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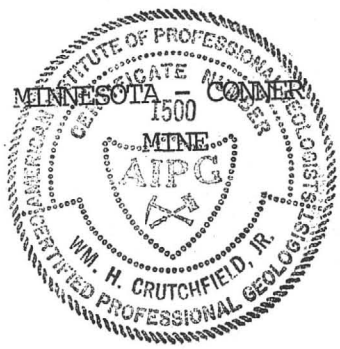
INSTITUTE OF PROFESSIONAL GEOLOGISTS
CERTIFICATE NUMBER
1500
MINE
AIPG
WM. H. CRUTCHFIELD, JR.
CERTIFIED PROFESSIONAL GEOLOGIST
MINNESOTA - CONNER

MINNESOTA-CONNOR MINE - Smelter Settlements.

Average shipments selected at random from original record of smelter settlements covering 110 cars of raw ore and concentrates shipped during 1901-1904 by Philadelphia Company.

CAR NO.	WEIGHT	OUNCES		%		Value per Ton.	Net Proceeds	
	Lbs.	Gold	Silver	Copper	Lead	$	$	
20540	43041	1.22	62.6		3.4	55.28	1064.90	#
15648	39707	.87	41.6			36.13	491.95	#
17211	40230	1.45	47.3		1.5	48.77	643.63	#
	2560	.08	24.3		56.5	44.70	155.28	X
13395	40657	1.47	147.5		2.2	100.32	1745.21	X
13591	41511	.19	31.2	3.0		20.28	240.62	X
14269	41461	1.39	112.3			81.30	1427.56	X
21909	62391	.3	27.0		2.3	11.86	319.30	#
18460	42963	.88	76.2	6.9		50.16	630.34	#
6559	41624	.41	32.3	.4		19.32	187.09	X
20064	44847	.36	46.5	4.2		29.73	434.36	X
13592	41461	.32	37.7	4.0		24.31	284.02	X
15528	41562	.55	51.8	1.0		31.27	455.89	#
17394	43510	.62	73.6			37.30	811.46	#
18604	45778	1.01	90.3			40.52	1017.86	X
20797	43974	.48	59.5		4.0	26.05	572.76	#
19478	43130	.55	76.1			38.29	825.72	#

NOTE :

Cars marked # are concentrates, while those marked X are raw ore. In the above values gold was figured at $19.00, silver around 50¢, lead 2 or 3 cents and 8¢ for copper, making the average value per ton in net proceeds about $33.00 per ton. At 1940 values this is equivalent to around $55.00 per ton net proceeds, and all of this material now takes a much lower freight and treatment charge. The above list includes high, low and average cars shipped.

EL PASO, TEXAS. 8/26 1902

T. Loy Gen Mgr Philadelphia & Ariz. M. Co.
Chloride Ariz

This is to advise you of weight, moisture and assay of the following lots of ore shipped to El Paso Smelting Works

Smelter	CAR No.	CAR Initial	WET WEIGHT	H2O %	H2O Cont.	ASSAY Au. Oz.	ASSAY Ag. Oz.	ASSAY Pb.	
509	15216	A.T.	39050	1		0.65	78.20		
						0.68	77.25		
						0.72	80.1		
						0.70	80.1		

and sample of this assay 8/26

the Moisture is reported at 1%, it did not Carry 1%, but the Smelter Charges 1% arbitrarily in Case the Moisture is less than 1%.

I send you Pulp by Mail Today.

W. J. Taylor Agent.

RATES ON ORE

PER TON

	VALUE $ 35	$ OVER 35 t. 50	$ OVER 50 t. 100	OVER $ 100
CHLORIDE t. PUEBLO	$ 8.60	10.35	12.25	14.70
" " KINGMAN	2.10	2.35	2.75	3.00
KINGMAN t. PUEBLO	6.50	8.00	9.50	11.70

Shaft D – 100' deep – on top of the hill by the road.
28 oz. Ag.
2 or 3% Cu.
Between D shaft and end line outcropping showing Cu.
Between tunnel & 60' level about #18. assay in Pb. & Cu.

Common shaft – 200'
not much lead in Common – but zinc – & mostly Cu.

N. shaft in manzanita – 100' deep.
short drift on 70' level
Fred worked on 40' level – about 40' drift – 25' other way.
Ag. & Cu. – oxidized Cu.
smelter rock.

Mother Lode – Cu. & Ag.
Shaft 200'

General Braut
Tunnel about 300'

(Extract from U. S. Bulle[illegible] 597, Geological Survey, 19[illegible]

THE MINNESOTA-CONNOR MINE

LOCATION. The Minnesota-Connor Mine, one of the more important properties of the district, is about 1½ miles southeast of Chloride and half a mile south of the PayRoll Mine, at an elevation of about 4400 feet. It lies at the head of an open gulch which drains southwestward into a Sacramento Valley. It is reached by good wagon roads of easy grade from the northwest and southwest.

HISTORY AND OWNERSHIP. The property is owned by the Phila. & Arizona Mining Company of Philadelphia, to which it was sold by John Barry about 1902. It consists of two claims, the Minnesota and Connor, joining each other end on. The property was located in the early eighties, since which time it has been a good producer, having yielded several hundred thousand dollars' worth of rich ore. In the early days the surface ores were worked by chloriders with handsome returns. Later the mine was leased to Kelley & McKennon, under whom it also was a prolific producer. During the last few years the property has been leased to a new organization, the Lehigh-Arizona Mng. Company.

VEIN AND ORE. The country rock is the usual pre-Cambrian complex, which here consists mainly of pressed microline-biotite schist, hornblende schist, gneiss and syenite. It is cut by dikes of vogesite or kersanite, which locally occur on either wall, by dikes of pale pinkish permatite or aplite, and by seams of epidote 1/8 to 1/4 inch thick. The vein strikes N. 30 to 50 W. and dips 60 to 80 SW. It is known to extend through a horizontal distance of 2400 feet and varies from 5 to 20 feet in width. Where exposed on the surface and in the shallow shaft southeast of the mill it stands about vertical and is 5 feet in width, but it is reported to flatten and widen as it goes down, and in the deeper part of the mine it has in places a width of 20 feet of good ore. The gangue is quartz, with some calcite, which locally seems to replace the quarts. The ore contains pyrite and arsenopyrite, as well as some chalcopyrite. The principal value is in silver, which in part is in the form of ruby silver, but the ore also contains some gold. Part of it is very rich, some large bodies running $200 or more to the ton. The production is reported to be about $100,000.00. (Refers to Lehigh-Arizona Company only) The propertyis developed to a maximum depth of 570 feet by four shafts and four levels, containing about 2500 feet of drifts and other work approximately as shown in Figure 9. The principal equipment is a very complete mill and hoists.

Owing to a suspension of operations and the presence of water, the mine was not accessible at the time of visit, except the Connor shaft southeast of the main workings. Here on the 50-foot level fair bodies of rich ore were found for a distance of 360 feet to the southeast of the shaft. (See Figure 9 showing Plan of Workings.)

NOTE : At the time Mr. Schrader made the above report in 1909 there were but two claims but later the company acquired adjoining property of importance and built up a large group which has been held intact since.

Mr. Schrader spent several months making a thorough study of Mohave County mines and mineralized areas which he describes and illustrates more or less in detail in his Bulletin.

MINE ASSAYS - MINNESOTA-CONNOR MINE

Where taken	OUNCES Au.	Ag.	Cu. %	Pb. %	Zn. %
ANZANITA CLAIM :					
Vein outcrop, pink quartz,	1.2	7.4			
South shaft, coarse,	.49	31.5			
" " "	.25	48.9		9.4	7.5
" " 100' level, coarse,	.2	25.0		12.1	6.2
" " " " "	.14	52.7	6.0		
" " " " fines,	.4	20.4			
North " 35' down,	.21	72.6			
" " " "	.02	54.0			
UNCLE ABE CLAIM :					
South shaft, coarse, from dump,	.02	23.7		4.5	
" Tunnel, lead ore,	.02	8.0		30.4	
" "	.22	4.5		8.3	
MOTHER LODE CLAIM :					
Tunnel, 4" Streak, shallow,	.3	50.2			
Prospect hole, 8" streak,	.04	58.0			
Shaft, 100' down, chalcopyrite,	.1	38.6	19.5		
" drift,	.1	22.3			
CONNOR CLAIM :					
South shaft, open cut, dump, fines,	5.73	15.3	.4		
"	1.13	31.0	1.2		
Coarse,	.03	70.0	8.8		
Lead ore,	.04	55.1	1.0	24.1	
"C" Shaft, 65' level, 7' wide,	.1	6.8		.8	3.4
Average of sorted ore (1902)	2.96	337.0			
MINNESOTA CLAIM :					
New shaft, 600 level, No. drift,	.08	14.8			
Zinc ore,	.08	43.2			15.9
700' Level, footwall,	.6	4.2			6.2
Pluto Claim :					
Crosscut on 280' level, zinc ore,	.04	6.4		3.1	27.4
	Tr	23.8		4.1	
MINNESOTA-CONNOR DUMPS :					
Average of several piles, 1914 cobbing,	.08	17.7			
Around Line Shaft (See "B" on Map)	1.6	60.4			
	.4	18.6			
Copper ore, massive sulphide ore,	.1	129.6	18.2		
	.26	23.7	2.3		
Average of cobbed pile,	.44	20.0		1.8	3.0

Average of 67 samples of low grade ore from these dumps was $17.72 at December, 1926, prices, as sampled by Needles Smelter.

(Above assays date from 1912 to 1933)

THE MINNESOTA-CONNOR MINE - What the experts say about it:-

F. M. KURIE, E. M., Philadelphia. Formerly general manager and consulting engineer of the famous Portland Mine, Cripple Creek, Colorado.
"I am certain the property will make good. Have never seen anywhere so many good strong veins outcropping in so small a space. It will prove to be an immensely profitable venture, and can be put on a paying basis for very little money." (From report when examining mine in 1911).

R. KEMP WELCH, E. M., Philadelphia. (From report made in 1910).
"The property is a very valuable one, well placed for economic development and working. Splendid ore bodies, but even without the ore it is worth the price asked. The Mineralization is very rich & strong right from grass roots."

WILLIAM TOVOTE, E. M., Field engineer for Phelps-Dodge Company, 1916.
"A great mine. This vein (Minnesota-Connor) will never quit. I worked on the 400 level during E. T. Loy's management and was frequently all through the mine. The size of that ore shoot and its richness made a lasting impression on me." (From personal inspection of vein on 700 level in 1916 just prior to closing down fof lack of funds. As a young engineer just out of Freiberg and seeking practical experience, Tovote had worked in the mine during production)

E. T. LOY, General Manager Phila. & Ariz. Mng. Co., 1899-1903. (From old correspondence)
"We have a wonderful body of Ore, rich in silver and running well in gold. At one place it resembles a jewelry shop. Our mill is working steadily and we have picked a winner in the Minnesota-Connor."

R. C. JACOBSON, E. M., Kingman. (From his report of 1923. Having spent a lifetime at Kingman in professional work, Jacobson knows Mohave County mines and their ores).
"You are fortunate to be able to take advantage of some $100,000 worth of sound development and equipment whereby you have an equal theoretical opportunity to open a similar ore body on an equal economic basis with the two deepest mines of the district (Tennessee and Golconda), and the project is one that I can heartily recommend."

H. L. McCARN, E. M., Kingman, 1928. Former superintendent of Rainbow and other mines near Minnesota and who often visited the latter property on trips of careful inspection of the big vein systems and workings.
"The Minnesota-Connor has a splendid record, for it is a great mine. Deeper development should be carried out, not only on the Minnesota-Connor vein itself, but on the other large vein systems as well. That Uncle Abe vein especially looks good to me; it should develop into a large ore shoot if your people will sink on it."

E. M. BIND, E. M., Chloride, 1919. Manager of Emerson property which adjoins Minnesota on the south. Bind was over the Minnesota-Connor ground every day during 1917-1919. Had mined extensively all over the West and Mexico.
"I like this property; one of the best I have ever seen. Such big, strong veins; no wonder they had a great ore body in those old workings. If they will go on down with that shaft and tap the ore at depth they will have a bigger mine than ever."

J. H. MacDONALD, foreman of Portland Gold Mine at Cripple Creek and Ray Consolidated Mine at Ray, Arizona, then superintendent of Minnesota-Connor 1911-1916.
"The Minnesota-Connor vein at 600 feet is 25 feet wide and looks exceptionally good; it is just like it is where I have seen it in the old workings above. We should sink to the junction of the Minnesota and Pluto veins and, based on the past history of the mine, we can reasonably expect- and I'm sure we will find- an enormous ore body from the junction of two such strong veins."

Ol' Diggin's

(Extracts from mining news of 30 years ago as taken from original files of Mohave County Miner. These news items now being re-printed in current issues under above named caption. The following refer to the Minnesota-Connor Mine.)

The bottom of the Minnesota shaft has reached into a new ore body that is reported to be large and very rich in silver. This strike has had its effect on all the mines of the big lead camp and there are fe, if any, miners not now employed at good wages. The Minnesota has reached to the 600' level and shows the possibility of deep work in the Chloride mines. April,1902.

At the 400 level of the Minnesota-Connor mine at Chloride a 4-foot body of ore has been entered that runs 4½ ounces gold and 300 ounces silver. The ore as it comes to the surface shows a mat of silver glance that is beautiful to look at. July 15, 1902.

On the 400 level of the Minnesota mine at Chloride a strike of ore has been made that is said to average better than 12 feet in width and that has an average value of better than $50. Streaks through the ore body will average up in the hundreds of dollars, but the whole mass will carry sufficiently high to make the ore a big paying proposition. Supt. Loy, who has been getting the mine in shape for production the past year, is jubilant over the strike. July 22, 1902.

Everyone believed the Minnesota mine to be a silver property in toto, but the recent sales of ore from the property show better than two ounces gold and 320 ounces silver. The ore body is large and on every side of the great stope is the same character of ores. No larger ore body was ever found in the mine and the shipments are made direct without assorting, giving the property a wonderful value. August 12, 1902.

On the 500 level of the Minnesota mine a station is being cut, preparatory to crosscutting the vein and drifting on the vein. This is one of the very important properties of the Chloride section, having produced a great tonnage of exceptionally rich ore, the content being silver. Gold ore has been found along the upper levels and it is expected that betterment of gold will be found on the lower level. October 7, 1902.

A new electrical plant is being installed at the Minnesota-Connor mine at Chloride to facilitate the work of sinking the new shaft below the old levels, where a big tonnage of silver ore was extracted during the past several years. Some nice gold ore has been opened up in the mine and the mill is now capable of turning out a fine grade of concentrates. Dec.24, 1902

An immense ore body has been opened up on the 500 level of the Minnesota mine at Chloride. The 400 level shows no diminution in size and the same is apparently true where the 500 levels are being carried off. These drifts show the best ore the mine has ever opened and that is going some.

John Barry was in town this week and was happy over the returns of a shipment of ore made to Pueblo Smelter for the lessees of the Minnesota-Connor Mines. The shipment netted them $4000.00. (From item under caption of "FIFTY YEARS AGO " dated August 1, 1888.)

ASSAYS

Record of samples assayed from various claims.

Sample Date	No:	Place	Metals: Ounces Au.	Ounces Ag.	Per cent Pb.	Per cent Zn.	Total value all metals
1912							
Jan. 8	1	Silver Bar, surface	.05	3.1			$ 2.55
	2	" " "	.02	1.3			1.05
	3	Uncle Abe, breast tun.	.03	2.0			1.60
	4	Moth. Lode, 4" streak	.3	50.2			31.10
10	1	Sil.Bartunnel,8" wide	.05	2.75	3.5		6.00
	2	Same, 12" wide	.04	2.8	1.2		3.60
	3	Same, 18" "	.03	3.6	3.2		5.60
	4	Same, 6" "	.02	6.8	17.5		21.30
Mch. 19	1	Manzanita, so. shaft dump, coarse rock	.49	31.5			25.55
	2	Same place, fine rock	.4	20.4			18.20
	3	Sil. Bar, E. vein crop.	Tr.	2.0			1.00
	4	Manzanita, north shaft 125 ft.down,so.drift,	.02	11.7			
	5	Same place, 100 ft.down	.04	12.0			
	6	" " 30 " "	.21	72.6			
	7	Un. Abe dump, fine rock	.03	4.0			
	8	" " shaft, 150 dft	.02	5.0			
May 25	1	Manzanita, no. [illegible] 35 ft. down	.02	54.0			27.
	2	Same,	Tr.	28.9			14.[illegible]
	3	"	"	38.0			19.00
Sept.30	1	Pluto, S. W. Xcut,	"	23.8	4.1	1.55	20.75
	2	Same	"	1.2	.7	2.5	5.20
	3	Same	.02	1.8	.4	7.0	12.54
Oct. 10	4	Pluto, north drift,	.11	12.4			9.64
11	5	Minn. N. E. Xcut,	.04	10.0			6.80
	6	Same, zinc ore,	.04	7.2		23.15	28.50
	7	Pluto, S. W. Xcut,	.02	2.6		3.5	5.40
17	8	" South drift,	.05	6.0	.35	4.2	10.00
24	9	Independence, (Vogt)	.04	6.0			4.40
25	10	Pluto, No. drift, 25ft.	.04	6.4	3.1	27.4	48.20
1913							
Mch. 19	11	Sil.{Bar,lower tunnel,	.03	3.1	6.1		7.85
	12	Same{(both in breast)	.02	2.6	8.0		9.00
	13	Manzanita, south shaft, Dump, coarse rock,	.25	48.95	9.4	7.5	49.80
	14	Same, fine rock,	Tr.	24.2		6.4	21.20
	15	Minn. 300 level old workgs.,picked up from muck pile,	.03	21.4	25.2	10.3	47.60
May 17	16	Manzanita - Prospect hole	.02	2.6	Tr		1.96
Sept. 3	17	Sil. Bar - new tunnel	.05	3.0	8.75		8.90

The mineral deposits of the Cerbat Range are nearly continuous from Chloride south to beyond Cerbat Canyon, a distance of over 10 miles, and are confined to a belt about 2 miles in width. About midway of this belt is an intrusion of porphyritic granite from which dykes, or fingers, extend several miles northwest and southeast, which are accompanied with sympathetic parallel fracturing, giving opportunity for the mineralization of the district. With the exception of 2 or 3 east and west systems near the main intrusion, the ore bodies are so closely related and bear such exact resemblance to each other that often ores found several miles apart seem identical. Some 4 miles south of the Minnesota the next deep workings are found, where the old Golconda Mined and almost similar ore body to the 1100 foot level, operating at a profit a 150 ton mill until burned----some say by sabatage --during 1917, which hasn't been rebuilt. This property was controlled by the Amster interests of Globe, with the American Metals Company owning the minority interest. Reported to have produced over $1,500,000.00 in gold, lead and zinc. Between the Minnesota and Golconda are a dozen other mines with no production reports available in exact figures, but safe to say the majority have shipped several hundred thousand ounces of silver from above the 200 levels. With these two exceptions, there are no deep workings in the district, and no other large corporations have operated in a systematic campaign, and so I base my argument, that the Minnesota at this writing has no known rich oxidized ore reserves from which to pay the cost of deep development. You are fortunate to be able to take advantage of some $100,000.00 worth of sound development and equipment whereby you have an equal theoretical opportunity to open a similar ore body on an equal economic basis with the two deepest mines of the district.

* no deep workings

Respectfully submitted,

(Signed) R.C. Jacobson

Registered Professional Engineer

The work outlined should give a reasonable basis for the geologists to work from, and for the engineer to outline a further development, and, unless a profitable ore body has been opened, $1500.00 should be set aside at this period of the operation for a most thorough mapping and geological survey of the property which should determine the advisability and location of further exploration of the Minnesota vein.

I find on the estate 2 other veins that should be prospected thoroughly, the General Grant-Mother Lode vein and the Manzanita-Uncle Abe vein. As surface indications appear nearly as favorable to the existance of profitable ore shoots and on the Manzanita much longer than appear on the Minnesota-Connor ground, with the decided advantage that, if such shoots are opened, you may mine them from the surface down, taking full advantage of the entire output, making the richer upper levels pay for the deeper development, as your predecessors on the Minnesota should have done.

oxidized zone

On my sketch map of the claims you will note the trace of a vein striking into the Mother Lode claims from the west, marked Dorothy vein. This is a small vein found by good prospecting and located on 2 small fractures between your holdings and the Altata property. The Altata is reported to have produced nearly as much as the Minnesota in early times from a series of short, very rich lenzes, milling as high as 2000 silver ounces per ton, quick money, easily spent, without thought to its economic reinvestment in deeper development. The Dorothy appears also to be several small lenticular ore bodies along about the strike as sketched. At this writing the owners report finding a new ore shoot nearer the Manzanita in trenching; but its extent is yet undetermined. However, this fracture should cross the Mother Lode and perhaps make the ore body so long sought for, which, if found, would likely make the vein to the north of the gulch into the General Grant ground decidedly favorable prospecting. Mr. Fox reports the workings on all 4 claims mostly inaccessible, but we both find sulphide ore that undoubtedly came from below water level, carrying good mill value, which fact, taking into consideration the strength and extreme length of the outcrops, would justify much more extensive prospecting. All 4 of these claims should be carefully examined at the time of the geological examination of the Minnesota 700 level.

In my opinion, they should make a valuable property, regardless of the Minnesota, and are worthy of just as energetic prospecting.

As mentioned before, the past prdduction of the district has been enormous, condidering the shallow workings, nearly all of the properties could, I beleive, now be working had the original operators conserved their profits and set aside a systematic share for deeper development, and followed conservative business methods. The nearest property to your holdings so worked is the Tennessee Mine which was operated by the United States Smelting and Refining Company for a period of years (1911-1918) and worked with their customary energy, foresight and thoroughness, and is now about the only property worked below the 100 foot level. Its production is variously estimated from $2,000,000.00 to $10,000,000.00. However, knowing the U.S. Company's methods it is safe to say that it was never worked at a loss.

poor operational management

THE MINNESOTA-CONNOR MINE

(Report on Preliminary Examination made by R. Kemp Welch, E. M., 1910)

TELEGRAM :

Sent from Chloride, Arizona,
April 16, 1910.

THE PROPERTY IS A VERY VALUABLE ONE, WELL PLACED FOR ECONOMIC DEVELOPMENT AND WORKING. SPLENDID ORE BODY, FAVORABLE TO A LARGE ECONOMICAL OPERATION ANS A LARGE EXTRACTION. CAN SHIP 6 CARS OF ORE AT ONCE, FOLLOW WITH 10 CARS WEEKLY OF GOOD PAYING ORE. CONNOR DUMP HAS XXX 5000 TONS OF RICH TAILINGS THAT CAN BE SHIPPED AT ONCE.

(Signed) R. KEMP WELCH.

PRELIMINARY REPORT :

Chloride, Arizona, April 17, 1910.

I have beem down the Minnesota-Connor shaft "A" to the 200-foot level; the water is that high. Took samples from that level from 3 feet of ore, about 18 inches solid; was also down the Line Shaft "B" to water and secured samples of same sized ore body. There is 25 feet of ore in the bottom of Shaft "A" and the ore extends the full length of the lower level.

Was down in the south Connor shaft; it has 5 feet of fine ore.

Carbonates exposed in two places in the Manxanita shaft; there is a 3 to 4-foot ore body; took samples.

In the Mother Lode about the same rich ore. In the Uncle Abe, 5 to 10 feet of rich carbonate galena; took samples. Silver Bar claim has two veins, one 20 to 25 feet, one 3 to 5 feet; took samples. Will get down the Pluto and General Grant shafts tomorrow.

The Mineralization is very rich and strong right from grass roots, and strengthens in quality with depth, also maintains size of ore bodies.

The Mill, 5 stories, is as represented. Will require about 10 days overhauling, cleaning up and minor repairs. Good buildings and fine equipment. Electric light for mine, mill and all buildings.

There are two fine roads to Chloride, and the railroad station. This property can be made at once a great big producer of all classes of ore from soft carbonates to high sulphides.

The property without ore bodies is worth $175,000.00. Will ship samples Tuesday.

(Signed) R. KEMP WELCH, E. M.

* *

Explanatory Note :

The Silver Bar Claim, referred to by Mr. Welch, was subsequently sold separately and development work on it opened an ore shoot of consequence. The 5-story mill was dismantled in 1930 and the machinery stored in sheds. While much of it is obsolete, some is still usable.

re-circultaion of underground solutions would occur, forming a reconcentration of the mineral content, especially silver, lead and zinc. All these characteristics appear in well defined form on the Minnesota-Connor-Pluto ground and will likely show in the Manzanita fracture as well. I judge the gulch which heads about at the common end lines of the Minnesota and Connor claims on their eastern boundary and runs westerly to the valley thru the Pluto and Mother Lode veins, to be probably the surface trace of an east and west fault or movement plane very common further South in the Cerbat Range, and invariably associated with the better ore shoots found in Mineral Park, Todd Basin and Cerbat. To the North, the big ore shoot of the Tennessee seems to make or comes to the surface at a point where the fracture splits under a similar surface condition. This ore shoot on the Tennessee is one of the most important deposits of the district, and shows no depreciation in the winze below the 1000 foot level, except that in its rake to the North it passed beyond the end line of the Tennessee claim, which fact led to the abandonment by the U.S. Co and later to litigation. This fact I have in good authority from Mr. Bennott, the U.S. CO.'s mine foreman who was in charge of the later work. Mr. Bennott informs me that the hanging wall of the Tennessee was broken and hard to hold while the foot wall was very close to and often composed of a wide, hard, pegmatite dyke. This corresponds to the description of the Minnesota by Mr. Fox. The ores are abouth the same by analysis and from records of my office.

From the various maps and survey notes found in the mine office I have reconstructed a sketch map of the claims, also a plan and section of the 700 foot new shaft, and endeavored to trace the relation to the vein systems, the last may not be accurate, but I beleive the infromation derived the best obtainable. You will note the very decided flattening of the vein at the 600 foot level, the corresponding straightening at the 700, indicating pressure from the east at this point, which in view of the fact that the ore was badly broken at the 600, will indicae a decided change below this influence if found to be more than of local occurence, and may mean a better grade of ore when the vein assumes its normal dip.

The Independence vein evidently crossed or joined the Minnesota vein above the 280 foot level, as Mr. Virgin says no vein was encountered in the cross cut to the old works.

This being the case, it likely had a decided influence as shown in the width and value of the ore shoot at this point. So also it may be reasonable to suppose the intersection or crossing of the Pluto vein with the Minnesota, so if such be the case, will prove even of greater benefit, and an immense ore body may result. The relative position of the Pluto to the Minnesota on the 700 foot level should be ascertained.

The development of the 600 foot level to the North did not show mill ore for the width of the vein (so I am Informed) but only in stronger and narrow widths in either wall. The best ore was encountered in the bottom of the drift in irregular lenzes, usually apexing about 2 feet above the floor. This may mean the top of an ore shoot that will extend below the disturbed portion of the vein at this level.

Drifting in the 700 will likely show some improvements, and it might be well to raise to the 600 on one of the best showings with an occasional cross cut to the walls. Failing here to find the ore shoot of the same characteristics of that above, and after a careful mapping of the formation, it may be found that, in view of the evident disturbance in the foot wall resulting in the flattening of the vein, that the ore shoot, or even the entire formation of the upper levels, has been thrown to the North, and the lower portion may be found by drifting to the south to the presumed fault, traced in the gulch. However, this is only conjecture, but can be worked out by prospecting south on the 700 foot level.

Mr. Virgin, who has unwatered the mine twice, estimates this cost at $4500.00 with the present equipment. But, as the condition of the shaft below water level, or more important, just at water level, has not been definitely ascertained, and as even the best of used machinery after standing idle 6 years may need unexpected repairs, I beleive $5,500.00 should be provided for this work, and, if any amount of lateral work is contemplated on the 700 foot level, the sump should be cleaned and deepened 10 to 20 feet. New air, water and steam columns will likely be required, all of which should not be smaller than 3 inch and galvanized, the water columns of extra strength. The several old pumps will be sufficient to control the water for your present undertaking.

Mr. Fox figures $40.00 per foot for sinking, and $16.05 for lateral work, and such was very close to our standard at that time. However, every item has increased since, except that of fuel oil, and that is off set by the 100 precent raise in timber. I judge, by consulting with operators of the district, that by adding 25 percent to the figures of Mr. Fox you will arrive at a very close approximation of the actual cost. $50.00 per foot for sinking, and $18.00 per foot for lateral work if sinking at the same time, and $20.00 per foot if but 2 shifts only. I would recommend at least 500 feet of lateral work on the 700 foot level and 150 to 750 feet of raising, best determined after the drifts have been extended into the vein, and at least one cross cut to the Pluto vein from a point as near the 700 foot station as possible, and a cross cut to the north east to explore the foot wall will give valuable information.

The drifting should consist of at leat 300 feet to the north or perhaps 400, as the rake of the ore shoot as shown on the old maps is quite flat. The rhyolite dyke might be made the objective of this drift, unless the formation encountered points to a more definite one. And, at least 150 feet of drift to the south, better 200 should encounter any fault plane if existing below the gulch. I beleive the work should be done on the foot wall as that seems the only logical way to hold the ground, and the work should be kept as straight as possible, to avoid expense later, should the opening be needed for mining. Information as to other parts of the vein can be obtained by cross cuts at regular intervals. If the work is to be kept open the drifts will have to be well timbered.

mining condition
apparently heavy ground

MINNESOTA- CONNOR MINE

Briefly: In my judgment you are very well warranted in expending from $20,000.00 to $ 80,000.00 in the further prospective development of the Minnesota-Connor property and an additional sum for the purely prospective development of the Manzanita-Uncle Abe vein systems.

The past history of the Minnesota-Connor property alone, when taken into consideration with that of the nearby producing properties in identical geological formations, would induce the above conclusion. But, when considering the fact that a most carefully prepared plan of systematic development having the recommendation and approval of experienced and practicable engineers, has almost reached the objective sought; and that by comparatively little expenditure you may take advantage of upwards of a $100,000.00 worth of sound development whereby you may reach that same objective for but a fraction of the original estimate; the project becomes greatly enhanced and one that I can heartily recommend.

My report follows in detail:

At present the holdings of the Minnesota-Connor Company comprise nine mining claims covering about 140 acres of valuable mineral land situated less than a mile in a southeasterly direction from the town of Chloride, in the Wallapai Mining District of Mohave Counth, Arizona, and more particularly in Sections 2 and 11 in Township 23 North, Range 18 West, of the Gila and Salt River Base & Meridian, and are on record as follows:

Acres

20	Minnesota,	Recorded	in	Book	SS	of	Mines, Page	468
12½	Pluto	"	"	"	"	"	"	466
9	Mother Lode	"	"	"	"	"	"	463
18	Wallapai	"	"	"	"	"	"	471
18	Manzanita	"	"	"	"	"	"	464
19	Uncle Abe	"	"	"	"	"	"	465
20	General Grant	"	"	"	"	"	"	468
14	Connor	"	"	"	13	of	Deeds "	239
8	Pluto Ext.	"	"	"	"	of	Mines "	45

The Connor is a patented claim and held by deed from the U.S. Land Office; the remaining eight are held by amended location and annual assessment, sufficient work having been done on each, however, to permit of applying for patent.

The location, geology, development and production of the group are most ably discussed by Mr. Fox in the appended report, and I have little to add. However, from past experience and familiarity with the ore deposits of the Cerbat range, especially in this section, I have generally found the ore shoots to uniformly dip at rather flat angles to the North, and to be materially influenced by crossing or intersecting veins and dykes, or in fact by any post fissure disturbance whereby the

ore shoots in the veins rake to north at flat angles

PRELIMINARY REPORT

on the

MINNESOTA- CONNOR MINES

OF

Chloride, Arizona

by

R. C. Jacobson, E. M.

(Registered Engineer, Arizona
Certificate #56, Kingman, Arizona)

June, 1923

Kingman, Arizona
January 10, 1930

C
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P
Y

Shaft - steel sets condition?

Replying in detail to your inquiry relative to present conditions at the Minnesota-Connor Mine, Chloride, Arizona.

NEW SHAFT AND WORKINGS:

Our new shaft (Pluto) is 724 feet deep, vertical, two-compartment, and is timbered with Carnegie steel sets, or H-beams, lagged solid with 2-inch selected O. P. lagging. For several years it has been partly filled with water, but I feel reasonable certain that it is in excellent shpae from top to bottom in spite of the submergence. I was down in it in 1918 and 1919 while it was kept unwatered by a neighboring milling concern, and at that time it was in splendid condition, very little corrosion of the steel sets being evident and not enough to weaken them. I do not think they would be damaged to any extent even now. The first 100 feet of the shaft is dry and there is only the usual thin shim of rust that flakes off of the steel. The guides and lagging that we can see for the first 16 sets are in first-class condition; below water level we would expect to have to replace a lagging here and there that may have become squeezed in by lateral pressure. The shaft was so well timbered that practically no repairing was necessary when unwatered in 1918. The guides, being rigidly bolted in place, cannot warp easily, and as they were specially selected, I question whether any will have to be replaced, because Oregon Pine stands submergence well.

Around the collar of the shaft some shrinkage has occurred, as it was only loose dump filling of the rock in the beginning and has naturally shrunk away. I put temporary blocking under the headframe posts, but some heavier timbers should be put in and blocked well into place. It was my plan, had the operations continued in 1918, to put in a concrete collar for permanance. The headframe will require some tightening and bracing, otherwise it is all right. The safety crosshead is a good one, having just been made when we closed down. The 250-gallon water bailer is in good shape.

As to conditions underground, I would expect to find the 600 level caved shut, but both crosscuts on the 700 level can likely be cleaned out and re-opened, as the rock was hard in the East crosscut, and the soft spots in the West crosscut through the vein were timbered. The station sets might need replacing. The air and water pipe columns would both have to be replaced, as these were second-hand when put in years ago. However, a few minor repairs after unwatering will put this shaft in as good condition as now, and we could not put down a new shaft as good as that one today for $50,000, so it will be worth just that much to the property. We have considerable heavy timber about the mine that could be used for heavy bracing and blocking, etc.

PLANT AND MACHINERY:

The mine is equipped with the largest and most powerful mining plant in this county and, with some overhauling that is always necessary after a long shut-down, is ready to operate on a large scale. This machinery is entirely ample to mine from a much greater depth than 700 feet; most of it is as good as new, especially the compressor, dynamo, hoist, heaters and feed pumps. The boilers were in exceptionally good shape when we closed down; they likely will need only a few new flues. The Hamilton-Corliss mill engine is as good as new. She shop engine, dynamo engine, air receiver, etc., are all in good shape.

BUILDING:

The plant is housed in frame and iron clad buildings that are in fair shape. The camp buildings are frame and are in even better shape, although in need of minor repairs. They are far more commodius, convenient and better looking than mine buildings usually are in this region. The large boarding house is well equipped and is the best preserved building. The bunk house is large; it needs re-lining. A new garage, large enough to accomodate two cars was built in 1920 and is in good shape.

WATER SUPPLY SYSTEM:

Our three 6000-gallon tanks are in excellent condition; also the 250,000 gallon concrete reservoir now full. Our spring on the Wallapai #2 claim supplies enough clear water for camp purposes even in a dry year and in the winter and spring months considerable water overflows into thereservoir for use in the boilers. A larger line than our present 2-inch line would supply considerable more water throughotu much of the year.

The new shaft, based on 1916 records, will furnish at least 20,000 gallons a day for use in milling that can be pumped into the reservoir from wher it has a gravity flow to the boilers and shops.

OIL STORAGE TANKS:

California crude oil, 18 gravity, is shipped in carloads and unloaded into our 10,000 gallon storage tank at Chloride depot, from where it is hauled by truck to the mine. The three reserve galvanized storage oil tanks at the mine will accomodate a carload, thus affording ample fuel in reserve at all times. These tanks are in good condition. The oil is piped to the boilers by gravity flow, also has force-pump feed.

Mill:

In 1920 the large 150-ton concentrating plant was dismantled to save it from possible damage from shrinking ground in the stopes beneath, the equipment being housed for future use in re-erecting the plant when necessary. Most of this equipment should be replaced by modern flotation cells which will affect far greater saving in values than was possible under the former methods. Considerable of this equipment can be used to advantage, such as the

Blake crusher, Corliss engine, shafting, pulleys, boxing, etc., all of which are good.

SUPPLIES AND TOOLS:

There is on hand quite a stock of miscellaneous supplies for general mine use, especially around a steam plant, such as packing, pipe fittings, steel, etc. New drilling equipment and various tools would be needed. Shop is equipped with drill press, forges, power engine, blower, and tools.

ROADS:

The property is served by two roads to the town of Chloride, the main road being of easy consistent grade from town to the buildings and plant. A small amount of work each month keeps this road in excellent shape for auto and truck use. It is quite an asset to the property and must have cost a good many thousand dollars to build in the first place. It should be widened at points to facilitate truck hauling and to allow room for vehicles passing each other. The lower road, coming out by way of the Altata property, serves the Mother Lode, Manzanita and Dorothy claims, while a third road circles around the south end of the Uncle Abe. Nearly every claim is accessible to one or more of these roads.

From Chloride to Kingman a new road has recently been constructed, cutting the distance to 23 miles between these points via the Coyote Hill Pass. This graveled road is maintained in excellent shape by the county road department.

JITNEY AND MAIL SERVICE:

Regular mail and jitney service in and out of Chloride is available six days a week, connection being made with main line trains at Kingman.

HOLDINGS:

There are 8 claims in the main Minnesota Group with two claims that adjoin each other lying off to the East making 10 claims in all, of which one is patented. On nearly every claim enough development work has been done to answer the requirements for applying for patent. Because of the claims being contiguous, annual assessment work requirements can be complied with by doing the requisite amount of work at one place for benefit of the whole group; thus, if operations are carried on at one point it is not necessary to do assessment work on each claim in addition.

On these claims there are evidences of several ore shoots: two on the Manzanita, one on the Uncle Abe, one on the Mother Lode-Grant, besides the original Minnesota shoot that has only been mined to a depth on the vein of 500 feet. The Wallapai vein system, being a southerly extension of the Payroll mine, offers an inviting opportunity because of the convergence of parallel veins, but this ground has never been opened up. The Manzanita claim is the most heavily gridironed with veins and, judging from the ore shoot at each end of this claim, there ought to be an ore shoot of magnitude the entire length of this claim; it is regarded by all old timers and miners

generally as the one outstanding undeveloped claim of the entire district, and many leasers have been after it and others have tried to jump it. The same vein goes on into the Uncle Abe ground and outcrops from 10 to 35 feet wide the entire length of the Uncle Abe. A shoot of lead ore was discovered on this claim a few years ago but has not been developed to any extent. The Jupiter claim carries the extension south of the Manzanita-Uncle Abe vein and the owner opened up an ore body of consequence thereon in a tunnel a couple years ago; the rake of the shoot was sharply to the north, as is usually the case in this district, and the shoot will soon pitch across the endline into the Uncle Abe ground, as it was discovered within a couple hundred feet of the line. Assays from the Uncle Abe lead ore show lead in excess of 20%.

ELECTRICAL POWER:

The present steam plant is ample for the additional development of the property to a producing mine. Because of its absolute reliability and flexibility, steam power is ideal for mining in this region. However, if at any time it is desired to change to electrical power it can easily be done, as the high tension line from Kingman to Chloride passes close by the south side of the group and a spur extends almost to the General Grant, possibly 2000 feet from the present plant. The large generating plant at Kingman, operated by Public Utilities Consolidated Corporation, supplies power for all the large mines of the county. Eventually cheap power will be had in abundance from Boulder Dam, construction work on which is soon to begin. Government engineers are now doing preparatory work there.

SMELTERS AND SAMPLERS:

There is a small sampler at Kingman that is not operating just now, although the intention is to resume as soon as mining becomes more active. Nearest smelter is at Humboldt in Yavapai County, this state; it has been closed down recently but recent announcement was made of its early re-opening to handle its own ores and custom ores as well. Most of the gold, silver and copper ores from here are shipped to Hayden, Arizona, to the big A. S. & R. smelter; the freight rate is low. Lead ore goes either to Midvale, Utah or El Paso, Texas, while zinc goes to Amarillo, Texas. Below is given a few rates covering freight shipments of ores and concentrates to these points:

ORE VALUATION PER TON:	$10	$15	$20	$25	$30	$35	$40
HAYDEN, ARIZONA,	3.00		3.90		4.60		5.30
AMARILLO, TEXAS,		4.50				5.50	
MIDVALE, UTAH, 30 ton car,			5.75		6.70		7.65
40 " "		4.50		5.00			

I do not have at hand now a schedule of smelter treatment charges for these classes of ore, but can obtain these from the respective smelters if necessary. I understand the rates are very much better they were, expecially as they used to penalize for zinc whereas now they pay for it and the other metals contained. The new Tennessee mill is making a very close separation into various products and as

soon as they make a shipment or two I can ascertain from them the point affording the best market. Both lead and zinc hold consistently to a much better market price now than for several years back, while copper is also stronger. Nearly all the Minnesota ores contain enough copper to lower materially the treatment charge even where there is not enough copper content to be paid for. The old records show that occasionally a car of straight copper ore was shipped from the mine, and I have often found dump samples of copper ore assaying from 15 to 20 percent copper.

LABOR:

At present there is an abundance of competent labor available in this county and state. Because of the more equable climate, miners prefer Chloride to such camps as Oatman, Ray, Ajo, etc., and we can readily assemble a competent crew of skilled men anytime. The wage scale is about the same as for several years past, about $7.00 per day for such skilled men as steam hoistmen, machine blacksmiths and expert drillmen; $5.00 for topmen, $5.50 for muckers, firemen, etc. Usually greater footage can be made at less proportionate cost per foot if the work is contracted; especially is this true of shaft sinking, and most of it is done that way in this county.

COST OF SUPPLIES:

Fuel oil, in carlots, costs approximately $1.60 per barrel at Chloride, or about 4 cents a gallon, considerably cheaper than having to pay 20 cents per gallon for gasoline or distillate, as is the case with most mines hereabout. Powder costs $14.25 per cwt., slightly less in ton lots. Mining timbers, Oregon Pine, are $45 M in truck loads out of the yard, but in carlots delivered at Chloride the price is about $33.00 M. Hollow drill steel (Crucible Steel Company) is around 15 cents a lb. in ton lots; Swedish Steel slightly higher.

These supplies are very little higher than pre-war prices; in some cases about the same, notably powder, which is cheaper now than in 1916 due to the fact that now we have powder manufactured in this state by the big copper mines (Apache Powder Company). The large commercial houses in Kingman carry full stocks of all mining supplies, hardware, oils, lumber, tools, machinery, etc., from which quick delivery can be made to any mines in the county. The Chloride lumber yard is well equipped with lumber of all kinds, fuel, mine rails, ipie, miscellaneous supplies and tools. Fuel oil is lower than for years due to the heavy production of the wells in Southern California and the keen competition among them.

Inasmuch as the steel beams for the shaft were purchased of Carnegie Steel people, I do not know their cost; the original invoice cost was never given us. It can be obtained direct from the Carnegie people, also the freight rate to Chloride. Oregon Pine sets cost less, are handled more easily, and would last the life of the mine.

OPERATING CONDITIONS GENERALLY:

The location and climate of Chloride are most ideal from a mining standpoint. The altitude of 4000 feet insures cool summers and mild-open winters. In summer no distress is felt by men working in the sun all day long, and sun-stroke is never known here. Cool nights enable the men to sleep well, and those on night shifts have no difficulty sleeping in daytime, so there is no loss of efficiency like there always is in hot camps where heat is intolerable. Our winter snows are light, and soon melt away; no tornadoes, earthquakes, floods or snowslides menace us as they do in many mining camps. Being situated as it is on the south side of the low mountain range affords the camp excellent drainage, and our roads are always open. Close proximity of railroad train, express and mail service is a vast advantage not often enjoyed by the large mines of this county; camps like Oatman, White Hills, Wallapai Mountains and Gold Basin have to haul by truck from 30 to 55 miles to reach a railroad point, while here we have own right at our door.

Less than an hour's ride brings us to Kingman where there is a strictly modern, first-class hispital costing over $150,000.00 that will take care of all injured men, whereas in former years we had to send them ot Los Angeles for treatment. Kingman has three large, modern hotels, with another one projected. Also has large mercantile establishments carrying heavy stocks like are found in large centers like Phoenix and Los Angeles; likewise has two modern assay laboratories, several large freight trucking firms, garages and shops. The Arizona Central Bank is a link in a strong banking system now affiliated with the First National Security system of Los Angeles. Large modern airports were recently constructed by both the Western Air Express and the T. A. T. -Maddux Air Lines, maintaining daily service East and West for quick travel. The American T. & T. Company have just completed a new 21-wire line through here, so that now we can pick up the receiver in our home and obtain immediate connection with any city in the United States.

DEWATERING EXPENSE:

Formerly this was around $4,000.00, although it must always be remembered that preparatory expenses, such as overhauling boilers and other machinery, replacing missing or worn vavles, pipe, connections, etc., have been saddled onto the unwatering cost only, whereas properly speaking this necessary preliminary expense applies to any permanent development undertaken, whether it be sinking shaft, drifting, stoping or whatnot. I think even now I can unwater to the 700 sump for a total expense not exceeding this figure; much depends of course, upon the condition of the shaft below the point of submergence. This figure contemplates a preparatory period of about ten days, during which time a mechanic and helper would thoroughly overhaul all machinery and get it in shape; a third man would go over the gallows frame, tank connections, road, station oil tank, etc, and the three would work together when necessary in heavy pipe work, etc. One large car of fuel oil, 250 barrels, would suffice, I figure. Aftersteam is up we would work three shifts per day, pulling continuously, using engineer, fireman and topman on each shift, with a general mechanic on day shift who would serve as pumpman and general repair man. Based on past records, 18 days should see the water

drained into the 700 sump and, barring accidents or unforeseen contingencies, we likely could even beat this time a day or two, as I do not think there is quite as much water in the workings as formerly. The pipe columns must be replaced, but when once done will serve throughout any subsequent development campaign, and the same can be said with reference to most all of the repairs and replacements made about the plant, shaft and premises generally. In all slightly less than a month is needed in which to get ready and to complete the unwatering. Length of time required to clean out and open up the crosscuts below would depend upon their condition.

DRILLS:

The Ingersoll Jackhammers we had to sink the shaft with are worn out. New drills, mountings and hose are needed. For heavy work the Denver Dreadnaughts are used, costing about $350.00 each here, complete with mounting. However, a lighter jackhammer in either the Gardner-Denver or Chicago Pneumatic make, is a good combination machine suitable for sinking and drifting, such machines costing about $285.00 each here, with mounting. We have some drill bars on hand that could be used in connection with some machines.

CAMP ACTIVITIES:

Chloride, after a period of limited activity, is showing increased interest in mining. The main feature of this is the recently completed new mill of theMonarch Lead Company on the Tennessee vein. In former years the Tennessee produced several million dollars to a depth of 1600 feet; in one period it shipped 278,000 tons of ore running over $50.00 per ton. Now it has opened up a new shoot in its own ground, also a large tonnage in the virgin ground of the Schuylkill, the adjoining property acquired. Very soon they expect to increase their output; just now they are tuning up and adjusting the mill for a long efficient run.

The Arizona Magma Company, operating the old Diana mine lying west of town, announced recently that they are about ready to resume operations after a six-months shut-down. They bought the Diana outright, paying $55,000 cash therfor, although they have only one claim, a small gas plant, no buildings, and shaft 300 feet deep. Now they have a very nice ore shoot, I'm told. The Chloride Consolidated, financed by Portland, Oregon, interests, operate just north of the Schuylkill; they, too, slowed up for re-financing for deeper development, and their manager told me last week they expected to resume this month. The Pilgrim mine, 9 miles west of Chloride, has uncovered some sensationally high-grade ore that is attracting a good deal of attention; it is one of the older mines having free milling gold. Just south of the Minnesota holdings, in the Mineral Park region, some important development is going on at the White Horse mine; much ore has been opened up already by California interests headed by a former engineer of A. S. & R. Company.

A merger is under way of several properties lying just to our East, including the North Georgia, Payroll, Mary Belle and Mayflower groups; Eastern engineer coming out shortly and they have approached me relative to including a portion of our ground in the merger. The Payroll are on top of an important ore shoot and are

financing to sink deeper; they want the water from our shaft for milling purposes, agreeing to pay us for it. Their small mill is about completed. A new deal is now pending on the Samoan, particulars of which I have not learned. The property lies away up the mountain east of our Wallapai.

OUR FUTURE PROSPECTS:

The Minnesota-Connor shoot, according to the governmental and other records, has produced several hundred thousands of dollars worth of ores, yet only the top of one shoot has been mined. With almost identically the same general characteristics here that obtain at the Tennessee mine, many prominent engineers point out the similarity of the two mines that are only a mile apart. Since the Minnesota vein was larger and richer as far as mined than was the Tennessee, we reasonably can expect the downward continuation of this great ore shoot. Experts have said it will make a great mine. But we are not solely dependent upon this one shoot for, as indicated elsewhere in this letter, we have strong assurance of some three or four other ore shoots in the group; and at least two of these other vein systems are much larger and stronger than the Minnesota vein. In addition, considerable of our old dumps can be worked profitably in a new modern mill. Parties are now after these dumps. We have the cream of a district recognized everywhere as one most heavily mineralized and capable of vast production. I have every confidence that the 700 level, if opened up, will have-every-confidence-that reveal a good body of ore, as on the 600 we seemed to be just on the apex of a shoot of nice milling ore. I was especially anxious to get under that point on the 700 level, but the old company quit short of their objective through lack of funds. Now we can take advantage of the vast development they did and the plant, buildings, water system and other improvements already here; this represents an asset worth in cold cash considerably over $100,000, and if we had it all to do today, starting in at the top of the ground with nothing here, it would cost nearer twice that. Hardly a mine in the country is as ideally located and as adequately equipped for quick resumption of work as is the Minnesota today, and we are the only one of the properties in the district blessed with our own permanent water supply.

Trusting that this covers the several matters on which you desired fuller information, I am,

Very truly yours,

(sg.) P. S. Virgin.

Uncle Abe Ext.

MANZANITA

The Manzanita was an old abandonded shaft which no one could tell us a thing about----nothing available from company records either. Was caved and filled with muck and water. Since March 1942 it has been cleaned out, retimbered etc. and a working set up esteblished. It was found to originally consist of a 100 foot shaft with a 15 foot cross cut and 20 feet of drifts,10 feet to the north and 10 feet to the south. Since then we have sunk the shaft an additional 50 feet and on the 100 foot level have extended the drift to the south 130 feet,to the north 40 feet. On the 150 foot level the south drift extends 75 feet, and the north extends 20 feet. Twenty-nine cars of ore were taken from the Manzanita. Operations were suspended due to lack of capital and no further shipping ore in sight. Plenty of mill ore left----and also good leads and indications of more ore if funds were available to continue operations by sinking the shaft to get deeper under the known ore shoot. Actual mining length of ore shoot worked (for shipping ore only) was 88 feet long and from 2 to 5 feet in width.

PRODUCTION

1942
July 1,1942 --- Dec. 20,1942
(12 cars)

Aug 18, 1942 prices

Gold --------	164.71 oz.	357.75	=	$ 58,925	
Silver ------	8755.18 oz.	6.99	=	$ 61,199	
Lead --------	29.59 Tons	(59,184.96 lbs.)	26¢	$ 15,388.10	
Zinc --------	14.58 "	(29,170.1 ")	40¢	11,668.04	
Copper ------	2.51 "	(5,035.03 ")	70¢	3,524.52	
				$150,704.66	

Capacity of cars? 7 70 tons? 840 Tons cars?

1943
Jan.3,1943 --- Oct.22,1943
(17 cars)

Gold --------	270.98 oz.		
Silver ------	7993.35 oz.		
Lead --------	27.74 Tons	(55,496.1 lbs.)	
Zinc --------	17.45 "	(34,919.53 ")	
Copper ------	1.95 "	(3,908.32 ")	

from 1899 to 1903 shows approximately 2500 tons of concentrates and raw ore shipped by the owners, without counting any tonnage shipped by those holding leases. In all, the mine has produced several hundred thousand dollars' worth of ore, and this from a depth of less than 500 vertical feet on one vein, as pointed out by Governmental reports. The value of the ore left in the old Connor workings which is now being opened up shows surprising values in gold and silver, and even several hundred tons of dump material which was recently removed from around the Connor shaft collar to make room for an ore bin ran around $12 per ton when milled. There is a large tonnage of this dump ore in the old dumps there that will, at present values, pay well if milled at the mine. Gold is always present and is one of the chief values in the ore.

In conclusion, I might say that, while the original Minnesota Connor ore shoot was one of the largest and most valueable in Northern Arizona, there are two or three other claims that, from surface showings have an even better indication of becoming important producers when opened up than did the parent shoot originally. The Uncle-Abe-Manzanita vein is much larger and stronger than the Minnesota ever was, and mining men predict it will develop into a better mine. As for the Minnesota itself, if opened up at depth, we believe it will rival the famous Tennessee mine lying just to its north.

I am sorry we donot have a full and complete record of all ore production since the very inception of this property, but the ore settlement sheets (originals), shipping record and assay data that I have covering the years 1899-1904 will afford a pretty accurate picture of the average mine run ore. In them we do not have any of the wagon lots of 800- ounce silver ore that Barry hauled to the old Cerbat mill, but rather a high average is maintained nevertheless, the silver assaying up to 230 ounces in carlots.

Hoping this will serve Mr. Woodward's purpose, I am with kind regards,

Very truly yours,

Sg. (P. S. Virgin)

During one of these shutdowns the company officials in Philadelphia decided - against the strong advice of their mine superintendent, McDonald, to crosscut into the old workings at a depth of 288 feet in the new shaft, the object being to recover a large body of zinc ore that was reportedly left in there. This crosscut struck the old shaft at a depth of approximately 350 feet in the latter, there being 70 feet difference in the elevation of the collar of the two shafts. After driving about 50 feet in badly caved ground at great expense (having to spile every foot of the way) that work was abandoned without results, and the mine then remained closed down until March, 1915, when another development fund was ready and sinking was resumed. The shaft was carried to the 600 level where the vein cut through it on its dip to the west. Drifting along the vein was carried north about 350 feet and south about 50 feet without encountering a solid valuable body of ore like that contained in the upper workings. At no place was the vein barren, but the ore was more scattered and bunchy like that found in the vein outside of the ore shoot as we go south on the old Connor drifts. The ore looked most promising at a point some 250 feet north of the shaft where it came up knee high in the drift and seemed to be the apex of a new shoot forming; this ore ran about $20 per ton at 1915 values and would, of course, be much better at today's values; a good mill feed.

During the latter part of 1915 sinking was resumed to the 700 level at which point, I ran a crosscut west 92 feet, cutting the vein footwall at 52 feet and extending 38 feet across the vein to the hanging wall; the vein is in a swell there, possibly due to the approaching junction; the footwall stands at 80 degrees, straighter than above, where its average dip had been 67 degrees. The hanging wall still shows the 67 degree pitch to the west. There was a fine streak of hard, banded ore on the foot about 15 inches wide, and a three foot streak of soft ore on the hanging, with occasional streaks all in between, enough to make a full drift of ore if they had been together. We were particularly anxious to get under the point lying out 250 feet to the north, but lack of funds forced the closing down of operations after we drifted a few feet on the 700 level and without ever reaching the original objective. Experienced mining men, practical and technical, have pointed out the similarity of this vein to the Tennessee vein, especially on the 600 level, where usually a lean zone exists in this district. On the 700 of the Tennessee their ore came in again and from that point to the 1600-foot level they extracted millions from 1912 to 1918 without bottoming their shoot, and in the Minnesota 600 we have similar conditions; that's why I was so disappointed at not being able to open up the 700. This was the last regular operation, so it answers also your question number 3.

In regard to Question #4 as to how much money was spent each time, it is impossible to say, for no definite record is available. The Pluto shaft cost about $35000.00 due to the extra expense of using Carnegie Steel Sets. About $15000.00 was spent at various times marking time, i.e., keeping out water while waiting for the company to complete their financing in 1912, 1913 and 1916. Over $30000.00 was expended against the superintendent's advice in a fruitless effort to re-open the caved A shaft before finally abandoning that effort at a depth of 300 feet, and in the crosscut into the old workings above mentioned. The mine is not to blame for this long-distance mismanagement, and had this money been expended in sound defelopment the 700 level could have been opened up and the shaft extended to the 900 level as well.

As originally put in, the plant, buildings, reservoir, prospect development, etc., undoubtedly cost fully $100000.00. Now, in regard to the tonnage extracted each time (Question 2) it is likewise impossible to give definite figures. Much of the extraction from 1880 to 1904 was, as previously stated, shipped as lump ore direct, while a large tonnage of lower grade ore was milled in the two mills at the property. The present tailings dump must still have around 6500 tons in it, based on computation of nearly 7000 tons several years ago. The shipping record

The 250-ton mill above referred to operated steadily for about four years on ores from the Minnesota workings, then intermittently during the next few years, finally closing down due to low price of metals and lack of capital for deeper development, a situation that could have been prevented, as Jacobson's report points out, had a systematic program of development been maintained during the heyday of cream production. The better grade ore was handsorted and shipped to smelters at El Paso, Pueblo, Los Cerrilos, Needles and other points, the low grade being put through the mill with a resulting poor recovery under the treatment then employed. That same ore today, because of increased prices on all five of the metals contained, viz., gold, silver, lead, copper and zinc, would be considered excellent mill feed. Our shipping record is quite complete for the period 1899-1903, but, as the mine was operated by leasers in after years who kept no record - or at least left none at the mine - of their shipments, we do not know the tonnage or value of the ore shipped. However, at various times, leasers operated and shipped on their own, such production being separate and over and above that shown in the shipping records left us by the P & A Company. I was told by former employees of the mine that at times there would be three sets of leasers working in the same shaft, and Schrader's U. S. Geological Survey mentions these leasers.

The ore shoot was continuous, although lenticular in shape, with widths varying from 6 to 25 feet and at one point a 30-foot stope was recorded. The vein at surface shows similar width. In the Connor upper level, where I have often been, the vein showed from 8 to 12 feet wide (65-foot level), and quite a quantity of ore was left in there which is now being prepared for shipment by the operators developing that one claim.

After a shut-down of some time, a new company was formed in 1911 to operate the property; their engineer, Frank M. Kurie, was the man who brought back the Portland Mine into heavy production after it was supposed to be worked out. He spent several months at the Minnesota property, strongly endorsing it in his reports. Finding the old A shaft badly caved (due to the former operators having stoped out the shaft pillars) a new shaft (Pluto) was sunk "by installments" and finally (1916) reached a depth of 724 feet, vertical; since that date the property has remained idle except for the necessary assessment work, one unwatering, and the present operations in the Connor shaft. The objective of the last operators was never reached, viz., the junction of the Minnesota and Pluto veins, for reasons hereinafter explained. Theold 250-ton mill was dismantled by the writer in 1920; most of this equipment is now obsolete, but some of it is standard equipment, especially the Blake 20x10 Crusher, several of these being in use in other mills in the county.

Other claims adjoining were added to the original holdings of Barry from time to time, until today the property comprised 10 claims, of which 8 are joined in one contiguous group, while the remaining two, adjoining each other, lie slightly off to the east. Only the Connor is patented.

Question 1 - What happed each time the mine was operated? This has been largely answered in the foregoing, but the writer can speak definitely of just what happened each time during the development operations of the former Minnesota Connor Mining & Milling Company (1911-1916), since he was there all of that time and in charge of the work a portion of the time. The new vertical shaft on the Pluto was started in 1911 and was planned to open up, at a supposed depth of 700 feet, the junction of the Minnesota and Pluto veins which roughly parallel each other on surface strike but dip toward each other. Both being strong veins, the engineers had pointed out the likelihood of the ore shoot in the Minnesota vein being greatly enriched and enlarged at that junction. Frequent interruptions occurred in the course of this development because of lack of adequate financing. A small operating fund having been exhausted, the mine would be shut down for several months while efforts were made to refinance; meanwhile the water was kept out, entailing considerable expense.

COPY

Garden Grove, California, Oct. 28, 1937

Mr. Edward Fell Lukens,
Philadelphia, Pa.

Dear Mr. Lukens:

Replying to your letter of the 20th instant, regarding the information desired by Mr. Woodward respecting out Minnesota-Connor Mine at Chloride, Arizona, I shall answer as best I can the several questions asked, taking them up not in the order asked but rather in a chronological order as they affect our property from its inception down to the present time. Therefore, let us first consider:-

Question 5 - History of the Mine.

As nearly as I could discover, from many years residence at the property, talks with the former owner and operators, and reference to various reports, early mining history, etc., the Connor mine was discovered in the early prospecting days of Chloride and even before the town as we now know it existed. Some of the early Indian uprisings against the white prospectors were staged on the Connor and others holdings of the present M-C group. Early in the eighties John Barry, principal developer of the mine up to 1900, began shipping Connor ore to the early samplers and smelters, some of it being hauled by wagon team to an old mill at Cerbat, a few miles to the south. Much of this ore ran sensationally high in silver and gold, returning large profits under even the then crude and wasteful methods of milling. During the two decades just prior to 1900 considerable tonnage of high grade was shipped, the lower grade being left in the mine and forming the $170000.00 tonnage referred to in Frank Langford's report of 1901.(Frank Langford, E. M., San Francisco, Cal.) Unfortunately, no consistent record is now available that will show the total tonnage and value of ore shipped during those 20 years, but we do have records of some 119 shipments of varying size to outside points and which might safely be considered a fair average of the mass shipments of that general period. This ore assayed up to 430 ounces silver and 5 ounces gold per ton, the average of the 119 shipments being: Silver, 89 ozs., gold, 1.65 ozs.

$622.11 $590 18 Aug 82

During this time Barry developed the ore shoot from its apex on the Connor to a depth of 300 feet on the Minnesota claim which adjoined at the north end of the Connor; the shoot raked north as it descended and at 300 feet vertical depth was well with in the Minnesota boundaries. He put up a stamp mill which he operated with his low grade ores until 1900 when he sold the property to the Philadelphia & Arizona Mining Company. I tore out those old stamps while living at the mine in 1914.

A large plant of machinery, buildings, equipment, and a 250-ton mill was put in by the P&A Company, one of the best equipped plants at that time (1900-1901) in Northern Arizona. Development was carried to a depth of 535 feet in the Minnesota (incline) shaft, and stoping done down to the 400 level of those workings, the ore shoot being continuous along this 1000 or more feet in the rake of the shoot from its apex on the Connor to the 500 level of the most northerly shaft (A) of the Minnesota. From various sources considered reliable I ascertained there was but little if any stoping below the 400 level. On the 400 and just above it were considerable bodies of highgrade ore, as shown by the daily assay memoranda (originals)left by the mine assayer from day to day and gathered up in subsequent years by me and which I still zealously guard. Undoubtedly this increased enrichment at the 400 was due to union at thatpoint of a parallel vein with the Minnesota vein, as our underground crosscut in 1912 did not encounter this vein when we drove from the Pluto shaft into the old workings.

UNCLE ABE

Like the Manzanita was another old shaft,a prospect hole sunk approximately 60 years ago---and again no available records. An assay from the shaft running very high in lead encouraged us to suspend operations at the Manzanita and start anew from scratch at the Uncle Abe. Shaft was cleaned out and retimbered just enough to make working conditions safe until real values were ascertained.

Shaft is 125 feet deep, from the 50 foot level about 200 feet of drifting has been done and about 40 feet at the 125 foot level,besides a 40 foot raise. All drifting and raise was done after we started operating on the Uncle Abe in Dec. of 1943. A total of 5 cars was sent to the smelter (see production record below)---all oxidized ore.

The ore shoot we know to be at least 200 feet long and still going strong in either direction-----in places it is 10 to 12 feet wide. The shaft is also sunk on the ore. Indications in bottom of shaft are good in both lead and zinc---however greater depth is the real preblem here since the shaft stopped in the lean area between the sulphides and the oxidized ores.

PRODUCTION

1944
(5 cars)

Gold --------	4.73 oz.	
Silver ------	695.47 oz.	
Lead --------	11.269 Tons	(22538. lbs.)
Zinc --------	2.51 "	(5021. ")

CHLORIDE, ARIZONA, 2-4 1943

MANZANITA MINES Russ Lord

LAB. NO.	OWNER'S MARK	GOLD		SILVER		GOLD & SILVER VALUE—TON	PERCENTAGES			OTHER	TOTAL VALUE
		OZ.	VALUE	OZ.	VALUE		PB.	ZN.	CU.		
17	None	.09	3.15	11.55	8.21	11.36			3.4		19.52

50' shaft on Manganite - where [illegible] worked

CHARGES 1.75

[signature]
ASSAYER

TENNESSEE SCHUYLKILL CORPORATION
CERTIFICATE OF ASSAY

CHLORIDE, ARIZONA, Aug 26 1943

Minnesota-Connor Mining Co.---Russ Lord

LAB. NO.	OWNER'S MARK	GOLD		SILVER		GOLD & SILVER VALUE—TON	PERCENTAGES			OTHER	TOTAL VALUE
		OZ.	VALUE	OZ.	VALUE		PB.	ZN.	CU.		
15	#1	0.12	$4.20	1.46	$1.04	$ 5.24	1.1	7.4	18" Zn ore in hanging wall 4' wide		$18.88
16	2	0/07	2.45	2.08	1.48	3.93	0.8	5.8			14.43

Connor Incline

Minco Shaft - South drift - 50' level

CHARGES $4.00

Joe Sharpe
ASSAYER

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
SOUTHWEST EXPERIMENT STATION
WESTERN REGION
BOX 4097
UNIVERSITY STATION
TUCSON, ARIZONA

Nov. 1, 1943

Mr. R. E. Lord, General Manager
Minnesota-Connor Mines Inc.,
Chloride, Arizona.

MANZANITA CLAIM

Dear Mr. Lord:

Reference is made to your letter of October 29 requesting assays of the samples taken at your Manzanita mine by our engineers.

The following table shows length of cut, location, description, and assays of the samples:

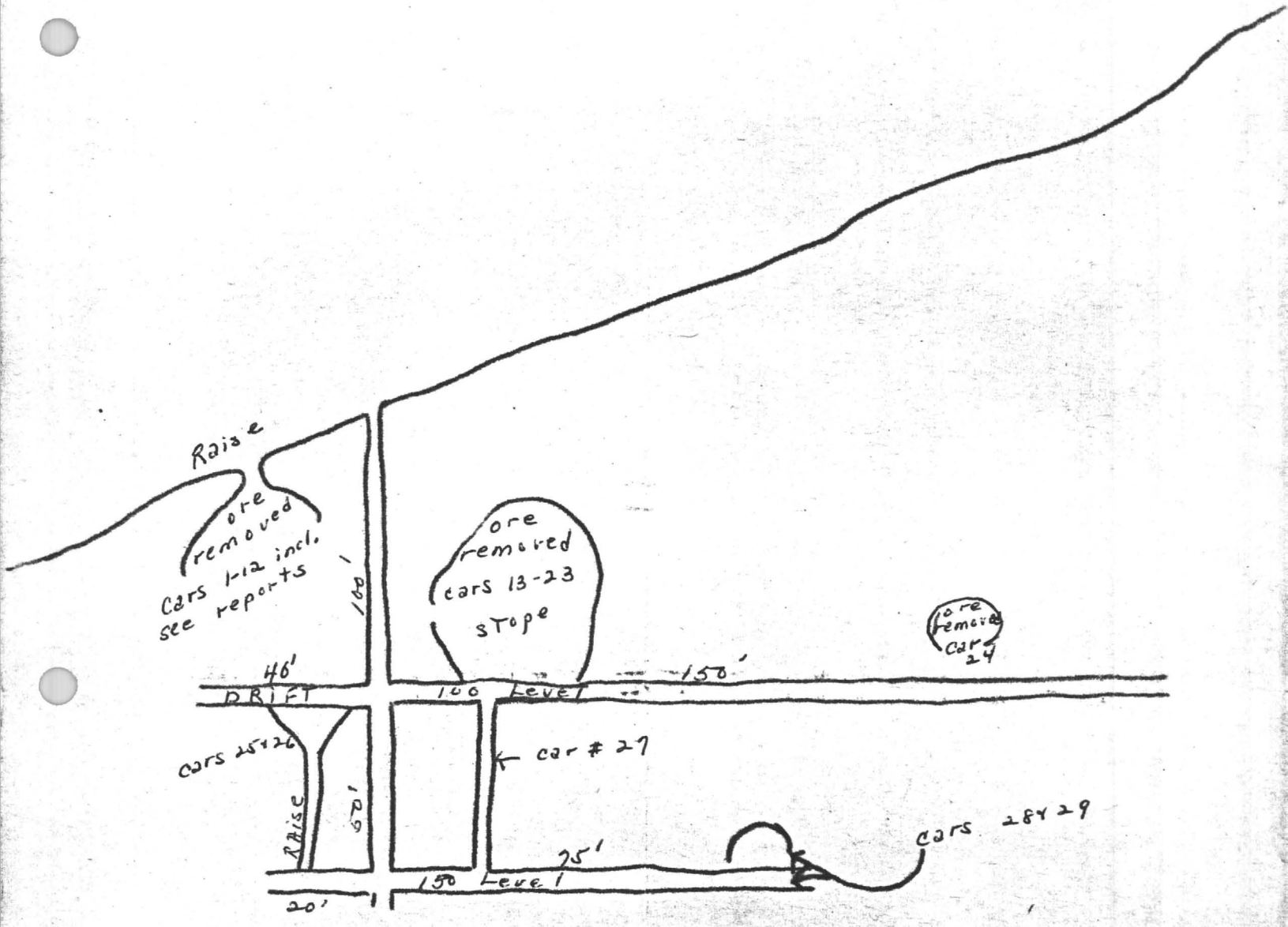
No.	Length	Location	Description	% Pb	% Zn	% Cu	Oz. Au.	Oz. Ag
3295	1.9	150-ft. level, breast footwall side	Heavy pyrite	3.8	5.0	.39	3.400	9.75
3296	2.7	150-ft. level, breast hanging wall side	Soft, talcy, some pyrite	0.4	1.4	.13	tr	1.30
3297	3.0	N side of stope, 5 ft below 100' level	Hard quartz some sulphide	8.0	4.0	.43	.060	7.75
3298	0.5	100-ft. level, south stope, back of stope	Pyrite in altered granite	9.9	3.5	.46	1.200	15.80
3299	1.2	50-ft. level, south end of stope	Quartz and pyrite partly oxidized	0.3	1.3	.15	.190	3.05
3300	2.3	Uncle Abe claim footwall of winze	Oxidized, soft	0.4	0.5	.20	.020	1.20
3301	2.0	Uncle Abe claim hanging wall of winze	Oxidized, soft	7.8	0.4	.38	.020	3.65
3302	0.9	Shaft at N. end of property 50-ft. level, south end	Oxidized, manganese iron stain	0.1	1.2	1.10	tr	17.60

Yours very truly,

J. H. Hedges

J. H. Hedges,
District Engineer.

Manzanita Claim
of
Minnesota Connor Mines Inc.



CERTIFICATE OF ASSAY

Chloride ~~KINGMAN~~, ARIZONA, 1/13/93

THE SAMPLE OF Ore FROM Mrs. Lord
AND SUBMITTED TO US FOR ASSAY, CONTAINS:

LAB. NO.	OWNER'S MARK	GOLD		SILVER		VALUE PER TON GOLD & SILVER	PERCENTAGE OF					TOTAL VALUE PER TON
		OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		LEAD	COPPER	ZINC			
	radical region		$		$	$						
20	—	0.89	31.15	21.05	14.97	46.12	4%					51.45

Gold @ - - $ 345 per oz.
Silver @ 7111 c per oz.
Lead @ 6.5 c per lb.
Zinc @ c per lb.
Copper @ c per lb.

CHARGES 2 00

CERTIFIED BY Jim Shaye ASSAYER

MINNESOTA- CONNOR MINE

TO WHOM IT MAY CONCERN:

The Minnesota-Connor, one of the largest and best known mines of Northwest Arizona, is located about 1½ miles southeast of Chloride, Mohave County Arizona, in what is known as the Wallapai Mining District. This area is conceded by eminent mining engineers and geologists to be one of the most heavily mineralized to be found anywhere, and it has produced many millions of dollars worth of ores since its discovery. The Minnesota-Connor lies in the heart of this rich region and has itself produced many hundred thousand dollars worth of ores according to governmental and private records. Such was the extreme richness and beautiful appearance of silver ore from this mine that it was much sought after for display in mineral cabinets. There are 10 claims, about 175 acres, in the property, of which 8 are connected in one contiguous group, while the other two claims adjoin each other, just off the main group.

This Minnesota vein has been mined extensively to the 500 foot level, at this point operations ceased due to a leaning out of values, which by the way is the same predicament the Tennessee Schulykill mine encountered at the same level. It seems to be a characteristic of this region. The Tennessee is the largest producer in this district, they were shut down for several years when they hit the lean zone, however they resumed operations and sunk to the 1400 foot level in 1918 and have mined from that level and up ever since. The Tennessee is about 3000 feet from our north end line and some of the old timers think that we are on the same vein system.

The old workings on our property are not accessible due to a cave in the old incline shaft and water. During the last war the former owners of the property sunk a two compartment, steel set, vertical shaft to a depth of 724 feet, between the Minnesota and the Pluto veins which run parallel to each other, and also dip towards each other, the object being to sink to the junction of the two veins which should result in an enormous ore body as the Pluto vein is strong with an average width of 5 feet at shallow depths. However the Minnesota vein straightened somewhat and the veins did not intersect at the 724 depth as they were calculated to do. Due to the high wages and supply costs at that time work had to be abandonded pending refinancing which dragged on and on; they let the water climb and the shaft has not been worked since. They did however, cross cut to both veins and found them encouraging as to possibilities with depth and further drifting on the vein to get into the rake of the shoots.

In the last 2½ years I have prospected another vein on the property, called the Manzanita-Uncle Abe vein. From one shallow shaft (100') I have taken 29 fifty ton cars of ore averaging; gold-.25 oz., silver-18 oz., lead-5%, and zinc 4%. And from another shallow shaft, 5 cars of very good mill ore, however it did not pay us to ship this ore, due to the low gold&silver values. This particular shoot has very big possibilities as the shoot is very strong, I have drifted on it 200 feet and it is still going strong in either direction--- average width 6 to 8 feet.

There is another strong vein called the General Grant-Mother Lode that also has big possibilities if it were developed.

We have ample water for milling, a side hill for mill site and a 50,000 gallon concrete reservoir in good shape. There is no equipment on the Minnesota-Connor claims and on the Manzanita we have a 36 foot head frame, 60 ton ore bin, 2 buildings, 25 H.P. gas hoist, portable compressor etc.

If you people are interested we have engineers reports, maps, smelter reports etc. that we would gladly send--or if you wish to send an engineer to Chloride I would gladly go over the property with him.

This is an opportunity for an enterprising outfit to take over for comparatively little and can be in production in a very short time.

Address any communications to R. E. Lord, Box 267, Chloride, Arizona.

MINNESOTA- CONNOR MINE

The Minnesota-Connor,one of the largest and best known mines of Northwest Arizona,is located about 1½ miles southwest of Chloride, Mohave County,Arizona, in what is known as Wallapai Mining District. This area is conceded by eminent mining engineers and geologists to be one of the most heavily mineralized to be found anywhere,and it has produced many millions of dollars worth of ores since its discovery. The Minnesota-Connor lies in the heart of this rich region and has itself produced many hundred thousand dollars worth of ores according to governmental and private records. Such was the extreme richness and beautiful appearance of silver ore from this mine that it was much sought after for display in mineral cabinets. There are 10 claims,about 175 acres,in the property,of which 8 are connected in one continuous group,while the other two claims adjoin each other just off the main group. A fine truck and auto road connects with town,being an easy grade,down hill all way. Altitude is 4400 feet. Operating conditions are ideal,with cool summers and mild open winters. Floods,tornadoes cyclones,snowslides and earthquakes are unknown here.

The veins are ture fissures,large and well defined,and cluster around four important systems,possessing two or three known ore shoots aside from the parent Minnesota shoot that was continuous from surface to 500 feet,the depth of the lowest level in the old workings. The average length of this ore shoot on the various levels was about 400 feet. The width varied from 6 to 25 feet,with lenses of ore reported to be 30 feet wide in places. While considerable of the production was made under various leasers who left us no complete record,we do have original settlement sheets from smelters covering 110 cars of raw and concentrate ores shipped during 1900-1904 that averaged net proceeds after deducting freight and treatment charges,$567 per car or about $23 per ton net. We also have returns from ore shipped from 1886 to 1897 on 119 shipments in which the average gold content was 1.65 ounces per ton and silver 89 ounces per ton. The high grade often running 200 to 800 ounces silver and over 5 ounces gold per ton was shipped direct to the smelters,the low grade being put through a stamp mill until 1900,then through a concentrating plant,which though the best of its day,was not adapted to effect high recovery of values. In recent years tests in flotation laboratories have shown this same ore to be readily amanable to flotation treatment with resulting high recoverips far ex exceeding those of the old system.

Considerable of the old mine dumps still contain sufficient values for profitable mill ore,as does also the tailings dump of about 7000 tons,an asset quickly to be noted by the engineers who sampled them. Probably 15,000 to 20,000 tons of this stuff would pay to mill,judging from numerous tests. The Connor dumps carry exceptional gold values averaging possibly a quarter ounce gold per ton,in addition to considerable silver and some lead and copper. One engineer estimated the dump tonnage to be worth around $150,000,00.

Engineers of wide travel and experience point out the great width of the true fissure veins of the Chloride region, in comparison with the veins of other mining regions. On our outlying claims, the vein traversing the Manzanita-Uncle Abe calim is from 15 to 25 feet wide, very strong outcrop carrying good values, and is far more favorably considered than the Minnesota-Connor vein originally was. Shallow shafts and tunnel on the Manzanita-Uncle Abe system indicate three ore shoots, none of which has been opened up to any extent. Massive sulphide ore on the dump assays up to 50 ounces silver and a quarter ounce gold, besides some lead and copper. A 6-foot pit on the hanging wall of the vein at the south shaft shows over an ounce of gold, while the north shaft runs higher in silver. Old-Time practical miners of the district assert their firm beleif that this vein system will develop into a great mine someday, it being one of the strongest in the entire district. On the Uncle Abe claim a shallow tunnel, only about 10 feet under cover, shows lead assaying 30 %.

Lying between the Minnesota-Connor vein and the Manzanita-Uncle Abe vein is another strong vein syatem, the Mother Lode-Grant vein. The Grant ore is a ZINC ore running up over 50% pure sphalerite, but as the vein enters Mother Lode ground to the south it shows more silver. In the 150 foot shaft on the Mother Lode a chalcopyrite streak assayed by a neighboring property manager who worked through our shaft, showed 19% COPPER as well as shipping values in gold and silver. A few years ago a fine shoot of high grade silver was opened up on the Dorothy ground adjoining the Grant on the west, the Dorothy being a cross vein intersecting the Mother Lode vein north of the Mother Lode shaft. The Dorothy shipped several cars of ore that ran up to 400 ounces silver per ton, and we regard it almost certain that a large ore shoot will be found in our ground where the Dorothy and Mother Lode veins intersect, both being strong veins.

Attention is called to the very adequate water supply on this property, this water accumulating on our claims that catch the continuous drainage from Cherum's Peak (highest point in the Cerbat Mts.) through gulches that have their confluence within the boundaries of our claims, resulting in a continuous flow of clear mountain water through a 2 inch pipeline nearly half a mile into our large mine tanks and the 250,000 gallon reservoir. In 30 years this spring has never dried up. Throughout most of the year the flow is ample to fill a much larger pipe than 2 inch and even in summer time the flow averages better than 3000 gallons daily. Then from our Pluto shaft about 20,000 gallons per day can be pumped, based on records kept during the period when the mine was being kept unwatered in 1916 follwoing regular operations that had drained it over a year. Thus our ample supply of water solves a problem usually very perplexing in this region. (The pipe line has been replaced with new 2 inch pipe)

A high tension electric power line from Kingman to Chloride passes close by the property and a spur terminal of that line is within a few hundred feet of our plant. With early completion of Boulder Dam cheap power will be available. The new highway from Kingman to Boulder Dam passes Chloride, making it easy for trucking to Kingman on the main line of the Sante Fe R.R.

Signed

P.S.Virgin Co-owner

All the above is taken from the report given the Minnesota-Connor Mines Inc. prior to their purchase of the property. Mr.Virgin is now the mortgage holder----full title being in the name of Minnesota-Connor Mines Inc.

In March,1942 R.E.Lord,acting as General Manager for the Minnesota-Connor Mines Inc. started to clean out and dewater the old shaft on the Manzanita claim. It was found to be a 100 foot shaft with a 15 foot cross cut to the vein and a 35 foot drift. On July 1,1942 the first shipment was made from this shaft. Since that time 15 shipments have been made -- all from the 100 foot level stoping areas. The total production as follows:

gold ---------	164.78 ounces	
silver--------	7873.45 "	
lead ----------	29.592 TONS -------	59184.988 pounds
zinc ----------	14.585 " -------	29170.132 "
copper ---------	2,517 " -------	5035.059 "

NOTE:--two shipments were sent to El Paso where the copper and zinc were not recovered.

All this ore has been taken from a very shallow depth to help defray expenses of sinking the shaft. We have every reason to beleive that when we open up on the lower levels that base metals will greatly increase.

The above totals are given for only the first 12 shipments since we do not have returns as yet from the others.

Garedn Grove, Cal., Sept. 17, 1944

Mr. T.M. Recchiuti
Minnesota-Connor Mines Inc.
Camden, New Jersey

Dear Mr. Recchiuti:

Replying to your letter of the 6th instant in regard to the Minnesota and Pluto veins, their width, values and general appearance, I shall give a brief outline herein on these points, although I think if you will refer to your files of three or four years ago I covered these matters in more detail then.

MINNESOTA- CONNOR VEIN. This is the same vein coursing the two claims. About the middle of the Connor claim is where the ore shoot originally was discovered and, as they sank on it, they found it raked north, as do practically all the ore shoots in this district, so that by the time it was opened on the 400 level it was down under where the main mill and plant was later erected and on the old 500 level it is nearly 700 feet north of the point of apex on the Connor. The levels usually were run every 100 feet, although some sub levels were run in development before stopes were opened. The vein was never narrower than drift width, usually from 10 to 15 feet wide, and often 20 to 25 feet wide in places. (See old mine maps, also engineers reports of Langford, Fox and others) Much of the ore was sensationally rich in spots and was sorted out and shipped as high grade, the lower grade of around $20 per ton being put through the old stamp mill and later through the250 ton concentrating mill. Much of the lower grade ore was by-passed nd left in the mine, especially in the upper Connor levels where I saw it many times prior to its extraction by leasers in 1937. I would make a rough guess that, from the records I have seen, the ore value from wall to wall before any high grade was taken out would average fully $35 per ton at the values of today. As the very low grade would be incuded in this average, the total tonnage of ore found from surface to 500 feet was enormous. Considerable high grade was extracted that assayed upwards of $200 per ton, values mostly in silver, though gold was a consistent value; we had more gold in the Minnesota than most mines in that area with a fair percentage of lead, copper and zinc. The largest part and most valuable portion of the ore shoot was on the 400 level near where the Linne Shaft was sunk. Not much stoping was done below that point (400 level) I was told, although the old maps shows some stoping just below the old 400. On the 500 level ore opened up in the drifting was taken out through the A shaft. We were never able to get down in that shaft below the 300 level when we came to the property because of cave-in but the former workmen in there told us a good deal of ore was left in the old 500 level and above up to the 400 level.

The Pluto vein, roughly paralleling the Minnesota some 350 feet west of the latter, is about 5 or 6 feet wide at surface and about 150 feet west of the Pluto shaft; it was about the same where we cut it on the 280 level, and on the 600 level it was about the same: no ore of consequence in it, as it is inly a

feeder vein and we didn't expect any ore in it but when it unites with the Minnesota vein we expect to find a good body of ore through the enrichment that results from the junction of two vein of this size and character. We assumed such junction would occur at 700 level of the Pluto shaft but both veins straightened up in their pitch and the junction has not occurred at the 700; I do not think it will be far below there where it does occur.

The Minnesota-Connor vein cut through the Pluto shaft at 600 level, from which point a drift was extended out north some 300 feet, the vein was still wide and loose like it was in the upper levels of the old workings, but the ore was scattered, bunchy and leaner. there is a lean zone around the 600 foot depth in the mines around Chloride. The Tennessee had it, but as soon as they got below it they encountered the main ore shoot bigger and stronger than ever and they are still producing from it through the Schuylkill shaft. We figure the same thing will occur in the Minnesota at depth. Experts who worked in the old upper workings in the early days and who later inspected the 600 and 700 levels of the veinwhere opened in the Pluto Shaft told me it was the same vein and would "never quit", and begged the then operators to sink down on it to the 900 or deeper and really open it up. We found considerable low grade ore in the drift on the 600 north which ran about $20 per ton; would be worth more now and be a good mill ore, but the main body of ore is expected deeper down. On the 700 level we merely touched the vein and had to close down due to lack of funds, so we were not able to open up that level, which was quite a disappointment to me, as I expected to find a good body of ore after we drifted out under the rake of the shoot on that level.

Between the 600 foot point in the Pluto shaft and the bottom of the old 500 level in the A shaft above there is probably 150 to 175 feet of vein area that has never been explored. (Collar of Pluto shaft is 70 feet lower down hill than collar of shaft A.) There is room there for a lot of ore on the original shoot extending below the old 500 level of shaft A, plus whatever ore was left in the workings above the 500 level up to the old 400. I tried my best to get the former superintendent to open up that stretch of ground before leaving the 600 level of the Pluto but he wouldn't. In considering this whole question of the Minnesota ore body it is well to give careful study to the 6 or 7 engineers reports made on the property, and to the records of actual assays and shipments, all of which show the Minnesota-Connor was a heavy producer many years.

Yours very truly

(signed) P.S. Virgin

Chloride, Arizona
June 21, 1946

Wm.T. Kolloge
1130 N. Twenty-Second Street
Milwaukee, Wisconsin

Dear Mr. Kolloge:

Am sorry to be so long in answering your letter--however, the delay was unavoidable, I assure you.

I sincerely regret the fact, that after Mr. Manson did learn of my presence and connection with the mine that he did not accept the invitation I extended to him to come spend some time with me and let me show him over the entire property. There is one section of the "old" part of the property which I am sure would be interesting to him. However, to date I have not had the pleasure of meeting Mr. Manson. You see we had a wire from Mr. Recchiuti telling us a Mr. Manson would be here----but after waiting several weeks had given him up.

T o answer your inquiries regarding the Minnesota-Connor property----we are in need of a sound development program which when put into effect will most certainly open up extensive ore bodies to keep a mill running indefinitely. Will list my ideas regarding this:

1-As mentioned in the Engineers reports which you must have, you will note the depth of the old Minnesota-Connor works approximately 500 feet and the Pluto shaft's depth of 728 feet. This Pluto shaft should be dewatered and rehabilitated and a drift run north till you reach the true rake of the ore. This was never done due to lack of finances during the last war. At the same time an indefinite but large amount of ore could be mined on the 600 foot level and would extend up into the old workings. Considerable ore was left there due to the prices of that day (40 years ago) but today would be very profitable. Approximate cost of this would be $25,000.--.My ideas regarding this heartily conform with the latest engineer report by Mr Jacobson---a copy of which I am enclosing. It would only be a repetition for me to send you information which is condensed in that report.

2- As Mr.Jacobson recommends the Manzanita-Uncle Abe should be developed. As I have worked on both claims on a small scale ---I would concentrate on the Uncle Abe and sink that shaft 100 feet and drift the full length of the ore shoot. Shaft sinking should help pay for itself since it is sunk on the ore. This will undoubtedly open up a large amount of good milling ore. Approximate cost--$5,000 to $8,000. This Uncle Abe vein I regard as one of the strongest and most interesting veins in this whole district. If given a chance it would be one of the heaviest producers around here. I have opened this single ore shoot for a length of 200 feet with an average vein width of 10-12 feet and it was

still going strong in either direction when we stopped. Reason for stopping was due to lack of finances.This shaft is 125 feet deep and the bottom is directly in the transition zone and an additional 100 feet of depth should be in the true sulphides,and beyond the leached condition which was predominate above.

The Manzanita,of course also warrents further work----but of the two I would recommend the Uncle Abe and then later on opening up or joining the Manzanita with the Uncle Abe. The Manzanita is approximately 1200 feet from the Uncle Abe on the same vein structure.

The labor situation----I can honestly say,due to knowing the district and most of the men could be handled adequately.

The milling situation---the local mill,approximately 8 miles from the Minnesota-Connor property could handle a maximum of 50 tons of ore daily from our property. This would suffice until we were in a position to support our own mill. Unless we had our own trucks the truck rate from the property to the mill would be $1.00 to $1.25 per ton.

Electric power is readily available and at reasonable rates due to the proximity of Boulder Dam.

Mr. Manson said (when talking to my wife) that you had all the smelter reports from the Manzanita-Uncle Abe. Approximately $29,000.-- was our net after freight and smelter deductions. Out of this we also had to pay $1.50 per ton for trucking to Kingman. Approximately $7,000. to $8,000. for pay roll. Any further detailed report on financial matters you would have to get from Mr. Recchiuti. You see we kept only an outline report here and sent weekly reports to the Camden office where the actual book keeping was done. That office took entire care of all taxes, social security etc.

The only reason I am managing another property is because we lack necessary finances for the development program which I have outlined briefly,and which conforms with Mr. Jacobson's report. Would be willing to cooperate and help you in any way possible,should you take over,since I have great faith in the Minnesota-Connor property----which if given a chance could be one of the largest producers in the district as it was years ago. And with present stimulus of increase in silver, lead and copper prices---I am even more convinced of its future.

Yours very truly

R. E. Lord

R.E. Lord

P.S. Mr. Manson said you had all smelter reports,engineer reports,maps etc.---so I beleive you have a fair picture of the property in general.

(October 1948)

Budget Bureau No. 42-R286.2.
Approval expires August 31, 1951.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
IN COOPERATION WITH THE BUREAU OF THE MINT

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ONLY

PRODUCTION AND DEVELOPMENT OF METAL MINES IN 1948 (LODE MINES)

C O P Y

Please indicate any change necessary for correct name and address.

Mining district or region Wallapai
Owner of mine Minnesota-Connor Mines, Inc.
Street 421 Lafayette Bldg.
Town Philadelphia State Penn.

Please reply to the following questions and return the schedule as promptly as possible in the enclosed envelope, which requires no postage.

Only with your express permission will your individual figures be disclosed; otherwise they will be held confidential.

IF YOU HAD NO OUTPUT, PLEASE SO STATE AND ANSWER REMAINING PERTINENT QUESTIONS. If you desire a copy of the published report check here ____.

1. DESCRIPTION AND LOCATION OF OPERATION:

(a) Name of mine or claims Manzanita claim of Minnesota-Connor Mines, Inc.
(b) State Arizona County Mohave Section ____ Township ____ Range ____
(c) Post office of mine ____ Shipping point ____ Name of railroad ____
(d) Location of claims ____
(Give name of stream, gulch, or mountain, or give distance and direction from post office)
(e) Name and address of company or individual operating mine and date of any change in 1948
J. Z. J. Mine Operators, Chloride, Ariz.
(f) State how long you operated in 1948, giving dates Jan - Nov

2. TONNAGE FOR 1948 (tons of 2,000 pounds dry weight, or if wet, so state):

	Crude Ore	Old Tailings, Old Smelter Slag
	Tons	*Tons*
Total crude ore and other material sold to or treated in—		
A. Amalgamating and cyaniding mills, with or without concentrating equipment (underline name of process used)		
B. Mills for concentrating only (report details on attached form)		
C. Copper, lead, or zinc smelter (state which)	102.9075	
D. Leaching or other plants (state kind)		
Total crude ore, old tailings, etc., sold or treated in 1948 ✓	102.9075 ✓	
E. CONCENTRATES PRODUCED		

3. TOTAL METALS IN ORE, BULLION, CONCENTRATES, PRECIPITATE, ETC., 1948 (assay content):

	Crude Ounces		Fine Ounces
	Before Melting	After Melting	
Gold in—			Au 0.956 07/T
A. Mill bullion and precipitate (fineness ____)			
C. Material sold to smelters (except E)	x x x x x x x x	x x x x x x x x	98.51775
D. Material sold to leaching or other plants	x x x x x x x x	x x x x x x x x	
E. Concentrates produced	x x x x x x x x	x x x x x x x x	
Total gold	x x x x x x x x	x x x x x x x x	98.51775
Silver in—			
A. Mill bullion and precipitate (fineness ____)			
C. Material sold to smelters (except E)	x x x x x x x x	x x x x x x x x	3,389.00
D. Material sold to leaching or other plants	x x x x x x x x	x x x x x x x x	Ag 32.9 07/T
E. Concentrates produced	x x x x x x x x	x x x x x x x x	
Total silver	x x x x x x x x	x x x x x x x x	3,389.00

	C. In Smelting Material	D. In Leached or Other Material	E. In Concentrates	Total Pounds
	Pounds of metal	*Pounds of metal*	*Pounds of metal*	
Copper content (wet assay)	2,032			
Lead content (wet assay)	20,128			
Zinc content	12,873			

Total net value received, according to settlement sheets:
(Freight $____ and treatment $____ deducted) $____

If preferred, fill in figures for tons of ore and mail settlement sheets, which will be returned promptly

(OVER)

Please reply to the questions on the back of this schedule

16—57128-1

4. PURCHASER OF PRODUCT IN 1948:

(a) What disposition was made of the products in 1948? American Smelting & Refining Co., El Paso, Tex.
(Give name of smelter or mill to which ore was sold; United States assay office, mint, bank, or others to whom bullion was sold)

(b) In whose name was product shipped? J. Z. J. Mine Operators

(c) If ore is treated at custom plant, give name and location

5. PLEASE GIVE NAMES OF NEIGHBORING MINES OPERATING DURING 1948:

NAME OF MINE	NAME OF DISTRICT, GULCH, STREAM OR MOUNTAIN	NAMES OF LESSEES OR OPERATORS	ADDRESS

6. MISCELLANEOUS:

(a) How is the mine developed? Incline Shaft. Two levels 100' & 150'. Around 500' drifting on 100' level and about 150' on 150' level.
(For example, by vertical shaft ____ feet deep, by drifts ____ feet, tunnel ____ feet long)

(b) What was amount of development done in 1948? Shaft ____ feet; drifts 250 feet; tunnel ____ feet; diamond drilling ____ feet.

(c) What is the general character and capacity of reduction plant at mine? No
(For example, 100-ton concentration mill, 300-ton flotation mill, 75-ton cyanide plant, etc.)

(d) What additions were made to plant in 1948?

(e) Treatment processes
(Give treatment in brief at your plant of crude ore; concentrate; tailing)

(f) Remarks (please mention important changes in 1948):

(g) How many days per week was mill operated? ____ Number of shifts? In mine about 100 shifts a month

J. Z. J. Mine Operators
(Name of company)

2/23/49 (Date) /s/ Raymond D. Ziegler (Signature) (Official position)

Chloride, Ariz., Box 114
(Address)

Do you object to the publication in MINERALS YEARBOOK of figures furnished on this schedule in such a manner as to disclose your production? No
(Yes or no)

U. S. GOVERNMENT PRINTING OFFICE 16—57128-1

Garden Grove, California
June 5, 1949

Mrs. Ruth Lord
Chloride, Arizona

Dear Mrs. Lord :

The smelter settlement record went forward by express on the 2d instant and I expected to write you the next day but have been so swamped I had to wait until a Sunday to find time.

The settlements listed in the book 1900-1903 by the old P & A Company, who then operated the mine, show the value of the lump ore shipments of that producing period; you will note some of them are quite high. The concentrates were from the old mill that - although the standard equipment of that day - could not recover but about half the ore values, since much of the silver was in soluble form and ran off with the water. The batch of assayer's notes is interesting in that this data shows the important values in the ore just as it was opened up on the various levels from day to day; absolutely reliable assays, as they were not then trying to sell the mine to anybody. I had run onto these old notes years ago, collected them and saved them as a part of the authentic mine records; they are quite fragile but mostly legible. If you have the time, it would be a good idea, I think, to sort them out as best you can by dates and list them in a book, showing where the samples were taken and how the values ran. The back portion of that smelter record could be used for such listing in lieu of any regular asdayer's daily record. You will note from the data that the 400 level of the old workings (Connor "C" shaft and Line Shaft "B") had very high grade ore and that it was of considerable size.

You inquired about mine maps. I don't have any. The old workings were never mapped like they should have been, and the only map I ever saw was an old stope map from surface to 400 level, and I think it was stolen from the mine office several years ago - long before the deal was made with Mr. Recchiuti. The new shaft (Pluto steel lined shaft) was not mapped. It is 724 feet deep, vertical, a station cut on the 600 and 700 levels; some drifting north on the vein on the 600 where the ore was scattered. On the 700 we just cut the vein (which at that point was 38 feet wide and lying west of the shaft) and found good ore on the footwall and some on the hanging wall, but only started to drift on the vein when we were ordered to close down. Upon the death of the president of the company later the company disbanded and turned the property back to the owners. The area between the 500level of the old "A" shaft and the 600 level of the Pluto shaft was never explored; it would represent about 175 or 180 feet on the incline, due to the slope of the hill, the collar of the Pluto being 70 feet lower than the "A".

I hope you can get your parties really interested. If you cannot I might be able to help find somebody this fall who might be interested, but unless there was something in it worth while for me I would not have the time to spend on it, as I carried the load for some 20 years until I was about worn out. With best wishes, I am

Sincerely yours,

P S VIRGIN

Note: The following information pp 1-44 was given to me by C.G. Patterson a friend of mine 25 years, circa 1982. Wm. H. Crutchfield Jr. March 22, 1987

Garden Grove, California
June 5, 1949

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Chloride, Arizona

W.H. CRUTCHFIELD, JR.
Mining Engineer

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(October 1948)

Budget Bureau No. 42-R286.2.
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2.

W.H. CRUTCHFIELD,JR.
Mining Engineer

PRODUCTION AND DEVELOPMENT OF METAL MINES IN 1948 (LODE MINES)

C O P Y

Please indicate any change necessary for correct name and address.

Mining district or region Wallapai
Owner of mine Minnesota-Connor Mines, Inc.
Street 421 Lafayette Bldg.
Town Philadelphia State Penn.

Please reply to the following questions and return the schedule as promptly as possible in the enclosed envelope, which requires no postage.

Only with your express permission will your individual figures be disclosed; otherwise they will be held confidential.

IF YOU HAD NO OUTPUT, PLEASE SO STATE AND ANSWER REMAINING PERTINENT QUESTIONS. If you desire a copy of the published report check here ____.

1. DESCRIPTION AND LOCATION OF OPERATION:

(a) Name of mine or claims Manzanita claim of Minnesota-Connor Mines, Inc.
(b) State Arizona County Mohave Section ____ Township ____ Range ____
(c) Post office of mine ____ Shipping point ____ Name of railroad ____
(d) Location of claims ____
(Give name of stream, gulch, or mountain, or give distance and direction from post office)
(e) Name and address of company or individual operating mine and date of any change in 1948
J. Z. J. Mine Operators, Chloride, Ariz.
(f) State how long you operated in 1948, giving dates Jan - Nov

2. TONNAGE FOR 1948 (tons of 2,000 pounds dry weight, or if wet, so state):

	Crude Ore	Old Tailings, Old Smelter Slag
	Tons	*Tons*
Total crude ore and other material sold to or treated in—		
A. Amalgamating and cyaniding mills, with or without concentrating equipment (underline name of process used)		
B. Mills for concentrating only (report details on attached form)		
C. Copper, lead, or zinc smelter (state which)	102.9075	
D. Leaching or other plants (state kind)		
Total crude ore, old tailings, etc., sold or treated in 1948	102.9075	
E. CONCENTRATES PRODUCED		

3. TOTAL METALS IN ORE, BULLION, CONCENTRATES, PRECIPITATE, ETC., 1948 (assay content):

	Crude Ounces		Fine Ounces
	Before Melting	After Melting	
Gold in—			
A. Mill bullion and precipitate (fineness ____)			
C. Material sold to smelters (except E)	x x x x x x x x	x x x x x x x x	98.51775
D. Material sold to leaching or other plants	x x x x x x x x	x x x x x x x x	
E. Concentrates produced	x x x x x x x x	x x x x x x x x	
Total gold	x x x x x x x x	x x x x x x x x	98.51775
Silver in—			
A. Mill bullion and precipitate (fineness ____)			
C. Material sold to smelters (except E)	x x x x x x x x	x x x x x x x x	3,389.00
D. Material sold to leaching or other plants	x x x x x x x x	x x x x x x x x	
E. Concentrates produced	x x x x x x x x	x x x x x x x x	
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	C. In Smelting Material	D. In Leached or Other Material	E. In Concentrates	Total Pounds
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Copper content (wet assay)	2,032			
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(OVER)

Please reply to the questions on the back of this schedule

16—57128-1

W.H. CRUTCHFIELD, JR.
Mining Engineer

4. PURCHASER OF PRODUCT IN 1948:

(a) What disposition was made of the products in 1948? American Smelting & Refining Co., El Paso, Tex.
(Give name of smelter or mill to which ore was sold; United States assay office, mint, bank, or others to whom bullion was sold)

(b) In whose name was product shipped? J. Z. J. Mine Operators

(c) If ore is treated at custom plant, give name and location

5. PLEASE GIVE NAMES OF NEIGHBORING MINES OPERATING DURING 1948:

Name of Mine	Name of District, Gulch, Stream or Mountain	Names of Lessees or Operators	Address

6. MISCELLANEOUS:

(a) How is the mine developed? Incline Shaft. Two levels 100' & 150'. Around 500' drifting on 100' level and about 150' on 150' level.
(For example, by vertical shaft ____ feet deep, by drifts ____ feet, tunnel ____ feet long)

(b) What was amount of development done in 1948? Shaft ____ feet; drifts 250 feet; tunnel ____ feet; diamond drilling ____ feet.

(c) What is the general character and capacity of reduction plant at mine? No
(For example, 100-ton concentration mill, 300-ton flotation mill, 75-ton cyanide plant, etc.)

(d) What additions were made to plant in 1948?

(e) Treatment processes
(Give treatment in brief at your plant of crude ore; concentrate; tailing)

(f) Remarks (please mention important changes in 1948):

(g) How many days per week was mill operated? ____ Number of shifts? In mine about 100 shifts a month

J. Z. J. Mine Operators
(Name of company)

2/23/49 (Date) /s/ Raymond D. Ziegler (Signature) ____ (Official position)

Chloride, Ariz., Box 114
(Address)

Do you object to the publication in MINERALS YEARBOOK of figures furnished on this schedule in such a manner as to disclose your production? No
(Yes or no)

U. S. GOVERNMENT PRINTING OFFICE 16—57128-1

Chloride, Arizona
June 21, 1946

Wm.T. Kolloge
1130 N. Twenty-Second Street
Milwaukee, Wisconsin

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Mining Engineer

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The Manzanita,of course also warrents further work----but of the two I would recommend the Uncle Abe and then later on opening up or joining the Manzanita with the Uncle Abe. The Manzanita is approximately 1200 feet from the Uncle Abe on the same vein structure.

The labor situation----I can honestly say,due to knowing the district and most of the men could be handled adequately.

The milling situation---the local mill,approximately 8 miles from the Minnesota-Connor property could handle a maximum of 50 tons of ore daily from our property. This would suffice until we were in a position to support our own mill. Unless we had our own trucks the truck rate from the property to the mill would be $1.00 to $1.25 per ton.

Electric power is readily available and at reasonable rates due to the proximity of Boulder Dam.

Mr. Manson said (when talking to my wife) that you had all the smelter reports from the Manzanita-Uncle Abe. Approximately $29,000.--was our net after freight and smelter deductions. Out of this we also had to pay $1.50 per ton for trucking to Kingman. Approximately $7,000. to $8,000. for pay roll. Any further detailed report on financial matters you would have to get from Mr. Recchiuti. You see we kept only an outline report here and sent weekly reports to the Camden office where the actual book keeping was done. That office took entire care of all taxes, social security etc.

The only reason I am managing another property is because we lack necessary finances for the development program which I have outlined briefly,and which conforms with Mr. Jacobson's report. Would be willing to cooperate and help you in any way possible,should you take over,since I have great faith in the Minnesota-Connor property----which if given a chance could be one of the largest producers in the district as it was years ago. And with present stimulus of increase in silver, lead and copper prices---I am even more convinced of its future.

Yours very truly

R. E. Lord

R.E. Lord

P.S. Mr. Manson said you had all smelter reports,engineer reports,maps etc.---so I beleive you have a fair picture of the property in general.

Garedn Grove, Cal., Sept. 17, 1944

Mr. T.M. Recchiuti
Minnesota-Connor Mines Inc.
Camden, New Jersey

W.H. CRUTCHFIELD, JR.
Mining Engineer

Dear Mr. Recchiuti:

Replying to your letter of the 6th instant in regard to the Minnesota and Pluto veins, their width, values and general appearance, I shall give a brief outline herein on these points, although I think if you will refer to your files of three or four years ago I covered these matters in more detail then.

MINNESOTA- CONNOR VEIN . This is the same vein coursing the two claims. About the middle of the Connor claim is where the ore shoot originally was discovered and, as they sank on it, they found it raked north, as do practically all the ore shoots in this district, so that by the time it was opened on the 400 level it was down under where the main mill and plant was later erected and on the old 500 level it is nearly 700 feet north of the point of apex on the Connor. The levels usually were run every loo feet, although some sub levels were run in development before stopes were opened. The vein was never narrower than drift width, usually from 10 to 15 feet wide, and often 20 to 25 feet wide in places. (See old mine maps, also engineers reports of Langford, Fox and others Much of the ore was sensationally rich in spots and was sorted out and shipped as high grade, the lower grade of around $20 per ton being put through the old stamp mill and later through the250 ton concentrating mill. Much of the lower grade ore was by-passed nd left in the mine, especially in the upper Connor levels where I saw it many times prior to its extraction by leasers in 1937. I would make a rough guess that, from the records I have seen, the ore value from wall to wall before any high grade was taken out would average fully $35 per ton at the values of today. As the very low grade would be incuded in this average, the total tonnage of ore found from surface to 500 feet was enormous. Considerable high grade was extracted that assayed upwards of $200 per ton, values mostly in silver, though gold was a consistent value; we had more gold in the Minnesota than most mines in that area with a fair percentage of lead, copper and zinc. The largest part and most valuable portion of the ore shoot was on the 400 level near where the Linne Shaft was sunk. Not much stoping was done below that point (400 level) I was told, although the old maps shows some stoping just below the old 400. On the 500 level ore opened up in the drifting was taken out through the A shaft. We were never able to get down in that shaft below the 300 level when we came to the property because of cave-in but the former workmen in there told us a good deal of ore was left in the old 500 level and above up to the 400 level.

The Pluto vein, roughly paralleling the Minnesota some 350 feet west of the latter, is about 5 or 6 feet wide at surface and about 150 feet west of the Pluto shaft; it was about the same where we cut it on the 280 level, and on the 600 level it was about the same: no ore of consequence in it, as it is inly a

feeder vein and we didn't expect any ore in it but when it unites with the Minnesota vein we expect to find a good body of ore through the enrichment that results from the junction of two vein of this size and character. We assumed such junction would occur at 700 level of the Pluto shaft but both veins straightened up in their pitch and the junction has not occurred at the 700; I do not think it will be far below there where it does occur.

The Minnesota-Connor vein cut through the Pluto shaft at 600 level, from which point a drift was extended out north some 300 feet, the vein was still wide and loose like it was in the upper levels of the old workings, but the ore was scattered, bunchy and leaner. there is a lean zone around the 600 foot depth in the mines around Chloride. The Tennessee had it, but as soon as they got below it they encountered the main ore shoot bigger and stronger than ever and they are still producing from it through the Schuylkill shaft. We figure the same thing will occur in the Minnesota at depth. Experts who worked in the old upper workings in the early days and who later inspected the 600 and 700 levels of the veinwhere opened in the Pluto Shaft told me it was the same vein and would"never quit", and begged the then operators to sink down on it to the 900 or deeper and really open it up. We found considerable low grade ore in the drift on the 600 north which ran about $20 per ton; would be worth more now and be a good mill ore, but the main body of ore is expected deeper down. On the 700 level we merely touched the vein and had to close down due to lack of funds, so we were not able to open up that level, which was quite a disappointment to me, as I expected to find a good body of ore after we drifted out under the rake of the shoot on that level.

Between the 600 foot point in the Pluto shaft and the bottom of the old 500 level in the A shaft above there is probably 150 to 175 feet of vein area that has never been explored. (Collar of Pluto shaft is 70 feet lower down hill than collar of shaft A.) There is room there for a lot of ore on the original shoot extending below the old 500 level of shaft A, plus whatever ore was left in the workings above the 500 level up to the old 400. I tried my best to get the former superintendent to open up that stretch of ground before leaving the 600 level of the Pluto but he wouldn't. In considering this whole question of the Minnesota ore body it is well to give careful study to the 6 or 7 engineers reports made on the property, and to the records of actual assays and shipments, all of which show the Minnesota-Connor was a heavy producer many years.

Yours very truly

(signed) P.S. Virgin

MINNESOTA- CONNOR MINE

W.A. CRUTCHFIELD,JR.
Mining Engineer

The Minnesota-Connor,one of the largest and best known mines of Northwest Arizona,is located about 1½ miles southwest of Chloride, Mohave County,Arizona, in what is known as Wallapai Mining District. This area is conceded by eminent mining engineers and geologists to be one of the most heavily mineralized to be found anywhere,and it has produced many millions of dollars worth of ores since its discovery. The Minnesota-Connor lies in the heart of this rich region and has itself produced many hundred thousand dollars worth of ores according to governmental and private records. Such was the extreme richness and beautiful appearance of silver ore from this mine that it was much sought after for display in mineral cabinets. There are 10 claims,about 175 acres,in the property,of which 8 are connected in one continuous group,while the other two claims adjoin each other just off the main group. A fine truck and auto road connects with town,being an easy grade,down hill all way. Altitude is 4400 feet. Operating conditions are ideal,with cool summers and mild open winters. Floods,tornadoes cyclones,snowslides and earthquakes are unknown here.

The veins are ture fissures,large and well defined,and cluster around four important systems,possessing two or three known ore shoots aside from the parent Minnesota shoot that was continuous from surface to 500 feet,the depth of the lowest level in the old workings. The average length of this ore shoot on the various levels was about 400 feet. The width varied from 6 to 25 feet,with lenses of ore reported to be 30 feet wide in places. While considerable of the production was made under various leasers who left us no complete record,we do have original settlement sheets from smelters covering 110 cars of raw and concentrate ores shipped during 1900-1904 that averaged net proceeds after deducting freight and treatment charges,$567 per car or about $23 per ton net. We also have returns from ore shipped from 1886 to 1897 on 119 shipments in which the average gold content was 1.65 ounces per ton and silver 89 ounces per ton. The high grade often running 200 to 800 ounces silver and over 5 ounces gold per ton was shipped direct to the smelters,the low grade being put through a stamp mill until 1900,then through a concentrating plant,which though the best of its day,was not adapted to effect high recovery of values. In recent years tests in flotation laboratories have shown this same ore to be readily amanable to flotation treatment with resulting high recoveries far ex exceeding those of the old system.

Considerable of the old mine dumps still contain sufficient values for profitable mill ore,as does also the tailings dump of about 7000 tons,an asset quickly to be noted by the engineers who sampled them. Probably 15,000 to 20,000 tons of this stuff would pay to mill,judging from numerous tests. The Connor dumps carry exceptional gold values averaging possibly a quarter ounce gold per ton,in addition to considerable silver and some lead and copper. One engineer estimated the dump tonnage to be worth around $150,000.00.

W.H. CRUTCHFIELD JR
Mining Engineer

Engineers of wide travel and experience point out the great width of the true fissure veins of the Chloride region, in comparison with the veins of other mining regions. On our outlying claims, the vein traversing the Manzanita-Uncle Abe calim is from 15 to 25 feet wide, very strong outcrop carrying good values, and is far more favorably considered than the Minnesota-Connor vein originally was. Shallow shafts and tunnel on the Manzanita-Uncle Abe system indicate three ore shoots, none of which has been opened up to any extent. Massive sulphide ore on the dump assays up to 50 ounces silver and a quarter ounce gold, besides some lead and copper. A 6-foot pit on the hanging wall of the vein at the south shaft shows over an ounce of gold, while the north shaft runs higher in silver. Old-Time practical miners of the district assert their firm beleif that this vein system will develop into a great mine someday, it being one of the strongest in the entire district. On the Uncle Abe claim a shallow tunnel, only about 10 feet under cover, shows lead assaying 30 %.

Lying between the Minnesota-Connor vein and the Manzanita-Uncle Abe vein is another strong vein syatem, the Mother Lode-Grant vein. The Grant ore is a ZINC ore running up over 50% pure sphalerite, but as the vein enters Mother Lode ground to the south it shows more silver. In the 150 foot shaft on the Mother Lode a chalcopyrite streak assayed by a neighboring property manager who worked through our shaft, showed 19% COPPER as well as shipping values in gold and silver. A few years ago a fine shoot of high grade silver was opened up on the Dorothy ground adjoining the Grant on the west, the Dorothy being a cross vein intersecting the Mother Lode vein north of the Mother Lode shaft. The Dorothy shipped several cars of ore that ran up to 400 ounces silver per ton, and we regard it almost certain that a large ore shoot will be found in our ground where the Dorothy and Mother Lode veins intersect, both being strong veins.

Attention is called to the very adequate water supply on this property, this water accumulating on our claims that catch the continuous drainage from Cherum's Peak (highest point in the Cerbat Mts.) through gulches that have their confluence within the boundaries of our claims, resulting in a continuous flow of clear mountain water through a 2 inch pipeline nearly half a mile into our large mine tanks and the 250,000 gallon reservoir. In 30 years this spring has never dried up. Throughout most of the year the flow is ample to fill a much larger pipe than 2 inch and even in summer time the flow averages better than 3000 gallons daily. Then from our Pluto shaft about 20,000 gallons per day can be pumped, based on records kept during the period when the mine was being kept unwatered in 1916 follwoing regular operations that had drained it over a year. Thus our ample supply of water solves a problem usually very perplexing in this region. (The pipe line has been replaced with new 2 inch pipe)

A high tension electric power line from Kingman to Chloride passes close by the property and a spur terminal of that line is within a few hundred feet of our plant. With early completion of Boulder Dam cheap power will be available. The new highway from Kingman to Boulder Dam passes Chloride, making it easy for trucking to Kingman on the main line of the Sante Fe R.R.

Signed

P.S. Virgin Co-owner

All the above is taken from the report given the Minnesota-Connor Mines Inc. prior to their purchase of the property. Mr. Virgin is now the mortgage holder----full title being in the name of Minnesota-Connor Mines Inc.

W.H. CRUTCHFIELD, JR.
Mining Engineer

In March, 1942 R.E.Lord, acting as General Manager for the Minnesota-Connor Mines Inc. started to clean out and dewater the old shaft on the Manzanita claim. It was found to be a 100 foot shaft with a 15 foot cross cut to the vein and a 35 foot drift. On July 1, 1942 the first shipment was made from this shaft. Since that time 15 shipments have been made -- all from the 100 foot level stoping areas. The total production as follows:

gold ---------	164.78 ounces		
silver -------	7873.45 "		
lead ----------	29.592 TONS	-------	59184.988 pounds
zinc ----------	14.585 "	-------	29170.132 "
copper ---------	2,517 "	-------	5035.059 "

NOTE:--two shipments were sent to El Paso where the copper and zinc were not recovered.

All this ore has been taken from a very shallow depth to help defray expenses of sinking the shaft. We have every reason to beleive that when we open up on the lower levels that base metals will greatly increase.

The above totals are given for only the first 12 shipments since we do not have returns as yet from the others.

MINNESOTA- CONNOR MINE

W.H. CRUTCHFIELD,JR.
Mining Engineer

TO WHOM IT MAY CONCERN:

The Minnesota-Connor, one of the largest and best known mines of Northwest Arizona, is located about 1½ miles southeast of Chloride, Mohave County Arizona, in what is known as the Wallapai Mining District. This area is conceded by eminent mining engineers and geologists to be one of the most heavily mineralized to be found anywhere, and it has produced many millions of dollars worth of ores since its discovery. The Minnesota-Connor lies in the heart of this rich region and has itself produced many hundred thousand dollars worth of ores according to governmental and private records. Such was the extreme richness and beautiful appearance of silver ore from this mine that it was much sought after for display in mineral cabinets. There are 10 claims, about 175 acres, in the property, of which 8 are connected in one contiguous group, while the other two claims adjoin each other, just off the main group.

This Minnesota vein has been mined extensively to the 500 foot level, at this point operations ceased due to a leaning out of values, which by the way is the same predicament the Tennessee Schulykill mine encountered at the same level. It seems to be a characteristic of this region. The Tennessee is the largest producer in this district, they were shut down for several years when they hit the lean zone, however they resumed operations and sunk to the 1400 foot level in 1918 and have mined from that level and up ever since. The Tennessee is about 3000 feet from our north end line and some of the old timers think that we are on the same vein system.

The old workings on our property are not accessible due to a cave in the old incline shaft and water. During the last war the former owners of the property sunk a two compartment, steel set, vertical shaft to a depth of 724 feet, between the Minnesota and the Pluto veins which run parallel to each other, and also dip towards each other, the object being to sink to the junction of the two veins which should result in an enormous ore body as the Pluto vein is strong with an average width of 5 feet at shallow depths. However the Minnesota vein straightened somewhat and the veins did not intersect at the 724 depth as they were calculated to do. Due to the high wages and supply costs at that time work had to be abandonded pending refinancing which dragged on and on; they let the water climb and the shaft has not been worked since. They did however, cross cut to both veins and found them encouraging as to possibilities with depth and further drifting on the vein to get into the rake of the shoots.

In the last 2½ years I have prospected another vein on the property, called the Manzanita-Uncle Abe vein. From one shallow shaft (100') I have taken 29 fifty ton cars of ore averaging; gold-.25 oz., silver-18 oz., lead-5%, and zinc 4%. And from another shallow shaft, 5 cars of very good mill ore, however it did not pay us to ship this ore, due to the low gold&silver values. This particular shoot has very big possibilities as the shoot is very strong, I have drifted on it 200 feet and it is still going strong in either direction--- average width 6 to 8 feet.

There is another strong vein called the General Grant-Mother Lode that also has big possibilities if it were developed.

We have ample water for milling,a side hill for mill site and a 50,000 gallon concrete reservoir in good shape. There is no equipment on the Minnesota-Connor claims and on the Manzanita we have a 36 foot head frame, 60 ton ore bin, 2 buildings, 25 H.P. gas hoist, portable compressor etc.

If you people are interested we have engineers reports,maps,smelter reports etc. that we would gladly send--or if you wish to send an engineer to Chloride I would gladly go over the property with him.

This is an opportunity for an enterprising outfit to take over for comparatively little and can be in production in a very short time.

Address any communications to R.E.Lord, Box 267,Chloride,Arizona.

UNCLE ABE

W.H. CRUTCHFIELD,JR.
Mining Engineer

Like the Manzanita was another old shaft,a prospect hole sunk approximately 60 years ago----and again no available records. An assay from the shaft running very high in lead encouraged us to suspend operations at the Manzanita and start anew from scratch at the Uncle Abe. Shaft was cleaned out and retimbered just enough to make working conditions safe until real values were ascertained.

Shaft is 125 feet deep, from the 50 foot level about 200 feet of drifting has been done and about 40 feet at the 125 foot level,besides a 40 foot raise. All drifting and raise was done after we started operating on the Uncle Abe in Dec. of 1943. A total of 5 cars was sent to the smelter (see production record below)---all oxidized ore.

The ore shoot we know to be at least 200 feet long and still going strong in either direction-----in places it is 10 to 12 feet wide. The shaft is also sunk on the ore. Indications in bottom of shaft are good in both lead and zinc---however greater depth is the real preblem here since the shaft stopped in the lean area between the sulphides and the oxidized ores.

PRODUCTION

1944
(5 cars)

Gold --------	4.73 oz.	
Silver ------	695.47 oz.	
Lead --------	11.269 Tons	(22538. lbs.)
Zinc --------	2.51 "	(5021. ")

CHLORIDE, ARIZONA, 2-4 1943

W.H. CRUTCHFIELD, JR.
Mining Engineer

MANZANITA MINES Russ Lord

LAB. NO.	OWNER'S MARK	GOLD		SILVER		GOLD & SILVER VALUE—TON	PERCENTAGES			OTHER	TOTAL VALUE
		OZ.	VALUE	OZ.	VALUE		PB.	ZN.	CU.		
17	None	.09	3.15	11.55	8.21	11.36			3.4		19.52

50' shaft on Manzanita - where Pruinger worked

CHARGES 1.75

ASSAYER

TENNESSEE SCHUYLKILL CORPORATION

CERTIFICATE OF ASSAY

CHLORIDE, ARIZONA, Aug 26 1943

Minnesota-Connor Mining Co.---Russ Lord

LAB. NO.	OWNER'S MARK	GOLD		SILVER		GOLD & SILVER VALUE—TON	PERCENTAGES			OTHER	TOTAL VALUE
		OZ.	VALUE	OZ.	VALUE		PB.	ZN.	CU.		
15	#1	0.12	$4.20	1.46	$1.04	$5.24	1.1	7.4	18" Zn ore in hanging wall 4' wide		$18.88
16	2	0/07	2.45	2.08	1.48	3.93	0.8	5.8			14.43

Connor Incline

Minco Shaft — South drift - 50' level

CHARGES $4.00

Joe Sharpe
ASSAYER

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
SOUTHWEST EXPERIMENT STATION
WESTERN REGION

W.H. CRUTCHFIELD, JR.
Mining Engineer

BOX 4097
UNIVERSITY STATION
TUCSON, ARIZONA

Nov. 1, 1943

Mr. R. E. Lord, General Manager
Minnesota-Connor Mines Inc.,
Chloride, Arizona.

MANZANITA CLAIM

Dear Mr. Lord:

Reference is made to your letter of October 29 requesting assays of the samples taken at your Manzanita mine by our engineers.

The following table shows length of cut, location, description, and assays of the samples:

No.	Length	Location	Description	% Pb	% Zn	% Cu	Oz. Au.	Oz. Ag
3295	1.9	150-ft. level, breast footwall side	Heavy pyrite	3.8	5.0	.39	3.400	9.75
3296	2.7	150-ft. level, breast hanging wall side	Soft, talcy, some pyrite	0.4	1.4	.13	tr	1.30
3297	3.0	N side of stope, 5 ft below 100' level	Hard quartz some sulphide	8.0	4.0	.43	.060	7.75
3298	0.5	100-ft. level, south stope, back of stope	Pyrite in altered granite	9.9	3.5	.46	1.200	15.80
3299	1.2	50-ft. level, south end of stope	Quartz and pyrite partly oxidized	0.3	1.3	.15	.190	3.05
3300	2.3	Uncle Abe claim footwall of winze	Oxidized, soft	0.4	0.5	.20	.020	1.20
3301	2.0	Uncle Abe claim hanging wall of winze	Oxidized, soft	7.8	0.4	.38	.020	3.65
3302	0.9	Shaft at N. end of property 50-ft. level, south end	Oxidized, manganese iron stain	0.1	1.2	1.10	tr	17.60

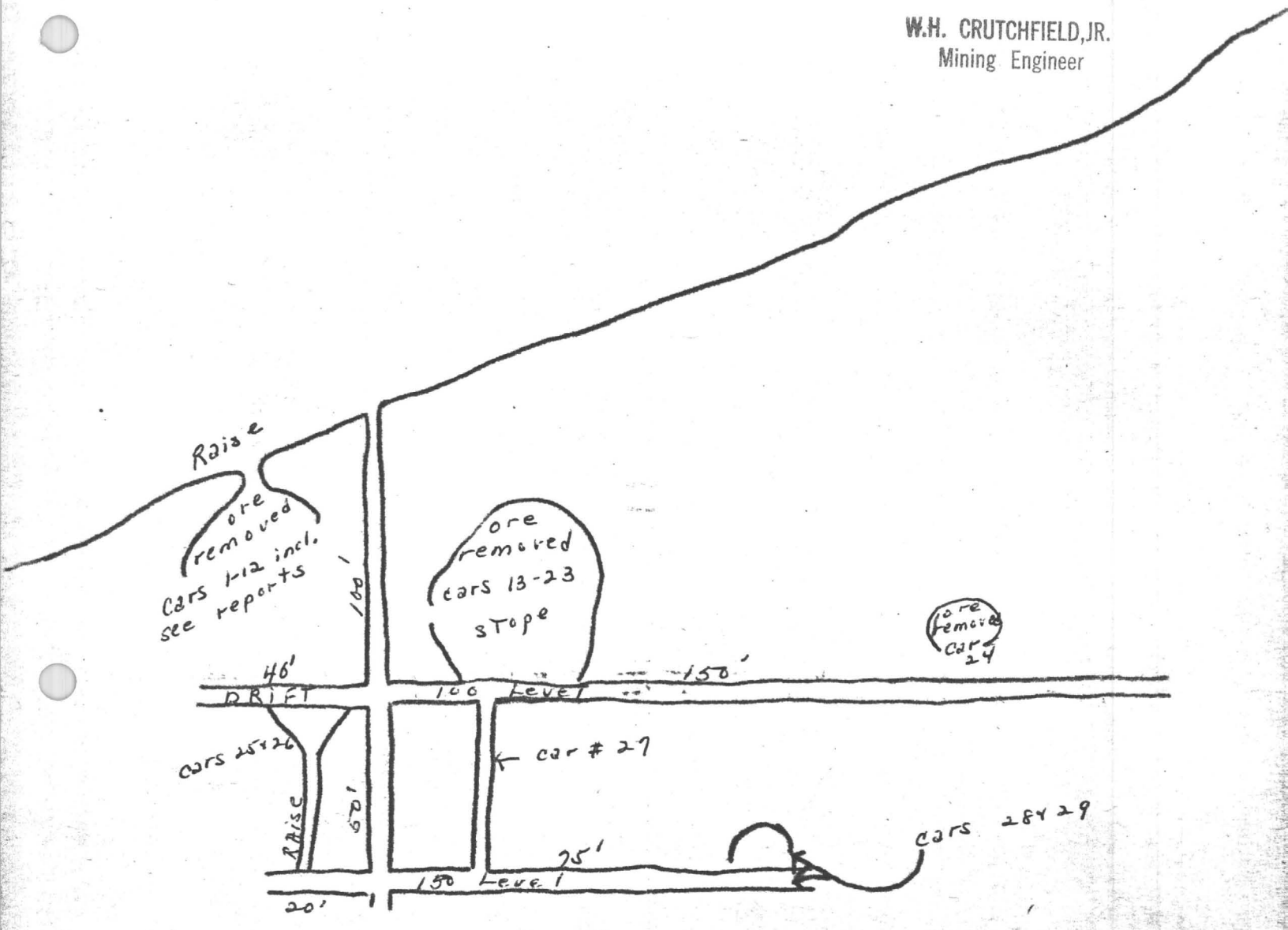
Yours very truly,

J. H. Hedges

J. H. Hedges,
District Engineer.

Manzanita Claim of Minnesota Connor Mines Inc.

W.H. CRUTCHFIELD, JR.
Mining Engineer



16.

W.H. CRUTCHFIELD, JR.
Mining Engineer

CERTIFICATE OF ASSAY

Chloride ~~KINGMAN~~, ARIZONA, 1/13/93.

THE SAMPLE OF Ore FROM Mrs. Lord
AND SUBMITTED TO US FOR ASSAY, CONTAINS:

LAB. NO.	OWNER'S MARK	GOLD		SILVER		VALUE PER TON GOLD & SILVER	PERCENTAGE OF					TOTAL VALUE PER TON
		OZS. PER TON	VALUE PER TON	OZS. PER TON	VALUE PER TON		LEAD	COPPER	ZINC			
			$		$	$						
	radiated region											
20	—	0.89	31.15	21.05	14.97	46.12	4/-					51.45

Gold @ - - $ 35 - per oz.
Silver @ 71.1 c per oz.
Lead @ 6.5 c per lb.
Zinc @ c per lb.
Copper @ c per lb.

CHARGES 2 00

CERTIFIED BY Jim Shaye ASSAYER

W.H. CRUTCHFIELD,JR.
Mining Engineer

MANZANITA

The Manzanita was an old abandonded shaft which no one could tell us a thing about----nothing available from company records either. Was caved and filled with muck and water. Since March 1942 it has been cleaned out, retimbered etc. and a working set up esteblished. It was found to originally consist of a 100 foot shaft with a 15 foot cross cut and 20 feet of drifts,10 feet to the north and 10 feet to the south. Since then we have sunk the shaft an additional 50 feet and on the 100 foot level have extended the drift to the south 130 feet,to the north 40 feet. On the 150 foot level the south drift extends 75 feet, and the north extends 20 feet. Twenty-nine cars of ore were taken from the Manzanita. Operations were suspended due to lack of capital and no further shipping ore in sight. Plenty of mill ore left----and also good leads and indications of more ore if funds were available to continue operations by sinking the shaft to get deeper under the known ore shoot. Actual mining length of ore shoot worked (for shipping ore only) was 88 feet long and from 2 to 5 feet in width.

PRODUCTION

1942
July 1,1942 --- Dec. 20,1942
(12 cars)

Gold --------	164.71 oz.		
Silver ------	8755.18 oz.		
Lead --------	29.59	Tons	(59,184.96 lbs.)
Zinc --------	14.58	"	(29,170.1 ")
Copper ------	2.51	"	(5,035.03 ")

1943
Jan.3,1943 --- Oct.22,1943
(17 cars)

Gold --------	270.98 oz.		
Silver ------	7993.35 oz.		
Lead --------	27.74	Tons	(55,496.1 lbs.)
Zinc --------	17.45	"	(34,919.53 ")
Copper ------	1.95	"	(3,908.32 ")

COPY

Garden Grove, California, Oct. 28, 1937

Mr. Edward Fell Lukens,
Philadelphia, Pa.

W.H. CRUTCHFIELD, JR.
Mining Engineer

Dear Mr. Lukens:

Replying to your letter of the 20th instant, regarding the information desired by Mr. Woodward respecting out Minnesota-Connor Mine at Chloride, Arizona, I shall answer as best I can the several questions asked, taking them up not in the order asked but rather in a chronological order as they affect our property from its inception down to the present time. Therefore, let us first consider:-

Question 5 - History of the Mine.

As nearly as I could discover, from many years residence at the property, talks with the former owner and operators, and reference to various reports, early mining history, etc., the Connor mine was discovered in the early prospecting days of Chloride and even before the town as we now know it existed. Some of the early Indian uprisings against the white prospectors were staged on the Connor and others holdings of the present M-C group. Early in the eighties John Barry, principal developer of the mine up to 1900, began shipping Connor ore to the early samplers and smelters, some of it being hauled by wagon team to an old mill at Cerbat, a few miles to the south. Much of this ore ran sensationally high in silver and gold, returning large profits under even the then crude and wasteful methods of milling. During the two decades just prior to 1900 considerable tonnage of high grade was shipped, the lower grade being left in the mine and forming the $170000.00 tonnage referred to in Frank Langford's report of 1901.(Frank Langford, E. M., San Francisco, Cal.) Unfortunately, no consistent record is now available that will show the total tonnage and value of ore shipped during those 20 years, but we do have records of some 119 shipments of varying size to outside points and which might safely be considered a fair average of the mass shipments of that general period. This ore assayed up to 430 ounces silver and 5 ounces gold per ton, the average of the 119 shipments being: Silver, 89 ozs., gold, 1.65 ozs.

During this time Barry developed the ore shoot from its apex on the Connor to a depth of 300 feet on the Minnesota claim which adjoined at the north end of the Connor; the shoot raked north as it descended and at 300 feet vertical depth was well with in the Minnesota boundaries. He put up a stamp mill which he operated with his low grade ores until 1900 when he sold the property to the Philadelphia & Arizona Mining Company. I tore out those old stamps while living at the mine in 1914.

A large plant of machinery, buildings, equipment, and a 250-ton mill was put in by the P&A Company, one of the best equipped plants at that time (1900-1901) in Northern Arizona. Development was carried to a depth of 535 feet in the Minnesota (incline) shaft, and stoping done down to the 400 level of those workings, the ore shoot being continuous along this 1000 or more feet in the rake of the shoot from its apex on the Connor to the 500 level of the most northerly shaft (A) of the Minnesota. From various sources considered reliable I ascertained there was but little if any stoping below the 400 level. On the 400 and just above it were considerable bodies of highgrade ore, as shown by the daily assay memoranda (originals)left by the mine assayer from day to day and gathered up in subsequent years by me and which I still zealously guard. Undoubtedly this increased enrichment at the 400 was due to union at thatpoint of a parallel vein with the Minnesota vein, as our underground crosscut in 1912 did not encounter this vein when we drove from the Pluto shaft into the old workings.

Highly informational and reasonably factual in my opinion WHC

W.H. CRUTCHFIELD,JR.
Mining Engineer

The 250-ton mill above referred to operated steadily for about four years on ores from the Minnesota workings, then intermittently during the next few years, finally closing down due to low price of metals and lack of capital for deeper development, a situation that could have been prevented, as Jacobson's report points out, had a systematic program of development been maintained during the heyday of cream production. The better grade ore was handsorted and shipped to smelters at El Paso, Pueblo, Los Cerrilos, Needles and other points, the low grade being put through the mill with a resulting poor recovery under the treatment then employed. That same ore today, because of increased prices on all five of the metals contained, viz., gold, silver, lead, copper and zinc, would be considered excellent mill feed. Our shipping record is quite complete for the period 1899-1903, but, as the mine was operated by leasers in after years who kept no record - or at least left none at the mine - of their shipments, we do not know the tonnage or value of the ore shipped. However, at various times, leasers operated and shipped on their own, such production being separate and over and above that shown in the shipping records left us by the P & A Company. I was told by former employees of the mine that at times there would be three sets of leasers working in the same shaft, and Schrader's U. S. Geological Survey mentions these leasers.

The ore shoot was continuous, although lenticular in shape, with widths varying from 6 to 25 feet and at one point a 30-foot stope was recorded. The vein at surface shows similar width. In the Connor upper level, where I have often been, the vein showed from 8 to 12 feet wide (65-foot level), and quite a quantity of ore was left in there which is now being prepared for shipment by the operators developing that one claim.

After a shut-down of some time, a new company was formed in 1911 to operate the property; their engineer, Frank M. Kurie, was the man who brought back the Portland Mine into heavy production after it was supposed to be worked out. He spent several months at the Minnesota property, strongly endorsing it in his reports. Finding the old A shaft badly caved (due to the former operators having stoped out the shaft pillars) a new shaft (Pluto) was sunk "by installments" and finally (1916) reached a depth of 724 feet, vertical; since that date the property has remained idle except for the necessary assessment work, one unwatering, and the present operations in the Connor shaft. The objective of the last operators was never reached, viz., the junction of the Minnesota and Pluto veins, for reasons hereinafter explained. Theold 250-ton mill was dismantled by the writer in 1920; most of this equipment is now obsolete, but some of it is standard equipment, especially the Blake 20x10 Crusher, several of these being in use in other mills in the county.

Other claims adjoining were added to the original holdings of Barry from time to time, until today the property comprised 10 claims, of which 8 are joined in one contiguous group, while the remaining two, adjoining each other, lie slightly off to the east. Only the Connor is patented.

Question 1 - What happed each time the mine was operated? This has been largely answered in the foregoing, but the writer can speak definitely of just what happened each time during the development operations of the former Minnesota Connor Mining & Milling Company (1911-1916), since he was there all of that time and in charge of the work a portion of the time. The new vertical shaft on the Pluto was started in 1911 and was planned to open up, at a supposed depth of 700 feet, the junction of the Minnesota and Pluto veins which roughly parallel each other on surface strike but dip toward each other. Both being strong veins, the engineers had pointed out the likelihood of the ore shoot in the Minnesota vein being greatly enriched and enlarged at that junction. Frequent interruptions occurred in the course of this development because of lack of adequate financing. A small operating fund having been exhausted, the mine would be shut down for several months while efforts were made to refinance; meanwhile the water was kept out, entailing considerable expense.

250' N of (steel sets) Pluto shaft -

NOTES:

* this is nearing 1982 mapping (Childs - Bradfish) of a NE - SW vein structure

600' "USUALLY A LEAN ZONE IN THIS DISTRICT" Tennessee, Golconda & Minnesota - Conner

COMPARISON TO TENNESSEE VEIN @ 700 LEVEL →

LAST REGULAR OPERATION WAS ON 700 LEVEL IN 1915

W.H. CRUTCHFIELD,JR.
Mining Engineer

During one of these shutdowns the company officials in Philadelphia decided - against the strong advice of their mine superintendent, McDonald, to crosscut into the old workings at a depth of 288 feet in the new shaft, the object being to recover a large body of zinc ore that was reportedly left in there. This crosscut struck the old shaft at a depth of approximately 350 feet in the latter, there being 70 feet difference in the elevation of the collar of the two shafts. After driving about 50 feet in badly caved ground at great expense (having to spile every foot of the way) that work was abandoned without results, and the mine then remained closed down until March, 1915, when another development fund was ready and sinking was resumed. The shaft was carried to the 600 level where the vein cut through it on its dip to the west. Drifting along the vein was carried north about 350 feet and south about 50 feet without encountering a solid valuable body of ore like that contained in the upper workings. At no place was the vein barren, but the ore was more scattered and bunchy like that found in the vein outside of the ore shoot as we go south on the old Connor drifts. The ore looked most promising at a point some 250 feet north of the shaft where it came up knee high in the drift and seemed to be the apex of a new shoot forming; this ore ran about $20 per ton at 1915 values and would, of course, be much better at today's values; a good mill feed.

During the latter part of 1915 sinking was resumed to the 700 level at which point, I ran a crosscut west 92 feet, cutting the vein footwall at 52 feet and extending 38 feet across the vein to the hanging wall; the vein is in a swell there, possibly due to the approaching junction; the footwall stands at 80 degrees, straighter than above, where its average dip had been 67 degrees. The hanging wall still shows the 67 degree pitch to the west. There was a fine streak of hard, banded ore on the foot about 15 inches wide, and a three foot streak of soft ore on the hanging, with occasional streaks all in between, enough to make a full drift of ore if they had been together. We were particularly anxious to get under the point lying out 250 feet to the north, but lack of funds forced the closing down of operations after we drifted a few feet on the 700 level and without ever reaching the original objective. Experienced mining men, practical and technical, have pointed out the similarity of this vein to the Tennessee vein, especially on the 600 level, where usually a lean zone exists in this district. On the 700 of the Tennessee their ore came in again and from that point to the 1600-foot level they extracted millions from 1912 to 1918 without bottoming their shoot, and in the Minnesota 600 we have similar conditions; that's why I was so disappointed at not being able to open up the 700. This was the last regular operation, so it answers also your question number 3.

In regard to Question #4 as to how much money was spent each time, it is impossible to say, for no definite record is available. The Pluto shaft cost about $35000.00 due to the extra expense of using Carnegie Steel Sets. About $15000.00 was spent at various times marking time, i.e., keeping out water while waiting for the company to complete their financing in 1912, 1913 and 1916. Over $30000.00 was expended against the superintendent's advice in a fruitless effort to re-open the caved A shaft before finally abandoning that effort at a depth of 300 feet, and in the crosscut into the old workings above mentioned. The mine is not to blame for this long-distance mismanagement, and had this money been expended in sound defelopment the 700 level could have been opened up and the shaft extended to the 900 level as well.

As originally put in, the plant, buildings, reservoir, prospect development, etc., undoubtedly cost fully $100000.00. Now, in regard to the tonnage extracted each time (Question 2) it is likewise impossible to give definite figures. Much of the extraction from 1880 to 1904 was, as previously stated, shipped as lump ore direct, while a large tonnage of lower grade ore was milled in the two mills at the property. The present tailings dump must still have around 6500 tons in it, based on computation of nearly 7000 tons several years ago. The shipping record

Uncle Abe - MANZANITA
"much larger & stronger than the
Minnesota - - -"
However Virgin believed that the
Minnesota "if opened up in depth
would rival the Tennessee - - -"

W.H. CRUTCHFIELD, JR.
Mining Engineer

from 1899 to 1903 shows approximately 2500 tons of concentrates and raw ore shipped by the owners, without counting any tonnage shipped by those holding leases. In all, the mine has produced several hundred thousand dollars' worth of ore, and this from a depth of less than 500 vertical feet on one vein, as pointed out by Governmental reports. The value of the ore left in the old Connor workings which is now being opened up shows surprising values in gold and silver, and even several hundred tons of dump material which was recently removed from around the Connor shaft collar to make room for an ore bin ran around $12 per ton when milled. There is a large tonnage of this dump ore in the old dumps there that will, at present values, pay well if milled at the mine. Gold is always present and is one of the chief values in the ore.

In conclusion, I might say that, while the original Minnesota Connor ore shoot was one of the largest and most valueable in Northern Arizona, there are two or three other claims that, from surface showings have an even better indication of becoming important producers when opened up than did the parent shoot originally. The Uncle-Abe-Manzanita vein is much larger and stronger than the Minnesota ever was, and mining men predict it will develop into a better mine. As for the Minnesota itself, if opened up at depth, we believe it will rival the famous Tennessee mine lying just to its north.

I am sorry we donot have a full and complete record of all ore production since the very inception of this property, but the ore settlement sheets (originals), shipping record and assay data that I have covering the years 1899-1904 will afford a pretty accurate picture of the average mine run ore. In them we do not have any of the wagon lots of 800- ounce silver ore that Barry hauled to the old Cerbat mill, but rather a high average is maintained nevertheless, the silver assaying up to 230 ounces in carlots.

Hoping this will serve Mr. Woodward's purpose, I am with kind regards,

Very truly yours,

Sg. (P. S. Virgin)

DESCRIPTION OF PLUTO steel set shaft

→

Kingman, Arizona
January 10, 1930

C
O
P
Y

W.N. CRUTCHFIELD, JR.
Mining Engineer

Replying in detail to your inquiry relative to present conditions at the Minnesota-Connor Mine, Chloride, Arizona.

NEW SHAFT AND WORKINGS:

Our new shaft (Pluto) is 724 feet deep, vertical, two-compartment, and is timbered with Carnegie steel sets, or H-beams, lagged solid with 2-inch selected O. P. lagging. For several years it has been partly filled with water, but I feel reasonable certain that it is in excellent shpae from top to bottom in spite of the submergence. I was down in it in 1918 and 1919 while it was kept unwatered by a neighboring milling concern, and at that time it was in splendid condition, very little corrosion of the steel sets being evident and not enough to weaken them. I do not think they would be damaged to any extent even now. The first 100 feet of the shaft is dry and there is only the usual thin shim of rust that flakes off of the steel. The guides and lagging that we can see for the first 16 sets are in first-class condition; below water level we would expect to have to replace a lagging here and there that may have become squeezed in by lateral pressure. The shaft was so well timbered that practically no repairing was necessary when unwatered in 1918. The guides, being rigidly bolted in place, cannot warp easily, and as they were specially selected, I question whether any will have to be replaced, because Oregon Pine stands submergence well.

Around the collar of the shaft some shrinkage has occurred, as it was only loose dump filling of the rock in the beginning and has naturally shrunk away. I put temporary blocking under the headframe posts, but some heavier timbers should be put in and blocked well into place. It was my plan, had the operations continued in 1918, to put in a concrete collar for permanance. The headframe will require some tightening and bracing, otherwise it is all right. The safety crosshead is a good one, having just been made when we closed down. The 250-gallon water bailer is in good shape.

As to conditions underground, I would expect to find the 600 level caved shut, but both crosscuts on the 700 level can likely be cleaned out and re-opened, as the rock was hard in the East crosscut, and the soft spots in the West crosscut through the vein were timbered. The station sets might need replacing. The air and water pipe columns would both have to be replaced, as these were second-hand when put in years ago. However, a few minor repairs after unwatering will put this shaft in as good condition as now, and we could not put down a new shaft as good as that one today for $50,000, so it will be worth just that much to the property. We have considerable heavy timber about the mine that could be used for heavy bracing and blocking, etc.

20,000 gpd water from shaft

$\frac{20,000}{1440} = \sim 14$ gpm

W.H. CRUTCHFIELD, JR.
Mining Engineer

PLANT AND MACHINERY:

The mine is equipped with the largest and most powerful mining plant in this county and, with some overhauling that is always necessary after a long shut-down, is ready to operate on a large scale. This machinery is entirely ample to mine from a much greater depth than 700 feet; most of it is as good as new, especially the compressor, dynamo, hoist, heaters and feed pumps. The boilers were in exceptionally good shape when we closed down; they likely will need only a few new flues. The Hamilton-Corliss mill engine is as good as new. She shop engine, dynamo engine, air receiver, etc., are all in good shape.

BUILDING:

The plant is housed in frame and iron clad buildings that are in fair shape. The camp buildings are frame and are in even better shape, although in need of minor repairs. They are far more commodius, convenient and better looking than mine buildings usually are in this region. The large boarding house is well equipped and is the best preserved building. The bunk house is large; it needs re-lining. A new garage, large enough to accomodate two cars was built in 1920 and is in good shape.

WATER SUPPLY SYSTEM:

Our three 6000-gallon tanks are in excellent condition; also the 250,000 gallon concrete reservoir now full. Our spring on the Wallapai #2 claim supplies enough clear water for camp purposes even in a dry year and in the winter and spring months considerable water overflows into thereservoir for use in the boilers. A larger line than our present 2-inch line would supply considerable more water throughotu much of the year.

The new shaft, based on 1916 records, will furnish at least 20,000 gallons a day for use in milling that can be pumped into the reservoir from wher it has a gravity flow to the boilers and shops.

OIL STORAGE TANKS:

California crude oil, 18 gravity, is shipped in carloads and unloaded into our 10,000 gallon storage tank at Chloride depot, from where it is hauled by truck to the mine. The three reserve galvanized storage oil tanks at the mine will accomodate a carload, thus affording ample fuel in reserve at all times. These tanks are in good condition. The oil is piped to the boilers by gravity flow, also has force-pump feed.

Mill:

In 1920 the large 150-ton concentrating plant was dismantled to save it from possible damage from shrinking ground in the stopes beneath, the equipment being housed for future use in re-erecting the plant when necessary. Most of this equipment should be replaced by modern flotation cells which will affect far greater saving in values than was possible under the former methods. Considerable of this equipment can be used to advantage, such as the

Manzanita - 2 ore shoots - is the most heavily veined

Uncle Abe - 1 ore shoot

Mother Lode - Granit - 1 ore shoot (Connor No. 6 Claim)

Blake crusher, Corliss engine, shafting, pulleys, boxing, etc., all of which are good.

W.H. CRUTCHFIELD JR.
Mining Engineer

SUPPLIES AND TOOLS:

There is on hand quite a stock of miscellaneous supplies for general mine use, especially around a steam plant, such as packing, pipe fittings, steel, etc. New drilling equipment and various tools would be needed. Shop is equipped with drill press, forges, power engine, blower, and tools.

ROADS:

The property is served by two roads to the town of Chloride, the main road being of easy consistent grade from town to the buildings and plant. A small amount of work each month keeps this road in excellent shape for auto and truck use. It is quite an asset to the property and must have cost a good many thousand dollars to build in the first place. It should be widened at points to facilitate truck hauling and to allow room for vehicles passing each other. The lower road, coming out by way of the Altata property, serves the Mother Lode, Manzanita and Dorothy claims, while a third road circles around the south end of the Uncle Abe. Nearly every claim is accessible to one or more of these roads.

From Chloride to Kingman a new road has recently been constructed, cutting the distance to 23 miles between these points via the Coyote Hill Pass. This graveled road is maintained in excellent shape by the county road department.

JITNEY AND MAIL SERVICE:

Regular mail and jitney service in and out of Chloride is available six days a week, connection being made with main line trains at Kingman.

HOLDINGS:

There are 8 claims in the main Minnesota Group with two claims that adjoin each other lying off to the East making 10 claims in all, of which one is patented. On nearly every claim enough development work has been done to answer the requirements for applying for patent. Because of the claims being contiguous, annual assessment work requirements can be complied with by doing the requisite amount of work at one place for benefit of the whole group; thus, if operations are carried on at one point it is not necessary to do assessment work on each claim in addition.

On these claims there are evidences of several ore shoots: two on the Manzanita, one on the Uncle Abe, one on the Mother Lode-Grant, besides the original Minnesota shoot that has only been mined to a depth on the vein of 500 feet. The Wallapai vein system, being a southerly extension of the Payroll mine, offers an inviting opportunity because of the convergence of parallel veins, but this ground has never been opened up. The Manzanita claim is the most heavily gridironed with veins and, judging from the ore shoot at each end of this claim, there ought to be an ore shoot of magnitude the entire length of this claim; it is regarded by all old timers and miners

Manzanita vein on into Uncle Abe
& outcrops from 10' to 35' in width
the length of the Uncle Abe
Jupiter is extension of Manzanita - Uncle Abe

W.H. CRUTCHFIELD, JR.
Mining Engineer

generally as the one outstanding undeveloped claim of the entire district, and many leasers have been after it and others have tried to jump it. The same vein goes on into the Uncle Abe ground and outcrops from 10 to 35 feet wide the entire length of the Uncle Abe. A shoot of lead ore was discovered on this claim a few years ago but has not been developed to any extent. The Jupiter claim carries the extension south of the Manzanita-Uncle Abe vein and the owner opened up an ore body of consequence thereon in a tunnel a couple years ago; the rake of the shoot was sharply to the north, as is usually the case in this district, and the shoot will soon pitch across the endline into the Uncle Abe ground, as it was discovered within a couple hundred feet of the line. Assays from the Uncle Abe lead ore show lead in excess of 20%.

ELECTRICAL POWER:

The present steam plant is ample for the additional development of the property to a producing mine. Because of its absolute reliability and flexibility, steam power is ideal for mining in this region. However, if at any time it is desired to change to electrical power it can easily be done, as the high tension line from Kingman to Chloride passes close by the south side of the group and a spur extends almost to the General Grant, possibly 2000 feet from the present plant. The large generating plant at Kingman, operated by Public Utilities Consolidated Corporation, supplies power for all the large mines of the county. Eventually cheap power will be had in abundance from Boulder Dam, construction work on which is soon to begin. Government engineers are now doing preparatory work there.

SMELTERS AND SAMPLERS:

There is a small sampler at Kingman that is not operating just now, although the intention is to resume as soon as mining becomes more active. Nearest smelter is at Humboldt in Yavapai County, this state; it has been closed down recently but recent announcement was made of its early re-opening to handle its own ores and custom ores as well. Most of the gold, silver and copper ores from here are shipped to Hayden, Arizona, to the big A. S. & R. smelter; the freight rate is low. Lead ore goes either to Midvale, Utah or El Paso, Texas, while zinc goes to Amarillo, Texas. Below is given a few rates covering freight shipments of ores and concentrates to these points:

ORE VALUATION PER TON:	$10	$15	$20	$25	$30	$35	$40
HAYDEN, ARIZONA,	3.00		3.90		4.60		5.30
AMARILLO, TEXAS,		4.50				5.50	
MIDVALE, UTAH, 30 ton car,			5.75		6.70		7.65
40 " "		4.50		5.00			

I do not have at hand now a schedule of smelter treatment charges for these classes of ore, but can obtain these from the respective smelters if necessary. I understand the rates are very much better they were, expecially as they used to penalize for zinc whereas now they pay for it and the other metals contained. The new Tennessee mill is making a very close separation into various products and as

soon as they make a shipment or two I can ascertain from them the point affording the best market. Both lead and zinc hold consistently to a much better market price now than for several years back, while copper is also stronger. Nearly all the Minnesota ores contain enough copper to lower materially the treatment charge even where there is not enough copper content to be paid for. The old records show that occasionally a car of straight copper ore was shipped from the mine, and I have often found dump samples of copper ore assaying from 15 to 20 percent copper.

LABOR:

At present there is an abundance of competent labor available in this county and state. Because of the more equable climate, miners prefer Chloride to such camps as Oatman, Ray, Ajo, etc., and we can readily assemble a competent crew of skilled men anytime. The wage scale is about the same as for several years past, about $7.00 per day for such skilled men as steam hoistmen, machine blacksmiths and expert drillmen; $5.00 for topmen, $5.50 for muckers, firemen, etc. Usually greater footage can be made at less proportionate cost per foot if the work is contracted; especially is this true of shaft sinking, and most of it is done that way in this county.

COST OF SUPPLIES:

Fuel oil, in carlots, costs approximately $1.60 per barrel at Chloride, or about 4 cents a gallon, considerably cheaper than having to pay 20 cents per gallon for gasoline or distillate, as is the case with most mines hereabout. Powder costs $14.25 per cwt., slightly less in ton lots. Mining timbers, Oregon Pine, are $45 M in truck loads out of the yard, but in carlots delivered at Chloride the price is about $33.00 M. Hollow drill steel (Crucible Steel Company) is around 15 cents a lb. in ton lots; Swedish Steel slightly higher.

These supplies are very little higher than pre-war prices; in some cases about the same, notably powder, which is cheaper now than in 1916 due to the fact that now we have powder manufactured in this state by the big copper mines (Apache Powder Company). The large commercial houses in Kingman carry full stocks of all mining supplies, hardware, oils, lumber, tools, machinery, etc., from which quick delivery can be made to any mines in the county. The Chloride lumber yard is well equipped with lumber of all kinds, fuel, mine rails, ipie, miscellaneous supplies and tools. Fuel oil is lower than for years due to the heavy production of the wells in Southern California and the keen competition among them.

Inasmuch as the steel beams for the shaft were purchased of Carnegie Steel people, I do not know their cost; the original invoice cost was never given us. It can be obtained direct from the Carnegie people, also the freight rate to Chloride. Oregon Pine sets cost less, are handled more easily, and would last the life of the mine.

W.H. CRUTCHFIELD JR.
Mining Engineer

OPERATING CONDITIONS GENERALLY:

The location and climate of Chloride are most ideal from a mining standpoint. The altitude of 4000 feet insures cool summers and mild-open winters. In summer no distress is felt by men working in the sun all day long, and sun-stroke is never known here. Cool nights enable the men to sleep well, and those on night shifts have no difficulty sleeping in daytime, so there is no loss of efficiency like there always is in hot camps where heat is intolerable. Our winter snows are light, and soon melt away; no tornadoes, earthquakes, floods or snowslides menace us as they do in many mining camps. Being situated as it is on the south side of the low mountain range affords the camp excellent drainage, and our roads are always open. Close proximity of railroad train, express and mail service is a vast advantage not often enjoyed by the large mines of this county; camps like Oatman, White Hills, Wallapai Mountains and Gold Basin have to haul by truck from 30 to 55 miles to reach a railroad point, while here we have own right at our door.

Less than an hour's ride brings us to Kingman where there is a strictly modern, first-class hispital costing over $150,000.00 that will take care of all injured men, whereas in former years we had to send them ot Los Angeles for treatment. Kingman has three large, modern hotels, with another one projected. Also has large mercantile establishments carrying heavy stocks like are found in large centers like Phoenix and Los Angeles; likewise has two modern assay laboratories, several large freight trucking firms, garages and shops. The Arizona Central Bank is a link in a strong banking system now affiliated with the First National Security system of Los Angeles. Large modern airports were recently constructed by both the Western Air Express and the T. A. T. -Maddux Air Lines, maintaining daily service East and West for quick travel. The American T. & T. Company have just completed a new 21-wire line through here, so that now we can pick up the receiver in our home and obtain immediate connection with any city in the United States.

DEWATERING EXPENSE:

Formerly this was around $4,000.00, although it must always be remembered that preparatory expenses, such as overhauling boilers and other machinery, replacing missing or worn vavles, pipe, connections, etc., have been saddled onto the unwatering cost only, whereas properly speaking this necessary preliminary expense applies to any permanent development undertaken, whether it be sinking shaft, drifting, stoping or whatnot. I think even now I can unwater to the 700 sump for a total expense not exceeding this figure; much depends of course, upon the condition of the shaft below the point of submergence. This figure contemplates a preparatory period of about ten days, during which time a mechanic and helper would thoroughly overhaul all machinery and get it in shape; a third man would go over the gallows frame, tank connections, road, station oil tank, etc, and the three would work together when necessary in heavy pipe work, etc. One large car of fuel oil, 250 barrels, would suffice, I figure. After steam is up we would work three shifts per day, pulling continuously, using engineer, fireman and topman on each shift, with a general mechanic on day shift who would serve as pumpman and general repair man. Based on past records, 18 days should see the water

drained into the 700 sump and, barring accidents or unforeseen contingencies, we likely could even beat this time a day or two, as I do not think there is quite as much water in the workings as formerly. The pipe columns must be replaced, but when once done will serve throughout any subsequent development campaign, and the same can be said with reference to most all of the repairs and replacements made about the plant, shaft and premises generally. In all slightly less than a month is needed in which to get ready and to complete the unwatering. Length of time required to clean out and open up the crosscuts below would depend upon their condition.

DRILLS:

The Ingersoll Jackhammers we had to sink the shaft with are worn out. New drills, mountings and hose are needed. For heavy work the Denver Dreadnaughts are used, costing about $350.00 each here, complete with mounting. However, a lighter jackhammer in either the Gardner-Denver or Chicago Pneumatic make, is a good combination machine suitable for sinking and drifting, such machines costing about $285.00 each here, with mounting. We have some drill bars on hand that could be used in connection with some machines.

CAMP ACTIVITIES:

Chloride, after a period of limited activity, is showing increased interest in mining. The main feature of this is the recently completed new mill of theMonarch Lead Company on the Tennessee vein. In former years the Tennessee produced several million dollars to a depth of 1600 feet; in one period it shipped 278,000 tons of ore running over $50.00 per ton. Now it has opened up a new shoot in its own ground, also a large tonnage in the virgin ground of the Schuylkill, the adjoining property acquired. Very soon they expect to increase their output; just now they are tuning up and adjusting the mill for a long efficient run.

The Arizona Magma Company, operating the old Diana mine lying west of town, announced recently that they are about ready to resume operations after a six-months shut-down. They bought the Diana outright, paying $55,000 cash therfor, although they have only one claim, a small gas plant, no buildings, and shaft 300 feet deep. Now they have a very nice ore shoot, I'm told. The Chloride Consolidated, financed by Portland, Oregon, interests, operate just north of the Schuylkill; they, too, slowed up for re-financing for deeper development, and their manager told me last week they expected to resume this month. The Pilgrim mine, 9 miles west of Chloride, has uncovered some sensationally high-grade ore that is attracting a good deal of attention; it is one of the older mines having free milling gold. Just south of the Minnesota holdings, in the Mineral Park region, some important development is going on at the White Horse mine; much ore has been opened up already by California interests headed by a former engineer of A. S. & R. Company.

A merger is under way of several properties lying just to our East, including the North Georgia, Payroll, Mary Belle and Mayflower groups; Eastern engineer coming out shortly and they have approached me relative to including a portion of our ground in the merger. The Payroll are on top of an important ore shoot and are

financing to sink deeper; they want the water from our shaft for milling purposes, agreeing to pay us for it. Their small mill is about completed. A new deal is now pending on the Samoan, particulars of which I have not learned. The property lies away up the mountain east of our Wallapai.

OUR FUTURE PROSPECTS:

The Minnesota-Connor shoot, according to the governmental and other records, has produced several hundred thousands of dollars worth of ores, yet only the top of one shoot has been mined. With almost identically the same general characteristics here that obtain at the Tennessee mine, many prominent engineers point out the similarity of the two mines that are only a mile apart. Since the Minnesota vein was larger and richer as far as mined than was the Tennessee, we reasonably can expect the downward continuation of this great ore shoot. Experts have said it will make a great mine. But we are not solely dependent upon this one shoot for, as indicated elsewhere in this letter, we have strong assurance of some three or four other ore shoots in the group; and at least two of these other vein systems are much larger and stronger than the Minnesota vein. In addition, considerable of our old dumps can be worked profitably in a new modern mill. Parties are now after these dumps. We have the cream of a district recognized everywhere as one most heavily mineralized and capable of vast production. I have every confidence that the 700 level, if opened up, will ~~have every confidence that~~ reveal a good body of ore, as on the 600 we seemed to be just on the apex of a shoot of nice milling ore. I was especially anxious to get under that point on the 700 level, but the old company quit short of their objective through lack of funds. Now we can take advantage of the vast development they did and the plant, buildings, water system and other improvements already here; this represents an asset worth in cold cash considerably over $100,000, and if we had it all to do today, starting in at the top of the ground with nothing here, it would cost nearer twice that. Hardly a mine in the country is as ideally located and as adequately equipped for quick resumption of work as is the Minnesota today, and we are the only one of the properties in the district blessed with our own permanent water supply.

Trusting that this covers the several matters on which you desired fuller information, I am,

Very truly yours,

(sg.) P. S. Virgin.