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Spanish Creek Placer properties.  
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Report by J. B. Hobson.

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Toronto, Sept. 25th. 1905

John Hays Hammond, Esq., Mining Engineer,  
71 Broadway, New York.

Dear Sir:-

I have made a careful examination and instrumental survey of the Spanish Creek Hydraulic and drift Mines, together with an examination of the water supply available for use on the property and present the results thereof in the following reports and accompanying maps with seven geological sections.

General Description.

The Spanish Creek group of hydraulic and drift mines is located in the Quesnel Division of the Cariboo District, British Columbia.

The Mines are situated on the Spanish creek, a southeast tributary of the north fork of the Quesnel river, about twelve miles by trail from the town of Quesnel Forks, about twelve miles by trail and five miles by wagon road, a total of about seventeen miles from Bullion and about two hundred miles by wagon road and five miles of trail from the town of Ashcroft, on the Canadian Pacific Railway.

By reference to the accompanying maps it will be noted that the group includes eight placer mining leases aggregating four hundred and fifty acres of placer mining land.

The mining leases cover for a distance of eleven thousand nine hundred and thirty feet the auriferous deposits of an ancient river which vary from about fifty feet to over five hundred feet in depth.

The ancient river flowed north-westerly following the strike of the slates which form the bed rock and classified by Amos Bowman as the Cariboo schist. These slates and schists are similar to those of the mother lode of Central California; they are traceable on their north-westerly strike for several hundred miles and form the central gold belt of British Columbia.

Spanish creek was the richest of all the creeks tributary to the North Fork of the Quesnel river between Cariboo lake and Quesnel Forks. Its bed eroded deeply into the deposits along the west rim of the ancient river. It was mined by the early miners and proved rich from its confluence with the river up to the falls, a distance of about three quarters of a mile. The bed of the creek was not worked above the falls on account of the heavy flow of water encountered in the prospect shaft sunk by the early miners.

The gravel deposits of the ancient river as seen in the exposures on the east side of Spanish creek, are composed of well water-worn mixed gravel remarkably well stratified and free from large boulders. They are not indurated or cemented and may be

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classed as free gravel that can be readily caved and washed without the aid of explosives for bank blasting. The deposits are capped in places by a deposit of light silty clay that is not indurated and will aid materially in the removal of the gravel deposits to the dumps.

The only development work on the property is the drifting work done on the high grade strata lying along the west rim. The gravel included in the stratum is co part lively gravel and well waterworn cobbles and boulders; it dips rapidly to the east and for this reason could not be followed easterly more than thirty to forty five feet owing to the heavy flow of water which is seen following out of the drain tunnel (about one hundred inches) which is also above the bottom of the ancient river. The work was all done during the past fourteen years by four old men who own the Moore claims. The gravel extracted produced from one ounce to nine ounces of gold per ton foot sets of timbers six feet high and three feet advance and averaged over three dollars per cubic yard. Having visited the workings and witnessed the cleanups at least twice each year since 1892. I can vouch for the correctness of the statement as to the yield of the gravel extracted from the drift workings.

#### Samples of Deposits.

The exposures of gravel on the property were thoroughly sampled by the writer on three occasions, between the year 1892 and 1900, the results of which averaged above the bed of Spanish creek 23 cents per cubic yard. The last sampling was done in August of the present year under my personal supervision, by William K. Bissett, a California drift and hydraulic ~~miner~~ miner of thirty six years experience and acting as foreman of the Cariboo Hydraulic Mine for the past ten years and the result thereof is shown in the following statement;

#### Prospects obtained from Spanish Creek Hydraulic Mines.

Sample	Place Sampled	Pans	Wt of Gold. Troy grs.	Value in cents	Value per cubic yd.
No. 1	Gravel exposures n and s of Black Bear creek	20	0.52	1.88	.13 16/100
No. 2	Grav. expe. e. side Spanish cr.	40	2.1	7.14	.24 9/100
No. 3	"	40	1.7	5.78	.20 23/100
No. 4	"	20	.5	1.7	.11 9/100
No. 5	do above the works	40	3.2	10.88	.38 8/100
No. 6	Grav. expe. in Victoria <del>Swick</del> Ditch on west side Spanish cr.	10	.41	1.39	.19 16/100

Sample	Place Sampled	Pans	Wt of Gold, Troy grs	Value in Cents	Value per cubic yard.
No. 7	Samples from high grade stakes from 6 feet sect at each point marked on section 1 to 5 incl.	100	18	58.2	81.48
No. 8	10 sections of drift workings exposures 7 feet high	40	42.2	1.43	5.02
No. 9	Sample of 4000 lb from front face of workings		218	7.41	3.70 per ton
No. 10	1 square foot of schist bedrock broken 3" deep	1	50.2	1.70	1.70 per ton.

The highest result (38.08 cents per cubic yard) was obtained from the exposures on Section Fig. 5 the lowest (11.9 cents per cubic yard) from the exposures at Section Fig. No. 4 the average from the five sections being 21.64 cents per cubic yard without including any samples from level below bedrock exposures on Spanish creek.

#### Estimated Quantities and Value of Gravel Included in the Property.

The estimate is made on the assumption that the grade of the bedrock in the channel will not exceed one per cent and taking into consideration the narrowest cross section exposed by trims shown in sections Figs. 3 and 6 the cubic contents for each foot of channel is estimated at 14,000 cubic yards multiplied by the length of the channel covered by the claims makes a total quantity amount to 154,000,000 cubic yards.

The quantity available for washing by hydraulic process on sluice grade of six inches per box of twelve feet, or about four % which is ample for the removal of the gravel in Spanish creek deposits at a rate of five cubic yards per miners inch, used twenty four hours, and after making deductions for quantities that cannot be removed by the hydraulic streams from high benches on the rims, I estimate the quantities available to sluice grades at 70,000,000 cubic yards.

While the average of the samples taken from five exposures is 21.64 cents per cubic yard, I consider it best to use a lower figure and will calculate the estimated gold contents at an average of 10 cents per cubic yard for the top gravels.

The quantity of gravel lying below sluice grades and which must be worked by hydraulic and link belt elevator at 40,000,000 cubic yards. The only exposures presented for testing the value of the lower deposits are those of the Chinese miners who washed the shallow gravels along the east side of Spanish creek, the drift workings of the

Moore claims and the Stephenson claim, all of which shows a high grade gravel and warrant the opinion that the lower gravels will average 30 cents or more per cubic yard.

Top gravel, 70,000,000 c.y. @ 10 c per c.y.	\$ 7,000,000
Bottom grav, 40,000,000 30	12,000,000
Estimated gold contents of deposit	<u>\$ 19,000,000</u>

A drain tunnel started from the river west of Spanish creek at a point above high water mark and driven two thousand feet, would afford drainage for bedrock deposits which could be worked by drifting process, the gravel hoisted through an incline and washed into Spanish creek in the manner now being followed with the gravel drifts from the drift workings on the west rim shown on the map and sections.

#### Dump for debris.

The north fork of the Quessel river is a torrential of large volume. has a mean grade of about fourteen feet per miles and is capable of clearing dumps of the debris which result from the entire workings of the mines.

#### Timber.

There is an abundance of fir, spruce, pine and cedar timber in the dense forests surrounding the property. Sawed timber can be cut and delivered at the mines for \$20. per thousand feet and sluice ~~blocks~~ blocks at 10 cents per cubic foot.

#### Water supply.

A water supply to operate the mine on a large scale by hydraulic process can be secured from four sources as follows:

First. Black Bear Creek with a flow varying from one thousand to four thousand miner's inches, can be relied upon to afford fifteen hundred miner's inches of water through the open season, providing a dam is constructed about fifty feet across the narrows in the canyon and the Black bear meadows converted into a storage reservoir having an estimated area of about nine hundred acres.

Second. Sailor creek, a large stream having its source in the high mountains and emptying into the north fork of the Quessel river about three miles from Spanish creek. The watershed of Sailor creek is large and affords a flow of water varying from ten thousand miner's inches during the freshet of two or three months, falling gradually to one thousand miner's inches, which is gradually increased again by the fall rains. There are no reservoir sites on the watershed of Sailor creek but with a canal having a capacity for delivering four thousand miner's inches, it could be relied upon to afford an average of two thousand five hundred miner's inches through the open season.

Fourth. Spanish lake, by constructing a brach canal about one mile in length from the Consolidated Cariboo Hydraulic Mining Company's proposed Spanish Lake Canal from a point west of the forks of Black Bear with Spanish creek.,

The property can, if desired to operate it in connection with the Consolidated Cariboo Mines, be cheaply supplied with the Spanish lake water to which could be added the supply afforded by Black Bear creek.

Estimated cost of equipment for use of water fro Spanish Lake delivered from Consolidated Cariboo Hydraulic Mining Company's proposed canal;

1 mile of canal and flume, capacity 5,000 miners ins	\$ 16,000
5000 feet 22" to 30" hydraulic pipe	20,000
4 giants 10" butts	5,000
Portable sawmill and sticker	5,000
Electric light plant	10,000
Camp building	10,000
Outfit of mining tools and implements	5,000
7 miles of wagon road to connect with Govt road	7,000
2000 feet of 3' x '8 sluices at \$10 per foot laid	20,000
Engineering, management and incidentals	20,000
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	\$118,000

Estimated result of operating the Spanish Creek Hydraulic Mines with 5000 miner's inches of water basing this estimate on the average duty attained for the water used at the Consolidated Hydraulic Mines at five cubic yards per 24 hour inch, 5000, miner's inches will wash out each 24 hours 25,000 cubic yards on top gravel at 10 cents per cubic yard. Gross daily ~~max~~ product, 25,000 c. y. at 10 cents

Deduct cost of mining, including labour, lumber explosives and management,	
Estimated daily net profit	1,500
Number of working days per season	180

Annual net profit. \$270,000

Estimated result of working the bottom gravel with four link belt elevators for elevating the gravel and two hydraulic elevators for elevating the clearing the excavation of water so the bed rock can be cleared. The link belt elevators to be operated by water power impact wheels. Four link belt elevators constructed on similar plans to those used on modern dredges, will elevate in 24 hours gravel freed from large boulders by the use of derricks, 12,000 c.y.

Estimated daily gross, 12,000 c.y. at 30 cents	\$ 3,600
Deduct cost of mining at 10 cents per c.y.	1,200

Estimated daily profits	2,400
Working days per season, 180	

Annual net profit \$432,000

There are no physical difficulties presented to interfere with rapid and ~~uninterrupted~~ economical construction of canals or other works, and the property can be equipped ready for washing operations on the top gravel with water used from Spanish lake by the 1st. September, 1906.

If supplied with water supply from Black Bear, Sailor and Goose creeks the property can be equipped ready for washing operations on the top gravel by the opening of the mining season in April 1907.

Working on the bottom gravels should not be commenced until such time as the working face of the upper deposits is carried at least 1500 feet from the dump into the river fronting the Stephenson claim.

Respectfully submitted,  
Sgd. J. B. Hebson.

NOTE. Practically all the recommendations as to equipment made in this report have been installed and constitute the equipment before mentioned.