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TOMBSTONE
MINING DISTRICT
Cochise County, Arizona

Charleston Mine
Area of Interest

Drilling
Reports, Notes, Assays &
Misc.

84

GEOLOGICAL

&

GEOCHEMICAL

STUDY

FOR: M. S. Horne
3033 North Central Avenue
Phoenix, Arizona

August 26, 1974

BY: C. A. Cosgrove, Mining Consultant
Working under supervision of:
H. Clyde Davis, B.S; M.S.
Geologist & Mineral Director

LOCATION

The area covered under this study lies in the west 1/4 of Section 17 T 20 S R 22 E and forms a portion of the west slope of Uncle Sam Hill, about 3 miles southwest of Tombstone. There are 12 claims, 9 of which are in Section 17 and 3 of which are in Section 18. (See claim map appended to this report). These claims are listed as follows:

Horne	#101
Horne	#102
Horne	#103
Horne	#104
Horne	#105
Horne	#106
Horne	#107
Horne	#108
Horne	#109
Horne	#109-A
Horne	#159
Horne	#160

GEOLOGY

This area is covered by an intrusive Latite Porphyry locally known as the Uncle Sam Porphyry. The principal outcrops of this porphyry are on the Uncle Sam Hill, the Three Brothers Hills to the north and west. Similar outcrops are also evident to the south near Charleston.

This porphyry is relatively resistant to erosion thus forming the craggy hills adjacent to the valley pediments. This porphyry has invaded the Bronco Volcanics, the Bisbee Formation, the Colina Limestone and the Epitaph Dolomite. This porphyry is probably younger than all the adjacent rocks except the Schieffelin Granodiorite and the Valley Fill of the San Pedro Trough. This intrusion is undoubtedly of the Tertiary period.

North of Uncle Sam Hill a deep embayment in the contact between the porphyry and the Bisbee formation, which forms the floor of the valley, suggests that the Bisbee underlies the porphyry at a comparatively shallow depth. This has been reported in the State of Maine mine, which penetrate

a considerable body of shale on the bottom level, at an elevation of about 4,300 feet (Butler, Wilson, and Rasor, 1938, p. 101). The floor at this part of the intrusion is therefore probably at a comparatively shallow depth, but farther southeast, near the Tombstone-Charleston road, the exposed contact becomes nearly vertical and cuts the bedding of the country rock at a high angle. Throughout the area between this road and the ridge extending north from Ajax Hill, the porphyry forms highly irregular masses that cut the Bisbee formation without regard to its bedding. A significant feature of this area is the mass of Uncle Sam porphyry following the major fault that farther north separates the Bisbee formation on the west from the Bolsa quartzite on the east. This fault was undoubtedly formed at the time of the major deformation of the Tombstone district. It had a minimum displacement of 5,000 feet and must extend to a considerable depth. The porphyry is frozen to both walls of this fault and has not been notably deformed since its emplacement, showing that the intrusion occurred after the major local orogeny.

A notable feature of the porphyry is the fracture (and strewing out of the resulting fragments) of a large proportion of the phenocrysts.

The groundmass ranges from vitric to microcrystalline, with a maximum grain size of about 0.04 millimeter, though more usually the groundmass crystals do not exceed 0.01 millimeter. Where determinable, the groundmass plagioclase is near An_{30} in composition and is contained, along with chlorite or biotite, in an intergrowth of orthoclase and quartz or glass.

Accessory minerals include magnetite, apatite, zircon, and sphene, but much of the sphene is a product of the alteration of biotite and presumable ilmenite. A few specimens contain rosettes of tourmaline, dichroic in greenish brown and brown. Some of this porphyry is mildly altered, with sericite, epidote, and albite developed in the plagioclase crystals and the mafic minerals altered to chlorite. Calcite is also present in some of the rocks.

CHEMICAL ANALYSIS OF UNCLE SAM PORPHYRY

SiO_2	67.60
Al_2O_3	16.22
Fe_2O_3	2.01
FeO	1.08
MgO	.91
CaO	2.91
Na_2O	3.79
K_2O	3.58
H_2O+	.92
H_2O	.28
TiO_2	.41
P_2O_5	.19
MnO	.10
ZrO_2	--------
O_2	--------

The area under study has been cut by one minor fault or fracture. This bears north 40° east from the center of west line of Section 17. Radiating from this zone are numerous fractures which show filling by secondary mineral solutions - and considerable alteration to the porphyry in proximity to the zone.

A study was made of the high altitude photography by NASA to determine major structural factors effecting the possible implacement of ore bearing solutions. A copy of an enlargement of this photography is attached herewith - This study was considered in the conclusion formed at the end of this report.

GEOCHEMICAL

Following the geological survey and preliminary surface study, it was determined that a geochemical reconnaissance would be the best practical method to locate anomalous mineralized areas for further study and drilling. Surface rock sampling was accomplished in accordance with the sample map attached herewith.

Geochemical results were determined by Skyline Labs, Inc., and are as follows:

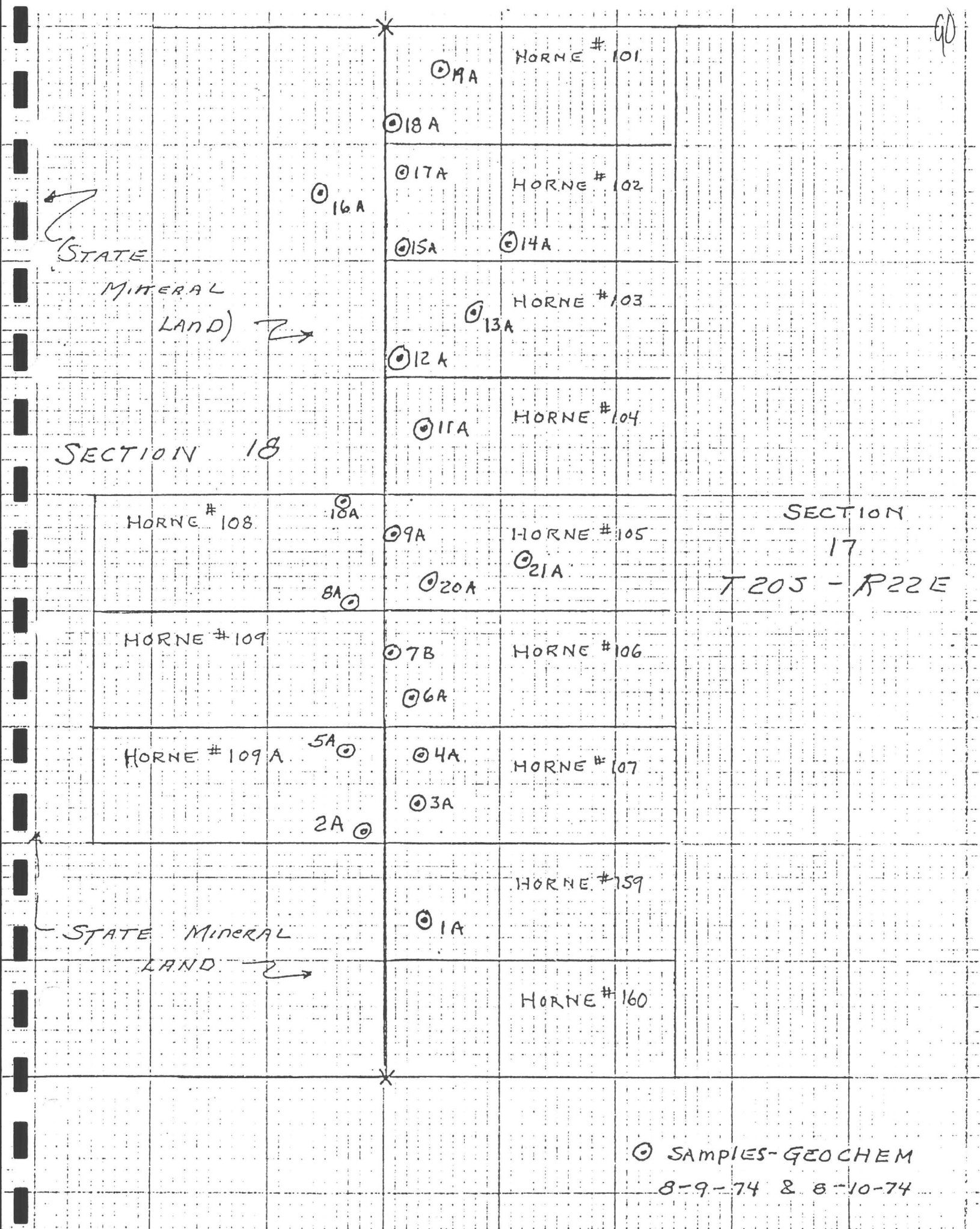
SAMPLE IDENTIFICATION	Ag ppm	Cu ppm	Mo ppm
1A	<0.2	5	
2	0.2	5	
3	1.0	5	
4	0.6	5	
5	<0.2	5	
6A	0.2	5	
7B	0.6	10	
8A	0.2	5	
9	0.8	5	2
10	700.	550	140
11	18.	5	
12	1.4	5	
13	<0.2	5	
14	0.2	5	2
15	1.8	5	2
16	0.4	5	
17	<0.2	5	
18	<0.2	5	
19	0.4	5	
20	14.	5	
21	4.2	5	12
22A	2.0	5	12

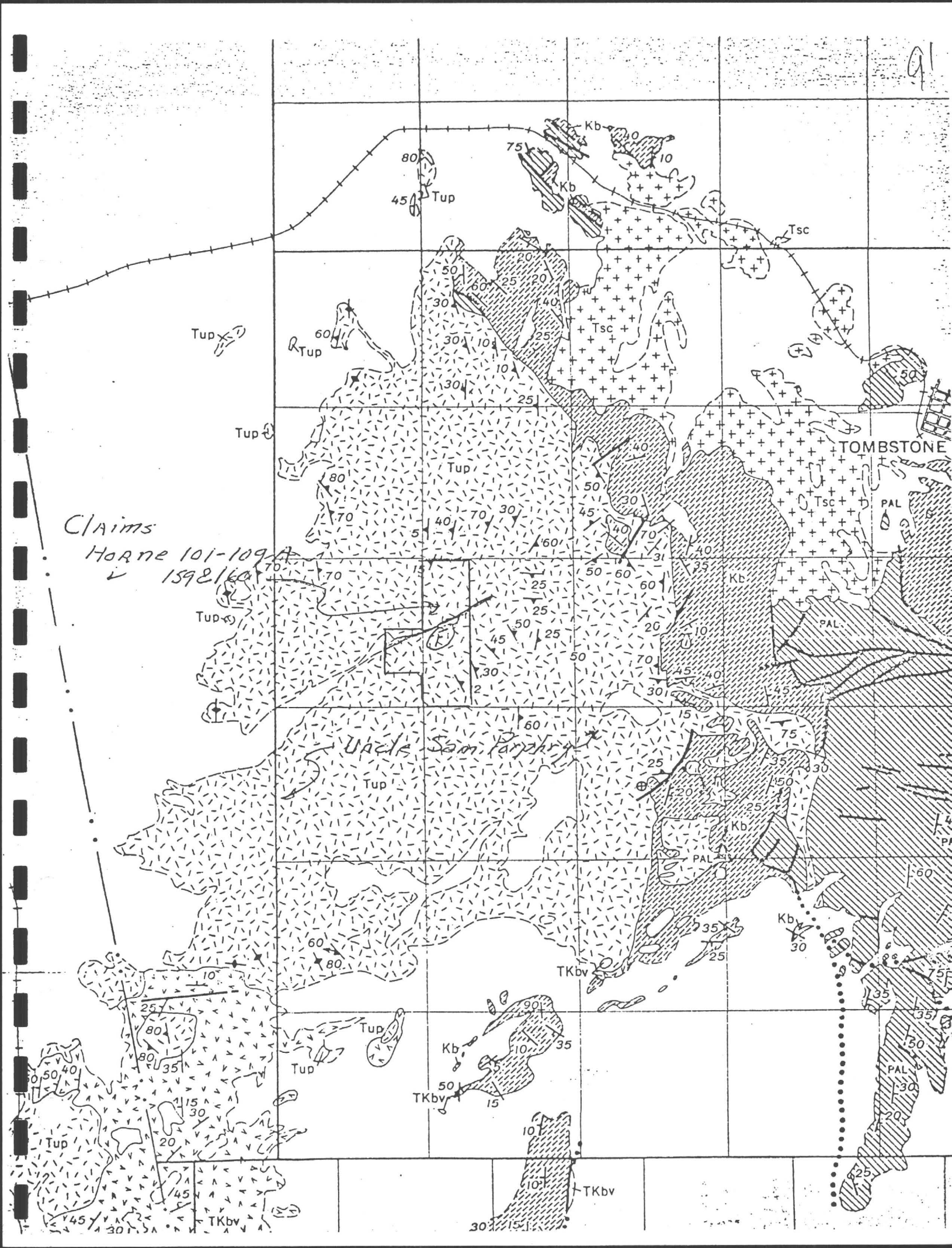
Conclusions: It is evident that two anomalous areas exist which warrant detailed study. It is therefore recommended that an examination program consisting of drilling, testing and studies proceed to delineate mineralized areas. This examination program should be evaluated by feasibility reports as each step is concluded.

This geological examination and research study together with the geochemical sampling was accomplished by C. A. Cosgrove, Mining Consultant, working under the direction and supervision of H. Clyde Davis, B.S; M.S., Geologist and Mineral Director for Brigham Young University.

C. A. Cosgrove,
Mining Consultant

H. Clyde Davis,
Geologist


HORNE # 101
19A
18A
17A
HORNE # 102
16A
15A
14A
STATE MINERAL LAND
HORNE # 103
13A
12A
HORNE # 104
11A
SECTION 18
HORNE # 108
18A
9A
HORNE # 105
21A
20A
8A
SECTION 17
T 20S - R 22E
HORNE # 109
7B
HORNE # 106
6A
HORNE # 109A
5A
4A
HORNE # 107
3A
2A
HORNE # 159
1A
STATE MINERAL LAND
HORNE # 160
⊙ SAMPLES - GEOCHEM
8-9-74 & 8-10-74


Claims
Horne 101-109
1592160
Uncle Sam Parphry
TOMBSTONE
Tup
Tsc
Kb
PAL
TKbv

[redacted]YLI[redacted]LAB[redacted]NC.[redacted]
Hawley & Hawley, Assayers and Chemists Division
1700 W. Grant Rd., P.O. Box 50106, Tucson, Arizona 85703
(602) 622-4836

CERTIFICATE OF ANALYSIS

Charles E. Thompson
Arizona Registered Assayer No. 9427
William L. Lehmbeck
Arizona Registered Assayer No. 9425

SAMPLE IDENTIFICATION	GOLD ppm	SILVER	COPPER	LEAD	ZINC	MO	Mn ppm		
10 A	0.12						156000		

See Report— Horne 100-189A 159 & 160 (Limestone)

TO:
Mr. C.A. Cosgrove
1923 West Osborn Road
Phoenix, Arizona 85016

REMARKS:
Trace analysis
1 Gold (0.02 ppm) - $2.50
1 Manganese - $2.00

CERTIFIED BY:

CHARGES:
PREPARATION $
ANALYSIS $ 4.50

DATE REC'D:
DATE COMPL.: 9/6/74
JOB NUMBER: 741625-A
$ 4.50

These may be ... 115-117

SKYLINE LABS, INC.
Hawley & Hawley, Assayers and Chemists Division
1700 W. Grant Rd., P.O. Box 50106, Tucson, Arizona 85703
(602) 622-4836

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

G31

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Ag ppm	Cu ppm	Mo ppm
1	B - 1	2.6		
2	2	1.2		
3	3	0.2		
4	4	<0.2		
5	5	<0.2		
6	6	7.2		
7	7	3.6		
8	8	0.8		
9	9	<0.2		
10	10	7.4		
11	11	2.8		
12	12	<0.2		
13	13	3.0		
14	14	5.4		
15	15	0.4		
16	B - 16	1.8		
17	2 - 5	2.8	25	14
18	2 - 1-A	1.0	5	
19	2 - H 102 E	<0.2		

Further Study of Harmon Group - 100-104A 159-160

TO:
Mr. C. A. Cosgrove
1923 West Osborn Road
Phoenix, Arizona 85015

cc: Pacific Palisades, California

REMARKS:
Trace analysis

CERTIFIED BY:

DATE REC'D: 9/4/74
DATE COMPL.: 9/10/74
JOB NUMBER: 741777

GEOCHEM STUDY
JABA, INC

James A. Briscoe & Associates, Inc.

Exploration Consultants:
Base and Precious Metals/Geologic and Land Studies/Regional and Detail Projects

James A. Briscoe
Registered Professional Geologist

Thomas E. Waldrip, Jr.
Geologist-Landman

January 2, 1987

Seth Horne, President
JAMES STEWART COMPANY
707 Mayer Central Building
3033 N. Central Avenue
Phoenix, AZ

RE: Letter report on geochemical samples taken from the south half of Section 36

Dear Seth:

We have finally received all of the assays back from the 35 samples that we took on the south one-half of Section 36, in order to satisfy the state prospecting permit work requirement for this year. We assayed these samples for ten different elements including gold and silver of primary interest, and also copper, lead, zinc, molybdenum, arsenic, antimony, vanadium and mercury. We also intended to assay the samples for galium, germanium and uranium, however, the budget did not permit such analyses. In fact, through a mix-up on the assayers part, we ended up getting about $1,200 worth of assays for $800. When I submitted the samples, I presented him with your check for $800, and asked him for the estimate for doing the afore mentioned assays. Instead of reporting to me, he simply started the process, and by the time he did give me a quotation, the work underway was approximately $1,000. I explained to him that we did not have the budget for that. Since the analyses had almost been completed, he decided to go ahead and give us the results without further billing beyond our initial $800.

The purpose for these multiple analyses was to determine whether the known metals associated with silver and gold could be used as path finders to the silver and gold mineralization.

The samples were taken from two parallel vein structures crossing your State land in the south half of Section 36. The host rock was in all cases Laramide age (approximately 65 million years ago) Bronco volcanics, consisting of andesite

5701 East Glenn Street, Suite 120/Tucson, Arizona 85712/602•721-1375

laharic (mudflow) breccias. After deposition, these breccias have been cut by northeast trending andesite dikes, which are common throughout the western portion of the Tombstone Mining District, and northeasterly trending hydrothermal veins. The veins have been prospected by shallow bulldozer cuts in recent years, as well as small prospecting pits and shafts, possibly dating back before the turn of the century. A small tractor-mounted backhoe was used to trench through existing dumps and vein exposures, as described in the notes on Attachment 1.

Each sample is described on the notes portion of Attachment 1. In general, the sample consisted of from 10 to 15 pounds of rock material collected in a cloth sampling sack. In all cases, the rubber-tired backhoe was used to trench into bedrock or into existing dump material so that a fresh, uncontaminated sample could be obtained. The trenches in bedrock were from two to approximately four feet deep. It is not too likely that gold values would have leached out of the surface, but it is conceivable that silver could be somewhat leached from the oxide zone and precipitated at greater depth at either the oxide sulfide interface or somewhere above that interface. The samples were processed in the Newmont Mining Company sample preparation lab. There, they were thoroughly crushed and pulverized to -10 mesh, thoroughly mixed, and then 200 grams split from the original sample. This sample was then ground to -300 mesh and submitted to the assayer - Copper State Analytical Lab, Inc. at 710 E. Evans, Tucson, Arizona. The gold and silver was assayed using the fire assay method with an AA finish. That is, the precious metal bead was obtained through the fire assay process, and then dissolved in acid and the amount of gold and silver present determined very accurately using an atomic absorption spectrophotometer. The other elements were assayed by appropriate analytical methods - for the most part, AA also. These described procedures were used to assure that the original sample was thoroughly mixed to insure a homogenous material before the assay sample was split out, and the assay methodology would not allow any precious metal to go undetected.

In the case of the dump samples, including 20 through 31, and the heap leach samples, including 32 through 35, trenches approximately 4 1/2 feet deep were cut through each dump. In the case of the small dump represented by samples 20 and 21, the samples were taken over approximately 15 foot intervals. In the larger dump, represented by samples 22 through 31, samples were taken over a 5 foot interval. The samples of

the heap leach - 32 through 35 - were taken from backhoe cuts at each corner of the pad, approximately 2 feet deep. These samples were felt to be representative of the dumps, and would show whether there was an erratic distribution of precious metals.

As can be seen by examining Attachment 1, samples 1 through 19, which represent everything except for the two larger dumps and the heap leach pads, there were no values even up to one part per million gold or more than 22 ppm silver - remembering that 34.285 ppm equals one troy ounce. Thus, it appears that all near-surface vein material along the two structures sampled contain only sub-economic amounts of gold and silver.

Samples from the larger dumps, where the old shafts made deeper penetration into the vein material, the results were also quite low. Sample 30, having 1.380 ppm (approximately 0.04 ounces) gold and 8.20 (0.24 ounces) silver, and sample #28 containing 0.280 ppm (approximately 0.01 ounces) gold and 22.20 ppm (0.65 ounces) silver, were the highest assays for gold and silver of all the samples taken. The maximum recovered gold and silver from these two samples would be about $15.20 for sample #30, and $4.88 for sample #28. The average recoverable precious metal content of the smaller dump was $5.57, while that for the large dump was $4.81, and $3.76 recoverable gold and silver remained in the heap leach pad. Even if precious metal prices were to double, I don't see the circumstances that would allow these dumps to be worked at a profit.

CONCLUSIONS

The south half of State Section 36 contains two major vein structures which were sampled. The results are disappointing. Without much higher values than are indicated by the current sampling, the potential tonnages indicated are insufficient for profitable mining. The geologic data does not suggest any increase in width of the surface veins within 100 feet of the surface, and samples from the larger dump from the deeper shaft suggest that values within 100 feet of the surface are probably sub-economic.

RECOMMENDATIONS

The south half of Section 36 is comprised of Bronco andesite breccia for the most part. This breccia is propylitically altered except along vein structures where it is altered to

clay and sericite with silicification. Low values of gold, silver, copper, lead and zinc and other elements are present in these veins, though in sub-economic quantities. There is no geologic reason evident from the current study that would suggest the presence of an economically viable ore body in the south half of State the section. Therefore, it is recommended that no further money be expended in that area, and it be returned to the State.

The north half of the section, however, is comprised primarily of rhyolite dome material, and rhyolite ignimbrites, also of the Bronco series volcanics. They have not been sampled by this campaign. Because of the difference in rock character, the values from the andesitic terrain cannot be extrapolated into the rhyolitic terrain. Further, the Charleston Lead Mine, where alteration appears to be more intense, lies primarily in or adjacent to the rhyolitic terrain. Since assessment work for the northern half of the section must also be performed, it is recommended that a similar sampling campaign be done first in the Charleston Lead Mine open pit, by cutting fresh surfaces in the pit using the same backhoe, and then in surrounding prospects within the State section. If values are also sub-economic in the northern half of the section, then it is probable that the State land can be dropped from further consideration for a shallow, precious metal ore body.

Very truly yours,

James A. Briscoe

JAB/ms

Attachment

SAMPLE NUMBER	Au PPM	Ag PPM	Cu PPM	Pb PPM	Zn PPM	Mo PPM	As PPM	Sb PPM	W PPM	Ga PPM	Ge PPM	Hg PPB	U PPM	NOTES
1	0.225	8.85	666	2.61	322.00	270	45	11.00	64			85		E of Lindsey Rd. & just E of Adobe building. Composite sample of dump dozer pile. Backhoe cut 15' long by 2/2 1/2' deep, FeOx veinlets in altered andesite.
2	0.045	2.20	172	0.28	106.00	10	2	1.50	28			85		30' NE of sample #1. Sample of the S. end of 25' trench - 2 1/2' to 4' deep. Sample taken on 20 degree dipping vein with some FeOx & silicification in altered andesite. Sample from approx. 2' below surface
3	0.125	0.75	310	0.20	800.00	6	4	2.50	22			20		From N end of same trench - see sample #2 - in footwall of vein.
4	0.085	0.55	24	0.18	388.00	2	9	-0.50	11			5		S of section line. Altered andesite with FeOx veinlets. No bedrock seen in sample cut to 2 1/2' deep. Composite sample taken from 1.5' down in 5' long trench.
5	0.185	1.50	26	240.00	208.00	6	3	-0.50	9			<5		10' E of #4, light colored altered material. Trench 10' in length by 3' deep. Verticle composite samples taken on each side of dump.
6	0.120	2.40	42	79.00	400.00	5	2	1.00	7			<5		E-W cut in altered andesite bedrock. Trench is 5' in length 1' below the surface of old dozer cut which was cut to approx. 5' below the surface. This is 300' E of #5 on trend of FeOx veinlets. Composite sample around wall of backhoe cut.
7	0.280	0.75	24	116.00	216.00	4	26	1.50	16			<5		Samples 7 through 11 - these samples were taken in a N-S trench approx. 100' long by 5' to 6' deep. #7 in hanging wall. #8 in footwall, #9 in hanging wall, #10 in footwall near fault & veinlets, and #11 in silicified pods. All samples collected on west side of cut.
8	0.015	7.65	42	49.00	0.21	3	7	2.50	18			<5		
9	0.045	1.80	24	544.00	188.00	26	3	120.50	17			<5		
10	-0.005	-0.50	9	20.00	426.00	3	21	120.50	12			<5		
11	0.085	0.85	28	164.00	0.19	14	74	1.50	13			<5		
12	0.040	0.80	42	42.00	356.00	11	12	4.50	7			20		Samples 12 through 15 taken from a N-S trench, approx. 300' E of #7 through #11, along trend of same vein zone. The trench is approx. 75' long by 3' to 4' deep. Four samples taken; each one between 15' & 20' long. They were taken across flat vein-like structures as seen in trench 300' to the west. #12 is at the S end & #15 is at the N end. #13 was from a flat vein with FeOx stain. Rock type in all cases is altered andesite.
13	0.045	1.25	38	724.00	140.00	2	18	3.50	6			<5		
14	0.140	14.65	114	0.22	324.00	17	78	85.50	11			20		
15	0.015	3.60	160	0.47	800.00	7	19	3.00	7			<5		
16	0.035	3.40	84	0.16	308.00	12	21	14.50	8			15		Small trench 7' long, 75' further E of #15. Rock type is altered & FeOx veined andesite.
17	0.120	8.85	366	1.22	580.00	222	72	19.00	22			85		On same structure, 300' to 400' E of #16. Composite sample taken around perimeter of NW trending cut, 3' deep by 20' long in old dump.
18	0.260	21.60	388	7.38	0.21	15	99	54.00	15			60		25' NE of #17 along same structure. Trench dimensions & sampling methods were the same as above.

ELEMENTS UNITS	Au PPM	Ag PPM	Cu PPM	Pb PPM	Zn PPM	Mo PPM	As PPM	Sb PPM	V PPM	Ga PPM	Ge PPM	Hg PPM	U PPM	NOTES
19	0.035	1.15	28	0.16	99.00	6	2	2.50	11			65		400' NE of #18. Sample from waste pile of old hand dug trench. Backhoe cut 15' long, 1 1/2' deep on E side of trench. Composite sample around perimeter of cut.
20	0.285	3.40	52	0.28	94.00	10	22	5.50	28			15		600' SE of sample #19, sample #20 & #21 from old dump approx. 30' long & 10' to 15' wide. Sample #20 was from shaft to 15' SW. Sample #21 15' to 30' SW of shaft. Composite perimeter samples taken approx. 3' down in 5' deep backhoe cut. Dump contains approx. 100 tons of material .
21	0.185	3.85	66	1.02	100.00	16	11	8.50	284			<5		
22	0.110	2.80	106	0.44	444.00	68	52	4.00	22			<5		600' E of samples #20 & #21, samples #22 through #31 are taken from large dump. Two trenches were cut at right angles to stratification in dump. The trenches form a narrow Y with arms trending to the SW. The N or shorter leg of the Y was sampled at 6' intervals while the S long leg of the Y was not sampled. Each of the composite perimeter samples was approx. 15 lbs. of material from a 6' deep trench, taken from about 3' in depth. The rock consisted of, for the most part, vuggy quartz, epithermal vein material with limonite after sulfides. Probably some sericite, though hard to see in light colored vein material. The dump is composed of approx. 750 tons of material.
23	0.295	6.40	160	1.51	512.00	96	40	8.50	14			<5		
24	0.285	6.15	144	1.31	142.00	300	55	4.50	32			10		
25	0.315	8.40	166	1.88	126.0	550	110	8.50	18			15		
26	0.300	10.65	134	2.11	122.00	560	2	6.00	26			35		
27	0.180	16.20	222	2.84	174.00	180	46	11.50	8			85		
28	0.280	22.20	800	6.70	324.00	460	2	13.5	12			145		
29	0.340	8.45	148	1.98	134.00	450	45	11.00	11			60		
30	1.380	8.20	156	1.81	120.00	490	24	9.00	11			35		
31	0.300	6.60	142	1.11	188.00	300	55	8.00	22			20		
32	0.440	5.85	156	1.04	306.00	324	21	4.50	22			<5		Samples #32 through #35 are taken on a heap leach pad dating back to circa 1980. This pad was very impermeable as indicated by ponded water. Because of its impermeability, no production was probably ever attained. The heap material was removed from the large mine dump sampled by #22 through #31. Samples were taken from five 2' deep back hoe cuts at each corner & center of the heap. The heap itself was approx. 3 1/2' deep. Sample locations are: #32 SE corner, #33 center, #34 NW corner, & #35 NE corner. Approx. 500 tons of material are on the heap.
33	0.235	5.40	180	1.35	204.00	470	42	2.50	76			15		
34	0.045	14.85	101	0.29	588.00	14	101	51.50	12			<5		
35	0.160	49.40	256	0.36	0.17	17	109	95.00	10			20		

SAMPLE NUMBER	AU PPM	AU IN TROY OZ/TON	VALUE @ $400 AU	AG PPM	AG IN TROY OZ/TON	VALUE @ $6.00 AG	EST. RECOVERY OF AU @ 90%	EST. RECOVERY OF AG @ 50%	TOTAL RECOVERY OF AU & AG
20	0.29	0.01	3.32	3.40	0.10	0.59	2.99	0.30	3.29
21	0.19	0.01	2.16	3.85	0.11	0.67	1.94	0.34	2.28
TOTAL	0.47	0.01	5.48	7.25	0.21	1.27	4.93	0.63	5.57
AVERAGE	0.24	0.01	2.74	3.63	0.11	0.63	2.47	0.32	2.78
22	0.11	0.00	1.28	2.80	0.08	0.49	1.15	0.24	1.40
23	0.30	0.01	3.44	6.40	0.19	1.12	3.10	0.56	3.66
24	0.29	0.01	3.32	6.15	0.18	1.08	2.99	0.54	3.53
25	0.32	0.01	3.67	8.40	0.24	1.47	3.31	0.73	4.04
26	0.30	0.01	3.50	10.65	0.31	1.86	3.15	0.93	4.08
27	0.18	0.01	2.10	16.20	0.47	2.83	1.89	1.42	3.31
28	0.28	0.01	3.27	22.20	0.65	3.88	2.94	1.94	4.88
29	0.34	0.01	3.97	8.45	0.25	1.48	3.57	0.74	4.31
30	1.38	0.04	16.10	8.20	0.24	1.43	14.49	0.72	15.20
31	0.30	0.01	3.50	6.60	0.19	1.15	3.15	0.58	3.73
TOTAL	3.79	0.11	44.15	96.05	2.80	16.80	39.73	8.40	48.14
AVERAGE	0.38	0.01	4.41	9.61	0.28	1.68	3.97	0.84	4.81
32	0.44	0.01	5.13	5.85	0.17	1.02	4.62	0.51	5.13
33	0.24	0.01	2.74	5.40	0.16	0.94	2.47	0.47	2.94
34	0.05	0.00	0.52	14.85	0.43	2.60	0.47	1.30	1.77
35	0.16	0.00	1.87	40.40	1.18	7.07	1.68	3.53	5.21
TOTAL	0.88	0.03	10.26	66.50	1.94	11.63	9.24	5.82	15.06
AVERAGE	0.22	0.01	2.57	16.63	0.48	2.91	2.31	1.45	3.76

COPPER STATE ANALYTICAL LAB, INC.

P O BOX 7517
TUCSON, ARIZONA 85725
PH: (602) 884-5811

BILL TO:

James A. Briscoe & Associates
5701 East Glenn Suite 120
Tucson, Arizona 85712

INVOICE: C - 6435
JOB NO: 5360
DATE: 11/21/86
ACCOUNT NO:
P. O. NO:
PROJECT: Charleston Mine

COPY TO:

P A I D Check# 25045

PAY FROM THIS INVOICE — NO OTHER STATEMENT WILL BE SENT

ANALYTICAL CHARGES				OTHER CHARGES	
QUANTITY	DESCRIPTION	UNIT COST	AMOUNT	DESCRIPTION	AMOUNT
35	Gold	5.75	$201.25		
35	Silver	2.60	$ 91.00		
35	Copper	2.00	$ 70.00		
35	Lead	1.80	$ 63.00		
35	Zinc	1.60	$ 56.00		
35	Arsenic	4.50	$157.50		
35	Antimony	4.75	$166.25		
35	Molybdenum	2.60	$ 91.00		
29	Assays	1.25	$ 43.75		
7	Mo 300 ppm	2.00	$ 14.00		
			$953.75	OTHER CHARGES	
	Less Professional Discount		-$153.75	ANALYTICAL CHARGES	
			$800.00	**PAY THIS AMOUNT**	$800.00

NET 10 DAYS

COPPER STATE ANALYTICAL
LAB, INC.
REGISTERED ASSAYER
D A SHAH
AZ REG. #
710 E. EVANS • TUCSON, AZ 85713 PH: (602) [illegible]

James A. Briscoe & Associates
5701 East Glenn Street Suite 120
Tucson, Arizona 85712

Job: 5360
Received: 11/13/86
Reported: 11/19/86
Sample No 35
Elements: 9
Invoice No.- C 6435

Elements Units	Au PPM	Ag PPM	Cu PPM	Pb PPM	Zn PPM	As PPM
1	0.225	8.85	666	2.61%	322	43
2	0.045	2.2	172	0.28%	106	2
3	0.125	0.75	310	0.20%	800	4
4	0.085	0.55	24	0.18%	388	9
5	0.185	1.5	26	240	208	3
6	0.12	2.4	42	79	400	2
7	0.29	0.75	24	116	216	26
8	0.015	7.65	42	49	0.21%	7
9	0.045	1.5	24	544	188	3
10	-0.005	-0.5	9	20	426	21
11	0.085	0.85	28	164	0.19%	74
12	0.04	0.8	42	42	356	12
13	[illegible]	[illegible]	38	724	140	18
14	[illegible]	[illegible]	114	0.22%	324	78
15	[illegible]	[illegible]	160	0.47%	800	19
16	[illegible]	[illegible]	88	0.16%	308	21
17	[illegible]	0.85	366	1.22%	580	72
18	[illegible]	21.6	588	2.37%	0.24%	99
19	0.035	1.15	28	0.16%	99	2
20	0.255	3.4	52	0.28%	94	22
21	0.145	0.85	46	1.02%	100	11
22	[illegible]	[illegible]	106	0.44%	444	52
23	[illegible]	6.4	160	1.51%	512	40
24	[illegible]	6.15	144	1.31%	142	75
25	[illegible]	8.4	160	1.38%	126	110
26	0.3	10.65	134	2.11%	122	2
27	0.18	16.2	222	2.84%	174	46
28	0.28	22.2	800	6.7%	324	2
29	0.34	8.45	148	1.98%	134	45
30	1.38	8.2	156	1.81%	120	24

COPPER STATE ANALYTICAL
LAB, INC.
DA SHAH
710 E EVANS • TUCSON AZ 85713

CSA SERVICES

James A. Briscoe & Associates
5701 East Glenn Street Suite 120
Tucson, Arizona 85712

Job: 5360
Received: 11/13/86
Reported: 11/19/86
Sample No 35
Elements: 9
Invoice No.- C 6435

Elements Units	Au PPM	Ag PPM	Cu PPM	Pb PPM	Zn PPM	As PPM
31	0.3	6.6	142	1.11%	188	55
32	0.44	5.85	156	1.04%	306	21
33	0.235	5.4	180	1.35%	204	42
34	0.045	14.85	101	0.29%	588	101
35	0.16	49.4	256	0.36%	0.17%	109

Elements Units	Sb PPM	Mo PPM
31	8	300
32	4.5	324
33	2.5	479
34	[illegible]	[illegible]
35	[illegible]	[illegible]

COPPER STATE ANALYTICAL
LAB, INC.
REGISTERED ASSAYER
DA SHAH
AZ REG. # [illegible]
710 E. EVANS • TUCSON, AZ 85713
PH: (602) 884-5811

James A. Briscoe & Associates
5701 East Glenn Street Suite 120
Tucson, Arizona 85712

Job: 5360
Received: 11/13/86
Reported: 11/19/86
Sample No 35
Elements: 9
Invoice No.- C 6435

Elements Units	Sb PPM	Mo PPM
1	11	270
2	1.5	10
3	2.5	6
4	-0.5	2
5	-0.5	6
6	1	5
7	1.5	4
8	2.5	3
9	4.5	26
10	120.5	3
11	1.5	14
12	4.5	11
13	3.5	2
14	85.5	17
15	3	7
16	14.5	12
17	19	222
18	38	176
19	2.5	6
20	5.5	10
21	8.5	16
22	4	68
23	8.5	96
24	4.5	390
25	8.5	550
26	6	560
27	11.5	180
28	13.5	460
29	11	450
30	9	490

COPPER STATE ANALYTICAL
LAB, INC.
REGISTERED ASSAYER

D.A. SHAH
AZ R[illegible] # [illegible]

710 E. EVANS • TUCSON, AZ. 85713 PH: (602) 884-5811

James A. Briscoe
5701 East Glenn Suite 120
Tucson, Arizona 85712

Job: 5360
Received: 12/02/86
Reported: 12/05/86
Sample No 35
Elements: 2

Elements	Hg	V
Units	PPB	PPM
1	85	64
2	85	28
3	20	22
4	5	11
5	-5	9
6	-5	7
7	-5	16
8	-5	18
9	-5	17
10	-5	12
11	-5	13
12	20	7
13	-5	6
14	20	11
15	-5	7
16	15	8
17	85	12
18	60	18
19	65	11
20	15	28
21	-5	284
22	-5	22
23	-5	14
24	10	32
25	15	18
26	35	26
27	85	8
28	145	12
29	60	11
30	35	11

COPPER STATE ANALYTICAL
LAB, INC.
REGISTERED ASSAYER
D.A. SHAH
AZ REG. #
710 E. EVANS • TUCSON, AZ 85713 PH

James A. Briscoe
5701 East Glenn Suite 120
Tucson, Arizona 85712

Job: 5360
Received: 12/02/86
Reported: 12/05/86
Sample No 35
Elements: 2

Elements Units	Hg PPB	V PPM
31	20	22
32	-5	22
33	15	76
34	-5	12
35	20	10

END REPORT

October 15, 1971

Mr. H. Clyde Davis
Director, Mineral Development
859 East 2730 North
Provo, Utah 84601

Dear Clyde:

We have sent you under separate cover via Airmail three small samples from Drill Hole #7 at Tombstone. We are still drilling one shift only, and make about 20 feet a day.

Clarence and I think that you should have a serious study made of the samples enclosed yesterday. Note the unusual metal at approximately 3273'. Also you will note that we have run through a section of very good sericite. This is by far the deepest that we have encountered any sericite of this quality.

Both Clarence and I will be in Washington, D. C. all of next week. We will be staying at the Interstate Inn (703) 534-9100. If you think that the hole should be shut down, please call us there and we will call Clark. I think Clarence has a surge of optimism because of what we have encountered at 3200'.

Sincerely yours,

M. S. Horne

MSH:ef

CHEMICAL & MINERALOGICAL SERVICES 3435 SOUTH STATE STREET, SALT LAKE CITY, UTAH 84115 (801) 266-8228

ANALYTICAL REPORT FOR:

Mr. Clyde Davis Brigham Young University	OUR NUMBER 2263
Administration Bldg.	DATE Oct 24, 1971
Provo, Utah Hole #7	CUSTOMER'S ORDER NO.

Sample #	Ag ppm	Cu ppm	Pb ppm	
3233 ft	3.0	20	10	Light Rock – pyrite
3274 ft		20		Darker Rock —
	.03	.002	.001	

Roy Bradshaw

Registered Assayers
OVER 50 YEARS

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.
BOX 50106 1700 W. GRANT RD.,
TUCSON, ARIZONA 85703 (602) 622-4836

BRANCHES
Douglas
Hayden
Morenci
Inspiration
El Paso
St. Louis

IDENTIFICATION		Gold OPT	Silver OPT	Lead %	Copper %	Zinc %	Mo. %
Hole 7							
1	1656-1660		None	< 0.01	< 0.01	0.02	
2	1670-1674		0.01	< 0.01	< 0.01	< 0.01	
3	1674-1678		None	< 0.01	< 0.01	< 0.01	
4	1683-1687		None	< 0.01	< 0.01	< 0.01	
5	1697-1702		0.01	< 0.01	< 0.01	0.14	
6	1702-1706		None	0.03	< 0.01	0.03	
7	1716-1720		None	0.02	0.01	0.26	
8	1722-1725		0.01	0.18	< 0.01	0.01	
9	1775-1779		None	0.02	< 0.01	< 0.01	
10	1839-1843		None	< 0.01	< 0.01	< 0.01	
11	1885-1889		None	< 0.01	< 0.01	< 0.01	
12	2102-2106		None	< 0.01	0.01	< 0.01	
13	2161-2165		None	< 0.01	< 0.01	< 0.01	
14	2209-2213		None	< 0.01	< 0.01	< 0.01	
15	2218-2222		0.01	0.18	< 0.01	< 0.01	
16	2231-2235		None	< 0.01	< 0101	< 0.01	
17	2236-2240		None	< 0.01	< 0.01	< 0.01	

REGISTERED ASSAYER CERTIFICATE NO. 6784 H. E. RICHARD Tucson Arizona U. S. A.

CC: James Stewart Co.
ADD: Attn: Mr. Clark Hughes
CITY: 3033 N. Central Avenue
ADD: Phoenix, Arizona 85012
TY:

REMARKS:
Single analyses

Analysis Cert. By _____

Preparation $ 15.30
Analysis $ 161.50

ACC: JAMES STEWART COMPANY | Date Spl. Received 8/20/71 | Date Compl. 8/25/71 | PNX 345569 | $ 176.80

September 19, 1973

MEMO TO: M. S. Horne

RE: HOLE #8

It is my belief from observation that transition from volcanic to sedimentary rock occurred at a depth of 840-845 feet. At this point there is approximately six feet of fault gouge very, very heavy in ground up metals. No possibility of determination of type without microscopic examination and analysis.

Thorough lab studies and assays of this hole would be to your advantage. A piece of core from 870' location is attached.

CAC/bde

C. A. Cosgrove

September 19, 1973

MEMO TO: M. S. Horne

RE: CHARLESTON

Hole #8 was stopped at depth 872', Monday, September 17.

Strata coordination was found between sediments:

#2 -- 785-797

#8 -- 850-864

A quartzitic material, one which I call sugar quartz. I think Clyde knows what I mean, and can give it its proper nomenclature.

Below this strata there is a transition into fine grained sandstone, very salicaous.

It is well to remember in comparing strata differentials that the collar elevation of Hole #8 is about 50 feet below collar elevation of Hole #2. Hence, the true strata differential is about 115 feet in a horizontal of 340' or a pitch of an angle whose tangent is .0334 plus or minus.

CAC/bde

C. A. Cosgrove

Hole #8

ARIZONA TESTING LABORATORIES

A DIVISION OF CLAUDE E. McLEAN & SON LABORATORIES, INC.
817 WEST MADISON ST. PHOENIX, ARIZONA 85007 PHONE 254-6181

For Mr. C. A. Cosgrove Date September 5, 1973

Sample of ~~XXXX~~ Ore Received: 9/4/73

Submitted by: same

ASSAY CERTIFICATE

Gold figured at $ 100.00 per ounce Silver figured at $ 2.00 per ounce

LAB. NO.	IDENTIFICATION	GOLD		SILVER		PERCENTAGES		
		OZ. PER TON	VALUE	OZ. PER TON	VALUE	COPPER	LEAD	ZINC
5152	8-287'	Nil		Nil		15ppm	35ppm	
	8-347'	Nil		Nil				
	8-488'	0.1ppm		1 ppm				
	8-566'	0.1		46		1200	5.00%	0.59%
	8-598'	0.1		13		70	0.37%	1000pp

RECEIVED
JAMES STEWART CO.
Phoenix, Arizona
SEP 12 1973

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean Jr.

Claude E. McLean, Jr.

394

September 19, 1973

MEMO TO: M. S. HORNE

RE: ASSAY ON LAST SAMPLES

Hole #8, Depth 771:

Silver	.2
Lead	0
Copper	.025
Zinc	2.4

Hole #8, Sample #2, Depth 806:

Silver	.09
Lead	0
Copper	.025
Zinc	0

all was pyrite.

bde

October 10, 1973

Mr. H. Clyde Davis
859 E. 2730 North
Provo, Utah 84601

Dear Clyde:

RE: CHARLESTON - HOLE #9

Under separate cover we are transmitting samples of the volcanics from Hole #9. A brief study of the hole Monday and Tuesday indicated roughly the following.

The first 170 feet is very good serracite completely altered. We then have a horst of andesite, followed by another 40 or 50 feet of serracite. We then break into the andesite which continues down to approximately 515 feet. The top 100 feet of this andesite are fairly heavily metalized with pyrites diminishing as it approaches the 320 foot zone. At 340 feet we pick up a section which I believe is a minable zinc ore section flowing out from both sides of a high grade streak at 346 feet. This high grade streak has zinc sulphide, lead and calcopyrite. The calco extends a couple of feet in each direction from the center, but is the minor constituent of the three metals, with zinc predominant. I have not disturbed this ore zone, but have taken a sample from approximately 15 feet below it and having it assayed by Holley & Holley at Tucson. We are assaying this for all the metals.

The zone immediately below this ore zone for the next 150 feet is interspersed continuously with seams of sphalerite ranging from knife thickness to 1' thick zones. In almost every case the outer fringes of the sphalerite is seemingly oxidized into what I feel is hemimorphite. Also continuously through this section are isolated splotches of possible hemimorphite, some of them with the zinc as a pseudo morph after galena. Continuing on down, we pass the 520 foot zone and go into a couple hundred feet of highly salicious light colored volcanic monzonite heavily metalized with pyrite. However, much of the pyrite is oxidized and this zone also contains the green splotches. There falls below this a zone of a darker material, less heavily metalized with pyrite, but much heavier in the dark green splotches. Also this zone contains intermittent zones of the sphalerite, both in seams and in pocket forms. This hole bottoms out at approximately 900 feet deep with a 30 foot section of breccia.

They were still in the breccia when I left last night and I presume they will have penetrated the sediment today. It is our intention to cut off the hole today and await study of both Holes #8 and #9 before further work is done. The holes are cased for further depth drilling if and when it is deemed necessary.

This hole, to me, is the most interesting hole we have drilled yet. The zinc sphalerite throughout the whole volcanic section occupies practically every seam or fissure available. It also has penetrated both in disseminated form and in splotchy form. This led me to a possible conclusion as to the source of the intrusion bringing the metal in. It is my thinking that the intrusion may lay below the two east-west faults, one which is in the pit and the other a half mile north of the pit. You will recall this is a highly altered fault laying between two definite faults.

Would appreciate your thoughts on this, as well as the investigation into the zinc oxide in the volcanics. If it is zinc oxide, Hole #9 becomes a minable proposition. Regards.

Sincerely,

CAC/bde

C. A. Cosgrove

P.S. I realize that there is a possibility that the green material is one of the chlorides instead of the oxide of zinc, but even if this is true there are sufficient sulphides of zinc and lead that this Hole still leaves me excited.

Clyde Davis
859 East 2730 North
Provo Utah 84601

FROM
C.J. COSGROVE
326 San Vicente Blvd
Santa Monica Calif
90402

Subject Assays - Holes 8 & 9 Date 11/15/73

MESSAGE:

Enclosed are Copies of assays of Holes 8 & 9
Which I Took -
#9-365 was taken outside of what I Considered
an Ore Zone centered on Elevation 346'
which I didn't want disturbed prior to Logging
& Charting.
9-763 was taken to test for Zinc Oxide.

Both Holes deserve study and assay
Work. Surely Hope ASTR does some
Work on them.

NOV 19 1973

Regards
Clarence

Copy 1115 Home

Signed

Rediform 4S 468 ☐ NO REPLY NECESSARY ☐ REPLY REQUESTED—USE REVERSE SIDE

SKYLINE LABS, INC.
Hawley & Hawley, Assayers and Chemists Division
P.O. Box 50106, 1700 W, Grant Rd., Tucson, Arizona 85703

CERTIFICATE OF ANALYSIS

SAMPLE IDENTIFICATION	GOLD oz/ton	SILVER oz/ton	LEAD %	ZINC %	COPPER %	MO			
9-365	<0.005	0.19	0.93	1.36	0.04				

NOV 19 1973

TO:
Mr. C.A. Cosgrove
1923 W. Osborn Road
Phoenix, Arizona 85015

Hole #9

REMARKS:
Single analysis

CERTIFIED BY:

CHARGES:
PREPARATION $
ANALYSIS $ 10.00
Minimum charge

ACCT.:	DATE REC'D:	DATE COMPL.:		
MR. C.A. COSGROVE	10/10/73	10/16/73	348032	$10.00

SKYLINE LABS, INC.
Hawley & Hawley, Assayers and Chemists Division
P. O. Box 50106, 1700 W. Grant Rd., Tucson, Arizona 85703

CERTIFICATE OF ANALYSIS

SAMPLE IDENTIFICATION	GOLD	SILVER	LEAD	ZINC %	COPPER %	MO	ZnO %		
763'				0.44	0.01		0.02		

TO:
Mr. C. A. Cosgrove
1923 W. Osborne
Phoenix, Arizona 85015
cc: Santa Monica, California

(Hole #9)
CAC getting copy to Silver

REMARKS:
Single analysis
Split Core being mailed under separate cover.

CERTIFIED BY:

CHARGES:
PREPARATION $
ANALYSIS $10.00

ACCT.:	DATE REC'D:	DATE COMPL.:		
MR. C.A. COSGROVE	10/12/73	10/18/73	348095	$10.00

COPPER STATE ANALYTICAL LAB., INC.

DNYANENDRA A. SHAH
ARIZONA REG. NO. 8888

REGISTERED ASSAYER
P. O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD
PHONE 602-884-5811
884-5812

300

James Stewart Co.
Attn: Harvey Hays
707 Mayer Central Bldg.
3033 N. Central Ave.
Phoenix, AZ 85012

JOB # 001454
RECEIVED 8/27/82
REPORTED 9/3/82
INVOICE # C 1775

SAMPLE NUMBER		Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
Hole 10							
Box 7	1128-1137	0.04	11.6	0.16%	0.21%	2.10%	12
16	1211-1220	<.01	0.4	12	20	40	
24	1282-1291	0.01	0.5	14	194	500	
25	1291-1300 at 1292	0.01	0.7	20	106	0.60%	
27	1309-1318	<.01	1.8	0.16%	782	0.17%	
28	1318-1328	<.01	0.7	264	0.21%	0.98%	
36	1392-1401-A	<.01	0.7	38	44	55	22
36	1392-1401-B	<.01	0.9	112	0.12%	0.53%	
37	1401-1410	<.01	0.3	22	20	50	
43	1456-1465	0.01	<.2	18	14	54	
45	1475-1484	<.01	<.2	16	12	62	
47	1491-1503	<.01	<.2	15	12	40	
49	1513-1522	<.01	<.2	22	28	114	
61	1623-1632	<.01	1.2	116	491	810	30
62	1632-1642	<.01	0.2	30	40	26	

REGISTERED ASSAYER
CERTIFICATE NO.
8888
Dnyanendra
Amrutlal Shah
DATE SIGNED
Arizona U. S. A.

9-3-82

1 ppm = 0.0001% 1 troy oz./ton = 34.286 ppm 1 ppm = 0.0292 troy oz./ton

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

005

301

COPPER STATE ANALYTICAL LAB., INC.

DNYANENDRA A. SHAH
ARIZONA REG. NO. 8888

REGISTERED ASSAYER
P. O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602—884-5811
884-5812

James Stewart Co.
707 Mayer Central Bldg.
3033 N. Central Ave.
Phoenix, AZ 85012
Attn: Harvey Hays #10 Hole

JOB# 001493
RECEIVED 9/17/82
REPORTED 9/27/82
INVOICE# C 1825

SAMPLE NUMBER		Pb ppm	Cu ppm	Zn ppm			
Box							
75		42	20	48			
100		62	20	160			
125		34	20	64			
135		32	18	50			

REGISTERED ASSAYER CERTIFICATE NO. 8828 Dnyanendra Amrutlal Shah DATE SIGNED 9-27-82 Arizona U. S. A.

1 ppm = 0.0001% 1 troy oz./ton = 34.286 ppm 1 ppm = 0.0292 troy oz./ton

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