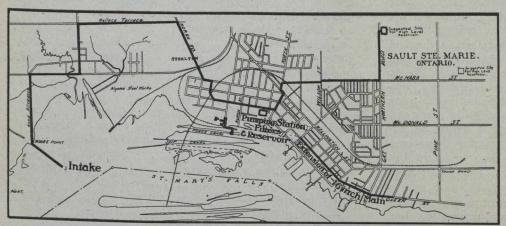
pansion will warrant the expectation of a total of 30,000 persons within a few years and that provision should be made to meet it. It is certain that electro-chemical and electro-metallurgic processes will be exploited as the scientists make new discoveries, and commercialize them. It is a fundamental principle of city planning to devise



Plan Showing Moore Point Scheme.

schemes which will be ample and satisfactory for the future. But it will be essential to construct only so much as may be necessary from time to time to safely satisfy the current requirements.

The Canadian Fire Underwriters' Association stipulate that the standard supplies for cities should be as follows:—

Table 2.—Showing the Requirements of the Underwriters.

Population	Standard fire streams U.S. Gallons	Normal supplies U.S. Gallons	Single style pumping capacity U.S. Gallons	Reservoir capacity U.S. Gallons
15,000	3,600,000	1,800,000	5,400,000	5,400,000
20,000	4,320,000	2,400,000	6,720,000	6,720,000
30,000	5,040,000	3,600,000	8,640,000	8,640,000
40,000	5,760,000	4,800,000	10,560,000	10,560,000

As a supply of water entirely by gravitation is not available for Sault Ste. Marie, pumping must be resorted

to. Water may be pumped from the source to a high-level reservoir, or it may be delivered by gravity to a reservoir in the city and afterwards pumped into the mains and the surplus discharged into a high-level reservoir.

It will be observed that a total population of 30,000 will require a normal supply of 3,600,000 U.S. gallons daily and a combined normal and fire supply at the rate of 8,640,000 U.S. gallons daily. It is evident that it would not be economical to pump long distances for fire extinction, therefore it will be necessary to build a reservoir to store sufficient water for this purpose.

In this connection it is desirable to point out that the capacity necessary to combat fires will involve about 60 per cent. of the pumping plant of the new schemes. During 1916 there were about 57 alarms which necessitated working the steam fire pumps for an aggregate of about 54 hours.

## Gros Cap the Ultimate Scheme.

The ideal site for an abundant supply of good water is that at Gros Cap. The results obtained by the International Joint Commission point to this fact. Shallow water extends from the shore for most of the distance up St. Mary's River and around Point aux Chenes, but at Gros

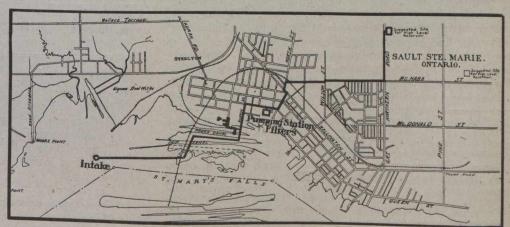
Cap the water is deep close to the beach. The intake, however, would have to be extended into the lake for a short distance to avoid the pollution which hugs the shore. Intake and main construction at this point would not be subject to disturbances due to dredging, building canals or other works which are inherent possibilities in connection with intakes located on St. Mary's River.

High winds will doubtless cause the drifting inshore of flocculent organic matter from the lake, but in all probability this would not be sufficient to warrant the need for filters. A slight measure of

chlorination, when necessary, would provide the required safeguard.

The principal disadvantage of drawing water at present at Gros Cap is the capital expenditure which would be involved in the construction of the trunk main. This main, laid to a reservoir, say, in Andrew Street, would be about 13½ miles long, and to Pine Street reservoir it would be about 15 miles in length. The frictional loss of head when delivering 6,000,000 U.S. gallons daily through a main, say, 15 miles long would be about 132 ft. of 27-inch. To these figures must be added about 30 ft. to overcome the ridge which parallels the lake from Gros Cap southward.

It would be financially impracticable to undertake a scheme of drawing water at Gros Cap at the present time, and it must, therefore, be set aside. In view of the fact that St. Mary's River schemes are liable to interference, especially if the industrial progress of the city is great and the shipping continues to expand, Gros Cap will



Plan Showing Old Beacon Rock Scheme.

doubtless be the place where the ultimate water scheme will be located. Meantime, it is desirable to bear in mind how the water from that source can be supplied to and from a part of any present schemes, without causing a serious dislocation of the works or abandonment of any part. This has been kept in view so far as possible in con-