

COPY
D. FORD MC CORMICK
Mining and Civil
Engineer

Box 1038
Medford, Oregon
June 14, 1940

Mr. J. E. Bartlett
Big 4 Mine
Route 2, Box 288
Grants Pass, Oregon

Dear Mr. Bartlett:

As per your request I have visited the Big 4 Mine, and studied the physical and economic aspects connected with the mining operations, and more particularly the water situation.

Gravel Deposit

There was not sufficient time during so short a visit for a survey and a test of the size and values of the gold bearing gravel deposits included within the boundary lines of the Big 4 mine comprising 137 acres of patented land and 3 mining claims, as pointed out to me; but, it is quite evident to any observer that there are thousand and thousands of yards of gravel, lying in the old channel, all of which can be mined very cheaply - say at a cost of 3¢ to 6¢ per yard, when operating with a full head of water on the giants, and using 12 to 15 cubic feet of water per sec. to the best advantage.

The three large pits already mined expose the gravel deposit thoroughly and since these pits are located 400 to 600 feet apart along the channel; and expose the bedrock, the rims and the old channel itself across faces from 400 to 600 feet wide and from 8 feet in depth on the rims to 50 feet in depth in the old channel proper, there is no doubt about the presence of a very considerable yardage remaining in the deposit within the mine boundaries. Other corroborating evidence is present, such as exposures along the roadside, pits made where trees have blown over, short cuts and gulches traversing the deposit and the remains of old test pits dug many years ago. From these facts it is apparent that a large volume of unmined gravel is present, sufficient to last many years for an operation of the size possible when judged by the available water flow of Pickett Creek; and too, even if this were doubled by any other type of operation.

Testing the values contained in a deposit of this type is expensive and requires much time and care. No attempt was made to check the values. Past performance will suffice, especially where large volumes have been removed, and where sizeable test runs were made - such as those conducted by Mr. Bartlett to determine for his own information what is to be expected from the various sections of the gravel bank, and bedrock locations. It has been determined by extended tests and records that the gravel will average over 20¢ per yard. This being the case, if other conditions are favorable, this becomes valuable placer ground. It was, therefore, the object of the writer to determine as nearly as possible what the physical conditions and economic problems presented in the way of operating difficulties, if any, for a successful mining venture.

Consequently, knowing that there is a sufficient volume of gravel for a long life, gravel that is neither cemented nor clayey, and in which there is no boulders to cause difficulties or extra expense; and assuming that the values average 20¢ per cubic yard or better, other items were investigated as follows:-

Tailings

There is no problem for the disposal of tailings other than that of the muddying of the Rouge River. The major part of the deposit consists of disintegrated clays and shales, soil and rotten country rock of various types with very few pebbles and very few boulders, larger than 6" to 8" in diameter, with an occasional one 10" in diameter. There is no problem in constructing the tail races to carry off the waste and spill it into Pickett Creek over a shear drop of from 175 feet to 200 feet from the high channel to Pickett Creek bottom. This high channel more or less parallels Pickett Creek. It is a distance of less than one half mile from the lowest tail race down Pickett Creek to the Rouge River where it flows into the River, at a point less than one half mile below the Robinson Bridge. The giants disintegrate the gravel bank so that very little hard material is left to collect in Pickett Creek, and furthermore, any small boulders that do accumulate are washed on into the Rouge River by freshets, and will not be of any consequence.

The muddying of the Rouge River will interfere with fishing during any season when there is good fishing in the River prior to May 1st, (the limit of the mining season set by the Water Right Period, as per the adjudicated right listed on page 41 of the Decree, and to be found as Preef 510, Vol. 8) . So far there has been no ruling made by the Rouge River Coordination Board effecting mining in any way as early as May 1st each year. It is my understanding that the Big 4 Mine season always ends by or prior to May 1st, the date the farmers are entitled to the creek waters for irrigation, and any operation at the mine after this date would be only for the purpose of cleaning up, and would not make muddy water.

From the nature of the top soil it is quite probable that any muddying of the waters of the Rouge River by the Big 4 Mine operations after the fishing season starts in the spring will be closely watched and supervised. I doubt if it is possible to construct settling basins large enough to clarify the tailings run-off waters sufficiently to be free from interference by State Police. If the operations happened to synchronize with other mining operations in the Galice District and on Graves Creek, both of which are also in similar red colored soil, so as to cause a turbidity of over 50 parts per million at the control points down near Agness, the mine would probably be ordered to control the tailings very closely. However, this problem is not of such great importance because the nature and small area of the Pickett Creek water shed automatically limits the water supply, and shuts down the operations early each season ahead of the fishing season at Geld Beach, at least as has been determined and specified up to the present time.

Due to the volume of fines in the tailings, it has been determined by Mr. Bartlett that 1½" per foot is the best grade to keep the riffles clear, and to save the gold. There appears to be comparatively little black sand and comparatively little fine gold to make these items special problems. Hence, with sufficient water available to move the tailings, other conditions are favorable for mining economically.

Water Supply

The water shed drained by Pickett Creek, making water ahead of the intake of the Big 4 Ditch, is not extensive. Furthermore, there is no snow-fall of consequence to store water in ice banks for a late run-off. This means, that the mine must depend on the normal rains for its water supply. Normal average yearly precipitation for the Grants Pass area is 28.8 inches, as reported by the Weather Bureau. Excepting the years 1937 and 38, and 1926 and 27, the precipitation has been below normal for the past 20 years. The average has been computed from records of the past 50 years. A glance at the accompanying tables shows two items of special interest for the local situation; first, that there is considerable variation in the month to month precipitation, as well as the precipitation for the same month each year; and second, that there is a comparatively dry season each year starting in May and lasting through September. If rains fall in Oct. there is often sufficient water to start mining operations in Nov., if the rains continue normally. Ordinarily the greatest precipitation occurs during the months of Nov. through March. Normal years make these 5 months the mining period, though often providing water for mining during Dec. and on through April for about 150 days each season. During the dryer seasons this period is cut to as low as 100 days or less, and in order to take full advantage of the available water supply it is sound planning to have the ditches oversize to catch the major amount of water consistent with other operating conditions, and to crowd the seasons work into the period when water is available. It is this problem that concerns the Big 4 Mine. The present ditch will carry when full, as near as can be calculated, only between 6 and 7 cu. feet of water per sec. There are periods when Pickett Creek makes two and three times this amount of water long enough to allow for considerable mining to be done at the Big 4 Mine under a head of approximately 175 feet in Pit #1. Mr. Bartlett stated that under present conditions he found that they could move approximately 240 cu. yards of gravel per 24 hours. If the flow of water was doubled, this amount of gravel should be doubled. It would be no great problem to widen the present ditch to twice its size. The same crew of men would be required to move just twice the gravel formerly moved in 24 hours. If 240 yards of gravel yield \$48.00, then 480 yards would yield \$96.00 per day of 24 hours. Mr. Bartlett's operations yielded approximately \$1500.00 per month under the present ditch, therefore, it should yield approximately \$3000.00 per month with double the volume of water. Mr. Bartlett states that under Mr. Robert Goff the mine yielded \$1189.17 from approximately 5000 yards of gravel moved from opposite sides of Pit #1 in 35 days of 24 hours each during the 1936-37 season. This appears to be a daily output of only 140 cu. yards per 24 hours, and an average value of 23¢ per yard, or \$32.20 per day.

The Big 4 Ditch is approximately 9 miles long and contains between 1600 and 1800 feet of flumes all of which, with the exception of two or three short lengths, has been reconstructed within the past five years. There is a short section of this ditch in serpentine rock, and some of the lower end is in soft shale rock. The serpentine rock would have to be blasted, but the shale rock could be picked and plowed down to enlarge the ditch. Most of the flumes now in use could carry double the volume of water they are now called upon to handle at the present full capacity of the ditch. During the high water season Pickett Creek would supply double the amount of the present flow in the ditch; but, to add about two weeks increased capacity for the ditch, at the present rate, both at the beginning and the ending of the normal season it would be necessary to complete a ditch 2200 feet long (1465 feet of which has been constructed and only needs to be cleared out) that will add the waters of the Right Fork of Pickett Creek to those now taken from the Left Fork of Pickett Creek.

This Right Fork makes almost as much water as the Left Fork, therefore will double the water supply for approximately four weeks during each season, an item of considerable importance when it adds from 20 to 30% to the possible double time capacity, or from 10 to 15% of increased total time for mine operations each normal season. An application for 11 sec. feet has been made out of the Right Fork, which is in addition to the 25 sec. feet Water Right adjudicated out of the Left Fork of Pickett Creek. Mr. Bartlett estimates that he can complete the ditch connecting the two creeks for \$500.00. He has a bid of \$300.00 per mile to widen the main ditch one foot on each side (which would double its carrying capacity) for approximately 6 miles through surface soil. It would cost more for the rocky section of the ditch line. In addition to this work it would be necessary to purchase 2000 feet of hydraulick pipe and necessary fittings, also two new #3 giants to complete the improvements required to handle 12 to 15 sec feet of water. \$10,000 carefully spent should take care of these improvements and allow a few weeks working capital to get underway - after which partial cleanups should take care of the running expenses.

Studying the tabulated Weather Bureau Records one notes, that in general, for the past 50 years the average yearly precipitation for both the Eastern and Western districts of Oregon show but little variation, and that they are surprisingly close to each other; the West or coast half receiving only about 10% more water than the Eastern half. The average state precipitation is 48.4 inches - the average Western District is 51.7 inches and that at Grants Pass is only 28.8 inches. In the past ten years, seven have fallen below this average. There are no records of measurements of the flow Pickett Creek. For actual water-flow one has to depend on the statements of residents familiar with the Creek, and upon evidence along the creek of high water, and normal flow.

Thousands and thousands of yards of gravel have been mined with water from the present ditch in the past.

General

Mr. Wm. F. Haden's Report dated March 4, 1939, contains several excellent photographs of the mine, ditch and flumes, also a full sized picture of the gold as it appears. The gold averages from 942 to 966 in fineness, as shown by the Mint returns in Mr. Bartlett's possession. This report also has blueprints attached showing the location of the mine and the ditches.

There is a high tension power line at Robinson Bridge not one half mile distant from the Camp and Pit #1.

The roads to the property are good gravel roads for half the distance to Grants Pass, the remainder is paved. It is 14 miles from the Big 4 Mine to Grants Pass. There is a daily Rural Mail Service, and no time of the year when the property is not accessible by automobile.

Opinion

In view of the fact that ther 24 hour operation can be carried on during the mining season at a cost of approximately \$32 per day, as follows;

- one foreman \$5, 3 pipemen \$12, 3 helpers \$9, and one ditch rider \$3, taxes \$3; during which period an average of not less than 300 yards per day, and at times, as high as 600 yards per day, depending on the type of ground mined, should be mined, (according to Mr. Bartlett's experience), and which program should gross from \$60 to \$100 per day, it appears that a season of 120 days only, would yield \$5000.00 profit, if \$1000 is allowed for contingencies over and above the labor expense. If a 150 day season was experienced an additional \$1500 profit should be won. From the above figures it appears that it would be a good investment to expend \$10,000 to attain this production in as much as the present equipment and ditch do not allow for either good operation or maximum possibilities.

Respectfully,

(signed) D. Ford McCormick

DFMCC:fm

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STATE DEPT OF GEOLOGY
& MINERAL INDS.

G. P. Dist.

Josephine County

Name: Big Four Placer

Owner: J. E. Bartlett, Route 2, Box 228, Grants Pass, Ore.

Location: One-half mile from the mouth of Pickett Creek.
Fourteen miles from Grants Pass.

Area: 137 acres of patented land in the west one-half of
Sec. 26, T. 35 S., R. 7 W.

History: Mined off and on for 40 years. Present owner ac-
quired the property in 1931 and knows very little
about the history of the property. About 20 acres
has been placered. Mr. Bartlett estimates about
60 acres of placer ground left.

General Information: Water right 38 second feet out of
Pickett Creek and tributaries delivered under 200 ft.
head. Gold about 9x40 to 9x80 in fineness. It is
pocket gold. Season being from November 15th to
June 1st. ~~For the description of the geology see~~
~~Page 37, Vol. 2, Oregon Mineral Resources.~~ Informant
did not visit property.

Informant: J. E. Morrison. 5/19/38.

*Handbook
p. 36*

WILLIAM F. HAYDEN

Consulting Mining Engineer
Suite 203-5, 108 North Sixth St.
Grants Pass, Oregon

March 24, 1939

Mr. J. E. Bartlett
Big Four Gold Mine
Route 2, Box 288
Grants Pass, Oregon

Dear Sir:

As per your request, I visited your Big Four Gold Mine located in the Pickett Creek Mining District, Josephine County, Oregon, January 27, 1939 and since that date have made several trips to complete my examination and while this report is made preliminary to a more extensive Geological and Engineering professional Report, I believe it covers the more or less salient features of the mine.

My Report follows.

Respectfully,

Wm. F. Hayden (signed)
Consulting Mining Engineer

WFH:G

OPINION:

It is our opinion that because of the fact that the Big Four Mine, which is now a profitable gold producer with few unfavorable obstacles in the way of continued production, its favorable economic qualities, location not only within a 30-minute drive of Grants Pass but also in the heart of a gold-producing district, rail, electric power practically at the door of the mine, the large known un-mined auriferous-bearing deposits, the uniform character of the gold, the favorable adjudicated water rights, etc., we believe because of its past gold recoveries, its present operating and production record not only warrants the expenditures outlined under Recommendations, but with the operation conducted equal to the present management should continue to be an outstanding gold producer.

Respectfully,

Wm. F. Hayden, (signed)
Consulting Mining Engineer.

WPH:G

March 24, 1939