With reference to the Rito Seco I submit the following, wholly
summarized from the reports of numerous engineers. These reports
should naturally be verified by anyone undertaking the development,
in order that full confidence may arise from personal knowledge in-
stead of dependence upon the accuracy of the reports of others.

The property has been exhaustively examined during the past 25
or 30 years by such engineers as John Gross, William Lawrence Austin,
Roger Gailloch, Wallace Stephens, Gunther, and others. Some years
ago fairly extensive drilling work was done, and during its history
numerous shafts have been sunk, some tunnels and open cuts, etc.,
made, supplemented by extensive tests and numerous assays, as well as
the milling in a small test mill, formerly on the ground, of some 2500
tons of the ore from different openings.

The property consists of 800 acres, situated in Costilla County,
Colorado, about 16 miles south-southeast from Fort Garland which is a
station east of Alamosa in the San Luis Valley.

The ore occurs in something of the nature of a reef, extending
in a northwesterly and southeasterly direction and so far as the sur-
face indicates, varying in width from 150 to 400 or 500 feet. Prac-
tically all of the exploration work has been done in mined-out areas,
aggregating about 11 acres, where the ore is fully exposed and not
covered with overburden from higher levels. There so exposed the ore
seems to have been oxidized or partially oxidized to a depth of from
10 to 55 feet. In these exposed oxidized areas (aggregating about
11 acres) there are about a million tons of ore with an average value
at the present price of gold approximating $4.35 per ton.

The so-called blue ore zone beneath the oxidized areas extends to
varying depths. At the main quarry the depth to the metamorphics is
probably 100 feet; elsewhere it has not been sufficiently ascertained
for accurate definition.

On the present basis of gold value, a large tonnage, probably in
excess of 7,400,000 or 8,000,000 tons of ore, ranging from 3.50 to
6.50 per cent gold content, exists. The existing reports vary in avail-
able tonnage from 8,000,000 to 15,000,000 tons of ore. Situated at
the surface and along the slopes of the hill or mountain, with compar-
avely little overburden over most of the area, the whole can be
quarried, handled with steam shovels, and trammed by gravity to the
mill site.

The oxidized ore availability mentioned permits of the applica-
tion of an important principle in a new mining development, namely,
the mining and reduction of the higher grade ore during the early
stages of the operation.

In the mill testing work covering some 5500 tons, by amalgama-
tion, subsequent grinding and concentration of the quartz remaining
in the tailings, we recovered approximately 85% of the values.
In this operation we did not use screens finer than 30 mesh as the readings in the cyanide tanks could be more readily and rapidly accomplished by providing a relatively coarse aggregate. Tests made by Wallace Stevens, Bloomfield, and Bowen indicate that with finer crushing and the use of a flotation process such higher recoveries, perhaps up to 95%, are obtainable. Assuming a basis of 90% the recovery on the foregoing average value of the oxidized ores would approximate $3.87 per ton.

Mr. R. A. Knowles, for several years in charge of operations of the Utah Copper Company, some years ago indicated a willingness to provide all the mining equipment, and on the basis of 1,000 tons per day, to do the necessary stripping, mining the ore, and delivering it at the mill at 40$ per ton.

Cyanide tests heretofore made indicate a cyanide consumption of approximately 1 to 1-1/4 pounds per ton of ore. Crushing costs have by many been estimated at from 50c to 65c per ton. The cost of milling would vary with the capacity of the mill. On a basis of 1,000 tons per day, the cost of mining and milling should not exceed 61.25 per ton. On the same production basis, all overhead and fixed charges should not exceed 80c per ton. These costs would necessarily or decrease by increasing or decreasing the daily tonnage. (Increase)

POWER: About 8 miles distant on an air line southward, the Culebra River is situated. At a point near the junction of the two branches of the Culebra creek, a large amount of power, approximately 1,000 hydro-electric horsepower, can be developed at a cost (including the installation of equipment and transmission lines) probably not exceeding $150 per horse power. By increasing the effective head and extending the points of diversion somewhat further upstream, more power would be available. From personal measurements extending over a period of years, the right branch of the Culebra creek has never carried less than 18 feet. foot and the south branch 7 feet fast.

The water supply might also be augmented, if found practicable, within limits of cost, by the installation of dams for the conservation of the water supply above the points of diversion, thereby increasing power available, correspondingly. Steam power development, except as an auxiliary for finishing may also be avoided, and the cost of power materially decreased. The right to the use of this water for power purposes could be quickly and inexpensively secured from the Cootilla Estates Development Company. The advantages to that company to arise from this development are obvious.

Allowing for an operating cost, including overhead and fixed charges of 3.50 per ton, which from all estimates is believed to be reasonably conservative, an approximate profit should by difference remain on the oxidized ores of $2.48 per ton. If these estimations are accurate the property would justify an expenditure for mining, power development, milling, and the purchase of the property, in excess of $1,000,000, and on the oxidized ores within the small while un难过 alone would provide a return of more than twice the initial cost. This would leave all undeveloped oxidized areas and all blue ores of commercial availability as a reasonable but considerable prospective element. This would also serve to indicate that the return of the capital investment and profits out of the presently developed oxidized areas man-
tioned only on a basis of 1000 tons per day, allowing for a reasonable construction period, should be secureable in about two years.

The water supply is ample for reduction facilities, probably over 1000 tons per day. Accessibility is exceptionally good. As the reef is situated on the southern exposure no weather conditions need affect mining in any manner. If railroad connections between Fort Garland and the property are to be provided, such facilities, crossing an open country, with but two small bridges on the Trincheras and Sangre de Cristo creeks, without excessive grading requirements, with ties available at relatively low cost from nearby timber, can be provided at an exceptionally low aggregate expense, and with grades not exceeding 2½% at any point the length of such a railroad connection would approximate 17 miles.

With capital available, capable management and some vision, at the present price of gold, the element of risk, if any, is reduced below that of the average mining operation and profitable operation of considerable duration may be reasonably anticipated. The ore is a quartz, impregnated with some iron pyrites, with gold and a small amount of silver as the basis of value, but free from refractory metals.

You will understand that this is a brief, and therefore perhaps incomplete review of the situation and is intended as a resume only of the reports submitted and the results of much time, labor, thought and effort of several capable engineers.

E. C. van Diest.
The following information is part of a report prepared by John Gross, Mining Engineer, submitted under date of September 25, 1909.

Additional detailed findings and technical data are available in Houston.

REPORT ON
PLOMO MINING PROPERTY

LOCATION

The Plopo Mining Company property is located on the Trinchera Estate, in Costilla County, Colorado, about 15 miles south and east of Fort Garland, the nearest railroad point, on the main line of the Denver & Rio Grande Railroad to Alamosa and Creede, Colorado.

The property is connected with Fort Garland by a good road; the elevation at the mine being 9000 feet and two 800 feet higher than Fort Garland; this road has no grades and the possibilities for railroad connection are extremely simple.

Southwest, a distance of about eight miles, and connected by a good road, is the town of San Luis, the County seat of Costilla Co.,

The Plopo property lies on the western slope of the Culborsa or Sanpo de Cristo Range, on Rio Seco Creek, which carries a fair quantity of water the entire year.

The property consists of three areas, designated as Plopo No. 1, Plopo No. 2, and Plopo No. 3, all shown on the diagram on the following page, and having the following acreage:
Plano No. 1 - 235 Acres
Plano No. 2 - 235 Acres
Plano No. 3 - 20 Acres
Total - 800 Acres

This total acreage is covered in this report as a single property to be operated as one unit, with clear title being guaranteed in every respect.

HISTORICAL:

The Plano Mining Company, which acquired title on the area designated in Plano No. 1, from the Futamura Estate Company, directly and indirectly at various times, was formed to exploit a deposit of ore known to exist along a fault plane, crossing El Plano Blikh in a Northeasterly and Southwesterly direction.

This work was originally begun about 1890, and consisted of several shafts and a tunnel, however did not disclose any large deposits, although a small amount of lead silver ore of about $4.00 value was shipped from here; this ore, while mainly lead, silver bearing, contained some copper and iron pyrites; it was this lead deposit that suggested the name "Plano Mining Co."

Some four years after the beginning of work on the lead ore deposit large quartzite beds with their gold values are noted.
attention; work was undertaken at the point of the present large quarry, when tunnel No. 1 was driven, and from which the ore was taken for the earlier tests; upon this ore from tunnel No. 1 there were two cyanide tests made by the Gold and Silver Extraction Co. of America in 1883, as well as a test by amalgamation and concentration in one of the mills in Idaho Springs, Colo., the same year.

The quartzite ore body, proving to be of such large extent, a mill was erected upon the property in 1885 or 1887 for further experiment upon a larger scale; this mill was equipped with Kinscll crushing mill and amalgamation plates; the crushing facility of the Kinscll mill, proving inadequate, was replaced later by 10 stamps, concentration being provided for by two Gilpin County bamp tables.

This mill treated, during 1887 and 1888, some 1663 tons of the quartzite ores by simple amalgamation and concentration, with a saving of perhaps 65% on a little less than a 3.00 head value; the results accomplished in the mill were further corroborated in 1889 by a general sample of 11 tons of ore from the Plume No. 1 area, taken in proportion to the ore body and milled in the Hidden Treasure mill at Black Hawk, Colo., by plate amalgamation and concentration on Gilpin County bamp tables.

The returns, by the amalgamation and concentration method, proved very unsatisfactory, due to the heavy loss in the tailings; in the meantime the rapid advance made in the application of the cyanide process, this method was turned to as an additional means to the further extraction of the values.

A 1000 pound sample was divided into two parts and tests conducted independently in 1889 by the Gold and Silver Extraction Co. of America and by the Boston and Mercur Gold Mining Co., with such satisfactory results that a complete cyanide apparatus was installed in the mill at Plum, in which, during the latter part of 1889 and the early part of 1890, tests runs, on a working scale, were carried out; some 183 tons were thus treated, first by amalgamation followed by cyanidation, then by cyanidation alone, resulting in the complete demonstration of the feasibility of treating this ore by modern method and at a profit when handled on a sufficiently large scale.

During and since the above experimental work Plume No. 1 as well as Plume No. 2 were thoroughly explored by shafts, etc., over an area of 2200 feet in length by 60 feet in width, and exposing the ore in a large number of places over this area.

Pending the installation of a large capacity mill, the property is closed down, as the small experimental mill, now installed, is too small to pay a profit upon the tonnage capable of being put through.

GEOLOGICAL

The underlying rock of the entire neighboring country consists of igneous granite and gneiss. Near the Archeon lies a thin bed of Ordovician quartzite; the thickness of which has not been determined; it is exposed north of the main fault, of about 1000 feet, and from 400 to 1000 feet in a northerly direction; at the east end of the exposure the quartzite dies against the Archeon, which slightly overlaps the quartzite, apparently along a fault plane,
while to the west the heavier wash covers such a large portion of the formation that it is impossible to determine the limits of the quartzite in this direction.

The quartzite bed has a general dip to the south; the eroded portion that took place at the eastern portion having thrown the northern exposure of the deposit to a weather edge, exposing along this line the contact with the underlying rock, which condition is not clearly seen in the western portion, owing to the greater amount of wash.

This quartzite bed has been mineralized, carrying a quantity of iron pyrites, with occasional minute quantities of galena and copper minerals, these latter, however, being insignificant; the economic quartzite, in connection with this quartzite, lies in the fact that it carries gold values, with a lesser silver value, very generally distributed throughout the deposit, with the exception of a small upper layer, still unlocated along the top of the cliff, from the large quarry westward to Tryon Gulch; this upper layer of unlocated quartzite originally covered the ore deposit, but has been subject to erosion to such an extent that it is now seen only along the edge of the cliff.

It is not determined where this mineralization originated, although it is quite likely that the solutions coming from below impregnated the bed through the numerous fissures and seams that existed, and which have since been largely closed by silica and did not reach the more resisting upper layer in sufficient quantity or strength to make them of the same economic importance, although they carry some value in gold and are, in part, impregnated with iron pyrites.

The main quartzite mineralized bed shows a thickness of 30 feet at the larger quarry, and this main quartzite ore body exists for the distance of 600 feet, east and west, as demonstrated by its exposure in the numerous gashes, and by shale rock upon it.

The shales and limestones, above the quartzite, are at the locality under discussion, practically eroded, although they appear at some distance to the east of the main ore body, along the western side of the north-east and south-east fault.

The measure of the ore-bearing strata indicates there is a good possibility that this ore strata extends further west beneath the wash and that, therefore, the limits of the ore body are more extensive.

At the very lowest level exposed in the large quarry a hard mottled ore, entirely unoxidized, end of a rather yellowish color with the main body of ore at Cavelsole, but the limits of this ore are not determined although similar ore exists at the mouth of Coffee Gulch; this ore probably marks the water level or zone of oxidation, and it is quite possible that this higher grade, unoxidized ore lies near the original channel of the gold-bearing mineral solutions, in the underlying formations.

Cross sections through various points of the deposit show the probable line of oxidation in the ore body, together with the approximate inclination of the ore-bearing strata and its thickness, which ranges about 50 feet.
DEVELOPMENT:

The early development of the property consisted of two quarries, several tunnels and a large number of shafts of varying depths.

Quarry No.1, the larger quarry, demonstrates the thickness of the ore body and exposes the same in excellent condition for examination.

Quarry No.2, a smaller quarry west of the large quarry, is not in the regular ore strata but in the overlying barren quartzite.

Tunnel No.1, at the lower level of the large quarry, running east of north a distance of 70 feet, then turning to the northwest a distance of 20 feet further; at the turn a mine 40 feet deep was sunk, at which point a heavy flow of water was encountered, and it is stated that the bottom of this mine is in granite. This tunnel starts in heavy sulphide ore, which continues for a distance of about 20 feet, and then gradually becomes less mineralized and of lower grade.

Tunnel No.2, at the top of the large quarry, running north in upper portion of ore strata, is partly filled and inaccessible but evidently some 20 feet in length, and in ore.

Tunnel No.3, below the quarry level, running west of north for a distance of 50 feet, this work is in the overlying barren strata.

Shaft No.1, 45 feet deep, in Archean, vary probably to the east of the fault plane.

Shaft No.2, 50 feet deep, in Archean.
- No. 6, 26" , ,
- No. 8, 26" , ,
- No. 6, 30" , , all in ore.
- No. 9, 30" , , largely in Archean, indication of ore.
- No. 6, 23" , , in Archean.
- No. 3, 23" , , in Archean.
- No. 6, 40" , , in ore.
- No. 6, 25" , , all in ore.
- No. 9, 50" , , mostly in ore.
- No. 18, 41" , , in Archean.
- No. 19, 30" , , in Archean.
- No. 3, 24" , , in overlying barren quartzite.
- No. 2, 20" , , partly filled, evidently in ore.
- No. 27, 18" , , all in ore.
- No. 13, 25" , , in Archean.
- No. 13, 50" , , all in ore.
- No. 13, 55" , , top in overlying barren quartzite and the bottom in ore.
- No. 0, 12" , , , in Archean.
- No. 22, 16" , , , in Archean.
- No. 23, caved, but dump shows unmineralized ore.
- No. 24, 45 feet deep, in overlying barren quartzite bottom in ore.
Cut No. 25, 60 feet in length, with 18 feet breast of ore; oxidized ore in walls with unoxidized ore in breast.

Shaft No. 26, filled up, dump shows some ore.

* * *

No. 27, 10 feet deep, all in ore.

* * *

No. 29, 6 feet deep, in ore.

* * *

No. 30, 95 feet deep, all in ore.

* * *

No. 31, 8 feet deep, all in ore.

Cut No. 28, 20 feet in length, showing ore.

Shaft No. 32, 25 feet deep, all in ore.

* * *

No. 33, 25 feet deep, all in ore.

* * *

No. 35, 10 feet deep, all in ore.

* * *

No. 36, 14 feet deep, in ore.

* * *

No. 37, 17 feet deep, through 7 feet of wash, rest in ore.

* * *

H, filled up, dump shows ore.

Old Shaft A, 6 feet deep, in ore.

* * *

E, 10 feet deep, in ore.

Old Tunnel in Snyder Gulch, 18 feet long, in ore.

The above workings show about 1800 feet of work done in shafts and tunnels over the entire property, not including the large amount of work on the large quarry.

THE ORE:

The ore body, as far as present development has demonstrated, consists of the oxidized, or but partly, unoxidized ore, and is that portion of the ore-bearing strata nearer the surface, above the water level.

The cross sectional areas of the oxidized ore body, corrected to perpendicular cross sections, are as follows:

<table>
<thead>
<tr>
<th>Section A-B</th>
<th>15,000 square feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-D</td>
<td>20,000</td>
</tr>
<tr>
<td>E-P</td>
<td>27,500</td>
</tr>
<tr>
<td>G-N</td>
<td>18,800</td>
</tr>
<tr>
<td>I-V</td>
<td>33,100</td>
</tr>
<tr>
<td>Average</td>
<td>30,500</td>
</tr>
</tbody>
</table>

Tying this average cross section, with the length of 2800 feet, we have 77,400,000 cubic feet, or on a basis of 15 cubic feet of ore per ton, gives us 5,160,000 tons of ore available for milling purposes.

This oxidized ore is a silicious, brittle ore, carrying a small percentage of iron oxides, with an average gold content of about 0.19 ounces, and a silver content of about 0.30 ounces per ton. This ore is easy to mine clean and free from sulfides, but contains considerable in the quartzite to which it adheres, and by a combination of both of these elements the values will be readily extracted, if properly treated, producing, probably, at the same time, a by-product of concentrates to be shipped to the smelter.

Below this oxidized ore zone there exists the heavy pyritic ore of which no estimate can be made as to tonnage, but it is very likely to add considerable production upon further development.
This heavy pyritic, or unoxidized, ore, is a compact, silicious ore with considerable iron pyrites, and generally appears to carry somewhat higher values than the oxidized ones; they naturally present slightly greater difficulties in their treatment than do the oxidized ones; these unoxidized ones are treated in this report as positive rather than positive, owing to the limited development thus far compared to the extensive development that has been done on the main oxidized ore body.

The ore body, in general, may be said to be very low grade for a low grade, where exposed at the surface, due to having been subject to leaching by surface waters. This is demonstrated in the face of the large quarry, and surface assays, while low, are nevertheless indicative of the presence of the main body of ore below the surface.

Some stripping will have to be done as the ore is covered with a loose wash between the ore exposures and within the limits of the ore body; this wash varies in thickness from nothing to probably 10 or 20 feet as a maximum; an example of this is shown at shaft No. 27, where only 7 feet of loose wash lies over good ore; there will be some barren quartzite to strip in places, although it is not likely that this will be of great extent.

The interesting fact presents itself, that in the large quarry, where the ore is so well exposed, it shows usually higher values than in some of the shafts, and as a more representative sample can be obtained from the quarry face it is probable to assume that this value will continue throughout the deposit; this is demonstrated by the values in samples taken from numerous, newly sunked points on the property, averaging about $5.70 from the main face of the quarry.

From the results of numerous tests it is safe to say that a mill extraction of at least 80% on the gold and 50% on the silver can be obtained on the oxidized ore, with only a slightly lesser extraction on the unoxidized ore, which will send no inessential item in the profits to be derived.

I would say that this property has the making of one of the largest low grade producers capable of continued profit for a long period. For while I have estimated the ore body at about 6,000,000 tons I am fully satisfied that further development will bring this tonnage to a much greater figure than I have calculated upon and that the life of the property will be at least 20 years, on a basis of 1000 tons of ore treated per day.