
School of Language. Speak fluent Spanish.

Publications: " The LIX 860 Series: Unmodified Copper Extrac-  
tion Reagents", International Solvent Extraction  
Conference, 1983, Denver, Colorado.

" Practical Aspects of Copper Solvent Extraction:  
Reagent Selection, Circuit Design & Operation",  
Copper 87, Vina del Mar, Chile.

Patents: U.S. Patent No. 4,507,268 - Solvent Extraction, 3/26/85  
U.S. Patent No. 4,544,532 - Solvent Extraction, 10/1/85  
U.S. Patent No. 4,563,256 - Solvent Extraction Process  
for Recovery of Zinc, 1/7/86

Professional Organizations: Member of AIME

Experience: Henkel Corporation  
Tucson, Arizona

Currently working as Director of Marketing and  
Technical Service - Latin America since November, 1983. This  
position is responsible for the marketing, sales, and technical  
service associated with the LIX, ALAMINE, and GUARTEC products of  
Henkel in Mexico, Central America, South America and parts of the  
United States. Two senior technical representatives report to  
this position. The main emphasis is on the extraction of copper  
from acidic solutions via solvent extraction. Solvent extraction  
of uranium, vanadium, nickel, cobalt, zinc, molybdenum, arsenic,  
antimony, bismuth, iron, rhenium, tungsten, silver and gold are  
also part of this job responsibility.

Experience: Henkel Corporation  
Tucson, Arizona

The job position interfaces with various government agencies, private mining companies, universities, research organizations and engineering companies involved with the design and construction of solvent extraction facilities. Hydrometallurgical consulting is also an integral part of this job.

November 1983 - September 1981 - Manager of Technical Services, Minerals Industry Division, Henkel Corporation. I was responsible for laboratory and technical service related to the Minerals Industry Division products. Two technologists reported to this position. (Worked with the Marketing Department to provide service to existing clients as well as potential clients by operating laboratory solvent extraction circuits and assisting in pilot plant operations at various mining facilities. Hydro-metallurgical consulting was also a part of this job.

Metallurgical consulting on a part time basis as a private individual has been done since 1981. Assistance in leaching, solvent extraction and electrowinning has been done on several metals. Main emphasis has been on feasibility testing of copper and zinc ores, secondary metal recovery, and subsequent design of a commercial operation. A list of clients and the respective projects is appended to this resume. I am actively involved with several mining companies at this time in the design of copper leaching and solvent extraction facilities.

Desert Refining International, Inc.  
American Analytical and Metallurgical Laboratories, Inc.  
Tucson, Arizona

August 31, 1981 - March 1, 1980 - Self employed as 25% owner of Desert Refining International, Inc. This company refined silver and gold from secondary metal sources to produce metal that was 99.99% pure. Final production rate was 1000 ounces per day of silver. Purchased American Analytical Laboratory as a 50% owner in February 1981 and was President of that custom assaying corporation. The Laboratory specialized in fire assaying of precious metals. I was also a 50% owner of Sieros Company during this entire period. Sieros produced copper sulfate crystals via ammoniacal leaching of electronic copper scrap followed by solvent extraction and crystallization. Sold out business interests in August 1981.

Henkel Corporation  
Tucson, Arizona

February 29, 1980 - February 16, 1978 - Senior Technical Representative, Henkel Corporation. This position in the Marketing Department was responsible for sales, technical service and

Henkel Corporation  
Tucson, Arizona

marketing of the LIX, ALAMINE, and GUARTEC accounts in the Western United States. Emphasis was on uranium, vanadium and copper solvent extraction.

Inspiration Consolidated Copper Company  
Inspiration, Arizona

January 31, 1978 - September, 1977 - Acting Director of Research and Chief Process Engineer for basic engineering of solvent extraction plant. Job responsibility included the Research Department and the Centralized Laboratory for Inspiration. The Analytical Department under the direction of the Chief Chemist consisted of six salaried chemists and eight days pay technicians. The Centralized Sampling Department was also under the Chief Chemist and consisted of one salaried foreman and six technicians. The Research Department consisted of three research engineers and eleven technicians.

The basic engineering for solvent extraction was with A.G. Mckee Engineering for the design of the leach piping and solvent extraction facility of a 4000 gallon per minute aqueous plant.

September, 1977 - May, 1977 - Chief Metallurgist, Research Department. Supervised three research engineers and eleven technicians. Responsible for all research work conducted for Inspiration Consolidated Copper Company and Inspiration Development Company. Considerable test work on hydrometallurgy was conducted during this period including cure leaching with ferric sulfate on mixed oxide-sulfide copper ores. Column leach tests as well as two commercial scale test heaps were operated during this period.

May, 1977 - October 20, 1976 - Hired as Senior Metallurgical Engineer in the Research Dept. Job responsibility was to coordinate and supervise various pilot plants, plant trials, and standard metallurgical testing of copper and nickel ores. Two solvent extraction pilot plants were operated during this period including the Davy-Powergas Knit Mesh unit. The position supervised two research engineers and six technicians. Postion was responsible for coordination of all testing with the various operating departments within the company.

The Anaconda Company  
Anaconda, Montana

October 8, 1976 - April, 1975 - Operations Superintendent for the Arbiter Plant in Anaconda, Montana. The Arbiter Plant was designed to produce 100 tons per day of cathode copper via ammoniacal leaching of sulfide copper concentrates followed by solvent extraction and electrowinning. Position included supervision of eight salaried foremen, four control room

The Anaconda Company  
Anaconda, Montana

technicians, and twentyfour day's pay operators. Plant facilities included concentrate unloading, pressurized oxygen-ammonia leaching, CCD thickener circuits, filtration, flotation, solvent extraction, lime boil, ammonia recovery, lead anode casting, and electrowinning. All process training of salaried and day's pay employees was under the direction of the operations supt.

April, 1975 - July, 1974 - Plant Metallurgist for the Arbiter Plant. Chief responsibility was for the operation of the lime boil, ammonia recovery, pressure leach, and solvent extraction portion of the Arbiter Plant.

July, 1974 - February, 1974 - Victoria Engineer for the Arbiter Plant. Job included pre-operational training of foremen, operators, and control room personnel for the proto-type Arbiter Plant.

The Anaconda Company  
Tucson, Arizona

February, 1974 - April 2, 1973 - Started as a Research Engineer in the pilot plant facility in Tucson. Job responsibility was chiefly to insure proper data acquisition of pilot plant operation and subsequent write-up of all pilot plant runs. Experience with hydrometallurgical leaching of copper, nickel, and zinc sulfide minerals using the Arbiter Process. Worked with solvent extraction and electrowinning of the previously mentioned metals.

Magma Copper Company  
San Manuel, Arizona

March 31, 1973 - June, 1972 - Reverb General Foreman, Smelter Division of Magma Copper. Job responsibility included a two reverberatory furnace operation handling approximately 2000 tons per day of copper concentrates. Reverb Department consisted of six salaried foremen and 150 day's pay employees under the direction of the Reverb General Foreman.

June, 1972 - February, 1972 - Metallurgical Engineer in the Smelter Division. Main responsibility was for sampling and reduction of copper loss in slag from the reverbs.

February, 1972 - April, 1971 - Metallurgical Engineer and Senior Chemist in the Metallurgical Department. Worked on tailing leach and acid neutralization in the concentrator. Set up analytical methods and equipped the new quality control lab when the new Electrolytic Copper Refinery started. Set up test equipment for quality control of high purity copper. Varied experience with standard wet chemical analysis, colorimetry, gas chromatography, emission spectroscopy, and x-ray.

April, 1971 - June, 1970 - Hired as a Metallurgical Engineer and Research Chemist in the Concentrator Division of Magma Copper.

Magma Copper Company  
San Manuel, Arizona

Job responsibility included standard reagent testing, flotation of copper and molybdenum, settling tests, screen analysis, and research work on acid neutralization of mill tailings.

Bagdad Copper Company  
Bagdad, Arizona

Summer work for five years ( 1965 -1970 ) which included work at their sulfuric acid plant, leach dumps, copper powder refinery, engineering and geology departments.

References available upon request.

July 15, 1989

Listing of companies that I have been employed as a consultant for metallurgical testing or solvent extraction design for their process streams:

Madison Industries P.O. Box 175 Old Bridge, New Jersey 08857	Copper Sulfate Production via SX
American Pacific Mining, Inc. 8835 E. Speedway Blvd. Tucson, Arizona 85710	B S & K Copper Project Leaching & SX-EW
Arimetco 8835 E. Speedway Blvd. Suite A Tucson, Arizona 85710	Yerington, Emerald Isle & Johnson Projects - Copper SX-EW
Sage Associates Inc. 4228 E. Grant Road #3 Tucson, Arizona 85712	Sanchez Project - Leach & SX-EW
Despac Mining Inc. P.O. Box 11496 Reno, Nevada 89510	Zinc Leaching & SX
Cominco Resources Inc. P.O. Box 3087 Spokane, Washington 99220	Mariquita Project - Copper Leaching & SX-EW
Westmont Mining Inc. 4949 So. Syracuse St. Suite 4200 Denver, Colorado 80237	Carlotta Project - Copper Leaching & SX-EW

Thank you for your interest in my services. If I may be of further service please contact me at the following address:

J. M. ( Mike ) Sierakoski  
11527 N. Lone Mountain Place  
Tucson, Arizona 85737  
Phone 602 - 297 - 7852

Resume  
Willis R. Dortch

PROFESSIONAL EXPERIENCE

5/76-present Principal, SAGE Associates. Inc., Tucson based mineral engineering and exploration consulting business. Acts as business manager, accountant, and financial officer of the Corporation. Has handled land work involving courthouse searches, claim staking, contract negotiation both for SAGE and for client companies. Also has managed construction projects-- road, camp, power plant-- in Mexico.

10/71-5/76 Teaching and studying gunsmithing. Traveling, hunting, photographing in Africa. Retired from Mobil Oil after 30 years service in October 1971.

6/69-1071 General Services Manager, Mobil Oil of Nigeria. Manager of Aviation, Communications, Land Transportation, Materials and Warehousing, Purchasing, Buildings and Housing.

3/68-6/69 Executive Assistant, Mobil Exploration (in Paris). Executive Assistant to General Manager, acted for General Manager in his absence (approximately 50% of time).

1959-68 General Services Manager, Mobil Oil Libya. Manager of Aviation Communications, Land Transportation, Materials and Warehousing, Purchasing, Buildings and Housing.

1956-59 Chief Geophysicist, Mobil Oil Libya. Directed geophysical operations which included three gravity and three seismic parties as well as airborne magnetic and marine seismic operations.

1955-56 Geophysical Supervisor, Mobil Exploration Portugal. Directed geophysical program of two seismic and two gravity parties.

1942-55 Geophysical Supervisor and Party Chief, Socony-Vacuum Mobil Oil), Venezuela and Colombia. Directed geophysical operations involving data gathering, interpretations and logistics for several seismic and gravity parties.

1941-42 Geophysicist, Magnolia Petroleum Co. (Mobil Oil) USA

EDUCATION

1946 University of Oklahoma, Geological Engineering, graduate studies

1937-41 University of Arkansas, B.S. in Electrical Engineering

MEMBERSHIPS

Member, Society of Exploration Geophysicists  
Member, European Association Exploration Geophysicists  
Member, AIME  
Professional Engineer, Arizona and Texas

FOREIGN LANGUAGES

Spanish, French, Portuguese and Italian

PERSONAL DATA

Born: September 27, 1920, Height 5'-11",  
Weight 165 lbs, Marital Status: Single  
Address: 4415 East Grant Road, #A107  
Tucson, AZ 85712  
Phone: (602) 881-2542

David B. Hackman  
4228 East Grant Road, #3  
Tucson, Arizona 85712  
602 795-8380

PROFESSIONAL EXPERIENCE

5/76-present

Principal, SAGE Associates, Inc. Tucson-based mineral engineering and exploration consulting company. Provided regional geological exploration, detailed geologic mapping, air photo interpretation, preliminary mine evaluation, geochemical and geophysical surveys and exploration drilling. The firm has specialized in evaluation of vein and bulk tonnage deposits principally of base and precious metals and industrial minerals.

Projects:

9/88-pres SANCHEZ Oxide Copper Deposit, Safford, AZ

Project manager for feasibility study of this deposit for an open pit, heap leach, mining operation with copper recovery by SX-EW at 20,000 tpd of ore. Organized the project, hired specific consultants, and made a geologic interpretation that was used as a framework for the ore reserve modeling and metallurgical testing. The project involved geologic interpretation, ore reserve modeling, metallurgical testing, geotechnical analysis, mine planning and permitting studies. Currently planning large-diameter core drilling program for more extensive metallurgical testing and geotechnical analysis.

7/84-1/88 16 to 1 Underground Gold Mine, Alleghany, CA.

Developed and managed the geologic program for restoration of mining at the 16 to 1 mine, which has produced more than one million ounces of gold. Responsible for planning the underground and surface mapping and diamond drilling program. Based on the results of this program and historical mine production data, an interpretation was made of the sequence of geologic events and the geologic controls of ore deposition for the deposit. Worked with the geostatistical analyst to develop a method for finding gold between drift levels using geochemical sampling and geostatistics. This technique is currently being used successfully by the mine staff.

7/82-12/83 Little Bald Mt and Zeke Gold Deposits, NV

Selected these deposits to be included with an Alaskan gold placer deposit for the Alaska/Nevada Gold Mines Limited Partnership. Raised a significant portion of the funding for the partnership and managed surface exploration programs for both deposits. Zeke has reserve of 2 million tons grading 0.056 oz/ton gold. Little Bald Mountain has been in production as an open pit and underground mine with gold extraction by heap leaching since 1984. The partnership has repaid invested capital and is currently producing gold profitably for the partners.

5/76-6/80 Epithermal Precious Metal Vein Exploration Program.

SAGE was formed in 1976 to explore for these deposits in the western US, the program was supported by St. Joe American. Two properties acquired for St. Joe and later quit-claimed to SAGE are in the Mogollon District, New Mexico and the Como District, Nevada. The Mogollon Property, under lease to the Cordex syndicate, is being explored under the direction of John Livermore. The Pony Meadows property in the Como District, under lease to U.S. Borax, is currently being drilled. Mogollon - Conducted surface mapping and directed much of the exploration drilling during the St. Joe program and for John Livermore (6/88-3/89). Como - Located the Pony Meadows property in late 1977 and conducted surface mapping, geochemical sampling, and drilling program based on a Comstock Lode Model.

12/71-7/74

Geologist, ALCOA. Directed the exploration of a copper deposit at San Antonio de la Huerta, Sonora, Mexico. Program included surface and underground mapping, diamond drilling, and interpretation of the geology in conjunction with geophysical data. Developed a series of feasibility studies and financial analyses to determine the appropriate mining method, determined that the deposit could best be mined by in situ leaching.

Jun68-Sep71

Geologist, summer Work in the western U.S. AMOCO Minerals (1971), Ernest K. Lehmann and Assoc. (1970), Sison Corp. (1969), Hanna Mining Co. (1968). Reconnaissance mapping, detailed mapping (surface and underground), core logging, geophysical interpretation, and geochemical sampling for precious and base metals.

6/64-7/67

Geophysicist, Mobil Oil, Tripoli, Libya. Geophysical data gathering and interpretation, and well-site geology and computer programming for geology and geophysics.

EDUCATION

1974-76

University of Arizona, Ph.D., Geological Engineering  
Dissertation: The Evaluation of Supergene Copper Deposits for in situ Leaching, Dec 1982.

1967-71

University of Arizona, M.S., Geological Engineering, Jun 1971

1960-64

Colorado School of Mines, B.S., Geophysical Engineering, Jun 1964

MEMBERSHIPS AND PUBLICATIONS

Member, Society of Economic Geologists

Member, Society of Exploration Geophysicists

Member, AIME

Registered Professional Engineer - Arizona

Publication:

Evaluacion del Deposito en San Antonio de la Huerta, Sonora, por Lixiviacion "In Situ" - published in Proceedings of XI National Convencion of Assoc. of Mining Engineers, Metallurgists, and Geologists of Mexico

FOREIGN LANGUAGES

Spanish

LARRY D. LE COMPTE

CONFIDENTIAL RESUME

589 North Sutherland Street  
Globe, Arizona 85501

Home Telephone: (602) 425-6281  
Business Telephone: (602) 473-7080

OBJECTIVE:

I am seeking to promote, establish, operate and manage a new industrial business where metal-bearing, inorganic hazardous wastes, as well as normal mining ores and concentrates are recycled and treated to recover a variety of base and precious metals. Those wastes and their problematic metals are targeted where maximum profitability can be achieved, but also those where no general recycling outlet currently exists. I would desire an executive management position which would include some degree of ownership.

EXPERIENCE:  
October 1963  
to Present

INSPIRATION CONSOLIDATED COPPER COMPANY

is a fully integrated natural resources company whose principal business is the production and sale of copper. Having sales of over \$200 million and net assets of \$170 million, Inspiration employs about one thousand people and operates primarily in the Southwestern United States. The marketing division is located in New York City.

PROJECT MANAGER, RESOURCE RECYCLING:

I was assigned to my present position in March 1985 after serving as Rod Plant Superintendent for nine years. My responsibility is to establish and manage a hazardous waste recycling program in order to generate new revenue sources. This includes all waste marketing, evaluation, approval, receipt, monitoring and quality control. A great deal of time and energy has been required in an attempt to gain State regulatory acceptance. While awaiting this benediction, the project has been expanded to include recycling of base and precious metals from both liquid and filter cake wastes. In addition, several California wastes have been exempted from hazardous waste manifesting if recycled at Inspiration. This project has progressed from an idea in early 1985 to gross \$1.9 million during 1987. Approximately 150 companies are currently approved for recycling at Inspiration.

During 1986 Hudson Bay Mining and Smelting Ltd., a sister company in Canada, requested a similar recycling program be established for their unit with marketing handled by my group.

Progress to date has been accomplished with minimal staff including myself, one office assistant, one engineer and another operating supervisor, both of whom were available part time only.

SUPERINTENDENT, FABRICATING DIVISION, ROD PLANT:

I was promoted to this position in June, 1976, after serving four years as Rod Plant General Foreman. My responsibilities

included a \$6.8 million annual operating budget; production of 210 million pounds of continuously cast 5/16-inch copper rod; blending a variety of copper cathode of inconsistent quality; maintaining low unit cost and highest marketable quality; controlling receiving, shipping, plant maintenance and modernization; resolving customer complaints and providing liaison as required. I directly supervised the three-shift operation with a complement of 46 unionized wage, 11 salary and three professional employees. Under my direction the plant has maintained 1978 unit costs levels through achieving 151 percent of production design capacity. I have completed design and implementation for a \$3.7 million plant modernization project including computerized automated molten metal casting, copper coil handling and gas/air combustion. I successfully completed a "Quality Circle" pilot program and had an excellent record in union contract negotiations, enforcement and grievance handling. As Superintendent I reported to the Manager of Metallurgical Operations and filled in for the vacationing manager on occasion. I was assigned additional responsibility for the concentrator for one month during 1982 at which time a failed tailings decant project was reimplemented successfully. I served as chairman of the Metallurgical Operations Career Development panel and served as third member of a customer relations team including the Vice President of Marketing and Director of Transportation. I frequently interfaced with local management and corporate officials.

#### GENERAL FOREMAN:

I was promoted to this position in February, 1972 after serving three years as operating shift foreman. My responsibilities included plant production, maintenance, quality, cost and safety control. In November, 1974 the Superintendent resigned and I assumed full plant responsibility until my ultimate promotion.

#### SHIFT FOREMAN:

I was promoted to this position in July, 1969 after serving as Geologist Technician for three years. The continuous melting, casting and rod rolling facility was the third of its kind in the world with first production in December 1968. During these formative years I developed the basis for tremendous process improvements and continued with these improvements to their fullest.

#### GEOLOGIST TECHNICIAN:

I was promoted to this position in 1966 after serving as a Geologist helper/sampler for three years. Inspiration entered into an expansion program that included exploration and development of several new properties. My responsibilities were supervision of a 4 to 8 man drill sampling crew. I assisted and supervised staking mining claims, mapping, geochemical and geophysical surveying, performing claim location and annual assessment work.

**GEOLOGIST HELPER/SAMPLER:**

I began my employment in October, 1963 as a geologist helper. My duties included collecting and preparing a variety of drill samples and assisting geologists in the field as required.

June, 1961 to  
October, 1963

**EARLY EMPLOYMENT:**

After graduating from high school I sought employment to earn money for college. I worked for Log-Master Services, Inc. and Century Geophysical Corporation as a directional survey draftsman and electric log prober's helper, respectively. Both firms were engaged in servicing the uranium mining industry near Grants, New Mexico. I worked both surface and underground locations.

**EDUCATION:**

I completed one semester at New Mexico State University at Las Cruces. I did not return due to insufficient funds. I had expected a degree from the Engineering College. I have subsequently completed Geology and Computer Language college courses to assist my various positions. I have completed numerous courses offered by my employer including technical report writing and improving supervisory skills.

**AFFILIATIONS:**

Wire Association International (past member).  
American Institute of Mining Engineers (past member).

**MILITARY:**

No military service.

**PERSONAL:**

I was born October 26, 1943, am 5'10 1/2" tall and weigh 175 pounds. I am married with one daughter in college. I enjoy hunting, fishing and general exercise.

**REFERENCES:**

I will provide references and a current position description upon request.



GEORGE W. SITES

Page Two

QUALIFICATIONS

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**EXPERIENCE: (cont)**

1967 - 1968

CANYON STATE CONTRACTORS  
Phoenix, Arizona

DIAMOND CORE DRILLER

1966 - 1967

MID STATE TOOL AND DYE  
Nashville, Tennessee

TOOL AND DYE MAKER

1962 - 1966

SOUTHERN WIRES  
Quincy, Florida

Served Machinist Apprenticeship

1959 - 1962

PHILLIP'S CORPORATION - MINERAL & CHEMICAL  
Attapulgus, Georgia

WELDER

1958 - 1959

SOUTHERN WIRES  
Quincy, Florida

WELDER

Received machinist apprenticeship.

1958 -

A. W. WILLIAMS DRILLING  
Mobile, Alabama

Worked in oil field 6 months.

1957 - 1958

COX STEEL  
Tallahassee, Florida

WELDER

1953 - 1957

DEZEL FURNITURE FACTORY  
Quincy, Florida

Half owner of furniture factory.

---

**PERSONAL DATA:**Date of Birth: July 30, 1937  
Health: Excellent  
Marital Status: Married, 4 children

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**HOBBIES:**Mineral Exploration, Western History

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While employed at Inspiration Consolidated Copper Company, we formed an Arizona base corporation in 1969 named Chantell Incorporated, which I was President.

We have 137 mining claims, and have built 2 cable tool drill rigs. I also built a down the hole rotary drill rig and one diamond core drill.

Did custom machine work and fabrication in our machine shop.

Drilled many water wells in the area and did contract drilling of all types for Inspiration and others.

I did a lot of rebuild work for Inspiration, approximately 20,00 drag chain link parts.

Mined azurite nuggets, built a number of roads and did land leveling, and rebuilt many pieces of heavy equipment, trucks, caterpillars, drills, cranes and all types of mining equipment, crushers, mills, flotation cells.

24 negatives  
removed from

folder to  
be archived separately



MILLSAPS MINERAL SERVICES, INC.

Dale -  
FYI

October 24, 1989

To: Carole O'Brien  
From: Frank Millsaps  
Subject: Stray Elephant Project

The Stray Elephant copper property is a very interesting proposition. It seems that there is a potential to get into the copper business within a year.

I would like to suggest that Budge make Bluestone an offer for the property. However I can not agree with their demands for either money, nor operating control.

Bluestone Resources, Inc have really only earned a finder's fee for this. Being generous, one could offer them a 20% split after Budge recovered the original investment. I would insist that Budge be the operator, and manager. However, Bluestone should be required to do everything possible to make the project succeed, including giving technical and marketing backup if Budge desires such services.

I have checked with ASARCO and Kennecott about marketing cement copper. Both are eager to get cement copper for their smelters. They both charge \$0.15 per pound of copper for smelting. According to the executive summary the charge smelter charge for copper sulfate is \$ 0.20 per pound. Also the freight on cement copper is considerably less, in that Copper Sulfate only has 500 pounds of copper per ton of crystals compared to a minimum of 1200 pound of copper in cement copper.

The capital cost estimate is a little off in that there is an 8.5% contingency, but no allowance for start-up capital. I am not certain that the contract mining for the first 200,000 tons should be in the capital cost estimate as it is an operating cost, and shouldn't be capitalized.

We can not figure on getting free acid, the letter from Stauffer Chemical Company is of no value what so ever in figuring operating costs. Acid from San Manuel will cost about \$ 26.00 per ton for freight alone. If acid costs \$15.00 FOB S.M. the cost delivered will be just over 2 cents per pound, and at 8 lbs/lb of copper that is \$ 0.164 per lb of copper.

The generally accepted cost for iron for precipitation is 8 cents per pound of copper. We will have to investigate the supply picture for that area. Considering the difference in smelter charges and freight of product the cost of iron is offset. The cost of LIX chemicals would be saved. I believe that labor costs will run the same regardless of the recovery method used. The operating cost estimate, using Bluestone's assumptions for recovery and other costs, for producing cement copper is \$ 0.5242 per pound of copper produced.

This project is very sensitive to recovery. One of the first things we need to do is get some meaningful testwork started. I would suggest that column tests be started as soon as drill cuttings are available. And that after parameters are established a test heap be set up.

BLUESTONE RESOURCES, Inc.  
4228 East Grant Road. #3  
Tucson, AZ 85712  
Tel 602 795-8380  
Fax 602 795-8389

Ms. Carol O'Brien  
A.F. Budge (Mining) Limited  
4301 N. 75th Street  
Scottsdale, AZ 85251

Dear Carol:

Enclosed is our summary report for the Stray Elephant Project near Quartzsite, AZ.

It is our understanding that should Budge Mining choose to enter into a joint venture agreement with Bluestone Resources for the production of copper from the Stray Elephant Project: (1) policy decisions regarding the operation would be made jointly, (2) Bluestone Resources would operate the property, (3) Budge Mining would recover its investment and interest from 75% of the cash flow, and (4) the remainder of the cash flow would be divided equally between the parties.

If you have any questions or comments please feel free to call.

Yours very truly,  
BLUESTONE RESOURCES, Inc.



David B. Hackman, President

## STRAY ELEPHANT PROJECT

### Executive Summary

The Stray Elephant copper property is located 7-8 miles west of Quartzsite, Arizona and approximately 1/4 mile south of Interstate 10 (Figure 1). There are 78 claims largely in sections 31 and 32, T4N, R20W, and section 4, 5 and 6, T3N, R20W. The claims are in the Middle Camp - Oro Fino mining district in the south Dome Rock Mountains, La Paz County, Arizona (Figure 2).

The property has easy access from Interstate 10 at the Dome Rock Interchange for both east and west travel. There is an additional entrance for east access to Interstate 10 approximately 1/4 mile north of the mineralized area known as "outcrop hill". Electricity is available from a light power line on the northern side of Interstate 10. The closest heavy duty power line is three miles to the west of the property. A water supply will have to be obtained from wells that will be drilled on the eastern portion of the property. There is water available at the Beacon service station and Ryder factory at Tom Wells Road, 4.6 miles to the west of the property.

The property was originally located in 1906 and has had only minor amounts of ore mined for direct shipment to various smelters. An adit and winze were driven in the 1920's into the base of outcrop hill. Outcrop hill is in the northern portion of the claim group and has the most drilling information. The reserves in the outcrop hill zone are estimated to be 3.7 million tons of 0.60% copper (Loghry, 1989). The southern zone has only one drill hole of significance and will need extensive drilling to further define the ore reserves which have the potential to be in the range of 5-6 million tons.

The Stray Elephant copper mineralization is localized in shear zones within a Mesozoic schist intruded by a quartz monzonite pluton. The northwest portion of the 4200 foot long zone of copper mineralization is exposed on outcrop hill. Most of the copper is contained in chrysocolla with minor amounts of cuprite, chalcocite, and chalcopyrite. The southeast portion of the deposit outcrops locally but most of the potential in this area is below leached outcrops or under alluvium.

The exploration program will consist of making a new topographic map at a scale of 1 :1200, geologic mapping of the surface, and diamond core drilling. Core drilling will define the copper distribution and structural characteristics of the ore better than rotary drilling. The core will be used for bottle roll and column leach tests.

Bluestone Resources (Table 1) currently has an option from the property owners to explore and develop the Stray Elephant Copper Property. The plan of operations at this time is to finish the drilling program in the outcrop hill area, to develop a mining plan and finalize ore reserves in this area. Outcrop hill has the least amount of preproduction stripping and has several high grade copper oxide zones. Approximately four months of drilling will be necessary to complete the analysis of the northwestern part of the ore body. Permitting will proceed at the same time as the drilling program, as the permitting process is expected to take six to eight months for final approval. Basic engineering will start at the same time as the drilling program and continue directly into the detailed engineering-construction phase.

The production of copper sulfate pentahydrate crystals is currently planned at Stray Elephant. The ore is to be mined at 3000 tons per day, five days per week, using contract mining. The ore is to be leached using strong acid technology followed by solvent extraction-crystallization (Figure 3).

The ore reserves at this time are approximately 3.7 million tons in the northwest portion of the deposit, however, there is an additional potential for 5-6 million more tons undetermined grade in the southeast portion of the deposit. At the fixed mining rate of 15,000 tons of ore per week the known reserves will take 4.74 years to mine. The recoveries from the leaching area are shown in table 2 with an assumed final recovery of 89 to 90% of the total contained copper. This final recovery is after 6-7 rinse cycles of 91 days per rinse cycle (546-637 days) for each 15,000 ton pad. The layout for heap levels one and two are illustrated in Figures 4a and 4b.

The leach area will be actively rinsed 365 days per year and the solvent extraction circuit is designed to operate under the same schedule. Crystallization can be stopped for holidays or other necessary down-time as the system will be designed for batch processing.

The total for land, exploration, and capital cost should not exceed \$2,000,000 (Table 3). All of these funds are expected to be expended in a one-year period, which is anticipated to be required for exploration, permitting and development of the mine and metallurgical plant.

The operating costs are listed in Table 4. These costs are believed to be conservative and it is expected that leaching acid can be obtained without cost. Therefore, total operating costs are expected to be no more than \$0.4517 per pound of contained copper.

Tables 5a and 5b illustrate the cash flow anticipated for the Stray Elephant project. Don Nickerson, one of our associates, can market five tons of copper sulfate (1.25 tons of contained copper) per day at a minimum price of \$1.20 per pound of contained copper, F.O.B. plant site. He believes he can achieve substantial additional market penetration with time. In the meantime the remaining copper sulfate can be sold to the Cyprus Miami smelter for the COMEX price minus \$0.20.

The difference between the two cases illustrated in Tables 5a and 5b is the difference in the COMEX copper price, \$0.85/lb-Cu in Table 5a and \$1.30/lb-Cu in Table 5b. Even at a copper price of \$0.85/lb.-Cu the project has a satisfactory rate of return without further penetration of the copper sulfate market.

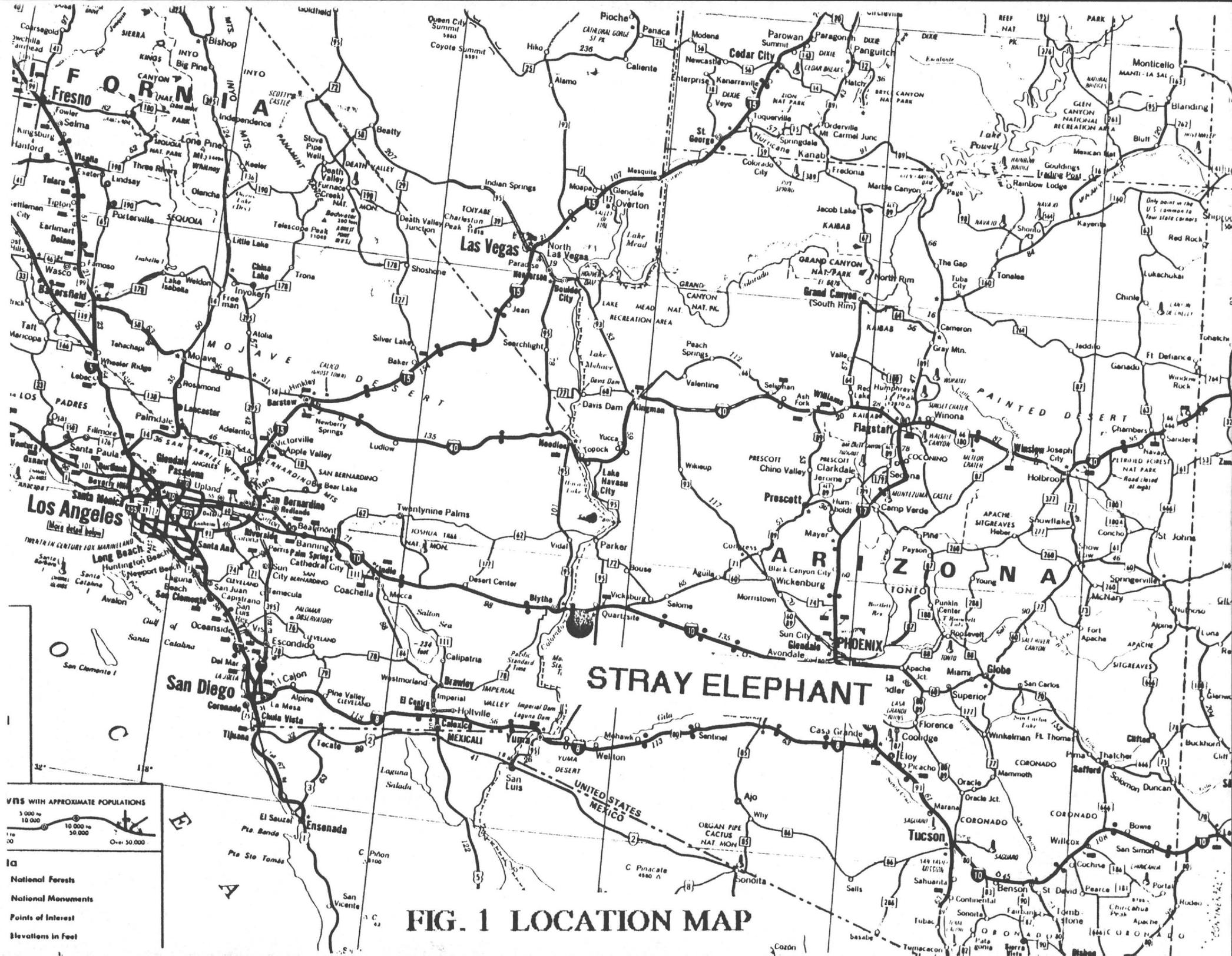
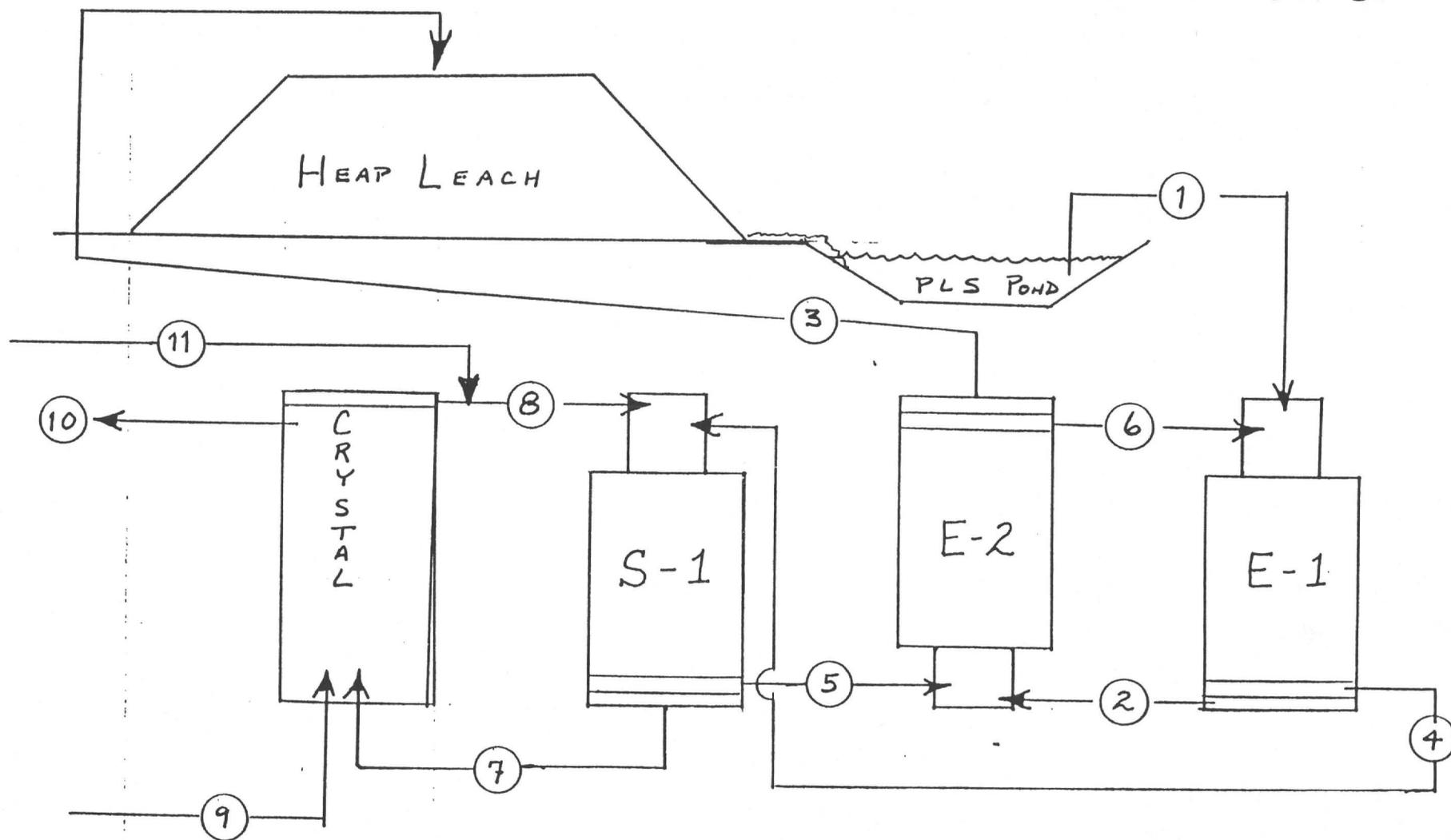


Figure 3



Nº OF STREAM	1	2	3	4	5	6	7	8	9	10	11
DESCRIPTION	PLS	E-1 AQ.	RAFFINATE	LOADED ORGANIC	STRIPPED ORGANIC	SEMI-LOADED ORGANIC	SX STRIP LIQUOR	SX STRIPPING LIQUOR	SULFURIC ACID	WASHED CRYSTALS	WASH LIQUOR
FLOW, GPM	500	500	500	500	500	500	171	171	1.94	—	3.34
CU, g/L	3.66	1.28	0.24	7.72	4.30	5.34	50.0	40.0	0	25.45%	40.0
CU, TPD	10.98	3.84	0.72	23.16	12.90	16.02	51.30	41.04	21.29*	10.26	0.80

\* 93% ACID

STRAY ELEPHANT  
LEACH PADS  
LEVEL ONE

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

Figure 4a

STRAY ELEPHANT  
LEACH PADS  
LEVEL TWO

21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40

Figure 4b

Table 1

BLUESTONE, INC.

Names and addresses of shareholders

- |  |   |
|--|---|
| 1) Paul A. Hodges<br>8800 East Calle Boliver<br>Tucson, AZ 85715       | 5) Donald Richard Nickerson<br>10192 John Day Drive<br>Huntington Beach, CA 92646 |
| 2) David B. Hackman<br>8120 East Sabino Drive<br>Tucson, AZ 85715      | 6) Larry Don LeCompte<br>589 North Sutherland<br>Globe, AZ 85801                  |
| 3) Willis R. Dortch<br>4415 East Grant, A107<br>Tucson, AZ 85712       | 7) Geprge William Sites<br>P.O. Box 1454<br>Claypool, AZ 85532                    |
| 4) Mike Sierakoski<br>11527 N. Lone Mountain Place<br>Tucson, AZ 85737 |   |

Table 2

## PRODUCTION SCHEDULE - STRAY ELEPHANT PROJECT

Year	Quarter	Rinsing Pads	Mined Tons (M)	% Cu Ext.	Cum. Tons Ext. Cu	Avg. TPD Cu
1	1	1 - 9	135	69	447.12	7.1
	2	10 - 22	330	80	1584	10.3
	3	23 - 35	525	81	2551.5	10.4
	4	36 - 48	720	81	3499.2	10.4
2	5	49 - 61	915	82	4501.8	10.5
	6	62 - 74	1110	82	5461.2	10.5
	7	75 - 87	1305	83	6498.9	10.7
	8	88 - 100	1500	83	7470	10.7
3	9	101-113	1695	84	8542.8	10.8
	10	114-126	1890	84	9525.6	10.8
	11	127-139	2085	85	10633.5	10.9
	12	140-152	2280	85	11628	10.9
4	13	153-165	2475	86	12771	11.1
	14	166-178	2670	86	13777.2	11.1
	15	179-191	2865	87	14955.3	11.2
	16	192-204	3060	87	15973.2	11.2
5	17	205-217	3255	88	17186.4	11.3
	18	218-230	3450	88	18216	11.3
	19	231-243	3645	89	19464.3	11.4
	20	244-256	3840	89	20505.6	11.4

TABLE 3

October 1989

PRELIMINARY CAPITAL COST ESTIMATE  
STRAY ELEPHANT COPPER PROJECT

ITEM -----	COST -----
Property down payment & preproduction	\$ 64,000
Air photo & topographic map	\$ 25,000
Drilling, geology, & testing	\$ 150,000
Water well, pumps & piping	\$ 50,000
Permitting	\$ 75,000
Contract mining @ \$ 1.25/ton	\$ 250,000
Primary jaw crusher & screens	\$ 250,000
Leach pad liner and preparation	\$ 300,000
PLS pond liner, dbl. lined 60 mil	\$ 50,000
PLS pumps & pipe line to SX	\$ 50,000
Solvent Extraction 2 Ext. x 1 Strip Concrete lined with HDPE, FRP mixers, SS impellers & shafts	\$ 65,000
Reagent, LIX 984 or 622	\$ 75,000
Diluent (high flash point kerosene)	\$ 20,000
Electrical power, substation, etc.	\$ 50,000
Offices, change room, warehouse	\$ 25,000
Crystallization Pads, liquid-solid sep., washing, drying, pumps, shipping, acid tank	\$ 150,000
Construction payroll	\$ 100,000
Engineering - detailed	\$ 50,000
Road construction	\$ 50,000
Contingency	\$ 151,000
	-----
TOTAL	\$ 2,000,000

Table 4

September 14, 1989

DIRECT OPERATING COSTS FOR STRAY ELEPHANT PROPERTY (EST.)

BASIS: 3000 TONS PER DAY MINED ORE TO LEACH, 5 DAYS PER WEEK  
 AVERAGE GRADE OF 0.60 % COPPER, (80) % RECOVERY (70%)  
 20,000 POUNDS PER DAY OF COPPER PRODUCED  
 CRUSHING TO MINUS 4" FOR LEACH  
 CURE AND RINSE FLOWRATES @ .0025 GPM

ITEM	COST	COMMENTS
MINING	\$ 0.134	\$ 1.25 PER TON
CRUSHING	\$ 0.031	\$ 0.30 PER TON
PAD PREPARATION	\$ 0.010	CAT AND DRIVER, SUPPLIES
SULFURIC ACID	\$ 0.120	10 @ 8#/#CU, \$30 PER TON 140
LIX 622	\$ 0.018	0.003#LIX/#CU
KEROSENE	\$ 0.003	60 GALLONS/DAY
SX LABOR	\$ 0.018	\$ 15/HOUR (360)
POWER	\$ 0.0075	\$ 150/DAY
CRYSTAL ACID	\$ 0.024	13.5 TONS/DAY
CRYSTAL WATER	\$ 0.0025	\$ 50/DAY
DRYING, L-S SEP.	\$ 0.010	\$ 200/DAY
FREIGHT - S.MAN.	\$ 0.0517	\$ 25.83/TON CRYSTAL
MISC. LABOR	\$ 0.018	\$ 15/HOUR
MAINT.	\$ 0.016	\$ 20/HOUR
ANALYTICAL	\$ 0.006	\$ 120/DAY
<hr/>		
SUBTOTAL	\$ 0.4697	
ADMINISTRATION	\$ 0.050	\$ 1000/DAY
SUBTOTAL	\$ 0.5197	
CONTINGENCY	\$ 0.0520	10 %
TOTAL	\$ 0.5717	PER POUND OF COPPER

*70% Recovery*

*1.50*

*\$ 0.80.15*

NOTE: IF LEACHING ACID IS AVAILABLE AT NO COST, THE DIRECT OPERATING COSTS ARE REDUCED TO \$ 0.4517 PER POUND OF COPPER.

*Owner  
 Jim L.  
 12/21/89*

TABLE 3a -- STRAY ELEPHANT - COPPER HEAP LEACH PROJECT

Joint Venture		Budge Mining Co. Bluestone Resource		50% 50%		COPPER SALES		
						Market	% Product	Price
RESERVES		OPERATING SCHEDULE				Sulfate	15%	\$1.20
Tons	Grade	Mine	250	da/yr	Smelter	85%	\$0.65	
3700000	0.60%	Plant	365	da/yr	Tank Hous	0%	\$0.65	
Mining Cost (\$/ton)	Operating Cost (\$/lb)	Copper Price (\$)	Smelter Charge (\$/lb)	Royalty (%NSR)	Income Tax	Loan Interest Rate	Loan Recovery Rate	
\$1.25	\$0.45	\$0.85	\$0.20	4%	34%	15%	75%	
=====								
Year	0	1	2	3	4	5		
Cu Prod(tons)		3499	3971	4158	4345	4532		
Gross Val		5126	5817	6091	6366	6640		
Royalty		205	253	244	255	266		
Gross Inc		4921	5585	5848	6111	6374		
Op Cost		3161	3587	3756	3925	4095		
Depr		400	400	400	400	400		
Pretx Inc		1360	1597	1691	1786	1880		
Depl		680	799	846	893	940		
Inc Tax		462	543	575	607	639		
Profit		898	1054	1116	1179	1241		
Depr		400	400	400	400	400		
Depl		680	799	846	893	940		
Cap Exp								
Expl	0							
Dev	0							
Total	2000							
NCF	-2000	1978	2253	2362	2471	2581		
DCF-ROI	104%							
Budge Inv	-2000							
Loan Int		300	111	0	0	0		
Cap Rec		1258	742	0	0	0		
Op Inc		210	700	1181	1236	1290		
Budge NCF	-2000	1768	1553	1181	1236	1290		
DCF-ROI	73%							
Bluestn NCF		210	700	1181	1236	1290		

TABLE 5b -- STRAY ELEPHANT - COPPER HEAP LEACH PROJECT

Joint Venture	Budge Mining Co.		50%		COPPER SALES		
	Bluestone Resource		50%		Market	% Product	Price
RESERVES		OPERATING SCHEDULE			Sulfate	15%	\$1.20
Tons	Grade	Mine	250	da/yr	Smelter	85%	\$1.10
3700000	0.60%	Plant	365	da/yr	Tank Hous	0%	\$1.10
Mining Cost (\$/ton)	Operating Cost (\$/lb)	Copper Price (\$)	Smelter Charge (\$/lb)	Royalty (%NSR)	Income Tax	Loan Interest Rate	Loan Recovery Rate
\$1.25	\$0.45	\$1.30	\$0.20	4%	34%	15%	75%
=====							
Year	0	1	2	3	4	5	
Cu Prod(tons)		3499	3971	4158	4345	4532	
Gross Val		7803	8855	9272	9690	10107	
Royalty		312	354	371	388	404	
Gross Inc		7491	8501	8901	9302	9703	
Op Cost		3161	3587	3756	3925	4095	
Depr		400	400	400	400	400	
Pretx Inc		3930	4513	4745	4977	5208	
Depl		1124	1275	1335	1395	1455	
Inc Tax		1336	1535	1613	1692	1771	
Profit		2594	2979	3132	3285	3438	
Depr		400	400	400	400	400	
Depl		1124	1275	1335	1395	1455	
Cap Exp							
Expl	0						
Dev	0						
Total	2000						
NCF	-2000	4117	4654	4867	5080	5293	
DCF-ROI	215%						
Budge Inv	-2000						
Loan Int		300	0	0	0	0	
Cap Rec		2000	0	0	0	0	
Op Inc		909	2327	2433	2540	2646	
Budge NCF	-2000	3209	2327	2433	2540	2646	
DCF-ROI	142%						
Bluestn NCF		909	2327	2433	2540	2646	

10-10-1989

ISOTHERM POINT CALCULATIONS AND GRAPHICS/McCABE-THIELES  
ISOCALC I PROGRAM-HENKEL CORP.-CU/H2SO4 SYSTEM  
(Ver. 1.06/RBS)

Client Name/Project:STRAY ELEPHANT

Choose from the following reagents: LIX 84, LIX 622, LIX 684, LIX 984,  
LIX 860, or other.

What is reagent to be predicted (USE CAPS PLEASE!)?-LIX 622

What is copper content of stripped organic-g/l?- 4.304

What is volume pct. of reagent tested?- 16

What is copper content of aqueous solution tested-g/l?- 3.66

What is pH of solution tested?- 1.9

What is total sulfate content of solution tested-g/l?- 15

Do you want to calculate the SO4= activity as a %, Y or N?N

What is the assumed activity of the SO4= ion, % ?- 40

What are other parameters of circuit?O/A = 1/1 *50/139 H2SO4*

The MAX LOAD for 16 pct. LIX 622 is 8.969 g/l Cu.

O/A= 10

ORG.= 4.658g/l Cu; AQ.= 0.120g/l Cu.

O/A= 5

ORG.= 5.006g/l Cu; AQ.= 0.149g/l Cu.

O/A= 2

ORG.= 5.994g/l Cu; AQ.= 0.280g/l Cu.

O/A= 1.5

ORG.= 6.483g/l Cu; AQ.= 0.392g/l Cu.

O/A= 1

ORG.= 7.266g/l Cu; AQ.= 0.698g/l Cu.

O/A= .5

ORG.= 8.295g/l Cu; AQ.= 1.664g/l Cu.

O/A= .2

ORG.= 8.779g/l Cu; AQ.= 2.765g/l Cu.

O/A= .1

ORG.= 8.887g/l Cu; AQ.= 3.202g/l Cu.

Time began:15:29:06; Time ended:15:31:32

Iterations= 835

What is O/A ratio in extraction? 1

What is mixer efficiency across extraction-X? 94

How many stages are in extraction (1-3)? 2

The Materials Balance across the circuit is as follows (g/l Cu):

Aq. Feed----	E-1 Aq.----	E-2 Aq. (Raff.)
3.660	1.285	0.245

E-1 Org. (L.O.)	-----	E-2 Org. (-----	Stp. Org.
7.683		5.308	4.304

The expected recovery is 93.30%.

The loaded organic is 85.66% of max load.

The net transfer is 0.211 g/l Cu per 1 vol. % of LIX 622.

15:34:31 15:37:05



**Stauffer Chemical Company**

10777 NORTHWEST FREEWAY  
SUITE 650  
HOUSTON, TX 77092  
MAILING ADDRESS  
P.O. BOX 1381  
HOUSTON, TX 77251  
TEL. (713) 688-9311

September 11, 1989

David B. Hackman,  
J. Michael Serakoski, et al  
c/o Sage Associates  
3-4228 East Grant Road  
Tucson, Arizona 85712

Dear Sirs:

This letter is to confirm our interest in evaluating further the use of our "acid" for leaching on your Arizona property. We are looking forward to further discussions and testing.

Sincerely,

STAUFFER CHEMICAL COMPANY

A handwritten signature in cursive script, appearing to read 'R. L. Dixon'.

R. L. Dixon

RLD:hb

cc: Larry D. LeCompte  
Cyprus Miami  
P. O. Box 4444  
Claypool, Arizona 85532



# CAL-CHEM METALS, INC.

10192 JON DAY DRIVE  
HUNTINGTON BEACH, CA 92646-5408  
(714) 962-6640 • TWX 910-393-1765  
FAX: (714) 963-7605

October 18, 1989

Mr. J.M Sierakoski  
SAGE

## COPPER SULFATE OVERVIEW

1. U. S. Production	<u>Gross Weight (1988)</u>	<u>As Copper</u>
1st Quarter	7,939 MT	2,012 MT
2nd Quarter	8,909 MT	2,247 MT
3rd Quarter	9,405 MT	2,372 MT
4th Quarter	<u>7,931 MT</u>	<u>1,999 MT</u>
TOTAL	34,184 MT	8,630 MT

### 1987

1st Quarter	7,834 MT	1,971 MT
2nd Quarter	8,088 MT	2,037 MT

## 2. U.S. Imports of Copper Sulfate

1988		10,992 MT
1989	1st Quarter	4,059 MT
	2nd Quarter	2,861 MT

3. 1988 U.S. Consumption of Copper Sulfate was approximately 45,176 Metric Tons or 99,595,010 lbs. Assuming 25% copper content, this is 11,294 Metric Tons and 24,898,752 as copper.

The first half of 1989 shows total consumption of 22,842 Metric Tons of Copper Sulfate or 50,357,473 lbs. Assuming 25% copper content this is 5,710 Metric Tons and 12,589,368 pounds as copper.

4. Imports from Yugoslavia for the first half of 1989 have been 1,965.9 MT at a CIF value of .29 per pound of material. To that, you need add 5% duty plus receiving cost and inland freight. Duty will be approximately \$0.012 lbs of material based on customs value.

Page 2

Mr. J.M. Sierakoski  
October 18, 1989

Imports from the USSR for the first half of 1989 have been 1,534.4 MT at a CIF value of \$.301 per pound of material. This also has a 5% duty. This duty is approximately \$.013 lbs of material based on customs value.

Imports from Canada for the first half of 1989 have been 920.7 MT at a CIF value of \$.36 lbs. Mexico is a duty free country.

U.S. producers are selling product to their major consumers and largest distributors at \$.52 to \$.56 per pound less 5%. Naturally there are exceptions. Canada producers are at \$.36 to \$.40 per pound delivered to their largest U.S. customers and distributors.

Quality product is the name of the game along with proper sizing and packaging and free flowing characteristics. A new producer in the U.S. with quality comparable to U.S. producers could market approximately 6 to 10% of the U.S. Consumption within 12 months or 3,000 to 4,500 MT of copper sulfate. This is 750 MT to 1,125 MT as copper per year. There could very likely need to be price concessions the first year as inducement to purchase a product from a new company.

5. Cal-Chem Metals, Inc. suggests it can penetrate the U.S. market by 5 to 10% within 12 months selling to the animal feed and agricultural markets primarily and secondarily to the plating, woodtreating, ceramic and other industrial markets. Cal-Chem Metals would charge a 5% commission fee for this service.

Value added to the copper sulfate sales value versus the COMEX value indicates we should expect to sell at \$.40/lb minimally to as high as \$.50/lb.

Current COMEX:		\$1.30 lb/copper	
Current Copper Sulfate	minimum:	\$1.60 lb/copper	\$.40 lb/CuSO <sub>4</sub>
	to as high as:	\$2.00 lb/copper	\$.50 lb/CuSO <sub>4</sub>

The reason the minimum price is \$.40 per pound versus the import price on the communist block country import price of \$.31 is that most of the communist block country imports are sold as feed stocks to copper producers who upgrade the material to U.S. quality standards and also use it to produce other copper chemicals such as copper hydroxide. The real market shows that U.S. distributors price is in the range of \$.36 to \$.40 lb of material FOB their plant.

Once we have samples of the quality we expect to produce we can test the market on pricing and volumes.

Best Regards,



Donald R. Nickerson  
DRN:rdn

## CAL-CHEM METALS INC

A California Corporation started June 30, 1980 by Donald R. Nickerson founder and president. Cal-Chem Metals Inc. acts as a marketing agent for Adelaide Chemical Company. Adelaide Chemical Company has a copper oxide production facility in Burna, South Australia. CCM markets approximately 3,000 MT per year of copper oxide for Adelaide Chemical. Cal-Chem Metals also purchases and sells various copper by-product streams and copper chemicals separate from its involvement with Adelaide Chemical.

Cal-Chem Metals Inc. acts as agent for TOP Australia Ltd. of Adelaide South Australia. Responsibilities are for monitoring TOP's purchases of high analysis fertilizer such as Di-Ammonium Phosphate, Mono-Ammonium Phosphate and Triple Super Phosphate. Monitoring responsibilities are to utilize local analytical labs in the Tampa, Florida and New Orleans areas for product inspection, visually and analytically. TOP imports approximately 20-30,000 metric tons per year of high analysis fertilizers from the U.S. and Canada.

Donald R. Nickerson, president of Cal-Chem Metals Inc is a business graduate from the University of Minnesota and has been in marketing most of his career. His last two employers were Philip A. Hunt Chemical Corporation where he was Regional Manager for the South Eastern United States in their Graphic Arts Division. This established exposure to the copper recovery business in the Midwest and South Eastern portions of the United States. His responsibilities were for thirteen salesmen and to increase sales by a minimum of 15% per year. After six years he left P.A. Hunt Chemical and joined Southern California Chemical, now owned by CP Chemical Company. He started as area sales manager for the south, stationed in Dallas. After six months, sales were increased to the point where it became economical to set up a blending plant in Garland, Texas. After two years and expansion of two additional plants, one in Union, Illinois, the other in Bayonne, New Jersey, Nickerson was promoted to Vice-President of Marketing and transferred to California. Nickerson was promoted to Vice-President and General Manager in June of 1972. He was with Southern California Chemical for twelve years. The main products sold to the printed circuit board Manufacturers were etchants to dissolve copper. The customers of these etchants required the suppliers to take the etchant back. The primary etchants were ammoniacal. The spent etchants returned to Southern California Chemical were used as feed stocks to produce Copper Chemicals such as Copper Oxide, Copper Sulfate and Copper Oxychlorides. Due to the recovery business, Nickerson received invaluable experience and exposure to the markets for Copper chemicals and also to the U.S. and international producers of copper chemicals.

Cal-Chem Metals, Inc. is responsible for Australian Copper Oxide sales of over \$7,000,000. In addition to this Cal-Chem Metals Inc markets over \$1,000,000 in other copper products.

