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PRINTED: 06/24/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: SACATON MINE

ALTERNATE NAMES:  
SACATON MILL

PINAL COUNTY MILS NUMBER: 441A

LOCATION: TOWNSHIP 5 S RANGE 5 E SECTION 26 QUARTER C  
LATITUDE: N 32DEG 56MIN 50SEC LONGITUDE: W 111DEG 51MIN 06SEC  
TOPO MAP NAME: CASA GRANDE WEST - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:  
COPPER SULFIDE  
COPPER OXIDE  
GOLD  
SILVER  
MOLYBDENUM

BIBLIOGRAPHY:  
ADMMR SACATON MINE FILE  
GRIES, PAUL "PROV. NEW SOURCES OF MIN. SUPPLY"  
USBM IC 8789, P 28-30, P 18 MAP  
MINING ENGINEERING VOL. 26, NO. 11, P 29-32  
UNPAT. CLAIMS EXTEND INTO SEC. 28, 29, 32

08/12/86

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: SACATON MINE

ALTERNATE NAMES:

SACATON PROJECT  
ASARCO  
SACATON MILL

PINAL COUNTY MILS NUMBER: 441A

LOCATION: TOWNSHIP 5 S RANGE 5 E SECTION 26 QUARTER C  
LATITUDE: N 32DEG 56MIN 50SEC LONGITUDE: W 111DEG 51MIN 06SEC  
TOPO MAP NAME: CASA GRANDE WEST - 7.5 MIN

CURRENT STATUS: PRODUCER

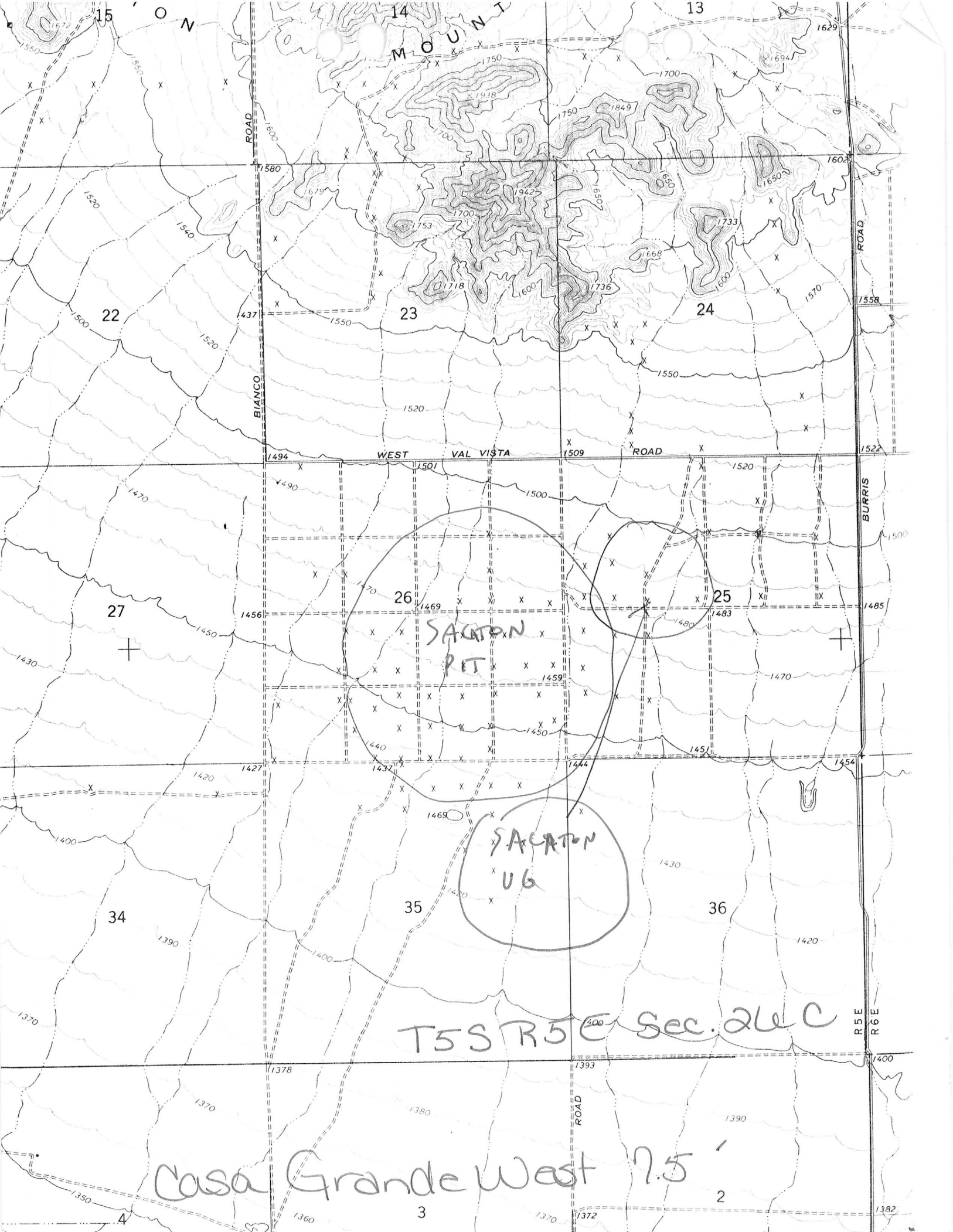
COMMODITY:

COPPER SULFIDE  
COPPER OXIDE  
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SILVER  
MOLYBDENUM

BIBLIOGRAPHY:

ADMMR SACATON MINE FILE  
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USBM IC 7879, P 28-30, P 18 MAP  
MINING ENGINEERING VOL. 26, NO. 11, P 29-32  
UNPAT. CLAIMS EXTEND INTO SEC. 28, 29, 32

*LC 8789*  
*"Advances in Geology of the Porphyry Copper Deposits  
Southwestern North America", Spencer R. Titley,  
Editor - Sacaton Chapter 25 by Robert B. Cummings*



15

14 MOUNTAIN

13

1629

ROAD  
BIANCO

ROAD  
BURRIS

580

1602

22

23

24

1558

437

1494

WEST VAL VISTA ROAD

1509

1522

27

26

25

1500

1456

1469

1483

1485

SACATON PIT

1459

34

35

36

1427

1469

1451

1454

SACATON U6

T5S R5E Sec. 26C

R 5 E  
R 6 E

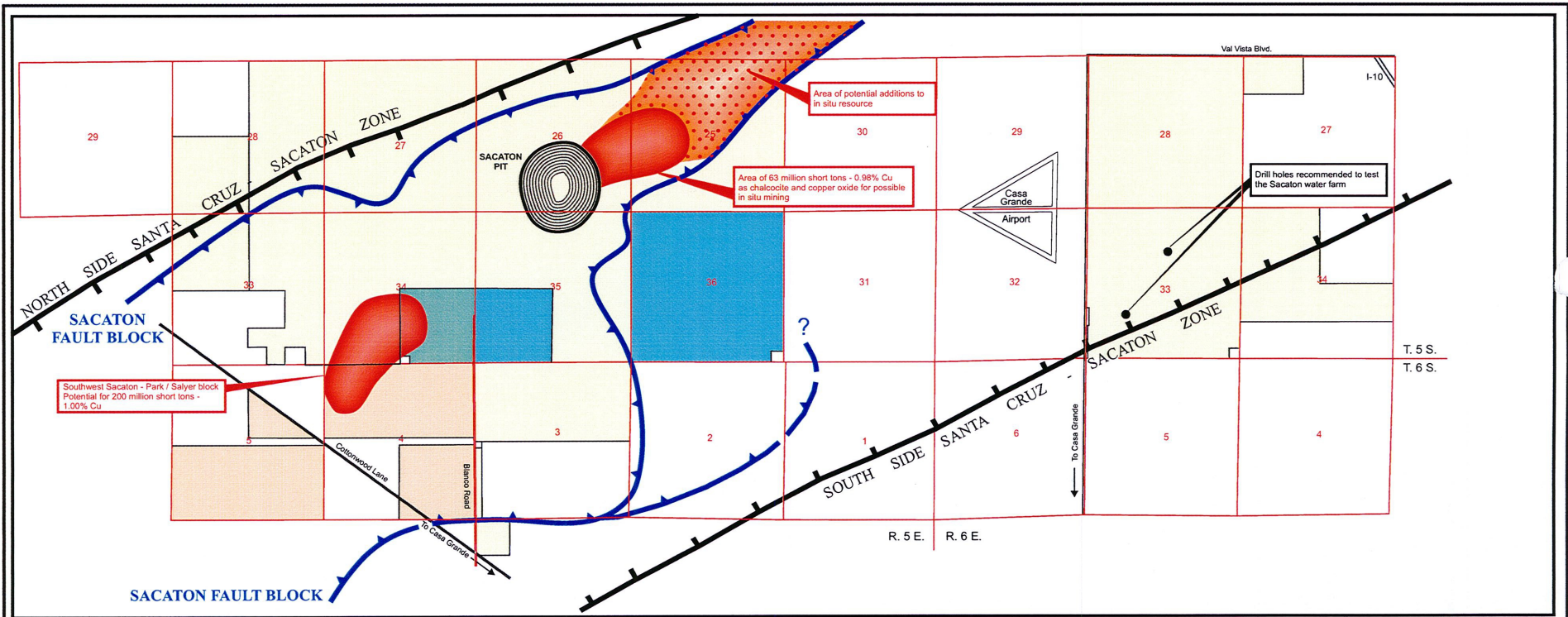
Casa Grande West 7.5

4

3

2

1382



**EXPLANATION**

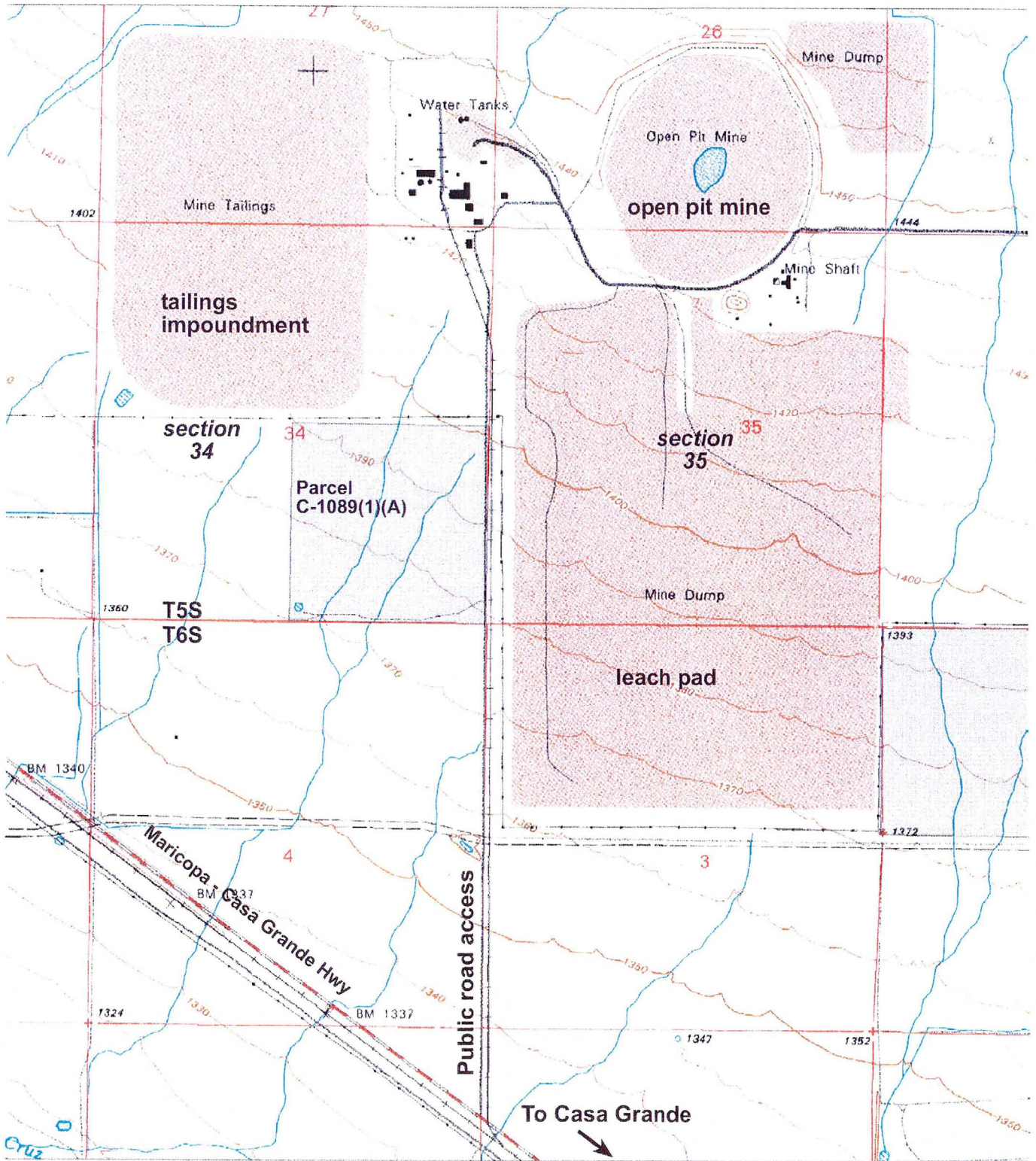
- SANTA CRUZ JOINT VENTURE LAND (50% ASARCO)
- FEE LAND
- STATE COMMERCIAL LEASE
- ASARCO FEE SURFACE, STATE MINERALS



5000 feet

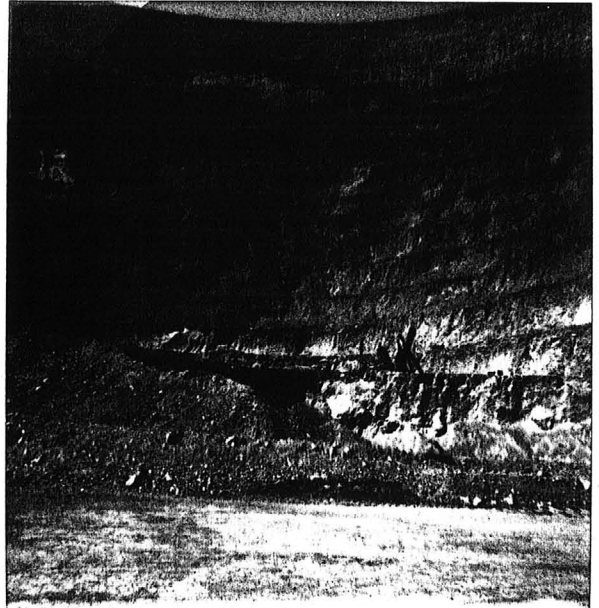
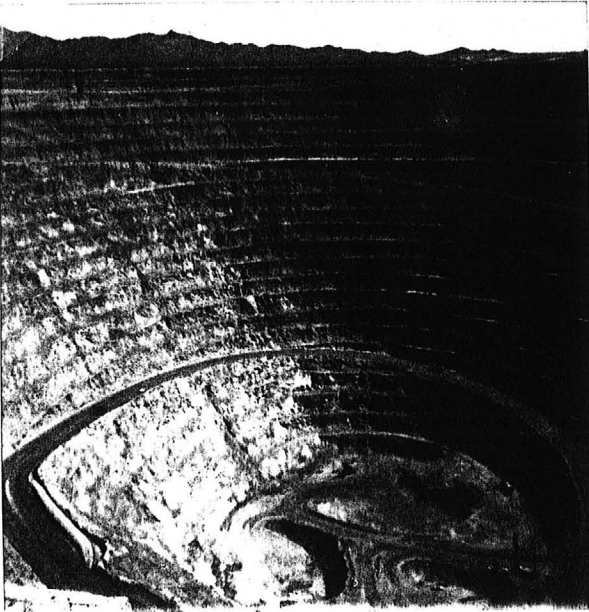
<b>ASARCO</b>	
<b>SACATON UNIT PROPERTY MAP</b>	
Pinal County, Arizona	
Data By:	File Name: Sacaton Property Map
Date: Apr. 91, Aug. 01, Nov. 01	Revision:
Scale: As Shown	

**Exhibit A;** topographic map showing location and access of State Trust Land Parcel C-1089(1)(A)



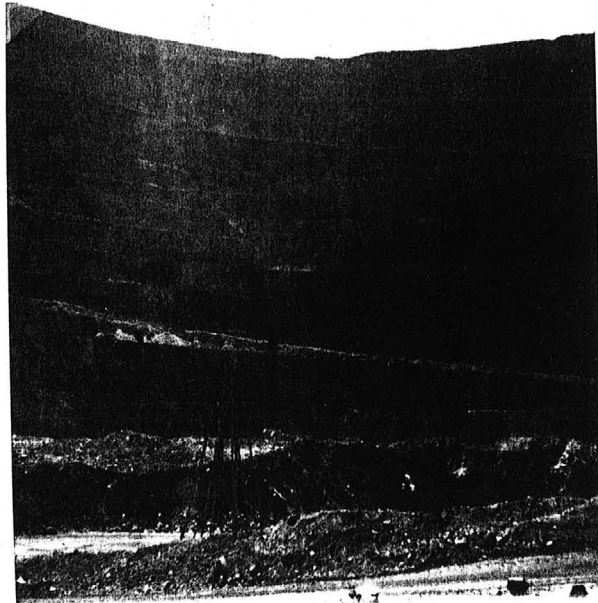
SACATON UNIT - ASARCO

TEMP COPIES, ORIGINALS BEING SCANNED



Sacaton Pit - Four more levels to go

Sacaton Pit

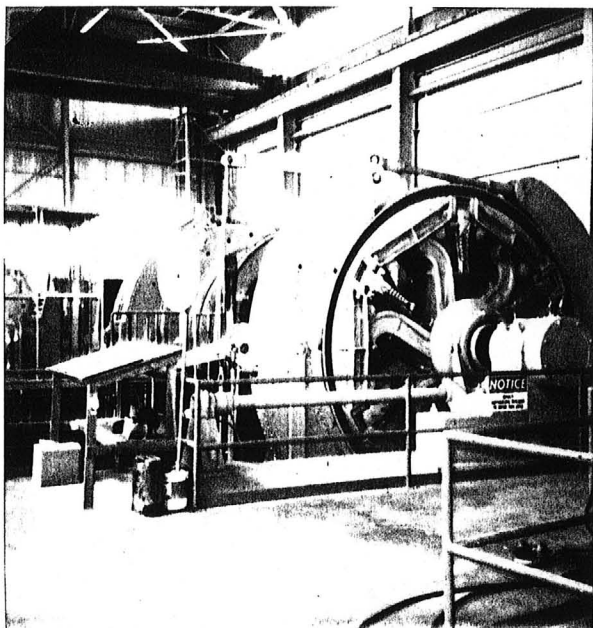


Sacaton Pit

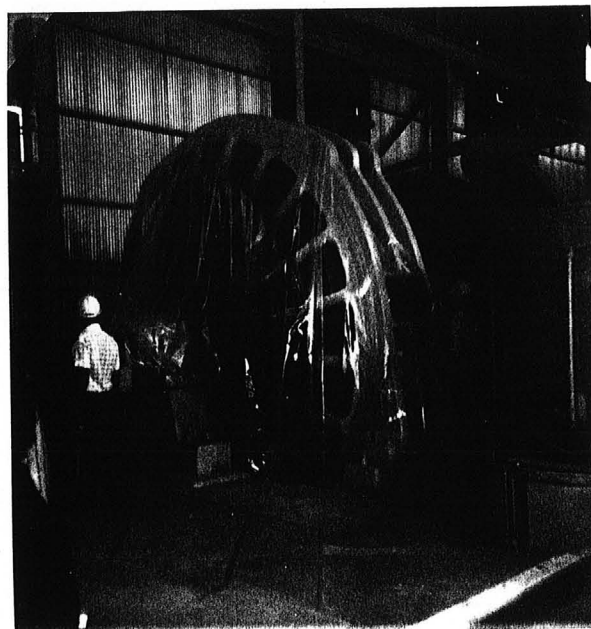
June 15, 1983

A41

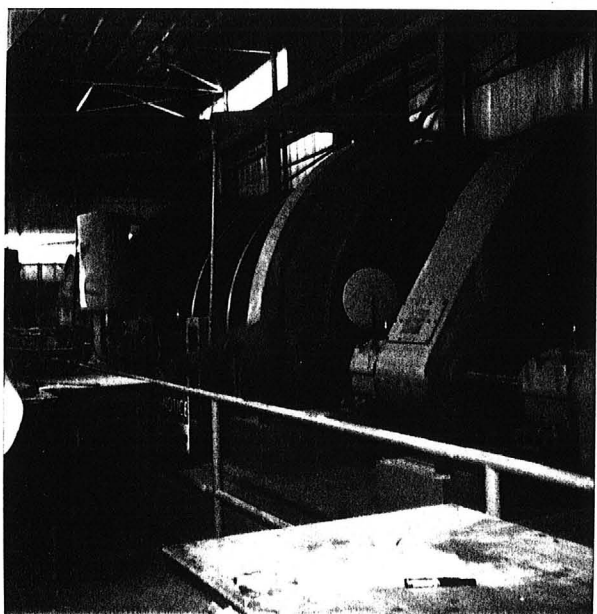
SACATON UNIT - ASARCO



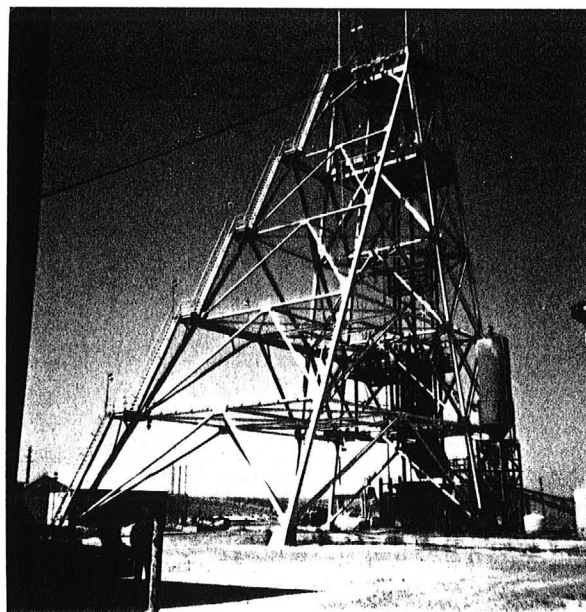
Hoist from Inspiration Liveoak Shaft now at Sacaton



Motor from Hoist from Inspiration's Liveoak Shaft now at Sacaton



Hoist from Canada now at Sacaton



Headframe at Sacaton Underground  
Flooded to 700'



E/MJ, June, 1972, p. 297  
" February, 1973, p. 9-12  
" March, 1973, p. 87  
" April, 1973, p. 87  
" February, 1974, p. 124

Mining Engineering, February, 1973, p. 51  
" " April, 1973, p. 36  
" " May, 1974, p. 10  
" " October, 1974, p. 70 (personnel)  
" " November, 1974, p. 29-32 (designing the Sacaton concentrator)

Skillings Mining Review, August 4, 1973, p. 32  
" " " December 29, 1973, p. 19  
" " " March 9, 1974, p. 23, 27  
" " " April 6, 1974, p. 15  
" " " Aug. 10, 1974, p. 14 (personnel)  
" " " May 24, 1975, p. 23 (shaft to be sunk 2000 ft. depth)

Metals Week, December 3, 1973, p. 2  
" " July 5, 1974, p. 2

SACATON UNIT.

PINAL

Mining Annual Review, November, 1973, p. 15  
" " " 1974, p. 295

Mining Magazine, May, 1974, p. 1 (gen. info.)  
" " August, 1974, p. 79 (gen. info.)  
" " February, 1975, p. 90=97 (gen. info., pictures, etc.)

Arizona Department of Mines and Mineral Resources

INFORMATION FROM MINE CARDS IN MUSEUM

ARIZONA

MM-6371 Atacamite

Pinal Co.  
Casa Grande  
Sacaton Mine  
Asarco Inc.

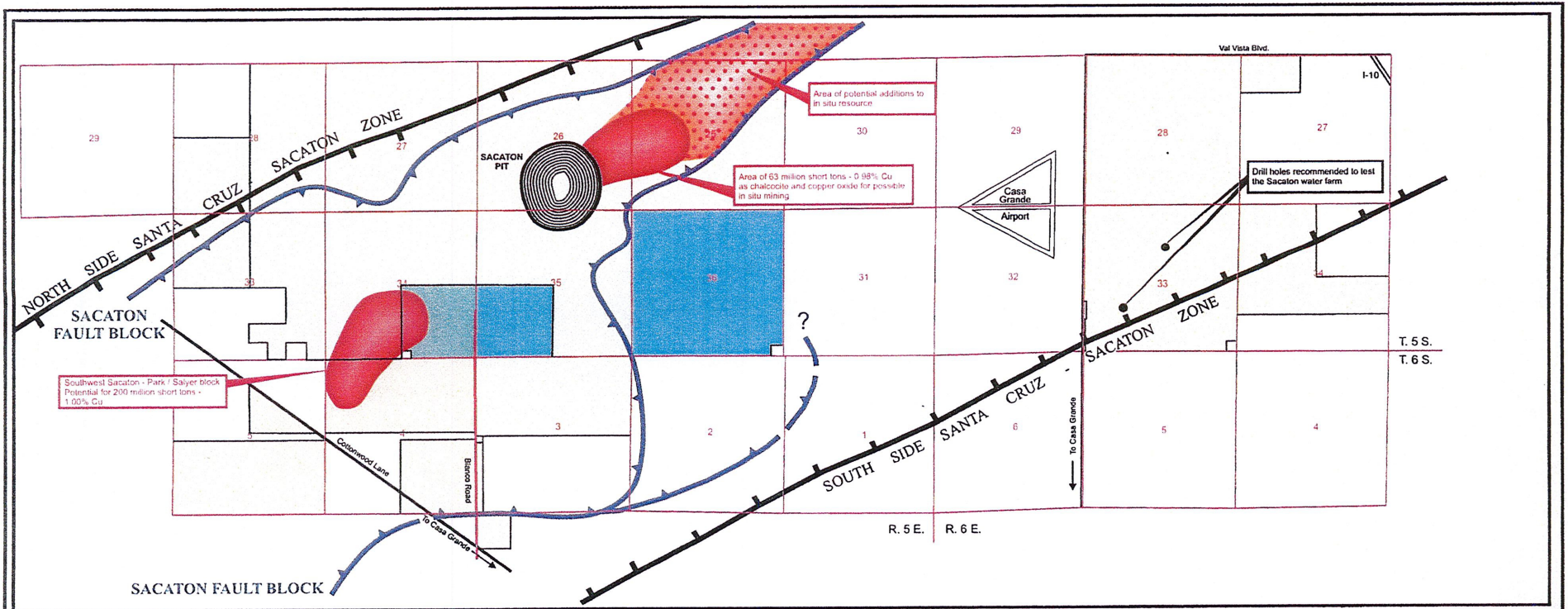
MILLS 441A  
1-AKA  
SACATON mine file

ARIZONA

MM 1319 Corundum  
1457 Corundum and rutile  
1904 Corundum and zircon

PINAL COUNTY

Sacaton Mountains  
(Gila River Indian  
Reservation)



### EXPLANATION

- SANTA CRUZ JOINT VENTURE LAND (50% ASARCO)
- FEE LAND
- STATE COMMERCIAL LEASE
- ASARCO FEE SURFACE, STATE MINERALS



5000 feet

**ASARCO**

### SACATON UNIT PROPERTY MAP

Pinal County, Arizona

Data By:	File Name: Sacaton Property Map
Date: Apr. 91, Aug. 01, Nov. 01	Revision:
Scale: As Shown	






# LEGEND

## LAND STATUS

-  Casa Grande
-  Annexation Area
-  State Minerals
-  State Surface

## Mineral Values

### Copper

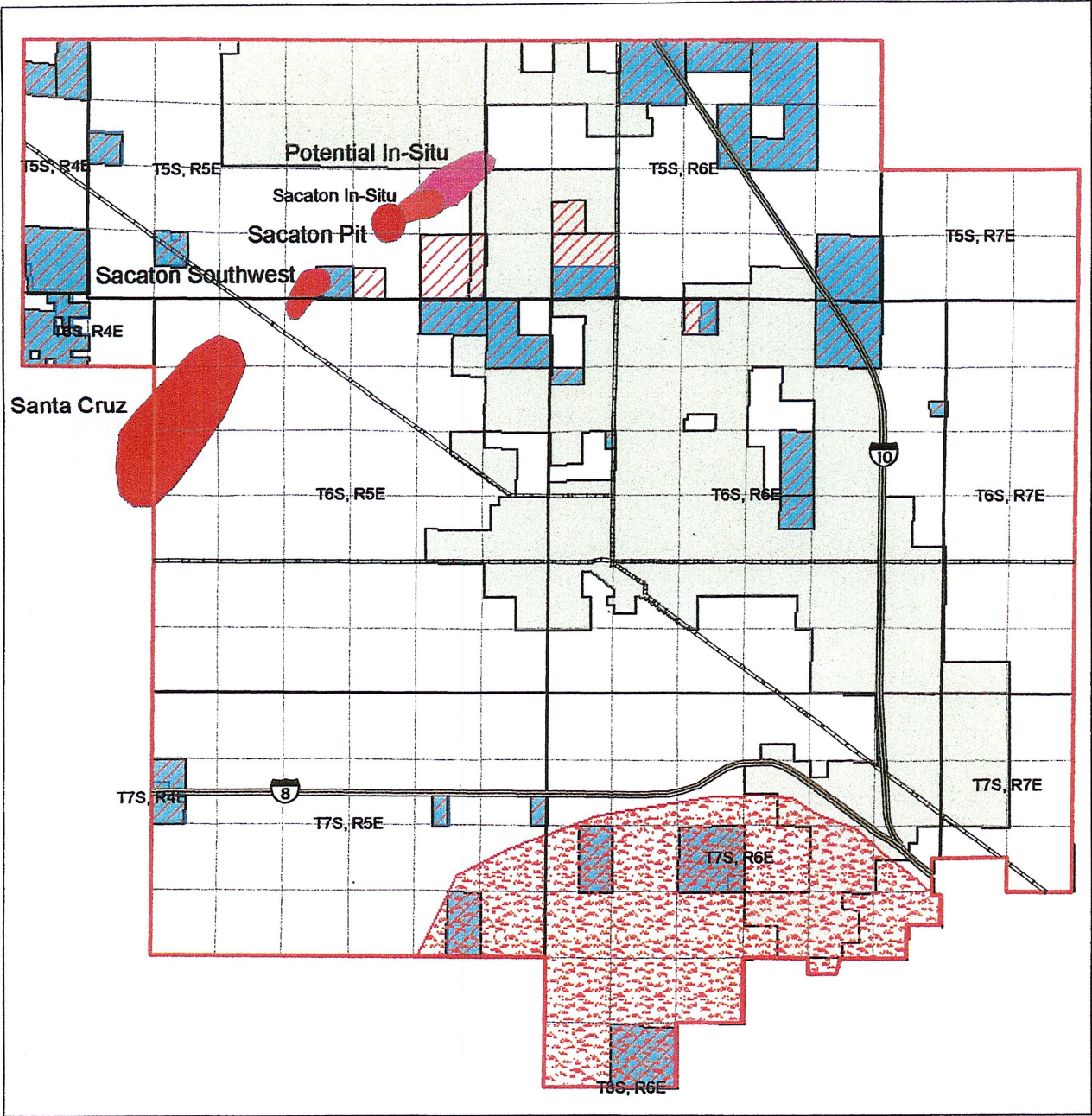
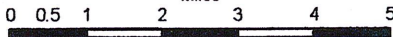
-  Potential In-Situ
-  Sacaton In-Situ
-  Sacaton Pit
-  Sacaton Southwest
-  Santa Cruz

### Material

-  Sand & Gravel



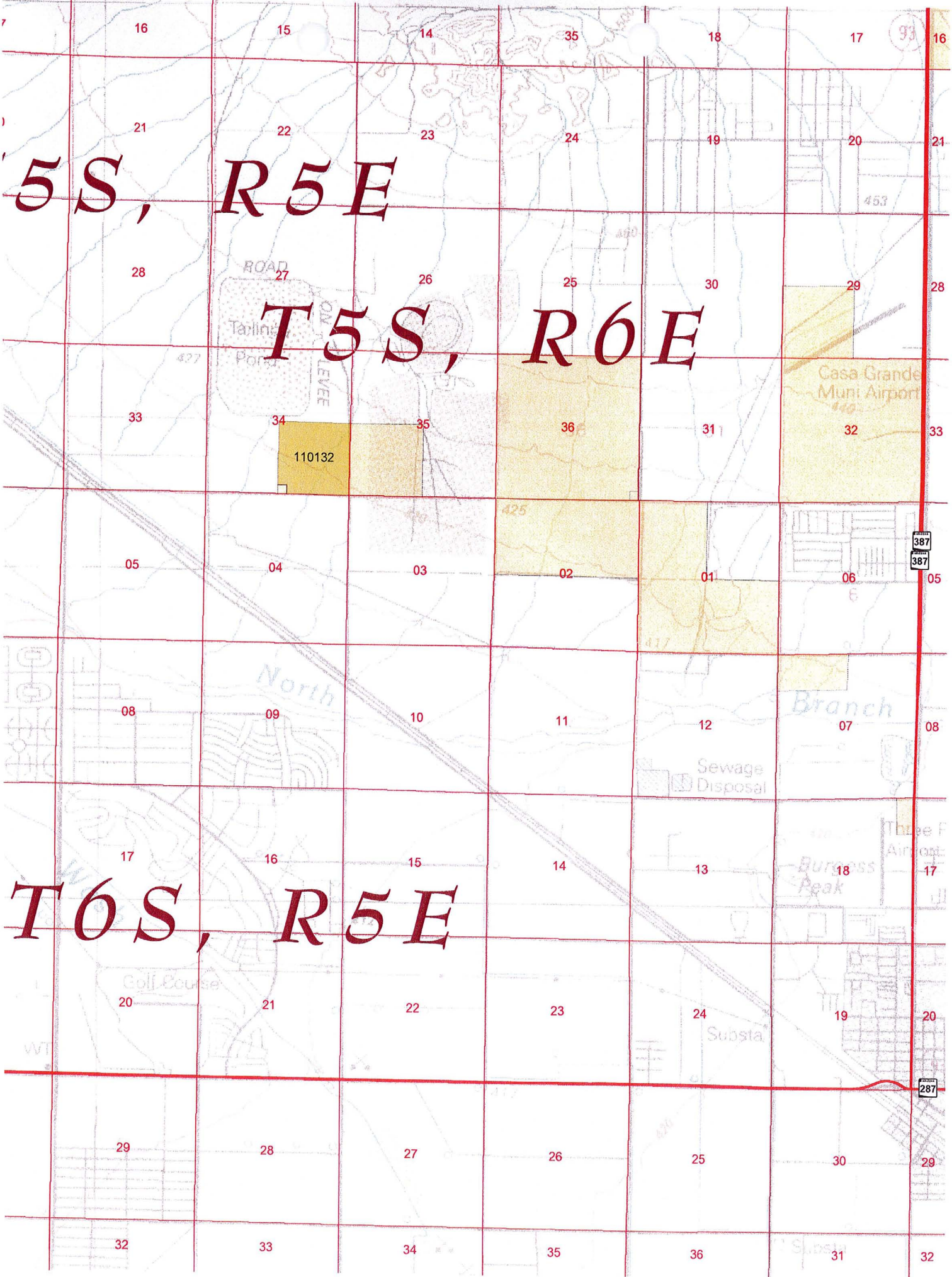
2006



*T5S, R5E*

*T5S, R6E*

*T6S, R5E*



387  
387

287

**E-CRETE**

Architects  
Engineers &  
Contractors

Prospective  
Home Owners



2151 East Broadway Road #115 | Tempe AZ, 85282-1932 | 888-432-7383 x11

"SAN TAN" PROPERTY

*Sacaton*

LAS-WR  
6-22-62

NW OF CASA  
GRANDE

See: AMERICAN SMELTING & REFINING COMPANY (file)  
(Gen. Information)



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CJH WR 5/8/81: May 8, 1981, attended 1981 Spring Meeting, Mineral Processing Div., Arizona Conference, AIME. Morning Technical session and lunch were held at Francisco Grande Resort six miles west of Casa Grande, Arizona. In the afternoon a guided tour of ASARCO's Sacaton Unit six miles north of Casa Grande was provided. The truck haulage open pit mine provides 11,500 tpd of 1.5% Cu ore (Chalcocite and Chalcopyrite) to the mill which is 1/2 mile from the mine. The pit will be phased out by 1984 when production will shift underground. A production shaft and an air shaft are presently being sunk by conventional methods. The 1800 ft. level will be the main haulage for ore mined by the block caving method. Copies of the secondary crusher flowsheet and a schematic mill flowsheet are being sent to the department's Phoenix Office.

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CJH WR 1/29/82: Don West, Sales Engineer, Joy Manufacturing was in. Because of the slump in Cu operations, Mr. West wants to explore the small mine equipment market. Suggested Tombstone and White Hills (Arizona Silver). He reported that the Jerome Mining Co., a wholly owned subsidiary of Stan West Inc. has contracted American Mine Services of Denver to sink a shaft adjoining Iron King property at Mayer. Also mentioned was that the Sacaton (ASARCO) head frame has been moved to this site. This will be a gold operation (see Page 5, The Mining Record, Jan. 13, 1982.)

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NJN WR 6/17/83: A visit was made to the Sacaton Mine and Mill of ASARCO with Ken Phillips and Richard Beard. We were informed there that a redesign of the pit plan will allow operations to continue until early in 1984. Changes in the pit plan include making some of the main haulage benches one way and steepening their grade to 12 and 16% at the bottom of the pit. Development has been terminated at the underground ore body and the hoist house mothballed.

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Active Oct. 1962

A conference with Joe Roberts, Boyles Bros. Drilling Co., revealed that they were still operating 2 drills for American Smelting & Refining Co., in the Sacaton Mountains, where they previously had been operating 4 drills. LAS WR 10-19-62

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Joe Roberts reported that their drilling ceased at the AS&R Sacaton Mountains Project, was cut off Oct. 15. LAS WR 1-25-63

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Nate Coxon stated that the drilling was still going on (as of now). This was verified at Sacaton. LAS Memo 10-23-63

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Went to AS&R Sacaton operation 7 miles NW of Casa Grande but no one was in the office except a secretary who said that was Mr. Hansen's office and that Mr. Edwards had an office at the airport. Shipping appears to have stopped and the contractor, Arthur McKee, is constructing two or three Butler type buildings on the spoil pile. GW WR 9/28/72

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Active Mine List 1972 - Anticipated Prod. 8,000 TPD

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Visited with Ed Calahan, mine supt. of the AS&R Sacaton mine, and learned that the shaft is 70' deep and has been for 1½ years. They expect it to be 2,000' deep when finished. Presently they are installing ahoist and will contract the sinking when economic conditions dictate. GW WR 12/1/76

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Mine visit - Sacaton to see if underground mining had resumed. GWI WR 12/15/76

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Circulate Sacaton Proposal (5/6)

MWS  
1/2 on

PROPOSED LANDFILL PLAN  
1986 FOR EMPTY PIT  
AT SACATON

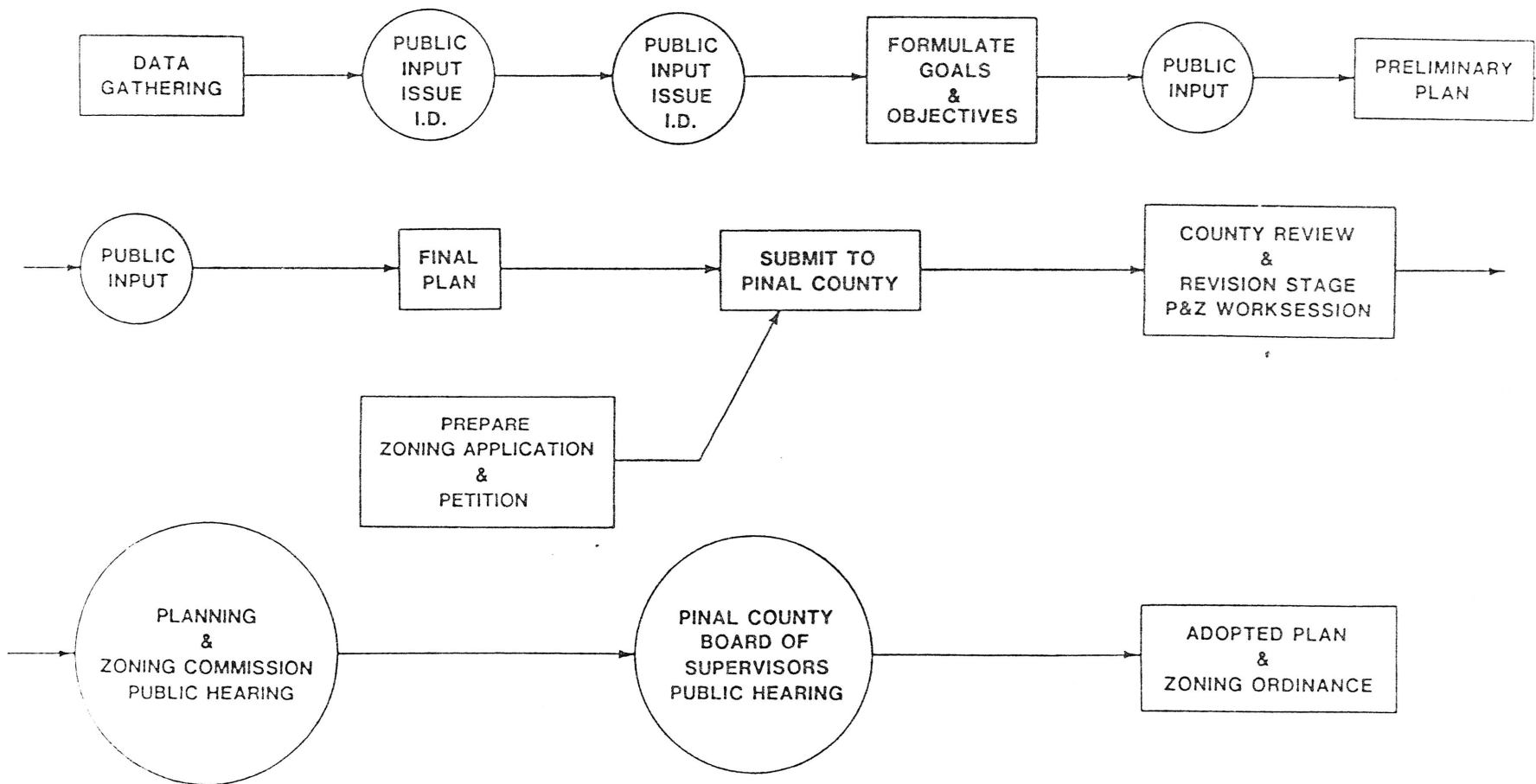
and Oct 29  
and Nov. 12  
and Dec 3  
J

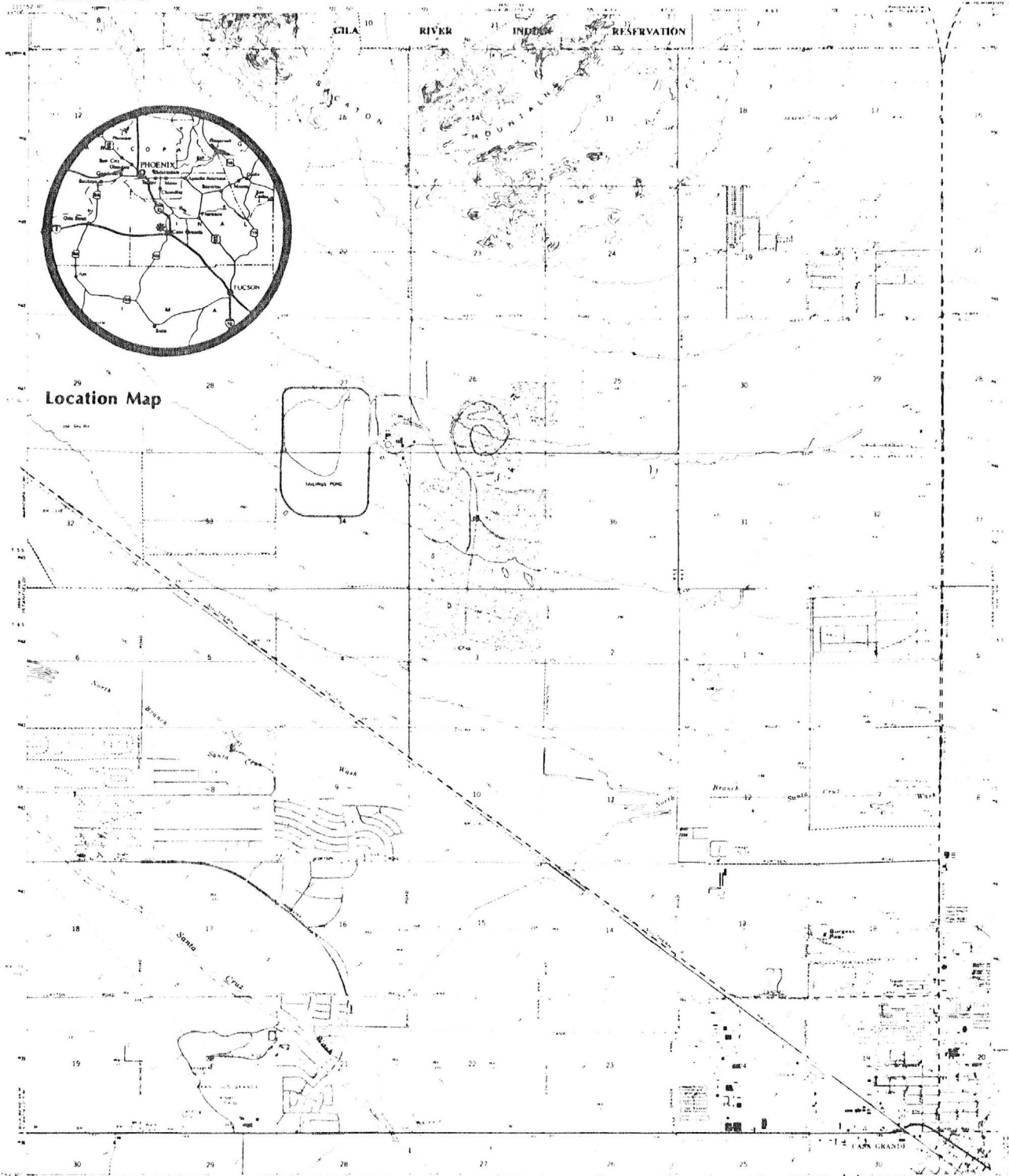
# SACATON EXHIBITS

David Williams  
Charlie Holroyd  
Deborah Rhodes

**CBA** PLANNING GROUP  
CELLA BARR ASSOCIATES Tucson, Arizona (602) 624-7401

# THE PLANNING AND REZONING PROCESS SACATON AREA PLAN & LANDFILL REZONING



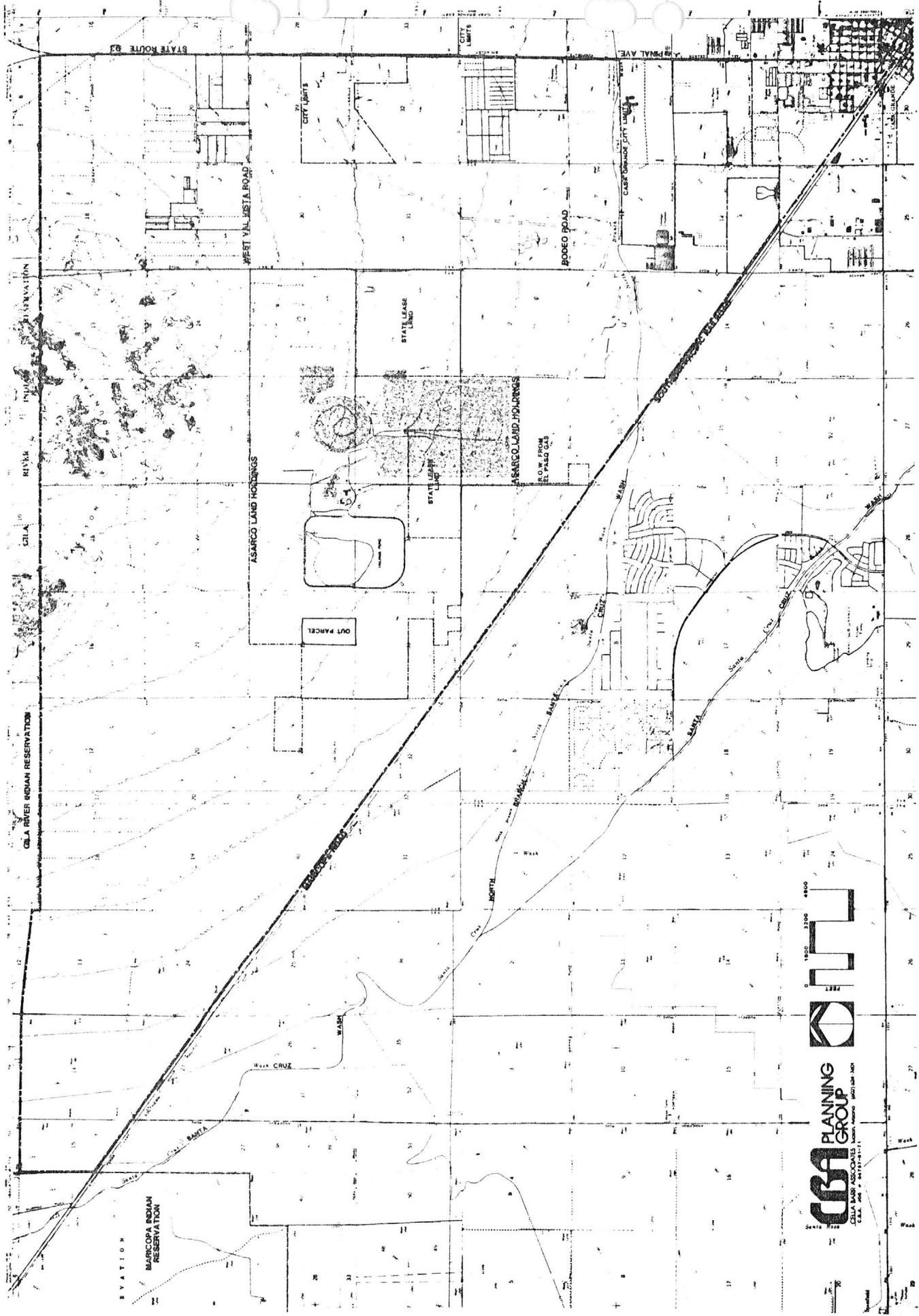


Location Map

Map made, edited, and published by the Geological Survey  
Scale is 1:50,000  
Topographic information is derived from the  
photographic base of 1933 and 1934 surveys.  
Photographic base is 1:50,000 and 1:100,000 based on  
National Standard Datum, 1929.  
Contour interval is 20 feet.  
Spot heights are shown in feet above mean sea level.  
The spot heights are based on the datum of 1929.  
The spot heights are based on the datum of 1929.  
The spot heights are based on the datum of 1929.

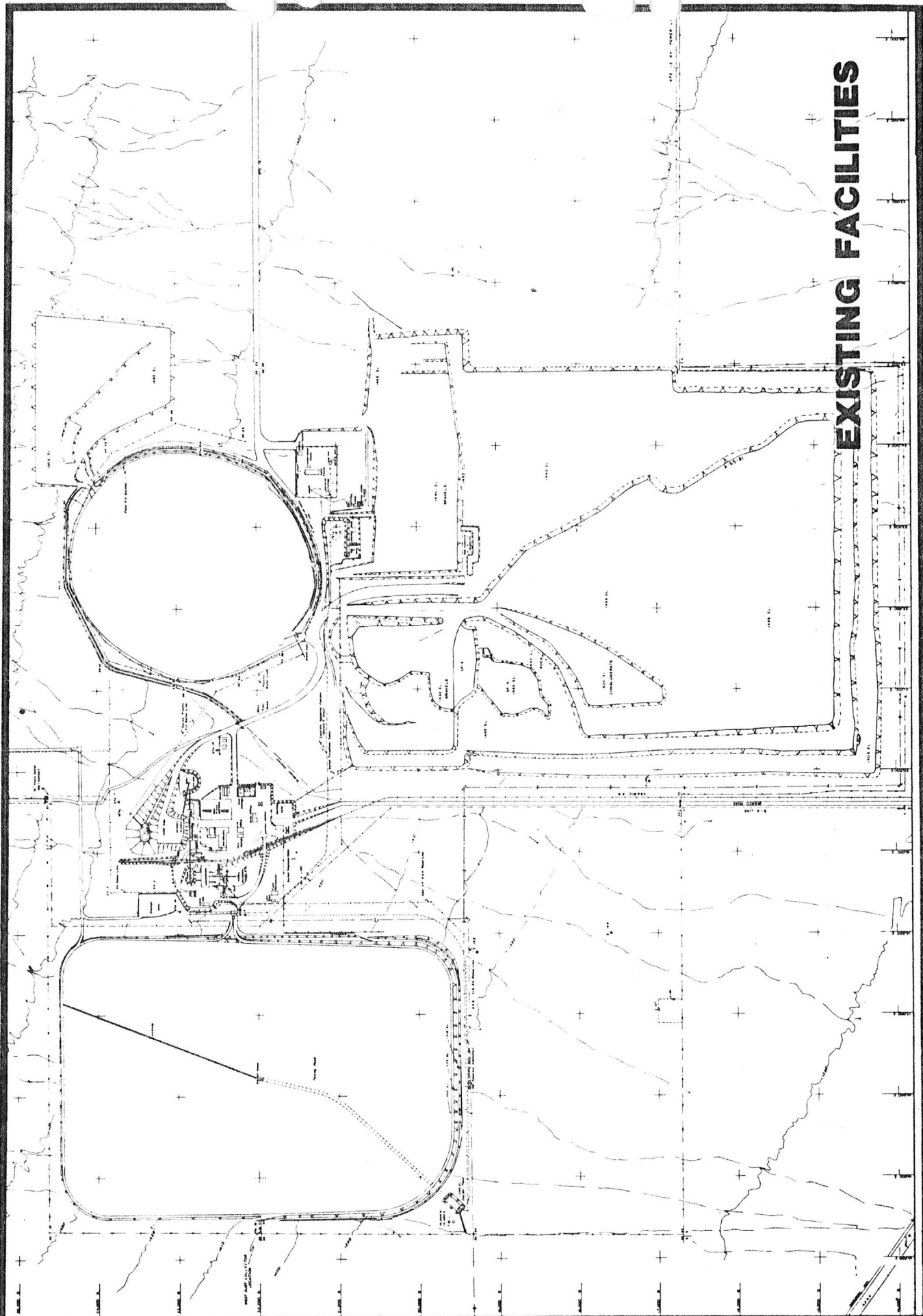
CONTOUR INTERVAL, 20 FEET  
SPOT HEIGHTS, MEAN SEA LEVEL  
MATHIAS, GEORGE W. 1933-34  
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092  
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

CASA GRANDE WEST APIC  
VICINITY MAP



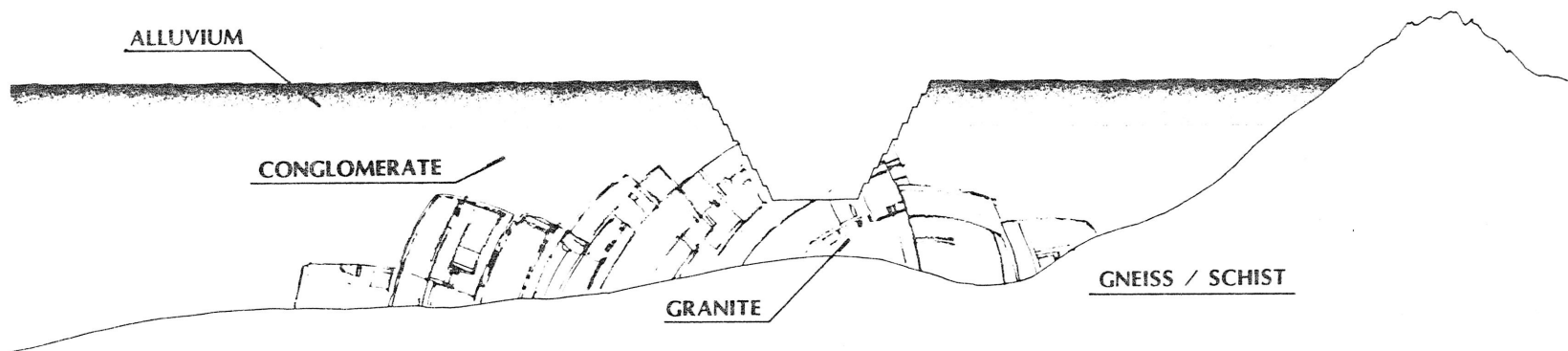
**CBA** PLANNING GROUP  
 CELIA BARR ASSOCIATES  
 1000 N. GARDEN AVENUE, SUITE 100  
 DENVER, CO 80202  
 TEL: 303.733.1111

# EXISTING FACILITIES

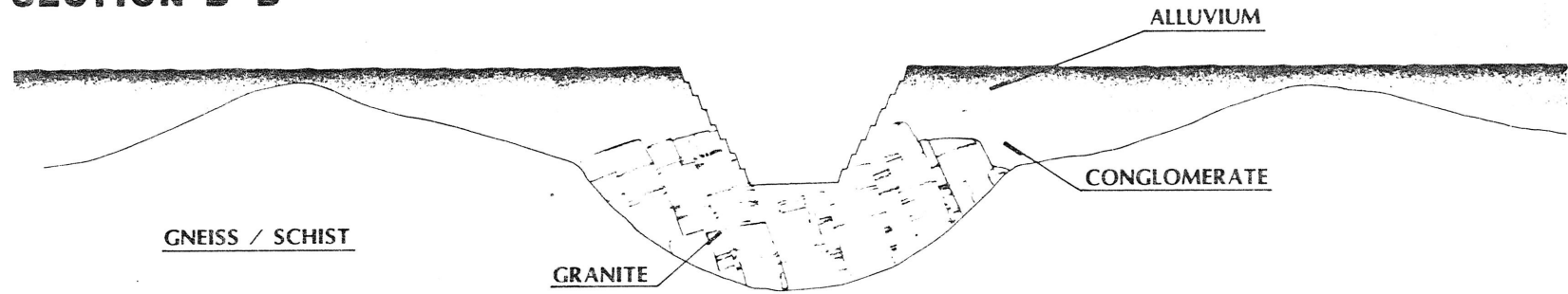


# GEOLOGICAL SECTIONS

## SECTION A-A'



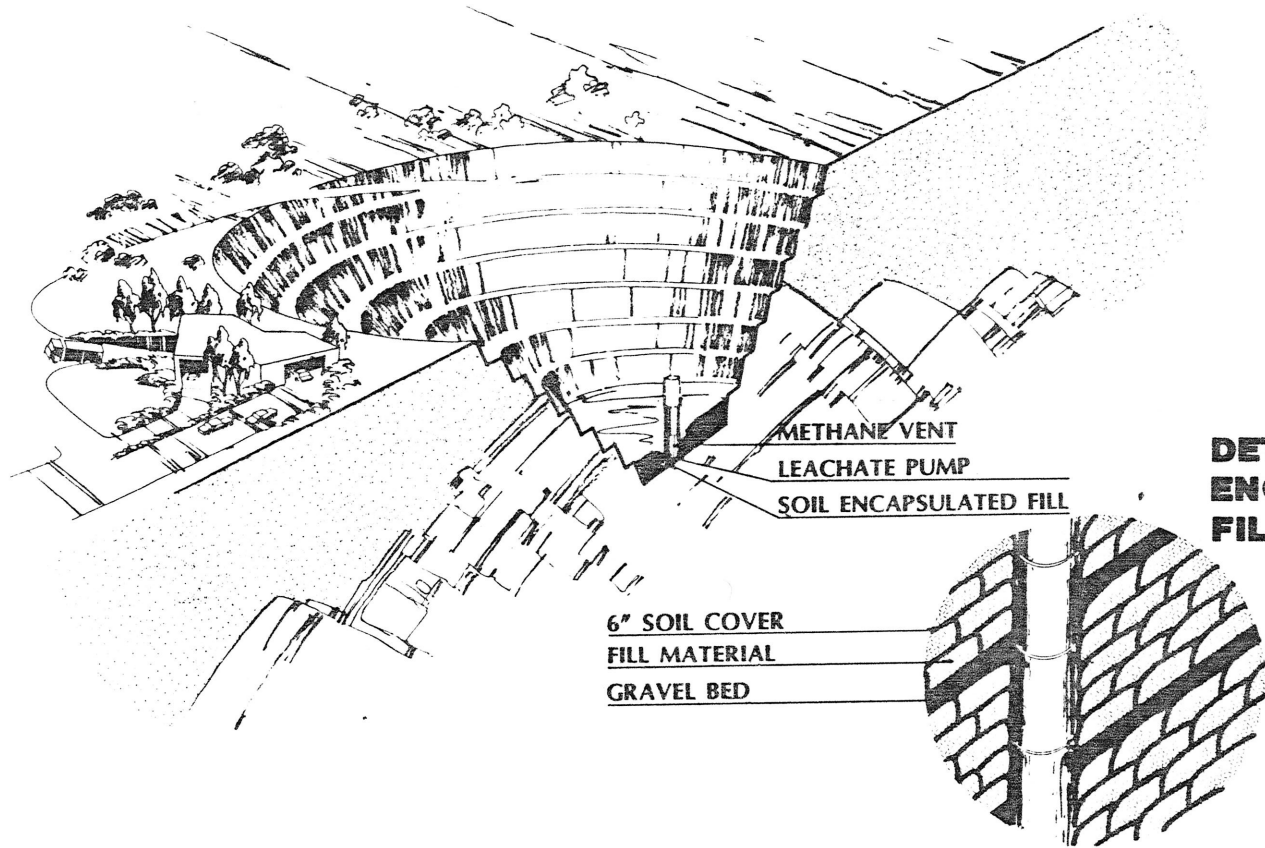
## SECTION B-B'





# LAND FILL OPERATION

TRANSFER STATION



**DETAIL  
ENCAPSULATED  
FILL**

6" SOIL COVER  
FILL MATERIAL  
GRAVEL BED

# CAPPED LAND FILL



**CSA** PLANNING  
GROUP  
CELLA BARR ASSOCIATES  
NORTH, ANDREWS (907) 684-7401

**DEPARTMENT OF MINERAL RESOURCES**

STATE OF ARIZONA

**FIELD ENGINEERS REPORT**

Mine Sacaton Unit, ASARCO

Date June 15, 1983

District Pinal County

Engineer Richard R. Beard.

Subject: Mine Visit

A visit of the Sacaton Unit of ASARCO was made in the company of Nyal Niemuth and Ken Phillips. Mr. Jim Harasha showed us around and Mr. C. Carroll, Mill Superintendent discussed the mill.

The work on the underground has been suspended and the shaft is now filled to within 700 feet of the surface with water. The headframe and hoists are still intact. One hoist came from a Canadian mine and the other from the Live Oak Shaft at Inspiration.

The pit is virtually conical in shape and there is very little problem with slope stability. There are about 23 benches 40 foot high with a haulage ramp 80' wide at a grade of 8%. At the lower levels the ramp grade is 10%. Now using two shovels and six 85 ton Haulpacs with the drop cuts being done with the front end loader. They intend to go four more levels and then shut down probably early next year.

The mill is a standard flotation mill with two 14½' x 18' ball mills using cyclone classifiers. There is also a regrind circuit. They are using a thickener on the middlings from the flotation cells as well as on the tails and concentrates.

**DEPARTMENT OF MINERAL RESOURCES**

STATE OF ARIZONA

**FIELD ENGINEERS REPORT**

Mine Sacaton Unit, ASARCO

Date June 15, 1983

District Pinal County

Engineer Ken A. Phillips

Subject: Mine Visit



In the company of Dick Beard and Nyal Niemuth, a visit was made to ASARCO's Sacaton Unit - an open pit copper mine - mill complex north of Casa Grande, Arizona.

Depletion of ore reserves is currently expected in March of 1984. At that time plans are to shut down the mine and mill, but leave the facility intact.

Development of the underground (down faulted) ore body for block caving has been suspended. The main shaft is down to 1800' and some 500' of drifting had been started (on three different headings). The main shaft is to be sunk another 200' to accomodate loading pockets, sumps, etc. The ventilation shaft had only just been started when the development was shut down. The production shaft is located approximately 2000 feet southwest of the ore body so as to be protected from radial fracturing as the ore body and overburden are caved.

The mine is currently running two shifts and producing 12,000 tons of ore daily and hauling only 1500 tons of waste daily. The floatation mill runs three shifts daily. Upon completion of mining the pit will have been mined down to the tip of an inverted cone.

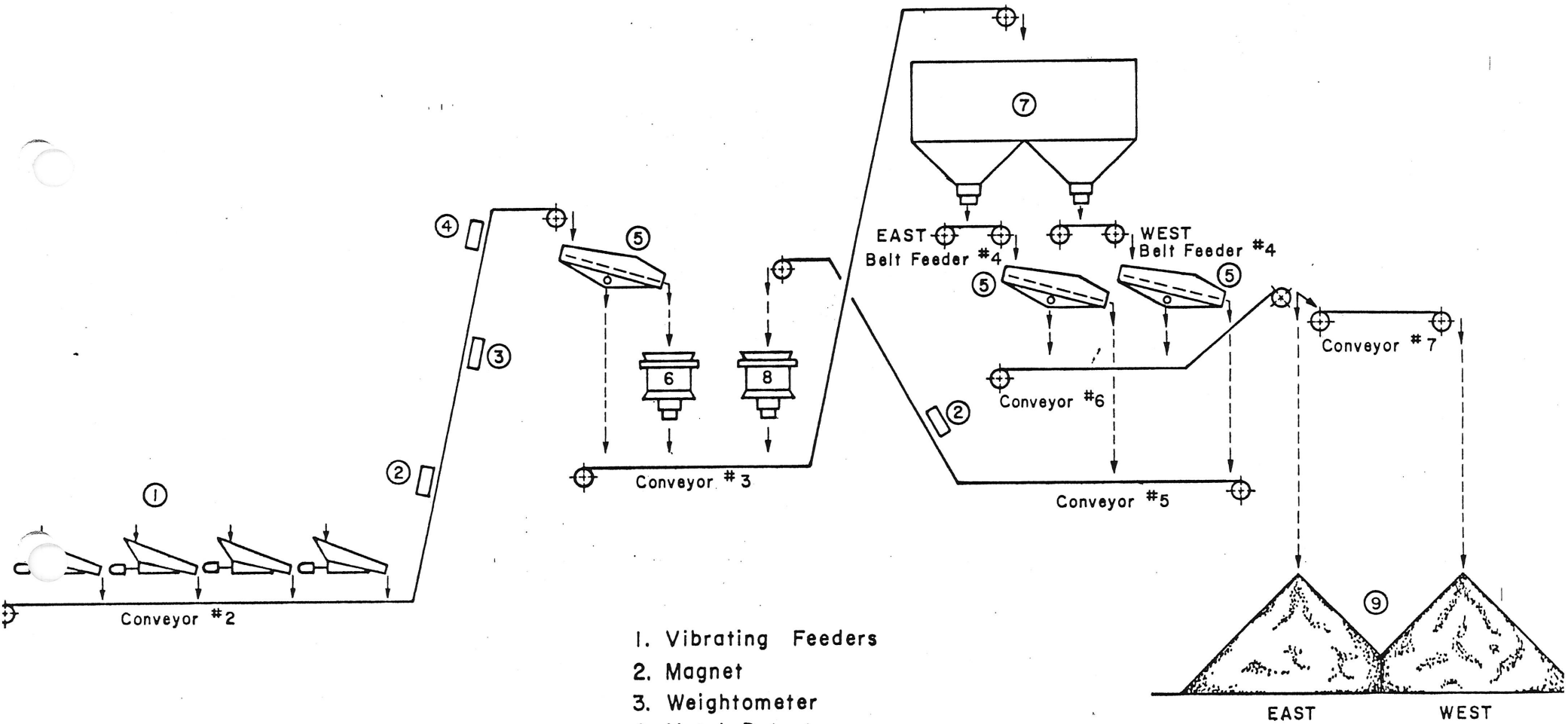
*cc. Tussan ✓*

38

Asarco - Sacaton file  
12/1/47

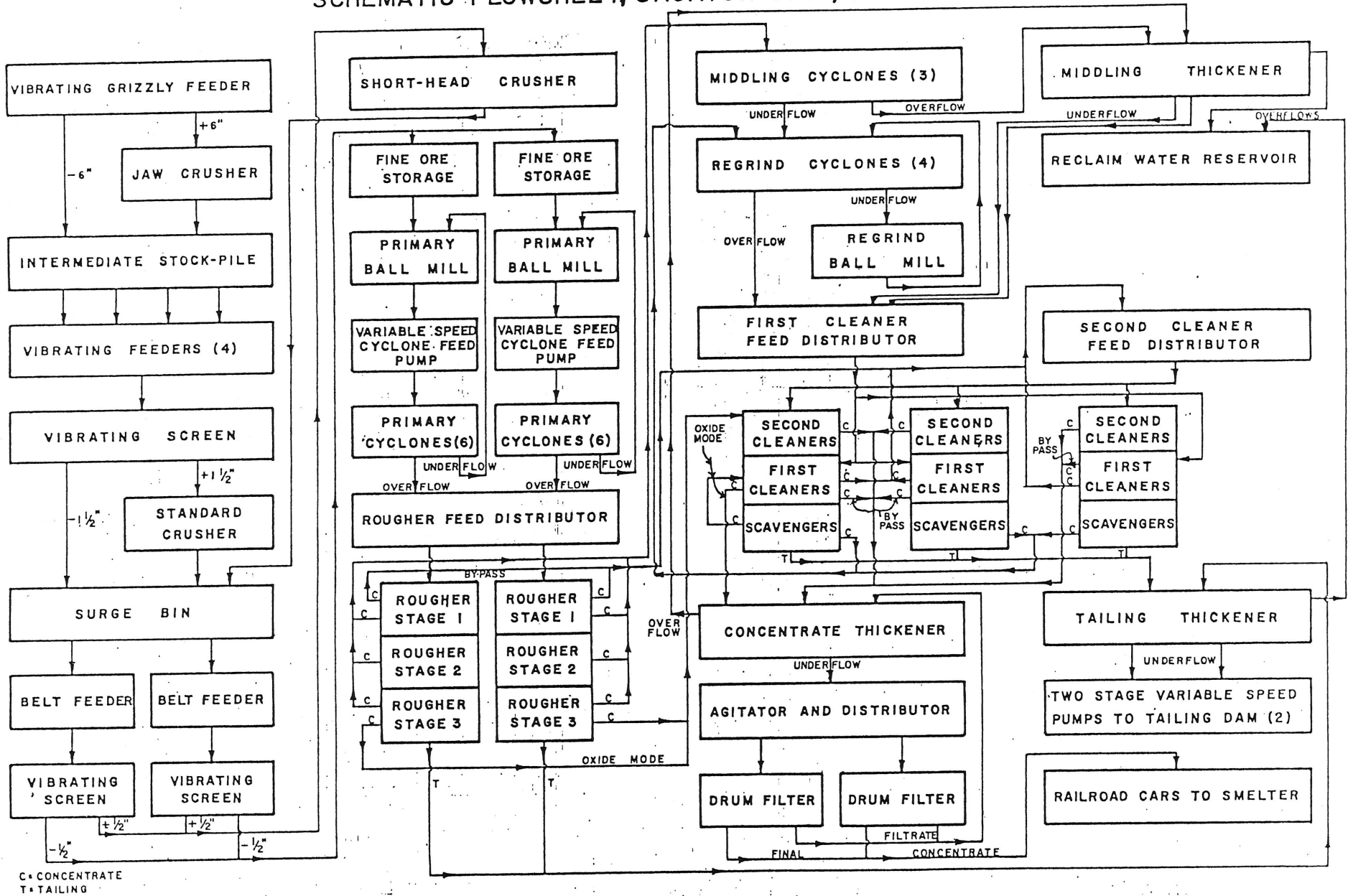
197

# SECONDARY CRUSHER FLOWSHEET



- 1. Vibrating Feeders
- 2. Magnet
- 3. Weightometer
- 4. Metal Detector
- 5. Vibrating Screens
- 6. Standard Crusher
- 7. Surge Bin
- 8. Short Head Crusher
- 9. Fine Ore Storage

# SCHEMATIC FLOWSHEET, SACATON UNIT, ASARCO



## SACATON COPPER DEPOSIT, ARIZONA

Long before satellite imagery made easy the recognition of major fracture zones in the earth's crust, geologists had recognized that ore deposits frequently are distributed along regional trends or lineaments, and substantial ore accumulations often were developed at the intersection of two crosscutting lineaments.

Early in 1961, geologists of the American Smelting and Refining Co. (ASARCO), holding a "skull session" in their regional office in Tucson, Ariz., were reexamining the area for likely localities upon which to concentrate their exploration activities. The southwest trending Superior-Miami trend was well established by development of several famous older copper properties. ASARCO geologists hypothesized a less well defined trend extending northeast through the Casa Grande area. A projection of the two trends crossed just south of the Sacaton Mountains, 5 miles northwest of the cotton-raising town of Casa Grande (fig. 8). The group agreed that this intersection, about 20 miles west of the nearest copper production, might be a good area to prospect.

Examination of a U.S. Geological Survey topographic map of the area showed that much of the prospect area was a flat desert plain where the bedrock was deeply buried by alluvial gravels. However, a few small knobs and gentle rises might represent points where resistant bedrock stood above the alluvial fill. A field check on February 9, 1961, showed that the first knob visited was indeed a rock outcrop, but it consisted of Pinal Schist that was of no immediate interest. The next "hill," 300 feet in diameter and 30 feet high, consisted of granite cut by a dike of much younger monzonite porphyry, a typical host rock for the Arizona copper deposits. Alteration of the rock and iron staining suggested that sulfide minerals had been leached from the surface outcrop but still might be found at depth.

On the strength of this small showing, the ASARCO land department was asked to secure exploration leases on State land in the immediate area and to obtain options on the intervening private land surrounding the prospect area. Geophysical surveys were used to obtain clues to what might lie beneath the thick accumulation of surface gravels. Electrical and magnetic methods were used in an attempt to outline areas underlain by concentrations of highly conductive sulfide minerals, and the seismograph was employed to estimate depths to possible ore bodies. These preliminary surveys outlined several anomalies that could be interpreted only by test drilling.

A drilling program was set in motion in September. The first five holes around the original outcrop found encouraging shows of mineralization, and the sixth hole cut rich chalcocite (copper sulfide,  $Cu_2S$ ) ore. With this inducement, a system of drilling on a regular grid was inaugurated, and a total of 74,000 feet of drill hole was completed by the end of 1962. This program roughly outlined two adjacent ore bodies. The west ore body appeared to be relatively shallow, overlain by an average of only 100 feet of alluvium and barren rock. The top of the east ore body, slightly northeast of the shallow ore, was at least 1,500 to 1,900 feet below the land surface. A major fault appeared to separate the two deposits.

The relatively low price of copper at that time delayed further exploration of the discovery until 1967, when rising prices justified a second and more detailed drilling program. By January of 1969, the company had drilled an additional 38 holes averaging a quarter of a mile in depth and totaling nearly 47,000 feet in all. This program confirmed the economic potential of the two ore bodies. It was established that the west ore body, which is about 1,200 feet in diameter and up to 700 feet thick, could be mined by open pit methods. The east ore deposit, 1,200 feet long by 600 feet wide by 300 feet thick, would be mined by underground methods exclusively. The two together were estimated to contain 47 million tons of ore averaging 0.76 percent copper.

In April 1972, the Board of Directors of ASARCO approved the expenditure of \$36 million to develop the Sacaton mine and to build a 9,000-ton-per-day concentrating plant (fig. 14). The concentrates would be shipped to the ASARCO smelter at nearby Hayden, Ariz. Stripping of the west ore body started that same month with leased equipment. By yearend, the company had acquired its own equipment, and stripping was in full swing. Full operation of the mine and mill began in the spring of 1974, 13 years after the initiation of a drilling program.<sup>4</sup>

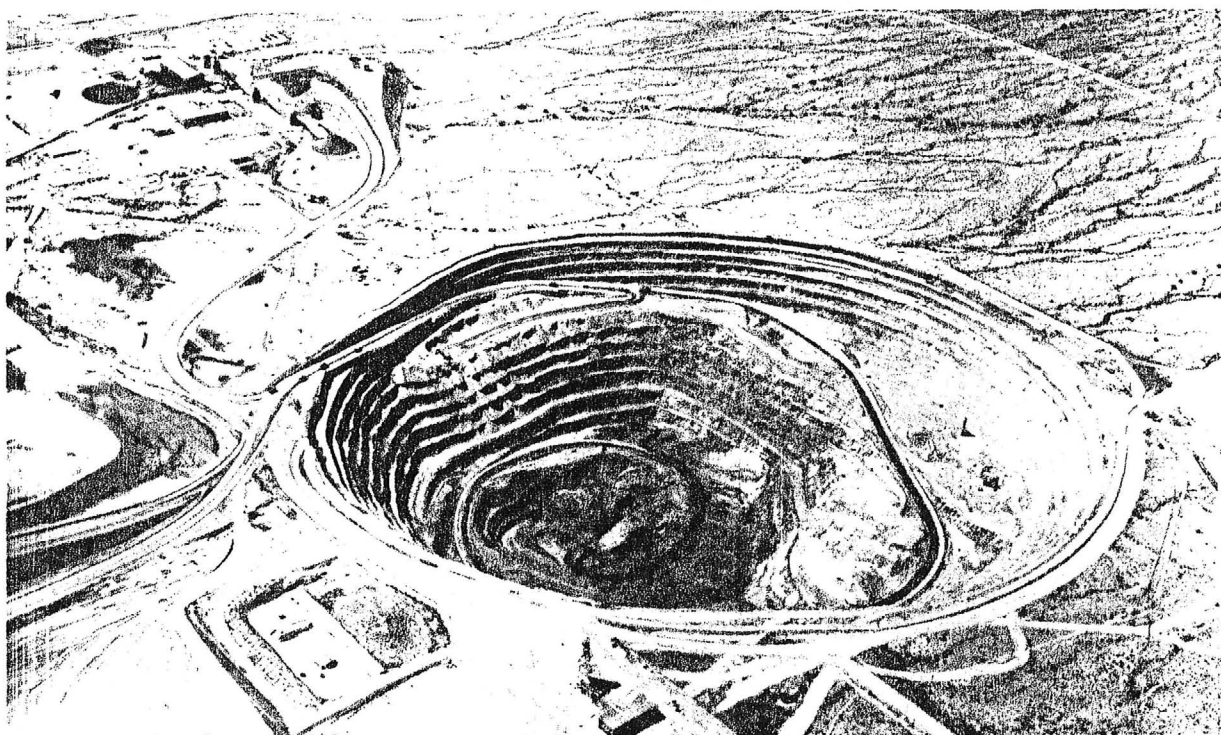


FIGURE 14. - Oblique aerial view of the Sacaton open pit and concentrator near Casa Grande, Ariz.

*(Courtesy, ASARCO, Inc.)*

<sup>4</sup>Compiled from numerous news items in Skillings' Mining Review, Engineering and Mining Journal, World Mining, Mining Magazine, and the Domestic Area Reports volumes of the Minerals Yearbook.



**CORAL FOUND IN ALASKA'S COAST:**

Deep within Alaska's frigid coastal waters, divers have discovered a valuable new resource; Alaskan Coral.

Alaskan Roger Pike, former jade shop manager and commercial fisherman, has retrieved sufficient quantities of coral in Alaskan waters to produce a new and genuine line of precious stone jewelry from the 49th State.

The coral, fresh from the sea, is brilliant pink and remarkably heavy in its watery state. Once it is cleaned, the potential material for jewelry is but a tiny fraction of the original "catch".

After being cut and polished, the coral produces a hard stone which shimmers in mottled greens, blues, yellows, browns, and blacks.

Stories of fishermen pulling up coral in their nets intrigued Pike, since coral has traditionally been associated with warm water regions. A year-long search, involving underwater television cameras and divers, was responsible for Roger Pike's eventual discovery of extensive coral forests.

(The Golden Nugget, via Pegmatite-San Diego and others)

**FIELD TRIP RECAP OF ASARCO MINE**

BY LEO LANGLAND

On Sunday, January 2, 1984, 34 MSA rockhounds made the third annual caravan to the Asarco Sacaton Mine near Casa Grande. The collecting was different this time. Deep red cuprite and chalcotrichite on native copper and even native silver were found as well as the usual brochantite--atacamite on chrysocolla. Moreover, the sun was out, with no wind and a temperature in the mid-seventies. A beautiful day!

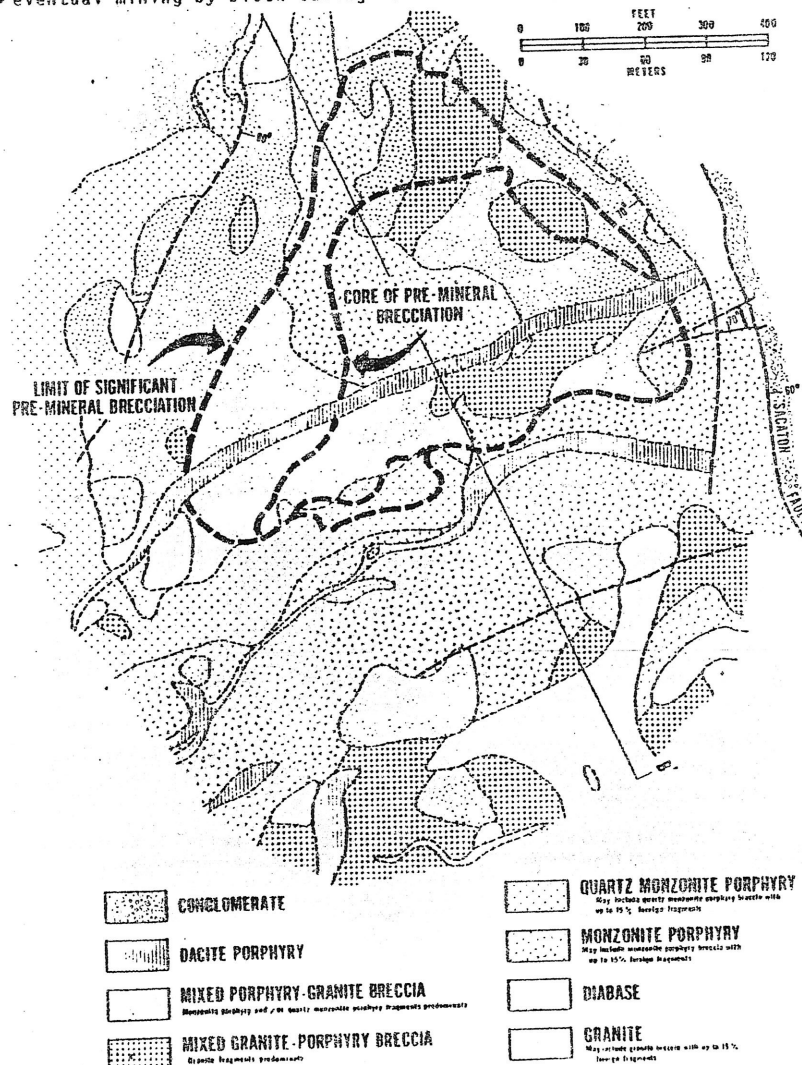
Our Asarco host, Larry Johnson was back, to give us a lesson on the geology of the Sacaton Mine, and to add to the excitement--a couple of ultra-light airplanes landed at our site to see what we were doing. Larry had to tell them to leave, as they didn't have official permission to be on the mine property.

Some of the geology of the Sacaton Mine, from University of Arizona, Arizona Bureau of Mines, publication Porphyry Copper by Bob Cummings, follows:

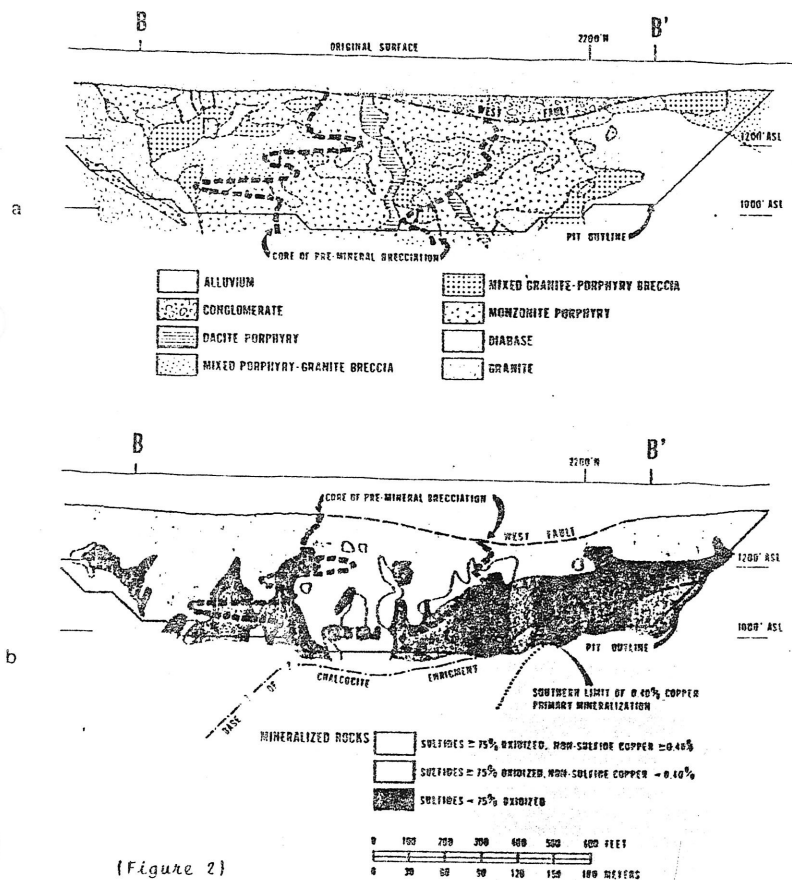
"The Sacaton copper deposit is located in Pinal County, Arizona about 6 mi. northwest of Casa Grande and 65 miles northwest of Tucson. The mine is on a gently sloping pediment south of the Sacaton Mountains. In the mine area vegetation is sparse, the climate is semiarid, and the average elevation is 1,450 ft. Early in 1961 Asarco geologists examined a small outcrop of leached capping 1.5 miles south of pre-mineral outcrops in the Sacaton Mts. This outcrop forms a low hill, about 30 ft. high and 300 ft. in diameter, surrounded by Quaternary alluvium. The hill is underlain by granite and thin monzonite porphyry dikes and exhibits pervasive phyllic alteration. Interpretation of the leached capping suggested that the outcrop contained about 2 percent pyrite by volume with traces of chalcocite."

"With the altered outcrop as a positive exploration lead, a drilling program was initiated which eventually outlined two zones of ore-grade copper mineralization. The relative position of the orebodies to the Sacaton Mts. and the discovery outcrop is illustrated in Fig. 1 and 2. Full-scale production from the West orebody commenced in Feb., 1974 and at the end of 1980 averaged approximately 11,500 tons of ore per day. At that time the West orebody was

being mined by open-pit methods, and plans for the East orebody called for eventual mining by block-caving methods."



(Figure 1)



(Figure 2)

"The Sacaton deposit occurs in the Basin and Range province of Arizona. At the close of Older Precambrian time the Oracle Granite batholith intruded the Pinal Schist. In Younger Precambrian time Apache Group sediments were deposited and igneous activity resulted in the emplacement of the Sacaton Granite northwest of the mine and numerous diabase dikes. During the Paleozoic the Sacaton mine area was probably near the northern limit of the Sonoran Geosyncline. An unknown thickness of Paleozoic sediments was deposited and later eroded along with most of the Apache Group rocks. During the Laramide Oregeny two granitic stocks, the Three Peaks Monzonite and the Sacaton Peak Granite, were emplaced in the vicinity of the mine. The faulting, uplift, and erosion that took place during the Cenozoic resulted in deposition of continental sediments and development of the present topography."



"In chronological order the major geologic events in the Sacaton Mine area include the following:

1. Formation of the Pinal Schist.
2. Intrusion of the Precambrian Oracle Granite
3. Intrusion of diabase dikes
4. Intrusion of monzonite porphyry and quartz monzonite porphyry.
5. Pre-mineral brecciation
6. Hypogene alteration and sulfide mineralization
7. Intrusion of dacite porphyry dikes
8. Erosion cycle, with formation of original chalcocite blanket
9. Subsidence and deposition of Whitetail (?) conglomerate
10. Normal faulting (West, Sacaton, and South faults) and post-mineral brecciation
11. Post-enrichment oxidation
12. Movement on Basement fault and further post-mineral brecciation
13. Quaternary alluvium

Rather than being discrete events, the intrusions of the porphyries and pre-mineral brecciation were probably overlapping. In addition, post-enrichment oxidation may have taken place in several cycles starting before deposition of the conglomerate and continuing through large scale displacement on the Basement fault."

#### 1984 SHOW COMMITTEE

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SPECIAL DISPLAYS.....	BARBARA LANGLAND
SWAP AREA.....	FRED BURR

The mine is nearly circular, having an average diameter of 3,100 feet. The mine is currently 720 feet deep (1981) and has a planned final depth of 960 feet.

There are two classifications of material mined - ore and waste. The ore, copper-bearing rock, is fed into crushing, grinding and concentrating circuits at the mill facility where it is transformed from raw ore into copper concentrate. The mill facility receives ore in pieces as large as three feet in diameter and reduces them into a material resembling face powder. Then, by treating the finely ground ore with water and a variety of chemicals, the copper minerals are removed from the waste rock and concentrated into a black to green powder. The copper concentrates are then shipped by rail to Asarco smelters in El Paso, Texas, Hayden, Arizona or Tacoma, Washington.

The waste is taken to the waste dumps. Waste is mined only so that more ore can be uncovered and mined.

Sacaton Unit produces approximately 19,000 tons of ore and waste per day on a 24-hour per day, 7-days per week schedule. This is accomplished by using a fleet of twenty 85-ton haul trucks, two 9 cu. yard electric shovels, 12 cu. yard front-end loaders and miscellaneous drills, bulldozers, graders, etc.

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The 85-ton haul trucks are Wabco 85C's. They are powered by Cummins 800 horsepower diesel engines, coupled with a 6-speed transmission shifting automatically. This engine-transmission combination gives a fully loaded Wabco 85C the capability of reaching speeds up to 40 miles per hour on level ground. These trucks weigh 133.5 tons when loaded and 48.5 tons when empty.

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All material produced must first be blasted. This is accomplished by three rotary blasthole drills. Each 9 inch diameter drill hole is drilled to a depth of about 50 feet. Each drill hole is sampled and assayed for copper content. The assay determines if the material to be blasted is ore or waste. Each blasthole is then loaded with about 600 pounds of explosive. The loading method varies with respect to ground water contained in the blasthole. Dry holes are loaded with an ammonium nitrate/fuel oil explosive. Wet holes are dewatered with a pump, sleeved with a plastic liner and loaded with the ammonium nitrate/fuel oil explosive. The average blast uses about one pound of explosive to break eight tons of rock and produces about 35,000 tons of broken material.

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From the beginning of the Sacaton Unit there has been an interest on the part of ASARCO Incorporated to try to preserve, where possible, the surrounding areas in their natural state. Where it is not possible to avoid disrupting the plant life, plans are made to revegetate as soon as work in the area ceases. There are currently some 46 acres, mostly dump slopes, that have been replanted with desert flora. By revegetating the disturbed areas, we are reducing the amount of erosion on our dump slopes, providing food and shelter to the native wildlife, and making the necessary waste disposal areas esthetically pleasing.

Thank you for your interest in the Sacaton Unit.

August, 1981

ACTIVITIES CALENDAR

- January 8...REGULAR MEETING MSA
- January 8-10...Apache Junction Rock & Gem Show--Centennial Hall, Mesa
- January 12...Micromounters Study Group--7:30 at Mineral Museum
- January 15...Dana Study Group--7:30 at Mineral Museum
- January 22...BOARD OF GOVERNORS MEETING--7:30 at Clubhouse  
...SHOW COMMITTEE MEETING
- January 29-31...Gila County Gem & Min. Soc. Show--County Fairgrounds,  
Globe, Az.
- January 30-February 8...Rock, Gem & Mineral Show--Quartzsite
- February 5...Paleontology Study Group--7:30--Mineral Museum
- February 9...Micromounters Study Group--7:30--Mineral Museum
- February 12...REGULAR MEETING MSA--7:30 Juniors  
--8:00 General at Phoenix College
- February 12-14...Tucson Gem & Mineral Show, Community Center
- February 12-13...Wickenburg Gem & Min Show, Community Center
- February 19...Dana Study Group--7:30 Mineral Museum
- February 26...BOARD OF GOVERNORS MEETING--7:30  
SHOW COMMITTEE MEETING
- July 8-11...AFMS SHOW in Houston, Texas
- September 17-19...RMFMS SHOW at Denver, Colorado

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FIELD TRIP IN JANUARY

BY LEO LANGLAND

On Saturday, January 2, 1982, the MSA started the New Year out right; 36 cars and about a hundred members and guests (some from Tucson G&M) were given royal treatment by ASARCO's Sacaton Mine near Cass Grande. The mineral collecting, geology and the weather held up and at the end of the day we all had lots of minerals to take home and study (as there were some puzzlers). In the February bulletin Ray Grant will give us a write up on the geology and the names of some of those minerals.

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ASARCO - THE SACATON UNIT

Sacaton Unit, employing about 270 men and women, is the newest of ASARCO Incorporated's three Arizona copper producing units. Preproduction stripping of the overlying, barren material was initiated in May, 1972. Subsequent ore production began in March, 1974. Presently, Sacaton Unit annually mills 4,000,000 tons of ore to produce about 21,000 tons of copper.

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DEPARTMENT OF MINERAL RESOURCES

STATE OF ARIZONA

FIELD ENGINEERS REPORT

Mine Sacaton Mountains Exploration Date Oct. 11, 1962  
District Casa Grande Area, Pinal County Engineer Lewis A. Smith  
Subject:

Owner: American Smelting and Refining Co., 813 Valley National Bank Building, Tucson, Arizona.

Interview with Richard Mieritz, consulting engineer, who reported that several drills were in operation around the clock. Apparently, the area is mantled by a heavy coat of gravels, said to average between 1200 and 1300 feet in depth, and the holes show 800 to 1800 feet. The surface below the gravels is very irregular. Mieritz says that an apparent anomaly is situated close to or on the projected intersection of three major structural units. He also had projected the Silver Bell mineralized belt (this trends N30-35 degrees W) and it roughly appeared to cross the area. B.S.&K. (Atlas) drilled several holes on an area, 2 or 3 miles northwest of Silver Bell. They found low grade copper mineralization but did not consider it good enough to further follow up.

Mieritz said some very good ore had been reported from one of the holes. He also said that a client of his has several claims near the present AS&R exploration. Boyles Brothers stated that they had 20 men and 4 drills working there.