

RECOMMEND OAK POINT AS AN AUXILIARY PORT

Report of Engineer Swan
and Master Mariners Re-
garding Harbor Develop-
ment on the St. Croix
River.

No. 406 Lake of the Woods Building,
Montreal, March 4, 1914.
Hon. Robert Rogers,
Minister of Public Works,
Dominion of Canada.

Sir: St. Croix River, Charlotte county,
N. B.

Having been honored with instructions from you to examine into and report on the St. Croix River, in Charlotte county, New Brunswick, with a view as to its suitability or otherwise for a new deep water harbor which would be open all the year round for the largest class of merchant shipping, beg respectfully to submit the following:

On 20th November, 1913, I left the Port of St. John, N. B., by tug boat and steamed down the Bay of Fundy to the estuary of the St. Croix River, proceeding by way of Head Harbor Passage, an opening between Campobello Island and Deer Island and distant some fifty miles from St. John. The River St. Croix forms the international boundary between the State of Maine, U. S. A., and the Province of New Brunswick, Canada. Having examined the entrance I continued up the river, passing the Town of Eastport, Maine, on the left, till the Town of St. Andrews, about fifteen miles from the mouth of the river, was reached. I examined the approaches to the Port of St. Andrews and possible development from Passamaquoddy Bay, and landing, examined the shore, after which I proceeded nine miles further up the river to Oak Point, the head of deep water navigation and situated about five miles south east of the Town of St. Stephen. I carefully examined the headland of Oak Point and the Ledge, as well as the Canadian side of the river, and later again visited the Port of St. Andrews also making myself conversant with railway facilities in the vicinity of St. Stephen and St. Andrews, and the feasibility or otherwise of extending the railways with a view to the construction of railway terminals alongside deep water wharves. I visited the principal industries in the vicinity of St. Stephen, within a radius of about ten miles and inquired into the amount of present traffic, the existing conditions for handling same, and the reasonable probabilities for future development.

I again visited the river and vicinity on 23rd and 24th February, 1914, and after exceptionally severe weather and found the river quite open for navigation. Thin ice had formed over it between Oak Point and St. Stephen, but a tug boat passed up without any difficulty whatever.

On this later visit, with your approval, I arranged for the St. Croix River Navigation Company, a subsidiary of the Dominion of Canada, that they should nominate three experienced navigators to accompany me and give me their opinion of the suitability or otherwise of the river and approach thereto from a navigable point of view. The representatives nominated and who accompanied me were, Captain Gillies of the Donaldson Lines, Captain Elliott of the Canadian Pacific Railway Lines, and Captain Kenny of the Head Lines, along with whom I again inspected the river on board the S. S. "Lansdowne" kindly placed at my disposal by the marine and fisheries department.

Present Conditions
Copy of Navigator's Report is appended hereto.
The St. Croix River is navigable for the largest class of vessels for about twenty-five miles in a northerly direction from Campobello Island and the Bay of Fundy. It is its narrowest part between Deer Point and Dog Island, near Eastport, the river is about 2,600 feet wide and it has an average approximate depth at low water the whole way up to Oak Point, varying from about forty feet to 350 feet. For about eight miles of its course, vessels would pass through Passamaquoddy Bay, which is approximately about twelve miles long and six miles wide and which, having deep water, would afford magnificent anchorage if desired. The river and bay are at all seasons of the year free from ice, but there is a variation in the tide of about twenty-four feet between high and low water. The approach for vessels entering the St. Croix River from the Bay of Fundy would be from Grand Manan Channel between Grand Manan Island and Campobello Island, thence by Head Harbor Passage, and I understand the Grand Manan or North Channel is looked upon more favorably by navigators than is the channel to the south of Grand Manan Island.

Existing Harbors.

At present the only shipping facilities on the Canadian side of the St. Croix river consist of several small piers at St. Andrews belonging to the Canadian Pacific Railway, which have a depth alongside of about 10 feet at low water, and further up a number of small timber jetties or wharves at the town of St. Stephen. These latter have an approach from the head of deep water navigation at Oak Point, a distance of about 5

miles, by a channel which is being now dredged by the United States government to a depth of about 12 feet at low water. Their object is to permit of light draught vessels reaching the town of Calais, situated on the American side of the St. Croix River immediately opposite the town of St. Stephen, the two towns being connected by a highway bridge carrying tramways.

Fog in the Bay of Fundy.

I have made careful inquiry regarding the prevalence of fog, and from the official returns it appears that the St. Croix River is very much less affected by thick weather than other parts of the coast on the Bay of Fundy, and apparently there is practically little or no fog during the five winter months, November to March inclusive.

The following are extracts from the government records, from which it will be seen that in the year 1913, for the five winter months there were only three days of fog, while for a practically similar period in 1912 there were six days.

Record of Fog, Eastport, Me.

| Year 1912 | Year 1913 |
|-------------------|-------------------|
| Month | Month |
| Days of Dense Fog | Days of Dense Fog |
| January.....0 | January.....3 |
| February.....0 | February.....0 |
| March.....1 | March.....3 |
| April.....5 | April.....1 |
| May.....6 | May.....7 |
| June.....3 | June.....1 |
| July.....9 | July.....9 |
| August.....10 | August.....11 |
| September.....2 | September.....4 |
| October.....0 | October.....0 |
| November.....1 | November.....0 |
| December.....1 | December.....0 |
| Total.....36 | Total.....44 |

Record of Fog at Partridge Island, Near St. John.

The following figures give the number of hours in which the fog alarms sounded at the several points during the years 1912 and 1913:

| Place | 1912 | 1913 | Average for 5 Years |
|------------------|--------|--------|---------------------|
| Partridge Island | 1667 | 1305 | 1486 |
| Head Harbor | 1314-2 | 1429-2 | 1372 |
| Cherry Island | 1167-2 | 1204-2 | 1136 |
| St. Croix Island | 350 | 440 | 395 |

It will be seen from the above, that the duration of fog, snow, or vapor, the three conditions which call for the operation of the alarm at St. Croix Island in St. Croix Harbor, only 27 per cent. of that at Partridge Island at the entrance of St. John Harbor. It is further to be noted that immediately on the turn of Head Harbor, Campobello, the fog conditions began to improve.

Town of St. Andrews.

The town of St. Andrews is situated on the east bank of the St. Croix

River overlooking Passamaquoddy Bay. There is a population of about 1,000, which is steadily increasing. The town is rapidly acquiring popularity as a summer resort. A great many large and expensive houses have recently been built, but unfortunately for the trade of the town, are only occupied during the summer months. Similarly the Canadian Pacific Railway have recently completed a large modern hotel, but it also is closed during the winter. The Canadian Pacific Railway have a connection with their wharves and there is a station for passenger traffic. The district immediately surrounding is devoted to agriculture and lumber.

There are in the vicinity several large fish industries, the water contiguous to St. Andrews being among the finest fishing waters in Canada. A very large and most modern equipped sardine cannery plant is located near the town, but is unfortunately closed at present; it is hoped, however, that it will soon be reopened. I am informed that the locality adjacent to St. Andrews abounds in black and red granite, but this industry has not yet been developed. Briefly, St. Andrews is at present a residential summer resort with practically little or no industry.

Town of St. Stephen.

The town of St. Stephen is situated on the north bank of the St. Croix River about five miles west from the head of deep water navigation at Oak Point. The river between Oak Point and the town has a channel with 12 feet of water at low tide and suitable for light draft traffic.

The towns of St. Stephen and Milltown, immediately adjoining and practically forming part of St. Stephen, have a population of about 5,000 and within a radius of five miles there is a more or less industrial population of about 15,000. About sixty years ago the town of St. Stephen had a very flourishing shipping traffic. I am informed that as many as twenty-five of the largest vessels then in the ocean trade have been seen at one time in the harbor known as the Ledge, situated between Oak Point and the town of St. Stephen. These vessels were mostly engaged in the transport of timber across the Atlantic and it was owing to the heavier class of timber in the immediate vicinity having been used up, that the traffic gradually disappeared.

Present Industries in St. Stephen and Neighborhood.

There at present the following industries in St. Stephen and neighborhood: The Dominion Fertilizer Co. Ltd., having an output of about 25,000 tons annually.

The Mann Axe and Tool Company, handling about 4,000 tons.

Messrs. Ganong Bros, sweet manufacturers, handling about 3,000 tons.

Messrs. Hadey and Son, handling about 5,000,000 feet of lumber.

The Canadian Cotton Factory, handling about 1,000 tons.

Wood and Pulp Mill with an output of over 100 tons daily.

The Eastern Pulp Company, handling 50,000 to 75,000 cords of pulp wood.

Cost to the extent of from 50,000 to 75,000 tons per annum.

In addition to which there is a considerable local output in agricultural products, chiefly potatoes, this amounting to about 40,000 tons annually. The town possesses an electric tramway encircling the three towns of St. Stephen, Milltown and Calais.

Town of Milltown N. B.

The town of Milltown, adjoining St. Stephen, has a population of about 3,000 and in addition to several lumber mills, is the site of the St. Croix Cotton mill, employing about 1,000 hands.

Town of Woodland, Maine.

The town of Woodland, close to St. Stephen, has a population of about 2,000 and has extensive paper mills, known as the St. Croix Paper Company, with an output of about 50,000 tons finished paper per annum.

City of Calais, Maine.

The city of Calais is within about two hundred yards of the town of St. Stephen, being directly opposite on the other side of the river and connected by a bridge and a tramway. It has a population of about 7,000 and is the seat of the chief lumber industry of the St. Croix river. It has also two shoe factories and is the eastern terminus of the Maine Central Railway, which company has also quite extensive machine shops there.

Hydro Electric Power.

There is considerable undeveloped hydro electric power in the vicinity of St. Stephen. The St. Croix river has a water shed of over 2,000 square miles and has a very large percentage of lake surface, so that from its physical condition the rainfall is somewhat controlled and runs off gradually. The St. Croix Paper Company have already developed some 10,000 H.P. at Woodland and are now developing a further 9,000 H.P. at Grand Falls, seven miles further up the river, and there is still a vast amount of power on the Canadian side undeveloped at Milltown, upper and lower dams. This power could be utilized for operating an electric railway or tramway between St. Stephen and Oak Bay and other industries.

Railway Connections.

As shown on Plan No. 1, the only railway in proximity to either St. Andrews or Oak Bay at present is the Canadian Pacific Railway which has at St. Andrews a terminal close to the river and already connected with the small wharves there. St. Stephen is now one of the terminal points of the Atlantic Division of the Canadian Pacific Railway, and a very good railway connection could be made between the existing railway terminal and The Ledge on St. Croix river, distant between 3 and 4 miles, and by continuing the railway to Oak Point and encircling same, another connection could be made with the existing Canadian Pacific Shore Line between St. John and St. Stephen at some point near Oak Bay Station.

Conclusions Arrived At.

In considering the St. Croix river for shipping purposes and as a possible auxiliary to St. John, more particularly for the extensive traffic during the winter months, it seems to have many attractions, such as—It is some 50

miles nearer the mouth of the Bay of Fundy than is St. John. The distance from Montreal to St. John by Canadian Pacific Railway is 433 miles. The distance from Montreal to Oak Bay, St. Stephen, by the Canadian Pacific Railway, is 438 miles, or thereby, and if in the future a branch line is constructed from Milltown to Oak Bay, this would shorten the total distance from Montreal to Oak Bay to 410 miles. The river St. Croix and Passamaquoddy Bay is comparatively well sheltered water, never closed by ice and protected from the swell of the Bay of Fundy by numerous islands near the mouth, and as there is deep water right close in shore to the sides of the river and bay, practically no dredging whatever would be necessary to form a shipping channel. Leading lights for the guidance of shipping at night would of course have to be provided; probably some joint agreement regarding cost of same could be made with the United States.

Assuming therefore that the river offers reasonably attractive facilities for shipping, the question arises as to what part of the river should be developed first; whether St. Andrews ought to be the terminal or some point further inland, and I have no hesitation whatever in recommending that, because of its geographical position as being the furthest point inland suitable for deep water navigation, Oak Point overlooking Oak Bay should be selected as the terminus. Oak Bay is a magnificent site reached by a comparatively straight stretch of river nine miles further inland than St. Andrews, with ample room for swinging and excellent accommodation for the construction of terminals and facilities. In addition to which there is already the Town of St. Stephen a short distance off with numerous industries, moderately large, and varied commercial activities, affording an absolutely certain considerable amount of traffic the whole year round.

The land at Oak Point slopes gently towards the river and bay and is all cleared and at present under grass. It is not that St. Andrews does not afford many more excellent points suitable for deep water terminals, but simply that by going further inland, the rail haul is shortened and there already is considerable local business; nevertheless if it should be considered advisable to construct one or more wharves at St. Andrews, the side of the river from Joe's Point upwards would be most suitable.

Recommendation.

I therefore recommend with great confidence that wharf areas, railway terminals, roads and freight handling facilities in general, should be designed on a comprehensive, practicable scale, and constructed by degrees at Oak Bay as may be necessary.

Outline of Proposed Works.

I have shown on Plan 1 accompanying this report the approximate relative position of the proposed terminal to the surrounding towns, and the railway connections. Complete surveys are now in course of being made and horizons are being taken to ascertain the nature of the strata at Oak Bay, and should this report meet with your approval, dotted plans and estimates of cost will be prepared.

Approximate Estimated Cost.

To commence with, I would not recommend that more than three steam ship berths should be provided, say probably about 1,800 Ldn. feet of wharfage along the shore, having forty feet of depth at low water; this shore wharfage could be extended as

required and ultimately a number of piers could be constructed projecting out from the shore wharves into the river. The cost of the first part of the scheme would of necessity cover the railway connections for the whole and would also include the lighting and buoying of the river, etc. From the information at present available I estimate the cost of providing 1,800 Ldn. feet of concrete wharf, with sheds, mechanical equipment, lighting, and railway connections and roads, but not including the cost of the site at about two and a quarter million dollars.

In conclusion, it is a recognized fact that no port in the world that has kept its facilities ahead of actual requirements, but has experienced immense development followed by great increase of trade and population.

I have the honor to be, Sir,

Your obedient servant,

A. D. SWAN,
M. Inst. C.E.
M. Inst. N.E.
M. Can. Sec. C.E.

St. John, N. B., Feb. 26, 1914.

THE CAPTAINS' REPORT.

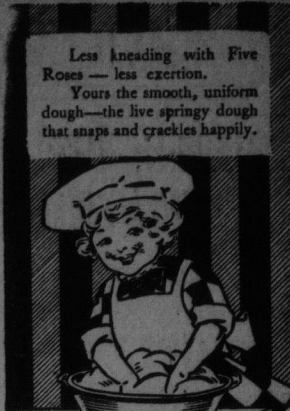
We the undersigned, by arrangement with Shipping Federation of Canada, at the request of Mr. A. D. Swan, C. E., N. E. left St. John, N. B., at 7 a. m., Tuesday, February 24th, on board government steamer "Lansdowne" to inspect entrance to Le tang Harbour, entrance to St. Croix River and Oak Point near St. Stephen, N. B., light northerly wind, clear and fine, temperature—6.

Met Mr. A. D. Swan, C. E., at Le tang, noon, and proceeded to St. Croix River by open channel and Quoddy Head.

L'Etang Harbor.

Very narrow entrance about 900 feet. Good commodious harbor inside. Entrance open South (Magnetic) and exposed to wind and sea S. E. to S. W. Suitable for steamers of moderate draft.

(Continued on page 8)



Less kneading with Five
Roses—less exertion.
Yours the smooth, uniform
dough—the live springy dough
that snaps and crackles happily.

22

**Five
Roses
Flour**
Not Bleached Not Blended

MADE BY THE FLOUR MILLING COMPANY, LIMITED, TORONTO.

Many Doctors Eat



Kellogg's
CORN FLAKES
Every Morning

Simply Wonderful!
THE SATISFACTION AFTER USING
DR. WILSON'S HERBINE BITTERS

For one week. That dull, tired, sleepy, feeling has gone, and you feel a new person, full of life and vigor. Don't put it off till "tomorrow" start Today. Price 25 cts. and \$1.00 per bottle. At all druggists in Canada.
Sole Props. The Brayley Drug Co. Ltd.

HERBINE OINTMENT
a good old remedy for
chopped hands.

St. John, N. B.

INSIST ON HERBINE

HERBINE OINTMENT
For Cuts,
Burns and
Skin Diseases.

Votes For Women

THE STANDARD'S Suffrage Edition.

Prepared and edited by the Women's Suffrage
Association of St. John, will appear on

MONDAY NEXT

It will contain a great many articles of interest on
the question of suffrage and numerous expressions of
opinions from the men of prominence in St. John and
elsewhere.

Committee in Charge:—Mrs. W. F. Hatheway,
Mrs. E. S. Fiske, Mrs. F. B. Cowgill.

"IT'S GREAT"

Is always the verdict after people have tried

**BROWN'S
Four Crown Scotch**

Make this whisky your choice.
It costs no more than the ordinary.

FOSTER & COMPANY, ST. JOHN
Agents for New Brunswick