

February 23rd, 1905

NM Mine File No. 191

To the President and Directors of  
 The Treasure Mining and Reduction Company  
 Gentlemen:

In compliance with your request I have examined your  
 properties and beg to submit the following as my report:

#### LOCATION.

The properties are located on the western slope of the  
 Mogollon Mountains in Socorro County, New Mexico, drainage being  
 into the San Francisco river, a tributary of the Gila, which in  
 turn empties into the Colorado river.

The properties consist of:

Confidence,	877 ft. by 600 ft. U.S. Patent,
Black Bird,	1344 ft. by 600 ft. U.S. Patent,
Blue Bird,	1085 ft. by 600 ft. U.S. Patent,
Red Bird,	478 ft. by 600 ft. U.S. Patent,
North Alpine,	1500 ft. by 600 ft. U.S. Patent,
South Apline,	1476 ft. by 600 ft. U.S. Patent,
Dutch Boy,	599-2/10 ft. by 600 ft. U.S. Patent.

Also the following, the approximate dimensions of which  
 are given, which are held by location possession and compliance  
 with the Laws of the United States without dispute:

The "Triangle", 100 ft. long at North side line, 50 ft.  
 long at south side line, by 600 ft. wide.

"Divide", 1350 ft. by 600 ft.

"Eureka", 650 ft. by 600 ft.; also covers in a corner  
 125 ft. by 225 ft., 200 ft. by 300 ft.

"Independence", 1050 ft. by 250 ft. at the south end  
 line by 100 ft. at the north line.

Also the following millsites:

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*Thayer-Lindsley Papers, On Wyoming, Laramie*

The Confidence and South Alpine, containing 5 acres each; the Black Bird containing 4-96/100 acres. Title to each of these U.S. Patent. Also the Blue Bird and Red Bird millsites containing 5 acres each, which are held by location, possession and compliance with the laws of the United States without dispute.

The South Alpine millsite is located across Silver Creek and adjoining the South Alpine mine. The other four millsites are located on White Water Creek (see map), distant from the mines to which they are connected by a good wagon road about four miles long, and in a direct line by electric wire about 12,000 feet. They are 1300 feet below the mouth of the adit tunnel on the Confidence mine, and 500 ft. above sea level.

The properties are reached from Silver City, the terminus of the Atchison, Topeka and Santa Fe R.R., by good wagon road 76 miles to the millsites. They are also reached from the town of Socorro by rail to Magdalena, thence by good wagon road westerly, which crosses the Mogollon Mountains to the properties, a distance of 120 miles.

#### TOPOGRAPHY.

The country in the immediate vicinity of the properties is cut into deep gorges by three creeks and their tributaries, viz: Mineral Creek on the north, Silver Creek in the center and Whitewater Creek on the south. The elevation of the ridges between each of the creeks being several hundred feet.

#### GEOLOGY.

The general country rock is trachyte, which is cut by numerous veins and dykes, and is evidently the center of great

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volcanic disturbances, as is evidenced by the numerous ramifications of dykes, veins and feeders. There are four great vein systems, all of which send out numerous spurs and feeders, many of which assume the proportions of veins. At this point I desire to call your attention to the ground plan map. On the extreme east is the vein known as the "Queen Vein" running in a northerly and southerly direction. Commencing at a point on Mineral Creek, the vein has been traced south and located its entire distance to Whitewater Creek. The other three veins, the Fannie vein on the north, the Maud S. in the center, and the Confidence on the south, seem to have their beginnings in the "Queen" vein, running thence in a westerly direction, and have been located as far as their croppings could be traced westerly, where they are covered by mountain wash and debris from which form the mesas or table land extending west to the San Francisco river.

Each of these veins is accompanied by an igneous dyke (resembling quartzite, and so called by the miners and hereinafter referred to as quartzite) and trachyte. The character of the three veins is very similiar, having a general easterly and westerly strike, and a general uniform dip northerly of several degrees from the vertical. The gangue of the vein is spar and quartz, carrying chloride of silver (occasionally a little bromide and sulphide) and gold, the proportions being in value about  $\frac{1}{3}$  gold and  $\frac{2}{3}$  silver.

#### HISTORY.

The mines of this district were first discovered in the early 80's, and one or two properties were opened upon the "Queen"

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vein, near the town of Cooney, which are said to have produced a great deal of money. The development upon the "Queen" vein is confined principally to the territory immediately south of Mineral Creek near the town of Cooney. Several bonanzas of high grade copper sulphide ores carrying gold and silver were worked in the early 80's. Within the last four years one of these old mines was reopened, and an ore body was discovered which has been developed below water level and is still being worked. The vein (Queen) has produced several hundred thousand dollars up to date.

#### PROPERTIES.

Several promising properties of the district have been opened upon the Confidence, Maud S. and Fannie veins, from which more than a million and a half dollars has been extracted .

The principal claims upon the property under investigation are the Confidence, Black Bird and Dutch Boy, all located on the Confidence vein, and the North and South Alpine claims located on the Alpine vein, which commences on the Confidence vein and runs in a northerly direction. It does not seem to have crossed the Confidence vein, but in going north it crosses through the other veins, or, in other words, it starts from the Confidence and continues thence in a northerly direction, going through all veins and formations.

The Eureka, Triangle and Divide are located on small veins, and are valuable only as far as developments show for the surface ground on which the mine buildings are erected.

The Red Bird is located on a vein running in a northerly and southerly direction, from which about \$12,000 is said to

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have been taken from one bunch or pocket of ore near the surface. This claim is practically undeveloped.

DEVELOPMENTS ON THE CONFIDENCE, BLACK BIRD AND DUTCH BOY CLAIMS.

The quartzite dyke forms the foot wall, and the trachyte the hanging wall. The vein varies in size, as shown by developments, from one foot to forty feet in width. For the developments I beg to refer you to the vertical section map of the workings forming part of this report.

These mines were developed below the adit level by means of a small electric hoist and small air compressor run by electric motor for operating air drills. (All the above machinery is located at head of No. 2 shaft in the adit tunnel).

That portion of the vein lying east of the junction of the Alpine for a distance of nearly 500 ft. is very large, varying in width from 10 to 40 ft., and has been badly crushed, warped and displaced by some great dynamic force, causing a free passage for water.

A thorough investigation of the property and of all the facts giving any information whatever in connection therewith (see vertical section map), show that the vein east of the No. 2 shaft did not carry any continuous pay ore until a depth of from 40 to 100 ft. had been reached from the surface. However, small ore shoots, or the tail end of the larger bodies, reached the surface in No. 5 shaft. From the point above designated (viz: from 40 to 100 ft. from the surface) ore of fair value continues down on the vein, gradually becoming poorer as it approaches the adit level.

At a point about 500 feet east of the No. 3 shaft, good

grade ore begins to extend downward below the adit level and has been struck on the 150 ft. level, showing that the leaching effects of percolating waters are beginning to subside in going easterly, as well as in depth. The developments made in this portion of the mine above the adit level lead to the opinion that there is practically a solid block of ore, viz: commencing at "A" stope on the west, and extending to the east crosscut near the end of the adit level, a horizontal distance of 870 ft., and from the adit level extending upwards towards the surface to an average height of 275 ft. That portion of the vein lying west of No. 3 shaft became poorer from the adit level down to the 150 ft. level, when a better grade of ore began to come in west and east of No. 2 shaft. The best portion lying west of No. 2 shaft had a decided rake upon the vein to the west, and that east of the shaft to the east (see map), with the exception of about 90 ft. west of the shaft. The entire body will yield handsome profits under the proposed new method of mining and reduction. The 450 ft. level is beginning to enter the east ore shoot, and is evidenced by streaks and bunches of rich ore showing in its face.

The 450 ft. level west is run in the country rock parallel to the vein, and will have to be extended at least 200 ft. before it reaches the main ore shoot going west.

The bottom of the shaft looks exceedingly well and promising, and gives every indication of nearing the end in depth of the low grade zone, or, in other words, I expect within the next 200 ft. that it will enter good ore. The west end of the 250 ft. level is in good ore.

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#### ALPINE VEIN.

A tunnel is run on this vein from the adit tunnel of the Confidence claim a distance of 210 ft., at which point it enters the south end line of the Pacific claim. A thorough sampling of the bottom of this tunnel, every ten feet, shows an average width of ore of 2 ft. 8 inches, value of \$10.17 per ton. There has been a great deal of ore taken from this ore shoot; there is, however, still left a little over one half of the original block of ground, viz: 300 ft. by 250 ft. by 2 ft. 8 inches, or approximately 8000 tons of ore still standing.

The Alpine vein after leaving the Confidence side line enters and passes through the entire length of the Pacific claim into the South and North Alpine claims, cropping out at intervals the entire length of these claims.

#### DEVELOPMENTS ON THE SOUTH AND NORTH ALPINE CLAIMS.

About 200 ft. north of the south end line is an old cribbed shaft, which, from the size of the dump, would indicate a depth of about 70 ft. I judge the shaft was sunk on the hanging wall side of the vein, and that a crosscut had been run from the bottom of the shaft through the vein. The vein outcrops within a short distance on each side of the shaft, showing it to be from 2 to 4 ft. wide.

There is a small pile of quartz on the dump, a selected sample of which gave an assay of \$19.64 per ton.

About 200 ft. north of the last shaft is an open cut about 20 ft. long, partially filled up, but showing at each end a quartz vein about 2 ft. wide. I was told that the ore extracted was shipped and reduced in local mills. There is about a ton of refuse ore on the dump which assayed \$3.00 per ton.

There are four short tunnels run upon the North Alpine

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vein near where it crosses Silver Creek. One on the north side about 75 ft. above the bed of the creek, about 60 or 70 ft. in length, the first 20 ft. shows a vein about 2 ft. wide which assays from \$15.00 to \$20.00 per ton. The other three tunnels are located on the south side of Silver Creek.

No. 1 tunnel is said to have produced some good ore. I was unable to get into this tunnel owing to the fact that the road which formerly led to it was washed away.

The middle tunnel, which is about 200 ft. above the bed of Silver Creek, is 88 ft. long. Commencing at the mouth of the tunnel and extending 75 ft. on a line with the tunnel, the vein has been stoped out to the surface. The vein in the face of the tunnel is 24 inches wide and assays \$11.58 per ton.

The upper tunnel is about 100 ft. above the middle tunnel, and is 50 ft. long. The vein is about 18 inches wide, the first 20 ft. of which is high grade ore; the balance to the end of the tunnel is very low grade. A grab sample of the ore on the dump gave an assay value of \$10.93 per ton.

Where the Alpine vein crosses Silver Creek is about 500 ft. below the Confidence adit tunnel, and distant about 3,000 ft. I should judge that the distance from the north end of the Pacific claim to the lower tunnel on the North Alpine claim on Silver Creek is about 1800 ft., and, as has been shown, good ore has been produced wherever the vein has been uncovered, proving without doubt that there are several ore shoots within this distance, and in fact all developments would indicate one continuous ore body or shoot the entire distance under consideration. That the ore will continue in depth does not admit of doubt, for it has continued good from its apex on the Confidence claim down to the Confidence adit tunnel, a vertical depth of 300 ft.

RESERVES AND PROBABLE RESERVES ON CONFIDENCE CLAIM.

For these I beg to refer to the vertical map.

The estimate of ore reserves as exposed, tonnage and values indicated by present exposures, and work required to fully demonstrate same, are as follows:

BLOCK #1. Boundaries: East, end of main adit; west, "A" stopes; top, surface; bottom, adit tunnel.

Exposures: Price raise #1, 110 ft. high; Price raise #2, 130 ft. high. Main tunnel raise 160 ft. high, exposing extracted ore body entire distance, and remaining ore in top.

No. 6 raise, 100 ft. high, exposing extracted ore body 30 ft. high, and remaining ore balance of distance. From surface by a 40 ft. shaft, showing ore for last 35 ft. Stopes from main adit and Price raises 1 and 2. Average height of ore body 275 ft. Length from a point 30 ft. east of "A" stopes to nearly face of main adit 870 ft., width 5 ft., which at 20 cu.ft. per ton gives 59,812 tons. Deducting 6,352 tons extracted, leaves a net tonnage of 53,460 tons of an average value of \$10.00 per ton.

BLOCK #2. Boundaries: Top, main adit floor; bottom, 150 east level; west, at a point 1,680 ft. in on main adit.

Exposures: Main adit floor; winze to 150 level; 35 ft. winze from main adit floor.

Height of ore body 150 ft. Length of ore body 150 ft. Width 10 ft., which at 16 cu.ft. per ton gives 14,062 tons of a value of \$12.00 per ton.

BLOCK #3. Boundaries: Starting on floor of main adit level, at a point 75 ft. further east of Block #2, thence for a distance of 220 ft., with one low grade zone of 20 ft. in center, thence down on the vein to a point 150 ft., or where the 150 east level will come.

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Exposures: Floor main adit level. Height 150 ft., Length 200 ft., Width 5 ft., which at 16 cu.ft. per ton gives 9,375 tons of a value of \$12.00 per ton.

BLOCK #4. Boundaries: Starting at a point 200 ft. west of No. 2 shaft on 250 west drift, thence 200 ft. along floor of drift, thence down 360 ft. along the rake of the ore body, or to a point where the 450 west drift will come.

Exposures: 200 ft. along floor of 250 west drift, and a 42 ft. winze from same. Height 360 ft., Length 200 ft., Width 5 ft., which at 13 cu.ft. per ton gives 27,700 tons of a value of \$19.00 per ton.

BLOCK #5. Boundaries: 250 west drift for 70 ft. west of shaft #2; shaft 400 ft., drift and stopes. Height 135 ft., Length 70 ft., Width 3 ft., which at 13 cu.ft. per ton gives 1938 tons of a value of \$10.00 per ton.

BLOCK #6. Boundaries: Floor of 250 east drift 75 ft. east of #2 shaft, thence 95 ft. along floor of drift, face of 450 east drift at a point 142 ft. east of #2 shaft. Height 220 feet, Length 95 ft., Width 8 ft., which at 15 cu.ft. per ton gives 11,805 tons of a value of \$12.00 per ton.

BLOCK #7. Length 200 ft., Height 250 ft., Width 3-1/2 ft., which at 15 cu.ft. per ton gives 11,666 tons of a value of \$12.00 per ton.

Exposures: On bottom of adit level and winze said to be about 85 ft. deep.

It will be observed that I have taken different amounts of cu.ft. for a ton of ore in the different blocks. This is based on the amount of low grade ore necessary to pick out to make that

going to the reduction works meet the estimated values. The waste dumps at the mouth of the adit level contain about 30,000 tons, which I carefully sampled with the following results:

	Value per ton.
A. Dump. Starts across wagon road in front of ore bin and runs north to where B. Dump starts. ....	\$3.87
B. Dump. Starts at north end of A. Dump and extends east. ....	\$7.48
C. Dump. Starts at north end of B. Dump and extends north parallel to and on east side of E. Dump. ....	\$7.77
D. Dump. Starts at north end of A. Dump; extends north and parallel to and west of E. Dump . . .	\$4.86
E. Dump. Is on level with adit level and between Dumps C. and D. There is a great deal of country rock in this dump. ....	\$2.60
F. Dump. Is between ore bin and mouth of adit tunnel. There is a great deal of country rock in this sample. ....	\$2.57

Dumps A, B, C, D and F are about equal in size, and taken together contain about as much material as E Dump does.

The average value of Dumps A, B, C, D and F is	\$5.31
Value of E. Dump,	2.60
	<u>2)7.91</u>
	\$3.95

Or \$4.00 per ton average value of all dumps.

30,000 tons of dump ore at \$4.00 per ton, \$120,000.00

The results obtained from sampling the waste dumps, as above shown, indicate that the lowest grade quartz in the entire mine will yield a substantial profit, for E. and F. dumps are made up entirely from material taken from drifts, shafts and upraises in the lowest grade quartz, or supposedly barren zones and country

rock, of which the latter appears to be about one half of the whole. Such being the case, the quartz in these dumps represents the very lowest grade ore in the mine, and will give an assay value of about \$5.00 per ton.

We can safely estimate a hundred thousand tons of this class of ore which can be made available for extraction in a very short time.

#### RESERVES ON ALPINE VEIN.

8,000 tons on Confidence claim above adit level, value \$10.00 per ton, \$80,000.00.

On the North and South Alpine claims, as has already been shown, profitable ore has been found wherever the vein has been worked upon. Very low and very high assays are obtained the entire distance of 1800 feet, the average of which would indicate an average value of \$10.00 per ton, and as has been demonstrated, the ore has continued good to the depth of 300 feet upon the Confidence claim. I therefore see no reason why the ore upon the same vein on the North and South Alpine claims should not continue in depth with equal persistency, but, on the contrary, every reason exists that it will do so. Therefore it is safe in anticipating a body of ore of 1800 ft. in length, 300 ft. deep and 2 ft. wide, containing about 80,000 tons of ore, value \$10.00 per ton.

#### WORK REQUIRED TO FULLY DEMONSTRATE ABOVE ORE BODIES & RENDER SAME ACCESSIBLE FOR ECONOMICAL EXTRACTION.

Block No. 1. Continuing of present four raises towards surface, and connecting same up with a level at a point 100 feet up from adit level.

Block No. 2. Continuing of 150 east drift, and connect-

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ing present raise from 150 east drift with main adit level.

Block No. 3. Continuing 150 east level; starting raises from same at a point 150 feet further east from present face, and sinking of a winze from main adit level to meet said raise.

Block No. 4. Continuing present 450 west drift and starting a raise from same at a point 235 feet further east from present face, and sinking a winze from 250 west drift to connect with raise.

Block No. 5. Blocked out ready for extraction. No further work necessary.

Block No. 6. Continuing present 450 east face, and starting a raise at a point a short distance further in, and sinking a winze from the 250 east level to connect with same.

Block No. 7. Extend levels Nos. 250 and 450 west, and make necessary raises to connect with adit level.

The above work when completed, will expose all the ore bodies on three or more sides, and render all available for economical extraction.

#### RECAPITULATION OF RESERVES AND PROBABLE RESERVES.

Block #1	53,460	tons	at	\$10.00	per ton,	\$534,600.00
Block #2	14,062	"	"	12.00	" "	168,744.00
Block #3	9,375	"	"	12.00	" "	112,500.00
Block #4	27,700	"	"	19.00	" "	526,300.00
Block #5	1,938	"	"	10.00	" "	19,380.00
Block #6	11,805	"	"	12.00	" "	141,660.00
Block #7	11,666	"	"	12.00	" "	139,992.00
Dump ore	30,000	"	"	4.00	" "	120,000.00
Low grade ore	100,000			\$ 5.00		500,000.00
Alpine vein on Confidence claim	8,000	"	"	10.00	" "	80,000.00
North and South Alpine,	80,000	"	"	10.00	" "	800,000.00
	<u>345,000</u>					<u>\$3,143,176.00</u>
Average value . . . . . \$9.03 per ton.						

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The ore up to the present time has been reduced in a stamp amalgamation mill, making a saving of from 70% to 80% of the assay values. There have been thus reduced 71,809 tons of ore which gave a total bullion output, after deducting express and mine charges, of \$727,154.73, or a net result of \$10.12 per ton.

It is my opinion that 75% of the assay value is accounted for in the above statement; therefore the value of the ore reduced was \$13.50 per ton.

#### REVENUES.

The revenues are derived from four sources:

- 1st. From the reduction of ores.
- 2nd. From the Company's store.
- 3rd. From rental of dwelling houses to employees.
- 4th. Profits from boarding houses.

The profits from all of which are just deductions from cost of operating the property.

#### COST OF MINING AND MILLING.

The cost heretofore attending the extraction and reduction of the ore will have no place in determining the future cost under ~~which~~ the method of operation which is hereinafter recommended, for the mining of the ore has been of the most expensive character, as it was done entirely by hand, and at all times, so far as my investigation goes, far ahead of air connections, thus insuring a loss of more than one third of the time for each miner so employed. The tramming of the ore in the mine to the ore bins or assorting tables cost on an average of not less than twenty five cents per ton. The cost of operating a little electric hoist is the same as though we had one of ample power and speed. The assorting of the



ore was done by hand, instead of by rock breaker and endless belt conveyor. The ore was hauled from the mine to the mill at a cost of \$1.00 per ton, where it was stamped and amalgamated in pans and settlers.

During the winter and rainy season of the summer, the roads were often for days and even weeks impassable for teams, during which time the operating expenses were practically the same -- with little deductions in cost -- as though the mill were running steadily. Under these conditions, I find on examination of the books that in one year where the mill ran more steadily than it did in any of the others, 17,029 tons of ore was reduced at a total cost of \$7.93 per ton.

The mill has a total crushing capacity of 75 tons per day, which if run on full time would have reduced 27,376 tons of ore. This loss of time was caused by the impassable conditions of the roads, owing to the rains in the summer and the rains and snows of the winter, as already stated, which prevented during such times the hauling of the ore from the mine to the mill.

As I have already observed, the above facts will not enter into the future cost of operating the property if my recommendations are followed.

#### WATER POWER.

By the proper appropriation and utilization of the waters of Whitewater Creek and its tributaries, more than 500 horse power can be generated and conveyed to the mine for the purpose of running hoists, compressors, tram cars and cyanide reduction plant, as well as pumping water from said creek for running the cyanide plant. This amount of power can be depended on for at least eight or nine months during a dry season, and the entire year in an average wet season.

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With the mine properly equipped, as intimated above, and all mining being done by power drills, and the tram ore cars run by electricity throughout the mine, the average cost of mining should not exceed \$2.00 per ton, with a mill capacity of 150 tons per day.

#### COST OF REDUCTION.

I have had most thorough and exhaustive cyanide tests made upon the ores, and find them well adapted to this treatment,, making a 90% saving. The ore must be crushed to a 40 mesh and subjected to a treatment of fourteen days in the leaching tanks. The consumption of chemicals is as follows:

2-1/2 lbs.	Potassium Cyanide	per ton of ore,
1	"	Zinc per ton of ore,
5	"	Lime per ton of ore.

Or a total cost of about 65 cents per ton of ore treated.

I recommend the ore to be wet crushed under stamps, which in a first class mill of this character the cost will not exceed 25 cents per ton.

The cost of loading and unloading the cyanide tanks, the handling of working solution and repumping battery water should not exceed 25 cents per ton, making a total cost for reduction of \$1.15 per ton of ore. These estimates are based upon reduction capacity of 150 tons of ore per day, and in my opinion they are conservative and will be verified, provided the mine is opened and equipped as herein indicated, and developments pushed vigorously at all times.

The profits to be derived from the store, boarding houses and rental of houses to employees will make a further reduction in the cost of operating of from 50 cents to \$1.00 per ton of ore treated, reducing the cost to approximately \$2.50 per ton. The profits to be derived from a first class general store run in connection with a property located in an

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isolated country, such as your property is, should not be overlooked. You will employ a large number of workmen, and the country is inhabited by ranchers and prospectors, and other smaller properties are being and will be operated, all of whom must have supplies of every character. Therefore a Company store backed by ample capital should and will do an enormous business. This store business is understood and thoroughly appreciated by many of the largest mine operators, notably by Phelps, Dodge & Co., who have established large stores at all of their most important mines and reduction works.

#### PROSPECTIVE VALUES.

Confidence Group. The future of this group depends upon the developments to be made in driving the main tunnel easterly upon the vein, and sinking and developing it in depth. At both places I consider the prospects more than usually favorable. The vein in the face of the main tunnel is strong and assays \$4.73 per ton. Every foot that is driven is constantly getting deeper, and when it reaches the center of the "Top" mine it will have a depth of over 1,000 feet vertically below the apex of the vein, and in view of the constant and frequent occurrence of ore shoots and their extraordinary length in the veins in this district, it is not unreasonable to expect to find a number of good ore shoots, if not a continuous one, as the face of the tunnel seems to be entering a point below the action of percolating waters, and any ore shoots that are discovered should contain better ore and be more continuous. The prospects are made exceedingly attractive by the fact that good ore is said to have been extracted and milled from the surface of the "Top" mine, which yielded from nine to fourteen dollars per ton, and the "Last Chance" new crosscut tunnel, which is located at the same

elevation as the "Confidence" adit level, has reached the vein and been run upon it for a distance of about 150 feet, showing a pay ore vein of from 5 to 7 feet in width assaying from \$3.00 to \$16.00 per ton. If the above facts are thoroughly weighed, it requires no discourse to show the great prospective value of the vein.

The prospective value of the Alpine vein is all that could be desired. I therefore recommend that a tunnel should be run upon this vein from the deep workings of the "Confidence" mine. This tunnel will cut all easterly and westerly veins, including the "Maud S." and "Fannie", which would give you economical control of all the mining properties upon these veins which should be acquired from time to time as developments and prices will warrant. In fact the topographical position that your property occupies in relation to other properties of the district, and controlling as it does the only large supply of water, makes you economical master of the entire district lying south of the divide between Mineral and Whitewater Creeks.

#### EQUIPMENT.

The equipment of the property consists in part of the following:-

Mine Buildings: Six dwelling houses, one boarding house, two bunk houses, ore bins (capacity 200 tons), one coal house, one powder house, one blacksmith shop, three log houses, one store, hoists, electric hoist in mine, air compressors, tools etc.

Mill Buildings: One first class stamp mill, 30 stamps; necessary pans and settlers, driven by water power a portion of the year; first class Corliss engine 500 horse power; large electric generator; water pipe line; one blacksmith shop; one boarding house; one bunk house; eight dwelling houses; one office with

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fixtures, vault etc., one ice house, one cold storage warehouse, two stables, two store buildings, one warehouse, one oil and iron warehouse.

The total value of these improvements aggregate not less than \$275,000.00.

#### REMARKS AND RECOMMENDATIONS.

The present condition of the mine is such that the ore cannot be extracted within the limits of reasonable cost. The adit tunnel is very crooked, in many places narrow, and run on an irregular grade. The rails are light, the cars are small and are run by hand.

This tunnel must be straightened, widened and put on a uniform grade; the present light rails replaced by heavier ones, and large cars substituted for the present ones, and should be operated by electricity.

The No. 2 shaft is sunk on all kinds of angles, and while a limited amount of work can be done through it, such as raising the material coming from drifts and raises in opening up ore bodies and exploring the vein, yet it will take a great deal of money to make it a first class working shaft. It can be used to good advantage to explore the vein down to its present depth for several hundred feet on each side of it, and it may be found advisable to sink it (as the present machinery is ample for the purpose) to a further depth of 300 feet.

No. 3 shaft is sunk on a regular incline on the vein; it can easily be enlarged to three compartments (it has two now) timbered and made suitable for doing a large amount of work through it.

While there is a large amount of good ore tonnage in the mine, yet very little is opened and in condition for extraction; raises must be made through them to the surface or

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to air connections. Tunnels and raises must be run at proper places on the present bodies of ore, as well as those that may be hereafter discovered, so that the ores from all parts of the mine can be extracted and reduced in the proper proportions, thus enabling the management to make uniform returns one month with another, as well as to do economical mining. In this way the night shift of miners can be greatly reduced, if not entirely discontinued.

All work proposed in developments and utilities should be made with a view of saving a penny in operating the property wherever possible.

The developments must at all times be pushed with vigor, with a view of augmenting the ore reserves rather than diminishing them, for this mine like all others will have its dark days, or in other words, barren zones will be encountered, but having large reserves to draw from will enable the management to pass through such into better ground, and at the same time continue paying the regular dividends.

In estimating the cost of mining I have included 75 cents per ton of ore extracted for development purposes. That is to say, I have estimated as follows:-

For stoping, tramming and delivery to mill,	\$1.25	pr ton
For dead work and development - - - - -	.75	do
Total cost of mining - - - - -	2.00	do

A powerful hoist should be erected at the head of No. 3 shaft, with proper ore bins, rock breakers, revolving assorting belt etc., so arranged that the ore can be delivered at the mill bins automatically for crushing. The pulp from the batteries should flow into large settling tanks of approved pattern, such as are used by the concentrating mills at Morenci, Arizona, where about 80% of the water is clarified and pumped back to be re-used in crushing, and the pulp can be delivered into the cyanide tanks

at very little cost. The surface of the ground is such that the ore after being delivered into the mill will pass down the hill from one department to another until it is discharged into the gulch, divested of its values. In other words, the placing of all the machinery, including the hoist, should be arranged so that the process of reducing the ore and extracting the value can be done with as little labor as possible.

The erection of the mill should be postponed until the mine is equipped and the present ore bodies are opened, so that a constant supply of ore can be had at a minimum cost for extraction. That done, the mine should be equipped at once with a mill of not less than 150 tons daily capacity, and provision should be made in way of power to increase its capacity from time to time as developments are made, for in my opinion if a true business policy is adopted by your Company, you will own and control all desirable properties in the district lying south of Mineral Creek, in which event you will require an enormous reduction plant. And upon your present holdings I recommend the 150 ton plant only as a beginning, as I am satisfied you will require a plant of three times that capacity in less than two years after you start up the proposed plant. The more ore you can mine and reduce, the less will be the expense per ton. There is little difference in charges in mining and treating one thousand, or one hundred tons daily. More common labor, more material, a little more wear and tear of machinery, and you have about all additional costs.

#### CONCLUSIONS.

The present developed ore bodies, in my opinion, contain a lower grade of ore, as a whole, than will ever be developed either upon the strike of the vein or in depth; consequently we

(W.A.F.)

have reached the minimum value in the ore, and I therefore look for better values in the future.

The very flattering prospects within your own property, combined with the known values upon the veins which the location of your property commands in an economical respect to the other properties of the district, makes the whole scheme very attractive, and assume the character of a permanent investment which will last and yield large dividends for a life time.

Should the development work be pushed with vigor, there is no question but what the enterprise will grow into colossal proportions as the next few years advance.

Respectfully

(Signed) Wm. A. Parish