

HYDRO-ELECTRIC POWER DEVELOPMENT AT WASDELL'S FALLS.

THE sixth annual report of the Hydro-Electric Power Commission of Ontario contains a section devoted to water-power investigations that are being carried out by the engineers of the Commission on a number of rivers throughout the province. Among them, the one farthest advanced at the present time is

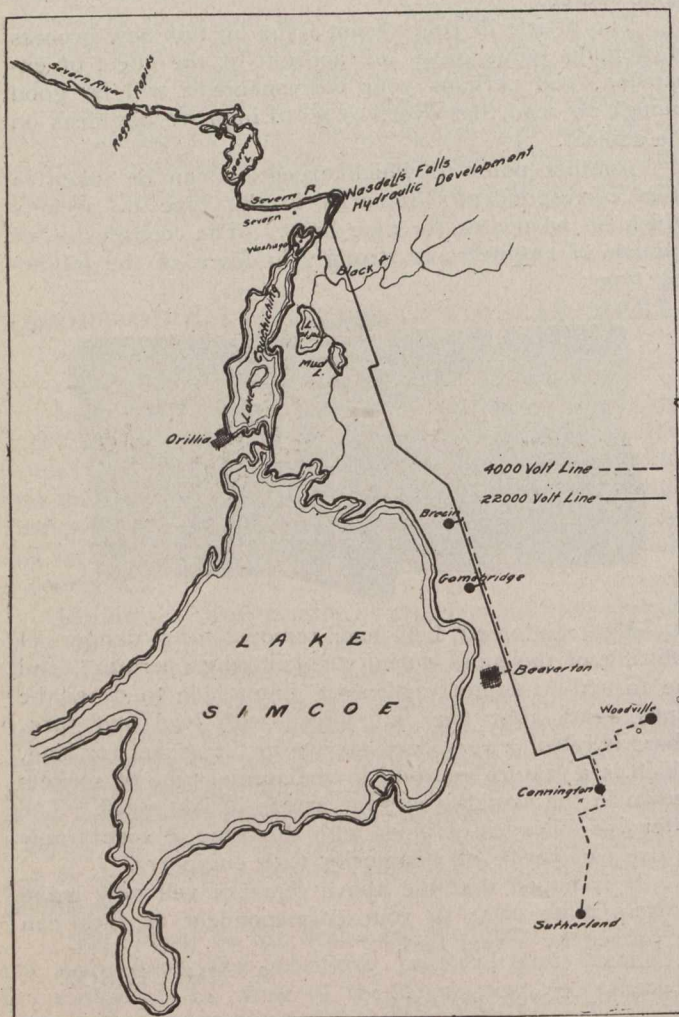


Fig. 1—Wasdell's Falls Development, showing Location and Projected Transmission Lines.

the development at Wasdell's Falls on the Severn River. These power studies are all carried out under the direction of Mr. F. A. Gaby, Chief Engineer of the Commission; by Mr. H. G. Acres, hydraulic engineer, and Mr. T. H. Hogg, assistant hydraulic engineer of the Commission. The information contained in their reports on the Wasdell's Falls project includes the following:—

The drainage area of the Severn River above the power site at Wasdell's Falls is about 2,080 sq. mi. About 700 sq. mi. of this is included in the watershed of the Black River, which joins the Severn about midway between Wasdell's Falls and the outlet of Lake Simcoe at Washago, as shown in Fig. 1. The maximum flow at Wasdell's Falls, as so far ascertained from gauge records and

discharge measurements, is 9,000 sec.-ft., or 4.32 sec.-ft. per sq. mi. of watershed. Under conditions that will obtain in the future, it is probable that the maximum discharge will never exceed 5 sec.-ft. per sq. mi., this low figure being due mainly to the potent regulating influence of Lake Simcoe, and to a small extent to the smaller lakes in the upper watershed.

The extreme minimum flow, during the period that the river has been under observation by the Commission, was 260 sec.-ft., or 125 sec.-ft. per sq. mi. The average flow for the period from October 1, 1912, to November 1, 1913, was 2,850 sec.-ft., or 1.37 sec.-ft. per sq. mi. This was one of the driest periods on record, so that the above is a fair indication of the minimum value of mean annual flow. On this basis the ratio of maximum to average flow is approximately as 3 to 1.

The area of Lake Simcoe is about 297 sq. mi., and when the Severn section of the Trent Canal is constructed the lake will be completely controlled by regulating dams at Washago. An annual storage draft of 18 in. may then reasonably be considered available, in which event the volume of available storage will be 12,420 million cu. ft., or 284,500 ac. ft.

The plant at Wasdell's Falls is designed for a peak capacity of 1,200 h.p. The Trent Canal works are designed to hold the tail-water level at El. 698, and with the proposed head-water level of El. 712.5, about 950 sec.-ft. of flow will be required to carry the peak load. On a 75% power factor basis the average flow will, therefore, require to be 700 sec.-ft.

The available volume of storage will provide the required average flow for 207 days in each year. Leaving an ample margin for unavoidable waste and inefficiency of operation, it is, therefore, evident that a sufficient supply of water may be anticipated at all times.

The power site at Wasdell's Falls is the only source of power from which the municipalities of Woodville, Sunderland, Cannington, Beaverton, and Brechin, may be economically served. These municipalities, in November, 1912, passed by-laws and subsequently contracted with the Commission for the supply of 625 h.p. Detailed investigations were immediately instituted, and estimates covering the cost of delivered power were submitted to the municipalities and found acceptable. The Commission, acting under authority of the Power Act, obtained an Order-in-Council covering the purchase of the site and the development of power at Wasdell's Falls, and early in 1913, work was begun upon plans and

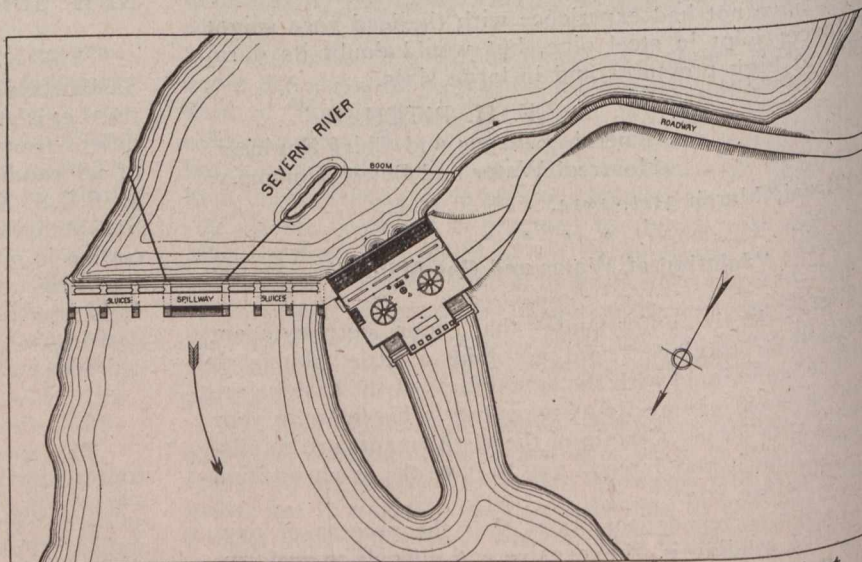


Fig. 2—General Arrangement of Wasdell's Falls Power Plant.