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THE MINING DISTRICTS OF

CHLORIDE, MINERAL PARK, STOCKTON HILL AND CERBAT.

LOCATION

These mining districts are situated about ten miles northwest of the R R station of Kingman, the County of Mojave, Arizona. They embrace a country about fifteen miles long and about three miles wide and are at an elevation of 2000 to 3500 feet above sea level. They are reached at the present time by stage from Kingman to Chloride, Mineral Park and Cerbat. A railroad is now under construction from Kingman to Chloride and will be finished about the middle of July. I am not familiar with the location of the road, but understand that most of the mines will be within three or four miles of the line.

No description could be given of the location of the mines as they are scattered all over the country and begin at the base of the hills and cover the entire country on both sides of the hills. Some of them are even down in the flat across which the railroad will run.

FORMATION:

The formation is granite, cut by porphyry dykes. Lime is also found in many parts of the belt.

The veins are from a few inches to 30 feet wide. The general strike is N to N W, S to S E with a general dip E. On an average the veins are of good size - 4 to 10 feet.

MINERALS:

The ores are not in any case free milling, carrying gold, silver, lead, zinc, antimony, arsenic, copper and iron as their most prominent characteristics. Many fine specimens of wire silver have been found here; in some cases the mass being as large as 30 to 250 oz silver.

Some claims are mostly lead ore, others free silver ore, still o hers gold ore, and others composition of these metals with copper. The bulk of the ores, however, I think will be found to be those carrying gold, silver and copper. Lead is abundant in places, but it is not a predominating metal.

PAST HISTORY:

The camp has been worked since 1864. At first the ores were shipped via Colorado River to the Gulf; later via S. P. R R from Yuma and at present via Kingman to the eastern smelters. Since then over 1000 claims have been located, and over fifty of them have produced fairly well. Ores of less value than $30.00 could not be handled, and were left in the mines or on the waste dump. The mines w re worked in this way down to water level, and then abandoned. There has been little machinery used in the country until the past few years. There are two companies operating extensive plants (including concentrators) and a third is building. The deepest working is about 700 feet, with another shaft down over 500 and several from 100 to 300. The veins are found to be continuous in depth, and carry the same values.

PROSPECTIVE FUTURE OF THE CAMP:

M. D. Rochford, who has been in my employ at different times during the past four years has now been in the country about nine months, and has made a careful study of the conditions, probable quantity of ore in sight, it's value and method of treatment. His letter is attached hereto.

He estimates that that are in sight 100,000 tons of ore of a value of $20.00. This ore is standing in the old mines, and does not include any that may be exposed by further development. At the present time good prospects can be bought for from $250.00 to $10,000 and $15,000.

The plan that has suggested itself to us is for several gentlemen to join in securing an option on a number of these claims, then go down there and make an examination of them and the surrounding country. If this examination was satisfactory, it would then be in order to make the purchase and erect at some central point a smelting plant of a capacity of 50 tons per day, erect the necessary works at the mines and extract and smelt the ore. Ore could be bought from the other mines at the same time, and as business justified the smelter could be enlarged to treat great quantities of ore.

Mr Ropp estimates that the cost of a smelter for treating 50 tons per day would be $12,000. This would make a matte that could be shipped to eastern smelters

and sold there, or via Santa Fe System to Los Angeles and by boat to Selby. To acquire these mines, erect plant, do necessary development work and supply sufficient capital to carry on the business would take, I should say, from $50,000 to $75,000.

Like all other camps in Arizona there is a lack of fuel, water and timber. Crude oil can be had from Los Angeles at a cost equal to coal at $5.00 per ton - lumber will cost about $25.00 per M/

Distant some 12 miles there is a spring of 10 inches of water which could be piped by gravity quite close to the town of Chloride. This water will be very valuable in the near future and would be worth no less than $10.00 per inch per day. To purchase and bring in this water would cost between $40,000 and $50,000. There can be little doubt about the value of this water supply, as there is not enough water in the mines to run them and supply water for the concentrating plants. The town gets water from several wells in the low land. There is no system of water pipes, it being carried on mules and distributed in barrels.

I would suggest, therefore, that the locality presents a good chance for the investment of some money in purchasing mines, erecting a smelter plant to smelt not only the ores of the company, but outside ores as well, and the acquiring of the water in the immediate vicinity and bring-

ing it into the town of Chloride.

The sooner some action is taken the better it will be I believe, as the railroad will soon be finished and there is now some considerable stir in the district as witnessed by a letter from Rochford which is attached hereto and marked No 2.

To bond the mines and examine them would not entail any large outlay, and I am convinced that ore enough can be found in them to warrant a purchase within a short time.

Having stated in brief the conditions, I beg to submit this proposition as one well worthy an immediate and careful investigation.

Kingman, May 4th, 1899.

M. L. Requa,

San Francisco, Calif.

My dear Sir:-

To my description of the Chloride Mining District submitted to you sometime ago I will add some data that may be of interest.

I find the mineral belt to cover an area of over 15 miles in length by three miles in width and containing five mining camps - Chloride, Mineral Park, Todd Basin, Cerbat and Stockton Hill.

The discovery of mineral was made in 1864. Since that time over 1000 locations have been made, some of which have produced over $500,000 and over 50 have produced fairly well.

The ores were all shipped to eastern smelters and all contained a value of over $30.00 per ton in Gold, silver and lead, leaving all ore containing a less value on the mines or on the waste dumps.

The veins are in granite and are from 6 inches to 30 feet in width, well defined and continuous both on the dip and the strike, the pay shoot in some being over 300 feet long.

The lowest workings are about 700 feet in depth. Several mines have gained a depth of over 300 feet with good ore in the bottom.

I have already given you a description of the character of the ore and about the average value. Judging from the number of places from which profitable ore has been shipped to eastern smelters and from the character of the ore left in the mines and on the waste dumps and from assays made from ores taken from the croppings in different parts of the district, I estimate that about 100,000 tone of ore can be had containing an average of about $20.00 per ton in gold and silver. In making this estimate I have not figured on any ore below the present workings in the different mines.

About one half of this ore is mostly exydised, containing about 15% iron, 5% sulphur, 60% silica and a small % of lime. It can probably not be concentrated with a good result. The balance of the ore is below water level and in a great many cases will probably be worked by concentrating.

I have investigated the merits of the district during a period of nine months and find the outlook favorable as to quantity, but have not yet determined how to extract the values.

It is probably that the smelting process is the only one that can be successfully applied to all the ores throughout the district. In this case I think plenty of lead could be had for flux. All the mines in the camp contain some lead, and two companied operating in the camp are producing about 25 tons per day of lead ore and concentrates.

Colorado Coke $13.00 per ton, Coal $8.00 per ton.

Lumber $25.00 per M., labor $2.50 per day, miners $3.00. I think matte can be shipped to any eastern smelter for $15.00 per ton. Water enough can be had to concentrate a certain number of tons of ore in most every case where concentrating ore is found, but a greater amount of water could be used to good advantage.

In considering this proposition you will understand that I have taken into consideration the very probably number of tons of ore that can be had to supply a smelting or matting plant, the average value, the character of the ore, the amount of iron, sulphur and silica, the probably per cent of zinc, arsenic and antimony, the probability of supplying plenty of sulphur by concentrating the most favorable ores, the facilities for delivering the ores at the reduction works cheaply, the facilities for getting supplies cheaply and the probability of the ores not being worked by any other process cheaper than by smelting or matting.

Your's truly,

(Signed) M. D. Rochford.

No 2. Kingman, May 9th, 1899.

M. L. Requa,

San Francisco, Calif.

Dear Sir:-

I found Chloride having a little excitement in the way of a town boom on my return. Several mines have changed

hands in a small way, and one for $25,000. I hurried back to examine a lead prospect I heard of, but was too late, a party having bought it for $1,000 cash. They asked $3,000 for it. There is a similar prospect of three claims near that is for sale for $5500. It has a litt e more work done on it. They want $500 down and balance in 90 days. I think $4,000 cash would buy it. The shoot is 600 feet long and they claim 60000 has been taken from it, but the old works are caved in and not much to be seen. It would require about $700 to see the lower workings. I think favorably of the proposition, but don't like to pay $500 down. I gave you a sample of the gold ore in the small sack in Los Angeles, but it occurs only in places in the upper workings. The mine is worked to a depth of about 90 feet (they say), with concentrating lead ore at the bottom. The concentrates will go 60% lead and 20 oz silver. If a smelter was in operation here it would be all right.

Your's truly,

(Signed) M. D. Rochford.

PAY DIRT

A PUBLICATION DEVOTED TO THE INTERESTS OF THE ARIZONA SMALL MINE OPERATORS

Charles F. Willis, Owner and Publisher — 508 Title and Trust Bldg., Phoenix, Arizona — 85003 — R. G. Moore, Editor

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5.0050

MOHAVE COUNTY (ARIZONA) MINER 8/6/64

Manager Tells Of Duval Mine History

Bill Crutchfield

Santa Fe Mining Inc.

INTERNAL CORRESPONDENCE

TO R. G. Marvin

DATE September 28, 1981

FROM G. R. Wagner

SUBJECT Duval Corporation - Request for Mining Lease - Mohave County, Az C-15-2 SFP

I have received the attached request from Duval Corporation for a mining lease in Section 35, T23N, R18W and Section 3, T22N, R18W, Mohave County, Arizona.

Their terms are not as generous as we normally would seek and I would most likely propose something more in line with $10.00 per acre bonus, $10.00 per acre rental, a 10 year term and 5-7% NSR royalty.

Would you please advise whether or not you would have any objections to our negotiating with Duval for a lease on the subject property.

G. R. Wagner

GRW

GW:gem
Attachment

cc: D. J. Walsh (w/attach)
D. B. Trubey "
W. H. Crutchfield "

BILL
THIS IS A JUDGEMENT ONLY YOU AND YOUR EXPERTS CAN MAKE. YOU HAVE THE KNOWLEDGE. SHOULD WE LEASE IT?
BOB

Duval owns surface of Sec. 35 T23N R18W (1965)
Tailings pond E/2
Inquire as to nature & extent of proposed drilling program

DUVAL CORPORATION

4715 EAST FORT LOWELL ROAD • TUCSON, ARIZONA 85712 • (602) 881-6200

RECEIVED
SEP 21 1981
G. R. WAGNER

September 16, 1981

Mr. George Wagner
Land Commissioner
Santa Fe Pacific Railway Company
P. O. Box 3588
Albuquerque, NM 87190

Dear Mr. Wagner:

Thank you for the information you gave me during our telephone conversation this date. As a follow-up of our conversation, please consider Duval Corporation's request for a Mining Lease on the following described areas:

Township 23 North, Range 18 West, Section 35, and

Township 22 North, Range 18 West, Section 3, both in Mohave County, Arizona, G&SRBM

Duval Corporation currently is operating a copper and molybdenum property adjacent to the above named sections. It is our belief that no commercially economic amounts of mineralization are within these sections. Our Planning Staff does, however, feel it necessary to drill the property, with the expectations of condemning any mineralization.

With the above in mind, and the possibility that we may in fact find mineralization, we respectfully request the issuance of a Mining Lease. The general terms we request include a twenty-year primary term, renewable if in operation on either this land or land adjacent to it. We would pay an annual advance rental and in the event of production, a Net Smelter Return royalty. Similar leases provide for $1.00 per acre for annual rental, and if in production, a 3% NSR.

Your consideration of our request and of preferred treatment over any other potential lessees in this area is greatly appreciated.

If you need additional information, please do not hesitate to contact me.

Sincerely,

DUVAL CORPORATION

Donna J. Coombs

Donna J. Coombs
Land Associate

DJC:mjk

DUVAL SULFUR AND POTASH COMPANY

Proposed Copper Operation

Kingman, Arizona
(Confidential)

LOCATION

Drilling exploration over the past two years has been principally confined to Section 19, T23N, R17W in the Ithaca Peak area. This section is outlined in red on attached map. Another orebody relatively lower in copper, but higher in molybdenum than that already outlined at Ithaca Peak is contained in Section 25, T23N, R18W (outlined in blue). This orebody does not figure into the proposed project at present.

Sections 23 and 26, T23N, R18W, outlined in orange, have been designated as possible mill sites. All of the surface of Section 35 immediately south of Section 26 is owned by Duval; Santa Fe Pacific owns the mineral rights. This particular section may be used for a waste disposal (tailings) area.

The location of the former Chloride Branch relative to the proposed mill sites is outlined in red.

EXPLORATION - Section 19, T23N, R17W

To date approximately 28,000 feet of drill holes have outlined a kidney shaped orebody in plan, measuring approximately 3800 feet longitudinally and 2000 feet in width in its greatest dimensions.

Thickness, under a thoroughly leached overburden ranging from 100 feet to 200 feet in depth, varies from zero feet at its margins to over 100 feet at its center.

There are two tonnage estimates: A conservative 48 million tons and a more optimistic one of 55 million tons. Overall average grade is 0.75% copper and 0.06% molybdenum (15 lbs. of copper and 1.2 lbs. of molybdenum per ton of ore mined). This grade is typical of the tenor of ore mined in the large open pit operations in the West today.

EXPECTED LIFE OF OPERATION

A minimum life of 12 years is expected. The concentrator to be built will handle 12,000 tons of ore per day. Total daily output of concentrates, essentially copper, is estimated to range from 340 to 380 tons per day on a 7 day week basis. A figure of 300 tons per day for 350 days of operation per year would be a conservative figure for estimating freight revenue on outbound movement.

ESTIMATED COST OF PROJECT

It is estimated that Duval will have spent $25-30 million, including exploration costs, before the first ton of concentrates is produced.

ESTIMATED TARGET DATE

The concentrating plant is expected to be completed and full operations underway 2 years from the end of March, 1962. By the end of March, 1962, all exploration and metallurgical testing should be finalized. Construction of the concentrating plant and stripping of overburden from the orebody will start soon after that date. Duval's concentrating plant of identical capacity at the Esperanza operation took about 1½ years to complete.

RAILROAD CONSTRUCTION AND TIMING

Should the Santa Fe see fit to construct spur to serve this operation, construction, according to Mr. Messer, should start as soon as possible after March, 1962. This would greatly facilitate construction of the concentrating plant and stripping operation.

It should be added that in this regard my only expression of policy, understood to be entirely unofficial, was to the effect that any such construction would necessarily have to be based on sound economic justification. That is, if Duval could show that a reasonable return on our investment could be obtained then I personally felt that our people would look into all aspects of the matter very closely.

OUTBOUND MOVEMENT

1. Copper concentrates conservatively estimated at 300 tons per day over a 350 day annual operating period. These concentrates would contain about 25 per cent recoverable copper and 75 per cent waste including water content of perhaps 10 per cent.

The actual value of recoverable copper for determination of freight rate valuation is 14 cents per pound. (The prevailing market price for copper is 31 cents per pound.) The valuation on each ton of 25 per cent copper concentrates is therefore:

500 lbs. copper x $0.14 = $70.00

2. Molybdenum is a by-product and will be shipped not as the sulfide but will be processed and shipped as molybdic trioxide - a commodity that has a prevailing market price of $1.60 per pound of contained molybdenum. Approximately 200 tons or 400,000 lbs. of MoO_3 will be shipped each month. The valuation of such a shipment would amount, market-wise, to approximately $345,000. Mr. Messer promised to get rate information and destinations on this commodity based on a like product being currently shipped from the Esperanza operation.

3. Copper concentrate destination: Duval's Esperanza operation ships to the American Smelting and Refining Company's smelter at Hayden, Arizona, under an existing contract. Of vital interest to the project at hand however is that, according to Mr.

Messer, the Hayden smelter is operating at full capacity and therefore the Kingman concentrates could possibly go to A.S.&R's. smelter at Tacoma, Washington. Discussion of this possibility has already taken place between Duval and A.S.&R. It was further explained that A.S.&R. would absorb most of the freight differential for the longer distance.

INBOUND MOVEMENT

Mr. Messer is working up the quantities of materials needed. However until these are received there are certain aspects of inbound revenue that could be mentioned for the sake of preliminary background information.

Apart from the short term haul of construction material and equipment, there are continuing items that would move in during the 12-year life of the project to support the day to day operations.

One such item would be ammonium nitrate - the explosive now commonly used in large open-pit operations. Duval's Esperanza operation receives the bulk of its ammonium nitrate from Scandia Bay, Florida. Perhaps ½ pound of explosive would be needed for each ton of rock removed. This figure will have to be determined. However for sake of illustration, some 150 million tons of rock overburden and ore will probably be excavated. This would amount to an explosive use of roughly 3000 tons per year.

An indeterminate amount of chemical reagents would also be used. Included among these was the mention of 25 tons per day of lime.

Steel balls and steel rods, necessary to grind the ore to fine size preparatory to concentration, are estimated to be used at the rate of ½ pound of steel per ton of ore mined. On the basis of the 48 million tons of ore to be mined, a total of 24,000 tons of such steel would possibly be used over the life of the project or 2,000 tons per year.

CONCLUSION

The foregoing is merely preliminary information but it does serve to generally indicate what is involved in the proposed copper project. Certainly it would be to Duval's advantage to have us service them with a spur; whether it would be to our advantage is still indeterminate. Much further specific information is required to properly evaluate the project from our standpoint.

Respectfully submitted,

Wm. H. Crutchfield, Jr.

Wm. H. Crutchfield, Jr.
Mining Engineer

Mining Department
Los Angeles 11-08-61
File 5.0050

Sheet # 1

DRILL HOLE LOG

In Sec 36, T23N-R18W

DUVAL SULPHUR & POTASH COMPANY

HOLE NO State # 1

PROJECT MINERAL PARK

SIZE NX & BX

TYPE DIAMOND DRILL Wire Line

LOCATION KINGMAN

START 0

N80,960.36 E77,430.19 ELEV 3766.6

STOP 302

FROM	TO	INTERVAL	RECOVERY	CHARACTER	REMARKS
0	37	37.0	0.0	Alluvium	Rock bit
	37				Begin NX
37	48	11.0	9.0	Pegmatite--weakly fractured, thin limonite in fractures; argillite (A)	
48	52	4.0	2.0	Basic Dike--weak, strongly altered; heavy limonite.	
52	56	4.0	4.0	Pegmatite--A; thin LM as fracture coatings	
56	65	9.0	8.0	Basic Schist--F. grained with thin Quartz veins; SLK; A.	
65	71	6.0	6.0	BT, Q. Diorite--Fresh, Med. grained; few fractures; massive	
71	74	3.0	3.0	Basic Schist--Fresh, Med. grained; slight A, SLK; fine PY & CP (?) on fractures at 71.5' thin QZ veins.	
	74.5			Approx. location of BX size core	
74	88.5	14.5	13.5	Intermed. type Schist--Mod. to Strongly altered, weak, SLK, Strong A; MO in thin QZ veins at 84', PY at 87'	
88.5	100	11.5	9.5	Diorite--Fresh; thin QZ veins; PY at 93'	
100	103.5	3.5	3.0	Diorite--Sheared, weathered, weak, A, SLK PY at 100.5'	
103.5	131	27.5	27.5	Quartz Diorite--Fresh, Mod. fractured, with thin PY coatings on fractures; thin QZ veins.	
131	141	10.0	10.0	Quartz Diorite--Fresh, slightly fractured; gneissic banding	
141	145	4.0	4.0	Pegmatite--Fresh, mod. fractures, PY,CP, SL (sphalerite)	
145	150.5	5.5	5.5	Quartz Diorite Gneiss--Slightly AT, thin QZ veins	

LOGGED BY A B Gray

DUVAL SULPHUR & POTASH COMPANY

ESPERANZA COPPER DIVISION

Sec. 36 T23N R18W

CERTIFICATE OF ASSAY

SPECIAL FOR B. G. MESSER

August 5, 1960

BEAKER NOS. Plotted ✓	MARKS, ETC.	SAMPLE-GMS.	Cu	Pb	Mo	Ag	Au	
—	Special #1		.07	Nil	.003	Trace	Nil	—
	N.41°W300' from SE Corner SYL #13							
—	Special #2		.02	Nil	.001	.02	Nil	—
	S.25°E.100' from NW Corner SYL #5							
—	Special #3		.02	.23	.001	.01	Nil	Pb ?
	S.31°W .425' from NE Corner SYL #8							
	Special #4		Nil	Trace	.001	.02	Nil	—
✓	S.18°W 170' from SYL #1		~~Nil~~	~~Trace~~	~~.001~~	~~.02~~	~~Nil~~	
—	Special #5		Trace	Trace	.004	.01	Nil	—
	N.57°E.490' from SW Corner SYL #12 Old Shaft, including shaft.							
X	Special #6		.74	1.84	.001	6.3	Trace	✓ vein
✓	S.35°W 225' from NE (old works) Corner SYL #4							
—	Special #7		.02	Trace	.001	.02	Nil	—
	S.56° W.300' from NE Corner SYL #6							
—	Special #8		Nil	1.10	.001	.02	Nil	Pb ?
	S.52°W.350' from N.E. Corner SYL #7							
—	Special #9		.04	Nil	.003	Trace	Nil	—
	S.52°W. 200' from N. E. Corner SYL #19							
	Special #10		.12	Nil	.026	.01	Nil	Mo -
—	S.75°W. 220' from N.E. Corner SYL #19							
—	Special #11		.02	Nil	.002	Trace	Nil	—
	N.3°E.60' from S.W. Corner SYL #11							
X	Special #12		.07	Trace	.093	Trace	Nil	Mo
	S.37°W.160' from N.E. Corner SYL #20							
	Special #13		Trace	Nil	.004	Trace	Nil	—
	S.75°E 50' from N.W. Corner SYL #9							
	Special #14		Trace	Trace	.002	.02	Nil	—
	N.25°W. 200' from S. E. Corner SYL #10							

6, 12, 15, 16 17, 19

FORM 311 M.L.

F. M. TINDALL

DUVAL SULPHUR & POTASH COMPANY

ESPERANZA COPPER DIVISION

CERTIFICATE OF ASSAY

August 10, 1960

BEAKER NOS.	MARKS, ETC.	SAMPLE GMS.	Cu	Pb	Mo	Ag	Au	
X	Special #15A		.43	Nil	.009	7.20	Trace	Cu-Mo-Ag
	N35°W from S.E. Corner 800' SYL #15							
X	Special #15B		.14	Nil	.002	1.60	Trace	Cu-Ag v.?
	Location same as 15A							
X	Special #16		.10	3.0	.002	.40	Nil	Cu-Pb-Ag
	S32° W 75' from N.E. Corner SYL #16							
	Special #17		.05	.13	.001	Trace	Nil	Pb ?
	S.75° E 250' from N.W. Corner SYL 17							
X	Special #18		.03	Nil	.001	4.80	Trace	Ag
	S.70° W From N.E. Corner SYL 18							
	Special #19		.06	Nil	.001	Trace	Nil	—
	N.55° W 475' from S. E. Corner SYL 14							

FORM 311 M.L.

F. M. TINDALL

Albuquerque, New Mexico

October 20, 1970

5.0050
76.0360

Mr. J. L. Stephens

Your C-102-1196 October 16, 1970 concerning Phillips Petroleum Company's request for an option for lease of copper and associated minerals underlying Santa Fe Pacific Railroad Company's holdings in Section 21 and 35, T23N, R18W, Mohave County, Arizona:

Section 21 is approximately 3 miles west of Duval Corporation's large open pit Ithaca Peak copper operation in Section 19, T23N, R17W. The much smaller Emerald Isle copper operation of El Paso Natural Gas is located just southeast in the E/2 NE/4 of Section 27, T23N, R18W. The proximity of Section 21 to these know orebodies could have generated the interest now shown by Phillips Petroleum. However I assume that Phillips must have a sounder reason than proximity, such as geochemical or geophysical anomalies, to justify its interest.

As to Section 35 a portion of Duval's tailings pond from its Ithaca Peak operation lies in the E/2 of the E/2. To my knowledge Duval owns the surface. Circa 1960 Duval conducted a geophysical survey of the tailings pond area situated in Sections 35 and 36. Duval also sampled outcrops in Section 36 and drilled several holes in the W/2 of Section 36. From this Duval concluded that there was a lack of copper porphyry-type mineralization in Sections 35 and 36. If Phillips Petroleum thinks otherwise re Section 35 I suggest that we give them the opportunity to try to disprove Duval's opinion.

Wm. H. Crutchfield Jr.

WHC:jb

cc: Mr. T. H. Rodgers

DUVAL SULPHUR & POTASH COMPANY

ESPERANZA COPPER DIVISION

CERTIFICATE OF ASSAY

KINGMAN SPECIALS

August 18, 1960

BEAKER NOS.	MARKS, ETC.	SAMPLE GMS.	Cu	Pb	Mo	Ag	Au
	Special #20		.03	Nil	.0012	Nil	Nil
	N67° W 220' from S.E. Corner SYL #21						
	Special #21		.03	Nil	.0012	Nil	Nil
	N11° W 310' from SE Corner SYL #22						
	Special #22		.03	Nil	.0006	Trace	Nil
	N30° W 480' from SE Corner SYL #23						
	Special #23		.09	Trace	.0018	Trace	Nil
	N57° E 75' from SW Corner SYL #24						

FORM 311 M.L.

F. M. TINDALL

FORM # 355
REVISED 10-62

ASSAY—GEOLOGY COMPOSITE DRILL LOG

DUVAL SULPHUR & POTASH COMPANY

PROJECT Mineral Park

Approx.			
Coörd. : N 1,580,500	BEARING	HOLE Nº State # 2
E 378, 330	INCL. vertical	COLLAR ELEV. 3840
START COMPL.		DEPTH 228'

DESCRIPTION	Geol.	Assay	INT.	C/R	% from	% to	%	%	oz	oz	% EQUIV.	GROUPING — RMKS.
		10	0		0	10						
Microcline Granite- minor mafics coarse-grained, unaltered		4	4		10	14						
Quartz Diorite Gneiss- high in mafic minerals, weathered.		0.5	0.5		14	14.5						
Granite-		0.5	0.5		14.5	15						
Quartz Diorite- veinlets of granite		5	5		15	20						
Quartz Diorite and Quartz Diorite Gneiss-biotite and minor chlorite		12.5	12.5		20	32.5						
Plagioclase- Biotite-Quartz Hornfels-(metamorphosed quartz diorite)-abundant epidote, quartz epidote veinlets, unaltered		7.5	7.5		32.5	40						
Granite- chlorite, microcline, weak alteration, pyrite, coarse grained		8.5	8.5		40	48.5						
Hornfels- quartz-biotite-plagioclase, epidote, pyrite, unaltered		4.5	4.5		48.5	53						
Granite Vein- quartz, microcline minor epidote, unaltered		0.5	0.5		53	53.5						
Hornfels-same as above		3	3		53.5	56.5						
Hornfels-with vertical pegmatite vein, 1" wide		2.5	2.5		56.5	59						
Granitic Gneiss-medium grained, equigranular, quartz-pyrite veinlet.		4	4		59	63						
Hornfels- same as above with veinlets of pyrite or pyrrhotite		12	12		63	75						
Pegmatite- quartz, microcline unaltered		1.0	1.0		75	76						
Hornfels - same as above		4.5	4.5		76	81.5						
Pegmatite- same as above		1.5	1.5		81.5	83						
Hornfels- same as above		6	6		83	89						
Pegmatite- same as above		1	1		89	90						
Hornfels- same composition, weakly foliated		17	17		90	107						
Granite- biotite, chlorite, pyrite		14	14		107	121						
Hornfels- quartz, plagioclase, biotite, epidote, metamorphic texture, unaltered		2.5	2.5		121	123.5						

LOGGED BY J.J. Eidel DATE Nov.14,1963

FORM # 355
REVISED 10-62

ASSAY—GEOLOGY COMPOSITE DRILL LOG

DUVAL SULPHUR & POTASH COMPANY

PROJECT Mineral Park

Coörd. : N	BEARING	HOLE Nº State # 2 (cont.)
E	INCL.	COLLAR ELEV.
START COMPL.		DEPTH

DESCRIPTION	Geol.	Assay	INT.	C/R	% From	% To	%	%	oz	oz	% EQUIV	GROUPING — RMKS.
Granite- pyrite on fractures			3.5	3.5	123.5	127						
Hornfels-same as above			15	15	127	142						
Granite			0.5	0.5	142	142.5						
Diorite Gneiss- biotite, crude foliation, epidote abundant			9	9	142.5	151.5						
Pegmatite- with quartz vein, no sulfides			5	5	151.5	156.5						
Diorite Gneiss-weak foliation composition similar to hornfels			3.5	3.5	156.5	160						
Pegmatite- very coarse grained			5	5	160	165						
Diorite-Gneiss-weak foliation composition similar to hornfels			22.5	22.5	165	187.5						
Biotite Chlorite Granite			4.5	4.5	187.5	192						
Diorite Gneiss- quartz pyrite veinlets, pyrite on fractures, unaltered, 214'-quartz pyrite veinlet with minor sulfide.			36	36	192	228						
BOTTOM OF HOLE						228						

Sheet # 2

DRILL HOLE LOG

DUVAL SULPHUR & POTASH COMPANY

HOLE NO State # 1

PROJECT MINERAL PARK

SIZE NX & BX

TYPE DIAMOND DRILL Wire Line

LOCATION Kingman

START 0

STOP 302

N 80,960.36 E 77,430.19 ELEV. 3766.6

FROM	TO	INTERVAL	RECOVERY	CHARACTER	REMARKS
150.5	152	1.5	1.5	Pegmatite--Fresh; some PY on infrequent fractures	
152	156.5	4.5	4.5	Quartz Diorite--Fresh, Mod. fractured; peg. 155' - 155.5'	
156.5	158.5	2.0	2.0-	Quartz Diorite--Altered, sheared; QZ with fine PY from 158 to 158.5'.	
158.5	161	2.5	2.5	Pegmatite--PY & small amount CP coating infrequent fractures.	
161	165.5	4.5	4.5	Granite--Fine grained, fine dissem. PY	
165.5	199	33.5	33.5	Quartz Diorite Gneiss--Fresh, slightly fractured; thin QZ coatings & minor PY on some fractures.	
199	211	12.0	12.0	Granite--Very coarse grained; fresh, little fractured	
211	219	8.0	8.0	Diorite Gneiss--Fresh unfractured	
219	221	2.0	2.0	Pegmatite--Fresh; thin PY coating, few fractures	
221	227	6.0	2.0	Diorite--Strongly fractured; PY coating fractures	
227	233.5	6.5	3.0	Diorite--Highly decomposed (A), weak	
233.5	236.5	3.0	3.0	Diorite Gneiss--Mod. Fractured	
236.5	242.0	5.5	5.5	Granite--Fine grained, Altered(A); Dissem. fine grained PY	
242	245	3.0	3.0	Pegmatite--Fresh; thin PY on fracture coatings	
245	302	57.0	57.0	Quartz Diorite Gneiss--Fresh, Very slightly fractured; thin coating of fine PY & some CP on some fractures. Peg. vein 279-280'	
	302			Bottom of hole.	
				Hole located in Sec. 36, T23N-R18W	

LOGGED BY J B Gray

FORM # 355
REVISED 10-62

ASSAY—GEOLOGY COMPOSITE DRILL LOG

DUVAL SULPHUR & POTASH COMPANY

Sheet 1 of 1

PROJECT Mineral Park

Approx. Coörd. : N 1,579,500	BEARING	HOLE Nº State#4
E 378,330	INCL. Vertical	COLLAR ELEV. 3751
START COMPL.		DEPTH 183.5

DESCRIPTION	Geol.	Assay	INT.	C/R	% From	% To	%	%	oz	oz	% EQUIV.	GROUPING — RMKS.
		10	0		0	10	Assays on following sheets					
Pegmatite- K-feldspar and quartz coarse grained, oxidized		4	4		10	14						
Actinolite(?)-Chlorite Schist and Hornfels- fine grained green micas and magnetite		2	2		14	16						
Microcline Pegmatite and Schist		2	0.2		16	18						
Gouge- comminuted schist with minor pegmatite fragments schist alterated and friable		10	2.8		18	28						
Actinolite(?),Amphibole Schist and Hornfels with thin pegmatite layers		6	5		28	34						
Pegmatite and coarse grained granite,weak pyrite(some oxidized) and guartz veinlets, some molybdenite adjacent quartz veinlets		12	9		34	46						
Altered Pegmatite- weak chlorite, weak foliation, some pyrite		6	4.8		46	52						
Biotite-Chlorite Gneiss-coarse grained,gradation from altered pegmatite, greater percentage of mafic minerals,biotite altered to pyrite and chlorite,some feldspar weakly altered		13	12		52	65						
Chlorite-Garnet Gneiss with bands ofmicrocline pegmatite,garnet at contacts; 81'- pyrite and minor chalcopyrite on fractures, 69.5± quartz-pyrite veinlet, 94'- pyrite		34	24		65	99						
		65	57		99	164						
Chlorite Granitic Gneiss with pegmatite bands, grain size variable, fractured, some movement, faults at 14o'-142' and 149.5-157.5',fractured areas contain some sericite and talc pyrite occurrs on the fractures.												
Biotite-Chlorite Gneiss, pyrite on veinlets, no alteration		5	4		164	169						
Pegmatite-minor chlorite		4	4		169	173						
Biotite-Chlorite Granitic Gneiss pyrite on fractures		10.5	10.5		173	183.5						
BOTTOM OF HOLE						183.5						

LOGGED BY L. J. Fidel DATE Nov. 14 1963

* Save for File Copy

DUVAL SULFUR AND POTASH COMPANY

Proposed Copper Operation

Kingman, Arizona
(Confidential)

LOCATION

Drilling exploration over the past two years has been principally confined to Section 19, T23N, R17W in the Ithaca Peak area. This section is outlined in red on attached map. Another orebody relatively lower in copper, but higher in molybdenum than that already outlined at Ithaca Peak is contained in Section 25, T23N, R18W (outlined in blue). This orebody does not figure into the proposed project at present.

Sections 23 and 26, T23N, R18W, outlined in orange, have been designated as possible mill sites. All of the surface of Section 35 immediately south of Section 26 is owned by Duval; Santa Fe Pacific owns the mineral rights. This particular section may be used for a waste disposal (tailings) area.

The location of the former Chloride Branch relative to the proposed mill sites is outlined in red.

EXPLORATION - Section 19, T23N, R17W

To date approximately 28,000 feet of drill holes have outlined a kidney shaped orebody in plan, measuring approximately 3800 feet longitudinally and 2000 feet in width in its greatest dimensions.

Thickness, under a thoroughly leached overburden ranging from 100 feet to 200 feet in depth, varies from zero feet at its margins to over 100 feet at its center.

There are two tonnage estimates: A conservative 48 million tons and a more optimistic one of 55 million tons. Overall average grade is 0.75% copper and 0.06% molybdenum (15 lbs. of copper and 1.2 lbs. of molybdenum per ton of ore mined). This grade is typical of the tenor of ore mined in the large open pit operations in the West today.

EXPECTED LIFE OF OPERATION

A minimum life of 12 years is expected. The concentrator to be built will handle 12,000 tons of ore per day. Total daily output of concentrates, essentially copper, is estimated to range from 340 to 380 tons per day on a 7 day week basis. A figure of 300 tons per day for 350 days of operation per year would be a conservative figure for estimating freight revenue on outbound movement.

ESTIMATED COST OF PROJECT

It is estimated that Duval will have spent $25-30 million, including exploration costs, before the first ton of concentrates is produced.

ESTIMATED TARGET DATE

The concentrating plant is expected to be completed and full operations underway 2 years from the end of March, 1962. By the end of March, 1962, all exploration and metallurgical testing should be finalized. Construction of the concentrating plant and stripping of overburden from the orebody will start soon after that date. Duval's concentrating plant of identical capacity at the Esperanza operation took about 1½ years to complete.

RAILROAD CONSTRUCTION AND TIMING

Should the Santa Fe see fit to construct spur to serve this operation, construction, according to Mr. Messer, should start as soon as possible after March, 1962. This would greatly facilitate construction of the concentrating plant and stripping operation.

It should be added that in this regard my only expression of policy, understood to be entirely unofficial, was to the effect that any such construction would necessarily have to be based on sound economic justification. That is, if Duval could show that a reasonable return on our investment could be obtained then I personally felt that our people would look into all aspects of the matter very closely.

OUTBOUND MOVEMENT

1. Copper concentrates conservatively estimated at 300 tons per day over a 350 day annual operating period. These concentrates would contain about 25 per cent recoverable copper and 75 per cent waste including water content of perhaps 10 per cent.

The actual value of recoverable copper for determination of freight rate valuation is 14 cents per pound. (The prevailing market price for copper is 31 cents per pound.) The valuation on each ton of 25 per cent copper concentrates is therefore:

500 lbs. copper x $0.14 = $70.00

2. Molybdenum is a by-product and will be shipped not as the sulfide but will be processed and shipped as molybdic trioxide - a commodity that has a prevailing market price of $1.60 per pound of contained molybdenum. Approximately 200 tons or 400,000 lbs. of MoO_3 will be shipped each month. The valuation of such a shipment would amount, market-wise, to approximately $345,000. Mr. Messer promised to get rate information and destinations on this commodity based on a like product being currently shipped from the Esperanza operation.

3. Copper concentrate destination: Duval's Esperanza operation ships to the American Smelting and Refining Company's smelter at Hayden, Arizona, under an existing contract. Of vital interest to the project at hand however is that, according to Mr.

Messer, the Hayden smelter is operating at full capacity and therefore the Kingman concentrates could possibly go to A.S.&R's. smelter at Tacoma, Washington. Discussion of this possibility has already taken place between Duval and A.S.&R. It was further explained that A.S.&R. would absorb most of the freight differential for the longer distance.

INBOUND MOVEMENT

Mr. Messer is working up the quantities of materials needed. However until these are received there are certain aspects of inbound revenue that could be mentioned for the sake of preliminary background information.

Apart from the short term haul of construction material and equipment, there are continuing items that would move in during the 12-year life of the project to support the day to day operations.

One such item would be ammonium nitrate - the explosive now commonly used in large open-pit operations. Duval's Esperanza operation receives the bulk of its ammonium nitrate from Scandia Bay, Florida. Perhaps ½ pound of explosive would be needed for each ton of rock removed. This figure will have to be determined. However for sake of illustration, some 150 million tons of rock overburden and ore will probably be excavated. This would amount to an explosive use of roughly 3000 tons per year.

0.4# / ton rock according to B.G. Messer 11/13/61

(12000 daily ton op) 350 day operating year = 4,200,000 tons milled/yr.

Reagent consumption #/ton Ore (Ref. Mining Eng, Nov. 1961 - p.1239)

Lime	3.5 - - - 21 # pd	21 X 350 = 7350 tons (100 cars)
Potassium ethyl xanthate	0.025 - - - 50# pd	420# per day
" amyl "	0.005 - - - 10# pd	147000#/yr
Methyl amyl alcohol	0.10 - - - 200# pd	73.5 tons/yr.
Stove oil	0.03 - - - 60# pd	
Sodium ferrocyanide	0.05 - - - 100# pd	

An indeterminate amount of chemical reagents would also be used. Included among these was the mention of 25 tons per day of lime.

Steel balls and steel rods, necessary to grind the ore to fine size preparatory to concentration, are estimated to be used at the rate of ½ pound of steel per ton of ore mined. On the basis of the 48 million tons of ore to be mined, a total of 24,000 tons of such steel would possibly be used over the life of the project or 2,000 tons per year. ∴ 12 tons per day or 4200 tons per year based on 350 day operating year

2# / ton of ore milled
2.4# avg for industry according to B.G. Master 11/13/61

CONCLUSION

The foregoing is merely preliminary information but it does serve to generally indicate what is involved in the proposed copper project. Certainly it would be to Duval's advantage to have us service them with a spur; whether it would be to our advantage is still indeterminate. Much further specific information is required to properly evaluate the project from our standpoint.

Respectfully submitted,

Wm. H. Crutchfield, Jr.

Wm. H. Crutchfield, Jr.
Mining Engineer

Mining Department
Los Angeles 11-08-61
File 5.0050

DUVAL CORPORATION
COPPER DIVISION — MINERAL PARK PROPERTY
KINGMAN, ARIZONA

REPORT ON PROPOSED TAILINGS DISPOSAL AREA, SECTIONS 25, 26, 35 AND 36, T23N, R18W

****

SUMMARY AND CONCLUSIONS

The outcrop assays, churn and diamond drill holes, geophysical data, and geological mapping indicate that the entire tailings disposal area, located in Sections 35 and 36, is composed of unaltered pre-Cambrian granitic gneisses, basic igneous rocks, and pegmatites. This pre-Cambrian complex is covered in many areas by a thin veneer of Quaternary alluvium; the complex contains no disseminated mineralization and has not been secondarily enriched. No mineralization of porphyry tenor or dimensions exists beneath the proposed tailings disposal area.

INTRODUCTION

Approximately the eastern one half of Duval Corporation's proposed tailings disposal area lies in Section 36, T23N, R18W. This section is state land.

The purpose of this report is to present all geological and geophysical evidence pertaining to this disposal area. Assays of vein outcrops, assays and logs of four drill holes on or near the area, and a geological map of the area are included in this report.

PREVIOUS WORK

Schrader (1908) described the geology of the Cerbat Range in general and specifically described the mineral deposits of the area. The two patented claims, the Ark and the San Antonio, (plate 1), which extend into Section 36 east of the proposed tailings area are described in Schrader's bulletin. These claims are owned by Duval and consist of quartz-pyrite veins containing values of silver and gold.

Dings (1951, plate 18) mapped the area in question on a 1:24,000 scale. The entire tailings disposal area falls within the area mapped by Dings as pre-Cambrian undifferentiated granite, gneisses and schists and Quaternary alluvium.

Subsequent detailed mapping (unpublished) by Duval geologists Donn Clippinger (1961) and I. B. Gray (1961) extended into the northeast portions of the area covered by Plate 1. The entire area was recently mapped by the writer.

GEOLOGY

A. General

The proposed tailings disposal area (Plate 1) lies in a basin surrounded

J. J. Eidel

DUVAL CORPORATION
COPPER DIVISION -- MINERAL PARK PROPERTY
KINGMAN, ARIZONA

REPORT ON PROPOSED TAILINGS DISPOSAL AREA, SECTIONS 25, 26, 35 AND 36, T23N, R18W
CONTINUED
****

by exposures of pre-Cambrian gneiss and granite on the north and south and by similar rocks and younger granite, aplite, and rhyolite on the east. The basin itself is partially filled with a veneer of Quaternary alluvium. Scattered outcrops indicate that the pre-Cambrian complex extends beneath this veneer. Schrader (1908, p. 27) states, "Though locally concealed, the pre-Cambrian complex underlies the area (western Mohave County) as a whole and constitutes the uneven floor upon which all other rocks rest.....it composes practically the whole of the Cerbat... Mountains." These pre-Cambrian rocks are the most easily eroded in the area and consistently underlie basins in the Cerbat Range similar to the one being discussed.

The younger rocks to the east are part of a large dike which extends southward. These rocks do not extend westward beneath the tailings disposal area as proven by drill holes.

B. Drill Holes

Three diamond drill holes and one churn drill hole were drilled on State Section 36, (Plate 1). The assays of the four holes and the logs of the three diamond drill holes are included in Appendix A.

Three diamond drill holes, (State #1, #2 and #4), were drilled in pre-Cambrian igneous and metamorphic rocks which were intruded by numerous pegmatite veins composed of approximately eighty percent potash feldspar. The pre-Cambrian complex and the pegmatites are unaltered except in the vicinity of the infrequent quartz-sulfide veins. All the porphyry type mineralization of Ithaca Peak, however, is within intensely altered rocks. The assays of all four drill holes indicate that no mineralization of an economic grade exists in the tailings dam disposal area.

ASSAYS

In July 1960, twenty samples were taken from various old workings checking for valuable mineralization in Section 36. This was done to supplement an application for Mineral Lease but didn't show enough mineralization to justify its use. The Mineral Lease Application was cancelled and a prospecting permit applied for. The samples were taken from thin quartz-sulfide veins exposed in the old workings. The assays of these samples are presented in Appendix B.

Only six of these samples contained significant values; all of them represent small quartz-sulfide veinlets. The veins and veinlets are plotted on Plate 1 in red; unmineralized pegmatites are plotted in blue. The veins are sparsely situated. No disseminated mineralization even approaching an economic grade exists in the tailings disposal area.

DUVAL CORPORATION
COPPER DIVISION — MINERAL PARK PROPERTY
KINGMAN, ARIZONA

REPORT ON PROPOSED TAILINGS DISPOSAL AREA, SECTIONS 25, 26, 35 AND 36, T23N, R18W
CONTINUED
****

GEOPHYSICAL EVIDENCE

Duval Corporation geologists conducted a resistivity survey in the tailings dam area. It was concluded that bed rock (pre-Cambrian complex) is shallow in this area and that no significant mineralization was indicated.

McPharr Geophysical (Ridge Mining Co., Texas Gulf Sulphur) conducted an extensive I P (induction potential) survey. Their results have not been studied by Duval personnel, but their termination of their interest in this property and in areas of similar geology on the western extremities of the Cerbat Mountains are another indication of the lack of porphyry type mineralization in the tailings disposal area.

Respectfully submitted,

DUVAL CORPORATION

By J. James Eidel
J. James Eidel
Geologist

References
Schrader, F. C., 1909, Mineral deposits of the Cerbat Range, Black Mountains, and Grand Wash Cliffs, Mohave County, Arizona: U. S. Geol. Survey Bull. 397.
Dings, M. G., 1951, The Wallapai Mining District, Cerbat Mountains, Mohave County, Arizona: U. S. Geol. Survey Bull 978-E.

APPENDIX A

APPENDIX B

Los Angeles, February 9, 1960

5.0050

Mr. J. L. Stephens:

As explained to Mr. D. G. Walsh on January 28, Mr. H. C. Vincent, Freight Traffic Manager, Amarillo, notified me through the attached letter regarding the interest of Mr. G. E. Atwood, Vice-President, Duval Sulphur and Potash Company, in Santa Fe Pacific Lands in Mohave County, Arizona.

Accordingly, on January 28 I contacted Mr. Atwood by telephone. He explained that his company has been actively exploring for copper in the Mineral Park area north of Kingman. Although Duval does not, as yet, know whether this exploration will be successful, at least the stage has been reached where this company must now think about further land and mineral-right acquisition in the alluvial area adjacent to the area now being explored. As I understand it, such acquisition is for two purposes:

a) Plant site and waste disposal
b) Protection from encroachment by outsiders in the event that the exploration at Mineral Park is successful.

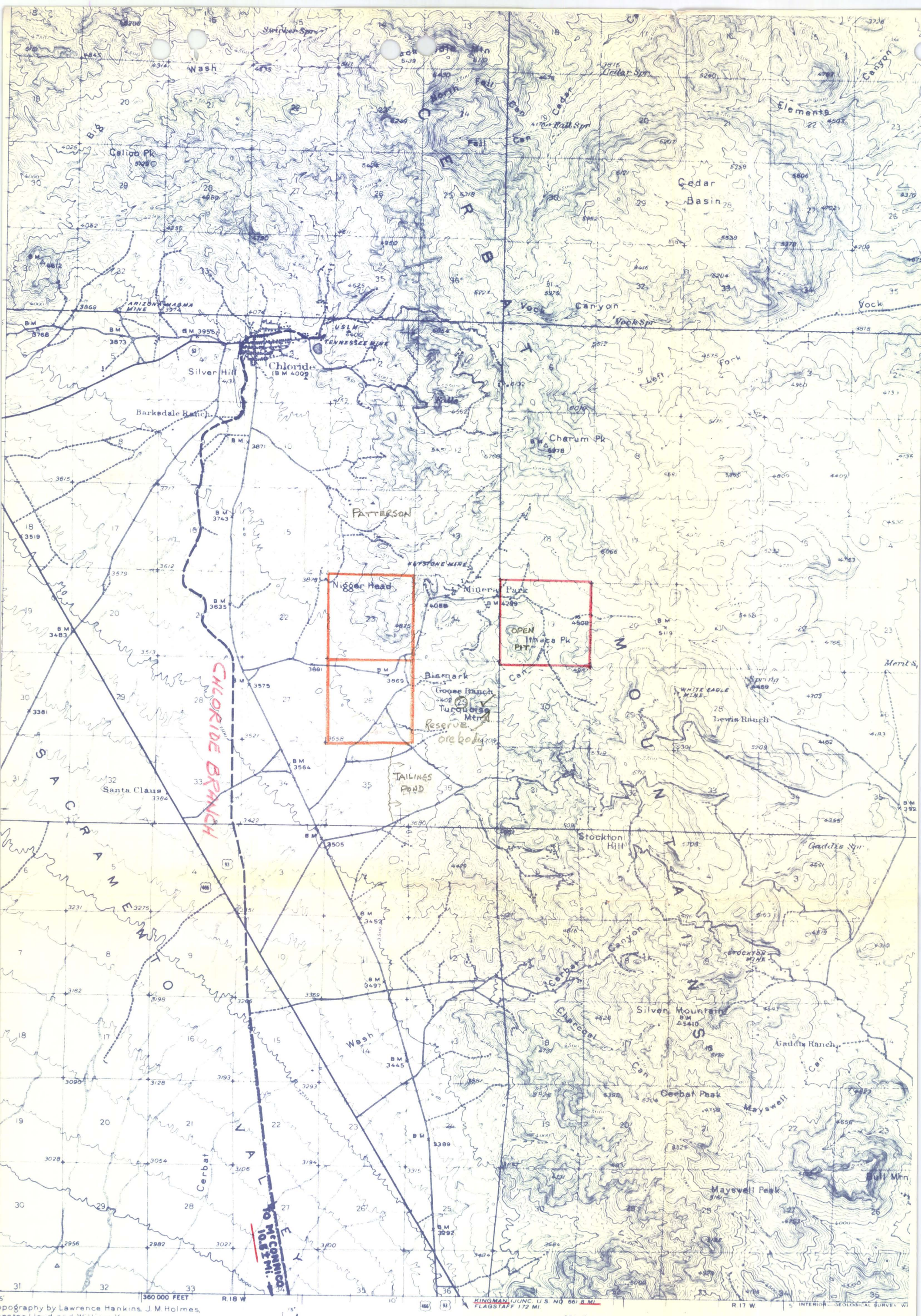
Santa Fe Pacific sections under consideration for leasing by Duval are 21, 27, 33, 35, T23N R18W. Of these, in all probability, only two would be leased for a long term period.

I asked Mr. Atwood whether his company had any intention of exploratory drilling in the above sections. (I had advised that performance by a lessee is vital in any lease transaction.) Mr. Atwood admitted that such exploration did not seem at all likely at present. However, he did add that if exploration was successful at Mineral Park, Duval would certainly drill the sections before building a plant or waste disposal site. This would be to assure that no buried ore deposits exist under the alluvium of said structures.

The matter boils down to the fact that Mr. Atwood would like to know, under the conditions outlined above, just what his company must or could do in the case at hand. Essentially, he is after some measure of protection or in other words some assurance that the Santa Fe Pacific would consider Duval's applications for leasing the above sections ahead of any possible outside company that conceivably could become interested in the general area.

As confirmation of my telephone conversation to Mr. Atwood on January 28, I wrote him on the same date advising that he will receive subsequent advice from you.

W. H. Crutchfield, Jr.



Topography by Lawrence Hankins, J. M. Holmes, Chester Lloyd, and William Knox
Surveyed in 1939

ROAD CLASSIFICATION

Heavy-duty — Light-duty

Unimproved dirt

U. S. Route — State Route

TRUE NORTH — MAGNETIC NORTH

APPROXIMATE MEAN DECLINATION, 1939

SCALE 1:62500

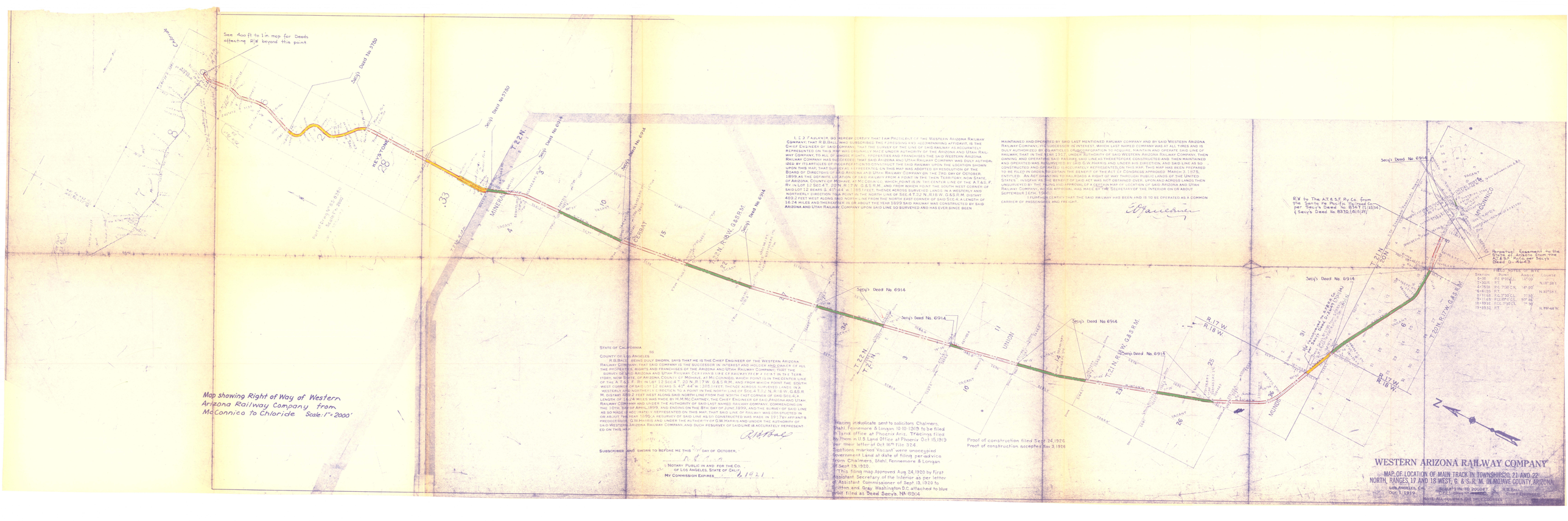
4 MILES — 21000 FEET — 5 KILOMETERS

CONTOUR INTERVAL 50 FEET

DATUM IS MEAN SEA LEVEL

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D. C.

A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST



See 400 ft. to 1 in. map for Deeds affecting R/W beyond this point.

Map showing Right of Way of Western
Arizona Railway Company from
McConnico to Chloride Scale: 1" = 2000'

I, E. D. Faulkner, do hereby certify that I am President of the Western Arizona Railway Company; that R. B. Ball, who subscribed the foregoing and accompanying affidavit, is the Chief Engineer of said Company; that the survey of the line of said railway as accurately represented on this map was orginally made under authority of the Arizona and Utah Railway Company, to all of whose rights, properties and franchises the said Western Arizona Railway Company has succeeded; that said Arizona and Utah Railway Company was duly authorized by its articles of incorporation to construct the said railway upon the location shown upon this map; that survey as represented on this map was adopted by resolution of the Board of Directors of said Arizona and Utah Railway Company on the 3rd. day of October, 1899, as the definite location of said railway from a point in the then Territory, now State, of Arizona, County of Mohave, at McConnico, which point is in the center line of the A.T.&S.F. Ry. in Lot 12 Sec. 4 T. 20 N., R. 17 W. G & S R.M., and from which point the south west corner of said Lot 12 bears S. 41° 44′ W. 1385.1 feet; thence across surveyed lands in a westerly and northerly direction to a point in the north line of Sec. 4 T. 22 N., R. 18 W., G.&S.R.M. distant 489.2 feet west along said north line from the north east corner of said Sec. 4; a length of 16.24 miles and thereafter in or about the year 1899 said railway was constructed by said Arizona and Utah Railway Company upon said line so surveyed and has ever since been maintained and operated by said last mentioned railway company and by said Western Arizona Railway Company, its successor in interest, which last named company was at all times and is duly authorized by its articles of incorporation to acquire, maintain and operate said line of railway; that in the year 1917, under authority of said Western Arizona Railway Company, then owning and operating said railway, said line as theretofore constructed and then maintained and operated was resurveyed by said G. W. Harris and under his direction, and said line as so constructed and operated is accurately represented on this map. This map has been prepared to be filed in order to obtain the benefit of the Act of Congress approved March 3, 1875, entitled: "An Act granting to railroads a right of way through public lands of the United States". Insofar as the benefit of said act was not obtained over, upon and across lands then unsurveyed by the filing and approval of a certain map of location of said Arizona and Utah Railway Company, which approval was made by the Secretary of the Interior on or about September 16th., 1900.

I further certify that the said railway has been and is to be operated as a common carrier of passengers and freight.

E D Faulkner

State of California
ss
County of Los Angeles

R. B. Ball, being duly sworn, says that he is the Chief Engineer of the Western Arizona Railway Company; that said company is the successor in interest and holder and owner of all the properties, rights and franchises of the Arizona and Utah Railway Company; that the survey of said Arizona and Utah Railway Company's line of railway from a point in the Territory, now State, of Arizona, County of Mohave, at McConnico, which point is in the center line of the A.T.&S.F. Ry. in Lot 12 Sec. 4 T. 20 N., R. 17 W. G & S R.M., and from which point the south west corner of said Lot 12 bears S. 41° 44′ W. 1385.1 feet; thence across surveyed lands in a westerly and northerly direction to a point in the north line of Sec. 4 T. 22 N., R. 18 W., G.&S.R.M. distant 489.2 feet west along said north line from the north east corner of said Sec. 4; a length of 16.24 miles was made by H. M. McCartney, the Chief Engineer of said Arizona and Utah Railway Company and under the authority of said last named railway company, commencing on the 10th. day of April, 1899, and ending on the 8th. day of June, 1899, and the survey of said line as so made is accurately represented on this map; that said line of railway was constucted in or about the year 1899; a resurvey of said line as so constructed was made in 1917 by affiant's predecessor, G. W. Harris and under the authority of G. W. Harris and under the authority of said Western Arizona Railway Company, and such resurvey of said line is accurately represented on this map.

R B Ball

Subscribed and sworn to before me this 3rd day of October,

Notary Public in and for the Co. of Los Angeles, State of Calif.
My Commission Expires [illegible] 1921

Tracing in duplicate sent to solicitors Chalmers, Stahl, Fennemore & Longan 10-10-1919 to be filed in land office at Phoenix Ariz. Tracings filed by them in U.S. Land Office at Phoenix Oct. 15, 1919 per their letter of Oct. 16th File 324.

Sections marked "Vacant" were unoccupied Government Land at date of filing per advice from Chalmers, Stahl, Fennemore & Longan of Sept. 29, 1920.

This filing map Approved Aug. 24, 1920 by First Assistant Secretary of the Interior as per letter of Assistant Commissioner of Sept. 13, 1920 to Britton and Gray Washington D.C. attached to blue print filed as Deed Secy's. No. 6914

Proof of construction filed Sept 24, 1926
Proof of construction accepted Nov. 3, 1926

R/W to The A.T. & S.F. Ry. Co. from the Santa Fe Pacific Railroad Co. per Secy's Deed No. 8747 (5/25/34)
& Secy's Deed No. 8370 (8/15/29)

Perpetual Easement to the State of Arizona from the A.T. & S.F. Ry. Co. per Secy's Deed D-4643

FIELD NOTES OF WYE

Station	Point	Angle	Course
0+00	P.C. 6°05′ C.L.	14°00′	
2+30.14	P.T.		N. 18° 58′ E.
4+75.28	P.C. 7°30′ C.R.	14°00′	
6+61.95	P.T.		N. 32° 58′ E.
8+11.65	P.C. 7°30′ C.L.	7°30′	
9+11.65	P.C.C. 10°0′ C.L.	97° 46′	
18+89.32	P.C.C. 7°30′ C.L.	7° 30′	
19+89.32	P.T.		N. ~~79°48~~ W.

WESTERN ARIZONA RAILWAY COMPANY

MAP OF LOCATION OF MAIN TRACK IN TOWNSHIPS 20, 21 AND 22 NORTH, RANGES 17 AND 18 WEST, G. & S. R. M. IN MOJAVE COUNTY, ARIZONA

Los Angeles, Cal.
Oct. 1, 1919

Scale 1 in. to 2000 ft.
C.E.C.L. Drwg No [illegible]

R. B. Ball
Chief Engineer

Note: All courses are true courses