

Right Hon. Mr. GRAHAM: That is all I want.

Hon. Mr. TANNER: The previous part of the memorandum refers to the United States being able to draw on supplies of water which are not international. It says:

It should also be noted that the proposed treaty, for the first time in history, places the abstraction of water from Lake Michigan through the Chicago Drainage Canal under international control and prevents any further abstractions of water from the Great Lakes System to another watershed except by authority of the International Joint Commission.

That, honourable gentlemen, is really all I wish to say to the House. My only hope is that the information which I have gathered up for my own benefit may be of some service to honourable members.

Following are the memoranda submitted by Hon. Mr. Tanner:

1. Lowering of Water Levels.

In 1925, independent studies were made in this office, and by the U.S. Lake Survey, in order to determine the cause of the lowered lake levels as existing at that time, as compared with the higher levels of previous years. This study was confined to the levels of Lakes Huron, Michigan and Erie. The conclusions arrived at as a result of these two independent studies were practically the same. About 40 per cent of the lowering of lake levels was due to deficiency of rainfall, but the conclusion arrived at was that this was not of a permanent nature and that increased precipitation would follow with consequent raised levels. Records show that the levels over a hundred years ago were lower than those existing in 1925, and that cycles of high and low levels had followed. This has been borne out since 1925, as the levels of all the Great Lakes in 1929 reached a level of from 4 to 5 feet above that of the minimum during the low-water period.

The proposed improvement of the International Section of the St. Lawrence necessitates the regulation of the outflow of Lake Ontario. The Joint Board of Engineers derived a rule curve for this regulation and tested its reliability by its application to conditions as existing over the period from 1860 to date. Such a regulation does not contemplate increasing the natural outflow in the aggregate, but will conserve water during periods of high levels in order to increase the flow during periods of low levels.

The contention that increased evaporation due to increased pond areas will have any effect on the flow in the St. Lawrence River can best be answered by a glance at the following table:

Existing surface areas of the Great Lakes and St. Lawrence River to proposed site of lower dam and power houses at Barnhart Island..	95,190 sq. miles
Increase in area due to construction of proposed dams with consequent creation of ponds.	12½ sq. miles

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abstraction of water from Lake Michigan through the Chicago Drainage Canal under International control and prevents any further abstractions of water from the Great Lakes System to another watershed except by authority of the International Joint Commission.

2. Canadian and United States Canals in International Rapids Section.

In order for Canada to build a canal entirely on the Canadian side of the International Boundary through the International Rapids Section of the St. Lawrence River, permission would first have to be obtained from the International Joint Commission for the diversion of sufficient water from the river to supply lockage. Such a project, if built, would not provide for the development of any power and instead of river and lake navigation, would substitute about 45 miles of narrow canal. The estimated total cost to the Federal Government of the waterway from Lake Ontario to Montreal by substituting such a project in the International Section would be increased from about \$40,000,000 as estimated under the proposed treaty and Ontario agreement to about \$195,000,000.

The facilities provided by such a project would be available for use by United States shipping on the same basis as the present canal system.

The United States can build a deep waterway from the foot of Lake Ontario at Oswego to Albany on the Hudson River without reference to any international body, as the water supply for such a canal can be obtained locally.

The deepening of the Hudson River up to Albany was completed this year to a depth of 27 ft. and the completion of the Welland Ship Canal by Canada means that the gap between Oswego and Albany is the only portion remaining to be completed to provide a deep waterway for the United States from the middle west to the sea. This route would be open for at least one month each year longer than Montreal and with rates cheaper out of New York than out of Montreal, might provide cheaper transportation than the St. Lawrence route. This project has been studied by U. S. Army engineers and they have reported that the benefits accruing therefrom would more than balance the carrying charges. Action on this project has been withheld however, pending negotiations with Canada on the St. Lawrence.

There is no doubt that the all-American route, if built, would be a very serious threat to the St. Lawrence route.

(See also Mr. McLachlan's evidence before the Senate Committee, 1928—page xxxix).

Memo re Water Supply for All-American Waterway, Oswego-Hudson Route.

The Deep Waterways Board of the United States presented two solutions of the above problem in their report of 1900.

These two plans for water supply were called respectively the "high-level" and the "low-level" plans and were both based on obtaining the requisite water supply for operation of the proposed canal from sources other than diverting water from any international river, although both plans contemplated taking some water from rivers tributary to Lake Ontario.

Under date of February 25, 1926, a Board of Engineers of the U. S. Corps of Engineers submitted a report on a "Deeper Waterway from the Great Lakes to the Hudson River." (House of Rep. Doc. No. 288, 69th Congress,