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M-DIAMOND VALE-OSCUA

OPEN FILE

DIAMOND VALE COAL SEAM

Description taken from the B.C. Saturday Sunset
October 31st, 1908

In the summer of 1906, the Diamond Vale Coal & Iron Mines, Limited, which previous to that time had been developing an extensive coal field on the Quilchena Creek in Nicola Valley, learned that the Nicola Branch of the C.P.R. would not for some time at least be extended past the town of Nicola, twelve miles short of Quilchena coal.

On that account the company purchased the coal rights under 2067 acres of land, together with 65 acres of surface from the original owners in the Nicola Valley near the confluence of the Nicola and Coldwater rivers in order that mining could be carried on where transportation for the product is available, and active operations on this new property have been continuous.

In July last a subsidiary company, The Diamond Vale Collieries Limited, purchased this property, together with plant and equipment, and for the past three months the work of development has continued under the new organization, the issued stock of which is owned and controlled by the parent company, which still retains the Quilchena holdings.

The following report on the Coldwater property has recently been made by Mr. W. E. Duncan, of Cardiff, Wales, engineer in charge of the mine, which has proven to be one of the most valuable coal deposits in British Columbia.

Diamond Vale Collieries,
21st October, 1908.

Report on Coldwater Property. Situation and Maps:

The Coldwater property of the Diamond Vale Collieries, Limited, is situated five miles from the head of the Nicola Valley, where the valley is at its greatest width, being about 2½ miles in width (north and south) and three miles east and west.

To the south the Coldwater River forms a portion of the boundary line, while the Nicola River a portion of the northern.

The Nicola Branch of the Canadian Pacific Railway passes through the property for about 2½ miles, with the railway depot and town of Merritt situated on the western boundary.

The Nicola Branch of the C.P.R. joins the main line at Spence's Bridge, 40 miles distant, and the following are railway distances to central points:--

<u>Distance from:</u>	<u>to</u>	<u>Miles</u>	<u>Rate</u>
Diamond Vale	Merritt	1	\$ 1.00
"	Coutlee	3	1.00
"	Coyle	6	1.00
"	Canford	11	1.00
"	Dot	21	1.00
"	Clapperton	31	1.00
"	Spence's Bridge	41	1.15
"	Ashcroft	66	1.55
"	Kamloops	112	2.00
"	Savona	88	2.00
"	Shuswap	145	2.00
"	Salmon Arm	178	2.25
"	Sicamous Junc.	198	2.50
"	Revelstoke	241	2.50
"	Enderby	219	2.50
"	Armstrong	228	2.50
"	Vernon	242	2.50
"	Okanagan Landing	247	2.50
"	Kelowna	275	3.30
"	Peachland	288	3.45
"	Summerland	302	3.55

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<u>Distance from:</u>	<u>To:</u>	<u>Miles</u>	<u>Rate</u>
Diamond Vale	Naramata	304	\$ 3.60
"	Penticton	310	3.70
"	Arrowhead	268	2.80
"	Lytton	64	1.55
"	North Bend	90	1.75
"	Yale	117	2.00
"	Agassiz	149	2.00
"	Harrison Mills	158	2.00
"	Mission Junct.	175	2.00
"	Hammond	188	2.00
"	Westminster Jn.	201	2.00
"	Port Moody	207	2.00
"	Barnett	210	2.00
"	Vancouver	219	1.80
"	Sumas Junction		2.00
"	Westminster	210	1.80
"	Seattle, Wash.	312	

HISTORY

The accompanying maps give: A. Map of District
B. Plan of property.

In 1891 coal seams were first exposed in the Nicola Valley, but no authentic report was made upon the coal area until 1904, when Mr. R.W. Ells, of the Canadian Geological Department, visited the district, and made a careful examination.

Dr. Ells' report was particularly favorable, and after carefully following his survey, the Company in 1906 secured their present holdings.

AREA AND TITLES

The area secured and now held by the Company consists of:

Mining Rights	2067 acres
Surface Rights	65 "

and the Company's solicitors, Messrs. Tupper & Griffith, of Vancouver, have certified that the titles are valid and in order.

MINERAL AREA AND PROSPECTING

The attached sectional drawing illustrates the coal basin of the property (as shown by development to September 1st), but in order to prove the ground in the first instance, the diamond drill was used, and bore holes were put down in the following locations:

	<u>Depth</u>	<u>Coal</u>
Bore No.1 On the banks of the Coldwater River	190 ft.	66 in.
Bore No.2 On the south bank of the Coldwater River 1 1/2 miles N.E. of No.1 Bore	137 ft.	60 in.
Bore No.7 On the north bank of the Coldwater River 1/4 mile north of Bore No.1	535 ft. 764 "	44 in. 49 in.

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Bore No.8	Depth	Coal
On the north bank of the Coldwater River	70 ft	39 in.
1800 ft from Bore No.7	222 "	38 "
	293 "	18 "

Cores taken from Bores Nos.7 and 8 were assayed by Mr. J.O'Sullivan, F.C.S., of Vancouver, and the following results obtained:

Bore No.7, coal at 535 ft.

Moisture	2.0 p.c.
Volatile matter	36.4 "
Fixed Carbon	50.2 "
Ash	10.5 "
Sulphur	.4 "
	<u>100</u> p.c.

60 p.c. coke, hard and coherent
Bore No.7, coal at 764 ft. ✓

Moisture	2.5 p.c.
Volatile matter	37.7 "
Fixed Carbon	54.8 "
Ash	5.2 "
Sulphur	.3 "
	<u>100.</u> p.c.

59 p.c. coke, hard and coherent

Bore No.8, coal at 70 ft. ✓

Moisture	2.3 p.c.
Volatile matter	38.6 "
Fixed carbon	50.3 "
Ash	8.5 "
Sulphur	.3 "
	<u>100</u> p.c.

58.8 p.c. coke, hard and coherent.
Bore No.8, coal at 222 ft. ✓

Moisture	2.1 p.c.
Volatile matter	37.5 "
Fixed carbon	54.4 "
Ash	6.0 "
Sulphur	.2 "
	<u>100</u> p.c.

60 p.c. coke, hard and coherent.

Mr. Sullivan's covering letter on the foregoing assays reads as follows:

"Gentlemen:-

"Please find my analysis report on the four samples of coal submitted to me by your Mr. T.J.Smith.

"I have pleasure in stating for your information, that the coal is bituminous, of excellent quality and compares favorably with the best Vancouver Island and British Columbia mainland product.

"It is a good coking coal and therefore, very suitable for steaming and domestic purposes."

From the logs of the diamond drilling the following strata is shown:

50 to 70 feet gravel, sand and clay wash, 70 to 700 feet, sandstone with bands of slate and shale, varying in thickness from 6 inches to 10 feet. In each boring the coal was shown to lie between a hard sandstone roof and bottom.

Prospecting for the lower measure is now being carried on, and indications are exceedingly favourable, coal in small cubes having been found in the wash from the prospect opening.

Prospecting for the outcropping seams to the north of the property has been diligently carried on, with the result that these seams have been exposed, and with their dip being to the south, it directly indicates that the basin of the upper measures lie well within the Company's area.

In addition to the above mentioned borings, prospecting and development, a considerable amount of work has been carried out on the outcropping seams to the south of the Coldwater River (now being operated by the Nicola Valley Coal & Coke Co.) and combining the whole under one heading, it is correct to state that the Company's property takes in practically the whole of the coal basin of the valley, and the coal seams may be tabulated as follows:-

Seam A	-	4 feet
Seam B	-	4 feet
Seam C	-	5 feet
Seam D	-	14 feet
Seam E	-	6 feet
Seam F	-	17 feet
		<hr/> 50 feet

DEVELOPMENT

Under this heading the work has been considerable.
No. 2 Shaft

This shaft measuring 6 by 13 feet, in the clear, has been sunk on the north bank of the Coldwater River, and at a depth of 68 ft., the coal seams shown by Bore Hole No.8 was won, the dip of the seam being to the North 30 degrees.

The development of the mine has been carried out by driving a slope to the dip for 300 feet, with 10 cross entries, 5 driven to the east, and 5 west.

The equipment and plant connected with this mine consists of: Trestle work and timber framing for tipples, and mine car track.

One 280 h.p. Babcock & Wilcox boiler. One feed pump. One feed water heater, with pump. One double cylinder hoisting engine, capacity 4 tons at 600 feet. One Ingersoll Sargent Air Compressor, capacity 350 cub. ft.

One belt drive engine and dynamo, 100 light, 16 c.p. Two No.7 Cameron pumps, capacity 160 gals. per min. One No.9 Cameron pump, capacity 200 gals. per min. One Snow Duplex pump, capacity 600 gals. per min. One 30 h.p. Loco. type boiler, Two Rand rock drills.

The buildings comprise:

Engine room, 28x40, boiler room, 28x47; wood framing, with galvanized corrugated iron roof, and sides. Pit head engine house. Blacksmith shop, 16x20. Warehouse, 20x30, oil house and magazine. Superintendent's office, 16x16. Office building, 28x36, two storeys.

Wooden framed saw mill is located in the colliery yard, and the equipment consists of: One h.p. steam engine, circular saw, gang edger, the capacity of the mill being 20,000 feet per day.

It has been decided to discontinue further work on the seam already exposed in this shaft, and that plans be made for sinking to the 134 foot level, the ultimate object being to develop on a larger scale than is now possible with the single shaft.

At a later date the question of sinking the shaft to a still further depth in order to win the lower measures, already proved to the south, may be well considered, and if decided upon, the Company would have an extensive area that could be worked from this mine.

No. 3 Slope

This is situated on the north west quarter of section 14, the portal of the slope being 24 feet above, and distant some 200 feet from the main line of the C.P.R. track, the direction of the heading being to the south, and the dip 32 degrees.

The entry, which is 10 feet by 6 ft. in the clear, was started on July 23rd, and square timbering has been used for a distance of 86 feet, beyond this the roof being solid enough to stand without timbering or props.

On the 20th of October the main slope was down 275 feet, measuring from the first set of timbers to the face of the heading.

The thickness of the coal seam, allowing for bone and rock shows an average thickness of 48 inches of coal, increasing in thickness and quality at greater depth.

A counter slope, 10 feet in the clear, was completed on the 6th of October, which provides for return air way, also walking road for men, horses, etc.

Underground development is being carried out upon the following plans:

At the 100 foot level, cross entry No.1 east was driven and is now completed, to connect with the counter, and if found necessary will be continued for a further air return.

At the 200 foot level No.2 east is now being driven, and will be continued for 60 feet, then driven to the rise to connect with No. 1 east.

At the 300 foot level, which will be reached about the end of October, the first main road will be turned, both east and west, and as soon as this is sufficiently developed the mine will be in an efficient condition to start regular shipments, and estimating on working double shift, with an efficient winding plant (it being proposed to use the hoist now at No.2 mine) the daily output should be from 300 to 400 tons.

The equipment and plant installed consists of: One 40 h.p. vertical boiler. One double cylinder hoisting engine. Two feed pumps. One direct coupled engine and fan. Mine cars, blacksmith's outfit, tools, stores, etc.

The buildings comprise: Engine house, temporary blacksmith shop, store and office.

The tippie is complete and fitted with screens that will enable four sizes of coal to be shipped, but no machinery is at present installed; which will be necessary as soon as the output is increased to four or five hundred tons per day.

From development work some 250 tons of coal has been mined, and as soon as siding accomodation is completed, this coal will be shipped.

The coal from the mine is cutting large, and is clean and bright, and samples of the coal taken from the 25 feet below the outcrop are reported by Mr. J.O'Sullivan, F.C.S. of Vancouver, as follows:

Water	1.5	p.c.
Volatile Matter	38.1	p.c.
Fixed carbon	55.6	p.c.
Ash	4.0	p.c.
Sulphur	.8	p.c.
	<u>100</u>	p.c.
Coke, 60 p.c. hard and firm.		
Water	1.0	p.c.
Volatile matter	43.7	p.c.
Fixed carbon	50.7	p.c.
Ash	4.0	p.c.
Sulphur	.6	p.c.
	<u>100</u>	p.c.

Coke, 55 p.c. Hard and Firm.

Estimating from actual figures during development, the cost per ton, mining 200 tons per day, including mine and colliery charges, should not exceed \$1.65 per ton of 2000 lbs. and calculating the percentages of lump, nut and small, the average price received at the colliery should not be less than \$2.85 per ton.

No. 4 SLOPE

This seam outcrops above the No.3 Slope seam, some 175 feet showing the same dip, and further proves that the basin of the coal field is well within the company holdings.

A heading has been driven to the deep for 25 feet, the seam showing 3 feet 6 inches of coal, increasing in thickness and quality in going down.

Plans are being made to open the seam at a level from which the coal may be conveyed direct to No.2 tippie, which will enable the output to be handed by one staff of surface men.

No. 5 SEAM

This is a seam lying 50 feet below No.3 Slope seam but until the measures are properly exposed no accurate report can be made.

SURFACE RIGHTS

The company own the surface rights of 48 acres at No.2 Mine, which is well located for all necessary equipment and future extensions.

At No. 3 Slope, 17 acres have been secured, the northern boundary being the C.P.R. Line fence for 1400 feet, and will prove valuable for colliery sidings, plant, buildings, etc.

TRANSPORTATION & MARKETS

The present railway facilities are favorable, and it being anticipated that at an early date a competitive line will be constructed through the valley, in addition to an extension of the present one, the question of transport will be one of great benefit to the company, enabling new markets to be secured at reasonable rates.

Existing markets have already been supplied with the Company's coal, including Vancouver, Kamloops, Revelstoke and Vernon.

A careful comparison of the No.3 coal has been made with other coals, particularly with those delivered into the Vancouver market, and there should be no difficulty in securing a very considerable share of that trade.

SEPTEMBER PRICES ARE AS FOLLOWS:	Per Ton
Banff anthracite, large	\$ 10.00
Banff Briquettes	10.00
Banff stove	10.00
Banff nut	9.75
Wellington	7.50
Wellington washed nut	6.50
Wellington Washed Pea	5.25

WAGES AND LABOR

The following wages are now being paid, and apply to the Nicola Valley District:

Mechanics	\$3.50 to \$4.00
Carpenters	3.50 to 4.50
Firemen	3.50 to 4.00
Miners	3.30 to 3.50
Helpers	2.50 to 2.75
Blacksmiths	3.50 to 4.00

TIMBER LIMITS

Not having made a careful examination of the limits, which are situated about 2½ miles south east of No.2 Mine, no concise details can here be given, but from inspection of limits adjacent to those held

by the Company there is no doubt that they will prove of considerable value, not only for colliery purposes, but a good revenue may be secured from sawn lumber, for which there is considerable demand.

The timber would be pine and fir. A cruiser has estimated that sixty million feet are available.

CONCLUSIONS

From the careful examination I have made, and with the development already carried out, I am satisfied that the company have the coal basin of the Nicola Valley underlying their property, and that the mineral and surface rights will, in the future, prove of exceptional value.

The location compared with other coal areas in British Columbia also enhances its value, and combined with existing railway facilities and the possibility of extensions, easy access to the coal measures, favourable labor conditions and a large mineral area, there should be no difficulty, even in depressed time of working at a profit.

The coal so far mined from No.3 Slope is of excellent quality, and compared with other coals delivered into the market it is possible to reach there should be no difficulty in securing the highest ruling prices.

To give any definite figures upon the quantity of coal underlying the property held by the company, would at the moment, be difficult, as it is quite probable that other seams will yet be discovered, but estimating upon those already known, and allowing 25 per cent. for faults, folds, pillars, etc., the total may be placed at 80 million tons.

There are a number of important items I have omitted from the foregoing report, as they are more or less dependent upon the future policy of the board and colliery management, but I will summarize on the most important sections;

COLLIERY EQUIPMENT

Until the lower measures on the northern portion of the property are well exposed and developed, it would not be advisable to make any great expenditure at No.2 Mine; as it would be more economical for the present to work from the outcrop to the deep, by means of slopes, than by combined shaft and slope, as would be necessary at No. 2.

The question of sinking a shaft in or about the centre of the property may be later considered, and should this be carried out, it would be quite possible to use to advantage No.3 Slope, and others that may later be driven, thus minimizing the capital expenditure in the shaft sinking.

The cost for shaft sinking to the upper measures, which would win three seams (including surface, steam plant, which might be so designed and erected as to be suitable for the permanent winding machinery) may be placed at \$60,000.

For the present I would strictly recommend the main expenditure being made on the No. 3 Slope, and that a portion of the plant now at No. 2 be used for the work.

To place No. 3 in an efficient state to handle, say 500 tons per day, the capital cost (including the removal of what plant is suitable at No. 2) would amount to, say \$15,000.

WASHING PLANT

Placing on the market clean and well sized coal is of the utmost importance, and the question of washing plant for dealing the nut and small coal, will require considerable attention as soon as the tonnage amounts to 500 to 600 tons per day.

COKE OVENS

This being a special department, I would strongly urge the sending of, say, 100 tons of small coal out for testing, and the results would then enable definite plans to be formed.

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I am of the opinion that the coking will become a very important section of the colliery, and that with care, an excellent quality of coke can be produced, with little competition to be met in the markets of the West.

In conclusion, I consider that the Company operating this Coldwater property should meet with success, and be able to establish themselves in a prominent position in the coal industry of British Columbia.

I have made no mention of your Company's coal holdings at Quilchena as my inspection of the property extended over one day only, but from what outcroppings of coal I examined I would say that this coal field is a continuance of the Coldwater measures, the division between the two being caused by the eruptives running north and south at the head of the Nicola Valley.

I am, yours obediently,

(Sgd.) "W. E. DUNCAN"