

SKAGIT RIVER, WASH., FROM SEDRO WOOLLEY TO  
BAKER.

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LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

WITH A LETTER FROM THE CHIEF OF ENGINEERS, REPORTS ON  
EXAMINATION AND SURVEY OF SKAGIT RIVER, WASH., FROM  
SEDRO WOOLLEY TO BAKER.

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AUGUST 15, 1912.—Referred to the Committee on Rivers and Harbors and ordered  
to be printed, with illustration.

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WAR DEPARTMENT,  
*Washington, August 15, 1912.*

SIR: I have the honor to transmit herewith a letter from the Chief of Engineers, United States Army, dated 14th instant, together with copies of reports from Capt. Arthur Williams and Maj. J. B. Cavanaugh, Corps of Engineers, dated November 5, 1910, and February 29, 1912, with map, on preliminary examination and survey, respectively, of Skagit River, Wash., from Sedro Woolley to Baker, made in compliance with the provisions of the river and harbor act approved June 25, 1910.

Very respectfully,

HENRY L. STIMSON,  
*Secretary of War.*

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

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WAR DEPARTMENT,  
OFFICE OF THE CHIEF OF ENGINEERS,  
*Washington, August 14, 1912.*

SIR: I have the honor to submit herewith, for transmission to Congress, reports dated November 5, 1910, by Capt. Arthur Williams, Corps of Engineers, and February 29, 1912, with map, by Maj. J. B. Cavanaugh, Corps of Engineers, on preliminary examination and survey, respectively, of Skagit River, Wash., from Sedro Woolley to

Baker, authorized by the river and harbor act approved June 25, 1910.

Skagit River is a tributary of Puget Sound and is now being improved under the general appropriation for Puget Sound and its tributaries, which provides for the removal of snags and obstructions. It is also being improved under a special project which provides for the construction of training and regulating dikes, a mattress sill, and the closing of subsidiary channels at the delta of the river. Those in interest desire a channel 6 feet deep throughout the 32 miles from Sedro Woolley to Baker, which, with the work already projected, would provide a 6-foot channel from Baker to Puget Sound, a distance of about 60 miles.

To determine the feasibility and advisability of such an improvement a survey was considered necessary and was made. As stated in the report thereon, the survey fully demonstrates that no improvement of value can be secured by methods of regulation. The only feasible improvement is by locks and dams which can not be secured at a cost commensurate with the resulting benefits. The district officer is therefore of the opinion that it is not advisable for the United States to undertake the improvement of this section of river at this time further than by the removal of snags and other obstructions as already provided for. //

These reports have been referred as required by law to the Board of Engineers for Rivers and Harbors, and attention is invited to its report herewith dated April 2, 1912, concurring in the opinion of the district officer.

After due consideration of the above-mentioned reports, I concur in general with the views of the district officer and the Board of Engineers for Rivers and Harbors, and therefore, in carrying out the instructions of Congress, I report that the improvement by the United States of Skagit River, Wash., from Sedro Woolley to Baker, in the manner apparently desired by the interests concerned as described in the reports herewith, is not deemed advisable at the present time.

Very respectfully,

W. H. BIXBY,  
*Chief of Engineers, U. S. Army.*

THE SECRETARY OF WAR.

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REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS  
ON SURVEY.

[Third indorsement.]

THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS,  
*Washington, April 2, 1912.*

Respectfully returned to the Chief of Engineers, United States Army.

In its indorsement of November 25, 1910, reviewing the report of preliminary examination of Skagit River from Sedro Woolley to Baker the board called attention to the fact that the fall over this reach was estimated at between 3 and 4 feet per mile, and expressed doubt as to the practicability of its improvement at reasonable cost.

The survey shows that the slope of this section of river is even greater than anticipated, the shoals more numerous, and the avail-

able depth less, and fully demonstrates that no improvement of value can be secured by methods of regulation. The only feasible improvement is by the construction of locks and dams, and since the commerce to be benefited is limited and such an improvement would be unusually expensive on account of physical conditions, it is the opinion of the district officer that it is not advisable for the United States to undertake improvement of this section of river at this time further than the removal of snags and other obstructions, as already provided for under the appropriation for improving Puget Sound and tributary waters.

No statements have been received from interested parties, who were notified of the adverse findings of the district officer and invited to submit their views to the board, and no applications for hearings on the subject have been made. After due consideration, the board concurs in the views of the district officer.

In compliance with law the board reports that there are no questions of water power, terminal facilities, or other subjects which may be coordinated with the suggested improvement in such manner as to render the work advisable in the interests of commerce and navigation.

For the board:

W. C. LANGFITT,  
*Lieut. Col., Corps of Engineers,*  
*Senior Member Present.*

PRELIMINARY EXAMINATION OF SKAGIT RIVER, WASH., FROM  
SEDRO WOOLLEY TO BAKER.

UNITED STATES ENGINEER OFFICE,  
*Seattle, Wash., November 5, 1910.*

SIR: In compliance with department letter of August 4, 1910, I have the honor to submit the following report upon a preliminary examination of Skagit River, Wash., from Sedro Woolley to Baker, as directed in the river and harbor act approved June 25, 1910.

The examination was made by me in person on October 11 and 12, 1910, accompanied by Mr. J. M. Clapp, assistant engineer, and by representatives of the Washington Tug Boat Co. and the Washington Portland Cement Co., which companies are interested in the improvement of the portion of the river under consideration. We traversed the river from Baker to Sedro Woolley, an approximate distance of 45 miles, in a flat-bottomed stern-wheel towboat, three hours being required for the trip. October 11, 1910, at the rooms of the Sedro Woolley Commercial Club a public hearing was held, at which it is thought representatives of all interested parties were present.

Skagit River is the largest in western Washington. It rises in the Cascade Mountains of British Columbia, flows in a general south-westerly direction, crosses the international boundary about 80 miles from Bellingham Bay, and at a distance of 130 miles from the boundary empties into Skagit Bay, an arm of Puget Sound. The area drained is about 2,800 square miles. Its low-water flow on October 9, 1908, was 4,000 cubic feet per second, and its flow at high water is about 100,000 cubic feet per second. There is sufficient water at all seasons, if properly regulated, to provide a channel 6 feet deep.

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Between Baker and Sedro Woolley there are four places where depths at low water are less than 3 feet. One of these is just below the mouth of Baker River at the town of Baker (now generally called "Concrete"), where a gravel bar separates the river into two channels and over which the low-water depth is approximately 2½ feet. The second point is near the town of Birds View, where there is a short gravel bar at the confluence of the main river and the cut-off. The third point is in the vicinity of Lyman, where the river divides into several channels with shifting banks. The fourth point is at Sorensens Riffle, where a like condition exists. Throughout the entire distance the river is remarkably free from snags, overhanging trees, and similar obstructions.

At the public hearing held at Sedro Woolley it appeared that all interested parties desired an open channel 6 feet deep throughout the portion of the river in question, which, together with the snagging operations now provided for in the general improvement of Puget Sound and its tributary waters, would provide a 6-foot channel from Baker to Puget Sound.

At the town of Baker (or Concrete) are located two important plants engaged in the manufacture of Portland cement. These two concerns have at the present time an investment stated as \$2,000,000, and their combined daily output of cement is about 2,500 barrels or 450 tons. These plants use about 28,000 barrels of oil for fuel per month. This fuel and the manufactured product is now all shipped by rail between the plants and Puget Sound points. The owners of these plants believe that with a waterway 6 feet deep a saving would be effected by using water transportation.

The river valley is about 1½ miles wide, very fertile, and is sparsely settled by farmers and dairymen. With the clearing off of the stumps the agricultural possibilities of the valley will be great. An immense amount of standing timber, estimated at 1,200,000,000 feet, is tributary to this part of the river, but logging can be carried on during about 90 days of the year only, on account of low water at other times. With 6 feet depth the output of logs now estimated at about 30,000,000 feet per year, would be probably doubled. It is reported that there are large deposits of iron and coal in the hills near the river as yet undeveloped because of lack of transportation.

The following is a statement of commerce in and out of Sedro Woolley as furnished by the commercial club of that place:

	Tons.
Outward:	
Principally food supplies, coal, and ice.....	4, 086
Inward:	
Hay.....	1, 600
Flour.....	2, 400
Beer.....	1, 200
Coal.....	3, 500
Miscellaneous freight.....	8, 000
Total.....	16, 700

In addition it is stated that in the past year 1,312 cars of lumber and shingles have been shipped out by rail. The above statement does not include logs, fuel oil for the cement plants, or cement, which are given above.

The west side of this valley is traversed by a branch line of the Great Northern Railway Co., and by the Baker River Railway Co., the latter a public carrier operating almost exclusively for the transportation of timber. A branch of the Northern Pacific Railway between Seattle and Sumas passes through Sedro Woolley. The water-front property in Baker and Sedro Woolley is owned by private interests and no wharves exist at either place. Steamers make landings at suitable points along the banks of the river in each of these towns, and in the section of river between. It is not thought that the construction of wharves is either necessary or desirable, and present terminal facilities are thought to be adequate.

The river is subject to floods during all seasons of the year. The greatest flood heights reported have occurred in the late fall or early spring and have reached a height of about 19 feet above low water. Such floods inundate a considerable portion of the lowlands bordering the river and have destructive effects. The improvements desired would tend in some degree to alleviate flood damages.

The fall of the river between Baker and Sedro Woolley is estimated at between 3 and 4 feet per mile. Because of this slight fall and of the frequency of floods, as described above, it is not thought that development of water power would be practicable.

I am of opinion that the improvement of the river to the extent of providing a 6-foot channel at low water would be of material benefit to navigation, and would aid greatly in the development of the adjacent country. The question of whether or not such improvement is feasible and justifiable from the standpoint of cost can only be determined by a survey.

It is, therefore, recommended that a survey be made of Skagit River from Sedro Woolley to Baker, Wash., at a cost of \$1,500.

Very respectfully,

ARTHUR WILLIAMS,  
*Captain, Corps of Engineers.*

The CHIEF OF ENGINEERS, United States Army  
(Through the Division Engineer).

[First indorsement.]

UNITED STATES ENGINEER OFFICE,  
NORTHERN PACIFIC DIVISION,  
*San Francisco, Cal., November 7, 1910.*

Respectfully forwarded to the Chief of Engineers, United States Army, recommended for approval.

CHAS. E. L. B. DAVIS,  
*Brigadier General, United States Agent,  
Division Engineer.*

[Third indorsement.]

THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS,  
*Washington, November 25, 1910.*

Respectfully returned to the Chief of Engineers, United States Army.

This river is a tributary of Puget Sound and is one of those being improved under the general appropriation for Puget Sound and its tributaries, which provides for the removal of snags and obstructions. In addition to this the act of June 25, 1910, provided for the improve-

ment of the mouth of the river under a special appropriation. A more extensive improvement than by snagging is now desired over the reach between Sedro Woolley and Baker, a distance of 45 miles.

Those in interest desire a channel 6 feet in depth, and the district officer is of opinion that improvement to that extent would be of material advantage to navigation, and he recommends a survey and estimate to determine whether such improvement is feasible and justifiable. It appears that the river below Sedro Woolley now carries a considerable commerce, and there is a prospective commerce of importance on the reach under consideration. It seems probable that if improvement to a depth of 6 feet were effected much of this commerce would be carried by water.

The district officer states that the fall over this reach is estimated at between 3 and 4 feet per mile. This suggests that it would be expensive and difficult to obtain a fixed channel of the depth proposed, and the board has doubt as to its practicability at reasonable cost. It believes, however, that the interests involved are of sufficient importance to warrant the expense of a survey in determining the question of practicability and desirability, and it therefore concurs with the district officer and the division engineer in recommending that the survey be authorized.

For the board:

DAN C. KINGMAN,  
*Colonel, Corps of Engineers,  
Senior Member Present.*

[Fourth indorsement.]

WAR DEPARTMENT,  
OFFICE OF THE CHIEF OF ENGINEERS,  
*Washington, December 5, 1910.*

Respectfully submitted to the Secretary of War.

This is a report on preliminary examination of Skagit River from Sedro Woolley to Baker, Wash., authorized by the river and harbor act of June 25, 1910.

Inviting attention to the report of the Board of Engineers for Rivers and Harbors in the preceding indorsement, I recommend that a survey of the locality, as proposed, be authorized.

W. H. BIXBY,  
*Chief of Engineers, U. S. Army.*

[Fifth indorsement.]

WAR DEPARTMENT, *December 6, 1910.*

Approved as recommended by the Chief of Engineers.

ROBERT SHAW OLIVER,  
*Assistant Secretary of War.*

SURVEY OF THE SKAGIT RIVER, WASH., FROM SEDRO WOOLLEY TO BAKER.

UNITED STATES ENGINEER OFFICE,  
*Seattle, Wash., February 29, 1912.*

SIR: In compliance with instructions contained in letter of December 8, 1910, I have the honor to submit the following report upon the survey of the Skagit River, Wash., from Sedro Woolley to Baker.

Survey was made during the present low-water season by Mr. H. F. Flynn, junior engineer, and a map is submitted herewith showing the character of this section of the river as determined from the results of the survey.

Report on preliminary examination of the stream was submitted by Capt. Arthur Williams, Corps of Engineers, dated November 5, 1910, and attention is invited to this report for a general description of the locality and the commercial interests affected by the desired improvement.

The survey has shown that the slope of this section of river is greater than anticipated, the shoals more numerous, and the available depths less, and has fully demonstrated that no improvement of value can be secured by methods of regulation. No permanent improvement of the shoals that will provide any material increase in navigable depths at low water can be made at reasonable cost, and the few rocks found in the upper river are not seriously obstructive at the higher stages when the river can be navigated.

Since the commerce to be benefited is limited, improvement of the river by the construction of locks and dams would not be justified, even if this were possible at a minimum cost, and due to the low banks of the river and the frequent occurrence of floods, improvement by canalization would be unusually expensive, since the use of fixed dams would not be permissible.

In my opinion, therefore, it is not advisable for the United States to undertake any improvement of the Skagit River between Sedro Woolley and Baker, Wash., at this time further than the removal of the snags and other obstructions as already provided for under the appropriation for improving Puget Sound and its tributary waters.

In compliance with law, I have the honor to report, also, that it is not practicable to coordinate with any improvement of the river, either flood protection or the development and utilization of water power for commercial purposes so as to reduce the cost of improvement and render it advisable.

Respectfully submitted.

J. B. CAVANAUGH,  
*Major, Corps of Engineers.*

The CHIEF OF ENGINEERS, *United States Army.*

[For report of the Board of Engineers for Rivers and Harbors, see p. 2.]

