



CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
416 W. Congress St., Suite 100
Tucson, Arizona 85701
520-770-3500
<http://www.azgs.az.gov>
inquiries@azgs.az.gov

The following file is part of the
James Doyle Sell Mining Collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

1

A2

JDS



16

GEORGE CROSS NEWS LETTER LTD. NO.10 (1985)

PAGE TWO

IDS

JANUARY 15, 1985



JDS



ASARCO

Sec #
TLN, R 4 W
Maricopa Co

Exploration Department
Southwestern United States Division

October 17, 1988

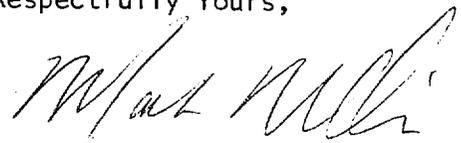
Mr. John Campbell
P.O. Box 1297
Wickenburg, AZ 85358

Dear Mr. Campbell:

We have received your submittal on the five claims located near Wickenburg, Arizona. Please send any data, including location map, on the prospect, so that we may properly evaluate it.

Thank you for considering Asarco.

Respectfully Yours,



Mark A. Miller
Geologist

MAM:mek

cc: J.D. Sell

MAM - your own

~~John D. Campbell~~ - you handle

RECEIVED

ASARCO Incorporated
1150 North 7th. Ave. - Box 5747
Tucson, Az. 85703
Attn. Exploration Dept.

Wickenburg, Az. 85358
P. O. Box I297

I have received information from the Arizona Dept. of Mineral Resources that your Co. is interested examining Gold prospects in the State.

Based on this information I would like to bring to your attention a property that we own in the Wickenburg, Arizona area.

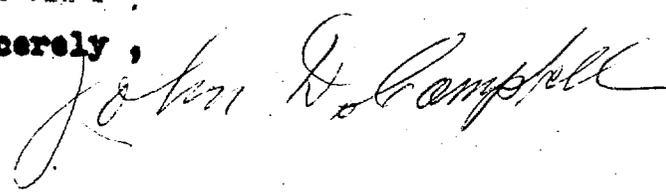
This consists of Five unpatented Lode Claims. This claims are in a Federal section open to mineral entry. We have the mineral rights on this claims, and have complied with all legal requirements. Recently we filed our assessment work for the current with, Maricopa Co. Recorder and B.L.M. everything is in order. Myself, and Wife are the owners.

This property was first located and worked back in the 1870 ties. Most of the ore taken out then, and up to the late 1930 ties, came from underground mostly fissure type Veins. No further extraction of ores have occurred since 1938. This property has been in my family since the early 1920 ties, and in my possession since 1967. We have done considerable prospecting, making sample pits, excavations and sampling. I believe that it shows good expectations.

This mineralized ore zone is of a searsite Mica schist with quartz, and much red oxide Iron, and some green chlorite. This mineralized zone is over 300 Ft. wide, an over 5500 long running along with this mineralized zone are four definite parallel fissure type ore veins. What we refer as the center vein is where most of the work by the old timers was done the main shaft reached a depth of 450 Ft. still in ore. Information shows, this old workings are not accessible being underwater. That I am told was the principal reason the mine was abandoned. My people worked on a further extension to the west of this vein and on some of the other parallel veins. We have also uncovered the last shaft my Uncle dug we got down to the 80ft. level I believe that it goes down to about 100ft. The sampling we have done on this shaft has showed an average value of about $\frac{1}{2}$ Oz. Au. from top to bottom across an average width of 18 to 20 inches of ore silver values are low less than 1 Oz Ag. per ton. This property is not in a remote area only about 10 miles to Wickenburg, and about 45 miles to Phoenix about seven miles of desert road to Hi-Way. Water is available in Old shaft or by drilling water table seems to be about 100 Ft.

If wanted we can supply a summary report on data we have available. Or if you would rather we can show property most any time for an on site inspection. Let us know a few days before your projected arrival so we may be available. Let us hear from you if interested.

Sincerely,



John D. Campbell
Ph. (602) 684 -3647

ASARCO

Sec. 7
T.C.N. R4W.
Maricopa Co.

Exploration Department
Southwestern United States Division

December 21, 1988

Mr. John D. Campbell
P.O. Box 1297
Wickenburg, AZ 85358

Lode Claims, Submittal
Maricopa County, AZ

Dear Mr. Campbell:

Enclosed is the data you sent us. At present we are looking for properties further along in development. If I am in the area, I will try to stop in and visit.

Thank you for considering Asarco. If you collect additional data on the property, please let us know.

Respectfully,



Mark A. Miller
Geologist

MAM:mek
enc.

cc: J. D. Sell

Wickenburg , Arizona 85358
P. O. Box 1297
October 25, 1988

Phone (602) 684 - 3647

ASARCO
Southwest Exploration Division
P. O. Box 5747
Tucson . Arizona 85703

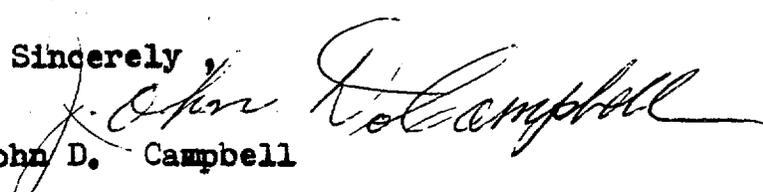
Re. Lode Mining Claims Wickenburg Area .

Attn . Mr. Mark A . Miller

Dear Sir :

Inclosed find presentation of this claims including History , Reports , maps , and sample reports . If after reviewing the inclosed material you wish to make an on site evaluation on the claims please call a couple of days before your expected arrival , so that I can make it a point to be around as I like to accompany interested party on their first visit to the property , so that I may point out what Knowledge I have gained by my working with this property over the years .

Sincerely ,


John D. Campbell

ASARCO Incorporated

OCT 28 1988

SW Exploration

P.O. Box 1297

684-2539

CAMPBELL INVESTMENTS

BRIDGE APARTMENTS

321 E. Center
Wickenburg, Az 85358

John D. and Lillian A. Campbell

Mining. Real-Property

Report on general geology of area, and possibilities of this property. Formerly Known as The Garcia Mine, and now The Hope, King-David Group.

This property is located in north-western Maricopa Co. about 9 miles south-east of Wickenburg, Az. And it is in section 7 T-6-N, R-4-W Vulture mining district.

Ownership: this claims are in a federal section, Federal mineral rights and held under the Federal, and state mining laws. All legal requirements fulfilled, affidavits of labor filled for the present year with Maricopa Co. and B.L.M. offices in Phoenix. Legal owners John D., and Lillian A. Campbell.

Geology :

The property is located in the north-east foot-hills of the Vulture mountains in schistoz formation with many volcanic upthrusts of an intrusive nature, that are believed by geologists of a newer age than the base schistoz formation. Wherever this newer volcanic upthrusts occur mostly of an Andesite, or Rhyolitic type. on the contacts between the Schistoz, and the volcanic in this zones, igneous material has been brought up to the surface in the form of quartz associated with hematite, limonite, and calcite this material received enrichments of Au, and Ag. from Hydrothermal solutions, and altered some of the surrounding schistoz formations. The volcanic actions caused much faulting both lateral, and vertical on the mineralized structures specially on the near-surface areas. It is believed by geological indications that with depth, these structures will stabilize.

Past History, and Development :

The property was first discovered in the mid 1870 ties. by a Mr Ignacious Garcia who was a freight, and wood contractor for the Vulture mine. In the area scouting for new stands of suitable wood for the boilers at the Vulture the only source of power then. A summer flood had come down this wash exposing the ore vein as it went across this wash. Ore proved to run over \$80.00 per ton at the then price of gold of \$ 16.00 per troy Oz. Mr. Garcia erected an arrastra for grinding ores, and hauled some to the Vulture mill then in the west bank of the Hassayampa river these methods were slow, and costly. An engineer from a Canadian mining Co. was in the area visiting promising properties, he examined the Garcia mine, and came to terms with Mr. Garcia. The property sold for \$80,000.00 is my information. The Canadian Co. Expanded the Garcia workings in the wash, and started to ship ores to the Smith mill at the river for treatment. They had problems with the wash water getting into the workings, and the treatment of ores at the Smith mill did not prove satisfactory. They moved to the west on the hill and started to sink a new shaft to get below the old workings, and built a six stamp amalgamation mill to treat their own ores the old workings at the wash were making enough water for their milling needs. This shaft was sunk to around 450 ft deep, still in ore various levels were started most of the ore came from the 200 to the 100 ft. levels east from shaft. First the drift on the 100 ft. level, and then the drift on the 200 Ft. level hit a fault this fault pitches toward the east at an angle of approx. 80 degree. the stopes between the 100, and 200 Ft. level were being worked, and producing ores for the mill. The average grade of ore had dropped to under \$40.00 per ton at the then price of gold, silver values were low.

The writer does not know if any attempt was made to explore the fault zone by cross-cutting, or winze work. There was ore in the shaft so the management to assure a supply of ore for their mill decided to start another drift toward the east at the 250 ft. level later they started another drift at the 300ft. level. The drift had advanced toward the east some 150 ft when the amount of water increased. The shafts both the Garcia, and the new working shaft had had water from the 80 ft. level to the bottom that being 450ft. level. this water was being controlled with a 2 inch steam cameron pump enough to supply the mill, in fact the last 50ft. of the shaft was being used as a sump to hold the water as it drained from the workings.

The Flooding of underground:

When the drift on the 250 ft. level had reached around 175ft. from the shaft at the end of the working day a blast was set off. next morning the men discovered that the water level had reached during the night above the 200ft/ level flooding the drifts, and the producing stopes, and the bottom pump was flooded out. The other 2inch pump available was lowered into the shaft, and started it could not even slow the raise of the waters. The Co. acquired further pumps I understand 2 3inch piston steam pumps, and used the hoist equipped with a torpedo bucket to lower the water. They managed to lower the water to the 150ft. level but no lower, and to do this the three pumps had to be in operation about 24 Hrs. per day. The only source of fuel to make stem was wood, and this supply was getting short, and the water problem had not been solved. It was decided to strip any ores available between the 150ft, and the surface that was possible, and between the shaft, and the fault zone. When this was done the Canadian Co. sold whatever equipment they were able to, and abandoned the property. It remained more or less inactive untill around the year of 1919.

The Campbell Brothers :

Ike, Mann, and John were the Campbell Bros. John was the father of the writer of this report. Ike was the first to arrive in the Wickenburg area after his discharge from the service at the end of World - War No. I. He met an old prospector, miner who had worked for the Canadian Co while they were operating the Garcia mine. He had stayed on the area, and had been serving as a watchman of the property while the equipment was being disposed of, and had done the annual assessemnt labor on the property for them. He told my uncle that the Canadians had not paid him for the last assessment work, and he belived that the property had been fully abandoned. He had discovered a small stringer west of the working shaft that he belived would improve with depth. He was not a citizen being from Mexico so could not legaly locate under his name. He offered to show Ike the property if he recived an interest in it. After examining the property Ike offered Mr. Crispin that being the prospectors name, a 25% share as he wanted to bring in his other brothers as working partners, and to furnish some money to get started the deal was made, and the property located

West Block Development :

Mann came to join Ike, and Crispin in the developing of the new discovery. John did not join them untill later only furnishing some working money. The stringer opened up to over 2Ft. of ore in a few feet of depth, but the values were not as high as on the old workings running only \$ 15.00 to 12.00 per ton at the then value of gold of \$ 20.00 per troy Oz. This occured during the reSSION of 1920 John joined them as things had closed at the copper mine at Ray, Az. To the west of the Garcia claims on what is now known as the King-David claim there was an old sample pit Uncle Ike did some exploraing an discovered on the foot wall a small pencil thin stringer of ore going into the foot-wall. He and his brothers did some further work

And discovered a pocket of ore embeded in the foot-wall . This pocket only produced about three tons of ore , but it was extreably high-grade producing over 500 Oz. of gold . It was of a different nature, then any of the other it was stained a deep green from copper the other ores are mostly red from the Iron content , and the gold particles very fine . Though they explored in about every direction no further ore of this type was found . The ore at the west shaft close to the old canadian workings was proving to be difficult to effect a good recovery , with the equipment the Campbells had available , this being only an arrastra , and amalgamation plates , the ore needed finer grinding to free the values , and a way to recover the heavies that were carring some of the values . As the economy had improved they decided to cease operations for the time , and at a later day if conditions were right try again . Mr. Crispin due to advancing years , and bad health said he would like out , and the Campbells bought out his interest in the property . No further work was done other than the annual assessment labor for the nex 10 years or so . Untill agin economic conditions at the start of the great depression forced the Campbells to again try an make the mine pay , and make them a living .

Operations during the 30ties :

A small $\frac{1}{2}$ ton , to 1 ton per Hr. Chilean mill was set up , and amagamation plates but they still lacked concentrating equipment to recover the values in the iron fines . The ore in the mine on the bottom of shaft had thined t under a foot , and the values remained low , two or three car-loads were sent to the smelter this washand sorted ores still by the time all the freight , and treatment charges were paid it did not leave enough to pay for the other costs , This method had to be abandoned . Ike had started a drift toward the west at the bottom of shaft in about 25 ft he ran into a wider vein of some 3 to 4 ft in width the values ran around \$ 10.00 per ton. It was decided to mine this new vein , and stock pile the ore in hopes that having this ores out, some-one would be interested in investing the necessary funds to install the required milling equipment to recover the valu . To accomplish this John , and Mann went to work at the Vulture mine that was installing a cynide plant while Ike , and a man they hired to help him stayed mining this ores . A Mr. Bons showed up at the mine, interested in mining . He looked into the proposition . Mann offered to sell his interest a he wanted to go to California to join another brother doing mining there . Bons bought him out , and advanced the monies to purchase the needed equipme A ball-mill , tables , amalgamator were installed This plant could handle 5 t 6 tons per Hr. It took about 5 months to install the mill , and get the "bugs out, by the time it started Ike had Stock-piled over 600 tons of ore . The recovery proved to be satisfactory , Running an average of over 35 tons per day . Gold bulion was extracted , and mostly sold localy , and the concentra shipped to the smelter . In about six month after the start of the mill Ike ran out of ore in the mine , the vein toward the west faulted agin , around 1400 tons of ore were extracted , and about 300 tons of ores , and tailings from previous operations were run through the plant . Bons having recovered his investment decided he wanted out , and as Ike had not found further ores in the mine it was decided to cease operations , and sell the Mill .

The Campbells never re-started the mine , and it was abandoned by them in the early Fifties , when through advancing age they had to retire from mining . The increased costs of mining , and the price of Gold not increasing to offset this costs forced the no further activity at the property .

Present Developing & Prospecting :

The writer of this report located the claims back in 1967 . Since then we have been doing our annual labor , and some exploration work , and sampling . The Mineralized zone is over 400 Ft. in width , with 3 separate ore structure vein running in a parallel course , but as they head toward the east this v seem to close , and seem to head toward a junction . Three Geologists that I visited agree that the best possibility is east from the old workings , and depth may make a substantial ore body . Our surface sample pits on this east end have found small stringers that run from a few hundred Au. to over 1.50 Oz. Au. The values are of a spotty nature on the surface . Most of the work in the past has been on the south structure the other two structures have had ve little exploration done on them . I have had samples that run over .16 Au from this veins with the increasing price of gold they may prove to be mineable.

Conclusion , and Prospectus :

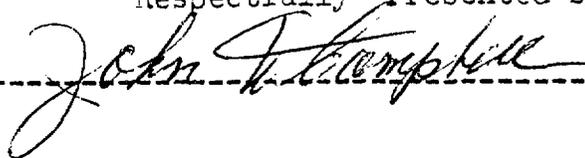
A well directed drilling program would give some quick answers . The writer believes that an angle core-hole east from the old workings , and one or two that will get under the old workings would prove what is , or is not there . Even some Bull-dozer cuts across the mineralized formations east of the shaft may uncover some workable ores . And cuts , and roads are needed anyway in order to bring in drilling equipment so these cuts would serve two purposes : make the exploration cuts , and the needed drilling - pads to set the equipment . Two other factors are in this property favor, there is a good water supply, and the mine dumps from past operations run an average of .07 Au. There is over 25,000 tons of material , the values are mostly in the fines . With the development of heap leaching it would make it feasible to recover this values . This dumps could be screened to minus 1 inch this screenings would have the majority of values . The values are all in the free-milling category , and I do not believe there are any adverse materials to leaching in this dumps . By screening , around 15,000 tons for the heaps would be avail Running around .07 Au . At the present Gold price of around \$ 450.00 per Oz. and basing recovery at around 75 % of values content . In money this would be over \$350,000.00 . This would give a quick cash flow while further in place ore reserves are developed . This dumps would help pay for some of the costs of further development . The present owners are willing to make an agreement involving small money down , then guaranteed monthly royalty or 10% of net smelter returns what ever is the greatest amount . All monies going toward an agreed end price .

Note for the Record :

The writer is not , or contends to be a geologist . But bases this report on the findings of thoes who are Geologists who have examined this property Mr. Phelps U. S. Dept of mines Mr. Evans private geologist . Mr. Flood examining geologist , and engineer , and Mr. Melvin Jones, geologist and his own life long connection with mining , and prospecting . Most of this facts on the past record are of a hearsay nature , and the writer has no way of proving them only what has been related to him are here presented , and to the best of his knowledge are true, Further development mostly by drilling , will bear the merit of this property .

Respectfully Presented by,

John D. Campbell



MELVIN H. JONES
Mining Geologist

MHJ/
1601 Sandhill Rd. #36
Las Vegas, Nev. 89104
15 December 1980.

MEMORANDUM FOR THE RECORD.

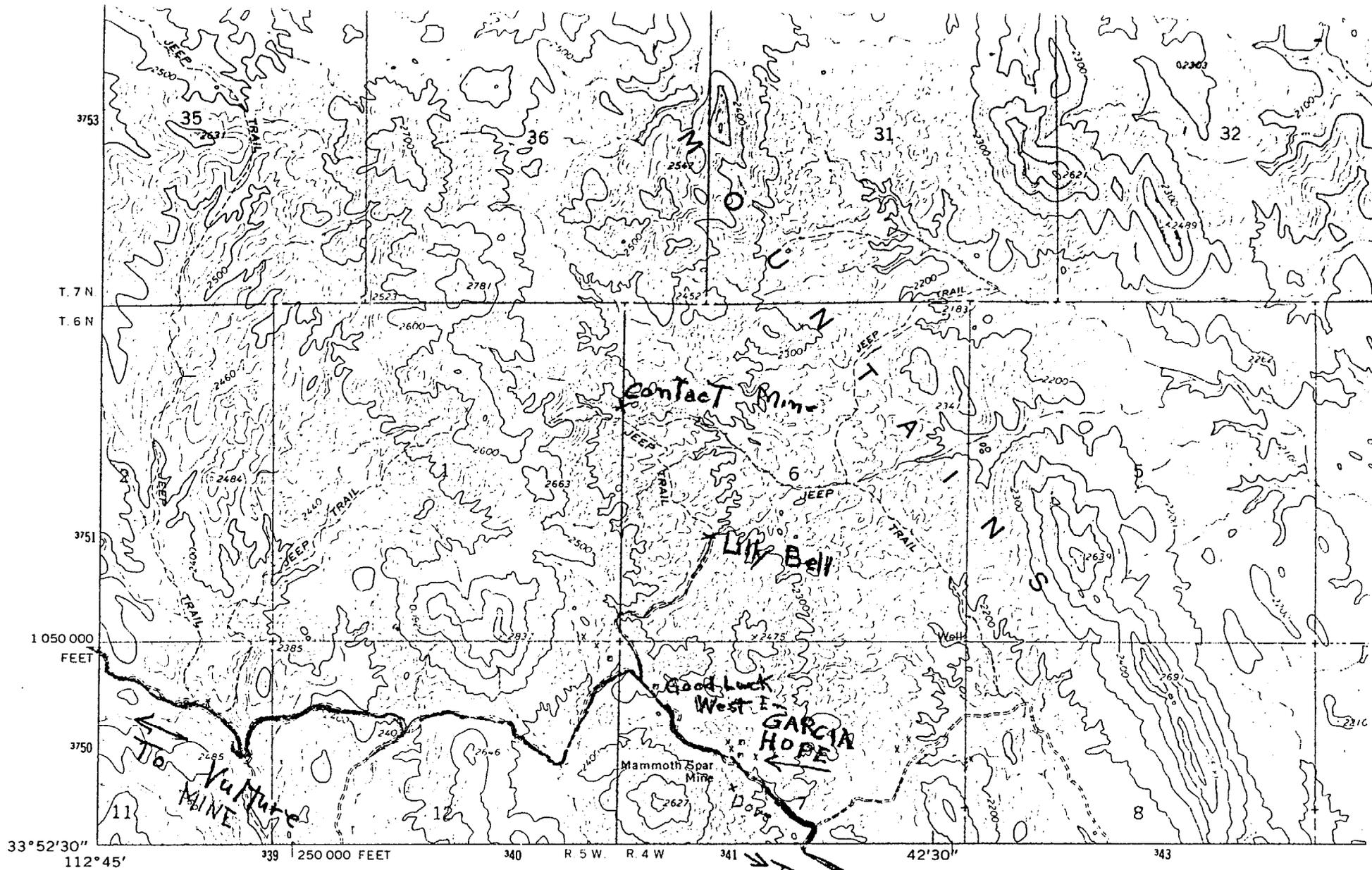
Garcia - Hope mine (gold), Vulture Mountains, 6 Mi. W. of Morrystown, Arizona. 85 432.

The writer accompanied by August Gangola, 612 Clarkway Dr., Las Vegas, Nev, 89106, and J. David Campbell, Box 1297, Wickenburg, Az. 85358, visited the old Garcia - Hope mine in the Vulture Mountains about 6 miles West of Morrystown, Az., on December 6, 1980. Mr. Campbell is the owner of the property which consists of 3 claims (now called Hope-Garcia, King David, and Extension). The claims are located on the road from Morrystown to the Vulture mine, in Sec. 7, T-6-N, R-4-W, SR&G B&M. Campbell is a descendant of the original owners (Garcia) and lived on the mine as a young man. The property produced Au and Ag in the past.

There is a shaft 500 ft deep (according to Campbell) and 3 working levels (drifts) therein. Water now fills the shaft to 90 ft. from the collar. Au and Ag is in silicious veins that widened to 6 ft at depth (Mr. Campbell), and carried .40 oz Au and 2 (or 3) oz of Ag. There are other exploration shafts and adits about. The large dump now carries .05 oz Au. The country rock is manganiferous darkened trap and vitrophyre, and rhyolite schist. The structures are somewhat contorted. This property has never been drilled.

The bases of an old 6 stamp mill are still standing, and past tailing piles are evident. According to Campbell, his uncle sold the Garcia to a Canadian Company in the early 1900's for \$80,000.00, and the latter operated for several years. Some of the ore from the Vulture mine was milled here, as well as, minor ore from the Newsboy mine (recovery was poor). On the West side of the property, extensive Fluorspar dykes are in evidence (these were not looked at, on this trip).

Melvin H. Jones

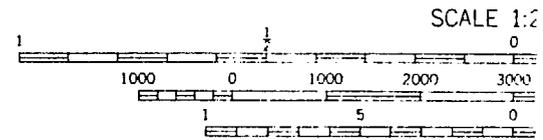
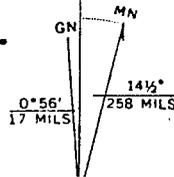


Mapped, edited, and published by the Geological Survey
 Control by USGS and USC&GS

Topography by photogrammetric methods from aerial
 photographs taken 1962. Field checked 1964

Polyconic projection. 1927 North American datum
 10,000-foot grid based on Arizona coordinate system, central zone
 1000-meter Universal Transverse Mercator grid ticks,
 zone 12. shown in blue

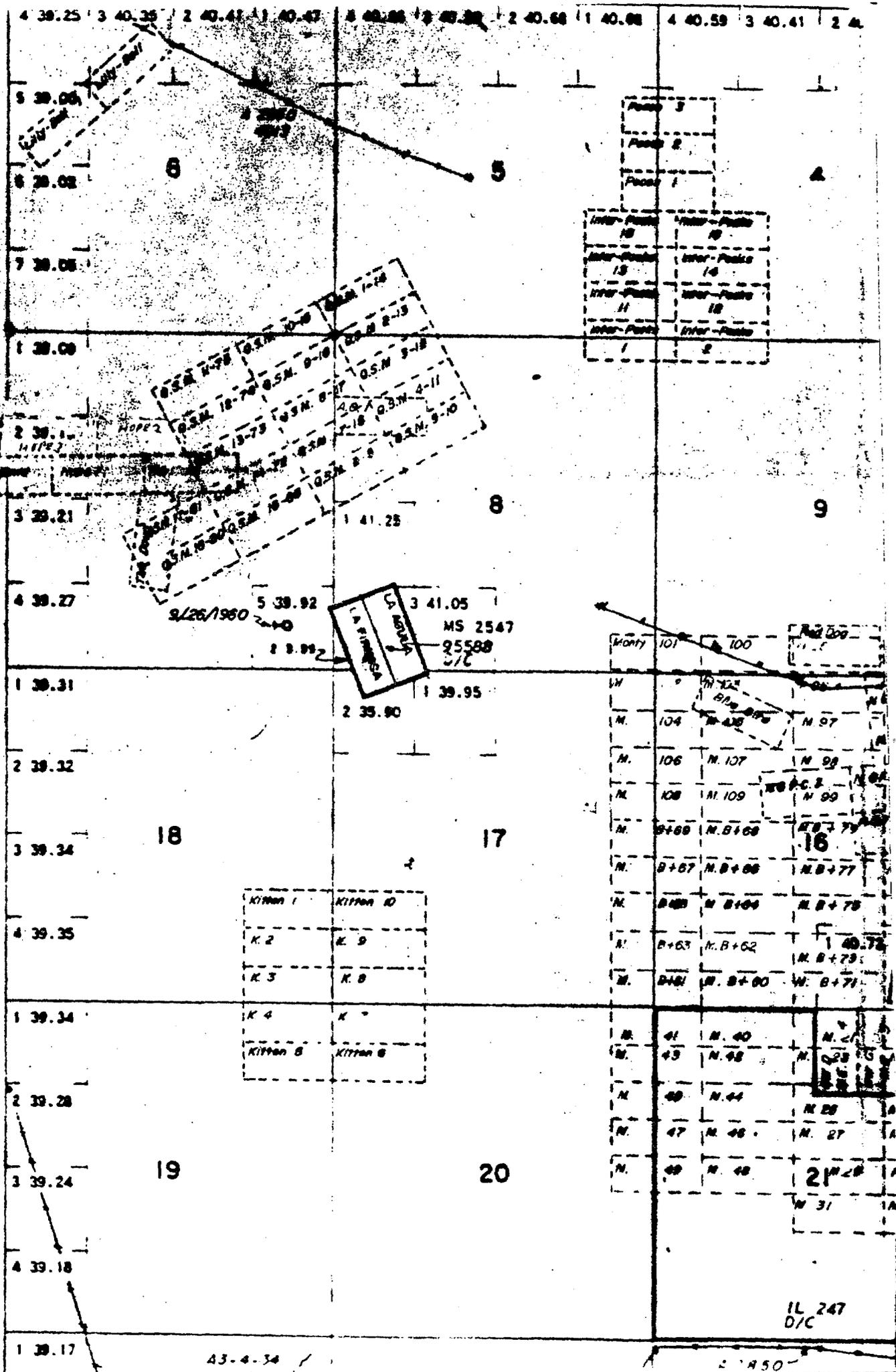
USGS
 Wickenburg Quad.
 Ariz.
 7.5



CONTOUR INTER'
 DOTTED LINES REPRESENT
 DATUM IS MEAN

VULTURE MTS. 1:62 500
 3451 IV

TO MORRISTOWN



4 39.25 3 40.35 2 40.41 1 40.47 8 40.55 7 40.59 2 40.64 1 40.68 4 40.59 3 40.41 2 40.41

5 39.05

6 39.02

7 39.05

1 39.09

2 39.11

3 39.21

4 39.27

1 39.31

2 39.32

3 39.34

4 39.35

1 39.34

2 39.28

3 39.24

4 39.18

1 39.17

6

5

8

9

18

17

19

20

Hope 2
 0.5M. 12-74 0.5M. 9-10
 0.5M. 13-73 0.5M. 8-17
 0.5M. 10-68 0.5M. 7-18
 0.5M. 11-67 0.5M. 6-11
 0.5M. 10-66 0.5M. 5-10
 0.5M. 9-65 0.5M. 4-11
 0.5M. 8-64 0.5M. 3-18
 0.5M. 7-63 0.5M. 2-19
 0.5M. 6-62 0.5M. 1-20

L. A. ...

MS 2547
 95588
 J/C

Parcel 3
 Parcel 2
 Parcel 1
 Inter-Parcel 10
 Inter-Parcel 10
 Inter-Parcel 13
 Inter-Parcel 14
 Inter-Parcel 11
 Inter-Parcel 18
 Inter-Parcel 1
 Inter-Parcel 2

Morty 101 100
 N. 104 N. 103 N. 97
 N. 106 N. 107 N. 99
 N. 108 N. 109 N. 99
 N. B+68 N. B+68 N. B+77
 N. B+67 N. B+68 N. B+77
 N. B+68 N. B+68 N. B+75
 N. B+63 N. B+62 N. B+73
 N. B+61 N. B+60 N. B+71

Kittan 1	Kittan 10
K 2	K 9
K 3	K 8
K 4	K 7
Kittan 6	Kittan 5

N. 41 N. 40 N. 21
 N. 43 N. 42 N. 22
 N. 45 N. 44 N. 23
 N. 47 N. 46 N. 27
 N. 49 N. 48 N. 28
 N. 31

IL 247
 D/C

Arizona Testing Laboratories

817 West Madison · Phoenix, Arizona 85007 · Telephone 254-6181

For Campbell Investments
 Post Office Box 1297
 Wickenburg, Arizona 85358

Date July 2, 1980

ASSAY CERTIFICATE

LAB NO.	IDENTIFICATION	OZ. PER TON		PERCENTAGES			
		GOLD	SILVER	COPPER	LEAD		
6648	Hope Incline Dump	0.13					
	Hope Main Dump	0.04					
	Hope 1 Chip 1	0.06					
	Hope 1 Chip 2	0.12					
	Hope 1 Chip 3	0.04					
	LuAnn Dump	0.07	Trace				
	Wagon Open Cut	0.06	Trace				
	Open Crown Open Cut	0.07	Trace				
Table Conc Test 1	0.70	Trace					

Respectfully submitted,

ARIZONA TESTING LABOR

Claude E McLean, Jr.

Claude E. McLean, Jr.



Arizona Testing Laboratories

817 West Madison · Phoenix, Arizona 85007 · Telephone 254-6181

For Campbell Investments
 Attn: Mr. J. D. Campbell
 Post Office Box 1297
 Wickenburg, AZ 85358

Date April 1, 1982

ASSAY CERTIFICATE

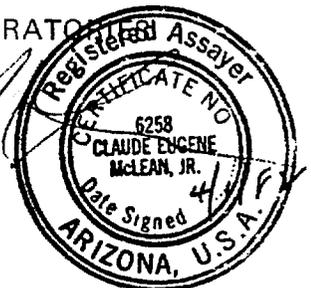
LAB NO.	IDENTIFICATION	OZ. PER TON		PERCENTAGES			
		GOLD	SILVER	COPPER	Zinc	Lead	
5992	The Hope Sample #1	0.13	-----	Incline Dump in wash 20 mesh			
	The Hope Sample #2	0.12	-----	Incline dump in wash three/eigh			
	The Hope Sample #3	0.26	-----	New cut center vein			
	The Hope Sample #4	0.13	-----	Campbell shaft addit face			
	The Hope Sample #5	0.14	-----	Campbell shaft addit back			
N G *	Sample #6 Stooges	0.01	0.05	slow out showing in wash			
N G *	Sample #7 3 Stooges	0.02	0.05	Small tunnel & open cut			
	Little Dude #8	0.54	0.35	Open cut upper end Al & Dave			
	Warrior Sample #9	0.10	-----	Drillings from three holes			
	Warrior Sample #10	0.14	-----	Stock piles of ore			
	Little Dude Sample #11	0.03	Trace	Open cut lower end Lamars samp			
	Mormon Girl Sample #12	0.04	0.05	West end of claim sample pit			
N G *	Red-Cat Sample #13	Trace	0.10	from vein off shaft			
N G *	Golden Stell Sample #14	0.06	-----	West start of drift			
N G *	The Faith Sample #15	0.06	0.05	Small sample pit			
	Red Crown Sample #16	0.06	0.05	Open cuts west end of claims			
N G *	Charity Sample #17	0.03	0.05	West wall of wash			
N G *	Sample #18 Red crown	0.02	2.2	0.02	34	West new c.	
	Mormon Girl Sample #19	2.3	2.8	East sample pit surface to three feet down			
Thoes samples marked with a N G		no further exploration warrented :					

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean, Jr.

Claude E. McLean, Jr.



Arizona Testing Laboratories

817 West Madison · Phoenix, Arizona 85007 · Telephone 254-6181

For Campbell Investments
 c/o Mr. John D. Campbell
 Post Office Box 1297
 Wickenburg, AZ 85358

Date February 11, 1982

ASSAY CERTIFICATE

LAB NO.	IDENTIFICATION	OZ. PER TON		PERCENTAGES			
		GOLD	SILVER	COPPER			
5302	#1 The-Hope	1.5	---	New small Vein East end	Hope		
	#2 Hope #4 New-Claim	0.14	Trace	Large Vein Dark ore	East end		
	#3 The Hope No. 4	0.04		Red out crop East end	Below Hill		
	#4 Hope - No. 2	0.04		Discovery shaft Hope No 2			
	#5 The-Hope	0.61	Cut	Below hill on New Vein			
	#6 Hope No. 2	0.08		Discovery shaft east Hope No . 2			
	#7 The-Hope	0.54		New vein Hope West from High grade			
	#8 The-Hope	0.03		East cut from discovery shaft Hope No			
	#9 Hope No. 2	0.02		open Cut east on Hope No. 2			
	#10 Hope No. 2	0.01		Small out-crop high on hill Hope No			
	#11 The-Hope	0.05		East side of old fault The - Hope			
	#12 The-Hope New Vein	0.02	0.05	Parallell Vein Green & Red ore South of Main vein			

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean, Jr.
 Claude E. McLean, Jr.



Arizona Testing Laboratories

817 West Madison · Phoenix, Arizona 85007 · Telephone 254-6181

For Campbell Investments
 Attn: Mr. John D. Campbell
 Box 1297
 Wickenburg, Arizona 85358

Date June 4, 1982

ASSAY CERTIFICATE

NINE DUMP-SAMPLES

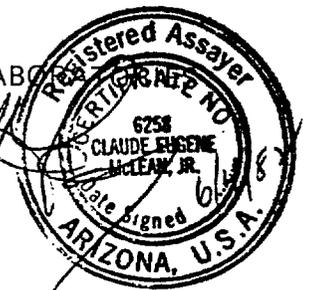
LAB NO.	IDENTIFICATION	OZ. PER TON		PERCENTAGES			
		GOLD	SILVER	COPPER			
6859	King David Main Dump	0.05					
	Hope Incline Dump	0.24					
	Hope Main Dump	0.05					
	Hope Tailings	0.06					

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean, Jr.

Claude E. McLean, Jr.



Arizona Testing Laboratories

817 West Madison · Phoenix, Arizona 85007 · Telephone 254-6181

For Campbell Investments
 Attn: Mr. J. D. Campbell
 Post Office Box 1297
 Wickenburg, AZ 85358

Date March 1, 1983

ASSAY CERTIFICATE

LAB NO.	IDENTIFICATION	OZ. PER TON		PERCENTAGES			
		GOLD	SILVER	COPPER			
0167	K.D. No. 1	Trace					
	Hope Center Vein-West	0.07					
	Hope Center Vein #1	0.27					
	Hope Center Vein #2	0.21					
	Hope North Vein-East	0.32					
	Hope North Vein-#1	0.26					
	Hope North Vein-#2	0.13					

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean, Jr.
 Claude E. McLean, Jr.





Arizona Testing Laboratories

817 West Madison Street ☐ Phoenix, Arizona 85007 ☐ 602/254-6181

Mr. J. D. Campbell
For Campbell Investments
Post Office Box 1297
Wickenburg, Arizona 85358

Date April 5, 1983

ASSAY CERTIFICATE

LAB NO.	IDENTIFICATION	OZ. PER TON		PERCENTAGES			
		GOLD	SILVER	COPPER	Lead		
0645	Hope S. Vein Sample Pit	0.05					
	Hope E. End Open Cut	0.30					
	Hope E. End Blow Out	0.02					
	Hope East N.D. No. 1	0.07					
	Hope East N.D. No. 2	0.09					
	Hope C.V. No. 1 Shaft	0.78					
	Hope C.V. No. 2	0.15					
	Hope C.V. No. 3	0.27					
	Hope C.V. No. 4	1.8					
	Hope C.V. No. 5	0.29					
	Hope C.V. Drift No. 6	1.7					
	Red Crown Table Concentrate	0.12	0.45		9.2		

*INCLINE-SHAFT
SAMPLES
10FT. APART*

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean, Jr.
Claude E. McLean, Jr.





Arizona Testing Laboratories

817 West Madison Street ☐ Phoenix, Arizona 85007 ☐ 602/254-6181

For Campbell Investments
Mr. J. D. Campbell
Post Office Box 1297
Wickenburg, Arizona 85358

Date April 8, 1983

ASSAY CERTIFICATE

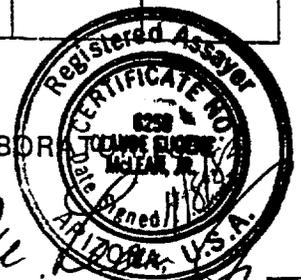
LAB NO.	IDENTIFICATION	OZ. PER TON		PERCENTAGES			
		GOLD	SILVER	COPPER			
0731	Hope - East New Discovery						
	Sample #1	0.02	0.05	<i>- TOP BAG CUT 116 ROSS 40 FT. 116 ROSS 150 FT. -</i>			
	Sample #2	0.04	0.05				
Sample #3	trace	0.05					
	Mormon Girl No. 1	0.10	0.20				
	West Side #2	0.22	0.40				
	No. 3	0.68	2.6				

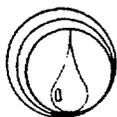
Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean, Jr.

Claude E. McLean, Jr.





Arizona Testing Laboratories

817 West Madison Street □ Phoenix, Arizona 85007 □ 602/254-6181

For Campbell Investments
Attn: Mr. J. D. Campbell
Post Office Box 1297
Wickenburg, AZ 85358

Date June 14, 1983

ASSAY CERTIFICATE

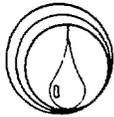
LAB NO.	IDENTIFICATION	OZ. PER TON		PERCENTAGES			
		GOLD	SILVER	COPPER			
1626	Tiny Jack Open Cut	Trace	Trace				
	Tiny Jack Pit	Trace	Trace				
	Hope East End Below Cut	0.11	<u>ACROSS</u>			<u>20 FT</u>	

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean, Jr.
Claude E. McLean, Jr.





Arizona Testing Laboratories

817 West Madison Street □ Phoenix, Arizona 85007 □ 602/254-6181

For Campbell Investment
J.D. Campbell
Post Office Box 1297
Wickenburg, Arizona 85358

Date September 13, 1983

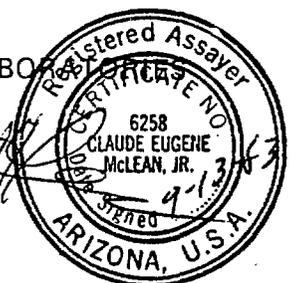
ASSAY CERTIFICATE

LAB NO.	IDENTIFICATION	OZ. PER TON		PERCENTAGES			
		GOLD	SILVER	COPPER			
2720	#1 The Hope, South Blow-out	12.	0.5	?			
	#2 The Hope, South Blow-out	0.29	Trace	?			
	Lu-Ann East-Open Cut	4.3					
	Sentinel No. 2, Sample #1	0.03					

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean, Jr.



1435 SOUTH 10TH AVENUE
TUCSON ARIZONA 85713

Jacobs Assay Office

Registered Assayers



PHONE 622-0813

cut # 62974

Tucson, Arizona,

12/13

19 83

Sample Submitted by Mr.

JOHN CAMPBELL

Sample Marked	GOLD Ozs. per ton ore	GOLD Value per ton ore*	SILVER Ozs. per ton ore	COPPER Per cent Wet Assay	LEAD Per cent Wet Assay	Per Cent Wet Assay	Per Cent Wet Assay	Per Cent Wet Assay
K.D.V. #1	0.003			Across 35 Ft. of vein formation				
#2	0.045			Across 30 Ft. of Vein				
#3	0.091			Across 4 ft. of ore foot wall side				
#4	0.035			Across 6 ft of ore				
#5	0.012			Across 6 ft. off-shoot formation				
#6	0.036			Across 2 ft. west of K.D. Shaft				
#7	0.060			Across 15 Ft of ore west open cut				
#8	0.041			across 10 ft west side of cut				
#9	0.020			Across 8 ft. far west cut				
EUREASAN								
135574 MINOR SAMPLE								

Charges \$ 63.00 Paid

Very respectfully,

[Signature]

FREEPORT

FREEPORT EXPLORATION COMPANY
A Division of Freeport Minerals Company

Valley Bank Plaza
South Virginia & Liberty
P.O. Box 1911
Reno, Nevada 89505
Phone (702) 323-2251
Telex 910-395-7008

April 4, 1984

Mr. John D. Campbell
P.O. Box 1297
Wickenburg, Arizona 85358

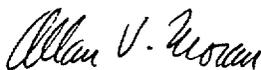
Dear Mr. Campbell:

The attached copies of sample summary sheets with assay values represent all the data we have collected on your claims in the Vulture Mountains. Also included are sample data from your claims at the Dragon Mine.

Samples collected on the main mineralized zone in your decline (73-75, 97, 99, 109-121) indicate Au values of 2.21 to 5.64 ppm Au or .06 to 0.16 oz Au/ton over approximately 2 foot widths. Sample No. 113 assayed 243.0 ppm Au and represents the first-sized pocket of high-grade gold you pointed out. Indeed, the sample has an abundance of visible gold, but is not at all representative of the overall mineralization.

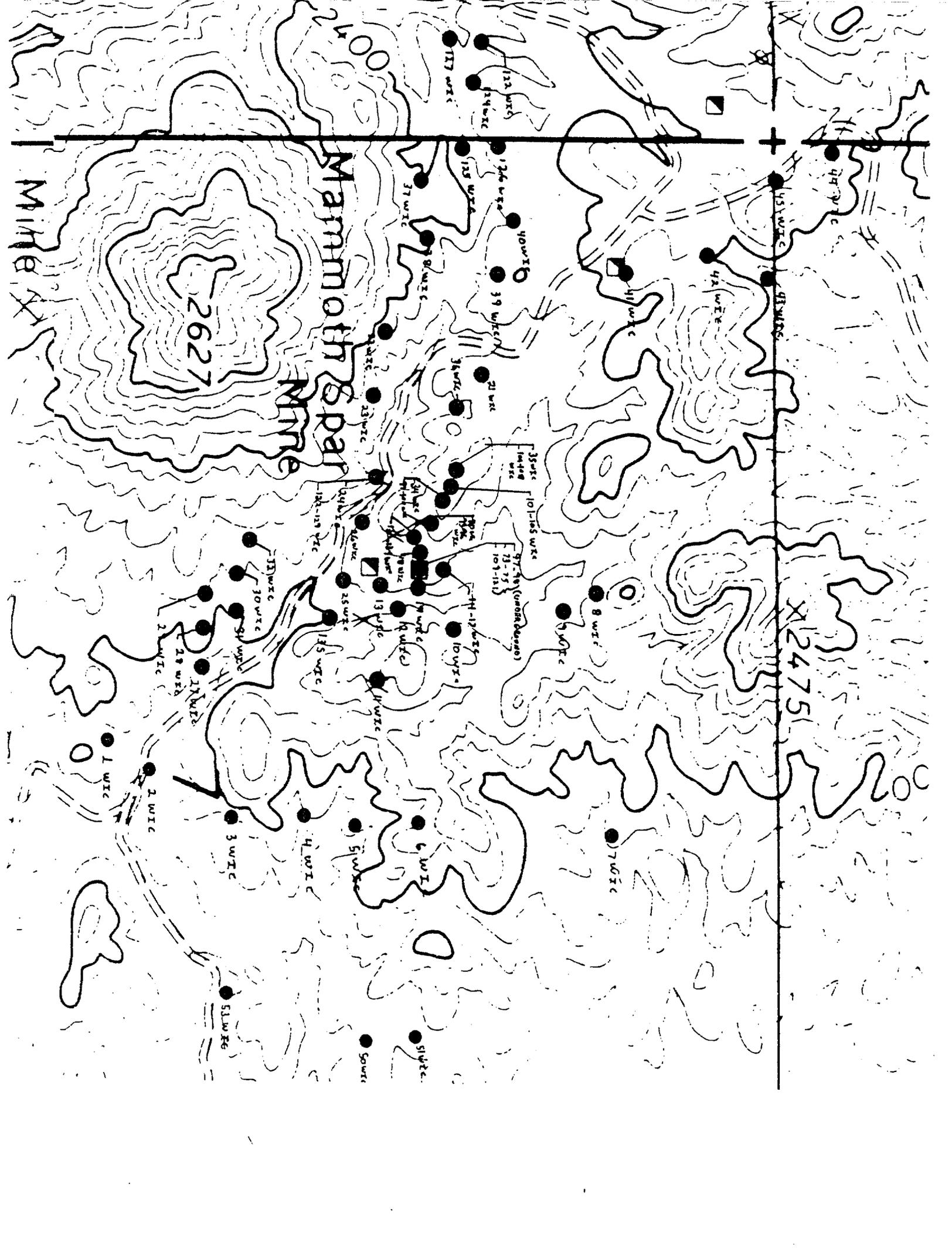
We do not intend to collect any additional data at the present time. Thank you for the opportunity to examine your property. Cy Wilsey will be contacting you regarding the land negotiations.

Sincerely,



Allan V. Moran
Senior Geologist

AVM/dt
Enclosures



SAMPLE NUMBER	LOCATION		DESCRIPTION Lithology and Mineralization	PATHFINDER ELEMENTS					BASE METALS				SULFO-SALTS		PRECIOUS METALS		
	Legal	Geographic		%	Mn	Ba	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag	
1-WIC	SE 1/4 T6N R4W	MAMMOTH SPRING	AMPHIBOLITE QTZ VN TOURMALINE											7		.01	
2-WIC	"	"	AMPHIBOLITE HEMITITIC STRATIFIED QTZ VEINS TOURMALINE											6		.01	
3-WIC	"	"	AMPHIBOLITE POSITIVE SAMPLE FAULT											22		.12	2
4-WIC	"	"	AMPHIBOLITE QTZ BLEBS TOURMALINE 1/4 RZ Fe CARBONATE MUSCOVITE SEMI LON CLONITE											9		.02	
5-WIC	"	"	QTZ LENSES OXIDIZED SULFIDES FAULT ZONE MUSCOVITE SCHIST											23		.01	
6-WIC	"	"	QTZ GANGUE FROG FAULT AMPHIBOLITE HEAVY QTZ CONTENT											15		2.63	
7-WIC	"	"	SMALL CALCITE INFRACTIONS MUSCOVITE SCHIST OXIDIZED SULFIDES											6		.05	
8-WIC	"	"	QTZ BLEBS MASSIVE QTZ NEAR BY MILKY QTZ LARGE MASSIVE VEIN											6		.01	
9-WIC	"	"	HEMITIC STAINED SCHIST QTZ VN NO RZ Fe CARBONATE TEST											1		.01	
10-WIC	"	"	MUSCOVITE SCHIST OXIDIZED											5		.01	
11-WIC	"	"	SULFIDES											4		.22	
12-WIC	NW 1/4 S7 T6N R4W	LOW GARD DUMP	MUSCOVITE SCHIST LOW MUSCOVITE MILK CLONITE OREDS OF PY GRUN TAILINGS REO PRODM QTZ											10		.41	1
13-WIC	"	"												41		.01	.84
14-WIC	"	MAMMOTH SPRING MILKY QUARTZ	MILKY QTZ											2		.07	
15-WIC	"	"	HEMITIC MUSCOVITE SCHIST SEL QTZ VN OXIDIZED PY											4		.15	1
16-WIC	"	"	MUSCOVITE SCHIST HANGING WALL QTZ BLEBS											4		.18	1
17-WIC	"	"	FOOT WALL MUSCOVITE SCHIST EPTOONS IN FRACTURES											4		.05	1
18-WIC	"	NEAR SHAPI MAIN VN	HEMITIC SCHIST SELECTED HEAVY OXIDIZED PY											7		.25	1
19-WIC	"	"	"											7		.10	1
20-WIC	"	"	"											7		.33	1
21-WIC	"	"	"											11		.18	1
22-WIC	"	"	CLONITE SCHIST AMPHIBOLITE											6		.01	1
23-WIC	"	"	"											11		.01	1
24-WIC	"	"	HEMITIC MUSCOVITE SCHIST QTZ WITH OXIDIZED PY											6		.23	1
25-WIC	"	"	SCHIST FIELD HEMITIC STAIN QTZ LENSES EPTOONS FRACTURE											8		.05	1

PROSPECT CAMPBELL

SAMPLE LOG

COUNTY MARICOPA STATE ARIZONA

PAGE ___ OF ___

SAMPLE NUMBER	LOCATION		DESCRIPTION	PATHFINDER ELEMENTS					BASE METALS				SULFO-SALTS		PRECIOUS METALS		
	Legal	Geographic		Sr	Mn	Ba	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag	
26-WIC	NW 1/4 T6N R4W	MAMMOTH SPA CARBONIFEROUS CLASTIC	MUSCOVITE SHEET HEAVY TITAN STANNITE QTL UN											4		.06	1
27	"	"	MUSCOVITE SHEET STANNITE OF HEAVY PY PROMINENT											2		.01	1
28	"	"	MUSCOVITE SHEET HEAVY TITAN CYRILLITE QTL UN											2		.01	1
29	7 T6N R4W	"	QTL VEEN IN AMPHIBOLITE OXIDES OF SULFIDE (PY)											9		.01	1
30 WEL	"	"	HEAVY TITAN ZONE IN AMPHIBOLITE MASH CALICITE QTL UN											6		.02	1
31	"	"	HEAVY TITAN ZONE IN AMPHIBOLITE QTL UN AND VEEN SULFIDE											9		.10	1
32	"	"	HEAVY TITAN SHEET EPIDOTE UN QTL MAGNETIC											21		.02	1
33	"	"	MUSCOVITE SHEET QTL UN SULFIDE TUNGSTEN											3		.01	1
34	"	"	SULFIDE MUSCOVITE SHEET HEAVY TITAN QTL UN OXIDE											7		2.25	1
35 WIC	"	"	SULFIDE MUSCOVITE SHEET CRATES OF SULFIDE HEAVY											4		2.66	1
36	"	ATBENFORK ADIT	HEAVY TITAN VN SMALL PARTIAL APPROX FAULT ZONE QTL UN											5		.27	1
37	"	MAMMOTH SPA	MUSCOVITE SHEET CONTACT BETWEEN MUSCOVITE AND CLASTIC AMPHIBOLITE											2		.07	1
38	"	"	QTL UN AND MUSCOVITE FE STANNITE AND SULFIDE WALL											3		.78	4
39	"	"	HEAVY TITAN SHEET HEAVY TITAN SHEET GROUND OF SULFIDE QTL UN MAGNETIC											7		.05	1
40 WEL	"	"	HEAVY TITAN VN CLASTIC SHEET OXIDE OF PY UNWORK VEEN											6		.03	1
41	"	MAMMOTH SPA SHAFT	CLASTIC MUSCOVITE SHEET MODERATE CLASTIC HEAVY TITAN QTL UN											3		.02	1
42	"	"	SULFIDE HEAVY TITAN VN IN CLASTIC SHEET QTL UN											3		.01	1
43	"	"	Fe STANNITE CLASTIC SHEET AMPHIBOLITE MUSCOVITE SHEET UN CARBONIFEROUS											3			1
44	"	"	SULFIDE SHEET OXIDE SHEET 99% SHEET HEAVY TITAN STANNITE											24		.35	1
45 WIC	"	"	CLASTIC CLASTIC SHEET SHEET QTL UN											2		.01	1

50 WEL	"	"	CLASTIC MUSCOVITE SHEET QTL UN OR PY HEAVY TITAN STANNITE											4		.12	1
--------	---	---	--	--	--	--	--	--	--	--	--	--	--	---	--	-----	---

PROSPECT CAMPBELL

SAMPLE LOG

COUNTY MAHAR STATE AZ

PAGE OF

SAMPLE NUMBER	LOCATION		DESCRIPTION	PATHFINDER ELEMENTS					BASE METALS				SULFO-SALTS		PRECIOUS METALS		
	Legal	Geographic		B	Ca	Mn	Ba	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag
51 WZC	NE 1/4 SEC 7 T2N R4W	DRAGON MINE	HEAVY QUARTZ														
52	NE 1/4 T2N R4W	DRAGON MINE	BY HEAVY FLOX SPERMAL														
53 WZC	NE 1/4 T2N R4W	DRAGON MINE	HEAVY QUARTZ														
54	"	"	"														
55	"	"	"														
56	"	"	"														
57	"	"	"														
58	"	"	"														
59	"	"	"														
60 WZC	"	"	"														
61	"	"	"														
62	"	"	"														
63	"	"	"														
64	"	"	"														
65 WZC	"	"	"														
66	"	"	"														
67	SW 1/4 T2N R4W	DRAGON MINE	HEAVY QUARTZ														
68	"	DUMP	"														
69	"	DUMP	"														
70 WZC	"	"	"														
71	"	"	"														
72	"	"	"														
73	SW 1/4 T2N R4W	CAMPBELL SHAF	HEAVY QUARTZ														
74	"	"	"														
75 WZC	"	"	"														

DRAGON CLAIMS

135 106
385 125
110 100

PPM

PROSPECT CAMPBELL

SAMPLE LOG

COUNTY MANICOPAL STATE AZ

PAGE OF

SAMPLE NUMBER	LOCATION		DESCRIPTION	PATHFINDER ELEMENTS					BASE METALS				SULFO-SALTS		PRECIOUS METALS	
	Legal	Geographic		Co %	Mn	Ba	F	Hg	Cu	Mo	Pb	Zn	As	Sb	Au	Ag
101-WEL	NW 1/4 S7 T6N R4W	PT BETWEEN SAMPLES 34-35 FOOTWALL	MUSCOVITE SCHIST WITH QUARTZ CONTAINING SMALL OVERLAP OF HORNBLAND SURFACE STARBUCK HELENITE SILICEOUS SCHIST											8		.07
102	"	"	QZ VN GOOSEY ZONE											14		1.02
103	"	"	MUSCOVITE SCHIST BETWEEN TWO ZONES OF HELENITE SCHIST N. OF HORNBLAND											5		.09
104	"	" HANLINE WALL	MUSCOVITE SCHIST SMALL QZ BLEBS											3		.03
105-WEL	"	" HANLINE WALL	QZ VN 1-6 ZONES											3		.24
106	"	"	MUSCOVITE SCHIST FOLIA AND QZ VN											3		.02
107	"	" HANLINE WALL	HELENITE ZONE WITH QZ ORTOPIY PY AT LEAST SUBQ QZ											5		.21
108	"	" HANLINE WALL	MUSCOVITE SCHIST QZ BLEBS, HORNBLAND MUSCOVITE											4		.01
109	"	" FOOTWALL	MUSCOVITE SCHIST HORNBLAND FOLIA											3		.37
110-WEL	"	CAMPBELL SHAFT	CLAYEY SCHIST AND MUSCOVITE SCHIST											3		.14
111	"	" UPTN 6"	SILICEOUS HORNBLAND MUSCOVITE SCHIST FROM SHAFT											7		5.0
112	"	" HANLINE WALL	CLAYEY SCHIST MUSCOVITE HORNBLAND SANDY HORNBLAND											13		2.21
113	"	" EAST CROSS CUT	HELENITE SCHIST WITH QUARTZ GOLD											60		28.0
114	"	" WEST CROSS CUT 4 FT	HELENITE SCHIST WITH QUARTZ GOLD											4		2.27
115-WEL	"	" WEST SIDE OF EAST CROSS CUT EASTERN HANLINE	HELENITE SILICEOUS MUSCOVITE SCHIST GOOSE HORNBLAND QZ VN											14		5.04
116	"	" NORTH REA	HELENITE SCHIST MUSCOVITE GOOSE QZ BLEBS											7		2.94
117	"	" FAIR OF WEST CROSS CUT	HORNBLAND SCHIST SOME HORNBLAND SILICEOUS HORNBLAND HORNBLAND											6		.19
118	"	" BEHIND PTAS LOWEST QZ VN CROSS CUT	HELENITE SCHIST WITH QUARTZ GOLD											9		.14
119	"	" WEST OF WESTERN UPTN	HELENITE SCHIST WITH QUARTZ GOLD											7		5.67
120-WEL	"	" HANLINE WALL	HORNBLAND SCHIST WITH QUARTZ GOLD											11		.27
121	"	" 10 FT BELOW WEST CROSS CUT	HELENITE VN PY OPIAC GIBBS QZ BLEBS VN IS ENCLAVED IN HELENITE											12		5.45
122	"	" EAST CUT #1 WEST WESTERN HANLINE	HELENITE SCHIST WITH QUARTZ GOLD											5		.75
123	"	" EAST CUT #1 GOOSEY ZONE	HELENITE SCHIST WITH QUARTZ GOLD											7		.10
124	"	" EAST CUT #2	MUSCOVITE SCHIST GOOSEY ZONE											6		.06
125-WEL	"	" EAST CUT #3 SOUTH OF WEST OF SHAFT	SMALL UYEBERIDZ SPOTS HIGH MUSCOVITE HELENITE SCHIST WITH QUARTZ GOLD											5		1.64

ASSAYERS

P.O. Box 266 - 51052 Hwy. 60
 Aguila, Arizona 85320
 (602) 685-2275

Customer Name Mr. J.D. Campbell Date 2-26-88

Address Box 1297

City Wickenburg State Az ZIP 85358

Method Used	AA	Fire Assay	<input checked="" type="checkbox"/> Leach Test	Wet Chemical	OTHER
-------------	----	------------	--	--------------	-------

SAMPLE	Result: Oz per ton Troy					
	Au	Ag	Pt			
HSV-1	.056	.364				
HSV-2	.35	.37				
HSV-3	Trace	.12				
HSV-4	Trace	.32				
HSV-5	.084	.236				

Assayed by *Susan C. White* Date *2-26-88*

PLEASE NOTE: Since we have no control over the method with which the sample submitted was taken or prepared, we state that the results displayed hereon are representative of only the sample(s) submitted to this office, and we guarantee the results only as being representative of that sample. We limit the liability of this guarantee to the cost of the assay of the sample(s) submitted unless stated otherwise in writing.

Central Arizona: Arizona Technology Open-File 1:24,000, 2 sheets.

Capps, R. C., Reynolds, S. A., 1986, Geologic map of the central Arizona Mountains, central Arizona Technology Open-File 1:24,000, 1 sheet.

Grubensky, M. J., Stimac, M., 1987, Geologic map and vicinity, central Arizona and Mineral Technology Open-File 1:24,000, 1 sheet.

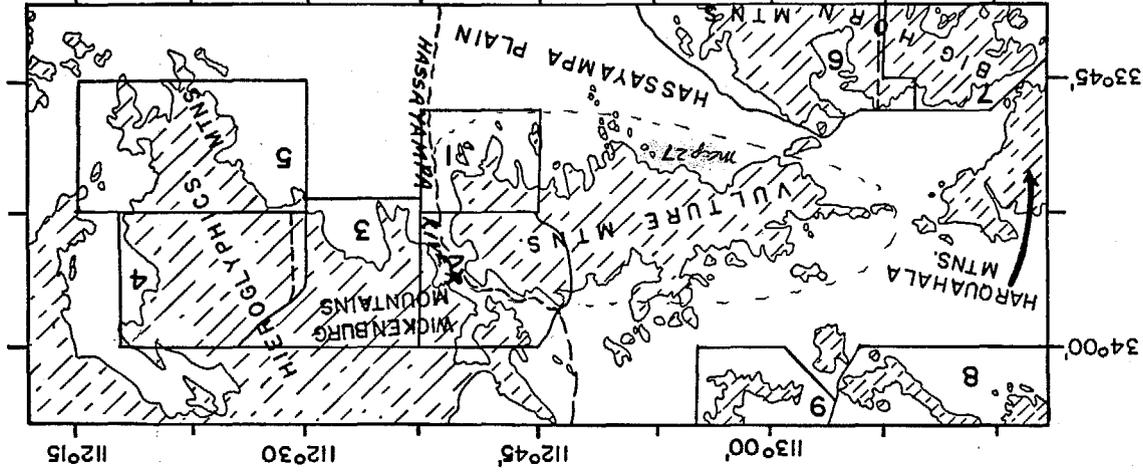
Reynolds, S. J., and Spencer, M. J., 1987, Geologic map of the Aguilera Mountains, central Arizona and Mineral Technology Open-File 1:24,000, 1 sheet.

Reynolds, S. J., and Spencer, M. J., 1987, Geologic map of the Wickenburg Mountains, central Arizona: Arizona Technology, scale 1:24,000, 1 sheet.

Stimac, J. A., Fryxell, J. W., and Grubensky, M. J., 1987, Hieroglyphic Mountains, central Arizona and Mineral Technology Open-File 1:24,000, 1 sheet.

Wahl, D. E., Reynolds, S. J., Grubensky, M. J., and Spencer, M. J., 1987, Geologic map of the central Arizona Mountains, Arizona Bureau of Geology Open-File Report 88-10, 1 sheet.

PREPARED IN COOPERATION WITH THE ARIZONA BUREAU OF GEOLOGIC MAPPING (COG)



INDEX TO PUBLISHED GEOLOGIC MAPS

1. This report.
2. Grubensky and others, 1987.
3. Stimac and others, 1987.
4. Capps and others, 1986.
5. Wahl and others, 1988.
6. Capps and others, 1985.
7. Richard and others, in prep.
8. Reynolds and Spencer, 1984.
9. Reynolds and Spencer, 1985.

Map 27, Geologic map of the
Wickenburg Mountains,
3 sheets, 1989.
1:24,000

Wickenburg, M.J., and Reynolds, S.J., 1988, Geologic map of the Southwestern Vulture Mountains, West-Central Arizona. AZGS Open-File Report 88-9. 16 p. Scale 1:24,000, 1 sheet.

includes Wickenburg area.

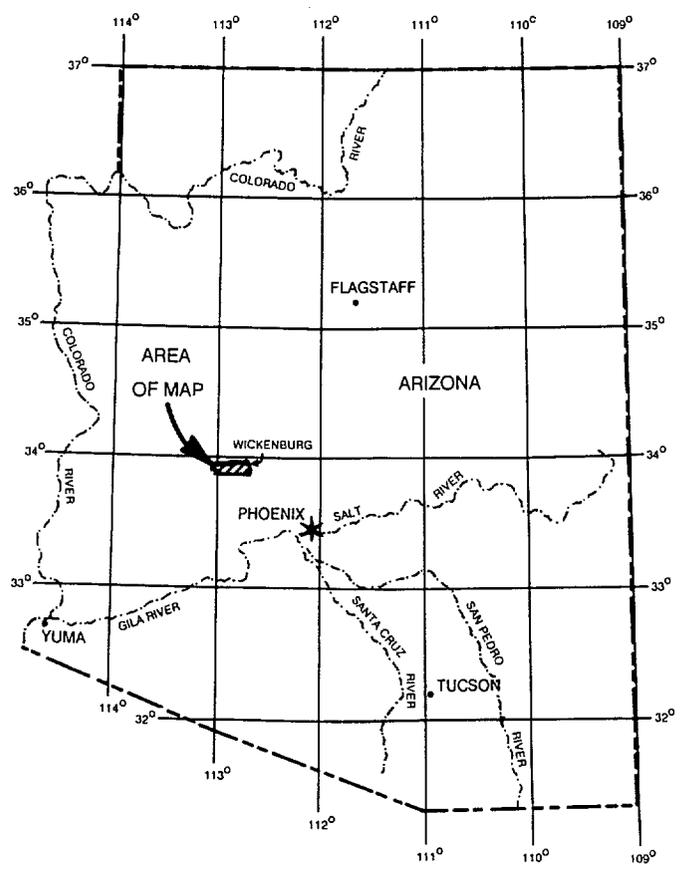
REFERENCES CITED

6. Capps, R. C., Reynolds, S. J., Kortemeier, C. P., Stimac, J. A., Scott, E. A., and Allen, G. B., 1985, Preliminary geologic maps of the eastern Big Horn and Belmont Mountains, west-central Arizona: Arizona Bureau of Geology and Mineral Technology Open-File Report OFR 85-14, 26 p., scale 1:24,000, 2 sheets.
4. Capps, R. C., Reynolds, S. J., Kortemeier, C. P., and Scott, E. A., 1986, Geologic map of the northeastern Hieroglyphic Mountains, central Arizona: Arizona Bureau of Geology and Mineral Technology Open-File Report OFR 86-10, 16 p., scale 1:24,000, 1 sheet.
2. Grubensky, M. J., Stimac, J. A., Reynolds, S. J., and Richard, S. M., 1987, Geologic map of the northeastern Vulture Mountains and vicinity, central Arizona: Arizona Bureau of Geology and Mineral Technology Open-File Report OFR 87-10, 7 p., scale 1:24,000, 1 sheet.
8. Reynolds, S. J., and Spencer J. E., 1984, Preliminary geologic map of the Aguila Ridge-Bullard Peak area (eastern Harcuvar Mountains), West central Arizona: Arizona Bureau of Geology and Mineral Technology, 2 p., scale 1:24,000.
9. Reynolds, S. J., and Spencer, J. E., 1985, Reconnaissance geologic map of the Merritt Hills, southwestern Yavapai County, Arizona: Arizona Bureau of Geology and Mineral Technology, scale 1:24,000.
3. Stimac, J. A., Fryxell, J. E., Reynolds, S. J., Richard, S. M., Grubensky, M. J., and Scott, E. A., 1987, Geologic map of the Wickenburg, southern Buckhorn, and northwestern Hieroglyphic Mountains, central Arizona: Arizona Bureau of Geology and Mineral Technology, 13 p., scale 1:24,000, 2 sheets.
5. Wahl, D. E., Reynolds, S. J., Capps, R. C., Kortemeier, C. P., Grubensky, M. J., Scott, E. A., and Stimac, J. A., 1988, Geologic map of the southern Hieroglyphic Mountains, central Arizona: Arizona Bureau of Geology and Mineral Technology Open-File Report 88-1, 6 p., scale 1:24,000, 1 sheet.

MAP SERIES
 MAP 27 SHEET 3 OF 3

*Geologic map of the
 Vulture Mts., ~~AK~~ AZ.
 \$15⁰⁰*

- Holocene
- Holocene to Pleistocene
- Pleistocene to Miocene
- QUATERNARY
- QUATERNARY TO TERTIARY
- Miocene
- Miocene to Oligocene?
- TERTIARY
- CRETACEOUS
- PROTEROZOIC



- Contact - Dashed where approximately located
- Fault - Dashed where approximately located, dotted where concealed; ball and bar on downthrown side
- Low-angle normal fault - Dashed where approximately located, dotted where

Massive quartz veins ± specular hematite ± chrysocolla

Banded quartz veins that locally form stockworks and that are associated with hematite staining in wall rocks

Manganocalcite veins and pervasive manganous alteration

Alunite + chalcedony + clay

Pervasive iron-oxide staining

Sericitic alteration

LIST OF REFERENCES

Capps, R.C., Reynolds, S.J., Kortemeier, C.P., and Scott, E.A., 1986, Geologic map of the northeastern Hieroglyphic Mountains, central Arizona: Arizona Bureau of Geology and Mineral Technology Open-File Report 86-10, 16 p., scale 1:24,000.

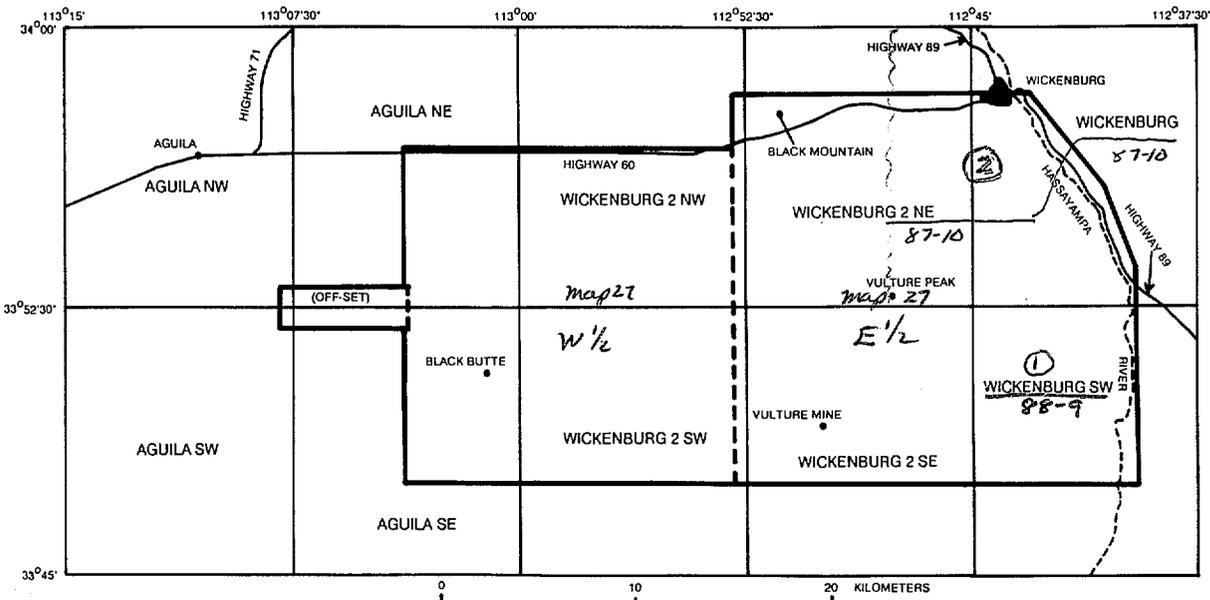
1) Grubensky, M.J., and Reynolds, S.J., 1988, Geologic map of the southeastern Vulture Mountains, west-central Arizona: Arizona Geological Survey Open-File Report 88-9, 16 p., scale 1:24,000.

2) Grubensky, M.J., Stimac, J.A., Reynolds, S.J., and Richard, S.M., 1987, Geologic map of the northeastern Vulture Mountains and vicinity, central Arizona: Arizona Bureau of Geology and Mineral Technology Open-File Report 87-10, 7 p., scale 1:24,000.

Rehrig, W.A., Shafiqullah, M., and Damon, P.E., 1980, Geochronology, geology, and listric normal faulting of the Vulture Mountains, Maricopa County, Arizona, in Jenney, J.P., and Stone, Claudia, eds., Studies in western Arizona: Arizona Geological Society Digest, v. 12, p. 89-110.

Reynolds, S.J., Spencer, J.E., DeWitt, Ed, White, D.C., and Grubensky, M.J., 1988, Geologic map of the Vulture mine area, Vulture Mountains, west-central Arizona: Arizona Geological Survey Open-File Report 88-10, 4 p., scale 1:24,000.

3) Stimac, J.A., Fryxell, J.E., Reynolds, S.J., Richard, S.M., Grubensky, M.J., and Scott, E.A., 1987, Geologic map of the Wickenburg, southern Buckhorn, and northwestern Hieroglyphic Mountains, central Arizona: Arizona Bureau of Geology and Mineral Technology Open-File Report 87-9, 13 p., scale 1:24,000, 2 sheets.



87-9 (3)

86-10 (4)

88-1 (5)

March 13, 1989

FILE NOTE

Newsboy Group
Sec. 22, T6N, R4W
Maricopa County, AZ

Hugo Dummett presented a talk-slides on the Newsboy Project, southeast of Wickenburg, to the AGS on March 7, 1989.

The Newsboy apparently shipped silica flux to Hayden and Superior at one time with rather high gold-silver credits (0.4-0.5 opt Au).

As the attached page from the AZ Dept. of Mineral Resources reports, D-29(87), the Newsboy group had been drilled by Checkmate Resources by 1986.

Hugo (Westmont Mining Inc.) explained that the Newsboy is in a flat structure separating basement schist from overlying volcanics (suggested 5 miles of displacement in upper plate). The brecciated base of volcanics is variably altered by multiple quartz stages, plus calcite, plus hematite-specularite, plus alunite and precious metals and minor oxidized base metals. Hugo calls such occurrences the "Sonora-type" and includes Copperstone as one of the models.

Westmont has drilled the entire volcanic cover (especially under the calcite-alunite altered areas) and delineated two zones of mineralization. The North Zone of plus 2 million tons of subeconomic gold-silver and the South Zone with 1½ million tons of 0.045 opt gold. The gold-silver ratio is 1 to 5.

Westmont has a large land position and many more "target areas"; however, M.A. Miller recently verbally reported that the Newsboy was up for JV.

I called Hugo and he confirmed the same, that is, Westmont is desirous of getting in a partner to help explore their 10 square mile land holdings in the SE Wickenburg area.

Hugo further stated that he believes the gold content presently found is indicative of being on a fringe zone, but with more than 100,000 tons of silica computed to be introduced into the Newsboy zone, it is part of a very large mineralized system.

Eighty-four holes have been drilled in their project area, mostly in the Newsboy block of volcanics.

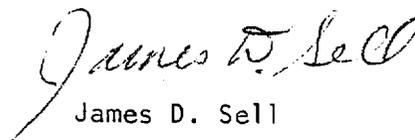
No pyrite nor sulfides of any kind have been noted during their examinations. Base metal values of 2000 ppm Cu, 2500 ppm Zn, and 6000 ppm Pb -- all as oxide, chlorite, sulfates -- have been noted in the sampling.

FILE NOTE

March 13, 1989
Page 2

Hugo mentioned that if Asarco was interested, then signing a short confidentiality agreement would give up access to all the data and a tour. I declined at this time due to lack of follow-up time on the SWED staff.

JDS:mek


James D. Sell

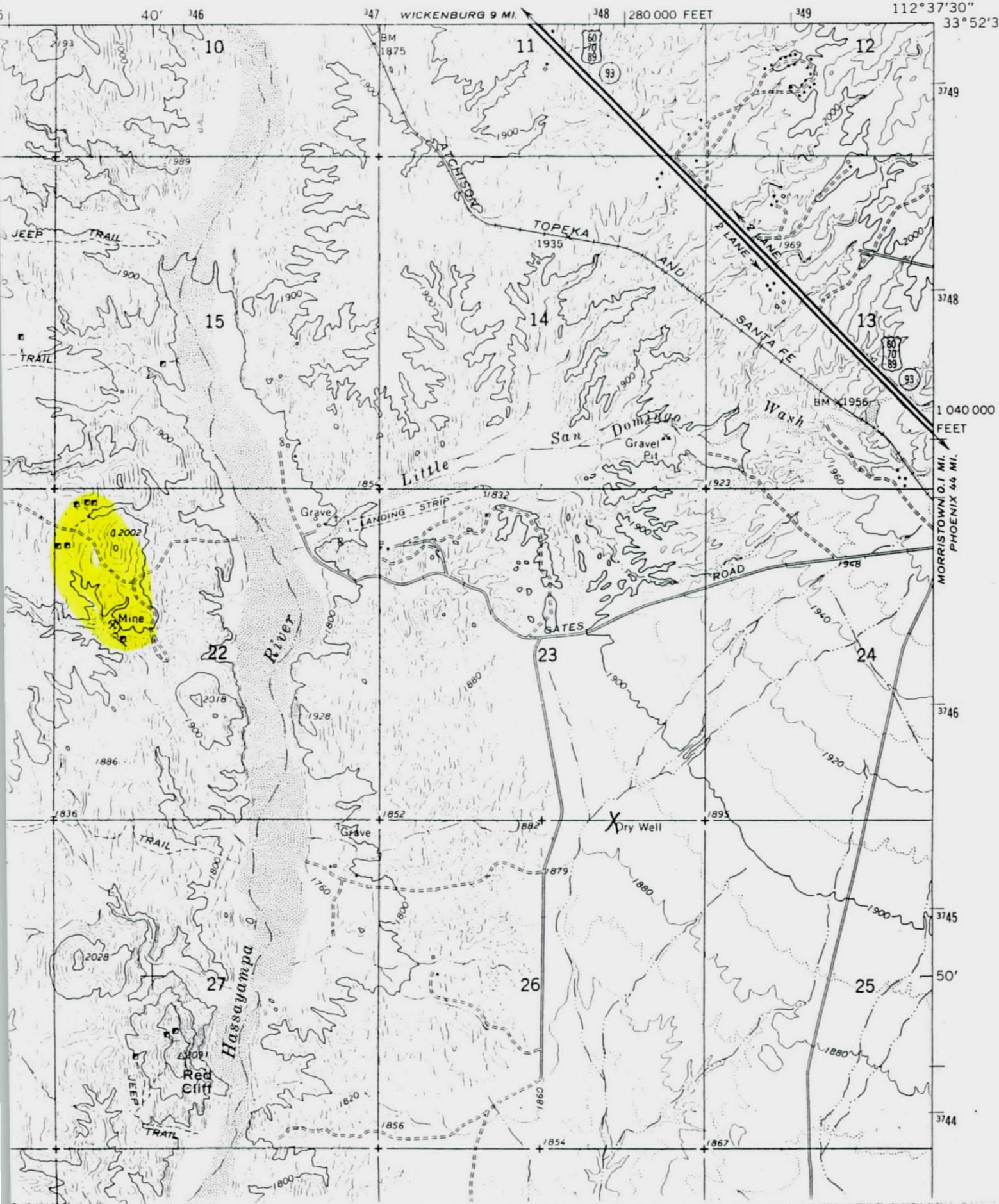
cc: W.L. Kurtz
M.A. Miller

ARIZONA EXPLORATION 1984-1986 (CONT)

<u>PROPERTY</u>	<u>LOCATION</u>	<u>OPERATOR</u>	<u>COMMODITY</u>	<u>ACTIVITY</u>
<u>MARICOPA (CONT)</u> COPPER PENNY (ALASKA)	T 5 N R 10 W SEC 33	SANTE FE MINING INC. 4775 INDIAN SCHOOL RD NE ALBUQUERQUE, NM 87190 505-262-2211	GOLD, COPPER, SILVER	GEOLOGIC EVALUATION, SURFACE DRILLING PROJECT
KEYSTONE #1 - 4	T 7 N R 1 W SEC 31	JOE LEACH 2510 N. 60TH PL. SCOTTSDALE, AZ 85257	GOLD	INTERMITTANT PRODUCTION OF SMALL LOTS, GRAVITY TREATMENT
LITTLE LADONNA	T 2 N R 7 E SEC 9	DON MOORE 8038 E JUANITA MESA, AZ 85208 602-986-9511	COPPER, GOLD	SURFACE SAMPLING PROJECT
MYSTIC GOLD	T 5 N R 1 W SEC 12	TERRA TECHNOLOGIES 2240 W. KENDRA PL. TUCSON, AZ 85741 602-297-6358	GOLD	REVIEW GEOLOGY AND EXISTING RESERVE DATA, DRILLING PROJECT PLANNED
NEWSBOY GROUP	T 6 N R 4 W SEC 22	CHECKMATE RESOURCES LTD. 1015, 470 GRANVILLE ST. VANCOUVER, B.C. V6C 1V5	SILVER, GOLD	25 HOLE SURFACE DRILLING PROJECT, REPORT CONTAINING LOGS, ASSAYS, AND MAPS COMPILED FOR PROPERTY OWNERS - MILLS MINING AND DEVELOPMENT
OLD WASP	T 1 N R 8 E SEC 1	OLD WASP MINING CO. 5289-A EAST APACHE TRAIL APACHE JUNCTION, AZ 85220	GOLD	OPERATE OPEN PIT MINE, GRAVITY/AMALGAMATION RECOVERY PLANT

WICKENBURG SW QUADRANGLE
ARIZONA—MARICOPA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

3451 INE
(RED PICA)



ASARCO

Hugo will send conf. by: 1. mile perimeter 2. silica permeation over face to ASARCO. Shows that this office is not to be read over. WLR

Southwestern Exploration Division
March 13, 1989

FILE NOTE

JDS - I say we should examine now!
If figures correct 67,500 oz is certainly a lead. If you cannot review

881-8871

data I will do it. Put your name on it if we make a deal (or maybe find Westmont to do the work we want done).

Hugo Dummett presented a talk-sides on the Newsboy Project, southeast of Wickenburg, to the AGS on March 7, 1989.

Newsboy Group
Sec. 22, T6N, R4W
Maricopa County, AZ

The Newsboy apparently shipped silica flux to Hayden and Superior at one time with rather high gold-silver credits (0.4-0.5 opt Au).

Kent
3/13/89

As the attached page from the AZ Dept. of Mineral Resources reports, D-29(87), the Newsboy group had been drilled by Checkmate Resources by 1986.

Hugo (Westmont Mining Inc.) explained that the Newsboy is in a flat structure separating basement schist from overlying volcanics (suggested 5 miles of displacement in upper plate). The brecciated base of volcanics is variably altered by multiple quartz stages, plus calcite, plus hematite-specularite, plus alunite and precious metals and minor oxidized base metals. Hugo calls such occurrences the "Sonora-type" and includes Copperstone as one of the models.

Westmont has drilled the entire volcanic cover (especially under the calcite-alunite altered areas) and delineated two zones of mineralization. The North Zone of plus 2 million tons of subeconomic gold-silver and the South Zone with 1 1/2 million tons of 0.045 opt gold. The gold-silver ratio is 1 to 5.

Westmont has a large land position and many more "target areas"; however, M.A. Miller recently verbally reported that the Newsboy was up for JV.

I called Hugo and he confirmed the same, that is, Westmont is desirous of getting in a partner to help explore their 10 square mile land holdings in the SE Wickenburg area.

Hugo further stated that he believes the gold content presently found is indicative of being on a fringe zone, but with more than 100,000 tons of silica computed to be introduced into the Newsboy zone, it is part of a very large mineralized system.

Eighty-four holes have been drilled in their project area, mostly in the Newsboy block of volcanics.

No pyrite nor sulfides of any kind have been noted during their examinations. Base metal values of 2000 ppm Cu, 2500 ppm Zn, and 6000 ppm Pb -- all as oxide, chlorite, sulfates -- have been noted in the sampling.

Sounds better than Delta Rockwell ~~is~~ review.

March 13, 1989

FILE NOTE

Newsboy Group
Sec. 22, T6N, R4W
Maricopa County, AZ

Hugo Dummett presented a talk-slides on the Newsboy Project, southeast of Wickenburg, to the AGS on March 7, 1989.

The Newsboy apparently shipped silica flux to Hayden and Superior at one time with rather high gold-silver credits (0.4-0.5 opt Au).

As the attached page from the AZ Dept. of Mineral Resources reports, D-29(87), the Newsboy group had been drilled by Checkmate Resources by 1986.

Hugo (Westmont Mining Inc.) explained that the Newsboy is in a flat structure separating basement schist from overlying volcanics (suggested 5 miles of displacement in upper plate). The brecciated base of volcanics is variably altered by multiple quartz stages, plus calcite, plus hematite-specularite, plus alunite and precious metals and minor oxidized base metals. Hugo calls such occurrences the "Sonora-type" and includes Copperstone as one of the models.

Westmont has drilled the entire volcanic cover (especially under the calcite-alunite altered areas) and delineated two zones of mineralization. The North Zone of plus 2 million tons of subeconomic gold-silver and the South Zone with 1½ million tons of 0.045 opt gold. The gold-silver ratio is 1 to 5.

Westmont has a large land position and many more "target areas"; however, M.A. Miller recently verbally reported that the Newsboy was up for JV.

I called Hugo and he confirmed the same, that is, Westmont is desirous of getting in a partner to help explore their 10 square mile land holdings in the SE Wickenburg area.

Hugo further stated that he believes the gold content presently found is indicative of being on a fringe zone, but with more than 100,000 tons of silica computed to be introduced into the Newsboy zone, it is part of a very large mineralized system.

Eighty-four holes have been drilled in their project area, mostly in the Newsboy block of volcanics.

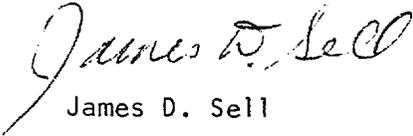
No pyrite nor sulfides of any kind have been noted during their examinations. Base metal values of 2000 ppm Cu, 2500 ppm Zn, and 6000 ppm Pb -- all as oxide, chlorite, sulfates -- have been noted in the sampling.

FILE NOTE

March 13, 1989
Page 2

Hugo mentioned that if Asarco was interested, then signing a short confidentiality agreement would give up access to all the data and a tour. I declined at this time due to lack of follow-up time on the SWED staff.

JDS:mek


James D. Sell

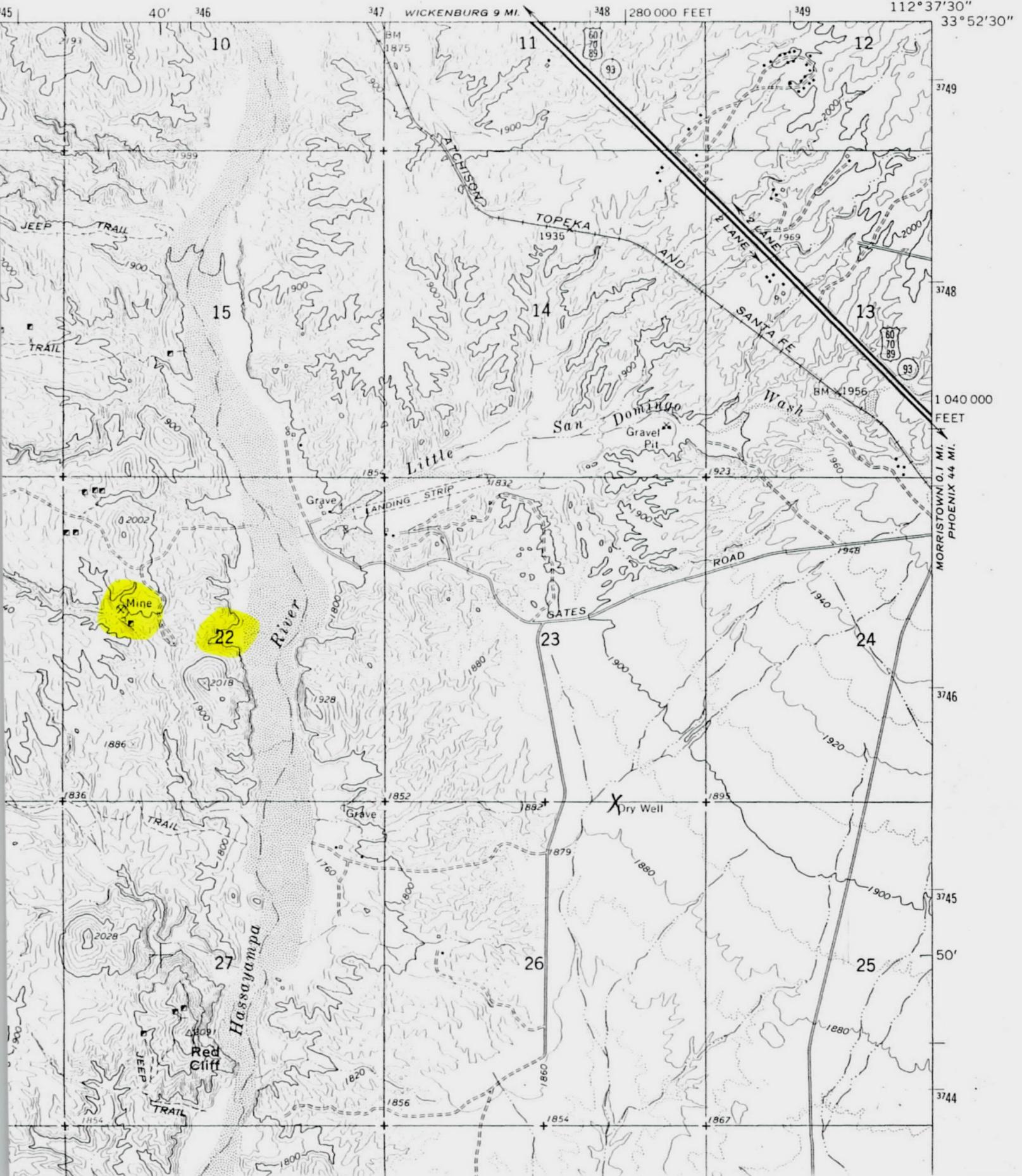
cc: W.L. Kurtz
M.A. Miller

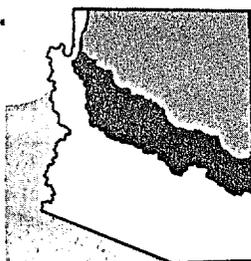
ARIZONA EXPLORATION 1984-1986 (CONT)

<u>PROPERTY</u>	<u>LOCATION</u>	<u>OPERATOR</u>	<u>COMMODITY</u>	<u>ACTIVITY</u>
MARICOPA (CONT) COPPER PENNY (ALASKA)	T 5 N R 10 W SEC 33	SANTE FE MINING INC. 4775 INDIAN SCHOOL RD NE ALBUQUERQUE, NM 87190 505-262-2211	GOLD, COPPER, SILVER	GEOLOGIC EVALUATION, SURFACE DRILLING PROJECT
KEYSTONE #1 - 4	T 7 N R 1 W SEC 31	JOE LEACH 2510 N. 60TH PL. SCOTTSDALE, AZ 85257	GOLD	INTERMITTANT PRODUCTION OF SMALL LOTS, GRAVITY TREATMENT
LITTLE LADONNA	T 2 N R 7 E SEC 9	DON MOORE 8038 E JUANITA MESA, AZ 85208 602-986-9511	COPPER, GOLD	SURFACE SAMPLING PROJECT
MYSTIC GOLD	T 5 N R 1 W SEC 12	TERRA TECHNOLOGIES 2240 W. KENDRA PL. TUCSON, AZ 85741 602-297-6358	GOLD	REVIEW GEOLOGY AND EXISTING RESERVE DATA, DRILLING PROJECT PLANNED
NEWSBOY GROUP	T 6 N R 4 W SEC 22	CHECKMATE RESOURCES LTD. 1015, 470 GRANVILLE ST. VANCOUVER, B.C. V6C 1V5	SILVER, GOLD	25 HOLE SURFACE DRILLING PROJECT, REPORT CONTAINING LOGS, ASSAYS, AND MAPS COMPILED FOR PROPERTY OWNERS - MILLS MINING AND DEVELOPMENT
OLD WASP	T 1 N R 8 E SEC 1	OLD WASP MINING CO. 5289-A EAST APACHE TRAIL APACHE JUNCTION, AZ 85220	GOLD	OPERATE OPEN PIT MINE, GRAVITY/AMALGAMATION RECOVERY PLANT

WICKENBURG SW QUADRANGLE
ARIZONA—MARICOPA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

34511 NE
RED PICAC





ARIZONA GEOLOGY

(formerly *Fieldnotes*)

Arizona Geological Survey

Vol. 19, No. 4

Investigations • Service • Information

Winter 1989

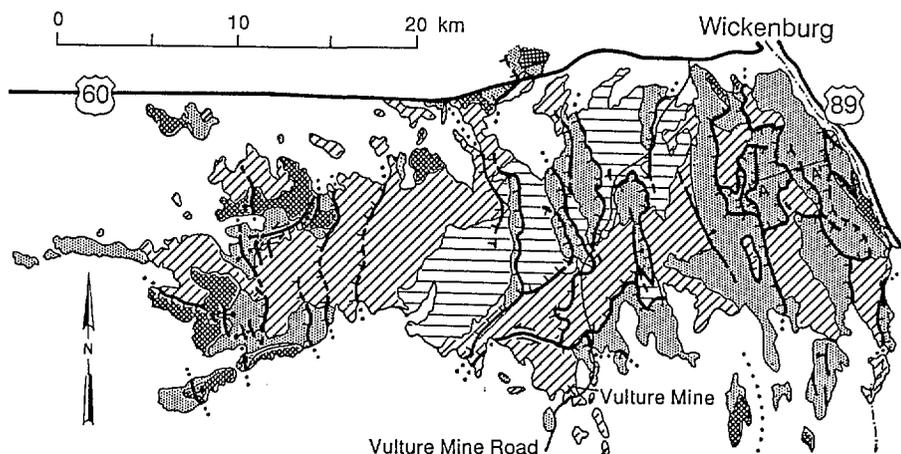
Geology of the Vulture Gold Mine

by Jon E. Spencer, Stephen J. Reynolds,
Michael J. Grubensky, John T. Duncan
Arizona Geological Survey
and Don C. White
521 E. Willis St.
Prescott, AZ 86301

The Vulture mine in the Vulture Mountains of west-central Arizona is one of Arizona's largest historic gold mines. The mine yielded approximately 340,000 ounces of gold and 260,000 ounces of silver from 1863 to 1942 (White, 1988).

The approximately 1 million tons of ore mined had an average grade of 0.35 ounces per ton of gold and 0.25 ounces per ton of silver. In spite of significant gold production, the deposit has received little geologic study until recently (Reynolds and others, 1988; White, 1988). Recent geologic mapping and laboratory studies by the authors of this article, drilling, and deposit evaluations have led to a much better understanding of the geologic characteristics, age, origin, and evolution of the deposit.

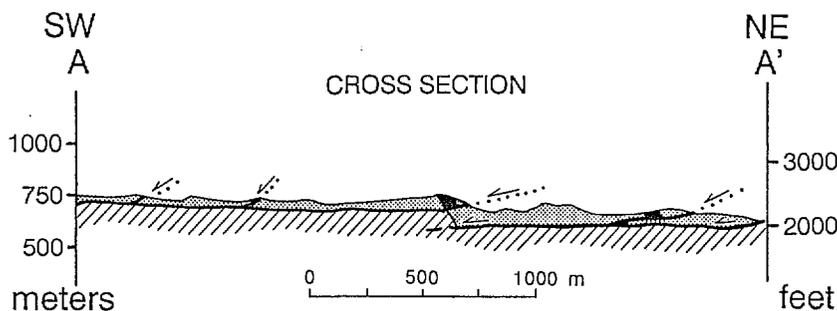
New mapping in the Vulture Mountains was partially supported by the U.S. Geological Survey and Arizona Geological Survey Cooperative Geologic Mapping (COGEMAP) program. Results of these investigations have implications for exploration strategies in the Vulture mine area and in similar highly extended areas elsewhere in Arizona.



- Tertiary basalt lavas
- Tertiary rhyolite lavas and tuffs, and sedimentary rocks
- Cretaceous granitoid
- Proterozoic granite and schist
- Low-angle normal fault, hachures on upper plate
- High-angle fault, bar and ball on downthrown side

Geologic Setting

Rocks in the Vulture Mountains consist of a variety of Proterozoic metamorphic and igneous rocks, a Cretaceous granite or granodiorite pluton, and lower to middle Miocene volcanic and sedimentary rocks. Large-magnitude, middle Miocene extension, common to most of western Arizona, was accommodated in the Vulture Mountains by movement on numerous listric and planar normal faults. Normal faults and fault blocks were tilted to the east or northeast during extension. Miocene strata now typically dip steeply or are locally overturned to the east or northeast and faults dip gently to the west or southwest (Figure 1).



Geology of the Vulture Mine

Mineralization and alteration at the Vulture mine occurred primarily within and directly adjacent to a north-dipping quartz porphyry dike that extends eastward from a Late Cretaceous pluton and intrudes Proterozoic crystalline rocks (Figures 2 and 3). Moderate to severe alteration of the dike and wall rocks has converted feldspar and mafic miner-

Figure 1. Simplified geologic map and cross section of the Vulture Mountains (from Grubensky and others, 1987; Grubensky and Reynolds, 1988; and M.J. Grubensky, unpublished mapping).

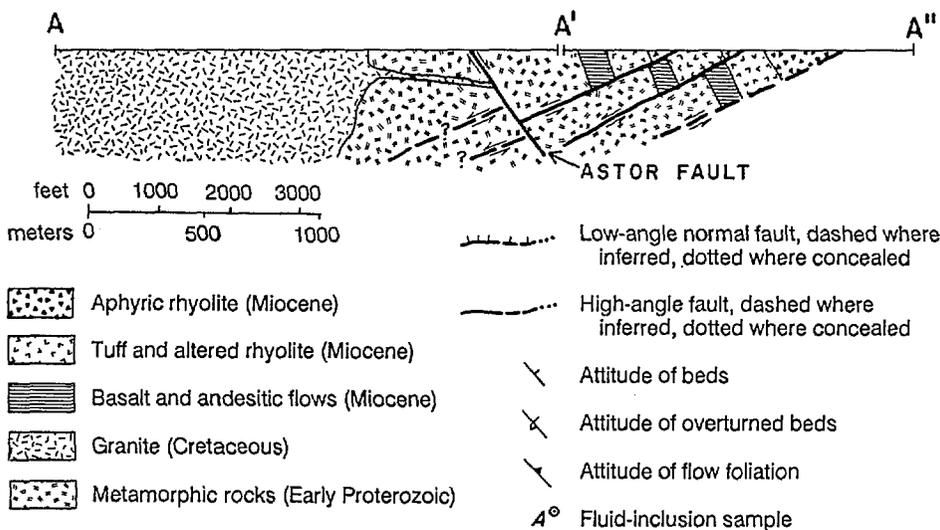
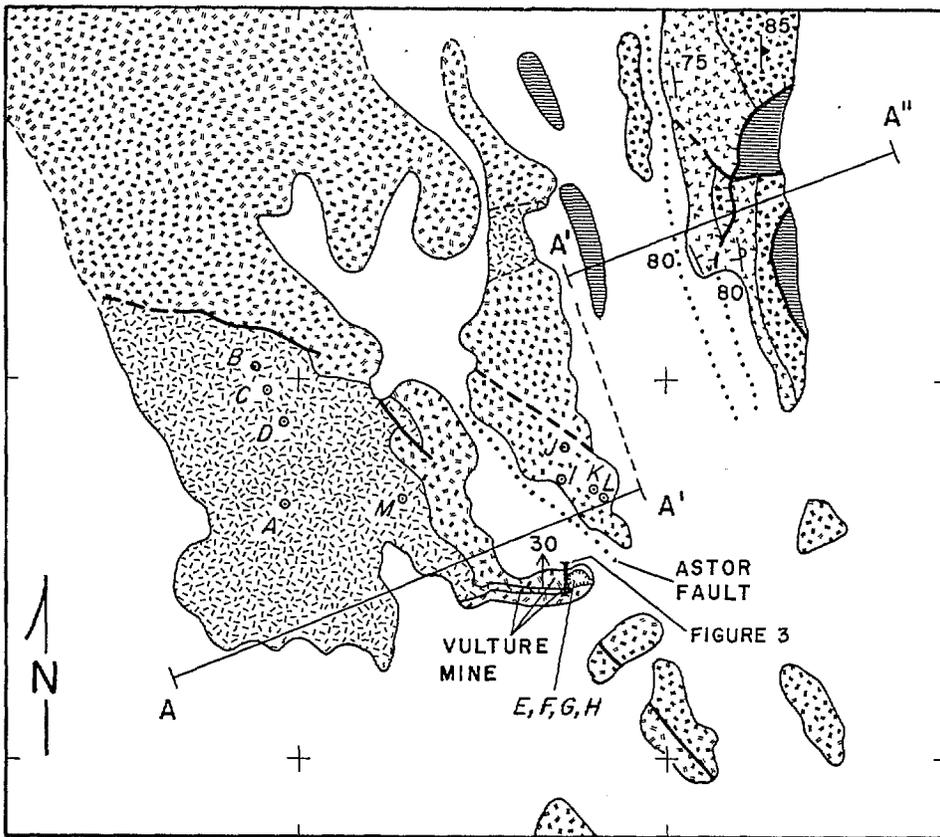


Figure 2. Simplified geologic map of the Vulture mine area and fluid-inclusion sample locations.

als to fine-grained sericite, hematite, and clay minerals. Altered dike rocks commonly consist of quartz "eyes" in a fine-grained matrix of alteration minerals. Gold is concentrated in quartz veins and in silicified and altered rocks within and adjacent to the dike (Figure 3). Gold is present as either native metal or electrum and is associated with pyrite, argentiferous galena, and minor amounts of chalcopyrite and sphalerite. There is a positive correlation among abundances of secondary silica, sulfides, and gold (White, 1988).

The Miocene volcanic rocks northeast of the Vulture mine were deposited on

the Proterozoic crystalline rocks that host the Vulture mine gold deposit (Reynolds and others, 1988). The originally horizontal volcanic strata and their crystalline substrate have been rotated 70° to 90° so that bedding is now almost vertical. Rocks exposed in the Vulture mine area, therefore, represent an originally vertical cross section that has been tilted approximately 80° to the east by rotational normal faulting. The map view (Figure 2) represents what was originally a vertical cross-section view; what is visible in a north-south cross section (Figure 3) was originally horizontal.

Conceptual restoration of the rocks of the Vulture mine area to their pre-rotation orientation reveals the approximate geometry of the ore deposit at the time of mineralization. Mineralization and alteration originally occurred along a north-northeast-trending subvertical dike that projected upward from the structural top of a Cretaceous granitoid pluton (Figure 4A). The association of gold with the dike (Figure 3) and gradation of the dike into the granitic rocks of the pluton indicate that gold mineralization was intimately related to Cretaceous magmatism and dike emplacement. Later erosion and subsequent burial by lower Miocene volcanic rocks (Figure 4B) was followed by structural dismemberment and tilting (Figure 4C) and eventual uncovering by late Cenozoic erosion. The Astor fault (Figure 3), which is probably one of the youngest faults in the area, cuts the deposit and has displaced its down-dip continuation by an unknown amount (White, 1988).

Fluid-Inclusion Characteristics

Fluid inclusions are bubbles of liquid and gas that are trapped inside minerals during mineral formation. The composition of fluids in inclusions that were trapped in mineral deposits at the time of deposit formation reflects the composition of the aqueous fluids from which the deposits formed. One can determine the salinity of the inclusions by measuring the freezing temperature of the trapped fluid. The minimum temperature of the fluid at the time it was trapped can be determined by heating the sample until the two phases (liquid and gas) in the inclusion become one. (This is called the *homogenization temperature*.) Fluid inclusions that formed during precipitation of host minerals are called *primary*, whereas those that formed later along fracture planes are called *secondary*.

Quartz veins are numerous over a broad area around the Vulture mine. Samples of veins were collected from an area (Figure 2) that represents an originally vertical cross section through the Vulture mine and that includes more than 1 kilometer of paleodepth range. Homogenization temperatures of primary and secondary fluid inclusions vary from approximately 200°C to 320°C and calculated salinities vary from approximately 1 to 18 percent NaCl equivalent by weight. Homogenization temperatures and salinities generally decrease with decreasing paleodepth (Figure 5). These fluid-inclusion data reveal the temperatures and salinities of the hydrothermal fluids that were probably undergoing convective circulation above the Cretaceous intrusion and that were respon-

sible for much or all of the mineralization and alteration at the Vulture mine. Greater fluid temperatures at greater depths probably reflect heat from the magma intrusion (now the granitoid pluton) that lay beneath the Vulture mine deposit. Downward-increasing fluid salinities may reflect a downward increase in the proportion of aqueous fluid expelled by the magma during crystallization.

Conclusion

Recent geologic mapping of the Vulture Mountains and adjacent ranges has established that the area has undergone large-magnitude extension as a result of rotational normal faulting (Grubensky and others, 1987; Stimac and others, 1987; Grubensky and Reynolds, 1988; see also Rehrig and others, 1980). Geologic mapping in the Vulture mine area indicates that this area has been faulted and tilted like most of the range and that the Vulture mine gold deposit has been tilted approximately 80° (Reynolds and others, 1988). Drill-hole assay data show that mineralization is associated with a dike that extends from the structural top of a Cretaceous pluton (White, 1988). Fluid-inclusion studies indicate that mineralization at the Vulture mine deposit occurred within a larger system of circulating aqueous fluids in which temperature and salinity increased downward toward a crystallizing magma body.

Figure 3 (below). Geologic cross section through the Vulture mine (modified from White, 1988 and unpublished data). See Figure 2 for location.

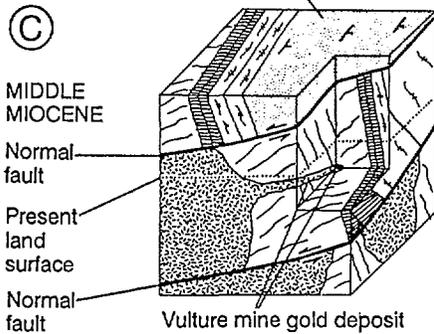
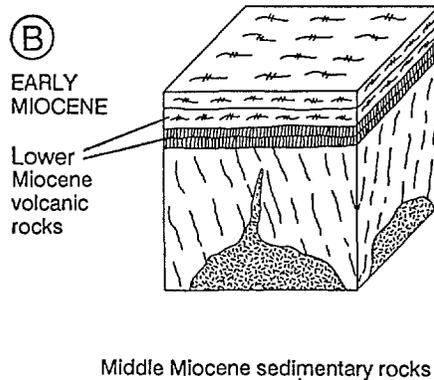
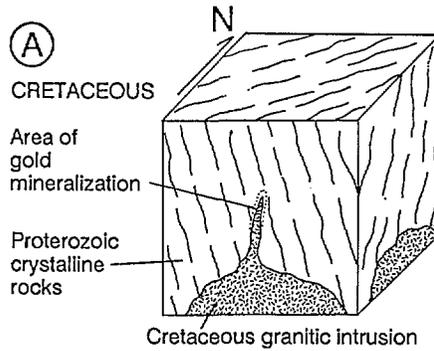
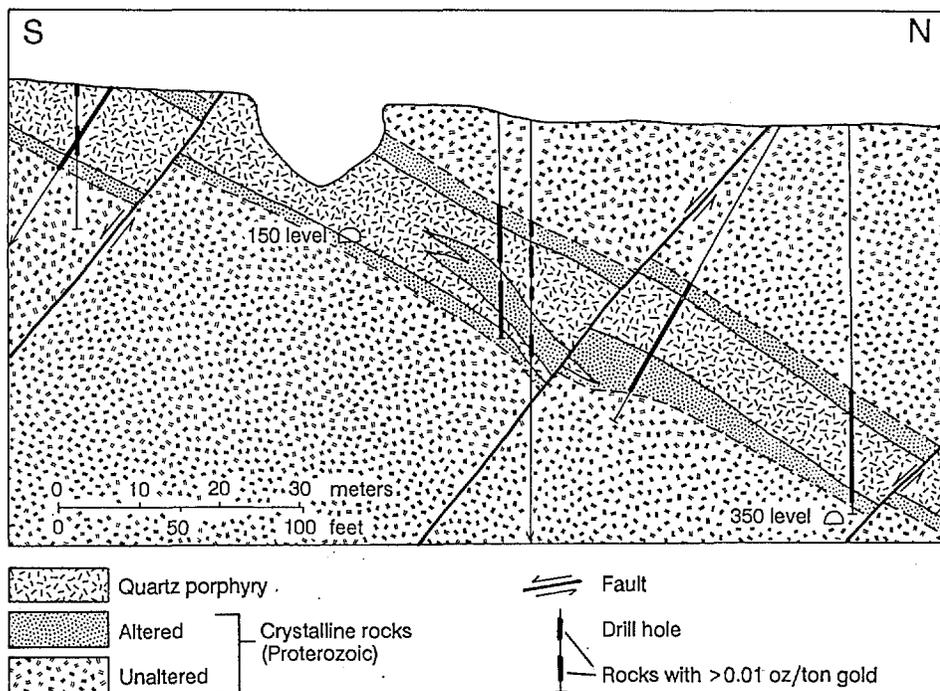
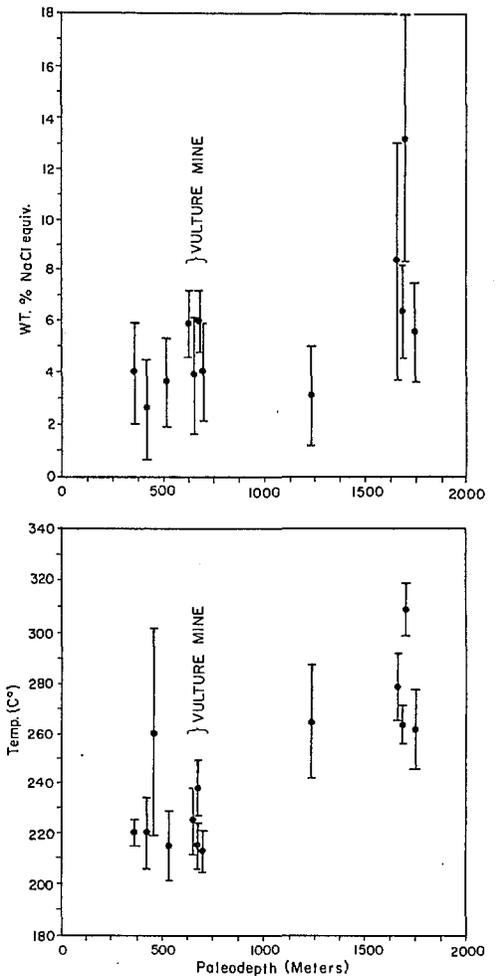


Figure 4 (left). Evolutionary block diagram of the Vulture mine area. Although only one generation of normal faults is shown, rotation probably occurred by movement on two or more generations of normal faults and is more complex than is shown here.

Figure 5 (below). Paleodepth versus salinity (upper diagram) and homogenization temperature (lower diagram) for fluid inclusions from quartz veins in the Vulture mine area. Paleodepth is the distance perpendicular to the approximately vertical disconformity at the base of Miocene volcanic rocks in the Vulture mine fault block. The actual depth of Vulture mine rocks at the time of mineralization was probably 1 to several kilometers.



Recognition of this type of ore-deposit tilting and possible structural dismemberment has implications for exploration strategies in extended areas. Specifically, mineral exploration in highly extended areas characterized by rotational normal faulting may be facilitated by the knowledge that mineral deposits may have been tilted 80° from their original orientation. Such rotation provides a natural laboratory for the study of mineral deposits because the

deposits are exposed in what was originally a near-vertical cross section. This type of extensional faulting may also cut an ore deposit into two or more pieces and leave them in shinglelike imbricate fault blocks separated from each other by several kilometers (e.g., Lowell, 1968).

References

Grubensky, M.J., and Reynolds, S.J., 1988, Geologic map of the southeastern Vulture Mountains, west-central Arizona: Arizona Geological Survey Open-File Report 88-9, 16 p., scale 1:24,000.

Grubensky, M.J., Stimac, J.A., Reynolds, S.J., and Richard, S.M., 1987, Geologic map of the northeastern Vulture Mountains and vicinity, central Arizona: Arizona Bureau of Geology and Mineral Technology Open-File Report 87-10, 7 p., scale 1:24,000.

Lowell, J.D., 1968, Geology of the Kalamazoo orebody, San Manuel district, Arizona: Economic Geology, v. 63, p. 645-654.

Rehrig, W.A., Shafiqullah, M., and Damon, P.E., 1980, Geochronology, geology, and listric normal faulting of the Vulture Mountains, Maricopa County, Arizona, in Jenney, J.P., and Stone, Claudia, eds., Studies in western Arizona: Arizona Geological Society Digest, v. 12, p. 89-110.

Reynolds, S.J., Spencer, J.E., DeWitt, Ed, White, D.C., and Grubensky, M.J., 1988, Geologic map of the Vulture mine area, Vulture Mountains, west-central Arizona: Arizona Geological Survey Open-File Report 88-10, 4 p., scale 1:24,000.

Stimac, J.A., Fryxell, J.E., Reynolds, S.J., Richard, S.M., Grubensky, M.J., and Scott, E.A., 1987, Geologic map of the Wickenburg, southern Buckhorn, and northwestern Hieroglyphic Mountains, central Arizona: Arizona Bureau of Geology and Mineral Technology Open-File Report 87-9, 13 p., scale 1:24,000, 2 sheets.

White, Don, 1988, Geology of the Vulture mine, Arizona: American Institute of Mining, Metallurgical, and Petroleum Engineers, Society of Mining Engineers Preprint 88-44, 5 p.

State Geological Survey - U.S. Geological Survey Meeting Held in Tucson

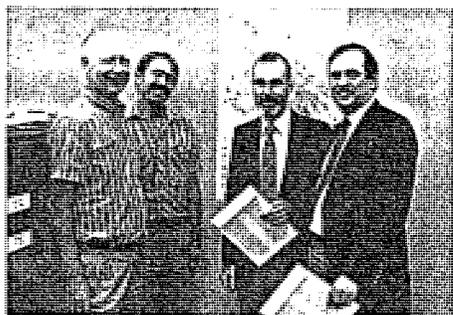


Figure 1. Representatives from the AZGS and USGS discuss the Cooperative Geologic Mapping (COGEMAP) program. Left to right: Larry Fellows (AZGS Director and State Geologist), Steve Reynolds (AZGS Research Geologist), Ben Morgan (USGS Chief Geologist, Reston), and Dave Russ (USGS Assistant Chief Geologist for Programs, Reston).

The annual meeting of the directors of western State geological surveys and key U.S. Geological Survey (USGS) staff was held in Tucson October 22-25 at the Ghost Ranch Lodge. The purposes of the meeting were to improve communication between staff of the State and Federal surveys; learn about current activities, projects, and concerns (Figure 1); and explore ways of fulfilling the respective statutory mandates more effectively through improved coordination and cooperation. Ten of the 13 western State geological surveys were represented; approximately 20 USGS staff members, primarily from the Office of Mineral Resources, were also present.

Western State geologists held an all-day business meeting at the Arizona Geological Survey (AZGS) on October 21

(Figure 2). USGS geologists held a variety of postmeeting functions at their Arizona Field Office.

Two major discussion sessions were held at the joint meeting: (1) the Mineral Resources Data System (MRDS), a computerized database maintained by the USGS, and (2) outreach activities in earth science education. A half-day field trip was taken to observe detachment-fault geology and the impacts of groundwater withdrawal, subsidence, and earth fissures in the Picacho basin (Figure 3).

The 1990 meeting will be cohosted by the USGS and Idaho Geological Survey in Moscow, Idaho.

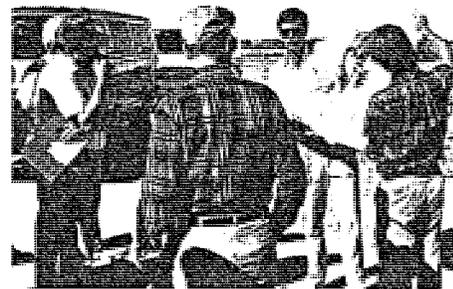
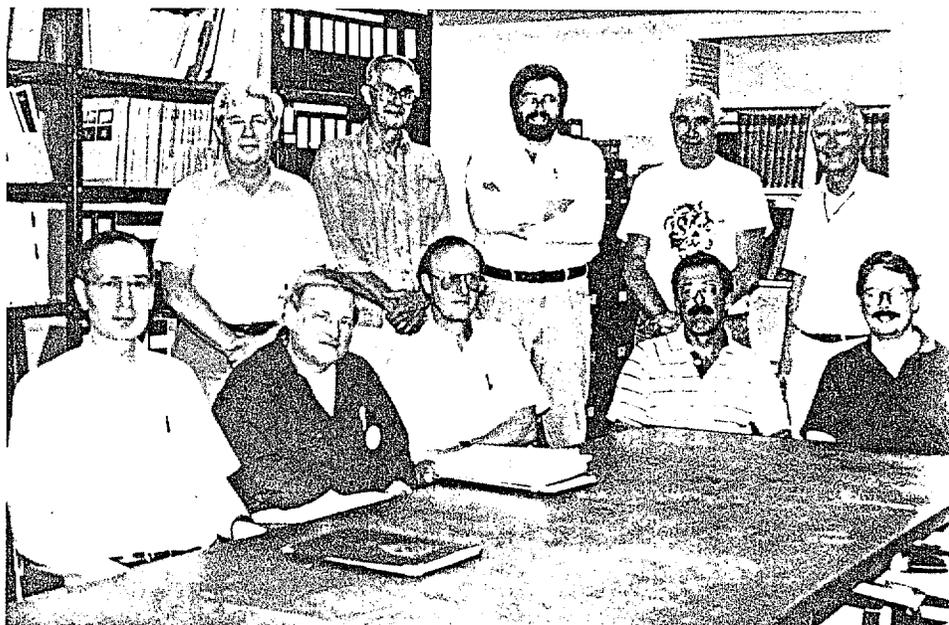


Figure 3 (above). AZGS geologists Phil Pearthree and Steve Reynolds discuss areas of subsidence and earth fissures in the Picacho basin with field-trip participants.

Figure 2 (left). Western State geologists meet to discuss mutual concerns. Top row, left to right: Bob Forbes (Alaska), Ed Ruppel (Montana), Jon Price (Nevada), Don Haney (Kentucky; President of the Association of American State Geologists), and Larry Fellows (Arizona). Seated, left to right: Eric Schuster (Deputy Director, Washington), Jim Davis (California), Earl Bennett (Idaho), Jamie Robertson (Deputy Director, New Mexico), and Lee Allison (Utah).

2-12-90 MAM-Handle

AS... Incorp.

JDS

FEB 12 1990

2/8/90

SW Exploration

Dear Mr. J. D. Sell

I have a group of six mining claims on Uulture Mine Road outside of Wickenburg. These claims are a couple of miles from the old Uulture Mine. These ^{first} claims has two shafts on it. They were assayed out by the man I bought it from. There were 3 tests. the results were (A) 1.22 Au and 6.29 Ag (B) ~~3.85~~ 3.8 Au and 3.85 Ag and (C) 1.24 Au, 3.63 Ag. I took a recent assay and it was 1.0216 Au and 1.3025 Ag. One of the other claims has a small outcropping of blue rocks, this was assayed out at 21,500 ppm Cu. The claims has a large wash running thru it, and there is plenty of black sands. I will let these go at a resonable rates. Thank You for your time.

DAVID GUILBAULT
122 S. Hardy Dr. #39
Tempe, AZ 85281

Sincerely
David Guilts

To JDS
 Date 9/12/90 Time 10:02 AM PM

WHILE YOU WERE OUT

M Will Wilkerson
 of Westmont Mining
 Phone () 881-8871

Area Code	Number	Extension
TELEPHONED	<input checked="" type="checkbox"/>	PLEASE CALL
CALLED TO SEE YOU	<input type="checkbox"/>	WILL CALL AGAIN
WANTS TO SEE YOU	<input type="checkbox"/>	URGENT
RETURNED YOUR CALL <input type="checkbox"/>		

Message _____

Mc
Operator

Newsbury back
 in Westmont's
 hand.

Review of data
 possible.
 Will send
 Conf. Agreement
 over by FAX



REORDER #23-000

one fo. - address

1 year 1 mile
 What ~~Section~~ T 6N R 4W
 Section

90 holes
 50-55% in'

2 holes
 Sec 22

all rest in W 1/2 Sec 22

WESTMONT

MINING INC.

FACD Inco.

FEB 12 1990

SW Expiration

Date: 12 Feb 90

Time: _____ AM / PM

To: Company Jim Sell
Attention _____
FAX # _____

From: WESTMONT MINING INC.
Name W.H. Wilkerson
FAX # 1-602-327-8782

Message: Here is the agreement. As I recall,
we can reduce the 2 years to one.

This facsimile transmission consists of 3 pages including this cover sheet.

Please call (602) 881-8871 immediately if all pages are not received.

February 13, 1990

J.L. Woods
Legal Dept.
New York Office

Confidentiality Agreement
Newsboy Property
T6N, R4W
Maricopa County, Arizona

The Newsboy Property is in Section 22, T6N, R4W, approximately 9 miles southeast of the town of Wickenburg, Maricopa County, Arizona.

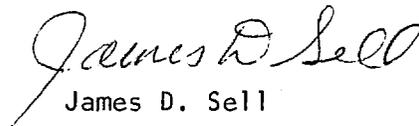
Some 90 holes total have been drilled in Section 22, with 55% being within the Newsboy (gold-silver) mineral reserve.

The agreement covers most of T6N, R4W where Westmont Mining has their claim block.

I have changed the 2 year date to one year, which has been agreed upon by the Westmont district manager.

Upon confirmation as to form and content, I will sign the Agreement in Tucson, forward copies to New York, and review their data.

JDS:mek
Att.


James D. Sell

cc: R.L. Brown/F.T. Graybeal
W.L. Kurtz

ccc: m A Miller
J W Rasmussen)

Date for review at their office should be available next week. Be prepared to go along after CA is signed.

JDS.

CONFIDENTIALITY AGREEMENT
(Newsboy, Arizona)

This Confidentiality Agreement is entered into this _____ day of _____, 1989⁹⁰, by and between _____ ("COMPANY") and Westmont Mining Inc. and Westmont Gold Inc. (jointly "WESTMONT").

COMPANY hereby acknowledges that WESTMONT has agreed to furnish technical information and cost data of a confidential and proprietary nature pertaining to its Newsboy Project in Maricopa County, Arizona, for the purpose of considering the acquisition of the Project from WESTMONT.

COMPANY agrees to the following conditions pertaining to this information:

1. COMPANY undertakes to keep confidential and not discuss with any third party information given to COMPANY concerning the above named Project.

2. COMPANY will return to WESTMONT, upon WESTMONT's request, all data supplied, and all copies of such data, at such time as either party notifies the other that it is declining to engage in further discussions concerning the Project.

3. COMPANY will refrain from using any such information supplied to it by WESTMONT except for the purposes of analyzing the acquisition opportunity.

4. COMPANY will use its best effort to prevent the disclosure of any such information, without the prior written consent of WESTMONT, to persons other than COMPANY's employees or to any of its employees not having a demonstrable need to know.

5. COMPANY will, prior to disclosure of any such information to any of its employees, fully advise such employee that he is and will be required to hold in confidence all of such information and that such information is not be disclosed to persons outside the company or to any of the company's employees not having a demonstrable need to know.

6. COMPANY agrees not to enter into negotiations for or acquire any properties within the Project area and within a period of ~~two~~ ^{two (2)} years of the date of this Agreement. The Project area is outlined on the attached map and includes an area of approximately one mile around the property controlled by Westmont.

* Essentially T4N, R4W, Maricopa Co, AZ

7. The obligations assumed by COMPANY under this Agreement shall not extend to any information that is now in or subsequently becomes part of the public domain; information that is in COMPANY's possession on the date of this Agreement; or information that is developed by or for COMPANY independent of disclosures under this Agreement.

The term "COMPANY" as used herein includes all of COMPANY's subsidiaries and associated companies and their employees, agents, contractors and assigns, whether acting in such representative capacity or individually.

The obligations of COMPANY shall terminate ^{one (1)} ~~two (2)~~ years after the date hereof. *JS*

In witness whereof, the parties have executed this Confidentiality Agreement as of the date below.

COMPANY NAME

WESTMONT MINING INC.
WESTMONT GOLD INC.

By: _____

By: _____

Title: _____

Date: _____

Date: _____

ASARCO

Exploration Department
Southwestern United States Division

February 14, 1990

Mr. David Guilbault
122 S. Hardy Drive #39
Tempe, Arizona 85281

Claim Group
T6N, R5W, Sec. 7
Maricopa County, AZ

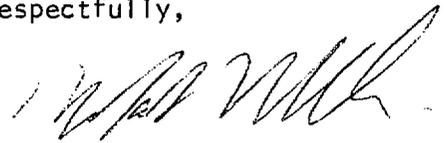
Dear Mr. Guilbault:

Thank you for responding so quickly to my request for additional data pertaining to your claim block. Since receiving this data I have checked our files and found that we have explored this area in the past. Your high grade copper assay is probably related to a weakly mineralized copper porphyry system located 1-2 miles east of your claim group. Fringe vein mineralization is not uncommon in these systems.

If our reconnaissance takes us into the area, we will certainly contact you if we are interested in your claim group. If there is enough of the high grade copper on your claims, our Hayden Smelter might be interested in your material.

Thank you for considering Asarco. Good Luck.

Respectfully,



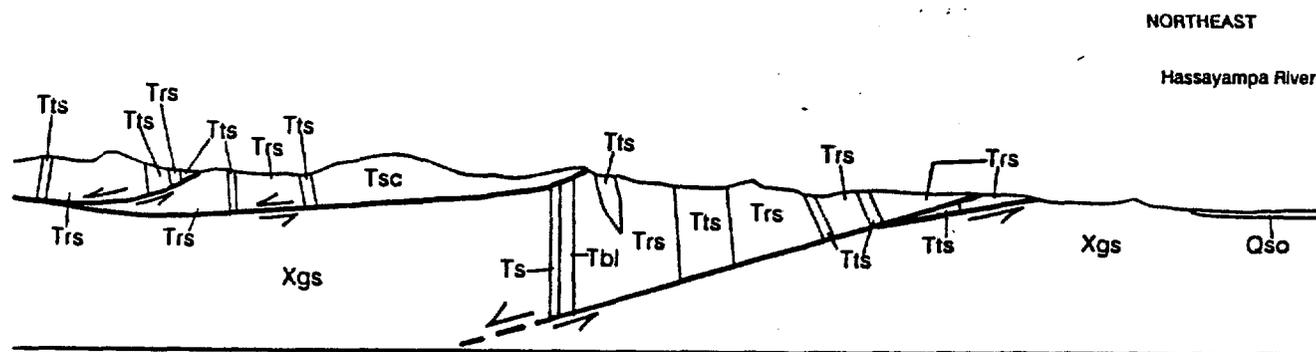
Mark A. Miller
Geologist

MAM:mek

cc: J.D. Sell

Field Guide to the New Waddell Dam Site,
Vulture-Hieroglyphic Mountains area,
and Mystic, Clemontine, Newsboy, and Yarnell
gold deposits, Central Arizona

Edited by
Stephen J. Reynolds
Arizona Geological Survey



Arizona Geological Society Field Trip
December 8 and 9, 1990

ARIZONA
J/13
12/8-9/90
c.2

Arizona Geological Society
P.O. Box 40952
Tucson, Arizona 85717

ASARCO
LIBRARY

Fall 1990 Arizona Geological Society field trip Newsboy gold deposit

Trip Leaders: Fred Bickford and Patti Tuve

The Newsboy gold deposit is located about 12 miles south of Wickenburg, Arizona. It is reached by leaving Route 60 at Morristown and driving two miles southwest on the unpaved Gates Road to the east bank of the Hassayampa River. Final access to the property is via a track across the usually-dry bed of the river. The center of the drill-defined ore body is located approximately 1500 feet beyond a cattle guard at the west bank of the river.

Gold reportedly was first discovered at the site as early as 1868, and various parties have conducted work there in the years since. During World War II, material that was mined from the site for smelter flux also earned gold credits. The ore deposit currently is being developed by Newsboy Gold Mining Company, which is engaged in mine planning and permitting. Knowledge of the ore deposit is derived from surface mapping, examination of limited underground workings, and drilling (reverse circulation and coring).

Lithologies at the site include a basement of dark green Precambrian biotite and chlorite schists overlain by Miocene rhyolite porphyry volcanics. The well-foliated Precambrian schists strike east-west and dip steeply to the north. The overlying felsic volcanics consist of flows, tuffs, and volcanoclastics. Mafic flows have been observed south of the deposit.

The contact between the volcanics and the schist is a shallow-dipping blanket-like breccia as much as 40 feet thick. Mineralization largely coincides with this breccia, which is known as the Newsboy Fault. In addition to the main body of mineralization, a thinner analagous blanket of mineralization locally occurs above the Newsboy Fault entirely enclosed within the volcanics. Precious metals grades are relatively consistent between holes within the drill-defined ore body. The in situ ore resource totals 5.8 million short tons at an average grade of 0.045 ounces per ton gold and 0.88 ounces per ton silver. Measured reserves total 1.8 million tons at an average grade of .048 ounces per ton gold and 1.25 ounces per ton silver. The deposit is largely open to the north and south.

The deposit and enclosing rock units are cut by a series of northwest-trending high-angle faults which result in the Newsboy Fault being progressively offset downward to the east. The deposit is terminated on the west by one of these high-angle faults, which is referred to as the Wash Fault. Mineralized breccia is exposed at the surface along the dry wash for which this fault is named. Several similar faults pass through the deposit east of the Wash Fault. It has been suggested that these faults may have served as conduits for the solutions which mineralized the Newsboy Fault, and the presence of mineralization in at least some portions of the faults can be taken as evidence for this possibility. A set of E-W trending high-angle faults is also present, but these faults are not clearly manifested.

Matrix material makes up a substantial fraction of the total rock volume in the breccia of the Newsboy fault, and black calcite is an abundant constituent of the matrix. Manganese oxide is common on fracture surfaces and more generally disseminated through carbonate matrix material. Several generations of cryptocrystalline silica can be seen. Yellow-green chalcedony is volumetrically most important. Veins of white opaline silica are of more restricted occurrence, and amethyst is seen rarely. Breccia fragments include rhyolite porphyry, carbonate, and rare blocks of Precambrian schist.

61

A 1988 Westmont Mining Company report distinguished three alteration assemblages associated with the deposit, which were seen as occupying layered zones coincident with or overlying mineralization. The zone of silica alteration (described in the preceding paragraph) encompasses the mineralization. The silica zone is overlain by the "Red Zone," consisting of kaolinite and iron oxide. Whether the iron oxide of this alteration zone represents weathered finely-disseminated pyrite or primary hematite is not known. The uppermost alteration zone is the "White Zone," which consists of an alteration assemblage of quartz, kaolinite, and alunite.

During this field stop there will be opportunities to see all of the major lithologies, exposures of the Newsboy and Wash Faults, and examples of the major alteration assemblages. Because of liability and safety issues, we request that our guests stay well clear of the accessible underground workings during their visit.

GEOLOGY OF THE NEWSBOY GOLD DEPOSIT

Jon E. Spencer and John T. Duncan
Arizona Geological Survey
845 N. Park Ave.
Tucson, AZ 85719

Will Wilkinson
Westmont Mining Inc.
2341 South Friebus
Tucson, AZ 85713

The Newsboy gold deposit is located at the eastern edge of the Vulture Mountains and is along west side of the Hassayampa River. Pre-Tertiary bedrock in the Vulture Mountains consists of Proterozoic crystalline rocks that are intruded by Cretaceous granitoids. These rocks are intruded by Tertiary dikes and overlain by early to middle Miocene sedimentary and volcanic rocks. The Vulture Mountains have been affected by severe Miocene extension, and middle Miocene and older rocks are typically cut by southwest-dipping normal faults and tilted moderately to steeply to the east or northeast (Grubensky, 1989). The Vulture mine gold deposit in the southern Vulture Mountains is related to a Cretaceous granitoid stock (White, 1988; Reynolds and others, 1988; Spencer and others, 1989), whereas many of the smaller base and precious metal deposits in the Vulture Mountains are Tertiary in age.

The eastern third of the Vulture Mountains contain a diverse suite of mineral deposits that are known or likely to be Tertiary in age. These deposits can be broadly divided into two types, as follows: (1) fluorite veins, and (2) variably silicified and/or iron-stained shear zones containing significant amounts of at least one of the following: copper minerals, lead minerals; manganiferous calcite, and gold. Both types of deposits are hosted in some areas by Tertiary volcanic rocks and many are near or along Tertiary faults.

At the Newsboy deposit, Miocene rhyolitic volcanic rocks are juxtaposed against underlying Proterozoic crystalline rocks by a subhorizontal fault that is strongly mineralized (Fig. 1). Faults that extend from the subhorizontal fault upward into the overlying rhyolite are also typically mineralized. Mineralized areas typically contain hematite, black calcite, variably banded chalcidonic quartz, and rare amethyst. Gold is associated with silica. The volcanic rocks in the mine area are variably and commonly pervasively altered over a broad area (most of the area of exposure shown in Fig. 1). Alteration assemblages include quartz-kaolinite-alunite, kaolinite-iron oxide, and silica (Hasenohr and Dummett, 1989). The volcanic rocks were affected by the following sequence of mineralization and alteration: (1) pervasive silicification, (2) deposition of yellowish green chalcidony along faults, (3) formation of veins and veinlets of white, banded, opaline quartz, and (4) deposition of sparse amethyst. Veins and irregular zones of black manganiferous calcite were emplaced after silicification (Hasenohr and Dummett, 1989).

Studies of fluid-inclusion in quartz by E.J. Hasenohr (written commun. to W. Wilkinson, 1990) and by J. Duncan indicate that minimum temperatures of quartz deposition (homogenization temperatures) were between about 180°C and 280°C (Fig. 2). Freezing-point depressions from most inclusions indicate that fluid salinities ranged from less than 1 wt. % equiv. NaCl to about 15 wt. % equiv. NaCl. Freezing point depressions from two pseudosecondary inclusions indicated approximately 20 and 25 wt. % equiv. NaCl. It is not known if low or high salinities were associated with gold mineralization at the Newsboy deposit.

Gold is concentrated in silicified rocks along and for several tens of feet above the basal fault. Drill-hole assays clearly indicate that the anomalous gold concentrations extend locally downward into the footwall Proterozoic rocks (W. Wilkinson, unpublished data, 1990), which suggests that

63
mineralization occurred after most of the movement on the mineralized faults. The Newsboy gold deposit has been estimated to contain 2 to 5 million tons of ore at a grade of 0.04 oz/ton Au (Hugo Dummett, oral commun., 1989).

In general it appears that base- and precious-metal deposits and fluorite veins in the eastern Vulture Mountains, including the Newsboy mine deposit, formed along or adjacent to Tertiary normal faults during or shortly after faulting. Circulation of mineralizing fluids was apparently related to Miocene tectonic and magmatic activity. It is possible that fluorite veins and base-metal dominated deposits in the eastern Vulture Mountains were derived from basin brines, whereas gold was derived from low-salinity fluids related to magmatism. The large range of fluid-inclusion salinities at the Newsboy deposit may be due to mineralization from both types of fluids.

REFERENCES CITED

Grubensky, M.J., 1988, Geologic map of the Vulture Mountains, Arizona Geological Survey map 27, scale 1:24,000.

Hasenohr, E.J., and Dummett, H.T., 1989, Geology and fluid-inclusion analysis of the Newsboy deposit, Maricopa County, Arizona: Geological Society of America Abstracts with Programs, v. 21, p. A295.

Reynolds, S.J., Spencer, J.E., DeWitt, Ed, White, D.C., and Grubensky, M.J., 1988, Geologic map of the Vulture mine area, Vulture Mountains, west-central Arizona: Arizona Geological Survey Open-File Report 88-10, 4 p., scale 1:24,000.

Spencer, J.E., Reynolds, S.J., Grubensky, M.J., Duncan, J.T., and White, D.C., 1989, Geology of the Vulture Gold mine: Arizona Geology, v. 19, p. 1-4.

White, Don, 1988, Geology of the Vulture mine: Mining Engineering, v. 41, p. 1119-1122.

Zahony, S., 1987, Geologic map of the Newsboy property: Westmont Mining Inc., unpublished map, scale 1:4,800.

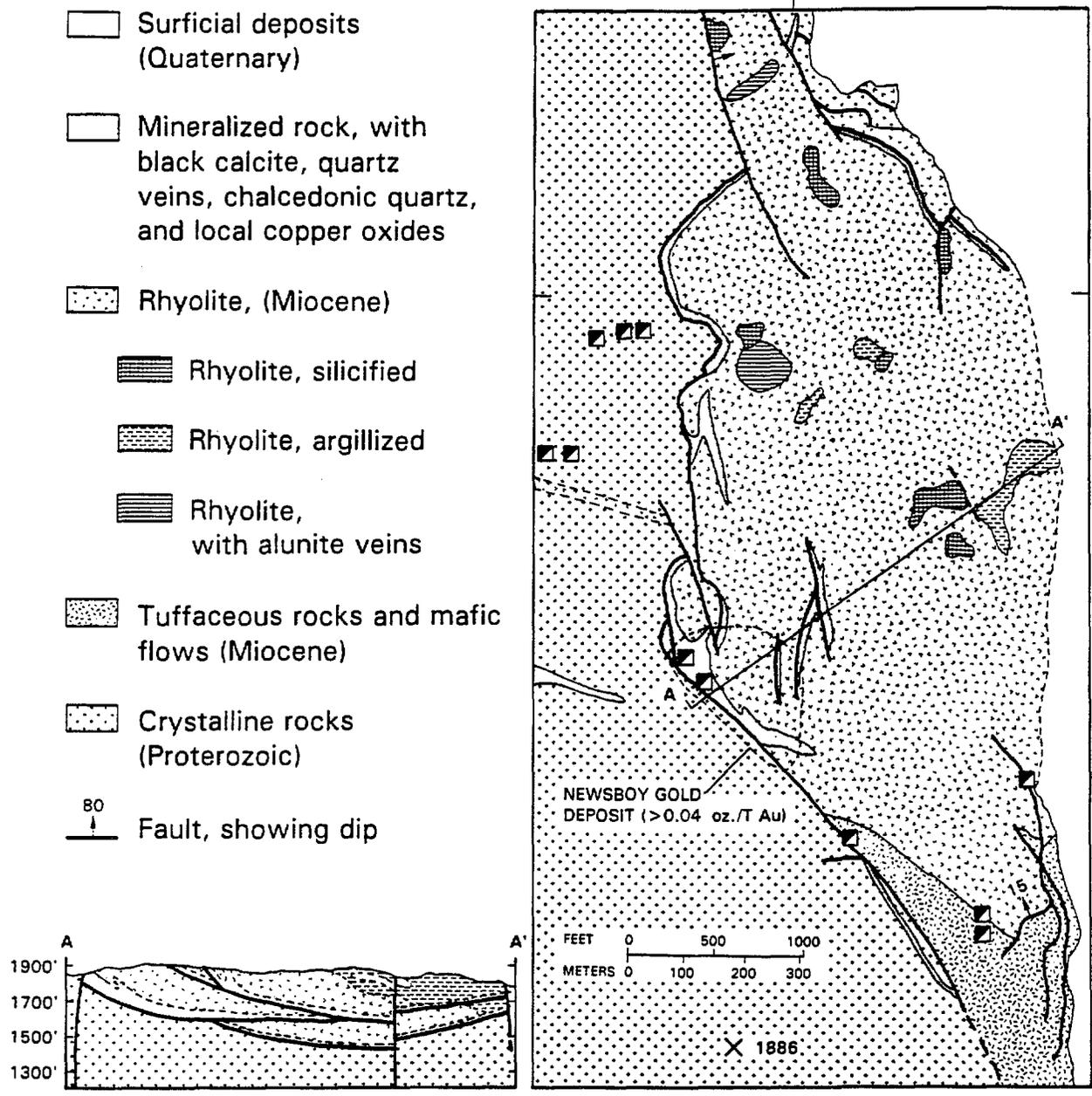
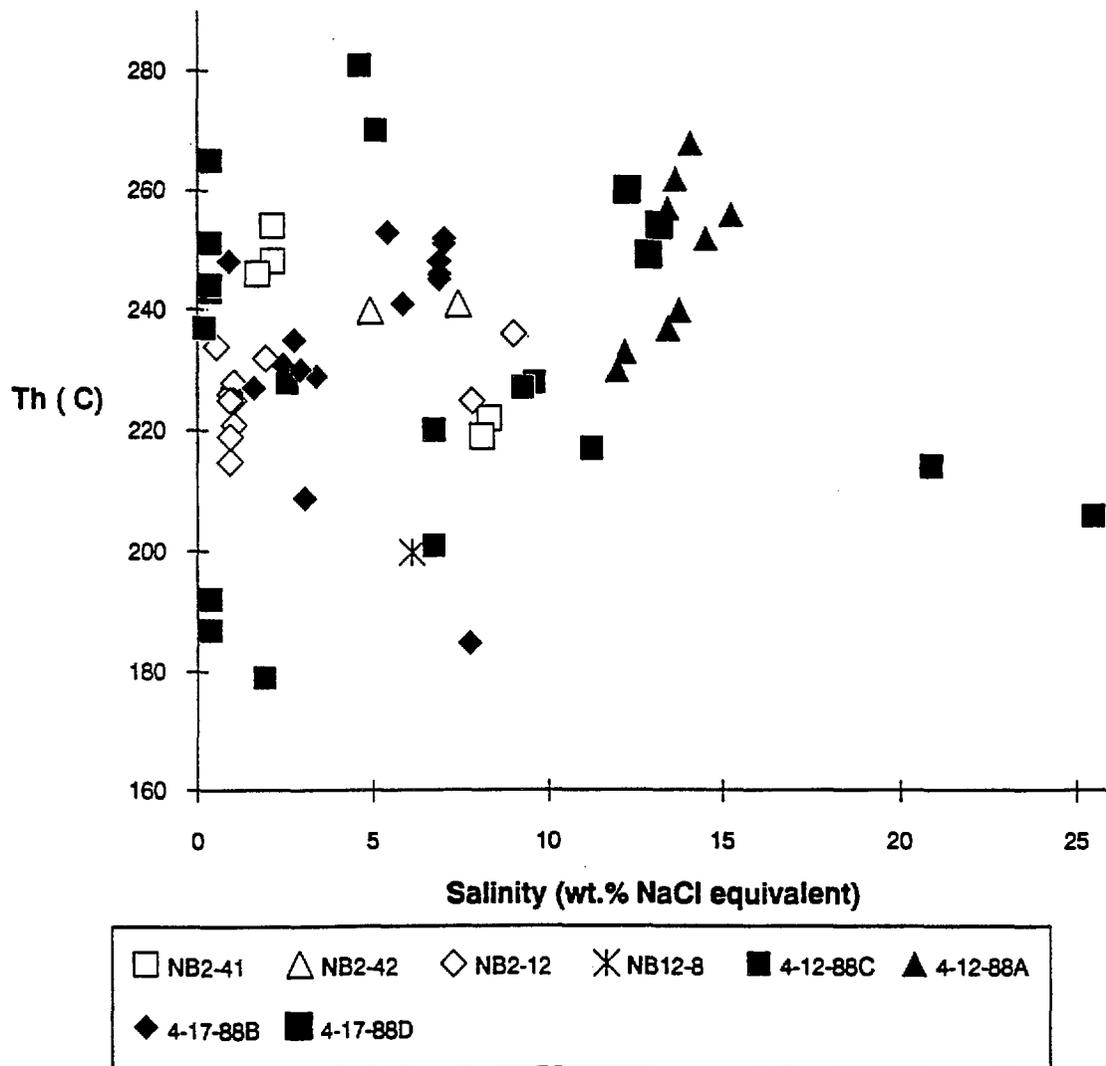
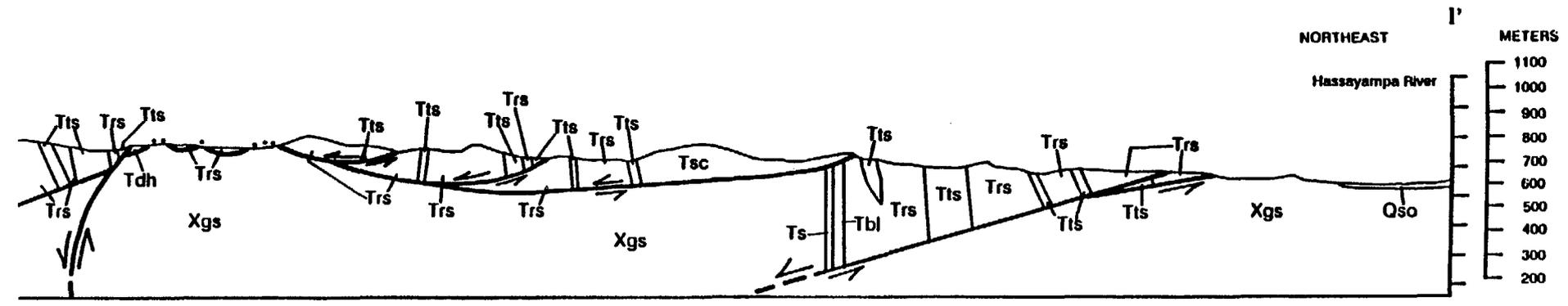
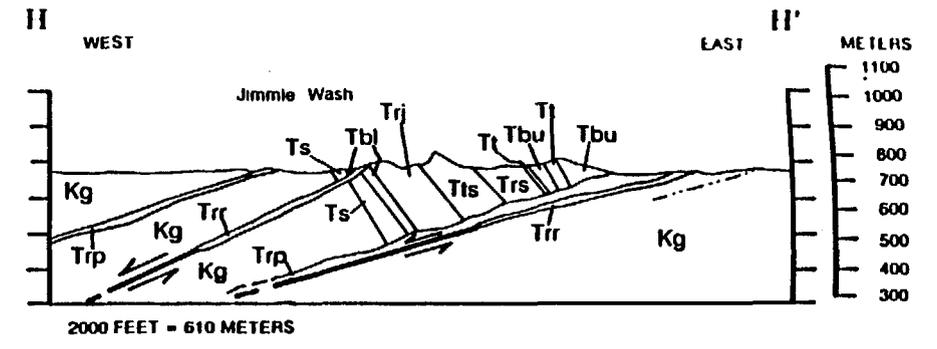
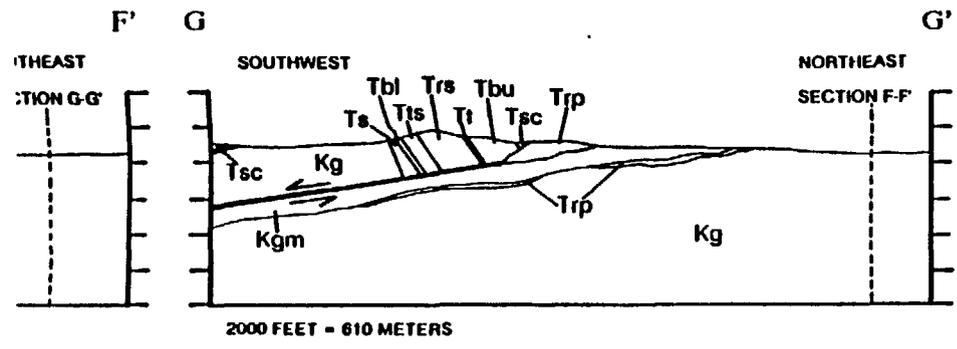
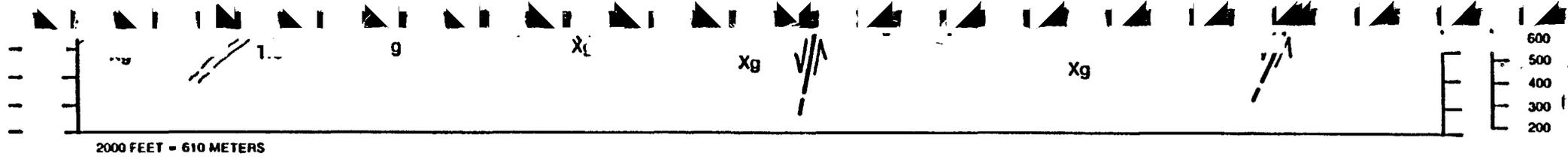


Fig. 1. Geologic map of the Newsboy mine area. Simplified from Zahony (1987).

65

NEWSBOY DEPOSIT - Fluid Inclusions





MILE

Geologic sections of the Vulture Mountains, from M J Erubensky, AZGS Map 27.

Send to JDS
FILE

Wounded Bull Resources N.L.

Incorporated in New South Wales

RECEIVED MAR 25 1991

March 18, 1991

Newsboy

Douglas M. Smith
Exploration Manager
ASARCO Incorporated
9305 West Alameda
Lakewood, CO 80226

ASARCO Incorporated

APR 12 1991

SW Exploration

Dear Mr. Smith:

As you may know, Wounded Bull Resources N.L., an Australian public company has acquired a 100% interest in the Newsboy Gold Mining Project in Maricopa County, Arizona from Westmont Gold Inc.

Wounded Bull has now completed a third party feasibility study, third party ore reserve analysis and third party metallurgical review.

I am including a recent Australian Stock Exchange announcement and a Newsboy Gold Mining Project summary sheet for your review.

The Newsboy Mine may be brought into production at a rate of about 27,000 ounces gold per year with estimated cash costs in the range of \$225 per ounce. Capital costs are about four million dollars for a contract crushing, contract mining scenario and 5.4 million dollars for a contract mining scenario where we do our own crushing.

Wounded Bull is interested in obtaining financing of the project via either an equity interest in Wounded Bull or a joint venture on the project. We feel that your company might have an interest in a project of this nature.

We would like to invite you to either see us at our booth at the Prospectors and Developers Convention in Toronto next week or at our project in Arizona at your convenience.

Sincerely,

Douglas M. Martin

Enclosures:

- 1) Announcement
- 2) Summary

801 Riverside Drive
Reno, NV 89503
(702) 322-0881
FAX (702) 322-3053

30 Thompson Street
Mosman, NSW, Australia 2088
Tele: (61-2) 969-5588
FAX: (61-2) 969-4255

2344 East Speedway Blvd.
Tucson, AZ 85719
(602) 323-0884
FAX (602) 795-3291

Wounded Bull Resources N.L.

Incorporated in New South Wales

February 25, 1991

The Manager - Companies
The Australian Stock Exchange (Sydney) Limited.,
20 Bond Street
SYDNEY, N.S.W. 2000.

Dear Sir,

Completion of Feasibility Study, Completion of Metallurgical Study, Completion of Resource and Ore Reserve Calculation, Newsboy Gold Mine, Arizona.

Wounded Bull Resources N.L.'s (WBR) 100% owned subsidiary Newsboy Gold Inc. has received a positive Feasibility Study from Signet Engineering (formerly Nedpac) of Perth, Australia. A favorable Metallurgical Study has been received from Kappes, Cassidy and Associates of Reno, Nevada. A Resource and Reserve Calculation has been completed as part of the overall feasibility study by Computer Aided Geoscience Pty. Ltd., of Sydney, Australia.

Capital costs for construction of a 600,000 ton per annum plant are estimated by Signet Engineering at U.S.\$5,494,073. The cash cost of gold production is estimated from the Signet Engineering report at approximately U.S.\$ 225/ounce at a rate of 25,000 ounces gold per year. Cash cost are comprised of processing costs of U.S.\$5.09 per ton of ore, mining costs of U.S. \$1.00 per ton and costs of moving waste at U.S.\$0.90 per ton. A maintenance and contingency of U.S.\$0.31 is also included.

Gold recovery is estimated by Kappes, Cassidy and Associates at plus 90% with a silver recovery of 19%. Further tests may increase the silver recovery.

801 Riverside Drive
Reno, NV 89503
(702) 322-0881
FAX (702) 322-3053

30 Thompson Street
Mosman, NSW, Australia 2088
Tele: (61-2) 969-5588
FAX: (61-2) 969-4255

2344 East Speedway Blvd.
Tucson, AZ 85719
(602) 323-0884
FAX (602) 795-3291

A resource and reserve calculation by Computer Aided Geoscience Pty Ltd has identified approximately 2 million tons of measured and indicated resource at a grade of 0.05 opt gold and 1 opt silver in the central mine area. An initial mine plan has been developed within this area that includes approximately 1.5 million tons of minable ore (including both proven and probable ore) at a grade of 0.05 opt gold and 1.2 opt silver within two pits. The average stripping ratio is 3.6 tons of waste to 1 ton of ore.

Additional reserves are present adjacent to the above as reported in previous quarterly reports.

Funding options are currently being explored by the company.

Sincerely,

W.J. Widin
Secretary

NEWSBOY GOLD MINING PROJECT MARICOPA COUNTY, ARIZONA

LOCATION:

45 miles northwest of Phoenix, Arizona and 10 miles south of Wickenburg, Arizona.

OWNERSHIP:

A 100% interest in the Newsboy Project was acquired by Wounded Bull Resources N.L. from Westmont Mining Inc.

LAND SUMMARY:

The property package includes 17,930 acres of state leased land and federal lode claims.

GEOLOGIC RESOURCE:

An insitu resource of 5.8 million tons grading 0.04 opt gold (232,000 ounces gold) has been identified on the property. Excellent potential exists for expanding both the mineable reserves and the geologic resource with a limited drilling program.

MINEABLE RESERVES:

An initial mineable reserve is comprised of 1.5 million tons at a grade of 0.05 opt gold and 1.4 opt silver. Mineable reserves were calculated by an independent consultant (Computer Aided Geoscience Pty Ltd) who specializes in ore reserve audits and ore calculations.

METALLURGICAL TESTING:

Gold and silver recovery is estimated by Kappes, Cassiday, and Associates at 90% and 20% respectively. The ore is clean and free of cyanacides resulting in low reagent consumptions of 0.07 lb/ton cyanide and 1.6 lb/ton lime.

PROCESS DESCRIPTION:

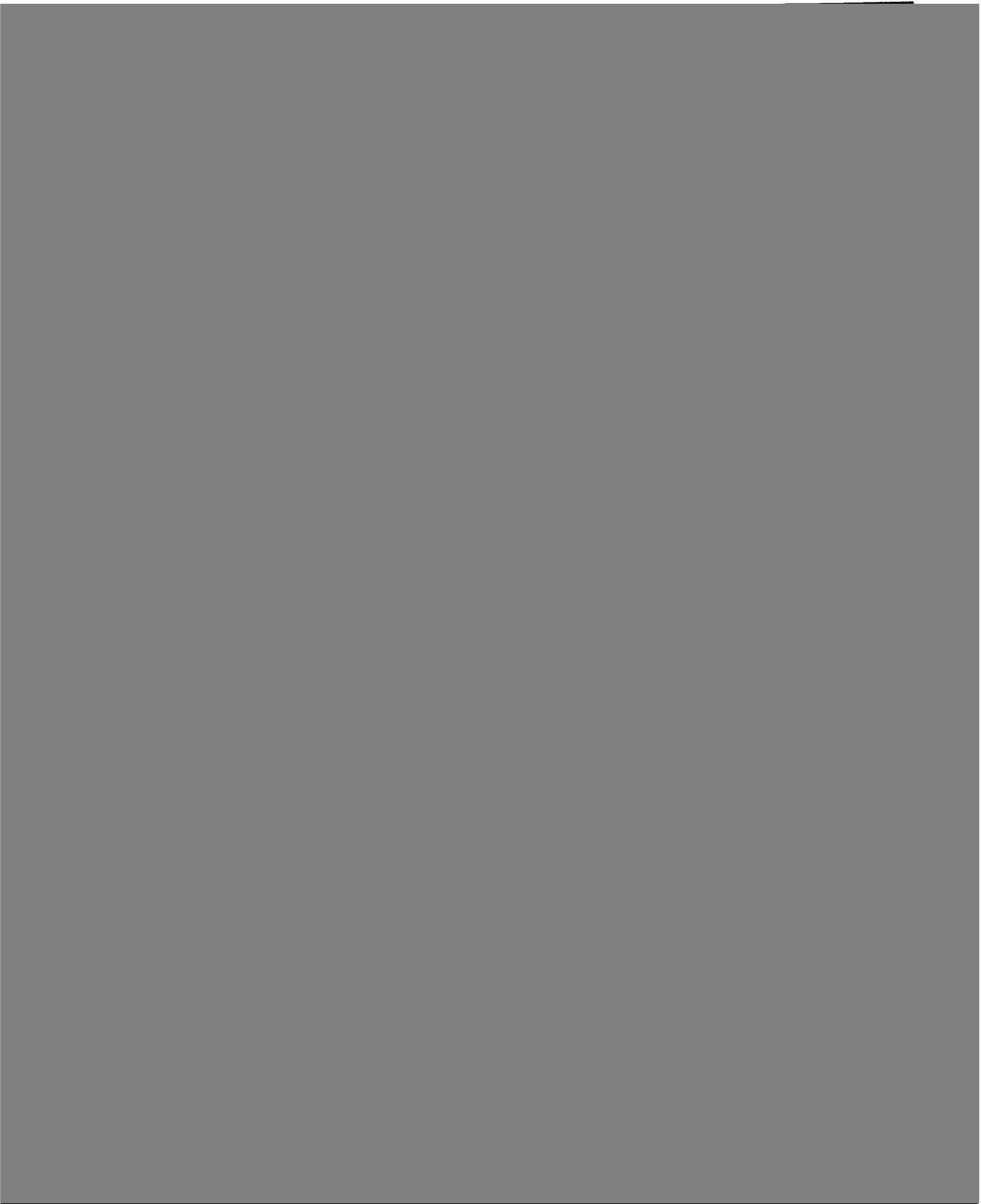
The process design calls for ore to be treated using conventional grinding to 100 mesh and recovery of gold and silver by the CIL method.

FEASIBILITY:

A bankable feasibility document completed by Signet Engineering Pty Ltd (formerly Nedpac Engineering) of Perth, Australia estimates the complete process mill/plant including crushing/grinding, CIL circuit and tailings dam can be constructed for U.S.\$ 5.4 million. Operating Costs are projected at U.S.\$5.40 for processing. Mining costs are estimated at U.S.\$1.00/ton for ore and U.S.\$0.90/ton for waste.

PREVIOUS WORK:

Westmont Mining completed a total of 102 reverse circulation drill holes for a total of 23,570 feet. An additional 1,681 feet of large diameter core was completed from 12 core holes for metallurgical testing during 1990.



INDUSTRY

Mining Journal, London, July 19, 1991

EXHIBIT A



CONFIDENTIALITY AGREEMENT

WESTMONT GOLD INC.

PROJECT LISTING - MAY 1991

	<u>Mining Claims</u>			<u>Lease Acres</u>	<u>Total Acres</u>
	<u>*Unpat.</u>	<u>Pat.</u>	<u>M.S.</u>		
ARIZONA					
Newsboy		298		1,520	7,480
Maricopa County (JV with Newsboy Gold Mining Company)					
Sections 4, 5, 8, 9, 10, 14-17, 19-23, 27-30, 32, 33, T6N, R4W; Sections 24 and 25, T6N, R5W.					
CALIFORNIA					
Riverside Pass		189			3,780
Riverside County (JV with Canyon Resources and Queenstake Resources)					
Sections 21, 27-29, 31-34, T1S, R23E; Sections 4-9, 17, 18, T2S, R23E;					
MONTANA					
Maltbys Mound		53	20	2,012	3,472
Madison County (JV with Newmont Exploration Ltd.)					
Sections 1, 2, 11, 12, 13, 23, T3S, R2W; Sections 7, 8, 17, 18, 19, 20, 29, 30, T3S, R1W.					
NEVADA					
Coleman Canyon		13			260
Elko County Sections 11 and 12, T44N, R55E.					

*Unpatented and patented mining claims assumed to be 20 acres/claim.

ASARCO

Exploration Department

Frederick T. Graybeal
Chief Geologist

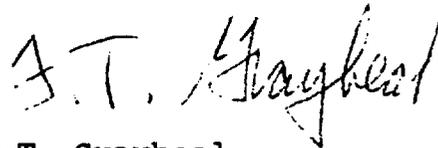
July 23, 1991

To: D.M. Smith - Denver Office
J.D. Sell - Tucson Office
J.C. Balla - Spokane Office

702-826-7007

Westmont Gold Inc. Properties

Attached is a confidentiality agreement identifying various exploration properties being sold by Westmont Gold. I have asked Paul Taylor to contact Peter Vikre regarding an initial visit to Westmont's data room in Denver. If there are any properties with which you are particularly interested either ask Peter Vikre to review them for you or coordinate with his visit to Denver when you might review those properties yourselves.



F.T. Graybeal

Attachments

cc: W.D. Gay

Pete called to say he had not seen any data since Westmont sold all to fellow Canadian.

ASARCO Incorporated

JUL 26 1991

SW Exploration

