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1119 MARINE BUILDING
VANCOUVER I.B.C.

August 7, 1962

British Columbia Power & Hydro Authority
970 Burrard St.
Vancouver, B. C.

Attention: Mr. R. W. Gross,
Manager, Land Division.

Dear Mr. Gross:

*Received from B.C. Hydro
and Power Authority on
a confidential basis
only. KDB
13.3.63*

Re: Bramhan Flats Placer Deposit

On July 10th I received your letter, referring to this property, and attached letter from James E. Thomson, Secy./Treas., Hudson Hope Mines Ltd., dated May 25, and post marked June 21, 1962.

I immediately applied to the Hudson Hope Mines office for information referred to in Mr. Thomson's letter. On July 27th I received, from the above office, the following reports:

1. A copy of a report from the Minister of Mines of B. C. - Annual Report for 1923.
2. A report to share holders of the Peace River Gold Dredging Co. Ltd., signed by Robert K. Peck, Secy./Treas., dated November 9, 1922.
3. Reports of assays of concentrates by Warnock, Hersey Co. Ltd. and G. S. Eldridge & Co. Ltd.
4. A lengthy report by V. L. Eardley-Wilmot addressed to Bramhan Flats Placer Syndicate of Edmonton and based on a four day visit to the property in August 1952.

1. GOVERNMENT REPORTS

There is no positive information in the above mentioned Government report regarding the gold content of this deposit. However, in another Government report by S. S. Holland, on placer gold production in British Columbia, it is stated that a total of 328 oz. of gold had been produced from this deposit, valued at \$18.65 per oz. and amounting to a total of \$8,890.00.

2. REPORT TO SHAREHOLDERS OF PEACE RIVER GOLD DREDGING CO.

This report contains no information regarding gold values contained in the gravels at Bramhan Flats.

3. REPORTS OF ASSAYS OF CONCENTRATES BY WARNOCK HERSEY CO. LTD. AND G. S. ELDRIDGE & CO. LTD

Both of these companies are highly reliable and, no doubt, the platinum and gold values which they found in the samples are correct, but they did not take the samples themselves and had no direct information regarding the volume of gravel represented by each of the samples.

Warnock Hersey Co. Ltd. reported "the assumed weight of the original samples of concentrates was 45 grams". A postscript on the assay certificate stated that the sample was assumed to be the concentrates from 5 cu.yds. of gravel.

G. S. Eldridge & Co. Ltd. stated that their sample represented 5 cu.yds., but they would have no way of checking this. It is evident that even a small discrepancy in volume measurements would seriously affect the per cu.yd. estimated value. It is a difficult, tedious and highly technical operation to obtain the exact volumes of gravel represented by any small samples of concentrates and few people, even including engineers, are capable or thorough enough to evaluate accurately placer gold deposits. Owners of such properties, and prospectors, seldom, if ever, appreciate the importance of accurate volume measurements. Therefore, these assay reports give no indication of the profits, if any, which might be obtained from this deposit.

4. EARDLEY-WILMOT REPORT

This report contains the only positive and authentic information concerning this deposit. It was presented to the Bramhan Flats Placer Syndicate of Edmonton and prepared in August of 1952.

Mr. Eardley-Wilmot is well known to me and is a retired Engineer from the Department of Mines and Technical Services, Ottawa. He is a thoroughly reliable gentleman and the author of many valuable reports on various aspects of Canadian Mining. I am not aware of his having had anything to do with placer mining and he could not have had any practical experience in such work. However, with his scientific and technical training, he would understand the general principals of placer sampling and would have access to text books on that subject. His approach to the problem was orthodox and systematic, but the time spent and the number of samples taken were quite inadequate to establish a realistic estimate of the values to be recovered from these gravels and the profit, if any to be realized. The maps and plans which accompanied his original report have been lost.

The most significant information contained in the report is: (A) six samples taken along the south shore of the property, over a distance of 1000 ft., averaged 44¢ per cu.yd., based on a price of \$35.00 per oz. This price ignores the fact that the gold previously recovered contained impurities which reduced its value from the then official price of \$20.76 to \$18.67 per oz., or by about 10%. Nevertheless, gravel containing 40¢ per cu.yd. could be profitably mined if sufficient volume could be established. (B) the remaining samples taken from the the north-south shoreline of the property averaged only 8½¢ per cu.yd., which is sub-commercial. (C) the only sample taken inland (#15), reported only 3¢ per cu.yd.

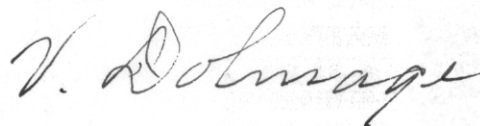
In placer deposits on river bars, such as Bramhan Flats, the gold is frequently concentrated along the shore lines. This is accomplished by the river currents washing away the lighter sand and gravel particles and leaving the much heavier gold particles. Because of this, samples taken from the shore line are much higher than those from inland and give a false impression of the over-all average. That this may have happened at Bramhan Flats is suggested by the much higher values obtained along the east-west, which is parallel to the river course, than those taken along the north-south shore and by the low value found in sample 15 which was taken inland.

CONCLUSIONS

It is evident that this deposit contains some gold, but it seems doubtful whether it is of any commercial value. However, the available data are too limited to enable any firm opinion as to its possible value. A firmer and more useful opinion could be formed, and better advice given, after a brief visit to the property of say one or two days and, with the help of a laborer and/or panner if one could be found.

It should be borne in mind, however, that to definitely determine the worth of this property would require a thorough sampling involving considerable drilling. This would probably cost as much as \$50,000 and even more if the profit margin happened to be small. However, if the first few samples were well taken and turned out to be far below commercial grade, further sampling might be unnecessary and the cost of sampling, therefore, much less.

Yours truly,



V. Dolmage.

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PLACER GOLD AT BRANHAM FLATS PEACE RIVER

Gold has been known to occur on this river bar for many years. Government records show that 328 ounces were produced but no doubt much gold was recovered which was not reported.

However, the production figures give little information regarding the values in cents per cubic yard or whether or not the gold was recovered at a profit. In evaluating this property only that gold which can be won at a profit need be taken into account.

The only records of any serious attempt to determine the values in cents per cubic yard were made by V. L. Eardley-Wilmot and Bernard Day.

NATURE OF THE DEPOSITS

It is well known that the Peace River valley east of the Rocky mountains is a very deep wide trench which is filled with fluvioglacial deposits to depths of more than 1000, and probably 2000, feet. Recent drilling to test various possible damsites has confirmed this.

These fluvioglacial sediments were deposited rapidly by melt water from receding glaciers. It is believed that their gold content came from primary deposits in the Rocky mountains and Ominica mountains. Under these conditions the gold could not possibly be present in more than very small amounts far below that required for profitable exploitation. Also, it would have to be in very fine particles to be carried so far. However, gold of this character and mode of origin is frequently concentrated along the margins of river bars by the river currents. These bar concentrations often

NATURE OF THE DEPOSITS (cont'd): - 2 -

support individual miners for short periods and in some instances ore replenished annually by the spring freshets.

Similar bar deposits occur on the Fraser, Thompson, Columbia and other rivers of British Columbia but all attempts to work such deposits by the use of dredges or other large equipment have been unsuccessful.

There is much evidence to indicate that the Branham flats deposit is of this type.

This deposit was briefly examined by the writer in 1927, at which time an attempt to win profits from it was being made but because of the low values was unsuccessful.

THE EARDLEY-WILMOT REPORT

This report was reviewed in my letter to Mr. Gross of August 7th. The maps which accompanied the report cannot be found and this made an interpretation of the report somewhat difficult. However, a visit to the property in September has overcome this difficulty.

Eardley-Wilmot is well known to me as a retired engineer from the Department of Mines and Technical Surveys now living in Victoria. He is the author of a number of valuable reports on various aspects of the Canadian mineral industry but I am not aware of his having any experience or training in placer mining which is a rather highly specialized phase of the industry.

However, from his general knowledge of mining he would understand the fundamentals of sampling which are common to all mine evaluations and he would have access to text books on the subject. His approach to the problem of evaluating this mine was logical and systematic and his findings are of value but the number of samples, the size of the samples, and the time spent were all much too small to establish the worth of the property.

THE EARDLEY-WILMOT REPORT (cont'd): - 3 -

Eardley-Wilmot's report dated August 14-17, 1952 is addressed to Branham Flat Placer Syndicate of Edmonton. Among the members of the syndicate is Geo. E. Midgley who has written reports on the property and expressed some strong opinions regarding its worth.

Eardley-Wilmot's treatment of the samples and concentrates was correct and accurate. However, the gold was separated from the concentrates by a very sensitive instrument known as the super-panner which would recover gold that could not be recovered by any practical field method or machine.

He divided his samples into two groups, each group being averaged separately.

Group (1) consisted of 5 samples taken from west to east along a 1000' line on the south side of the property near the river bank. This would be parallel to the general direction of river currents. Group (2) was taken along a north-south line along the river bank.

All the samples were taken from the top 3 feet of the deposit.

He calculated that the samples of the first group averaged $44\frac{1}{2}$ cents per cubic yard and those of the second group $8\frac{1}{2}$ cents per cubic yard.

The one sample taken inland carried only 3¢ per cubic yard.

Values in the range of 40¢ per cubic yard could be mined profitably if the deposits were large enough, that is, hundreds of thousands of cubic yards. Eardley-Wilmot's work proves that the top three feet of gravel along the south edge of the property carries about 44¢ per cubic yard and that the other parts tested contain only $8\frac{1}{2}$ cents per cubic yard which could not be mined profitably except on an extremely large scale. His work also indicates with some certainty that the deposit is of the river bar type, thus supporting the opinions of all the geologists who have examined the deposit.

BERNARD DAY REPORT

Bernard Day is unknown to me. His method of sampling the property as described in his report, that is by taking a number of random samples and bulking them into two samples for assay is unscientific and unreliable and cannot be checked. He failed to state to what depth the gravels were tested or how the volumes of the samples were measured.

His methods of placer testing by drilling were quite unorthodox. The methods now employed use a casing fitted with a cutting shoe of accurately determined diameter and the casing is driven the entire length of the hole always ahead of the bit. The entire "core" is recovered, the gold extracted and weighed. Unless the shoe of the casing is always deeper than the cutting bit, gravel from the sides of the hole will certainly fall in giving the sample a greater volume than that used in making the calculation, thus magnifying the estimated value per cubic yard. He states on page 2 of his report dated December 8, 1958, "The writer first visited Branham Flats property in July 1958 to investigate surface conditions and as far as possible check the statements contained in the report of Geo. E. Midgley, P.E., of Edmonton, dated December 1957, a copy of which is attached and made an addendum to this report." This is an unusual approach to the difficult problem of assessing the value of such a placer deposit. He states further, "The work done comprised a number of pannings the concentrated result of which were divided into two samples, number 1 being taken from an area explored by Mr. Roy Erickson of Edmonton who reported the results of bulk test of 320 cubic yards of sand and gravel bulldozed to a maximum depth of 15 feet and roughly measured by the writer to contain 300 cubic yards. Number 2 sample was taken from areas outside the bulk test portion of the

BERNARD DAY REPORT (cont'd):

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Erickson operation and a number of pits or small shafts and trenches in other parts of the main property." This, too, is an unusual approach for a professional engineer.

The concentrates of these samples were assayed by Bell Laboratory in Haileybury. Sample 1 representing 1 cubic foot yielded 10.50 milligrams of gold and 0.905 milligrams of platinum. Assuming 100% recovery and a gold price of \$32.00 and platinum \$82.00 per ounce, the total value in cents per cubic yard is 32.6001 cents. Sample 2 representing 2½ cubic feet yielded 10.17 milligrams of gold and 0.86 milligrams of platinum. At the above prices this works out at 13.7394 cents per cubic yard. (One ounce equals 31104 milligrams.) Judging from the manner in which the samples were taken it is safe to conclude that they represent only a thin layer near the surface.

Also, Day was "instructed to arrange for a preliminary churn-drilling program primarily to check the stratification of the deposit and to locate bedrock which was stated in the Midgley Report to occur at about 50 feet."

Mr. Day's account of his attempt at placer testing by drilling shows a lack of knowledge of the essentials of this method. To use a water-well drill with water-well drillers would alone defeat the purpose of the test. The complete lack of any systematic sample records, the idea of taking samples every five feet instead of continuously are further evidence of unfamiliarity with placer testing. The statement "that a portion of the values would be driven into the walls by the type of drill and bailer used" is the exact opposite of what long experience has taught experts in this field. They have invariably found that if the bit is permitted to operate beyond the bottom of the casing and shoe it greatly increases the diameter of the hole and therefore the volume of the gravel above that calculated from the measured diameter of the casing. His statement in his report, "From memory I would say that an average value of from 10 to 12 cents per cubic yard from the 5-foot samples bailed in gold and an undetermined but appreciable amount of platinum in four

BERNARD DAY REPORT (cont'd):

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of the five holes drilled during my visit," is certainly a casual way of reporting the results of what was to have been a scientific and professional test and one which must have cost his clients a large sum of money. Later in his report he states, "I have not been informed of the results of the tests carried on in the washing plant installed by the company as I recommended." It is difficult to understand on what evidence he bases his conclusion. I am unable to accept any opinions based on this drilling program.

Even so, Mr. Day's conclusions and recommendations as stated in his December 8, 1958 report only go so far as to say, "The results obtained from the assaying, bulk sampling and drilling to date would definitely suggest that this property has potential merit and warrants further development and exploration prior to any decision regarding the installation of a dredge. ". . . . The results of several sampling tests give values in gold and platinum which are of commercial importance and would if consistent yield a good economic return on either a washing or dredging program."

Briefly stated, his opinion is that the property warrants further testing.

ROY ERICKSON'S BULK TEST

Roy Erickson is unknown to me. The results of his test are so far out of line with those obtained by all others that they are difficult to accept at face value. If \$1.00 per cubic yard is to be found in this deposit all of the many attempts to exploit it would not have failed. I am at a loss to know why Erickson himself, who had a lease on the richest part of the deposit, did not work it to his own profit.

The findings of Warnock Hersey Co. Ltd. and G. S. Eldridge & Co. Ltd. were discussed in my letter of August 7th. No doubt they would determine the metallic content of the samples delivered to them with great accuracy but they would have no direct knowledge of the volume of gravel represented by the samples or whether the samples represented virgin gravel or concentrates. Therefore, their statements give no information concerning the value of this property as a placer mine.

THE GEORGE E. MIDGLEY REPORT

December 1957

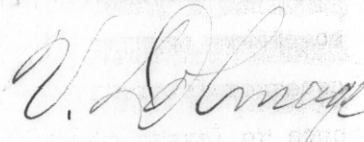
This report contains the results of no samples obtained by the writer. It contains only opinions based on hearsay and on other people's work, principally Roy Erickson's bulk sampling. No further comment is necessary.

On my visit to the property in September 1962 I found no signs of activity. Only a few random pieces of second hand or used equipment were seen with no engines for power. No excavations or tailings dumps of any size were found which would indicate that mining operations had been carried on in recent years. I was informed that some equipment had been taken into the property this season and out again prior to my visit.

It has been my opinion since my first visit to the property in 1927 that this is a river bar type of deposit, that from time to time streaks of gold concentrations have been formed by the river currents along the shore line and farther inland during occasional abnormally high freshets and that the deeper sediments which are 1000 or more feet deep contain only insignificant amounts of gold.

I can find no positive evidence among the reports submitted which would cause me to change this opinion. I would not recommend further testing.

Respectfully submitted,



V. Dolmage.

November 1, 1962.