

Elko Has Extraordinary Water-power Cheaply Available for Industrial Purposes.

The following extract from the official report of Engineer W. J. E. Biker, of the Department of Hydrographic Surveys, gives an authentic description of the character and estimated force of the water-power that may be developed from the Elk River Canyon and Falls, at Elko. This report was accompanied by drawings showing in detail the construction required to develop this power. The report of Mr. Biker in full, illustrated by these drawings, may be found in the report of the Minister of Lands for the Province of British Columbia, for the year ending December 31, 1912, at pages 198 to 203 inclusive.

"According to instructions, I investigated the Elk River Canyon from a power standpoint, and give below the salient features drawn from the report thereon. **The Power-site is about one mile south-east of the town of Elko.**

"The Elk River rises in the Rocky Mountains, near the summit of the Kananaskis Pass and the Eastern Boundary of British Columbia with Alberta, from which point it runs in a southerly direction for a distance of 110 miles to its confluence with the Kootenay River, which is 13 miles north of the International Boundary. This river is subject to great variation in flow and the high, or flood water, period (by reason of the above lumbering operations and forest fires within the watershed) is getting gradually shorter and more violent in character, although I think the limit in this regard has been reached. To compensate for this condition there are many admirable economical reservoir sites which could be developed to control these flood waters and be made capable of contributing towards uniformity of stream-flow. H. B. Hicks, Field Engineer, gauged the river on October 22, 1911, and found 817 cubic feet per second. I gauged it about the same point on October 16, 1912, and found 846,226 cubic feet per second, which may be said to be almost low-water flow. In regard to high water, from indications of drift-wood and flood-wash, I estimate the flow to be **20 times the above or 16,924 cubic feet per second.**

"The watershed of the river above the power-site is 1700 square miles in area and very mountainous in character, resulting in a very rapid run-off. The Canyon and Falls are very fine from a scenic point, and much frequented by travelers and residents of the district.

"The plans and photographs accompanying this report show the character of the Canyon. The profile shows the available effective head to be 174.75 feet. Power possibilities at low water with an efficiency of 80 per cent. at the turbines is 13,443 horse-power.

"The site selected for the diversion has the advantage of being partially formed. A rock island standing 15 feet above the water and dividing the river can be utilized, since the foundation is solid rock at this point. The headgates and entrance to the main conduit can be taken out on the west side, and a submerged weir constructed on the east side, which will be long enough on the crest to take care of the flood-water. A wingboom, as shown, will be required to divert all floating debris from the headrace. The conduit would be 2600 feet in length, and may be constructed at a very moderate cost, contouring the west side of the Canyon as far as the lower pool where a waste spillway and pipes leading to the turbines could be placed. The power-house may be located on solid rock in the northwest corner of this pool, the site admitting of easy construction.

"It is surprising that this power-site has been allowed to remain undeveloped so long, for the district within a radius of 12 miles can easily be proved to have a "power market" to justify the initial expenditure. The main feature in regard to this power-site is its exceptionally low initial cost per horse-power developed. I hold the opinion that the works at the power-site alone, without distributing systems, could be installed for \$25 per horse-power.

"Another advantage is the ease and low cost of increasing the power produced by the construction of a reservoir immediately above the diversion-works as shown by a red dotted line on the plan, which could be made to develop 30,000 horse-power on day load at low-water flow.

"The plans show the available power possibilities, and the scheme taking advantage of the full head would develop 13,443 horse-power. **This could be augmented by storage to double the above horse-power."**

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