



CONTACT INFORMATION

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Arizona Department of Mines and Mineral Resources Mining Collection

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04/27/87

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: BLAINE MINE

ALTERNATE NAMES:

SILVER CLIP
CLIP

LA PAZ COUNTY MILS NUMBER: 288

LOCATION: TOWNSHIP 3 S RANGE 23 W SECTION 25 QUARTER ~~SE~~ NE
LATITUDE: N 33DEG 08MIN 12SEC LONGITUDE: W 114DEG 34MIN 56SEC
TOPO MAP NAME: HIDDEN VALLEY - 7.5 MIN

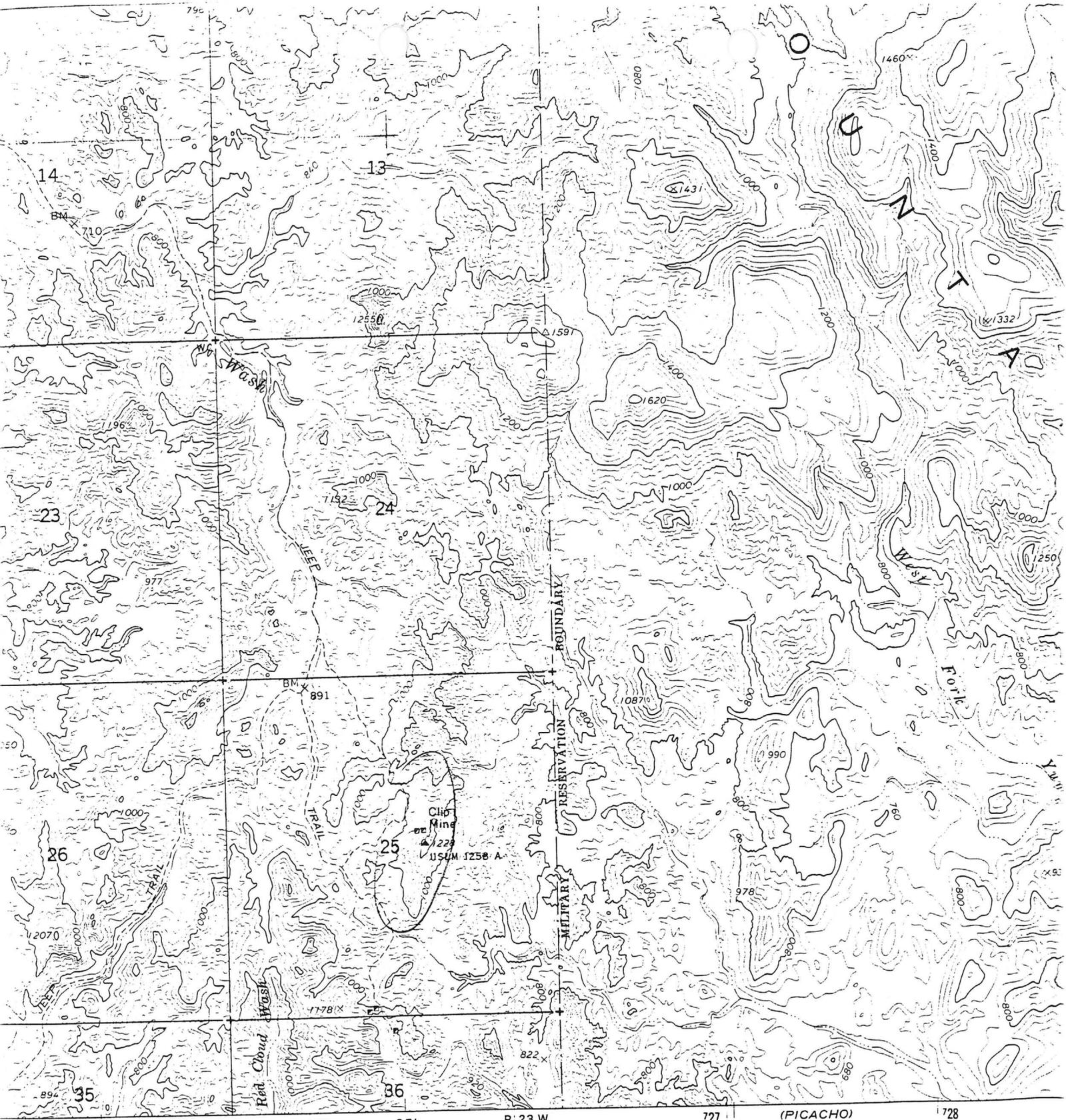
CURRENT STATUS: PAST PRODUCER

COMMODITY:

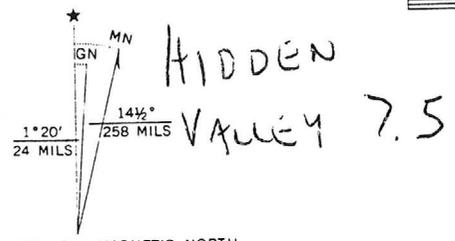
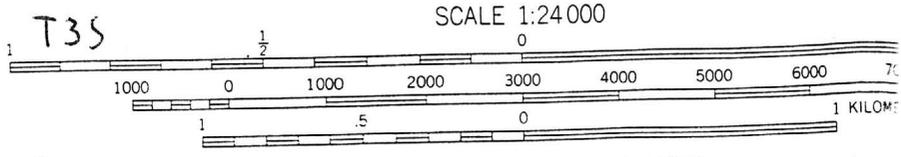
LEAD OXIDE
SILVER
VANADIUM
IRON
MANGANESE
STRONTIUM
BARIUM
GOLD LODE
TITANIUM RUTILE

BIBLIOGRAPHY:

KEITH, S.B., 1978, AZBM BULL. 192, P. 176
ADMMR BLAINE MINE FILE
AZBM FILE DATA
ADMMR BLOUNT LODE MINE FILE



1:240 000 FEET R. 23 W. (PICACHO) 3050 11 SE 1728



HIDDEN VALLEY 7.5

CONTOUR INTERVAL 40 FEET
 DOTTED LINES REPRESENT 20-FOOT CONTOURS
 DATUM IS MEAN SEA LEVEL

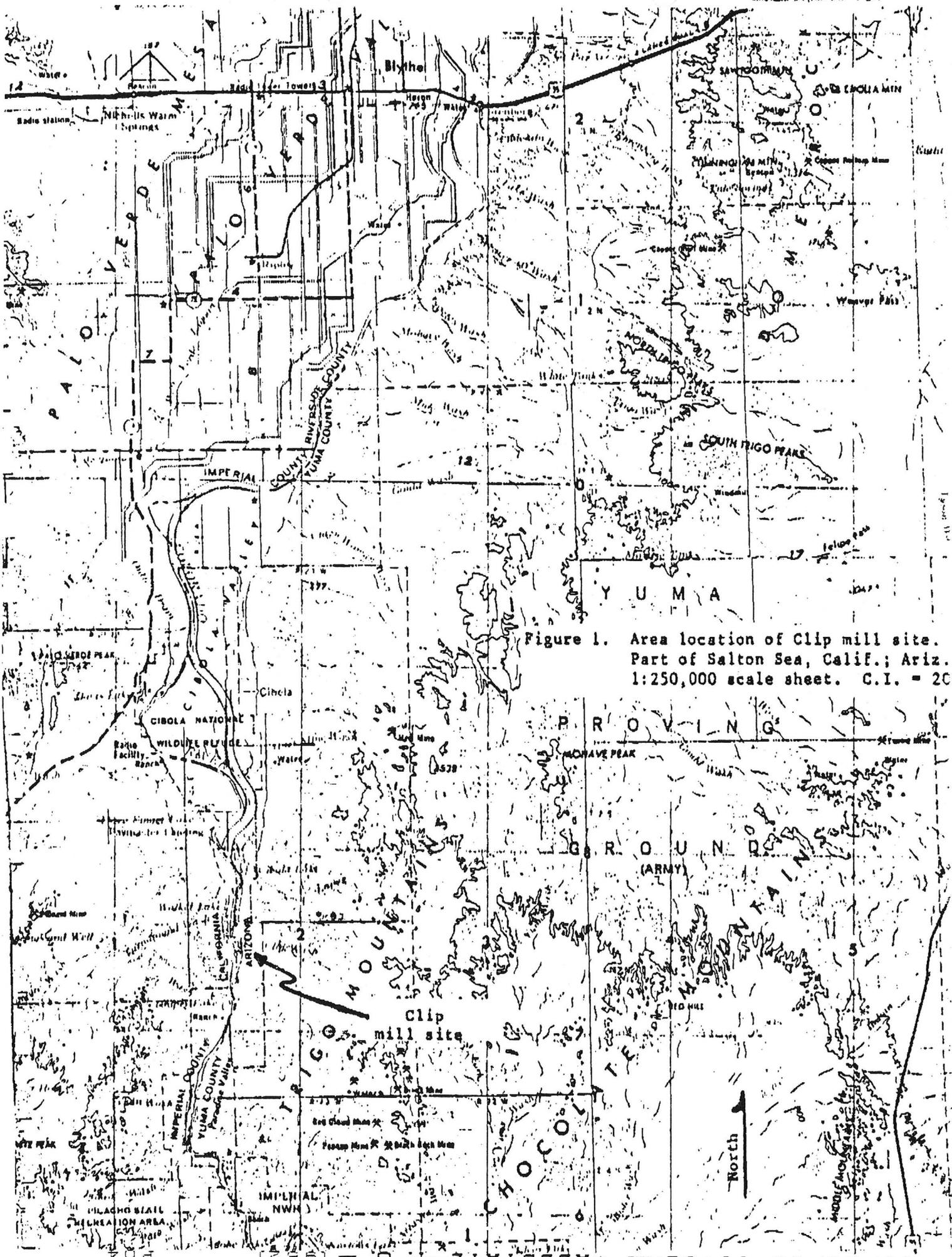


Figure 1. Area location of Clip mill site. Part of Salton Sea, Calif.; Ariz. 1:250,000 scale sheet. C.I. = 20

1:24,000 Quadrangle Name:	HIDDEN VALLEY
250K Quadrangle Name:	SALTON SEA
Annual Prod. Acc.:	EST_
Annual Prod. Amt.:	160.000_
Annual Prod. Comments:	
Annual Prod. Grade:	UNSPECIFIED_
Annual Prod. Item:	AG_
Annual Prod. Source:	A.B.M. BULLETIN 134, P. 56_
Annual Prod. Unit:	DOLLARS_
Annual Prod. Year:	1883_
Associated Rock Age MV:	
Associated Rock Number:	
Associated Rock Type MV:	
Associated Rock Unit Age:	
Associated Rock Unit Name:	
Clearing House:	95/04/07
Commodities Present:	AG PB V MN F FE CU
Commodity Comments:	
Commodity Profile:	100
Commodity Specialist Com.:	
Commodity Subtypes:	
Commodity Type:	B
Complete Record Profile:	76
Concentration Process:	
County Name:	LA PAZ
Cumulative Prod. Acc.:	EST
Cumulative Prod. Amt.:	950.000
Cumulative Prod. Grade:	UNSPECIFIED
Cumulative Prod. Item:	AG
Cumulative Prod. Unit:	DOLLARS
Cumulative Prod. Year:	1884-1887
Date Issued:	1999/12/21
Deposit Desc. Comments:	AT THE 120 FT LEVEL ORE SHOOTS TERMINATE OR VERSE FAULTS INCREASED ORE VALUES. A FUALT ZONE._
Deposit Desc. Profile:	50
Deposit Env. Profile:	100
Deposit Size:	S
Deposit Type:	VEIN_
Deposit Type Code:	11000
Development Status:	6

USGS MRDS
RECORD =
SILVER CLIP

Discoverer:
District Name: SILVER DISTRICT_
Drainage Area Name: 15030104
Elevation: 1100 F
Entry Date: 1972/04/01
Environment Comments:
Exploration Comments:
Exploration Profile: 50
File Link Identification: IMS
General Anal. Data Source:
General Analytical Data: 20 TO 140 OZS. AG/TON_
General Comments: THIS RECORD CONTAINS DATA FROM DUPLICATE
ISCHER WHICH HAS BEEN DELETED FROM MRDS. ;
LIT; 2 UNPUB REPT_

Geology Comments:
Geology Profile: 42
Graphic Link ID: 0000000000027233
Host Rock Age (s):
Host Rock Age MV: TERT_
Host Rock Number: 1
Host Rock Type (s):
Host Rock Type MV: ANDESITIC TO DACITIC LAVA FLOWS, TUFF, AND
Host Rock Unit Age:
Host Rock Unit Name:
Hydrologic Unit Code: 15030104
Identification Comments:
Identification Profile: 80
Land Status: 49
Latitude: 33-08-09N
Latitude - Decimal Deg: 33.135833
Local Structure: THE BEDS, WHICH GENERALLY DIP AT LOW ANGLES,
SHATTERED IN SEVERAL DIRECTIONS. THE MOST
ING TRENDS N25E, WITH STEEP WESTWARD DIP,
ENT SYSTEM STRIKES NORTHWARD, WITH STEEP
FAULTS OF UNDETERMINED THROW STRIKE
AND NORTHWEST, WITH WESTWARD DIPS_

Location Comments:
Location Precision:
Location Profile: 100
Longitude: 114-35-05W

Longitude - Decimal Deg: -114.584722
Major Commodities: AG
Meridian: GILA AND S
Mineralization Age: TERT_
Minor Commodities: PB
Model Name:
Model Number:
Nature of Discovery:
Non-Ore Minerals: CALCITE, QUARTZ, FLUORITE, BARITE_
Non-USGS Works:
Operator:
Ore Body Name:
Ore Control or Locus: THE CLIP VEIN OCCURS WITHIN A FAULT ZONE
30E TO N10W AND DIPS 60 DEG TO 70 DEG W_

Ore Materials: PB OXIDE, CERARGYRITE, CERUSSITE,
ITE, HEMATITE, PYROLUSITE_

Orebody Depth to Bottom: 120
Orebody Depth to Bottom U: FT
Orebody Depth to Top: 0
Orebody Depth to Top U: FT
Orebody Dip: 70W
Orebody Form: LINEAR_
Orebody Max. Length: 750
Orebody Max. Length U: F
Orebody Max. Thickness:
Orebody Max. Thickness U:
Orebody Max. Width: 1 TO
Orebody Max. Width U: FT
Orebody Strike: N30E
Other Quadrangle Name:
Other Quadrangle Scale:
Overall Workings Area:
Overall Workings Area U:
Overall Workings Length:
Overall Workings Length U:
Overall Workings Width:
Overall Workings Width U:
Owner:
Physiographic Province: 12 BASIN A
Position: 28 MILES NORTH OF YUMA.

Potential Resources Acc.:
Potential Resources Amt.:
Potential Resources Com.:
Potential Resources Grade:
Potential Resources Item:
Potential Resources Src.:
Potential Resources Unit:
Potential Resources Year:
Prod. and Res. Profile: 40
Production: M
Production Years:
Quadrangle Name:
Quadrangle Scale:
Range: 023W
Record No.: M002561
Record Type: S
Reference Number:
Reference Profile: 100
References: WILSON, E.D., 1933, GEOLOGY AND MINERAL
YUMA COUNTY, ARIZONA: ARIZ. B.M. BULLETIN
ER, F.Z., 1966, THE GEOLOGY AND MINERAL
ER DISTRICT, TRIGO MOUNTAINS YUMA COUNTY
HESIS SAN DIEGO STATE COLLEGE.
TRIAL MINERALS: ARIZONA DEPARTMENT OF MINES
OURCES MINERAL REPORT 3, 185 P._

Regional Structure:
Report Date MV: 4/1/72
Report date: 1972/04/01
Reporter Affiliations MV: USGS
Reporter Name MV: GERE, W.
Reporter Type MV: R
Reporter's Affiliation: USGS_
Reporter's Name: GERE, W.
Reporters Comments MV:

Reports:
Res./Pot. Resources Acc.:
Res./Pot. Resources Amt.:
Res./Pot. Resources Com.:
Res./Pot. Resources Grade:
Res./Pot. Resources Item:
Res./Pot. Resources Src.:

Res./Pot. Resources Unit:
 Res./Pot. Resources Year:
 Reserves Acc.:
 Reserves Amt.:
 Reserves Comments:
 Reserves Grade:
 Reserves Item:
 Reserves Source:
 Reserves Unit:
 Reserves Year:
 Second Quadrangle Name:
 Second Quadrangle Scale:
 Section: 25
 Section Fraction:
 Significant Alteration: CARBONATIZATION, SILICIFICATION_
 Site Name: SILVER CLIP MINE_
 Special Field 1:
 State Code: AZ
 State Name: ARIZONA
 Synonym: BLAINE, CLIP MINE_
 Tectonic Setting:
 Township: 003S
 Trace Commodities: V MN F
 USGS Works:
 UTM Easting: 7253000
 UTM Northing: 36687500
 UTM Zone: +11
 Unpublished Source:
 Updater Affiliation: USGS
 Updater Date: 79 10
 Updater Name: HALL, R.K. (CR
 User Field: *U94/11
 Work Desc. Profile: 100
 Workings Depth: 200
 Workings Depth U: FT
 Workings Desc. Comments: WORKINGS INCLUDE 5 LEVELS OF DRIFTS AT
 OOT INTERVALS_
 Workings Length: 150
 Workings Length U: FT
 Workings Type: U
 Year of Discovery:

From B. 192, 1978

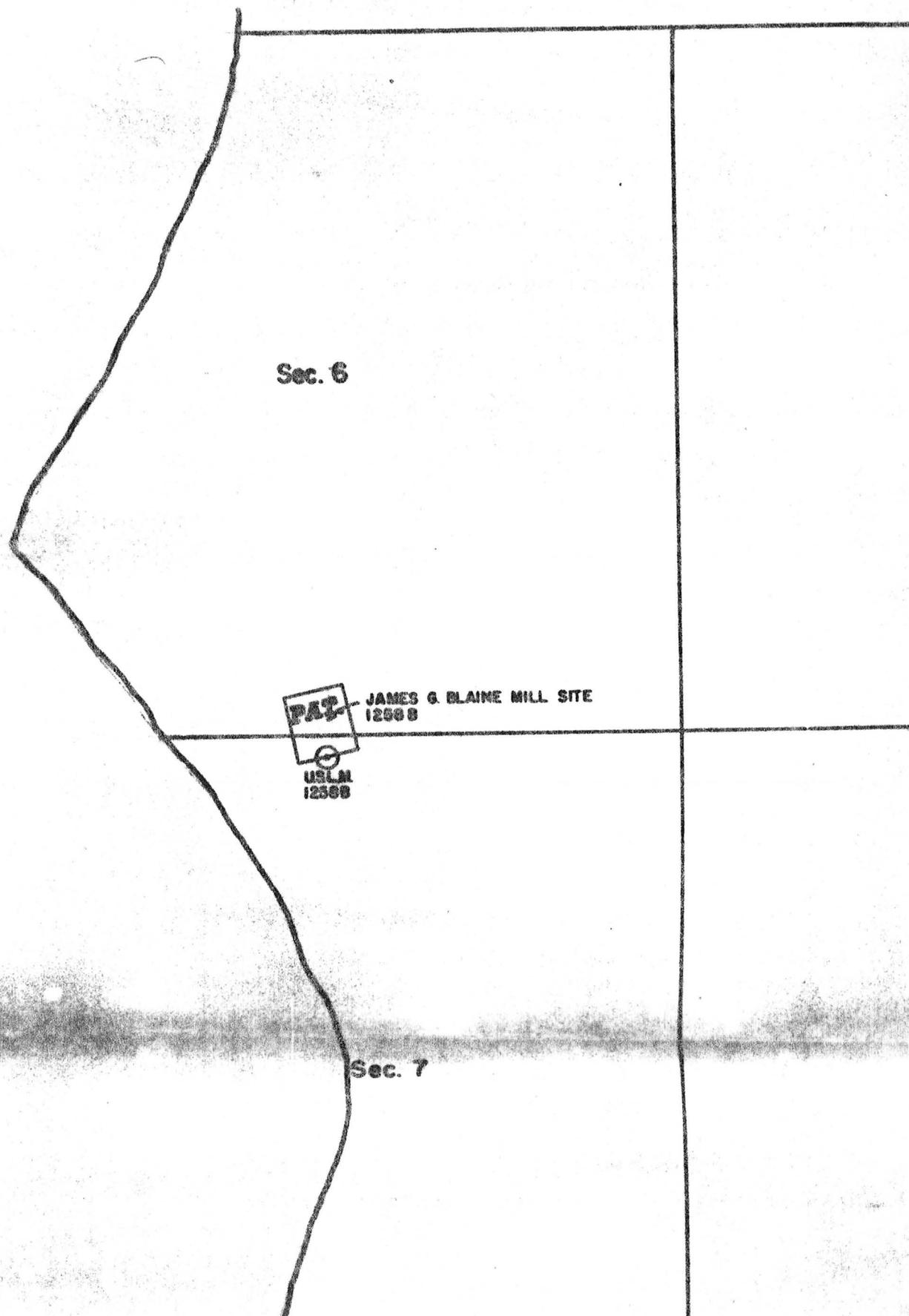
Silver and Eureka Districts, Table 4 Cont.

MINING DISTRICT AND MINES	LOCATION			MINERAL PRODUCTS	GEOLOGY	TYPE OF OPERATION AND PRODUCTION	REFERENCES
	T.	R.	Sec.				
3. Clip mine (Silver Clip, Jas. G. Blaine; Hubbard & Bowers; Thompson, Shiner, Fields, & Bates; Sil- ver Mines Consolidated Co.; United Silver Mines Co. of Yuma)	3S	23W	Cen 25	Pb, Ag, V, Fe, Mn, Sr, Ba, F, Cu- (Cl, Br)	Argentiferous, oxidized lead mineralization with silver chloride and bromide, vanadi- nite, and some malachite in a gangue of ferruginous and manganese calcite, quartz, fluorite, barite, pyrolusite, iron oxides, celestite, gouge, and brecciated wall rock, in a lensing vein in a fault zone cutting Tertiary andesitic to dacitic flows, tuffs, and breccias. Deep wall rock altera- tion to chlorite, limonite, and calcite as well as silicification. Ore pinches out in depth. Ore reportedly ran 20 to 140 oz. Ag/T with very minor Au.	Adit and shaft workings with stopping to the surface. Mined mainly in 1883-1887 and to lesser degree in 1925 through 1929. Total estimated and reported production would be some 25,000 tons of ore averaging about 46 oz. Ag/T. No reported recovery of lead.	Hamilton, 1884, p. 238 Wilson, 1933, p. 56-59 Parker, 1966 ABM file data
4. Colorado River placers (Various operators)	3S	23W	25 & 36	Au	Gold placers in bench gravels, arroyo bot- toms, and ancient bars and channels of drainage from the Trigo Mountains and along the ancestral Colorado River, in the Para- dise Valley area south of Lighthouse Rock.	Dry washing operations. Worked intermittently in late 1880's, during 1930's, and from 1950 through 1966. Estimated and re- ported production would be some 800-1000 ounces of gold with 80- 100 ounces of silver.	Burchard, 1882 Wilson, 1961, p. 25 Johnson, 1972, p. 75-76 ABM file data
	4S	23W	1 & 2				
5. Geronimo North & South mines (Unknown operators, Neal Mg. Co.)	3S	23W	E Cen #	Pb, Zn, Ag, Fe, Mo, V, F	Argentiferous lead sulfate and carbonate, zinc carbonate, lead oxide, wulfenite, and partly altered streaks of galena in irregular	Shaft and tunnel operations. No known early history or recorded production but some rich Pb-Ag	Wilson, 1933, p. 64-65 Parker, 1966

MINING DISTRICT SHEET # 534

NW $\frac{1}{4}$, T. 3S., R.23W. Secs. 6 and 7

JAMES G. BLAINE MILLSITE



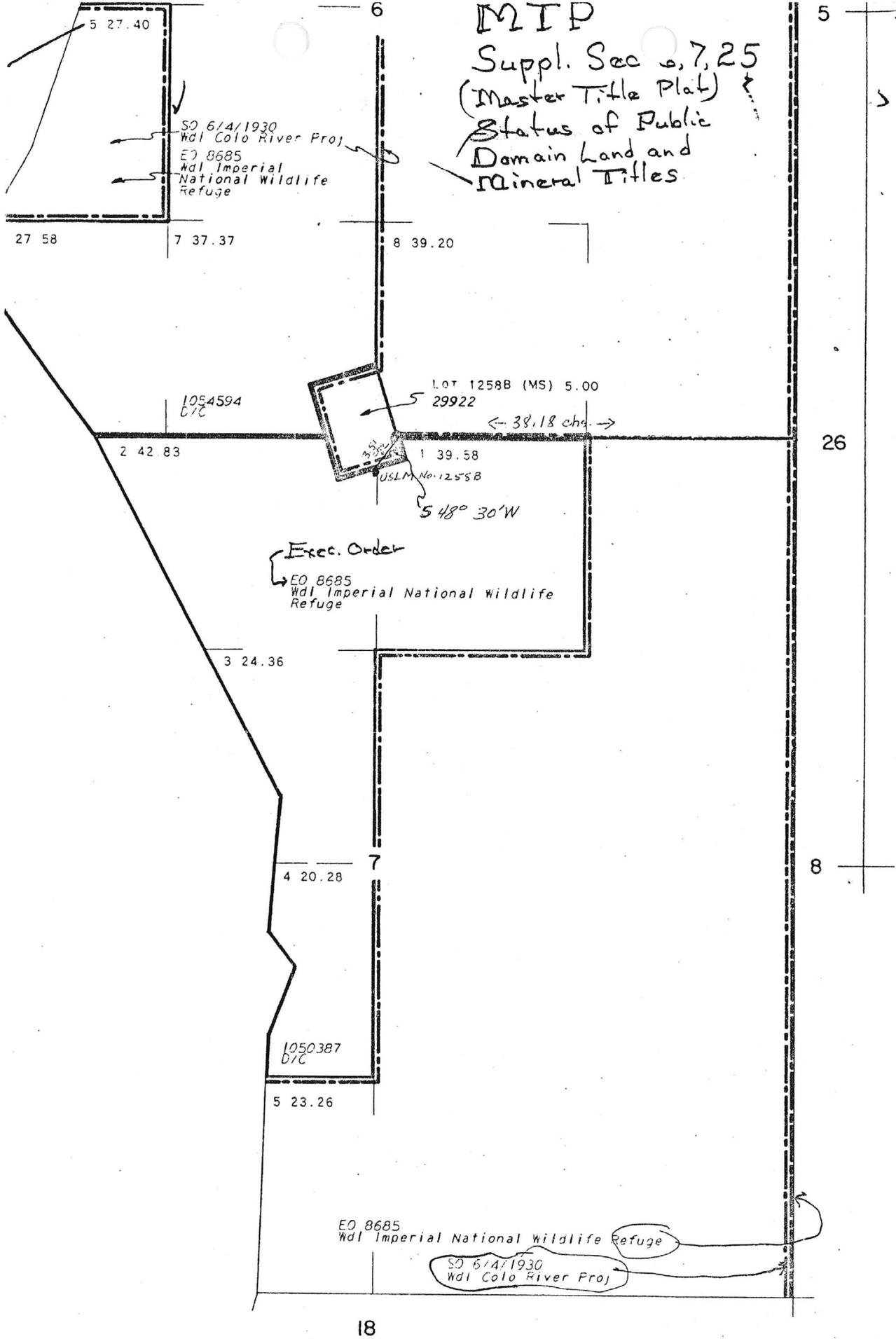
Sec. 6



JAMES G. BLAINE MILL SITE
12568

Sec. 7

MIP
Suppl. Sec 6, 7, 25
(Master Title Plat)
Status of Public
Domain Land and
Mineral Titles



SCALE
5 0 5 10
10 chains to ft

BLAINE MINE

YUMA COUNTY

RRB WR 8/16/83: It was reported that the Smarts had dredged the Colorado River so they could bring heavy equipment (furnaces, etc.) into the Clip Millsite by barge.

JOHN LACCIPOLE - 22711 SPARROW DELL DRIVE, CALABASAS, CA 91302

PH - 818-591-8916, OWNER OF MILLSITE - 1491 + 2003

PA

Blaine Mine

CJH WR 6/26/81: David A. Anderson, Consultant, Phoenix Recovery Systems, Inc., Rt. 5, Box 202, Union City, Ohio 47390. Tel: (513) 968-3200 and his friend R. Williams, 5555 W. Flying "M", Tucson, Az 85713. Tel: 883-5879. Mr. Anderson has as a client, Precious Metal Resources, Cleveland, Ohio, a brand new company. They recently purchased the tailing ponds (patented claims) of the Clip Mine, Yuma County. The tailings reportedly contain 10 oz. Ag/st. However Metallurgical tests were getting only 30% recovery. Mr. Anderson wanted to research AZ fluorspar deposits with the idea of making Hydrofluoric acid to treat the siliceous tailings, thereby exposing the encapsulated silver to cyanidation. He agreed that the economics of this process, even if it worked, did nto look good.

12/14/81 Telephone call: Mr. Gerald Smart of MINENCO, 3314 Observatory Ave. Cincinnati, Ohio 45208 called and said that his company has entered into a joint venture with Precious Metals Resources (see above) to work the tailings of the Clip Mill. They are presently trying to get information on prior operation of mill and are contemplating building a road into the millsite if they feel they can make it cost effective.

RRB WR 2/4/83: Gary Smart, 3314 Observatory Ave., Cincinnati, Ohio 45208 reports that they plan to treat the dumps at the ~~Blain~~ *Blaine* Mine, Yuma County. He will notify us when he establishes a local address. He described the process they will use to extract silver from this manganiferous ore as one on which the silver is volitized to separate it from the manganese. He expects to have his equipment set up and to be in production in about four months.

NJN WR 3/11/83: Gerald Smart with G. E. Smart and Sons Inc., 3314 Observatory Ave., Cincinatti, Ohio 45208, phone 513-321-7836 visited. The company's statutory agent, accountant and Arizona contact is Duskin and Duskin, 800 N. 7th Ave., Phoenix ⁸⁵⁰¹¹ Mr. Smart reported that they are setting up a mill at the Silver Clip Patented Mill Site that is within the Cibola Wildlife Preserve. They are going to rework 35,000 tons of tailings from the Clip Mine, Yuma County. They hope to recover silver by roasting and chlorine leaching and would like to recover barite as a byproduct if feasible.

RRB WR 5/6/83: Visited the CLip Millsite and talked to Bill Smart. His brother Gary had returned to Cincinnati and his father was in Blythe. Their local address is G. E. Smart, Box 212, Palo Verde, CA 92266. They are setting forms for concrete slabs and waiting for the equipment to arrive. They had some unspecified legal and/or financial problems to work out.

Padre Kino (old Silver Clip Mine)

Conference with Walter Segar, at the Yuma conference

Segar reported that Carl Self, 2465 6th Ave., Yuma (782-3636) or (782-3009) home, had 2 Mexicans working on a silver-lead showing at the old Clip mine (~~now called the Padre Kino~~) Attempts to contact Self failed, as he was away from Yuma for a couple of days. LAS Memo 10-6-65

Mr. Wyatt Stanley of Spokane phoned to learn the owner status of the James Blaine (Clip) mine in Yuma County. He said he was interested in possibly retreating the mill tailings. He was advised to ask the county assessor as to the ownership as it may be patented. GW WR 12-18-70

Dr. Birdick said that BLM had contacted him regarding buying his one acre of the 5 acre mill site of the old Clip mine. Thus far they merely appraised the land and have made no commitment. They want the ground for a wildlife refuge or wilderness area. He thinks they will probably offer an exchange of land. GW WR 12/21/72

Went on to Salome and picked up John Brusco and went to the old Clip millsite wher Mr. Brusco took a sample from several locations on the tailings pile. A rough estimate indicates there may be 10-12,000 of tailings. Mr. Brusco will conduct an experiment on the material using HNO_3 acid as a solvent then salt as a precipitant. He was cautioned that the material perhaps should be reground for the most effective release of the silver values. GW WR 12/11/73

Mr. Pete Dohms, geologist for New Jersey Zinc.Co., seemed favorably impressed and stated that they were trying to buy or lease the Clip millsite for the water rights. Due to the Federal Government appropriating most of the land adjoining the Colorado River, the Clip millsite is about the only place that water can be obtained at a reasonable depth. GW WR 12/12/73

Visited with Dr. Birdick, Yuma, who gave the name of the owner of a portion of the Clip millsite; it is Wm; Hindle, 1929 El Rey Road, San Pedro, California. GW WR 12/13/73

Jack Hamilton, Tonto Mining & Milling, brought in a sample of Clip tailings to be tested by ABM for a milling process. A Lester Perry of California has the tails and wants to recover as much as possible of the 13 oz. Ag/ton. GW WR 10/9/75

Called Dave Rabb to discuss Les Perry Clip mill tailings sample. Dave thinks the recovery of 50% of the Ag (13 oz/T) will be the maximum due to its combination with MnO_2 . GW WR 10/20/75

T35 R2310 Sec25 C

YUMA COUNTY

BLAINE MINE

ABM Bull. 134 p. 56

U III Silver Clip

A. L. Flagg vanadium reports - Book VI

USBM "U" file - has been examined for vanadium

See: PARKER, FRANK Z. (Geology File) The Geology and Mineral Deposits of the Silver District, Trigo Mtns., Yuma County, AZ.

See: IC 8969 -- Gold and Silver Leaching Practices in the US; p. 16

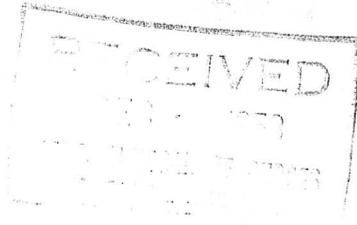
BLAINE, JAMES G.

Ag

Yuma

14 -

Sec 36
T 3 S, R 23 W



Yuma, Arizona.
Dec, 2nd, 1958

Mr. R. I. C. Maning.
Phoenix, Arizona.

Dear Mr. Minning:

The owners of the Old Clip, or Blaine mines in the Silver District, is owned by Mr. H. P. Myres of El Centro California but at the Present time he is in Europe, but his agent here is Norman Hindle, the manager of the Imperial Hardware Store and if you write to him he can take care of any thing in regards to the mine.

With best wishes . I am

Yours very truly,

W. D. Riley
W. D. Riley

Date Printed: 10/01/96

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

INFORMATION SUMMARY

Information from: **P. E. Fox, President and CEO**
Company: **Silverspar Minerals, Inc.**
Address: **409 Granville Street, Suite 1409**
Vancouver, BC CANADA V6C 1T8
Phone: **604-669-5737**

MINE FILE: **Blaine**
County: **La Paz**
AzMILS Number: **288**

SUMMARY

I called the number for Silverspar Minerals in the Canadian Mines Handbook to obtain current information from the company on their interest in the Eureka (Silver) District of La Paz County. The phone was answered by Mr. P.E. Fox, listed as President and CEO of Silverspar Minerals. He did not identify the company over the phone until I asked if I had reached Silverspar Minerals, to which he answered yes. He explained the current status of the properties as having received recent "exciting inquiries regarding silver and continued interest in fluorspar". Further he is "expecting some venture funding soon"... on the project. No work was done on the Arizona properties last year except review and analysis. This comment has been abstracted to the following ADMMR mine files: Blaine, Black Rock, Dives, Geronimo North & South, Hamburg, Mendevil, New Jersey Zinc company file, Papago, and State

Ken A. Phillips, Chief Engineer Date: September 13, 1996

Date Printed: 01/27/98

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

INFORMATION SUMMARY

Information from: "Doc" P.A. Birdick

Company:

Address:

City, State ZIP: Yuma, Arizona

Phone: 602-783-5012

MINE: Clip Millsite

ADMMR Mine File: Blaine Mine

County: La Paz

AzMILS Number:

SUMMARY

Doc Birdick reports he owns the north one acre of the Clip Millsite which is patented.

There are current attempts to reprocess the tailings on the property.

Ken A. Phillips, Chief Engineer

Date: August 24, 1993

BLAINE MINE YUMA COUNTY
Formerly "SILVER CLIP" SILVER DIST.

MAP - SILVER DISTRICT, YUMA COUNTY, may
be found in map cabinet , Drawer **6**

(By L. E. Brazeel, 1941)

Patented

Kingman, Ariz. 5/31/40

To: J. S. Coupal, Director
From: Elgin B. Holt
Subject: James G. Blaine mine, Yuma Co.

This is in answer to your memo. of May 28, asking for information on the James G. Blaine silver mine, located about 3 miles N. N. E of the Red Cloud Mine, in the Silver District, Yuma County, Arizona.

You will find a full description of this mine and history of its operations on page 56 in Bulletin No. 134, Geology and Mineral Deposits of Southern Yuma County by Eldred D. Wilson, 1933.

Briefly, property was formerly known as the Silver Clip, and produced in its history about \$1,113,600 - 1883 - 1929. It was operated from 1883 to 1887 by Hubbard and Bowers, ore being treated in a 10-stamp pan-amalgamation mill erected on the Colorado River, 5 miles N. W. of property, during which time it produced over \$1,000,000 in silver; ore at that time said to run 40 to 50 ounces silver per ton. At old mill site on river, there is a mill tailings dump now of better than 20,000 tons, said to run from 7 to 12 ounces silver. Considerable low grade ore left in mine.

In 1927 a 100-ton cyanide mill was erected at property and water was piped from Colorado River. Mill was remodeled in 1928 and treated 700 tons ore only. This operation was a rank failure due to fact that the ore is heavily impregnated with manganese (pyrolusite). Ore is oxidized material, containing fluorite, barite, calcite, quartz, hematite, limonite, manganese, cerussite, lead oxide, vanadinite, malachite; the principal silver mineral being cerargyrite (horn silver).

Ore seems to be a metallurgical "nut"; but Mr. Edwin Mills informs me that a process has been successfully worked out at Fresnillo, Zacatecas, Mexico, to treat this kind of ore. As near as I know, I think this process consists of first dissolving the manganese by means of sulphurous acid; washing and then using cyanide - something along that order.

There are no sulphides or zinc present in the ore.

Property is now reached by a poor desert road, but passible, leading from the Quartzite-Yuma road from a point 4 miles north-east of the Gila suspension bridge, 4 miles west of Dome; said desert road being about 40 miles in length.


Elgin B. Holt.

Silver Glance Resources Inc.

1409 - 409 Granville Street
Vancouver, B.C. Canada V6C 1T8
Telephone (604) 669-2428

LETTER TO SHAREHOLDERS

Erosion of the Ozone layer by chlorine-bearing fluorocarbons has sparked new restrictions on the use of chlorofluorocarbons (CFC's) and has accelerated phase-out deadlines. This is good news for shareholders of Silver Glance Resources Inc. Two years ago the Company decided to exploit its reserves of fluorite-bearing rock in its Silver District property near Yuma, Arizona to take advantage of increasing environmental concerns regarding CFC's. The cry over CFC's and the depletion of the Ozone layer has now reached the crisis stage. The Company's decision to switch to fluorite is proving to be a good one. The stock has moved to the \$3.50 to \$4.00 range and interest in the Company continues to grow.

The Significance of Fluorite

Fluorite is the chief feedstock for the new Ozone benign products, hydrofluorocarbons (HFC'S) and hydrochlorofluorocarbons (HCFC's). A three-fold demand for fluorite and its immediate product hydrofluoric acid is anticipated with the shift from CFC-based products to HFC's. In addition, some two tons of acidspar is required to produce one ton of hydrofluoric acid. There is thus a five-fold multiplier in effect on acidspar production. The Company's Silver District property near Yuma, Arizona is the only open-pit acidspar deposit in the United States and is potentially the only domestic producer to supply fluorite to consumers on the U.S. market. Deposits in the Silver District Mining District have the potential to be low cost producers because of their low mining and processing costs, nearby transportation and proximity to end-users.

Reserves

Current reserves are four million tons grading five ounces per ton silver which include 1.8 million tons of acidspar quality rock grading 14% fluorite. Recent work has resulted in an increase in over-all grade and quality along with the discovery of a new zone in which early drill results returned 14% fluorite over a true width of thirty feet. This zone, accessible by open pit mining, is open along strike and to depth and could add a significant component to the reserve base. On-going work will exploit this reserve and develop final processing requirements to produce 50,000 tons of acidspar and one million ounces silver per year.

Recent Developments

The United States recently passed a measure to accelerate the elimination of CFC's in refrigerants, solvents, insulating processes and other applications. Production of CFC's had been slated for extinction by the year 2000. The U.S. is now considering moving that date five years closer. DuPont Co. and Allied-Signal Inc., two of the largest CFC producers, have spent about \$600 million to develop and produce CFC alternatives. DuPont has authorized construction of the world's largest facility to produce non-ozone-depleting HFC's. The Company said that the \$100 million worldwide plant at Corpus Christi, Texas, will have an annual capacity of about 70 million pounds to produce HFC-134A and HCFC-124. Coupled with an existing facility at the same site and a plant under construction in Chiba, Japan, DuPont said that by 1993 it will have capacity to produce up to 75 million pounds annually of HFC-134a and 50 million pounds of HCFC-124. Design is under way for a fourth facility in Dordrecht, the Netherlands, which is projected for completion by 1994.

HFC-134a is now targeted to replace all CFC products in new automobile air conditioning systems, commercial and industrial refrigeration equipment and home refrigerators. HCFC-124 will be a component of DuPont's products for servicing existing and new systems in home refrigerators, automobiles, refrigerated transport and some supermarket applications.

Outlook

All in all, the Company is well-positioned to capitalize on the accelerating demand for new, environment-friendly fluorocarbon products. Our growing resource base coupled with low production costs, by-product credits, access to the U.S. market and proximity to transportation all enhance the future potential of the Silver District project.



Philip J. Rogers
President
February 11, 1992

Schedule B: Supplementary Information - Silver Glance Resources Inc.

Securities Issued during the Second Quarter Ended January 31, 1992

Date	Type of Security	Type of Issue	Number	Price	Total Proceeds	Type of Consideration	Commission
Nov. 22, 1991	Common	Shares for Debt	9,200	2.50	\$ 23,000	Royalties	0
Dec. 12, 1991	Common	Options	50,000	1.10	\$ 55,000	Cash	0
Dec. 12, 1991	Common	Options	45,000	1.60	\$ 72,000	Cash	0
Jan. 31, 1992	Common	Options	10,000	1.60	\$ 16,000	Cash	0

Options Granted During the Second Quarter Ended January 31, 1992

Security	Number or Amount	Exercise or Convertible Price	Expiry Date
Option	160,000	\$ 3.60	December 12, 1993

Authorized and Issued Share Capital at as January 31, 1992

Class	Par Value	Authorized Number	Issued Number	Issued Amount
Common	N.P.V.	20,000,000	1,621,848	11,176,615

Options, Warrants and Convertible Securities Outstanding as at January 31, 1992

Security	Number or Amount	Exercise or Convertible Price	Expiry Date
Options	160,000	\$ 3.60	December 12, 1993
Warrants	125,000	\$ 1.50	July 17, 1992

There are no flow-through shares or shares in escrow or subject to pooling as at January 31, 1992.

Schedule C: Management Discussion

PROPERTIES

The second quarter was highlighted by the announcement of a new fluorite discovery on the Silver District Property near Yuma, Arizona. The 1991 drill program produced significant fluorite assays from the Princess area, a vein system mined for silver in the 1870's. Three of the eight reverse circulation holes (#287, 288 and 290 at the extreme north end) returned assays averaging 5.6% fluorite over 10 feet, 14.9% fluorite over 30 feet and 14% fluorite over 30 feet respectively. The zone remains untested for a further 1,000 feet north as far as the Old Hamburg Mine. The Company believes considerable tonnage could be added to the over-all fluorite inventory between the Old Hamburg Mine and holes 288 and 290.

Subsequent to the quarter-end, the 1992 drill program was commenced on the Silver District. The program will consist of approximately 8,000 feet of reverse circulation drilling in over 30 holes and has three objectives - (1) define the Princess zone; (2) firm-up reserves on the Black Rock deposit; and (3) test possible extensions of the Silver King, Maxie #2 and Padre Keno zones all of which are currently open.

With the completion of the 1992 program, the Company will have fulfilled the \$500,000 expenditure requirement to earn a 100% interest in the Silver District Property, subject to a 1.5% net smelter return.

FINANCING

The Company received \$143,000 from the exercise options for 105,000 common shares by two directors and two employees. Regulatory authorities approved the issue of 9,200 common shares to settle 1990 property payments totalling \$20,000 U.S. on certain claims within the Silver District.

Subsequent to the quarter end, the Company has received \$426,800 from the exercise of options for an additional 118,000 common shares by three directors and three employees.

OUTLOOK

The Company received invaluable assistance in January when the earth's Ozone Layer attracted worldwide headlines. The U.S. National Aeronautics and Space Administration announced startling findings from atmospheric studies which showed record-high concentrations of chlorine monoxide over the skies of the Northern Hemisphere. Chlorine monoxide is a chemical by-product of the chlorofluorocarbons (CFC's) known to be the chief agents of Ozone destruction. This announcement has motivated governments in developed countries to review the timetable for the total phase-out of the production of CFC's. Total phase-out which was scheduled for the year 2000 is now being considered for the mid 1990's. Germany has announced total phase-out by the end of 1993.

The shift from CFC's to Ozone-benign products, hydrofluorocarbons (HFC's) and hydrochlorofluorocarbons (HCFC's), is expected to at least double the worldwide demand for acid grade fluorite (acid spar) the chief feedstock of HFC's and HCFC's.

The Company's Silver District Property is the only open-pittable acid spar deposit in the United States and is potentially the only domestic producer to supply fluorite to consumers in the U.S. market.

Upon the completion of the 1992 drill program, the Company is planning to proceed with a development process that will result in a feasibility report by January, 1993. The financing for this development process will be indirectly assisted by the worldwide concerns about Ozone depletion.



Philip J. Rogers, CA
President
March 31, 1992

Directors of the Company

Philip J. Rogers
North Vancouver, B.C.
President/Director

President of the Company; Self-employed
Chartered Accountant (1983 to present).

Peter E. Fox
Vancouver, B.C.
Director

Consulting geologist, Fox Geological
Consultants Ltd. (a non-reporting British
Columbia company) 1971 to date.

John W. Fisher
Delta, B.C.
Director

Chemical Engineer, Metallurgist; Rea
Gold Corporation.

Jan Van Der Weij
North Vancouver, B.C.
Director

Businessman.



INSTRUCTIONS

This report is to be filed by Exchange Issuers within 60 days of the end of their first, second and third fiscal quarters and within 140 days of the end of their fourth fiscal quarter. Three schedules (typed) are to be attached to this report as follows:

SCHEDULE A: FINANCIAL INFORMATION

Financial information prepared in accordance with generally accepted accounting principles for the fiscal year-to-date, with comparative information for the corresponding period of the preceding fiscal year. This financial information should consist of the following:

For the first, second and third fiscal quarters:

An interim financial report presented in accordance with Section 1750 of the C.I.C.A. Handbook. This should include a summary income statement (or a statement of deferred costs) and a statement of changes in financial position. A summary balance sheet is also to be provided.

For the fourth fiscal quarter (year end):

Annual audited financial statements.

SCHEDULE B: SUPPLEMENTARY INFORMATION

The supplementary information set out below is to be provided when not included in Schedule A.

1. *For the current fiscal year-to-date:*

Breakdown, by major category, of those expenditures and costs which are included in the deferred costs, exploration and development expenses, cost of sales or general and administrative expenses set out in Schedule A. State the aggregate amount of expenditures made to parties not at arm's length from the issuer.

2. *For the quarter under review:*

- (a) Summary of securities issued during the period, including date of issue, type of security (common shares, convertible debentures, etc.), type of issue (private placement, public offering, exercise of warrants, etc.) number, price, total proceeds, type of consideration (cash, property, etc.) and commission paid.
- (b) Summary of options granted, including date, number, name of optionee, exercise price and expiry date.

3. *As at the end of the quarter:*

- (a) Particulars of authorized capital and summary of shares issued and outstanding.
- (b) Summary of options, warrants and convertible securities outstanding, including number or amount, exercise or conversion price and expiry dates.
- (c) Total number of shares in escrow or subject to a pooling agreement.
- (d) List of directors.

SCHEDULE C: MANAGEMENT DISCUSSION

Review of operations in the quarter under review and up to the date of this report, including brief details of any significant event or transaction which occurred during the period. The following list can be used as a guide but is not exhaustive:

Acquisition or abandonment of resource properties, acquisition of fixed assets, financings and use of proceeds, management changes, material contracts, transactions with related parties, legal proceedings, contingent liabilities, default under debt or other contractual obligations, special resolutions passed by shareholders.

ISSUER DETAILS		ISSUER TELEPHONE NO.	FOR QUARTER ENDED	DATE OF REPORT
NAME OF ISSUER				Y M D
SILVER GLANCE RESOURCES INC.		669-2428	January 31, 1992	92 03 31
ISSUER'S ADDRESS		PROVINCE	POSTAL CODE	
1409 - 409 Granville Street, Vancouver, B.C.			V 6 C 1 T 8	
CONTACT PERSON		CONTACT'S POSITION		CONTACT TELEPHONE NO.
Philip Rogers		President		980-8604

CERTIFICATE

The three schedules required to complete this Quarterly Report are attached and the disclosure contained therein has been approved by the Board of Directors. A copy of this Quarterly Report will be provided to any shareholder who requests it.

DIRECTOR'S SIGNATURE	PRINT FULL NAME	DATE SIGNED
	Philip J. Rogers	Y M D 92 03 31
DIRECTOR'S SIGNATURE	PRINT FULL NAME	DATE SIGNED
	Peter E. Fox	Y M D 92 03 31



United States Department of the Interior

FISH AND WILDLIFE SERVICE
POST OFFICE BOX 1306
ALBUQUERQUE, N.M. 87103



In Reply Refer To:
Region 2/RE

LA-Arizona
Imperial NWR
Hindle, William
(11)

December 21, 1989

Mr. John Laccinole
22711 Sparrow Dell Drive
Calabasas, California 91302

Dear Mr. Laccinole:

Thank you for your call of December 12, 1989, requesting information on the Clip Mill Site. The information you requested is enclosed. I hope it will suffice for assisting you in cleaning up the property Mr. Hindle formerly owned in the Imperial National Wildlife Refuge.

The information I am sending came from our files rather than from Headquarters West. I thought it would be more efficient if we simply copied material here in the office rather than involve a third party.

I hope the information will give you what you need. We strongly support you in your endeavor of not only cleaning up the Clip Mill Site, but in making it a fitting memorial to Mr. Hindle.

Sincerely,

Larry A. Dunkeson
Assistant Regional Supervisor
Division of Realty

Enclosure

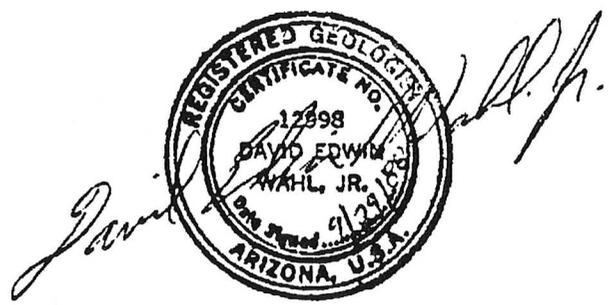
cc: Refuge Manager,
Imperial NWR

TABLE OF CONTENTS

	page
Introduction and Purpose of Study.....	3
Method of Study.....	3
Physical Setting.....	4
Grade & Tonnage of Physically Recoverable Clip Mill Tails.....	6
Gross Value of Clip Mill Tailings.....	6
Net Value of Clip Mill Tailings and Conclusions.....	6
Sample Descriptions.....	15
Assay Results.....	16
References.....	22
Metallurgical Report of David D. Rabb, P.E.....	23
Appendix A (area/volume calculations raw data).....	A1-A11

PLATES

- Plate 1, Clip Tailings Sample Locations.....unbound
- Plate 1a, Thickness of Clip Tailings (overlay to Plate 1) "
- (reductions of Plates 1 & 1a included with text)



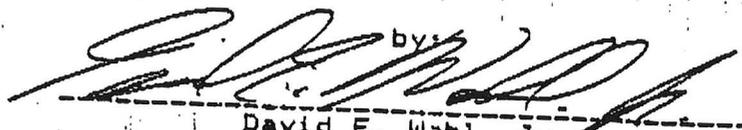
DAVID E. WAHL, JR., Ph.D.
CONSULTING GEOLOGIST
P.O. BOX 10758
SCOTTSDALE, AZ 85271
(602) 946-0559

MINERAL VALUATION OF CLIP (JAMES G. BLAIN) PATENTED MILL SITE

(James G. Blain Patented Mill Site, Patent #1258-B;
located within Sections 6 & 7, T3S, R23W, G&6RB&M,
La Paz County, Arizona)

for
U.S. Department of the Interior
Fish and Wildlife Service

by:



David E. Wahl, Jr.
Consulting Geologist
September 29, 1988

ARIZONA PROFESSIONAL REGISTRATION NO. 12998

10 to 13 oz. Ag/ton. They also revealed that the tails were difficult to treat because of Manganese content. Documents supplied by Headquarters West also provided additional information on Clip mill tailings metal content.

On-site investigations were then conducted. On 6/29/88, the Clip mill tailings were surveyed, and 5 orientation samples were collected. As illustrated on Plate 1, north-south and east-west lines were surveyed on a 100' grid. These 100' grid points were marked on the ground with labeled wood laths which served as reference points for mapping of the tails.

Upon receipt of preliminary orientation sample assays, a trenching program was designed to more fully test the tails. This trenching was accomplished 7/29-30/88 using an Allis Chalmers #715-B backhoe. Ten trenches were dug, and an additional 17 samples were collected. All of the trenches were dug through the tailings pile to underlying alluvium, and thickness of the tailings was well established. Sample descriptions are given in page 15.

All samples were analyzed for Ag, and several composite samples were analyzed for Au, Cu, Pb, Zn, Fe & Mn. Assay results are given in pages 16 to 21. Ag values were factored against thickness of tails tested by respective samples to yield overall Ag grade of the tails. A sample testing a 10' thickness of tails, for example, would have twice the weight in overall tails Ag grade determination as would a sample testing a 5' thickness of tails.

Various data points showing tails thickness were contoured on a scaled diagram (see Plate 1a, overlay to Plate 1). These contours were then digitized using a Summagraphics graphics tablet and Rockware Digitizer software to determine tails volume. Density determinations were then made on several tails samples, such that tonnage calculations could be made.

Data on metal content and distribution of Clip tails was forwarded to David D. Rabb, Ph.D., P.E. (metallurgical engineer), for economic analysis.

PHYSICAL SETTING

The Clip mill sill is located adjacent to the Colorado River at an elevation of 220 feet approximately 40 1/2 miles south of Blythe, California. From Blythe, access is via Interstate Highway I-10 west to California Highway 78 (3 miles), thence south on CA 78 to the town of Palo Verde, Ca (17 miles), thence further south on CA 78 to the Cibola Refuge access road (3 miles), thence east across the Colorado River and south along the river's east bank to the south end of Cibola Lake on an improved dirt road (13 1/4 miles), thence southeast and southwest on a jeep trail to the Clip mill site (4 1/4 miles).

During my visits to the property, all roads were in good repair

and the site could be reached in two wheel drive vehicles. Local heavy runoff, however, could easily wash out the jeep trail in the Clip Wash drainage north of the Clip mill site. During past times of flooding on the Colorado River, the site has reportedly been accessible only by boat traffic across the river from Paymaster Landing, California.

Electric power is not available at the site. It would have to be generated locally. Water could be easily obtained at the site. Surface flow of the Colorado River lies approximately 500' west of the tails, and a caved shallow well is present at the site. Plentiful water should be available at very shallow depth at the well location.

The low elevation and desert locale of the site assures that temperatures would rarely drop below freezing, and year round solution processing could be accomplished. Day time temperatures greater than 110 degrees F could hamper operations during summer months.

Most of the preserved Clip mill tails are relatively clean, and they could be collected for reprocessing without undue difficulty. As is illustrated on Plate 1a, the Clip tails have been divided into two parts. The "main" tails block represents tails 4' thick or thicker. The "auxillary" tails block represents those tails 2' or 3' thick. For volume determination considerations, these thicknesses are modeled as flat slabs with vertical sides. Contour configurations were adjusted for actual tails configuration; e.g. feather edge pinch out of tails was modeled as a lesser areal extent of greater thickness.

The "main" Clip tails block is relatively free of cultural or natural contaminant material. The cultural contaminants are minor amounts of old process equipment and product at the south margin of the "main" tails block. This contamination could easily be pushed aside without significant loss of tails. The bulk of the "main" tails is friable silty sand which could be easily moved by front end loaders or such equipment. A 6"- to 12"-thick moist silty/clay layer marks the base of the tails. This silty/clay layer is typically quite visible relative to overlying tails and underlying barren conglomerate, and would serve as a guide in any stripping operations. It is considered that all "main" tails as modeled could be moved without difficulty; they are defined as being physically recoverable.

The "auxillary" tails block is more contaminated than the "main" tails block. Part of the "auxillary" block is tailings material which has been pushed into a flood control dike. Some mixing of tails with underlying conglomerate apparently occurred during this movement of tails. An unknown amount of tails was washed away during flood events. Other parts of the "auxillary" block were intentionally covered by a thin layer of gravel during recent process operations. This contamination of the "auxillary" tails block causes it to contain lower Ag values than the "main" tails block. It is considered that all of the "auxillary" block tails

are physically recoverable. Figures 3 through 8 (pages 8 - 12), and Plates 1 & 1a (pages 13 & 14, and unbound) illustrate various aspects of the Clip mill tails.

GRADE & TONNAGE OF PHYSICALLY RECOVERABLE CLIP MILL TAILS

To arrive at total physically recoverable Clip mill tails, the volumes of individual contour thicknesses were summed, multiplied by a density factor and divided by 2000 pounds/ton to yield tonnage in short tons (raw area and volume data given in Appendix A).

297,866 cubic feet (total Clip tails volume)
x 62.37 lbs/cubic foot (weight of 1 cubic ft. H₂O at STP)
x 1.90 (tails density)

= 35,298,013 lbs/2000 lbs = ca. 17,650 short tons

Normalization of Ag assay values yields an average grade of 9.01 oz Ag/ton for the total 17,650 physically recoverable tons of tails at the Clip mill site.

The "main" block of Clip tails contains 12,160 tons @ 9.92 oz Ag/ton. The "auxillary" block of Clip tails contains 5,490 tons @ 7.00 oz Ag/ton. Additionally, the Clip tails contain 0.39% Pb (lead). Other metals analyzed for in the Clip tails are thought to be present in amounts too small to be considered for economic recovery.

GROSS VALUE OF CLIP MILL TAILINGS.

As reported in the May 18, 1988 Mining Record, prices May 10, 1988, for silver and lead respectively were \$6.43/oz and \$.34/lb. The total 17,650 tons Clip tails at 9.01 oz Ag/ton = 159,027 oz Ag x \$6.43/oz Ag = \$1,022,540 gross Ag value. 17,650 tons x 0.39% Pb = 137,670 lbs Pb x \$.034/lb Pb = \$46,808 gross Pb value.

Gross Ag Value = \$1,022,540
Gross Pb Value = 46,808

Total Gross Value = \$1,069,348

NET VALUE OF CLIP MILL TAILINGS AND CONCLUSIONS

All data collected during this study were analyzed by David D. Rabb, P.E. (Metallurgical Engineer). Dr. Rabb was Professor of Mining Engineering for many years at the University of Arizona, and he is particularly familiar with treatment of Arizona ores. His report on the Clip mill tails follows on pages 23 to 30.

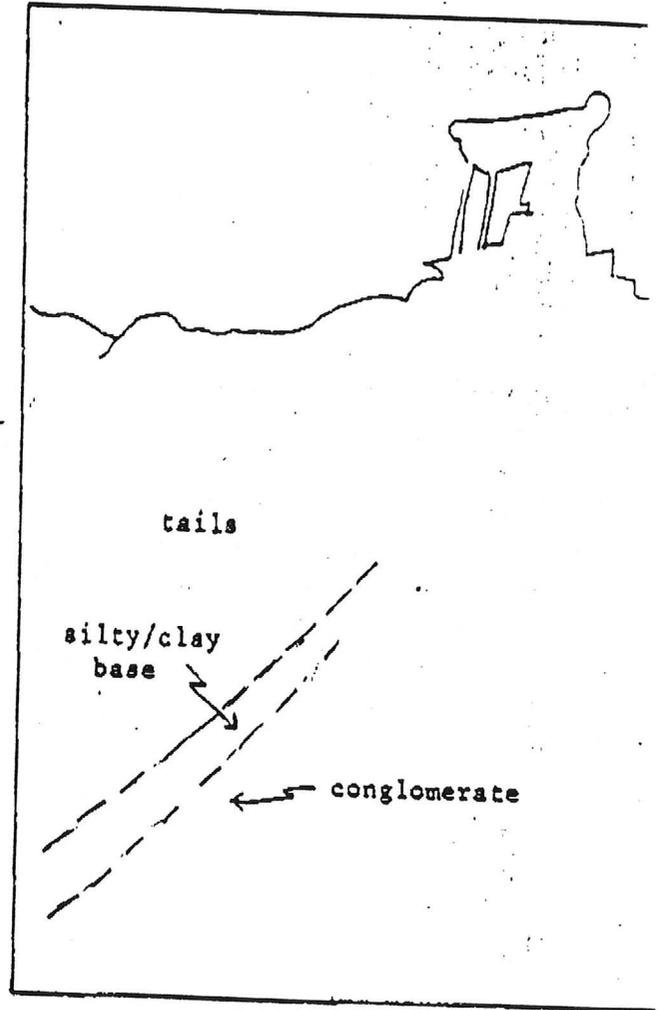


Figure 6. Trench 2 in "main" tails showing silty/clay base of tails and underlying barren conglomerate.

PLATE 2a
(see also Plate 1)
THICKNESS OF CLAY THINNESS



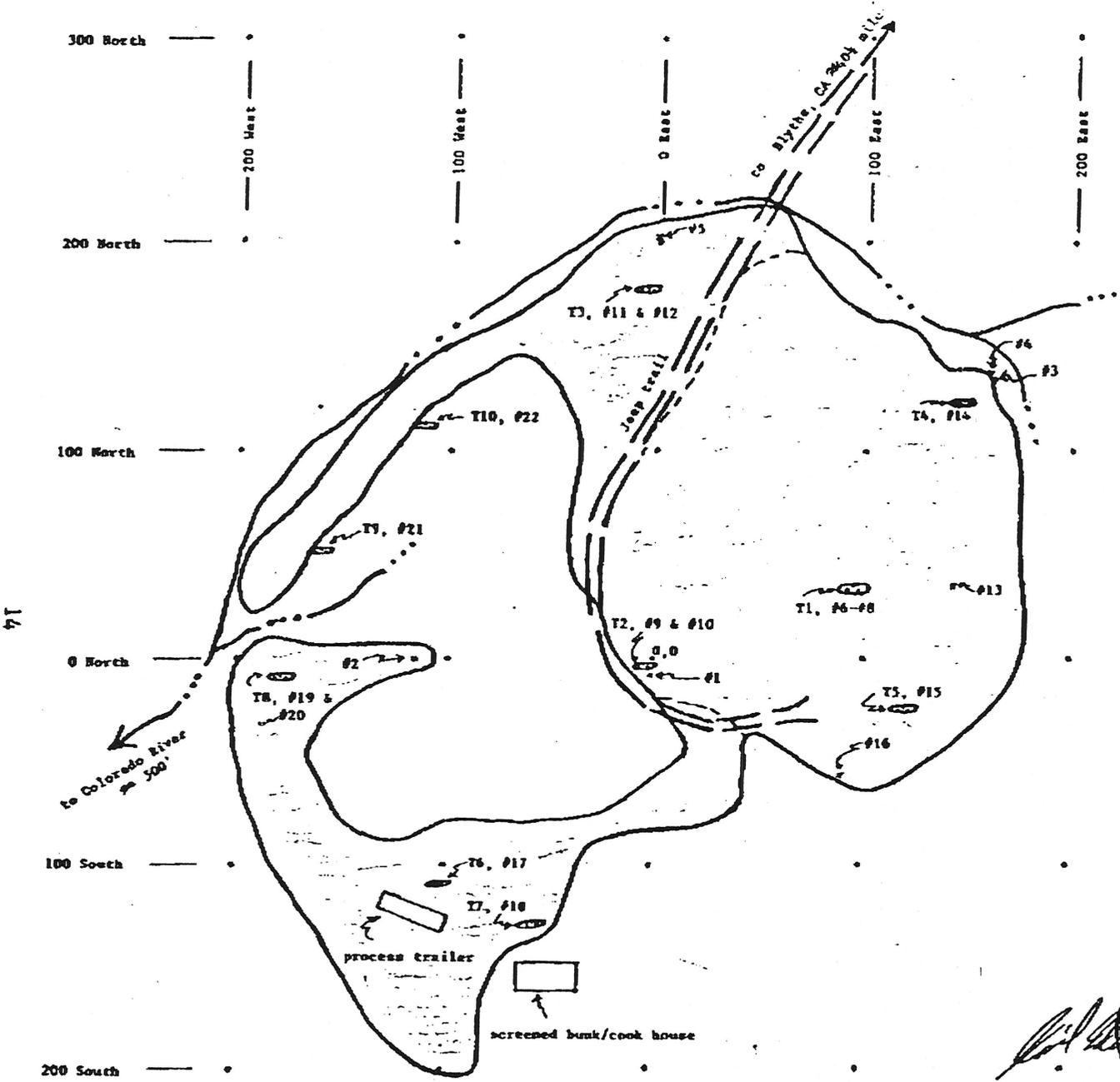
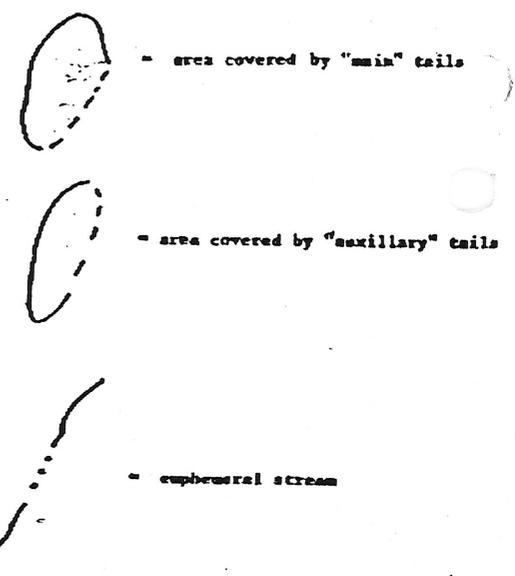


PLATE 1

CLIP TAILINGS SAMPLE LOCATIONS

- X #3 = sample Clip #3
- T6, #17 = trench #6, sample Clip #17



(located within James C. Blaine patented millsite, U.S. NO. 1258-H, Sections 6 & 7, T 35, R 23W, CASHBAM, Arizona)



100 feet

SAMPLE DESCRIPTIONS
(see Plate 1 for sample locations)

(Clip #1 - #5 collected 6/29/88; Clip #6 - #13
collected 7/29/88; Clip #14 - #22 collected 7/30/88)

- Clip #1 Sandy, brownish red tails. Surface trench through ca. 4' high slope. Sample contains small percentage of foreign pebbles and cobbles (alluvial wash over).
- Clip #2 Reddish brown tails from disturbed mound (part of flood control dam). Surface cut through mound ca. 6' high.
- Clip #3 Six inch thick basal lithified iron-rich layer of tails which dips to WNW at low angle.
- Clip #4 Reddish brown to tan sandy tails (typical tails). Surface cut through 3' high face at margin of tails.
- Clip #5 Surface sample of reddish brown sandy tails.
- Clip #6 Mixed conglomerate and caved tails at bottom of trench #1. Shovel and hand auger to ca. 18" from bottom of 11' deep trench.
- Clip #7 Eleven foot vertical channel in trench #1. Includes 10' of chiefly cross-bedded silty to sandy tails (with thin varves), and ca. 1' thick moist silty/clayey base.
- Clip #8 Sample of 11' thick tails of trench #1 from material excavated via backhoe.
- Clip #9 Four foot vertical channel through tails in trench #2.
- Clip #10 Three foot vertical channel through conglomerate under tails in trench #2.
- Clip #11 3.3' tails in trench #3.
- Clip #12 3.5' conglomerate under tails in trench #3.
- Clip #13 Hand auger sample through 6.5' tails.
- Clip #14 4' tails in trench #4.
- Clip #15 6.5' tails in trench #5.
- Clip #16 "Fused balls"; small pile of processed material on top of tails.
- Clip #17 2' tails covered by ca. 2" gravel layer. Sample is vertical channel through tails and gravel in trench #6. Gravel was apparently placed on top of this portion of tails in a previous attempt to process tails.
- Clip #18 3' tails in trench #7.
- Clip #19 3' tails in trench #8.
- Clip #20 1.5' conglomerate under tails in trench #8.
- Clip #21 1' tails in trench #9.
- Clip #22 2' tails in trench #10.

IRON KING ASSAY INC.

Page 1

08-Sep-88

LAB JOB #: MSC02790
Client name: Dave Wahl, Jr.
Billing address: PO Box 10758
Scottsdale, AZ 85271
Phone number: 946-0559

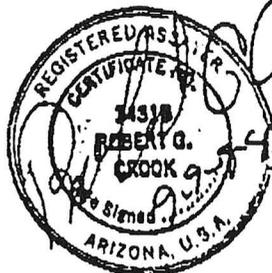
No. Samples: 6
Date Received: 07-13-88
Submitted by:

INVOICE ATTACHED

ANALYTICAL REPORT

Client ID	Lab ID	FA/AA	FA
MSC02790		Au ppm	Ag oz/ton

Clip Mill Tails			
Clip 1	2790- 1	-	9.45
Clip 2	2790- 2	-	5.48
Clip 3	2790- 3	0.18	2.08
Clip 4	2790- 4	-	9.78
Clip 5	2790- 5	-	9.02
Composite	2790- 6	0.06	-



P.O. Box 58 • Humboldt, Arizona 86328 • Phone (602) 632-7410

IRON KING ASSAY INC.

Page 1

08-Sep-

LAB JOB #: MSC02902
 Client name: Dave E. Wahl, Jr.
 Billing address: PO Box 10758
 Scottsdale, AZ 85271
 Phone number: 946-0559

No. Samples: 19
 Date Received: 08-10-88
 Submitted by: D.E.Wahl, J

INVOICE ATTACHED

ANALYTICAL REPORT

Client ID	Lab ID	FA/AA	FA	
			Au ppm	Ag oz/ton
MSC02902				
#6 Cong.	2902- 1	-		9.54
#7 Tails 11'	2902- 2	0.01		11.04
#8 Tails 1'	2902- 3			8.69
#9 Tails 4'	2902- 4			8.89
#10 Cong.	2902- 5			<.10
#11 Tails 3.3'	2902- 6			6.34
#12 Cong.	2902- 7			0.13
#13 Tails 6.5'	2902- 8			10.19
#14 Tails 4.'	2902- 9			10.14
#15 Tails 6.5'	2902- 10			10.83
#16 Fused Balls	2902- 11			5.04
#17 Tails 2'	2902- 12			4.81
#18 Tails 3'	2902- 13			9.01
#19 Tails 3'	2902- 14			7.03
#20 Cong.	2902- 15			0.76
#21 Tails <1'	2902- 16			5.75
#22 Tails 2'	2902- 17			6.84



P.O. Box 58 • Humboldt, Arizona 86329 • Phone (602) 832-7410

THE "CLIP" MILL SITE
aka "Blaine"

Location: Sections 6 & 7,
Township 3 South
Range 23 West

M.S. 1258 Comprising about 4 acres. Map
shows site dimensions 435.60 feet
by 400 feet.

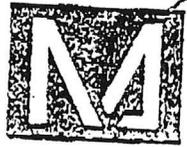
Material: Mill Tailings piles from early cyanide operation

Measured Tonnage and grade of estimated re-
coverable material

1. 12.16 Kt @ 9.92 ounces of silver per ton
2. 5.49 Kt @ 7.00 ounces of silver per ton
- Total 17.65 Kt @ 9.00 ounces of silver per
ton

Another sampling showed about 6.76 OPT,
average from 17 samples and an average of 7.16
OPT from 5 samples with one sample indicating
0.18 gold. (vagrant)?

CHEMICAL • MECHANICAL • METALLURGICAL • TESTING • CONSULTATION



METAL ANALYSIS
INCORPORATED

2507 EAST 57th ST. • POST OFFICE BOX 1108
HUNTINGTON PARK CA 90255 / (213) 582-5153

February 14, 1990

Mr. Warren Walters

Re: Soil Analysis

<u>Sample ID</u>	<u>Ag, ppm</u>	<u>Au, ppm</u>
H3 Cow P Corral	30	8
Main	30	10
Rivers Gail	40	14
Back of MAIN	30	< 1
H4 Road	< 1	5
No ID	20	9
R2	40	20

The above are results from the samples sent to us for analysis.

Tony Lener 
Tony Lener
Quality Assurance Director

PRE-ACQUISITION ENVIRONMENTAL
CONTAMINANT SURVEY - IMPERIAL
NATIONAL WILDLIFE REFUGE, 1988

July 1988

Background

The U.S. Fish and Wildlife Service has recently established national policy regarding contaminant surveys for properties under consideration for acquisition (January 19, 1988). The Comprehensive Environmental Response, Compensation, and Liability Act (and its subsequent amendment) provides that landowners, including the Federal Government, may be responsible for the entire cost of hazardous waste cleanup on their lands, irregardless of whether they were responsible for or had prior knowledge of those wastes.

In regard to the aforementioned policy and Public Law a pre-acquisition environmental contaminant survey was conducted on the Imperial National Wildlife Refuge at the Clip and Red Cloud Mill sites. Both areas have a history of mineral processing and have been identified for acquisition and incorporation into the National Wildlife Refuge system during FY88.

Methods and Materials

Ten soil samples (5/site) were collected from the two mill sites on March 29 and 30, 1988 (Table 1). Samples were collected at strategic locations, i.e. tailing, dry wash, background, within each area. Samples were collected by stainless steel spoon, composited on-site, sieved through 2-mm mesh stainless steel screens and retained in plastic whirl-paks. All sample equipment was washed with deionized water between collection locations. Samples were submitted to Environmental Trace Substances Research Center, University of Missouri and analyzed under the Environmental Protection Agency Extraction Procedure (EP) as outlined in 40 CFR 261 Appendix II. Results were reported in mcg/ml (=ppm) for 21 elements. EP toxicity is established for eight of the 21 elements analyzed, i.e. arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver (40 CFR 261.24).

Table 1. Sample Locations, Imperial National Wildlife Refuge Pre-Acquisition Contaminant Survey.

<u>Sample Identification Number</u>	<u>Location</u>	<u>Sample Weight(g)</u>
Clip Mill (March 29, 1988)		
88INWRO1	Background	618
88INWRO2	Dry Wash	536
88INWRO3	Mine Tailings	489
88INWRO4	Mine Tailings	630
88INWRO5	Chemical Drums	397
Red Cloud Mill (March 30, 1988)		
88INWRO6	Background	684
88INWRO7	Project Center	584
88INWRO8	Mine Tailings	650
88INWRO9	Dry Wash	619
88INWRO10	Dry Wash	546

Results

Summaries for metal detections are listed in Table 2. Off-site transport of metals into dry washes appears to be minimal with the exception of magnesium and manganese at Clip Mill and strontium, lead, and zinc at Red Cloud Mill. Sources of magnesium and manganese at the Clip Mill appear to be a chemical drum site and mine tailings, respectively. Lead and mercury are also found at extremely elevated levels at these sites, however, their off-site transport is not evident. Sources of strontium, lead, and zinc at Red Cloud Mill appear to be confined to mine tailings.

Table 3 lists maximum concentrations of eight elements which characterize EP toxicity as defined by the U.S. Environmental Protection Agency (40 CFR 261.24). Table 4 lists EP values for each of these elements for samples collected at the Clip and Red Cloud Mill sites.

Table 3. Maximum Contaminant Concentrations for Extraction Procedure Toxicity Characterization (40 CFR 261.24).

Contaminant	EPA Hazardous Waste Number	Maximum Concentration (mg/l, =ppm)
Arsenic (As)	D004	5.0
Barium (Ba)	D005	100.0
Cadmium (Cd)	D006	1.0
Chromium (Cr)	D007	5.0
Lead (Pb)	D008	5.0
Mercury (Hg)	D009	0.2
Selenium (Se)	D010	1.0
Silver (Ag)	D011	5.0

The U.S. Environmental Protection Agency defines hazardous wastes based on characteristics of ignitability, corrosivity, reactivity, or EP toxicity. A material is considered hazardous if the extract from a representative sample contains any of the contaminants listed in Table 3 at a concentration equal to or greater than the maximum value listed for a respective element.

Samples collected at both mill sites exhibited EP toxicity (Table 4). EP concentrations exceeded maximum values listed for mercury and lead at the Clip Mill and for lead at the Red Cloud Mill. The source of mercury at Clip Mill appears to be the mine tailings. Tailings at that site were found to be 23 times greater than the 0.2 mg/l maximum value for that element. Lead was also found to exhibit EP toxicity in the tailings, however, its primary source appears to be located in the vicinity of the chemical drums. The soil sample collected at that location was 81 times greater than the

Table 2. Metal residues for soil samples from Imperial National Wildlife Refuge, Arizona, March 29-to-30 1988. All values are in mcg/ml. -0.99=nondetectable value.

SITE	SAMPLE	SUBSTRATE	Ag	Al	As	B	Ba	Be	Cd
CLIPMILL	INWR01	BACKGROUND	-0.99	0.3	0.0062	0.2	1.96	-0.99	-0.99
CLIPMILL	INWR02	DRYWASH	-0.99	0.54	0.0063	1.3	0.47	-0.99	-0.99
CLIPMILL	INWR03	MINETALES	-0.99	0.3	-0.99	0.82	0.045	0.017	-0.99
CLIPMILL	INWR04	MINETALES	-0.99	0.3	-0.99	0.2	0.41	0.008	-0.99
CLIPMILL	INWR05	CHEMDRUMS	0.2	4.6	0.002	0.35	0.39	0.021	0.047
REDCLOUD	INWR06	BACKGROUND	-0.99	-0.99	-0.99	0.1	0.39	-0.99	-0.99
REDCLOUD	INWR07	PROJCENTER	-0.99	-0.99	0.033	0.2	0.902	-0.99	-0.99
REDCLOUD	INWR08	MINETALES	-0.99	0.97	-0.99	0.2	0.26	-0.99	0.15
REDCLOUD	INWR09	DRYWASH	-0.99	0.02	0.0062	0.1	0.624	-0.99	-0.99
REDCLOUD	INWR10	DRYWASH	-0.99	0.2	0.0072	0.2	0.604	-0.99	0.099
			Cr	Cu	Fe	Hg	Mg	Mn	Mo
CLIPMILL	INWR01	BACKGROUND	0.19	-0.99	0.76	-0.99	9.73	4.7	-0.99
CLIPMILL	INWR02	DRYWASH	0.05	0.043	0.24	0.0007	34.9	15.7	-0.99
CLIPMILL	INWR03	MINETALES	0.06	2.96	0.23	1.02	14.3	23.5	-0.99
CLIPMILL	INWR04	MINETALES	0.1	0.51	0.4	4.7	19.9	9.74	-0.99
CLIPMILL	INWR05	CHEMDRUMS	-0.99	0.4	0.07	0.975	22.4	2.4	-0.99
REDCLOUD	INWR06	BACKGROUND	0.3	-0.99	1.2	-0.99	19.9	1.7	-0.99
REDCLOUD	INWR07	PROJCENTER	-0.99	-0.99	0.1	0.001	22.8	0.57	-0.99
REDCLOUD	INWR08	MINETALES	0.09	0.02	0.44	-0.99	16.2	0.92	-0.99
REDCLOUD	INWR09	DRYWASH	-0.99	-0.99	-0.99	-0.99	15.0	2.1	-0.99
REDCLOUD	INWR10	DRYWASH	0.1	-0.99	0.42	-0.99	10.3	1.4	-0.99
			Ni	Pb	Se	Sr	Tl	V	Zn
CLIPMILL	INWR01	BACKGROUND	0.1	3.4	0.003	2.99	-0.99	-0.99	0.02
CLIPMILL	INWR02	DRYWASH	-0.99	3.4	-0.99	3.56	-0.99	-0.99	0.11
CLIPMILL	INWR03	MINETALES	0.07	54.9	-0.99	3.29	-0.99	-0.99	0.1
CLIPMILL	INWR04	MINETALES	0.08	37.7	-0.99	2.26	-0.99	-0.99	0.075
CLIPMILL	INWR05	CHEMDRUMS	0.07	406.0	-0.99	0.898	-0.99	-0.99	2.37
REDCLOUD	INWR06	BACKGROUND	0.21	-0.99	-0.99	0.43	-0.99	-0.99	-0.99
REDCLOUD	INWR07	PROJCENTER	-0.99	-0.99	0.0062	3.03	-0.99	-0.99	0.01
REDCLOUD	INWR08	MINETALES	0.07	132.0	0.0053	3.00	-0.99	-0.99	6.60
REDCLOUD	INWR09	DRYWASH	-0.99	-0.99	-0.99	1.25	-0.99	-0.99	0.02
REDCLOUD	INWR10	DRYWASH	0.07	21.0	-0.99	1.95	-0.99	-0.99	3.75

Table 4. Extraction Procedure toxicity values for soil samples from Imperial National Wildlife Refuge, Arizona. March 29-to-30, 1988. All values are in mcg/ml. -0.99=nondetectable value.

SITE	SAMPLE	SUBSTRATE	Ag	As	Ba	Cd	Cr	Hg	Pb	Se
CLIPMILL	INWR01	BACKGROUND	-0.99	0.0062	1.96	-0.99	0.19	-0.99	3.4	0.003
CLIPMILL	INWR02	DRYWASH	-0.99	0.0063	0.47	-0.99	0.05	0.0007	3.4	-0.99
CLIPMILL	INWR03	MINETALES	-0.99	-0.99	0.045	-0.99	0.06	1.02	54.9	-0.99
CLIPMILL	INWR04	MINETALES	-0.99	-0.99	0.41	-0.99	0.1	4.7	37.7	-0.99
CLIPMILL	INWR05	CHEMDRUMS	0.2	0.002	0.39	0.047	-0.99	0.975	406.0	-0.99
REDCLOUD	INWR06	BACKGROUND	-0.99	-0.99	0.39	-0.99	0.3	-0.99	-0.99	-0.99
REDCLOUD	INWR07	PROJCENTER	-0.99	0.033	0.902	-0.99	-0.05	0.001	-0.99	0.0062
REDCLOUD	INWR08	MINETALES	-0.99	-0.99	0.26	0.15	0.09	-0.99	132.0	0.0053
REDCLOUD	INWR09	DRYWASH	-0.99	0.0062	0.624	-0.99	-0.99	-0.99	-0.99	-0.99
REDCLOUD	INWR10	DRYWASH	-0.99	0.0072	0.604	0.099	0.1	-0.99	21.0	-0.99

5.0 mg/l maximum value established for lead. Both elements appear to be restricted to the mill area and have not been transported off-site via the dry wash.

Mercury was absent from the Red Cloud Mill, however, lead exceeded the maximum EP concentration by a factor of 26. Its source appears to be restricted to the mine tailings and unlike the Clip Mill, the area is encumbered with problems of off-site transport. Lead samples in an adjacent dry wash exceeded the maximum EP value by a factor more than four.

Summary

Soil samples were found to exhibit EP toxicity for lead and mercury at the Clip Mill and for lead at the Red Cloud Mill. Exceedence of maximum values characteristic of EP toxicity were as great as 23 times for mercury and 81 times for lead. Therefore, by definition under 40 CFR 261.24, materials obtained from each mill site are characterized as hazardous wastes due to their exhibition of EP toxicity. However, under 40 CFR 261.4 (b) Part 7, solid waste from the extraction, beneficiation and processing of ores and minerals, including overburden, are specifically exempted as hazardous wastes.

Although mining wastes have been excluded by the Environmental Protection Agency as hazardous, their impacts to wildlife are well established. Samples collected from the proposed acquisition sites exhibited EP toxicity for lead and mercury. The toxicity of these two elements to fish, wildlife, and invertebrates were recently summarized by Ron Eisler at Patuxent Wildlife Research Center (Fish and Wildlife Service Biological Reports 85 [1.10] and 85 [1.14]). Risk of biological exposure must be addressed by the National Wildlife Refuge. Otherwise, it is with great reservation that we can recommend for the acquisition of these properties.

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