Summary of Estimated Expenditure.

Capital Expenditure	for 30,000 pop.	for 20,000 pop.
Moore Point Scheme, No. 1	$754,160	$599,060
Moore Point Scheme, No. 2	728,970	570,790
Old Beacon Rock Scheme	757,680	588,830
Coldwater Creek Scheme No. 1.	802,758	582,274
Coldwater Creek Scheme No. 2.	628,870	538,120
Annual Cost—		
Moore Point Scheme No. 1	84,352	64,916
Moore Point Scheme No. 2	86,660	66,889
Old Beacon Rock Scheme	84,896	66,696
Coldwater Creek Scheme No. 1.	84,593	62,375
Coldwater Creek Scheme No. 2.	69,476	55,536

Availability, Permanence and Quality of Supply.

St. Mary's River is capable of affording an inexhaustible supply of water for all time. Unfortunately, it is polluted, but by efficient filtration the water can be made satisfactory and safe for public use. The intakes, however, are perforce to be in close proximity to the ship channel or in the part which may be used by vessels. The intake main has either to cross the water-front property of the Lake Superior Power Co. or over government property. The repairs and maintenance of submerged pipes and works would be difficult and expensive. Owing to the future expansion of the shipping, power and industrial enterprises it is doubtful whether an assured permanence of the intake works is possible.

Coldwater Creek is able to furnish all the water needed by Sault Ste. Marie for a long period. The water is excellent in quality and rendered pellucid by natural filtration. Repairs and maintenance can be easily carried out as all the works would be conveniently accessible either on the city's property or on public highways. The works would not be liable to disturbance, except perhaps to an insignificant extent due to the expansion of the city eastwards, when the concrete gravity conduit may have then to be replaced by cast-iron pipes to prevent any chance of the water being contaminated by crossing sewers.

Not Much Difference in Cost.

The difference in the cost of the St. Mary's River schemes is small. The Coldwater Creek Scheme No. 1 would cost approximately the same as the St. Mary's River Schemes, but there are no difficulties to overcome and the prices allowed are, therefore, possibly high. The Coldwater Creek Scheme No. 2 would cost less, both initially and annually, than any of the other schemes.

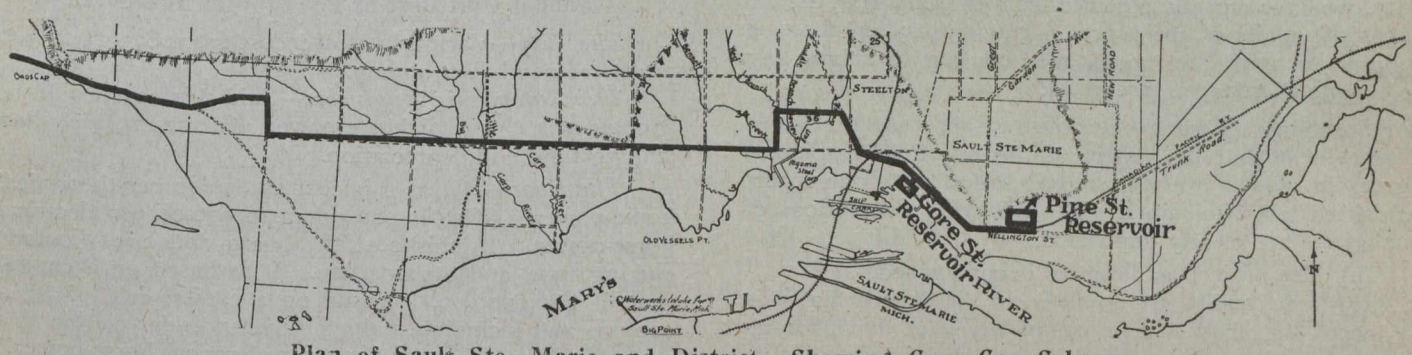
It is evident that Coldwater Creek Scheme No. 2 will be the most satisfactory, both from the sanitary and financial point of view. As the burden of having a reserve steam plant would be adequately compensated by increased reliability in case of fires, such a plant, or its equivalent in other forms of acceptable power, should be installed.

Temporary Measures.

Having regard to the terms of tenancy of the present pumping station, the following are suggestions as to temporary measures which may be permitted:—

Provided the sewage and tradewastes are intercepted and discharged sufficiently downstream, water could no doubt be abstracted from the tailrace near Huron Street. It could be conveyed by means of 24-inch diameter wood-stave pipes to a well adjoining the substation. This would mean a main about 2,300 feet in length, laid in a trench about 10 feet deep in a low-lying district. The pumps would be electric driven and placed either at the Gore Street substation or in an adjoining building. The water would be chlorinated and be pumped into the existing city mains.

The provincial sanitary engineer (F. A. Dallyn, B.A.Sc.) is prepared to approve of these measures, which must be considered as entirely temporary. The cost would probably range from $60,000 to $100,000, according to circumstances, but the machinery would be transferred to the new station when it was ready.



Plan of Sault Ste. Marie and District, Showing Gros Cap Scheme.

Control of Consumption of Water.

At the present time the water is measured by a pitot tube which, no doubt, has been calibrated, but owing to the small apertures it is liable to interference. Moreover, even if the operators are conscientiously careful in their records it will be more reliable if the records are made automatically, as would be the case with a Venturi meter. This meter would be available to control a chlorinator which employed chlorine of a constant quality, but its particular object would be to obtain a continuous record of the consumption during every moment of the 24 hours. With such an instrument the officials could periodically shut off various districts at night and observe the reduction in flow and thus localize the leaks.

This would enable inspectors to rapidly eliminate grievous waste, and later on to eradicate others, less pronounced, yet in the aggregate cause a serious burden on the waterworks plant. As this work would proceed, the night line on the charts would assume the characteristic curves to be found where the consumption is reasonable. Where services are exposed to risks of freezing, the plumbing should be rearranged and if thought advisable the work might be done by the city and assessed against the properties. Plumbing regulations should be formulated and enforced, prescribing the strength, quality and location of fittings. Meters should be installed on all connections for industrial purposes, and for certain large premises.