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GEOLOGICAL REPORT

- on the -

BLACK WONDER PROPERTY

MOHAVE COUNTY

SAN FRANCISCO MINING DISTRICT

ARIZONA

- for -

RIVIERA EXPLORATIONS LTD.

September 11, 1990
Vancouver, British Columbia

W. G. Timmins P.Eng.
W.G.T. Consultants Ltd.

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GEOLOGICAL REPORT

- on the -

BLACK WONDER PROPERTY

PART "A"

SUMMARY

Riviera Explorations Ltd. has recently acquired 23 lode mining claims and fractions held by location. They are situated some five road miles (8 km) northwest of Oatman, and seven miles (11 km) by gravel road east of Bullhead City, Mohave County, Arizona. The claims are collectively known as the Black Wonder or King's Bonanza Property.

The logistics involved with exploration, development, and production are very good.

The Black Wonder area is situated along the King's Bonanza Fault zone which strikes at 300 degrees and dips 60 to 70 degrees to the northeast. The main structure, possibly a detachment fault, has been traced on surface by geological mapping for a length in excess of 13,200 feet (4,023 m) and is up to 40 feet (12.2 m) in width.

The footwall side of the brecciated fault zone is characterized by the Times quartz monzonite porphyry of mid-Tertiary age, while the hanging wall side is composed of highly fractured, iron-stained, and bleached trachytic andesite, which is typical of the alteration associated with gold deposits spatially related to detachment faults.

Several stages of auriferous quartz and calcite veining, breccia filling and stockworks occur along the structure.

Six holes were diamond drilled in 1961 to test anomalous conditions located by a geophysical survey (method unknown) carried out in 1960. The drilling tested some 2,000 feet (610 m) of the main zone.

Anomalous gold and arsenic values were encountered by a limited geochemical survey carried out by United Southern Mines Inc. in 1984 in an area some 900 feet (274 m) by 250 feet (76 m). Detachment faults generally have arsenic and antimony associated with gold deposition and as distinctive halos to related deposits.

The structure is very similar to those on other properties in the northern portion of the district which contain open-pitable and heap-leachable deposits containing low grade gold and silver values and which have been classified as detachment faults.

CONCLUSIONS

The Black Wonder Property is traversed by the King's Bonanza Fault system, possibly a detachment fault, for a strike length of some 2.5 miles (4 km).

The fault system is characterized by a massive silicified, calcified, and brecciated zone carrying significant gold values.

The footwall of the system is mid-Tertiary quartz monzonite porphyry, whereas the hanging wall is altered and bleached andesite of Tertiary age. The alteration is typical of that related to deposits associated with detachment faults.

Diamond drilling of six holes in 1961, to test anomalous conditions outlined by a 1960 geophysical survey, encountered significant gold and silver values. The drilling tested a strike length of some 2,000 feet (610 m).

Anomalous gold and arsenic values were encountered by a 1984 geochemical survey. Arsenic and antimony occur with gold deposition and as a halo around detachment fault-related gold deposits.

Previous work, costing well in excess of $60,000.00, including trenching, mapping, pitting, shaft sinking, driving of short adits, and diamond drilling has indicated the presence of a potentially significant deposit or deposits of low grade gold-silver values that

would be amenable to open pit mining and recovery by heap leach methods.

Based on information compiled to date, the Black Wonder Property represents a highly favourable gold-silver prospect, exhibiting most, if not all, of the geological characteristics associated with detachment fault gold deposits. The property warrants further exploration.

RECOMMENDATIONS

A preliminary program of diamond drilling is recommended to test the previously drilled section of the favourable zone located within claim #U.S.M. #4.

Contingent upon the positive results of the preliminary drill program, more detailed drilling of the zone should be undertaken to delineate mineralized areas along the extensive strike length of the Black Wonder structure.

It is also recommended that Riviera Explorations Ltd. allocate the sum of $50,000.00US to carry out the recommended preliminary exploration program.

Respectfully submitted,

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
W.G. TIMMINS

September 11, 1990
Vancouver, British Columbia

William G. Timmins, P.Eng.
Consulting Geologist

GEOLOGICAL REPORT

- on the -

BLACK WONDER PROPERTY

PART "B"

INTRODUCTION

Riviera Explorations Ltd. retained the writer to assess the potential of the Black Wonder property located near Bullhead City, Mohave County, Arizona and to recommend an exploration program that would assist in fully evaluating the economic potential of the property.

The writer personally visited the property on January 22, 1987 and has examined and studied geological and geochemical reports, maps, and diamond drill results.

The writer has worked on a number of other projects in the San Francisco Mining District over the past several years.

PROPERTY

The property covers approximately 390 acres and is comprised of 23 lode mining claims and fractions held by location as follows:

CLAIM NAME	BOOK	PAGE	AMC. NUMBER
U.S.M. #4	900	989	191007
U.S.M. #4a	930	261	197695
U.S.M. #5	900	991	191008
U.S.M. #6	900	993	191009
U.S.M. #7	900	995	191010
U.S.M. #7a	930	263	197696
U.S.M. #8	903	835	191969
U.S.M. #9	930	911	198037
U.S.M. #10	907	930	192647
U.S.M. #11	934	683	192648
U.S.M. #12	930	913	198038
U.S.M. #12a	930	915	198030
U.S.M. #13	930	917	198031
U.S.M. #13a	930	919	198032
U.S.M. #36	938	425	199670
U.S.M. #37	938	427	199761
U.S.M. #38	938	840	199932
U.S.M. #39	938	842	199933
U.S.M. #50	928	947	196373
U.S.M. #53	933	458	198587
U.S.M. #54	933	460	198588
U.S.M. #55	933	462	198589
U.S.M. #56	933	464	198590

OWNERSHIP

The claims are held by Riviera Explorations Ltd. The writer has not personally carried out a title search of the claims.

LOCATION

The property is located approximately seven miles (11.3 km) east of Bullhead City, Mohave County, Arizona, in the San Francisco Mining District. Bullhead City lies about 100 miles (161 km) southeast of Las Vegas, Nevada. The claims are situated in portions of T20N; R20W; Sec. 31; and T20N; R21W; Sec. 25, 26, 36, Mohave County, Arizona. (See Figure 1)

ACCESS

The property is easily accessible by automobile along the gravelled Silver Creek Road which runs between Oatman and Bullhead City and passes through the length of the claims.

TOPOGRAPHY

Elevations on the property vary from 1,800 feet (549 m) A.S.L. to 2,200 feet (670 m) A.S.L. with the topography consisting of gently rolling hills. The main relief on the property, some 300 feet (91 m), is manifested in the highly siliceous outcrops of the Black Wonder zone.

CLIMATE

The climate in the district is arid. Temperatures during the summer months average above 90 degrees F (32 degrees C) and during the

winter months about 45 degrees F (7 degrees C). Annual rainfall is less than 10 inches (25 cm).

VEGETATION

Vegetation is sparse and consists of a variety of desert grasses, cacti, sagebrush, thorny brush and greasewood.

WATER

Water wells would be required for any future production. The Silver Creek area appears to be an excellent aquifer.

POWER

Hydroelectric power is available locally.

SUPPLIES AND ACCOMMODATION

Most supplies are readily available from the larger communities in the area. Local communities such as Bullhead City or Kingman have ample accommodation, thus, employees would be able to commute to the site, alleviating costs of camp construction and maintenance.

HISTORY

Gold was first discovered in the Oatman (San Francisco) District in 1863 with the main discoveries of the Gold Road and Tom Reed Veins in 1900 and 1901 respectively.

Rich ore was discovered on the Tom Reed Vein in 1916 and in the same year the United Eastern ore body was developed.
The Gold Road Mine operated from 1900 to 1916, briefly during 1922 and again from 1934 to 1942.

Between 1897 and 1942, the Oatman District produced 2.2 million ounces of gold and 800,000 ounces of silver from over 3.8 million tons of ore at an average grade of 0.58 ounces of gold per ton and 0.17 ounces of silver per ton. Production ceased in 1942 with World War II emergency legislation. The low gold price after the war was not conducive to exploration and development in the district.

In recent years the increase in the price of gold has resulted in a renewed interest in the area to re-evaluate the gold potential in the Oatman District.

The United Eastern Mining Company was incorporated in 1913 to prospect an apparent fault fissure north of the Tip Top ore body. A shaft was sunk at the northern end of Oatman and in March, 1915, a cross-cut driven on the 465-foot level intersected 24 feet of ore which assayed 1.109 ounces of gold/ton ($22.93 per ton with the

price of gold at $20.67 / oz.).

After an ore body estimated to contain gold valued at about $6,000,000 US had been delineated, a 200-ton mill was built and a shaft sunk in the hanging wall of the vein had been completed and equipped by the end of 1916. The mill was later enlarged to a capacity of 300 tons per day.

About the same time, the Big Jim Vein, immediately northeast of the Grey Eagle and Black Eagle claims of the Tom Reed Company, had been discovered. In April, 1917, the United Eastern Company purchased the Big Jim mine. The known ore bodies of the United Eastern property were exhausted by June, 1924. Dump ore was treated in 1925, and there was some production by lessees in 1926.

Considerable diamond drilling was carried out from the eighth and tenth levels where low grade values were encountered. The total yield of the United Eastern Mine from 1917 to 1926 amounted to approximately $14,853,395US (720,000 oz. gold). The average costs per ton amounted to $8.254 of which $4.332 was for mining.

During the early 1930's lessees mined some 50 tons of ore per day from between the 500-and 700-foot levels of the Big Jim Mine. The ore was milled in the Telluride plant of the Oatman Associated Mining Company.

The United Eastern main ore shoot was located on the northeastern

branch of the Tom Reed structure, on the Tom Reed extension claim, where the Gold Road latite was faulted against the Oatman Andesite. The ore shoot was 950 feet long, 750 feet high, and up to 45 feet wide, did not outcrop as a distinct vein, and contained economic values between the third and ninth levels. The vein continues in depth, as low-grade material. The ore consisted partly of massive quartz with adularia and calcite and partly of stringers separated by barren andesite. The ore body produced 511,976 tons with an average gross value of $21.037 per ton (1.018 ounces of gold/ton with the gold price at $20.67 / oz.). The United Eastern Mining Company also mined an ore body on the Big Jim claim which was 850 feet long, 450 feet high, and up to 35 feet wide. It produced 220,552 tons with an average gross value of $17.248 per ton (0.834 ounces of gold/ton: gold price at $20.67 / oz.).

Underground development of the United Western Mine commenced around 1915. A total of 6,700 feet (2040 m) of drifting and cross cutting was done along with 2,750 feet (838 m) of shafts and raises.

Production to 1940, when the mine closed down due to the closure of custom milling facilities, was 40,000 tons at a grade of 0.300 ounces of gold per ton.

Fischer-Watt Mining Company. Ltd., was actively engaged in gold exploration in the Oatman District from 1979 to 1982 and entered into a joint venture with Hecla Mining Company and Canadian Natural Resources in 1981. Due to Hecla's budgetary restraints in late

1982, the joint venture was terminated, however the joint venture did carry out extensive geological mapping, compilation of subsurface data, and diamond drilling on the Tom Reed Vein system.

Sun River Gold Corp. recently acquired the United Western Mine and adjoining properties, and carried out diamond drilling. Reserves are estimated at 734,095 tons (665,971 tonnes) with a weighted average grade of 0.201 ounces of gold/ton (6.892 grams/tonne). The average width of the deposit is 15.7 feet (4.79m). The company is planning to place the deposit into production and is currently negotiating to fund the operation.

The Black Wonder mineral occurrence was first discovered in the mid 1860's around the time of the discovery of the Moss Mine, a short distance to the north.

There were two shafts sunk on the main section of the outcrop: one to a depth of 100 feet (30.5 m); the other to a depth of 65 feet (19.8 m). Several shallow pits were dug and a few short adits were driven.

The property was favourably reported on by Hind & Johnson, Mining and Metallurgical Engineers and Assayers, in 1916 for the Oatman Champion Gold Mines Company. Hind and Johnson reported that they sampled the bottom of the 65 foot (20 m) #1 Shaft which assayed from 0.040 to 0.080 ounces of gold per ton. A similar range of values were encountered from samples taken from the various surface cuts in

the zone. A sample taken from what appeared to be a pocket near the deeper 100 foot #2 Shaft assayed 0.730 ounces of gold per ton. The #2 Shaft was half full of water at the time of their investigation.

A geophysical survey was carried out in 1960 by a Mr. Harold Ferrin for Grubstake Mining Company and in 1961 he supervised the diamond drilling of approximately 915 feet (278.6 m) in six holes. The drilling was done to test the anomalous conditions encountered by the 1960 survey. Mr. Ferrin also split and sampled the core, sending the samples to an undisclosed assayer.

Allen L. Hearst, a Mining Engineer, wrote a letter report dated May 24, 1963 to Grubstake Mining Company recommending that at least six additional diamond drill holes be put down between the Ferrin drill holes. Hearst also stated that there was a reasonable possibility of developing in excess of one million tons of gold-silver ore with a gross value exceeding $7.00 per ton (0.20 ounces of gold per ton) that could be mined by open pit methods.

Since 1982, United Southern Mines Inc., has carried out geological mapping and surface investigations to determine the extent of the mineralized zone.

In 1984 the results of a geochemical survey consisting of 51 soil samples taken along a length of 900 feet (274 m.) on claim #4 and #5 were reported on by James C. Snell, P.Eng.

The sampling was done to test the highly altered hanging wall of the Black Wonder zone. The samples were analyzed geochemically for gold, silver and arsenic. Gold values ran from <10 ppb to 40 ppb and arsenic ran between 2 and 34 ppm. Silver values were of little consequence. (See Figure 5).

A grab sample of breccia taken in 1988 by James C. Snell, P. Eng., from a draw below the site of diamond drill holes #5 and #6 assayed 0.804 ounces of gold/ton. Another grab sample of breccia ran 0.095 ounces of gold/ton.

REGIONAL GEOLOGY

The San Francisco Mining District lies on the western flank of the Black Mountains, a fault-bounded Tertiary volcanic assemblage composed of trachyte, latite, rhyolite, and basalt situated in the southern end of the Basin and Range province.

The Black Mountains are deeply incised on its western flank, but are little eroded to the east. Exposures of Precambrian basement rocks are found on the western margin and in the north end of the district. Except for the capping basalt, the volcanic centre appears to have been in the Oatman area. The volcanic assemblage has a 10 degree dip to the east.

The Tertiary volcanic rocks rest on a Precambrian basement of

schist, gneiss, and granite. The Precambrian rocks are overlain by the Eocene Alcyone Formation, a sequence of trachytic tuffs, latite flows, tuff breccias, lahars and minor sedimentary rocks. The Alcyone Formation was intruded by the Times Porphyry, a rock very similar in composition to the Alcyone, and interpreted as being comagmatic with the Alcyone. The Alcyone Formation is unconformably overlain by the Esperanza Formation, a trachytic flow. The Esperanza Formation is conformably overlain by the Miocene Oatman and Gold Road Formations.

The Oatman Andesite is a sequence of massive to vesicular biotite-poor latite flows, latite tuffs, flow breccias, including minor sedimentary beds, and is approximately 1000 feet (305 m) thick at Oatman, but thins rapidly from the centre of the District .

Conformably overlying the Oatman Andesite is the Gold Road Formation; a sequence of biotite-rich latite flows and minor ash flows and breccias. Maximum thickness is about 800 feet (244 m).

The Esperanza, Oatman and Gold Road Formations are collectively termed the Middle Volcanics. Based on the similarity of distribution of the Oatman and Gold Road Formations and on their petrologic character, it is probable that these rocks were comagmatic and originated from nearby vents.

The Middle Volcanics are unconformably overlain by the Upper Volcanics, a series of trachytes, quartz latites and rhyolite tuffs.

Included are the Antelope Quartz Latite and Sitgreaves Tuff.

The Middle Volcanics, and probably the Upper Volcanics, were intruded by a quartz monzonite pluton; the Moss Porphyry, which is probably comagmatic with the Middle and Upper Volcanics and has been interpreted to be a late-stage epizonal pluton which intruded its own volcanic cover.

Also intruding the Middle Volcanics, and probably the Upper Volcanics, are white rhyolite dikes and domes. The rhyolite is known as the Elephants Tooth Rhyolite.

Deposition of the gold appears to be a late feature associated with a second volcano-plutonic episode.

The mineral deposits at Oatman are typical of epithermal precious metals veins in Tertiary volcanic rocks. They consist of quartz-calcite-adularia open-space fillings along fissure veins within which defined ore shoots containing fine-grained gold occur. Sulfide content is generally low: less than one quarter of one percent.

The ore shoots appear to have a limited vertical range of a few hundred to 1200 feet and exhibit a strong vertical zonation of alteration-mineralization. Many of the ore shoots are blind at the surface, showing only weak alteration with little or barren vein material. Many of the ore bodies have been cut and displaced by

post-mineral faults which closely follow the attitude of the veins.

The characteristics of mined ore shoots are outlined in Table I.

Those ore shoots having greater widths seem to be localized in areas of dilatency along the Tom Reed Vein where significant bends in strike or dip occur. Bends in strike, producing a concave north trace or steepening of dip, have produced the greatest ore shoot widths, such as the United Eastern with widths up to 45 feet.

Mineralization has occurred in most of the ore shoots in several stages of quartz and calcite. Lausen (1935) recognized five stages. The better grade ore shoots typically contain bands of the late-stage green and yellow quartz which occur as streaks through the lower grade early quartz and calcite causing an erratic distribution of values in a given ore shoot. The ore shoots are best developed in those portions of the veins that consist of nearly massive quartz-calcite although a significant portion of the vein zones, particularly the Tom Reed Vein zone, consists of a stockwork of quartz and calcite veinlets.

Two principal vein systems; the Gold Road system and the Tom Reed system, have been responsible for most of the production in the district.

TABLE I

SUMMARY OF ORE BODY CHARACTERISTICS MINED FROM THE TOM REED-UNITED EASTERN AND GOLD ROAD VEINS, OATMAN, ARIZONA

Ore Body	Tonnage	Grade Oz.Au/T	Maximum Dimensions Length	Width	Height
United Eastern	550,000	1.10	450	45	700
Tip Top	250,000	0.70	500	20	1,300
Ben Harrison	250,000	0.70	650	20	750
Big Jim	220,552	0.83	850	35	450
Aztec	500,000	0.75	1,950	35	800
Black Eagle	200,000	0.50	350	10	1,000
United American	140,000	0.50	300	10	1,000
United Western	40,000	0.30	990	6	300
Gold Road	1,500,000	0.32	6,200	22	1,300
Telluride	20,000	1.00	200	2-3	200

GEOLOGY OF THE PROPERTY (Figure 3)

The Black Wonder area is situated along the King's Bonanza Fault, a possible detachment fault, trending about 300 degrees and dipping approximately 60 to 70 degrees to the northeast.

The structure appears to be the western extension of the Gold Road Vein that also passes through the northern portion of the claims held by Sun River Gold Corp. approximately one mile east of the Black Wonder property.

The footwall side of the fault is characterized by mid Tertiary quartz monzonite, while the hanging wall side is composed of highly fractured, iron-stained, and bleached Tertiary andesite, typical of alteration associated with detachment fault-related gold deposits.

The Black Wonder area contains numerous faults and rhyolite dikes less prominent than the main fault structure. The main structure is exposed for a length of more than 13,200 feet (4,023 m) and is up to 40 feet (12.2 m) wide at the surface. Numerous pits, trenches, short adits, and shafts are located along the main structure.

The main zone is cut by numerous step faults and cross faults cutting the zone at a 75 degree angle.

MINERALIZATION

Numerous auriferous quartz and calcite veins and veinlets occur in the brecciated "rhyolitic" porphyry along the Black Wonder structure. Quartz and calcite also form the matrix of the fault breccia. Several stages of quartz and calcite occur in the veins with one replacing the other.

Curvatures of the structure, forming dilatant zones, may have contributed to the emplacement of precious metal values.

A grab sample of calcite-rhyolite breccia taken by James C. Snell, P. Eng., from the face of the collar of an adit in a draw below the site of diamond drill holes #5 and #6 assayed 0.804 ounces of gold/ton. The sample was assayed by Min-En Laboratories Ltd. of North Vancouver, B. C., (certificate # 8-47/P1, Jan. 21/88). Another grab sample of rhyolite-quartz breccia ran 0.095 ounces of gold/ton.

DIAMOND DRILLING (1960-1961)

The following drill hole information is taken from a report written by Mr. Harold Ferrin, dated December 27, 1961, for Grubstake Mining Company. Mr. Ferrin split and sampled the core and sent the samples to an unidentified assayer. There were no assay certificates available to the writer.

Diamond Drill Hole	Dip	Length	Intercept	Au oz./T	Ag oz./T
No. 1	-90	155'	65'-85'	0.195	0.49
No. 2	-90	147'	65'-75'	0.120	1.18
			102'-110'	0.040	0.15
No. 3	-82	162'	75'-85'	0.186	0.54
			110'-120'	0.600	0.88
No. 4	-90	200'	110'-115'	0.411	0.97
			190'-200'	0.120	0.14
No. 5	-90	90'	40'-75'	0.309	0.64
No. 6	-90	155'	60'-75'	0.280	1.89
			105'-115'	0.110	0.42

(See Figure 4 for drill hole locations)

The sampling was done in a "spot check" fashion. Core was split that represented favourable strata, and other samples were taken to check values in various formations. Sections of silicification carried much better values than those that were predominantly calcite. Considerable pyrite was encountered in drill hole No. 3 and No. 6.

EXPLORATION PROGRAM

A preliminary diamond drill program should be undertaken to verify the results reported from the 1961 diamond drill program and to fill in between some of the existing drill holes. Several proposed holes have been located on the ground for this purpose.

Contingent upon the results of the preliminary drill program, a second phase of exploration consisting of geochemical surveying and drilling should be implemented.

ESTIMATED COSTS OF EXPLORATION PROGRAM

Diamond Drilling, 1,000 feet @ $35/ft. all incl.....	$ 35,000
Assays, freight, logging and splitting.....	3,000
Engineering, supervision, transportation etc.....	5,000
Contingencies @ 15%.....	6,500
Total.....	$ 49,500
Say.....	$ 50,000

It is estimated that the initial exploration program should take approximately one month to complete.

Respectfully submitted,

September 11, 1990
Vancouver, British Columbia

William G. Timmins, P.Eng.
Consulting Geologist.

CERTIFICATE

I, William G. Timmins, of the City of Vancouver, in the Province of British Columbia, hereby certify that:

1. I am a geologist with offices at #604-595 Howe Street, Vancouver British Columbia; practising my profession for 24 years.

2. I am a graduate of Haileybury School of Mines, and attended Michigan Technological University.

3. I am a member of the Association of Professional Engineers of British Columbia and the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

4. This report is based on a study of published and private reports and maps, government reports, historical data, and a personal examination of the property on January 22, 1987.

5. I have no direct or indirect interest in the property described herein, nor in the securities of Riviera Explorations Ltd. or its affiliates, and do not expect to receive any such interest.

6. I hereby consent to the use of this report by the company in connection with a Prospectus, Filing Statement, or Statement of Material Facts relating to the raising of funds for this project.

Dated in Vancouver, in the Province of British Columbia, this 11th day of September, 1990.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
W. G. TIMMINS

William G. Timmins, P.Eng.
Consulting Geologist

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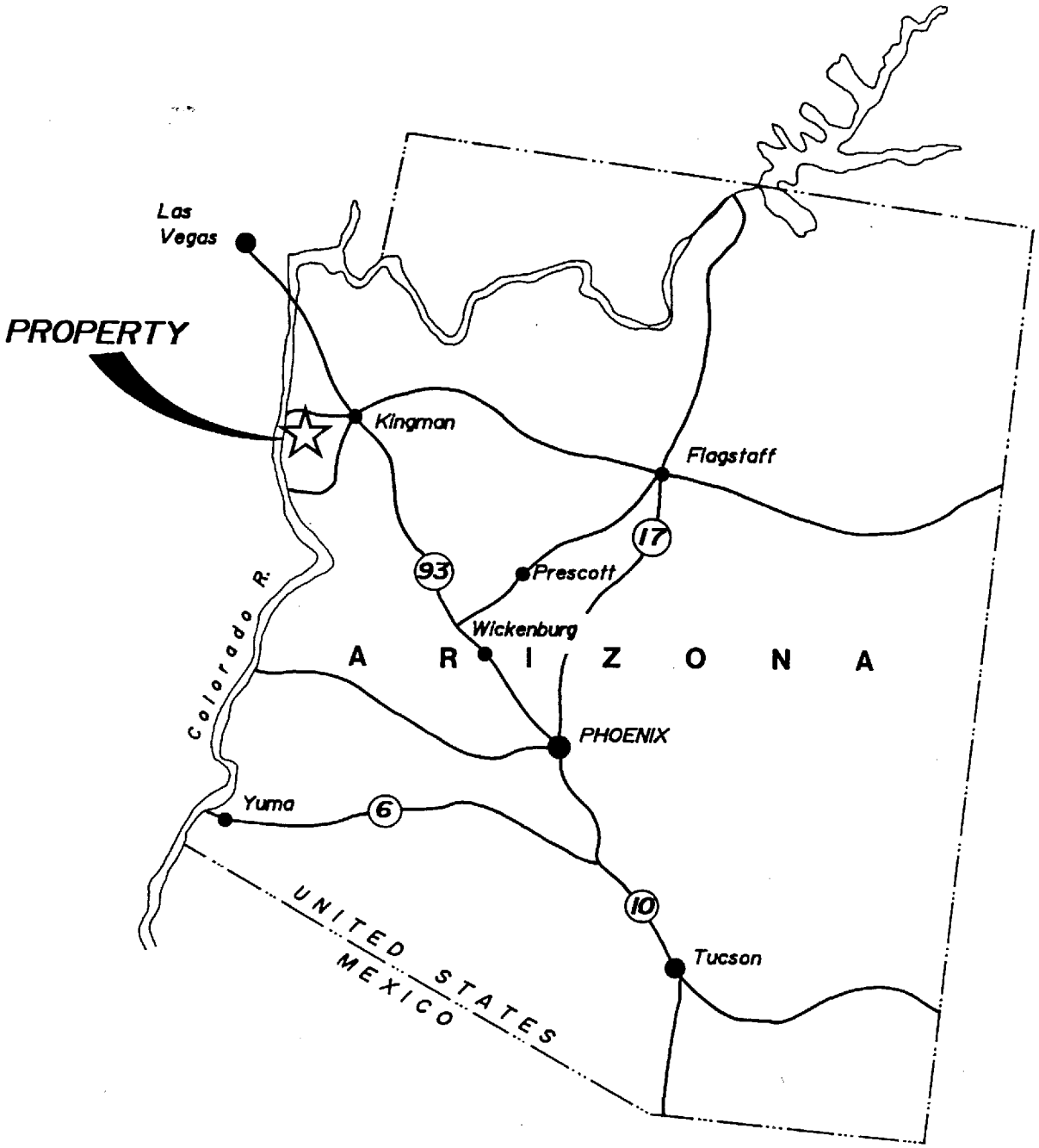
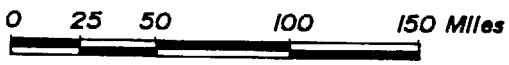
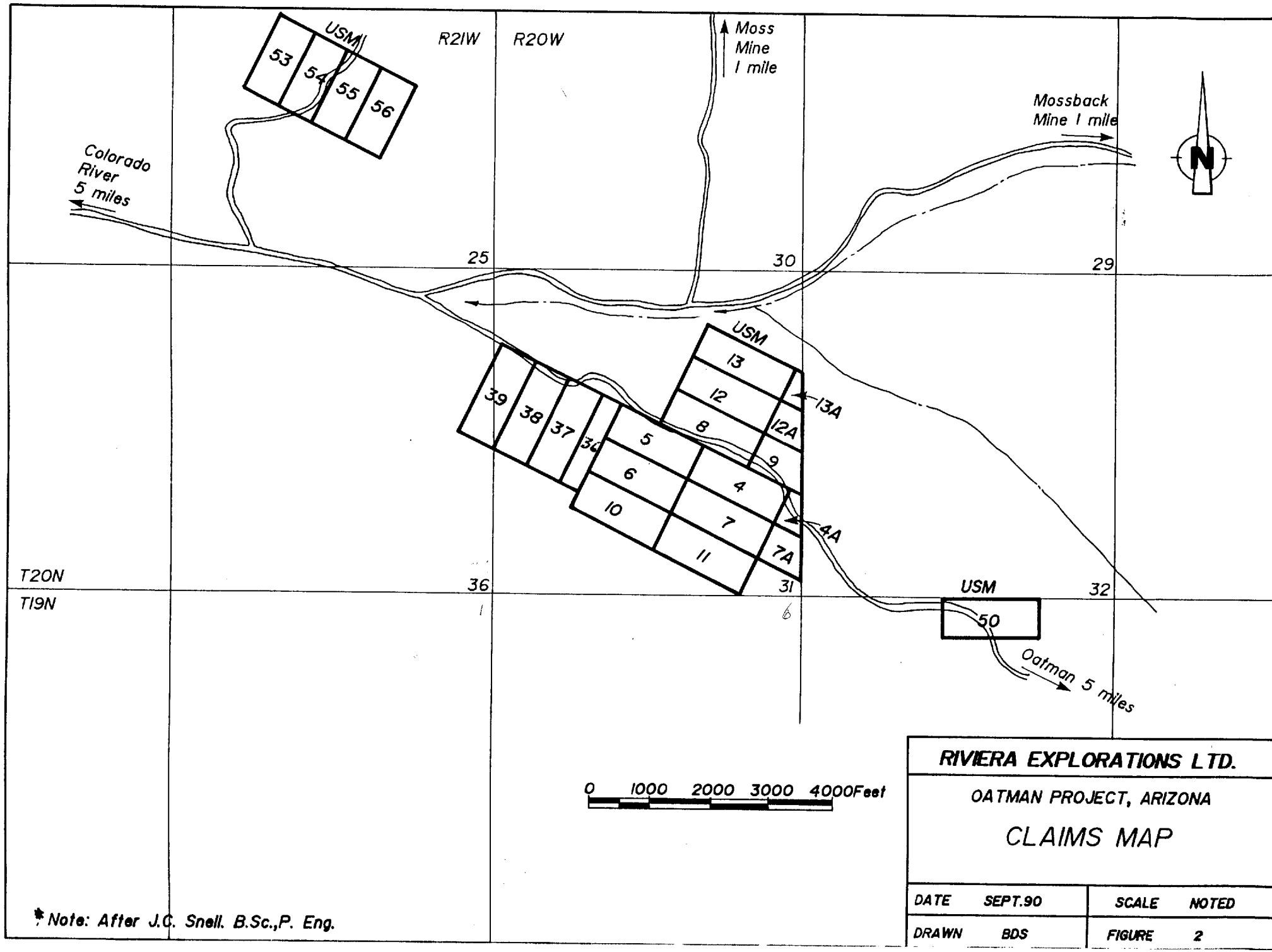
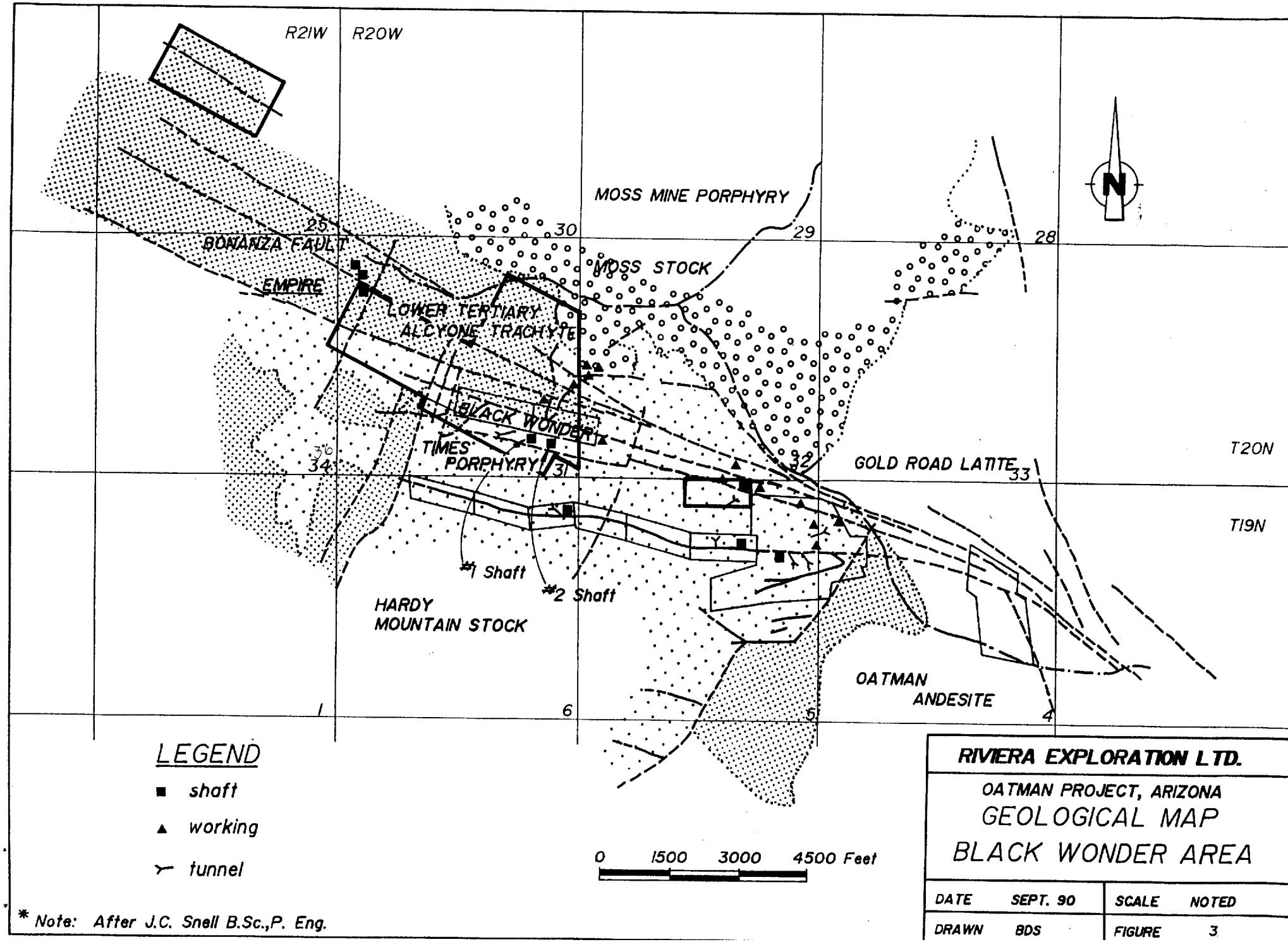




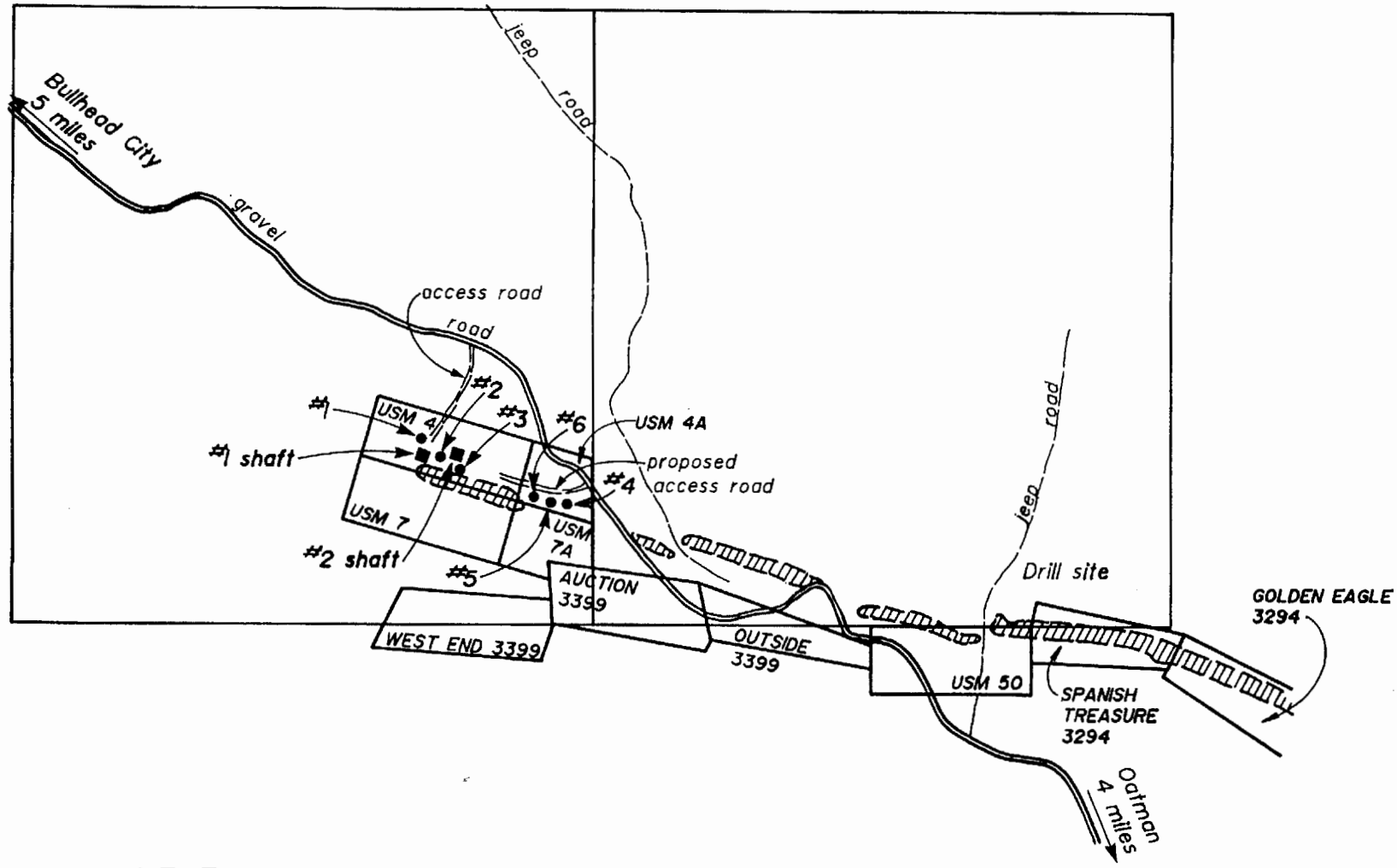
RIVIERA EXPLORATIONS LTD.	
OATMAN PROJECT, ARIZONA	
LOCATION MAP	
DATE SEPT. 90	SCALE NOTED
DRAWN BDS	FIGURE 1

*Note : After J.C. Snell B.Sc.,P. Eng.


USM
53
54
55
56
R21W
R20W
Moss
Mine
1 mile
Mossback
Mine 1 mile
Colorado
River
5 miles
N
25
30
29
USM
13
12
8
9
13A
12A
39
38
37
36
5
6
10
4
7
11
4A
7A
T20N
T19N
36
31
32
USM
50
Oatman 5 miles
0 1000 2000 3000 4000Feet
RIVIERA EXPLORATIONS LTD.
OATMAN PROJECT, ARIZONA
CLAIMS MAP
DATE SEPT.90
SCALE NOTED
DRAWN BDS
FIGURE 2
* Note: After J.C. Snell. B.Sc.,P. Eng.



* Note: After J.C. Snell B.Sc.,P. Eng.



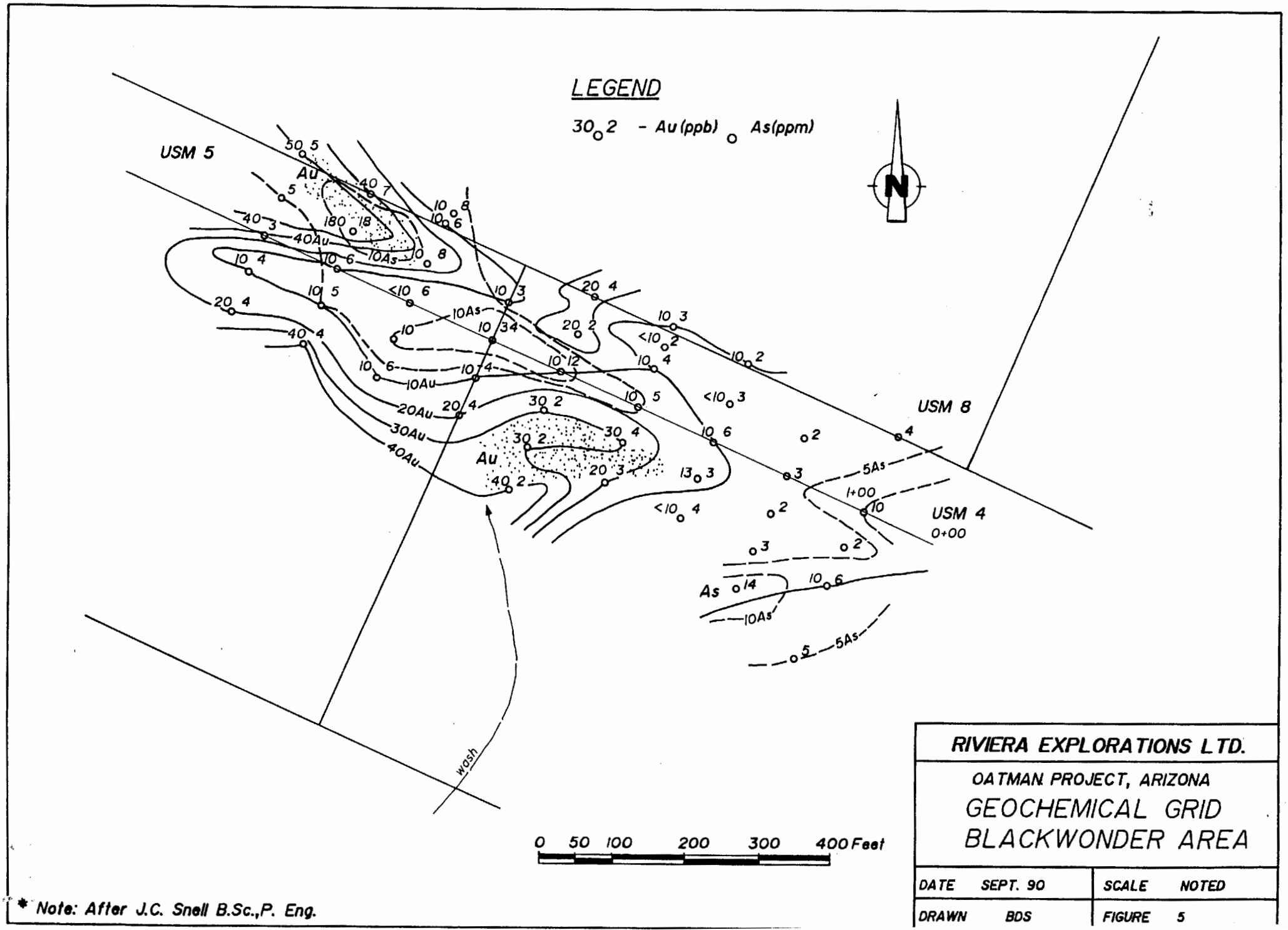
LEGEND

- drill hole location
- shaft
- mineralized zone

0 500 1000 2000 3000 4000Ft.

*Note: After J.C. Snell B.Sc.,P. Eng.

RIVIERA EXPLORATIONS LTD.	
OATMAN PROJECT, ARIZONA	
DDH LOCATION MAP	
DATE SEPT. 90	SCALE NOTED
DRAWN BDS	FIGURE 4



* Note: After J.C. Snell B.Sc.,P. Eng.

GEOLOGICAL REPORT

WITH

EXPLORATION AND DEVELOPMENT

RECOMMENDATIONS

ON

THE KING'S BONANZA PROPERTY

SAN FRANCISCO MINING DISTRICT

MOHAVE COUNTY, ARIZONA

FOR

UNITED SOUTHERN MINES INC.

DENVER, COLORADO, USA.

MARCH 1983

JAMES C. SNELL B.Sc., P.Eng.
Geological Engineer.

Mr. R.F.J. Newsom, Chairman
United Southern Mines Inc.
Denver, Colorado, USA.

Vancouver, B.C.
Canada
March 1983

Dear Sir:

Please find undercover my report on the King's Bonanza Mineral Property of United Southern Mines Inc. This report details the geology and ore potential of the King's Bonanza Fault located by yourself and the writer in the Oatman District, Mohave County, Arizona.

The writer believes that this major mineralized structure will take years to fully explore and develop. Cash flow should be achieved on the short term in order to finance a long term program.

As per your request this report outlines an exploration and development program and budget with reference to an initial production target of 1000 tons per day from open pit ore reserve sources.

Respectfully Submitted,

James Snell

James C. Snell B.Sc. P.Eng.
Geological Engineer.

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Fig. 8	Diamond Drill Sections 3

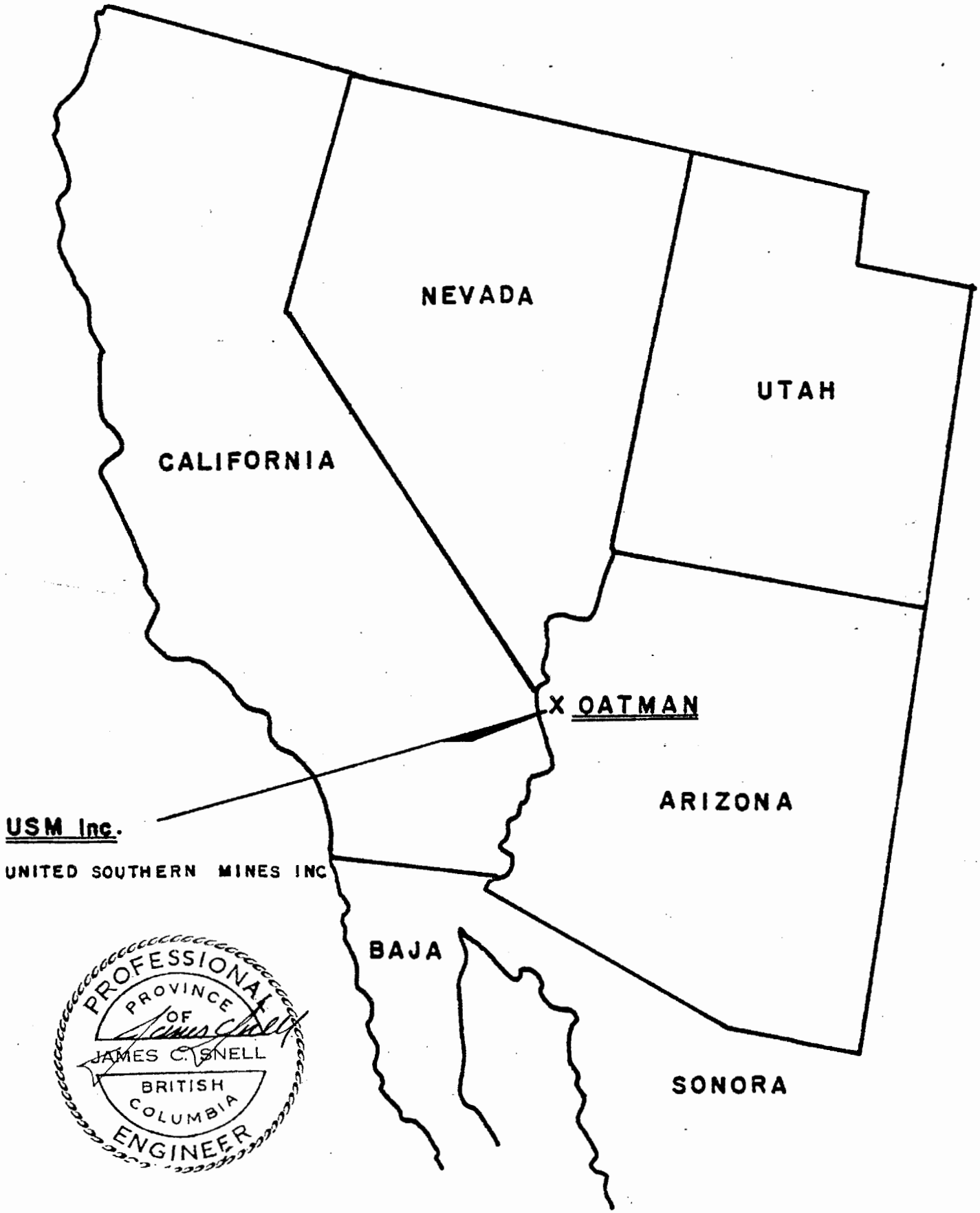


FIG. I Location Map - UNITED SOUTHERN MINES INC.

INTRODUCTION

INTRODUCTION

The writer has been requested by Mr. R.F.J. Newsom, Chairman, United Southern Mines Inc. to complete a geological report on the Company mineral properties located along lower Silver Creek in the Oatman Camp, San Francisco Mining District, Mohave County, Arizona.

The writer accompanied by Mr. Newsom conducted field investigations and completed comprehensive geological research of the Oatman Area in 1982. It was recommended that a large block of mineral claims be located on open ground along an extensive mineralized fault structure striking on a northwesterly bearing through lower Silver Creek Valley, five miles northwest of Oatman.

The King's Bonanza Fault zone, averaging approximately 2000 feet in width, extends northwesterly for a strike length of approximately five miles, from sec.3; T.19N, R20W to sec.26; T20N, R21W. The company has located mineral claims along this structure over a strike length of 2 1/2 miles in sections 25,26,36,31.

Mineralized outcrops occur on several properties owned by the Company including the Black Wonder, the Empire and the Bonanza. These properties are situated from east to west along the geologically favourable mineral zone.

The property overlies a contact between Lower Tertiary Alcyone Trachyte, Mid Tertiary Times Porphyry and the slightly younger Moss Mine Porphyry. The host rocks have been intruded by extensive porphyry and pegmatite dyke systems across widths of up to 2000 feet within the boundries of the fault.

Associated with dyke intrusion is a high degree of silicification , calcification, alteration, contact metamorphism, brecciation and veining. This confined hydrothermal activity has resulted in a very wide spread auriferous environment within the boundries of the fault. Free gold is the essential economic mineral present and may be associated with very minor pyrite and some silver. Dyke systems, host rocks and vein breccia zones are all gold bearing locally.

The Oatman area is considered by the writer to be a very significant gold province that will require many years to fully develop and exploit.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

It can be concluded from geological research, field investigations and available technical data, including 6 diamond drill holes that the King's Bonanza Property has high potential for exploration, development and production.

The King's Bonanza Fault strikes at 300 degrees for a distance of 2 1/2 miles through the Company property and maintains an average width of 2000 feet. Located within the boundries of this favourable geological environment are such historic properties as the Black Wonder, the Empire and the Silver Creek Bonanza.

The ore occurance is free gold in (1)quartz and calcite veins and veinlets (2)altered quartz porphyry and quartz monzonite dykes (3)high silica, contact metamorphic alteration in the host rocks (4)breccia zones.

Diamond drill results obtained from 1960 records indicate 3 million tons of ore available for open pit mining on the east part of the property. This ore may be classified as drill indicated probable ore with a grade estimate of .125-.150 ounces gold per ton equivalent (includes silver). This ore reserve is on the southeast corner of the Black Wonder property. (These reserve estimates where compiled from data by Ferrin - geophysicist 1960-1961. This data appears to be accurate.) Exceptionally large tonnages of geologically inferred ore occur on the property. Reserves on the east part of the property alone may be as much as 100,000,000 tons. This estimate has been made following examination of drill results, outcrop areas, mine workings and prospect pits.

Two miles to the northwest, along the strike of the King's Bonanza Fault; underground shaft and workings on the Bonanza property expose identical geological conditions and mineralized structure. The underground workings and surface pits on this property indicate potential ore of approximately one million tons of similar grade. .125-.150 ounces gold per ton. Possible ore in this area cannot be estimated at the present time but would probably be several times the potential ore reserve estimate.

Field investigations provided sufficient information to establish the geological parameters for economic mineralization. The deposits are confined within the King's Bonanza Fault and the Moss Fault structures. A drill tonnage estimate made by Allen Hearst of one million tons of 0.200 ounces gold per ton is considered by the writer to be conservative. The writer considers that drill indicated tonnage and reserves outlined by underground workings is approximately 4,000,000 tons with a grade of .125-.150 ounces gold per ton. This figure includes 1,000,000 tons on the Bonanza property. These reserves will require preproduction development drilling to prove up ore body configuration and to confirm final values.

PROFESSIONAL
PROVINCE OF
JAMES C. SNELL
BRITISH COLUMBIA
ENGINEER

TONNAGE AND GRADE CALCULATION (Gold @ $400.00)

	TONNAGE	GRADE	VALUE $
Block A	1,837,500	$36.00	66,150,000
B	337,500	$96.00	32,400,000
C	800,000	$66.00	52,800,000
D	337,500	$67.00	22,612,500
Total	3,312,500	$53.00	$173,962,500

Average Grade Estimate .133 oz. gold per ton

(1) Gold @ $400.00 = $53.00

(2) Gold @ $300.00 = $40.00

(3) Gold @ $500.00 = $66.00

Cost Estimate - 1000TPD open pit = $15.00 per ton.

Average - Blocks B,C,D (Gold @ $400.00)

Grade Estimate 0.190 oz. gold per ton.

Tonnage	Grade	Value
1,475,000	$76.00	$112,100,000

GEOLOGICALLY INFERRED TONNAGE - EAST SECTION

$$2000\text{'length} \times \frac{1000\text{'width}}{10} \times 500\text{'in depth} = 100{,}000{,}000 \text{ Tons}$$

Production - 10,000 TPD - cost est. $10.00

grade est. $53.00

profit est. $43.00

CASH FLOW ESTIMATE ON PROBABLE RESERVES - (Gold @ $400.00)

Initial Production Rate -	1000TPD
Gross Ore Value Estimate -(.125ozAu)	$50.00 per ton
Mining and Milling Cost Estimate -	$15.00 per ton
Profit Estimate -	$35.00 per ton
Probable Reserve Estimate -	4,000,000
Gross Reserve Value -	$200,000,000
Net Reserve Value -	$140,000,000
Production Period -	11 years
Estimate Annual Profit -	$12.6 million
Safety Factor 10% -	$1.3 million
Profit Estimate per year -	$11.3 million (10 million plus)

==========

RECOMMENDATIONS

It is recommended that a detailed exploration and development program be conducted on the King's Bonanza Fault. Such a program will probably require a number of years and it is recommended initially that the present reserves be proven and the property brought into production. Prior to commencement of development drilling, selected targets should be investigated with individual diamond drill holes along the 2 1/2 mile strike of the King's Bonanza Fault. These targets would be selected on the basis of structure, alteration, brecciation and mineralization. Several areas of interest occur on and between the Black Wonder, Empire, and Bonanza.

Development priorities would be finalized following the initial investigation. Development of the present reserves would be undertaken as part of this program.

It is recommended that a 1000TPD production objective be considered initially. Production can be scaled up in units of 1000TPD as additional reserves are developed. Operating costs would consequently be reduced and ore reserves would increase as production grade requirements drop through increased milling capacity. Initial production would commence on the highest grade reserve area in order to achieve maximum initial cash flow. Lead time to cash flow would be reduced by limiting the initial rate of production to 1000TPD. Development and preproduction costs would be reduced for the same reason. Exploration and development along the King's Bonanza Fault can proceed in time. This work would be financed from production profits. The structure and surface alluvial has a production potential of many years.

A proven ore requirement of four million tons grading .125-.150 ounces gold per ton (equivalent) would be considered sufficient to justify a production decision. This would require the location and development of a block of ore with the following volumn: length 1000 feet x width 400 feet x depth 100 feet. This objective is recommended and has in part been achieved. (See probable reserve detail).

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
JAMES C. SNELL

PROGRAM AND BUDGET

PROGRAM AND BUDGET

A control survey has been established at the present time and has been utilized for claim staking purposes. This base line can be utilized for survey control of the entire project. The claim number can be utilized for reference to a particular working area.

PROGRAM A EXPLORATION AND DEVELOPMENT

PHASE I

(1) Establish a north-south survey grid at the Black Wonder, Empire and Bonanza. Establish a 400 foot grid interval. Tie the grid into the base line.

(2) Draw a base plan for the project.

(3) Map and plot bedrock geology at the Black Wonder, Empire and Bonanza on the 400 foot grid.

PHASE II

Drill Program No.1 - Preliminary drill program
- Selective drilling of favourable structural targets and mineral zones. 5000 feet.
- Complete assay plans and sections.

PHASE III

Drill Program No.2 - Development drill program
Probable ore reserves.
- 100 foot drill grid interval.
- Verticle holes if possible.
- Assay plans and sections
- Tonnage and grade calculations
- 40 holes to 250 feet - 10,000 ft.

PHASE IV

Drill Program No.3 - Development Drill Program Selected Targets.

- Same as program No.2.

PHASE V - Tonnage and Grade Calculations

- Production Feasibility Study

PROGRAM B PREPRODUCTION

PHASE VI - Concentrator Design

PHASE VII - Pit Preparation, Ore Stockpile

PHASE VIII - Concentrator and Crusher Construction

PROGRAM C - Production Capital Requirements.

BUDGET

PROGRAM A EXPLORATION AND DEVELOPMENT

PHASE I	- Survey	=	$5,000.	
	- Plan and geology	=	$5,000.	
	- Vehicle purchase (2 pickups)	=	$25,000.	
	- Contingencies	=	$5,000.	= $40,000.00
PHASE II	- Drill Program No.1			
	5000 feet at $20.00	=	$100,000	
	Supervision, assays 20%	=	20,000	
	Contingencies 10%	=	10,000	= $130,000.00
PHASE III	- Drill Program No.2			
	10,000 feet at $20.00	=	$200,000	
	Supervision, assays 20%	=	40,000	
	Contingencies 10%	=	20,000	= $260,000.00
PHASE IV	- Drill Program No.3			= $260,000.00
	- Same as program No.2.			

PHASE V	- Tonnage and Grade Evaluation	= $25,000	
	- Engineering Feasibility	= $75,000	
			= $100,000.00

	PROGRAM A	Subtotal =	$790,000.00
			($800,000.00)

PROGRAM B PREPRODUCTION

PHASE VI	Concentrator Design	$100,000.00
PHASE VII	Mine Preparation; Stockpile 100,000 Tons @ $10.00 Contract.	$1,000,000.00
PHASE VIII	Crusher and Concentrator Construction 1000TPD.	$3,500,000.00

	PROGRAM B Subtotal =	$4,600,000.00

PROGRAM C PRODUCTION CAPITAL STARTUP REQUIREMENTS

Period - 90 days

Rate - 1000TPD

Cost - $15.00 per Ton

Subtotal = $1,350,000.00

Total = $6,750,000.00

==========

ESTIMATED CASH FLOW RETURNS FOR STARTUP PERIOD.

- 90 day production period.

- Grade estimate - .125oz. Gold per Ton

Gold at $400.00 = $50.00

90,000 Tons x $50.00

= $4,500,000.00

==========

SUMMARY

Diamond drill records, underground workings and related geological projection indicate probable ore reserves of 4 million tons with an estimated grade of .125 ounces gold per ton. These reserves are located on the King's Bonanza Property of United Southern Mines Inc.

Exceptionally large geologically inferred reserves occur on the property which require future exploration and development.

PROGRAM A, an $800,000.00 exploration and development program has been recommended. Depending on the results of this program; PROGRAM B, preproduction and production can be instituted.

A proven reserve of four million tons grading .125 ounces gold per ton would be considered sufficient to justify a production decision at approximately 1000TPD.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
JAMES C. SNELL

Respectfully Submitted

James C. Snell B.Sc. P.Eng.
Geological Engineer.

GENERAL

LOCATION AND ACCESS

(114 degrees 25'W - 35 degrees 05'N)

The King's Bonanza Property is held by location and consists of 40 contiguous mineral claims. The property is situated between five and eight miles northwest of Oatman, Arizona on lower Silver Creek.

114 degrees 25'W - 35 degrees 05'N	Sec 31, Twp 20N, R20W
	Sec 36, Twp 20N, R21W
	Sec 25, Twp 20N, R21W
	Sec 26, Twp 20N, R21W

The property is reached by all weather gravel road, that runs between Oatman and Bullhead. The property is seven miles from Bullhead on the Colorado River and about the same distance from Oatman. A power line is located approximately 1 mile west of the Bonanza and a gas pipeline is located 3 miles east of the Black Wonder. Paved highways service Oatman and Bullhead.

GEOGRAPHY

The property is located within the Black Mountain Range of northwest Arizona, along the lower slopes and valley bottom of Silver Creek Wash. Elevations range from 1600 feet in the west to 2600 feet in the east. Mineralization is exposed over a verticle range of 1000 feet. Mineralized structures are located on exposed bedrock over approximately 35% of the strike length. The balance of the structure is covered beneath Quaternary alluvium of the front range mesa and beneath the gravels of Silver Creek Wash. Topography is gentle rolling to flat mesa and is only locally precipitous along silica enriched outcrops. The climate is very arid at low elevations within the Mohave Desert. Rainfall is sparse, generally less than 10" per year and temperatures average 70-80 degrees with cooler winters and long very hot summers. Vegetation is desert type, consisting of cactus, thorny brush, sage and greasewood.

HISTORY

HISTORY

BLACK WONDER PROPERTY

The writer has no information as to when the property was originally located. Old tunnels, shafts and prospect pits suggest that prospectors worked the area at the time of the discovery of the Moss Mine situated just to the north. This period would be between the years 1860 and 1865.

On record are 2 reports by geophysicist, Harold Ferrin, dated June 1, 1960 and December 21, 1961; the property at that time was called the Silver Creek Grubsteak. Another letter on file is from an Allen L. Hearst of Oroville, California to Mr. L. Moss of Oatman, Arizona; describing the potential of the Black Wonder Property.

A geophysical survey was conducted by Ferrin in 1960 for the purpose of outlining mineral zones and ore shoots. The geology and mineralogy is described briefly and as well the results of the geophysical survey.

According to Ferrin, the geophysical survey recorded nine ore bodies with potential commercial value for open pit mining along 2400 feet of structure. Anomylous conditions 1,2,3,4 have really been described as one large deposit that has been segmented by faulting. According to Ferrin a 50 foot shaft is located on the No.1 deposit exposing commercial ore throughout. Part of the No.8 deposit is exposed in the side of a wash and assayed $20.00 ($400.00) on the surface. Mr. Ferrin recommends 11 drill holes in order to explore the mineral zones located by geophysical methods. Mr. Ferrin indicates that open pit mining methods could be utilized successfully on the property due to nature of the mineral zone and the character of the topography.

During the later part of 1960 and 1961 six diamond drill holes were completed to explore the mineralization outlined by Ferrin's work. The report of 1962 details the results of this drill program. Only 6 of the 11 holes recommended were completed due to a lack of financing. Spot lengths of core were split and assayed and all the drill holes intersected commercial gold and silver ore. Quoting from Ferrins report of 1962 "The purpose of this supplementary report is to verify and establish proof of the existing ore zones as set forth in my original report dated June 1, 1960. This has been done by means of diamond drilling the ore bodies as recommended in the geophysical report."

It is the writers opinion that the mineralization on the property as located by geophysics and drilling can not as yet be considered proven ore but is in fact drill indicated probable ore that will require further development in order to establish final configuration.

In his letter of May 24, 1963 to Mr. Lloyd Moss; President of the Grubstake Mining Company, Mr. Allen Hearst gives his analysis of the Black Wonder property at the request of Mr. Moss.

"The Black Wonder can in my opinion be developed as a profitable open pit gold property."

"It would appear that there is a reasonable possibility of developing in excess of one million tons of gold-silver ore with a gross value exceeding $7.00 ($80.00) per ton.

Mr. Hearst suggests that at least six additional drill holes will be required to prove the ore body. It is the writers opinion that more development drilling than this will be required to outline the ore body in detail. It is also anticipated that a much larger ore body exists on the Black Wonder with a lower but economic grade.

Assay Logs (Gold @ $400.00 Silver @ $10.00)

		Gold $		Silver $		Total $	
Hole No.	Footage	1962	1983	1962	1983	1983	Average
1	65'-75'	5.25	60.00	.49	4.90	64.90	
	75'-85'	8.40	96.00	.50	5.00	101.00	82.95
2	65'-75'	4.20	48.00	1.18	11.80	59.80	
	102'-110'	1.40	16.00	.15	1.50	17.50	38.65
3	75'-85'	6.50	74.00	.54	5.40	79.40	
	110'-120'	21.00	240.00	.88	8.80	248.80	164.10
4	110'-115'	14.40	164.00	.97	9.70	173.70	
	190'-200'	4.20	48.00	.14	1.40	49.40	111.55
5	40'-60'	4.20	48.40	.69	6.90	54.30	
	60'-75'	19.60	224.00	.58	5.80	229.80	142.35

6	60'-75'	9.80	112.00	1.89	18.90	130.90	
	105'-115'	3.85	44.00	.42	4.20	48.20	89.55

Gold

Calculated sample average - 0.260oz per ton.= 104.85

Estimate hole average - 60% = 62.91

Gold equivalent - 0.155oz per ton

Grade used for cash flow calculations - 0.125oz per ton.

EXPLANATION:RESERVE CALCULATIONS

It can be noted that two spot samples were taken from the core of each drill hole. According to Ferrin these spot samples were taken on the basis of geophysics? Due to the uniform geological conditions the writer has been able to assign values over the length of the hole. In order to establish a probable grade for each hole the average sample grades were reduced by 40%.

The average grade established, has been assigned to the probable tonnage inferred by that hole. The grade of the entire orebody is the weighted average value established for these separate ore blocks. Values are in gold and silver from the dyke material and altered country rock sampled. Development drilling will be required to confirm the grade established.

SUMMARY OF HISTORICAL DATA - BONANZA PROPERTY 1922-1940

Main vein 20 feet wide, strike N45W. Gold values have been panned from the wall rock. Gold can also be panned from the other veins of the group. Two big dykes traverse the ground. The whole surrounding country is mineralized. The property lies at a low elevation and pay ore has been exposed on surface by erosion. The work of cutting out the roadway resulted in cutting 36 feet of ore averaging $12.80 ($256.00). On the surface of the Bonanza are the big placer mines of the district (Gold Gulch Placers). It is probable that the gold came from the network of veins gridironing the country. The Silver Creek Bonanza Mining Company property is situated on lower Silver Creek. Property consists of eleven claims, everyone showing vein outcrop. The two most important veins in the system show their outcrop on the Woodrow Wilson and Thomas Jefferson claim. The property is located south of the Moss Mine.

The veins converging into the area are from the Hardy, Moss and Ruth. The 150 foot shaft has been sunk close to the north end of the property. Good ore was encountered all the way down. The vein was found to be better than 30 feet wide and sections of it carry values as high as $80.00 ($1600.00). The vein has been opened up for more than 2000 feet in length. Parallel veins also carry good values. All these veins can be reached from one development shaft. Efforts have been made to pick up the main gravel channel which is supposed to carry the better pay dirt in the big gravel deposit covering the veins of the Bonanza in Silver Creek. Development of the mine to 500 or 600 feet is a necessity. Work should be carried along the big vein and the country crosscut for a considerable distance.

HISTORY

Silver Creek Bonanza Mining Co.

January 20, 1922 - Mohave County Miner.

The property consists of eleven full claims, situated on lower Silver Creek, every claim showing vein outcrop. The two most important veins in the system show their outcrop on the Woodrow Wilson and Thomas Jefferson; these veins being large and potential. On the Thomas Jefferson claim a vein 20 feet wide has been opened in many places for a length of 450 feet, pannings being obtained at every point.

A superficial shaft has been sunk at a point midway of the claim, that brings to light a most interesting vein condition. Even in the wall rock gold values may be panned. The ore in the big vein pans high mill values. There are some low grade inclusions in the vein. The vein at this point is big and soft and gives evidence of opening into one of the big producers of the district.

Gold can be panned from the other veins of the group and for a distance of a square acre, gold is found through the alluvial showing the disintegration of the vein higher upon the side of the mountain.

Two big dykes traverse the ground embraced in the company holdings and it is probably the presence of these dykes that is responsible for the enrichment of the veins. The whole surrounding country is mineralized. The property lies at a low elevation and at a low horizon. Due to erosion pay ore is exposed on surface.

On the high buttes to the east of this property important placer ground has been found as well as rich outcrops of gold ore. These veins have a strike westward toward the holdings of Silver Creek Bonanza.

July 11, 1924 Mohave County Miner.

The work of cutting out the roadway along the side of the canyon, resulted in the cutting of 36 feet of ore, that gave an average of $12.80 per ton ($256.00). This is the vein that will be sunk on but at some distance to the west of where the road cut it. The vein can be traced for a long distance on surface. Every point of the outcrop contains values. At 25 feet in the shaft, values as high as $45.00 have been found.($900.00)

On the surface of the Bonanza are the big placer mines of the district, values have been found from surface to bedrock. It is probable that the gold came from the erosion of the network of veins gridironing the country.

August 29, 1924 Mohave County Miner

The shaft has reached a depth of 85 feet and the ore fills the entire bottom, streaks of considerable width running high in gold content while the whole width is of milling grade. Every foot of depth shows better ore. In the bottom of the shaft the ore pans better than $20.00 ($400.00) for the full width and the soft material is hardening up. On the surface of the claim is situated the Gold Gulch Placers.

January 20, 1922 Mohave County Miner

Early this week the mining editor made an examination of the property of the Silver Creek Bonanza Mining Company situated on lower Silver Creek.

This property consists of eleven full claims, every one showing vein outcrop.

The two most important veins in the system show their outcrops on the Woodrow Wilson and Thomas Jefferson, these veins being large and potential.

On the Thomas Jefferson claim a vein 20 feet wide has been opened in many places for a length of 450 feet, pannings being obtained at every point. A shaft has been sunk at a point midway of the claim that brings to light a most interesting vein condition. Even in the wall rock gold values may be panned. The ore lenses in the big vein pan high mill values. The vein at this point is big and soft.

Gold can be panned from other veins of the group and for a distance of a square acre gold is found through alluvial, showing the disintegration of the vein, higher up the side of the mountain.

The group of claims is situated to the south of the old Moss and the same fault system found in the Moss property is in evidence on this property.

Two big dykes traverse the ground embraced in the Company holdings. It is probably the presence of these dykes that is responsible for the enrichment of the veins.

The claims are well situated for economic operation, being easily reached by automobile and only about six miles from the Colorado River.

The whole surrounding country is mineralized and lies at a low elevation. Erosion has carried off the heavey overburden, found in the upper part of the district leaving pay ore exposed on surface.

On the high buttes to the east of the property important placer ground has been found as well as rich outcrops of gold ore similar in many respects to ore taken from the Moss. These veins have a strike westward toward the holdings of Silver Creek Bonanza.

The claim known as the Thomas Jefferson is one of the most important in the whole vein system.

July 11, 1924 Mohave County Miner

Mr. McCarthy has been hard at work getting the mine shaped up for the installation of machinery and is ready to put the hoist and compressor plants in place.

The work of cutting out the roadway along the side of the canyon recently resulted in the cutting of 36 feet of ore that gave an average of $12.80 ($256.00) per ton. This is the vein which will be sunk on but at some distance to the west of the road cut. The vein can be traced for a long distance on surface and at every point of outcrop values can be had some assays running high.

In the bottom of the shaft 75 feet, values as high as $45.00 have been found ($900.00).

On the surface of the Bonanza is the big placer mines of the district. Values have been found from surface to bedrock. It is probable that all the gold came from the erosion of the network of veins gridironing that country.

August 29, 1924 Mohave County Miner

The Company has reached a depth of 85 feet in the shaft and the ore fills the entire bottom, streaks of considerable width running high in gold content while the whole width is of milling grade. At the bottom of the shaft the ore pans better than $20.00 ($400.00) for the full width. The soft material is hardening up indicating that the whole vein filling will soon be high grade ore bearing material.

On the surface of the claim is situated the Gold Gulch Placers which are expected to be taken over and operated by a large dredge outfit. These placers are the best thing ever opened up on a large scale in this country.

October 24, 1924 Mohave County Miner

The shaft is down to 92 feet, the bottom is in good ore. This interesting property consists of 10 unsurveyed lode mineral claims in the Silver Creek Section. The vein which is from 12-15 feet is well exposed for 300 feet on the surface and can be traced much further.

January 17, 1925 Mohave County Miner

The new machinery is working without a hitch.
Kidneys of ore from the vein are found in the wall.
The vein is dipping back into the shaft.
The shaft is being carried down on an incline.
Assays taken from across 12 feet of material recently ran $50.00 ($1,000.00) to the ton in gold.
The vein is a wonderful showing of ore wherever opened.

December 1925 Mohave County Miner. Special Edition

The property lies five miles westerly of the Gold Road and the same distance northerly of the Oatman Section.
The veins converging into this area forming the old Hardy, the Moss, Ruth and other mines.

The feature of the Bonanza mine is the amount of erosion that has carried the sediments to a low horizon leaving its trail of gold in the alluvial along the hillside for a wide area and depositing the coarse material in the gulches long distances giving evidence of the heavy gold bearing qualities of the veins through their strike far up into the hills toward the high range.

Along the strike of the main lode of the camp superficial work has been carried on in opening up the mineral bearing qualities of the vein. Close to the north end of the estate the Company has sunk its shaft to a depth of 150 feet.

In sinking the shaft, good ore was encountered practically all the way down and from the bottom crosscuts and drifts have been carried off into and along the big vein. This vein was found to be better than 30 feet wide and sections of it carried values as high as $80.00 ($1600.00) but the whole of the opened area carries values that would be considered high for milling purposes.

Everywhere that the big vein has been opened it has shown important ore bearing qualities, these openings being for more than 2000 feet in length. The parallel veins also carry good values, all these veins being reachable from one development shaft.

During the past few years, efforts have been made to pick up the main gravel channel, which is supposed to carry the better pay dirt in the big gravel deposit covering the veins of the Bonanza in Silver Creek. In a way this has been successful, the number one shaft reaching bedrock at a depth of 65 feet, while the number two shaft has been going down on the benches following the decline of the canyon side. The depth attained in this shaft was 108 feet and it is expected that if the incline is followed it will lead into the old channel that was filled during the years following the heavy erosion. It is more than probable the old channel will be found running off toward the southwest.

The opening of this great mass of gold bearing gravel should make the surface debris valuable as well as the big veins that gridiron the mountain side. In the first shaft the material had a value of approximately one dollar per ton from top to bottom and while there was more low grade matter in the number two shaft, the whole mass will carry exceptionally high values. The whole may be worked by a dredge, water being converged from the upper part of the big wash.

Development of the mine to 500 or 600 feet is a necessity and this work should be carried off along the big vein and the country crosscut for a considerable distance.

The outcrops of the big vein shows for more than 450 feet east and west of the shaft. The crosscut went through the entire vein to the north and again to the south of the shaft. In the vein to the north the values were found to be excellent. Deep mining is sure to bring in a real producer in the Bonanza Group.

Note JCS: "Free gold in the alluvial has reported estimated value of $1.00 per ton. Free gold enclosed by rock minerals could have a similar value. Possible value of alluvial is $2.00 per ton. Possible value of alluvial at present metal prices is $40.00. Cost of processing this material through the mill $15.00, profit potential $25.00. Large tonnages of this alluvial material should be tested along the strike of the fault to confirm."

May 21, 1926 Mohave County Miner

The work of driving along the 150 foot level will soon be underway. The machinery is capable of carring operations to the 1000 foot level. For the present the company is preparing to carry operations along the 150 level. Important ore was found in the lateral work and this ore body is to be further explored. The ore is high mill grade and the vein where encountered is quite wide.

FIELD ENGINEERS REPORT

Dept. of Mineral Resources

State of Arizona

E.B. Holt May 7, 1940

Property - 11 claims, located 10 miles Northwest of Oatman, Arizona.

Geology - Country rock is Oatman andesite, traversed by a vein 20 feet in width, carring gold. Gangue of vein is composed of silicified andesite, stained red and yellow with iron oxides. Strike N 45 degrees W, dip 70 degrees NE.

Development - main shaft sunk on slope of vein to a depth of 150 feet with two short crosscuts. All ore removed from sinking the shaft assayed $5.00 gold per ton. ($60.00). Ore is oxidized material and the gold is free.

Ore Shoot - The main ore shoot is 20 feet wide and has been opened by surface cuts for a length of 450 feet.

Remarks - Bonanza property has the potential for a large low grade Mine. Property is recommended.

OWNERS MINE REPORT

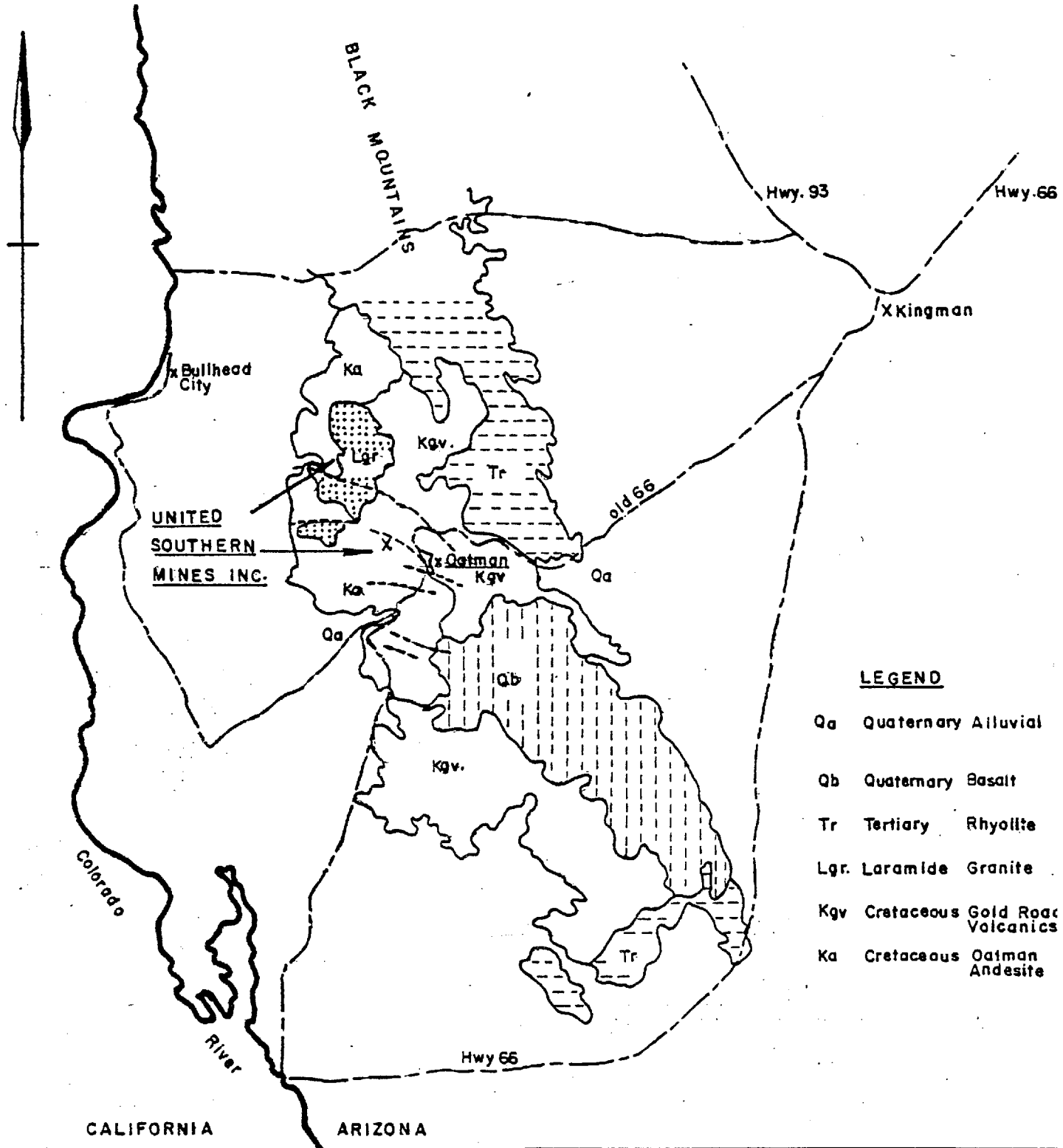
Dept. of Mineral Resources

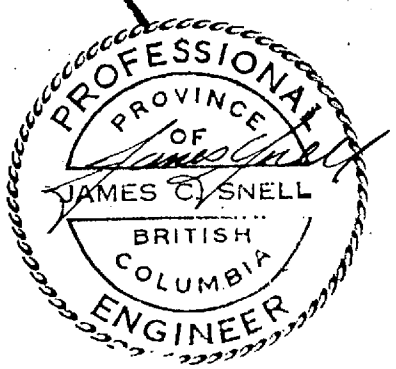
State of Arizona

1940

Mine	- Silver Creek Bonanza
Location	- Silver Creek Section, Oatman Arizona
Claims	- eleven at 220 acres
Topography	- low rolling hills
Mine Workings	- incline shaft 70 degrees to 150 feet. 50 feet of crosscutting 50 feet of drifting 165 feet surface tunnel 3 placer shafts total 225 feet

Ore	- pay gold ore from surface to the bottom of the shaft. Shaft and ore body strong enough to force gold values to surface for a length of 450 feet, averaging 20 feet wide
Road Conditions	- good road right to property
Water Supply	- plenty of water in Silver Creek, to supply 1000 ton mill.
Power	- 2 miles to power
Remarks	- property lies 1 mile south of the Moss Mine





UNITED SOUTHERN MINES INC

REGIONAL GEOLOGICAL MAP

MOHAVE COUNTY, ARIZONA

Scale 1" = 6mi

Drawn By JC Snell BSc.P.Eng.

FIG.

GEOLOGY

GENERAL GEOLOGY

It has been determined from research and field investigations that the geology of the Oatman District is complex. However the complex geological history has resulted in a very fine mineralizing environment. The mine potential of the area is very substantial and undeveloped. Free gold can be found wherever hydrothermal activity has been focused.

Strong quartz-calcite vein systems, dyke systems and alteration zones have developed in Tertiary volcanics and intrusives and as well within the Precambrian basement complex. The gold bearing mineral systems some of which are over five miles in length have been mined extensively at only three locations Gold Road, United Eastern and Tom Reed Mines. At least seven very major mineralized structures have never been explored.

The origin of the ore deposits in the district is believed by the writer to be from two sources.

(1) Igneous Intrusion - Times Porphyry - quartz porphyry dykes

Moss Porphyry - quartz monzonite porphyry dykes

(2) Vulcanism - Volcanic vents and feeder systems rhyolite dykes. Antelope Rhyolite.

Two periods of intrusive activity have occured. The USGS has dated the intrusive periods between Cretaceous and upper Tertiary. The writer dates the Moss Mine Porphyry at middle Tertiary and the Times Porphyry to be slightly older; lower middle Tertiary. Intrusion has been through the Precambrian basement and into lower Tertiary Volcanics.

Deposits of igneous intrusive origin appear to have a high quartz to calcite gangue ratio; deposits of volcanic origin appear to have a high calcite to quartz gangue ratio. All deposits are gold bearing and widths of individual mineral zones may vary from 4 feet to 200 feet and more.

Volcanic activity commenced in lower Tertiary time and was completed in upper Tertiary time. At least seven periods of vulcanism have been recorded at Oatman by the USGS ending with a final Olivine Basalt extrusion.

Lava flow through fault feeder systems and into the volcanic cones has induced mineralization during each succeeding stage of vulcanism, as hydrothermal solutions have perculated through the channels in successively younger rocks in the volcanic pile. Antelope Rhyolite appears to have had the greatest influence on the economics of the district.

Three specific types of dykes have been observed in the map area.

(1) Rhyolite dykes have filled fault feeder systems during upper Tertiary Antelope Rhyolite Vulcanism.

(2) Quartz Porphyry dykes are directly related to intrusive activity. These dykes are hosted by lower Tertiary volcanics and are believed to be associated with the intrusion of the Times Porphyry. (granite porphyry).

(3) Quartz Monzonite Porphyry dykes are related to intrusive activity. These dykes are hosted by lower Tertiary volcanics and Times Porphyry and are believed to be associated with the intrusion of the Moss Mine Porphyry.

Some dykes appear to be transitional from pegmatitic to porphyritic to rhyolitic. This transition in space and time joins intrusion to vulcanism as one long mineralizing orogeny. The mineralogy and chemistry of the dyke types is similar. Mineralization appears to be deep seated and well established in the Precambrian; however the degree of deep mineralization is unknown. Mineralization has been exposed by erosion over a verticle range of at least 2000 feet within the district.

The total effect of intrusion on economic mineralization in the district is not known but the influence of this event is probably great. The Moss Mine Porphyry is well exposed at the Moss Mine and has intruded and underlies older volcanics to the west and south of the mine area along the King's Bonanza. This intrusive activity has resulted in not only the required ground preparation but probably initiated mineralizing activity which terminated with upper Tertiary rhyolite vulcanism.

Individual vein systems exhibit continual reactivation and replacement ie. original calcite gangue replaced by quartz, the quartz brecciated and in turn healed by calcite. This corresponds to a sequence of volcanic and intrusive activity as described. Dyke systems may have been replaced entirely or in part by auriferous vein gangue during the long period of hydrothermal activity.

GEOLOGICAL LEGEND

Quaternary - Alluvial Debris

Upper Tertiary - Olivine Basalt

- Antelope Rhyolite
  - Intrusive Rhyolite
  - Cottonwood Rhyolite
  - Sitgreaves Tuff

Middle Tertiary

upper - Moss Mine Porphyry

-(Quartz monzonite porphyry)

lower - Times Porphyry

-(Micrographic granite porphyry)

Lower Tertiary - Gold Road Latite

- Meadow Creek Trachyte
- Flag Spring Trachyte

- Oatman Andesite
- Esperanza Trachyte
- Alcyone Trachyte

ECONOMIC GEOLOGY

The King's Bonanza Property is centered on the King's Bonanza Fault structure. Bedrock is exposed on the Black Wonder Property in the east, on the Bonanza Property 2 miles to the west and on the Empire Property in the center. The balance of the property is covered by Quaternary gravel of Silver Creek Wash and front range mesa.

On the Black Wonder Property and on the Empire Property this major fault traverses the geological contact between Lower Tertiary Alcyone Trachyte (basal volcanics); the mid Tertiary Times Porphyry and the somewhat younger Moss Porphyry. The Hardy Mountain stock to the south is composed of granite porphyry and the Moss Mine Stock to the north consists of quartz monzonite porphyry. Both of these intrusives are mineral bearing. The area has been reduced to a low level by erosion. The volcanic remenant has been eroded close to the intrusive base, contact metamorphism is wide spread.

The property is traversed by a great number of porphyry dykes which strike at between 280 degrees and 300 degrees. The dykes vary in thickness from a few feet up to 100 feet and more; they may be granitic to quartz monzonite in composition and

pegmatitic to rhyolitic in texture.

Geological conditions are unique for the formation of large low grade deposits as well as high grade vein type deposits. The area has been subjected to multiple geological processes favourable to localization of gold bearing hydrothermal activity.

(1) Contact Metamorphism

Contact metamorphism has greatly effected the remenant Alcyone Volcanics. Alteration affects are intense over a wide spread area and include kaolinization, sericitization, silicification and calcification of the underlying host rocks. Locally, pyritization is in evidence as in drill hole No.3 and by the nature of oxidized outcrops. The Oatman district is a very gold rich geological enviroment. Concentrated hydrothermal activity generally results in gold enrichment. Contact metamorphism is one of the processes effecting enrichment.

(2) Fissure Filling

Fissure filling processes have been very active within the confines of the fault boundries in the metamorphosed enviroment. The King's Bonanza Fault traverses the district from the Gold Road Mine in the southeast to the Bonanza in the west, a distance of six miles. On the Black Wonder, fissure filling is in evidence within the confines of the fault boundries over a width of 2000 feet. The dykes strike north of west and dip to the north at 70 degrees-80 degrees.

These dykes have been classified by Ferrin as quartz monzonite porphyry, quartz porphyry and pegmatite. The dykes as well as the host rock have been altered, silicified and mineralized. Alteration, brecciation and veining have accompanied dyke filling. In some cases, auriferous silica-calcite zones give evidence to almost complete dyke replacement.

Drill intersections and assay results show that a wide spread area underlying the Black Wonder is a gold enriched environment. The altered host, quartz, calcite shearing, breccia zones and altered porphyry dykes are all mineralized and gold bearing. The gold content appears to be directly proportionate to the degree of silicification and less so for the calcite content of the

host.

Anomylous conditions outlined by Ferrin are no doubt due to accumulated pyrite. Pyrite accumulation in the opinion of the writer will not neccessarily denote higher grade gold conditions; however pyrite accumulation will probably be localized within the general area of interest. The degree of alteration, brecciation, and silicification will determine the gold content of the host. Pyrite may however be prejudiced to these conditions.

The main King's Bonanza Fault structure has acted as a major feeder channel to multiple volcanic extrusions during Tertiary time. Dyke filling appears to have been initiated during the late phase Moss Porphyry intrusion. The occurance of residual altered pegmatite within the Hardy Vein just to the south indicates that the fissure now occupied by the vein zone was formerly occupied by a pegmatite dyke which was later replaced by quartz during a late period of hyrothermal activity. Almost complete replacement has occured. Along the King's Bonanza Fault a great many such dykes have been replaced in part by silica and calcite. Some of these dykes have been almost completely replaced and the structures carry commercial values in gold and silver. The ores in this part of the district carry considerable

silver, more than in any other area of the Oatman Camp. High silver values are inherant to mineralization localized along the west end of the structure.

The economic geology of this part of the district appears to be dominated by the very strong relationship between dyke filling and later replacement. This is a unique economic mineralizing sequence and accounts for the very large ore reserve potential. All of the dyke systems have the potential to host gold ore bodies. Similarly, where narrow dyke systems cluster and where the host has been altered and sicilified a large low grade ore body may develop.

The Gaddis-Perry property is located on a major dyke just to the east of the Black Wonder. This dyke system traverses the Company property on Silver Creek. A description of the Gaddis-Perry provides insight into ore potential of the area.

The pegmatite dyke is 500 feet in width and strikes N75W for a distance of at least two miles. It has been intruded along the volcanic contact within the Fault boundries. The margins of the dyke on both sides are zones of mineralization dipping 70N. The south contact called the Gaddis-Perry ledge is a zone of quartz and silicious pegmatite, 60-80 feet in width. The north contact

is known as Angle Ledge and is 20 feet in width. Both the outcrops and subsurface portion of these zones carry good gold values. That the source of gold in these deposits is related to the pegmatite is probable.

Just to the north west at Holmes Camp, a two foot dyke has been prospected to a depth of 6 feet and carries up to $350.00 in gold to the ton. This dyke has been traced to the east for 700 feet where it becomes entirely replaced by silica forming a quartz vein.

On summary, pegmatite and porphyry dyke systems have been partially or completely replaced by gold bearing silica and calcite from the Sundial in the east to the Bonanza in the west a distance of almost five miles. The dyke systems and hydrothermal effects are confined within the boundries of the King's Bonanza Fault over a width averaging 2000 feet. Narrow dykes from a few feet up to 20 feet may be almost entirely replaced by auriferous silica. Where a number of these dykes are closely spaced and where wall rock has been altered a large potential open pit ore body may occur.

The large dyke structures have usually been subjected to partial replacement and brecciation such as at Gaddis-Perry. Such

deposits may form a large low grade occurance or narrow high grade shoots that must be treated as such.

It is the writers opinion that the King's Bonanza Fault structure has the potential to contain within its boundries large quantities of gold and silver ore. All mineral claims acquired along this strategic structure could prove to be of great worth. History may show that one of the larger gold production areas in the United States is confined within the boundries of Sections 30,31,25,26,36. Geological conditions as described are unique for open pit mine development; gold ores surface and overburden is light. It is conceivable that plus 100 million tons of gold ore might eventually be developed.

CERTIFICATE

I, James C. Snell, with business address in Vancouver, Canada do hereby certify that:

1) I am a consulting geological engineer.

2) I am a graduate of the Provincial Institute of Mining, Haileybury, Ontario, Canada.

3) I am a graduate of the University of Alaska School of Mines, Fairbanks, Alaska, U.S.A.

4) I have received a Bachelor of Science Degree in the Geological Sciences in 1964.

5) I am a registered Professional Engineer of the Province of British Columbia, Canada.

6) I have examined the field geology of the Oatman Camp, Mohave County, Arizona and the geology of the King's Bonanza Fault in some detail.

7) I have arrived at the conclusions and have made the recommendations developed in this report.

8) Following completion of the geological examination, I have decided to take further interest in the development of the Company; in the exploration and development program and in Corporate affairs.

Dated at Vancouver, British Columbia, this 31th day of March, 1983.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
JAMES C. SNELL

James C. Snell B.Sc., P.Eng.
Professional Engineer

GEOLOGICAL REPORT

on the

UNITED WESTERN PROJECT

SAN FRANCISCO MINING DISTRICT

MOHAVE COUNTY, ARIZONA

PART "A"

SUMMARY

Sun River Gold Corp. holds 21 patented and 24 lode mining claims, under option to purchase or lease, which cover a prolific gold-bearing vein system , including three past producing mines. The property is situated in Mohave County, northwestern Arizona near the town of Oatman.

The logistics involved with exploration, development and production are excellent.

The Oatman mining camp in the San Francisco Mining District has been credited with the production of 3,800,000 tons of ore averaging 0.58 oz. gold / ton and 0.17 oz. silver / ton from 1897 to 1942, mainly on the Tom Reed and Gold Road Veins systems.

The United Western Mine is located on the Tom Reed vein system from which approximately 2,000,000 tons were mined. The United Western Mine produced 40,000 tons averaging 0.300 oz. gold / ton prior to 1940.

The United Eastern Mine, to the southeast of the United Western Mine, produced 550,000 tons of ore grading 1.10 oz. gold / ton

across widths up to 45 feet.

The Big Jim Mine produced 220,552 tons with an average grade of 0.834 oz. gold / ton.

The gold-bearing veins of the Oatman District are hosted by Tertiary volcanic rocks and associated rhyolite intrusions that overlie a Precambrian basement complex of schists, gneisses and younger granite.

Gold occurs in the native form and as electrum not associated with sulphides. Pyrite is common in the wall rocks, but is nearly absent in the veins.

Wall rock alteration is propylitic, illitic and phyllitic. A characteristically low pH alteration zone overlies most ore bodies.

Similar gold-bearing veins occur in the Precambrian granite in the adjacent Union Pass District twenty miles (32 km) to the north.

Mineralization in most of the ore shoots has occurred in up to five stages of quartz and calcite.

The ore shoots are from a few hundred to 1,200 feet vertically, from 4 to 45 feet wide and several hundred feet in length. Gold occurs in massive quartz-calcite veins and stockworks of quartz-calcite veinlets.

The property is underlain by the favourable Oatman Formation consisting of latite flows, latite tuffs and flow breccias.

Vein structures of quartz-calcite-adularia contain fine-grained free gold.

Proven and indicated reserves totalling 701,758 tons grading 0.202 oz. gold / ton over 15.7 feet have been calculated in the area of

underground workings of the United Western Mine, between the 400 and 950 Levels, and from recent and past surface and underground diamond drilling.

In addition, there is excellent potential for the development of substantial additional reserves along the strike of the vein system both to the northwest and southeast.

CONCLUSIONS

The Oatman mining camp in the San Francisco Mining District has produced 3,800,000 tons of ore averaging 0.580 oz. gold / ton and 0.17 oz. silver / ton from 1897 to 1942.

The United Western Mine Project, consisting of 21 patented claims and 24 lode claims, is held by Sun River Gold Corp., and is located on the main Tom Reed gold vein system from which approximately 2,000,000 tons were mined grading from 0.30 oz. gold / ton to 1.10 oz. gold / ton.

The United Western Mine produced 40,000 tons with an average grade of 0.30 oz. gold / ton prior to 1940.

The United Eastern Mine produced 550,000 tons grading 1.10 oz. gold / ton over widths up to 45 feet.

The Big Jim Mine produced 220,552 tons grading 0.834 oz. gold / ton.

The property is underlain by the favourable Oatman Formation consisting of latite flows, latite tuffs and flow breccias.

The vein structures consist of quartz-calcite-adularia open-space fillings along fissures containing fine-grained free gold.

Reserves have been calculated in the area of underground workings

of the United Western Mine between the 400 and 950 Levels and from surface and underground diamond drilling to the northwest and southeast of the workings as follows:

CLASS	TONS	GRADE (oz. Au/ton)
UNITED WESTERN MINE AREA		
1) Proven (underground)	165,025	0.258
Indicated (underground)	67,900	0.239
2) Drill Indicated (N.W. Ext.)		
Main Zone	42,854	0.131
Hanging wall Zone	8,342	0.249
3) Inferred (N.W. Ext.)		
Main Zone	346,412	0.235
Hanging Wall Zone	153,588	0.249
UNITED EASTERN MINE AREA (S.E.EXTENSION)		
1) Drill Indicated		
Main Zone	217,500	0.201
Main Zone	116,000	0.118
Main Zone	37,012	0.160
Hanging wall Zone	47,125	0.256
2) Inferred		
Main Zone	31,529	0.160
Hanging Wall Zone	150,000	0.256
TOTAL RESERVES:	1,383,287 tons	0.221 oz.Au/ton

*701,758 tons grading 0.202 oz. Au/ton are classed as mineable reserves across an average width of 15.7 feet.

There is also excellent potential for developing additional reserves along the strike of the vein system both to the northwest and southeast.

With the recent acquisition of the adjoining claims covering the southeast extension of the United Western ore body and the United Eastern and Big Jim Mines, Sun River Gold Corp. is in an excellent position to achieve substantial gold production for several years.

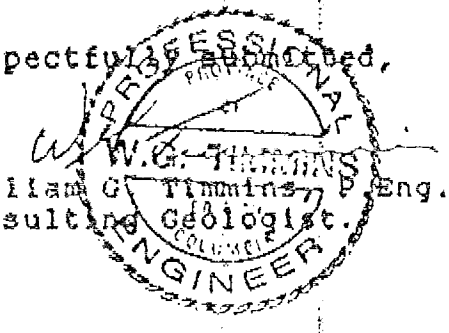
Based on the current reserve estimates, the United Western Project warrants continued exploration and development to ultimately place the property into production.

RECOMMENDATIONS

It is recommended that Sun River Gold Corp. attain access to the underground workings to facilitate a feasibility study involving underground sampling, diamond drilling, and bulk sampling for metallurgical studies.

It is also recommended that Sun River Gold Corp. allocate the sum of $344,200.00US to carry out Phase I and Phase II of the recommended exploration and development program. It is further recommended that Sun River Gold Corp. arrange for an additional sum of $4,600,000.00US to place the deposit into production.

Respectfully submitted,



January 31, 1991.
Vancouver, B. C.

William G. Timmins, P.Eng.,
Consulting Geologist.

ECONOMIC CONSIDERATIONS

The calculations involving the economics of the United Western Mine deposit are based on the following facts and assumptions and are incorporated in the accompanying spread sheet analysis:

ORE RESERVES

701,758 tons in place at a weighted average grade of 0.202 ounces of gold per ton across an average width of 15.7 feet.

MINING DILUTION

Assumed at 15%.

Reserves:

807,022 tons grading 0.176 ounces of gold per ton.

Historical data reveals that the ore bodies previously mined by the United Eastern and Tom Reed Mining Companies were mined using horizontal cut-and-fill on the wider sections of the ore bodies, and shrinkage and open stope methods on narrower sections.

Wall rocks and vein material were very competent allowing for relatively low mining costs.

The previously mined ore bodies are located on the same vein system as the United Western Mine deposit.

The United Eastern Mine is situated some 1,500 feet to the southeast along strike from the United Western Mine deposit.

MILLING LOSSES

Assumed at 3%.

Reserves:

807,022 tons grading 0.171 ounces of gold per ton.

Previous milling recoveries between 1917 and 1935 ranged from 95.7 to 98%.

The gold in the ores was free, finely divided, and dissolved readily in cyanide solutions. The ores contained no cyanicides and on the average were highly amenable to treatment by cyanide recovery methods.

MINING AND MILLING COSTS

Estimated at $35.00 per ton.

Mining and milling rates are estimated at 400 tons per day for 330 days per year.

ANCILLARY COSTS

Estimated at $5.00 per ton.

All dollar values are expressed in U.S. funds.

No consideration has been allowed for contained silver values.

APPENDIX

Recent Work - 1989-90

Since the submission of my report on the United Western Mine Project dated November 1, 1988 Sun River Gold Corp. has rehabilitated the Arizona Central Shaft to a depth of 350 feet (107 m) to the top of a decline which accesses the mine workings at the 700-foot Level.

Sun River Gold Corp. also purchased and installed a new 105 foot (32 m) tall tubular steel headframe on the United Eastern No. 3 Shaft after having re-established and collared the shaft to a depth of 20 feet (6 m).

The headframe was engineered for this specific project and will facilitate the future rehabilitation of the shaft as the main production shaft during mining and underground development.

A electric double drum hoist with the capability of handling production and development material for a depth of 1,200 feet (366m) also been purchased along with other ancillary surface equipment.

W. G. Timmins, P.Eng.
W.G.T. Consultants Ltd.

January 31, 1991.
Vancouver, B.C.

ALLEN L. HEARST

MINING:

P. O. BOX 626
OROVILLE, CALIF.

May 24th, 1963

Mr. Lloyd Moss, President
Grubstake Mining Company
Oatman, Arizona.

Dear Mr. Moss:

Reference is made to your request for my analysis of the Black Wonder mining property on Silver Creek, near Oatman.

The Black Wonder can, in my opinion, be developed as a profitable open pit gold property provided additional sampling substantiates the values and volume indicated by the work thus far accomplished.

It would appear that there is a reasonable possibility of developing in excess of one million tons of gold-silver ore with a gross value exceeding $7.00 per ton. Recovery of the gold and silver values should be at least 90% by bulk cyanidation. Mining costs on an open pit basis should not exceed $2.50 per ton, at least for the first two years of operation because the ratio of stripping to mining would be very low.

The flow sheet for the mill would be very simple: Jaw Crusher, Gyratory crusher and Ball Mill in the grinding circuit with the proper classifier to adequately control particle size. Concrete Leeching Tanks could be used for economy.

With the above plant and a minimum production of 500 tons per day milling costs should not exceed $3.00 per day. Ton

The Black Wonder is fortunate in that the necessary water for an operation of this size appears to be readily available in the Andesite contacts on the property. Two 6" holes drilled into this formation should provide ample water for mining and milling as well as excess water for land developers below your properties. APPROX 700' DEPTH

In order to prove conclusively the existence of the estimated ore body there should be at least six more diamond drill hoes put down. One between Ferrin holes 2 and 3, and five between Ferrin Holes 4 and 5.

These holes should be drilled at not less than 45 degrees. Standard drilling practices should be followed and all sludge should be recovered for assay. A competent Engineer should be present at all times during the drilling in order to accurately map strata and assign sample identification.

The Placer Claims in Silver Creek should be sampled by dragline cuts. In my opinion a drag line is the only way that those gravels can be tested at depth economically.

To repeat I feel that if proper engineering techniques are followed in the Development of the Silver Creek properties that a profitable operation can be established at a minimum of capital outlay.

Sincerely,

Allen L. Hearst

Allen L. Hearst

THE EISENHAUER LABORATORIES
316-322 South San Pedro Street
Los Angeles 13, California

ASSAY CERTIFICATE

PHONE MADISON 2-9323

Los Angeles, Calif. Jan. 24/61 19

I hereby Certify that the samples described below, received from

Harold Ferrin assay as follows:

Owner's Mark and Sample	GOLD		SILVER		TOTAL VALUE PER TON	PERCENTAGE OF		
	OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		COPPER	LEAD	ZINC
Silver Creek Drill Sludge -Hole #1	.96	$ 33.60	1.08	$ .97	$ 34.57			
Silver Creek Drill Sludge-Hole #2	.32	$ 11.20	.43	$ .43	$ 11.63			

GOLD @ $ 35 PER OZ
SILVER @ $ .90 PER OZ.
LEAD @ ____ C.
COPPER @ ____ C.

CHARGES $ 7.00

ASSAYER

Established 1916

SILVER CREEK GRUBSTAKE PROPERTY

Supplementary Geo-physical Report

Including Results of Diamond Drilling

By

Harold Ferrin

December 27, 1961

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SILVER CREEK GRUB STAKE PROPERTY

The purpose of this supplementary report is to verify and establish proof of the existing ore zones as set forth in my original report dated June 1, 1960. This has been done by means of diamond drilling the ore bodies as recommended in the geo-physical report.

A copy of the written portion of the original geo-physical report is inserted at the end of this supplementary report for convenience sake, The maps and Plate have been eliminated however, as they are generally repeated in this present report.

Due to limited finances we were able to drill only about one half of the recommended holes as the attached plane Map "A" illustrates. It was possible to drill only six holes and therefore we placed them, so far as was possible, in the most stragetic positions to give a general over all picture of the mineralized zones.

Also, due to the lack of roads and the steep hills it was not possible to get into some of the most likely zones, and thus all of the six holes were not necessarily put down in the most likely zones. This condition was also responsible for the long intervals between some of the drill holes, as it was not possible to move the equipment in to the areas necessary to make the holes an equal distance apart.

Following is a resume of the results and description of the six holes drilled, and also a chart showing the results of assays taken:

DIAMOND DRILLING RESULTS

Diamond Drill Hole No. 1

This hole was drilled 153 feet through brecciated and altered monzites with most values running in the silicious replacements, as illustrated on the attached map. A large area of low grade calcites were cut from 100 to 153 feet.

Diamond Drill Hole No. 2

Number 2 hole was put down 147 feet to the east of hole number 1, and was the lowest grade hole we drilled. The geophysical survey indicated that this area was of a lower grade. However this location was the only one in that area to which we were able to get the drill moved in.

Diamond Drill Hole No. 3

This hole was put down at an 82° angle in order to cross more formation in the 162 feet of depth, as the vein tilted considerably at this location. This was due to the fact that it is very near to a large cross fault as is evidenced on the attached Plane map.

The cores from this hole showed the presence of considerable iron sulphides nearly all the way down.

Diamond Drill Hole No. 4

Like hole number 2, this hole also was not placed in a very favourable position, being on the extreme east end of a mineralized zone.

While the number 1 sample was taken out of what indicated to be the best area of the hole, I did not expect the values to run this high. I had this pegged to be a mass low grade area.

Diamond Drill Hole No. 5

Hole number 5 was drilled on a highly fractured and brecciated prophyry vein system lying on the hanging wall side of the monazite dyke system. This prophyry is highly silicified and is locally called Times Porphyry. It is so completely brecciated however, that it is almost imposible to obtain a suitable core recovery. In fact the recovery was so poor and the ground so badly broken that we moved over a few feet and drilled hole number 6 almost on the edge of a large post mineral cross fault.

Diamond Drill Hole No. 6

Number 6 hole is almost on the edge of a large post mineral cross fault and cut through the brecciated quartz porphyry between 65 and 80 feet. This hole also showed a considerable amount of iron sulphide all the way down.

The six attached Drill Maps show the mineralized zones, angle of holes drilled, and where the ore was encountered; also the results of assays taken from a portion of the cores cut by the drill.

ASSAY RECORD
of
Silver Creek Diamond Drill Core

		$35.00 Gold	.90¢ Silver	Total
No. 1 Hole				
Sample No. 1		$ 5.25	$ .49	$ 5.74
Sample No. 2		8.40	.50	8.90
" " 1	SLUDGE	33.60	.97	34.57
" " 2	"	11.20	.48	11.63
No. 2 Hole				
Sample No. 1		$ 4.20	$ 1.18	$ 5.38
Sample No. 2		1.40	.13	1.53
No. 3 Hole				
Sample No. 1		$ 6.30	$ .54	$ 6.84
Sample No. 2		21.00	.88	21.88
No. 4 Hole				
Sample No. 1		$14.40	$ .97	$16.37
Sample No. 2		4.20	.14	4.34
No. 5 Hole				
Sample No. 1		$ 4.20	$ .69	$ 4.89
Sample No. 2		19.60	.38	19.98
No. 6 Hole				
Sample No. 1		$ 9.80	$ 1.89	$11.69
Sample No. 2		3.85	.42	4.27

All of the above assays were taken from core carefully split. One half was placed back in the core boxes; the other half was put through a chipmonk Braun laboratory crushes and crushed to 3/16 minus. It was then

carefully blanketed and divided. One half was sent to the assayer and the other half properly boxed and labeled, and is available for any parties who may have reason to want to check the above values.

There will have to be more cores split and assayed to broaden the scope of average values. Most of the high values above were selected by geophysics as favourable stratas, and others were taken to check values in various formations. However it is evident the silicious replacements carry much better values than the calcites carry.

RECOMMENDATIONS

In my original report I recommended this property for a strip pit operation. An open pit property, if properly equipped and handled, can be profitably operated on ore that would otherwise be considered too low grade to be of any consequence.

It is difficult for a layman to understand the principles of open pit and strip pit mining. Therefore I will illustrate by using figures from a well known mine. In this case we will take the Morenci mine at Clifton, Arizona.

This property mines three and one-half tons of bank run material to get one ton of ore averaging six tenths of one per cent copper, a stripping ratio of two and one-half to one.

The stripping costs is approximately 20¢ per ton, or 50¢ to remove the two and one half tons. The one ton of ore averaging twelve pounds of

copper at 30¢ per pound equals $3.60. About 90¢ to $1.00 per ton in gold is also recovered, bringing the one ton value up to $4.50. The 50¢ stripping costs is deducted from the $4.50 leaving about $4.00 per ton for the ore milled. On this large scale operation the over all cost is about $2.00 per ton milled, leaving almost 100% net profit.

The $4.50 divided into the three and one-half tons mined makes less than $1.50 per ton deposit average.

The point I am trying to make clear is that on an open pit operation one controls his own grade of ore in accordance with the size of operation and the economics of the individual property.

The costs for operation on the Silver Creek property would no doubt double that of a large operation such as the one described. However, the Silver Creek deposit indicates three or four times higher values.

A few years ago the Arizona newspapers published an item stating the Phelps Dodge Corporation operating the Morenci and Ajo pits declared a $25,000,000 dividend for the first quarter of 1956 during the high price of copper.

CONCLUSIONS

A given sized operation will have to be decided upon before a cost sheet can be worked out. This cost sheet should be figured by an operating engineer who specializes in that particular field, and who is somewhat familiar with the present costs of labor, materials, and equipment.

Respectfully submitted,

Harold Ferrin

Harold Ferrin, Geophysist

C O P Y

Geo-physical Report

By: Harold Ferrin June 1, 1960

INTRODUCTION

This report and survey was made for the purpose of outlining the mineralized zones, or ore shoots, along the giant vein structure of the Black Wonder Vein system which, due to former property titles, is virtually an undeveloped virgin property.

The accompanying photographs will give some illustration of the magnitude of the vein structure of these claims.

PROPERTY AND TITLES

The Silver Creek Grub Stake property consists of a group of about forty lode claims, all held by location ownerships, in accordance with State and Federal law. The claims are situated in Township 30 North, Range 20 West, in Sections 30, 31, and 32.

LOCATION AND ACCESSIBILITY

This property is situated approximately five miles north west of Oatmen, Arizona along the County graded and graveled Silver Creek Road that runs down to Bullhead City, and Davis Dam. The mine is directly across Silver Creek from the much famed Moss Mine that was the original discovery for the entire Oatman district.

GEOLOGY

The geology is characteristic of the district and is composed of Trachytes, Oatman Andesites, Gold Road Latites, and Moss Porphyrys. However, I will omit detailed geology from this report due to the fact the owners have allready a detailed geological report from a very capable Geologist, Mr. Ed. F. Gruskie.

The strike of the vein system is almost east and west, running North 70° West, and dipping to the North 60° to 70°.

There has been teriffic cross faulting and step faulting along the vein. The strike of the cross faults average North 5° West, cutting the vein at a 73° angle. See illustration on attached Map C.

MINEROLOGY

The mineralization in this district has always been dependent on faulting and fracturing, whereby a systematic alteration of quartz and calcites deposition has replaced the open fissures and fracture zones.

RESULTS OF GEO-PHYSICAL SURVEY

The Geo-physical survey recorded nine ore bodies with potential commercial values for open pit mining along twenty-four hundred feet of vein structure. This well justifies Diamond drilling. See illustration on attached Plane Map A.

Numbers 1, 2, 3, and 4 are really one large deposit, step faulted by three small cross faults. The thrust is thirty to forty feet sideways on each of the three faults. See illustrations on Map C.

It will be necessary to survey out and map up a cross section on all eleven drill holes and the nine ore bodies before drilling them, as illustrated on the attached Map B.

The reason for not including these in this report at the present time is the fact that we would most likely change the exact position of most of them when we actually start drilling operations in order to save on the road building, convenience of water hauling, etc.

It will not be necessary to Diamond drill Number 1 deposit due to the fact there is already a fifty foot shaft on it exposing commercial ore on the surface, and down to the bottom.

However, it will take eleven drill holes to properly determine the tonnage and values estimated of these deposits.

One corner of the Number 8 ore shoot is exposed in the side of the wash and assayed $20 per ton on the surface.

DEVELOPMENTS

There has been no development work on the property other than a few location holes and a fifty foot shaft at the west end of what I have mapped as Number 1 ore shoot.

The property is a natural for strip and pit operations, due to the slope of the hill and the dip of the vein. As illustrated on the attached Map B, the Hanging Wall can be removed with stripping equipment and the vein open pitted.

The open pit method of operation is very economical. It eliminates sinking shafts, building head frames, installing expensive hoisting equipment, installing air lines, water lines, building skip guides, installing ladders, driving drifts and raises, hanging shoots for drawing ore, laying underground tracks, building of storage bins, and numerous other expensive time killing jobs than can only be done with hand labor instead of machinery.

The large companies pay dividends on as low as $2 and $3 values by using open pit methods. The basis of this report therefore is on the open pit method of mining.

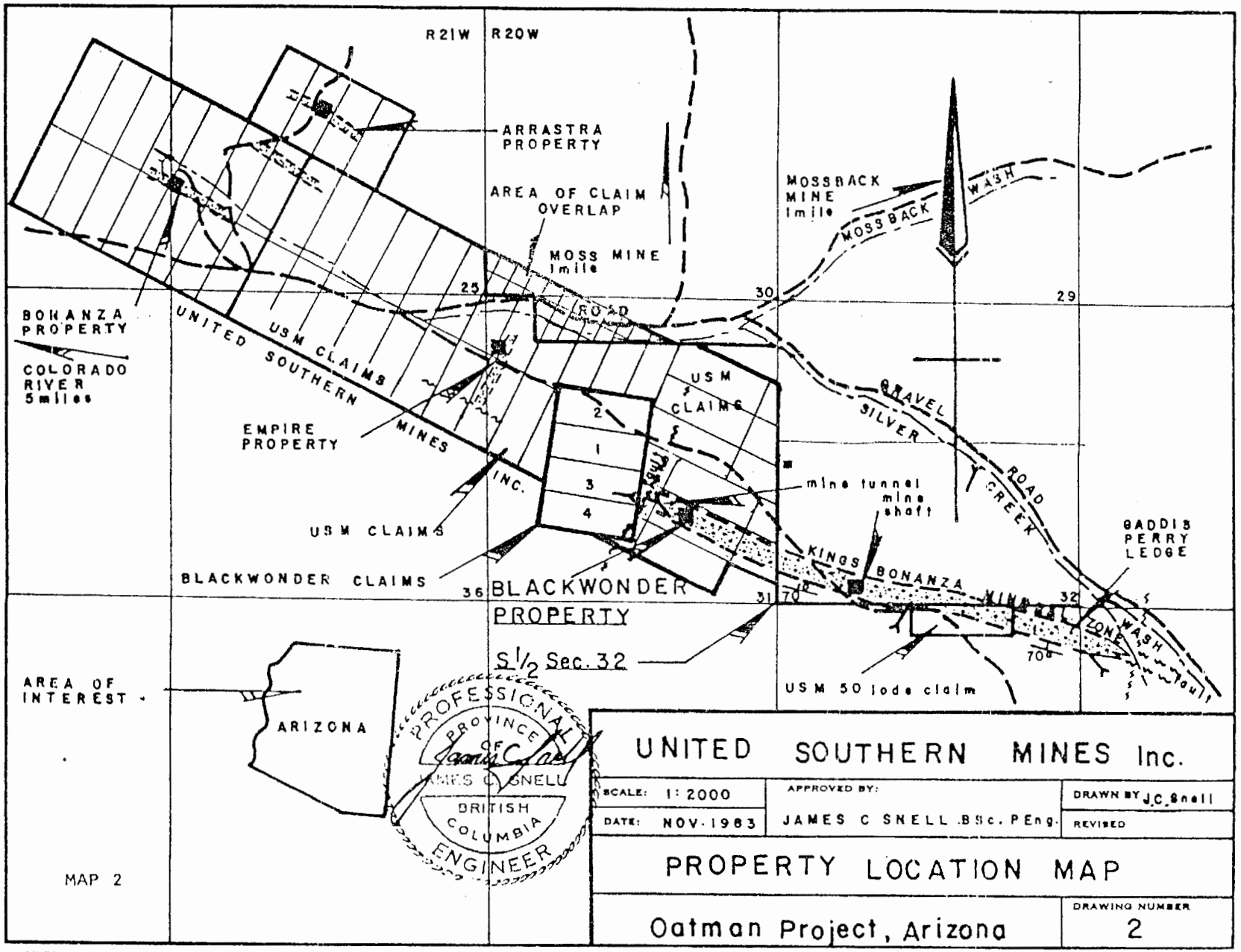
CONCLUSIONS

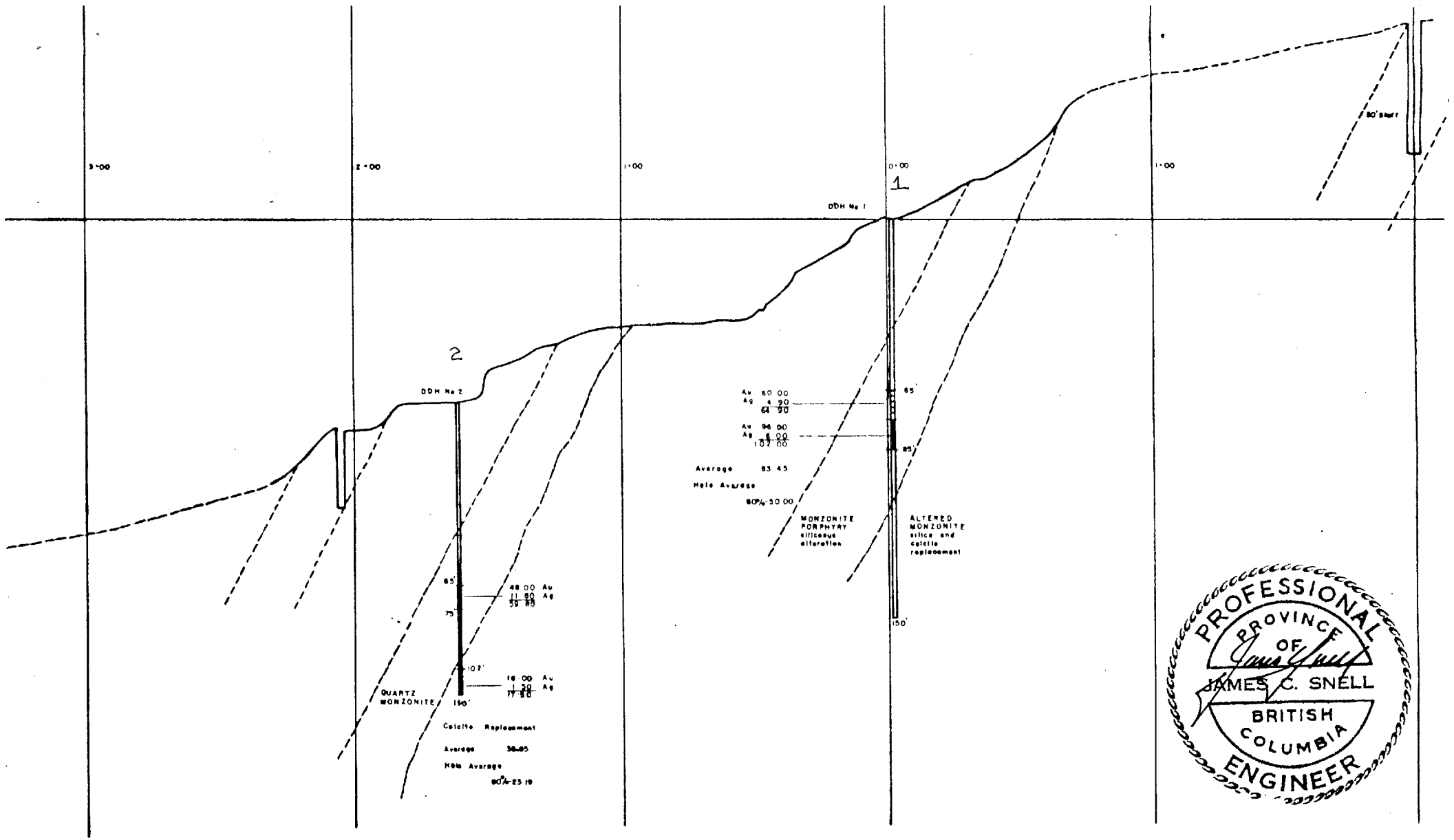
This should be a very simple and profitable operation if properly handled and equipped, and I do not hesitate to recommend the exploration and subsequent development of this property.

Respectfully submitted,

Harold Ferrin

June 1, 1960


R21W
R20W
ARRASTRA PROPERTY
AREA OF CLAIM OVERLAP
MOSS MINE 1mile
MOSSBACK MINE 1mile
MOSSBACK WASH
ROAD
25
30
29
BONANZA PROPERTY
COLORADO RIVER 5miles
UNITED SOUTHERN MINES INC.
USM CLAIMS
USM CLAIMS
EMPIRE PROPERTY
2
1
3
4
mine tunnel
mine shaft
GRAVEL ROAD
SILVER CREEK
GADDIS PERRY LEDGE
USM CLAIMS
BLACKWONDER CLAIMS
36
BLACKWONDER PROPERTY
S1/2 Sec. 32
31
KINGS BONANZA
KINGS ZONE
32
WASH
USM 50 lode claim
AREA OF INTEREST
ARIZONA
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
JAMES C. SNELL
UNITED SOUTHERN MINES Inc.
SCALE: 1:2000
DATE: NOV. 1983
APPROVED BY:
JAMES C SNELL .BSc. PEng.
DRAWN BY J.C. Snell
REVISED
PROPERTY LOCATION MAP
Oatman Project, Arizona
DRAWING NUMBER
2
MAP 2
8½X11 PRINTED ON NO. 1000H CLEARPRINT



BLOCK A

ORE BLOCK PROBABLE (drill indicated)

350' x 350' x 150' 1,837,500 Tons

Est. Av. Grade 38.60 0.09 oz Au.

Value of Block: 67,258,600.00

Fig.6

UNITED SOUTHERN MINES INC.

Black Wonder Drill Section

After Ferrin 1961

scale - ~~1" = 25'~~

50% reduction

1" = 50'

0 25' 50'

REDRAWN BY JCSNELL BSc P.ENG.

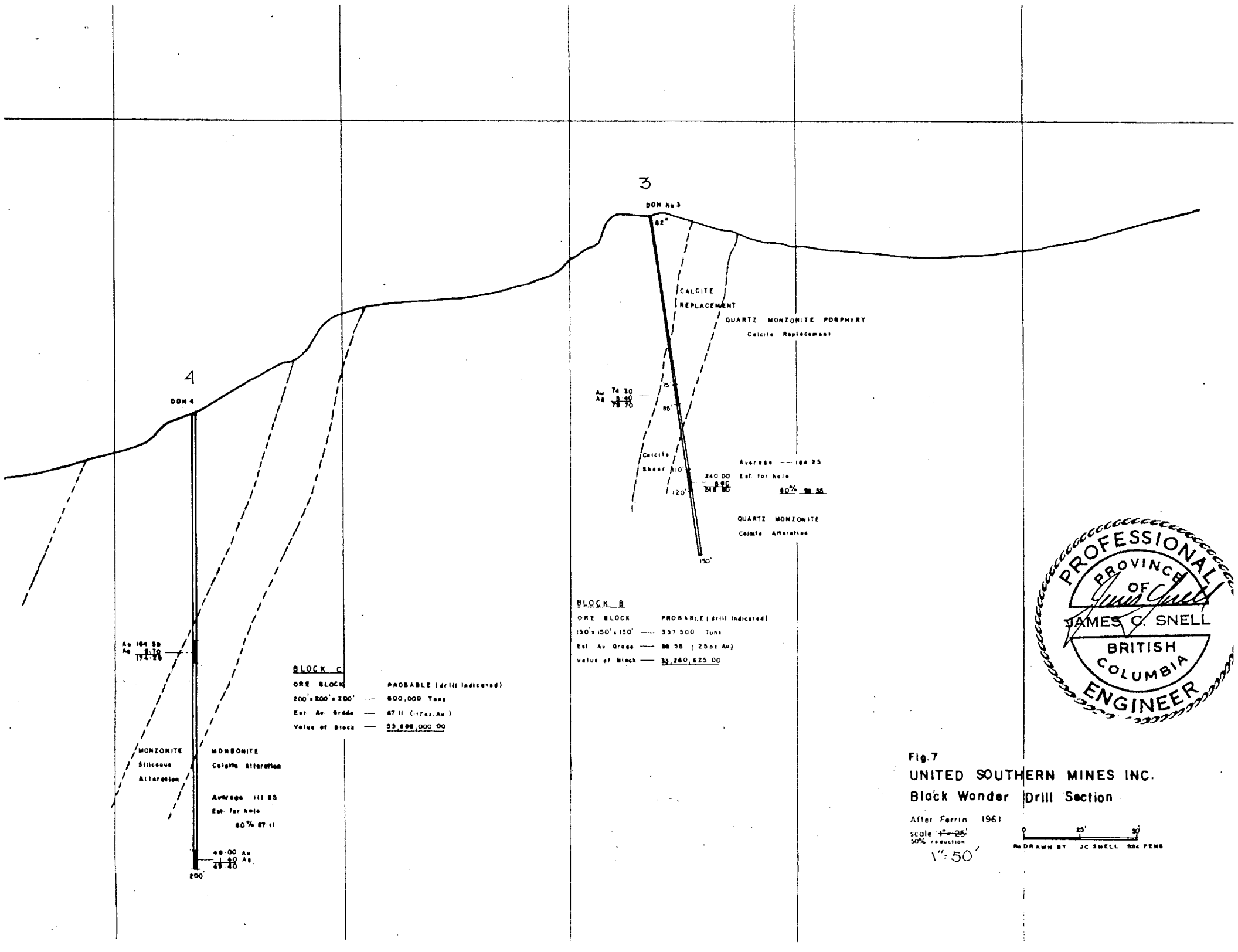


Fig. 7

UNITED SOUTHERN MINES INC.

Black Wonder Drill Section

After Ferrin 1961

scale ~~1" = 25'~~ 50% reduction

1" = 50'

0 25' 50'

No DRAWN BY JC SNELL Size PENS

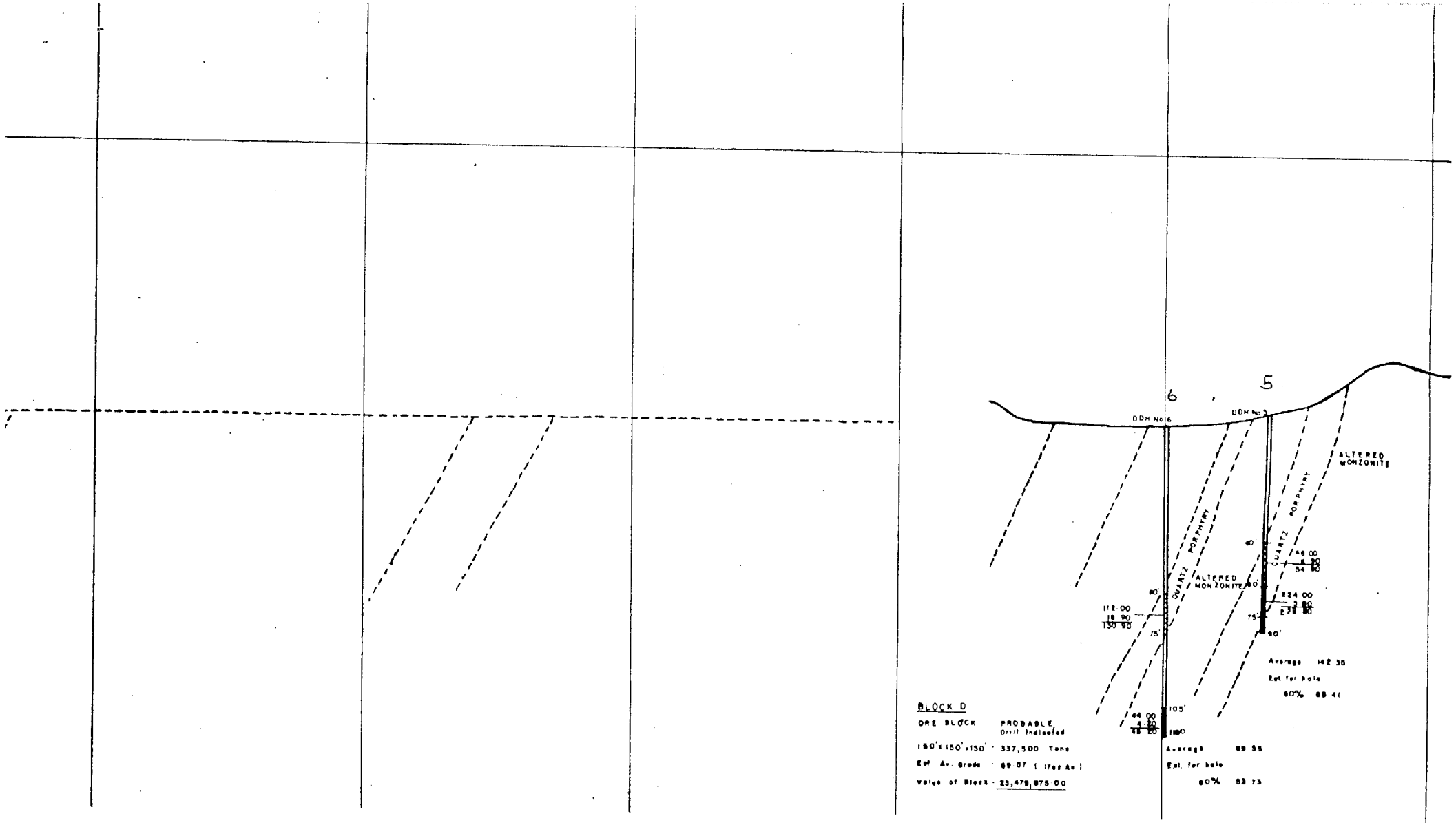


Fig. 8

UNITED SOUTHERN MINES INC.

Block Wonder Drill Section

After Ferrin 1961

scale 1" = 25'
50% reduction

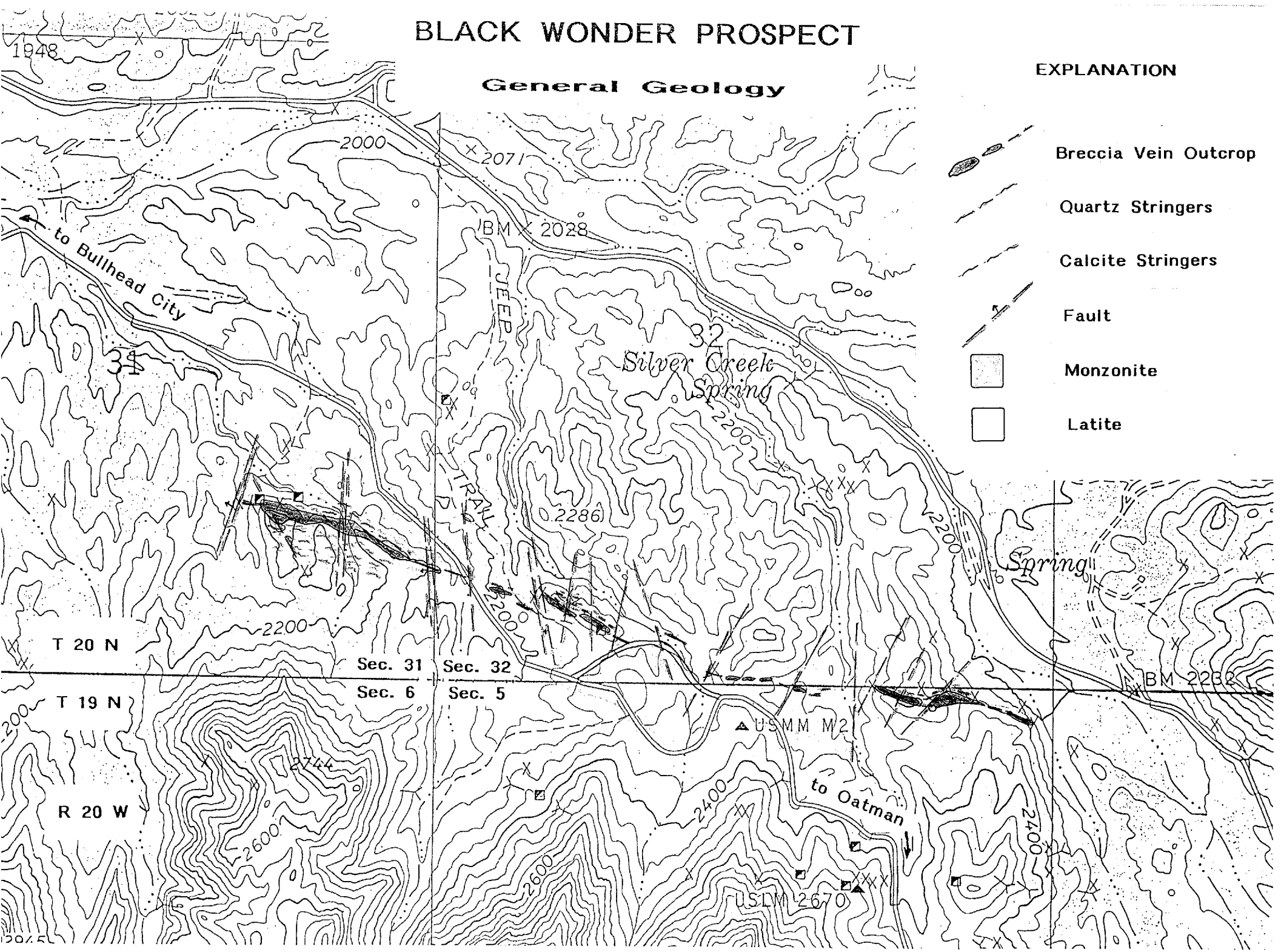
1" = 50'

0 25' 50'

REDRAWN BY J.C. SNELL 8th Feb.

BLACK WONDER PROSPECT

General Geology

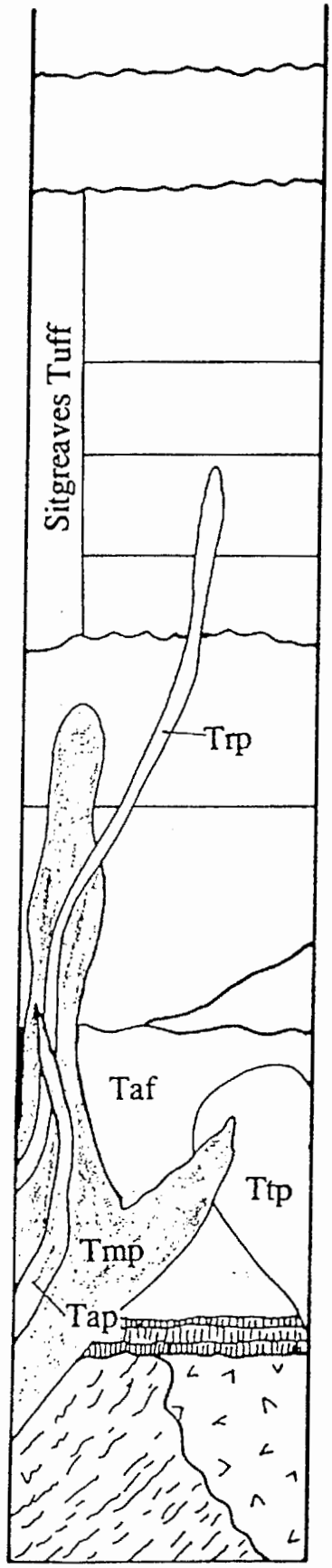


1" = 1000'

Reynolds Metals Exploration Inc.

Mohave County, Arizona

Figure 3



Basalt flows & interbedded conglomerate & rhyolite ash
300 m

Meadow Creek Quartz Latite

Flag Spring Quartz Latite

Cottonwood Formation

Antelope Rhyolite

Gold Road Latite
≤ 240 m

Rhyolite porphyry (Trp)

Oatman Andesite
≤ 300 m

Esperanza Quartz Latite
60 - 300 m

Moss Porphyry (Tmp)

Alcyone Formation (Taf)
450 - 730 m

Times Porphyry (Ttp)

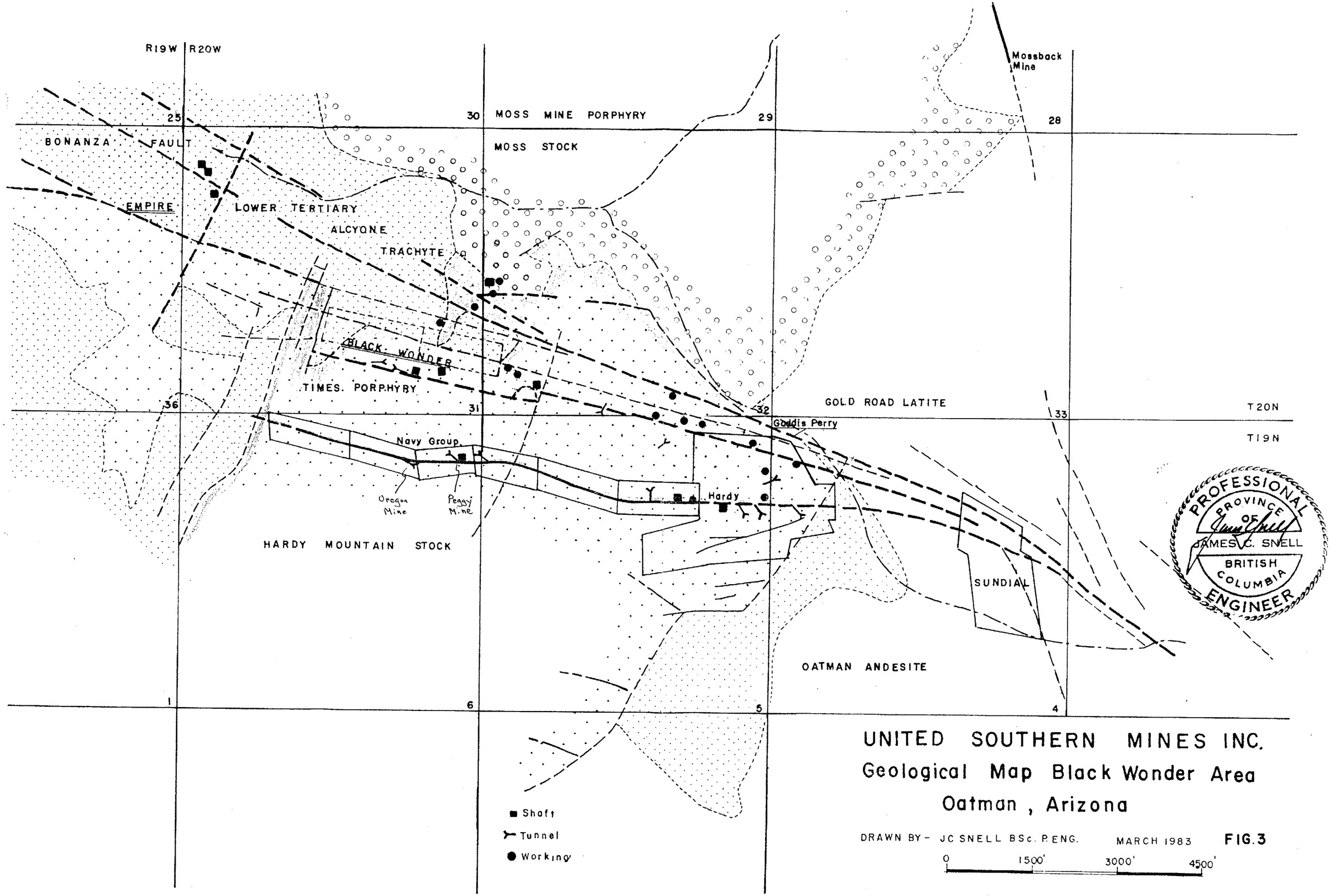
Andesite porphyry (Tap)

Basalt flows

Precambrian X or Y Katherine Granite

Precambrian X
Unnamed gneiss

REGIONAL COMPOSITE STRATIGRAPHY



UNITED SOUTHERN MINES INC.

Geological Map Black Wonder Area

Oatman, Arizona

DRAWN BY - JC SNELL BSc. P.ENG. MARCH 1983 FIG.3