

5. *Bagaduce River, Maine.*—To comply with the requirements of the river and harbor act of August 5, 1886, a preliminary examination and survey was made of the Bagaduce River between the towns of Penobscot and Brooksville, Me.

A report of the results of the survey was transmitted to Congress February 8, 1888, and printed as House Ex. Doc. No. 157, Fiftieth Congress, first session.

The estimated cost of straightening and deepening the channel, proposed by the officer in charge, to give a width of 100 feet from Bridge's Point to the village of South Penobscot, with a depth of 5 feet at low water, is \$45,000.

The river and harbor act of August 11, 1888, contains an appropriation of \$3,000 for the proposed improvement, and \$10,000 may be profitably expended in continuing it during the fiscal year ending June 30, 1890.

Amount appropriated by act of August 11, 1888.....	\$3,000.00
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{ Amount (estimated) required for completion of existing project.....	42,000.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1890	10,000.00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867.	

1. *Bayoduce [Bagaduce] River, Maine, between the towns of Penobscot and Brooksville.*—Printed in House Ex. Doc. No. 157. (See also Appendix A 16.)

A. 16.

PRELIMINARY EXAMINATION OF BAYODUCE [BAGADUCE] RIVER, MAINE, BETWEEN THE TOWNS OF PENOBSCOT AND BROOKSVILLE.

UNITED STATES ENGINEER OFFICE,
Portland, Me., December —, 1886.

GENERAL: The river and harbor act of August 5, 1886, required an examination or survey of the "Bayoduce River between the towns of Penobscot and Brooksville, Maine."

By letter of September 27, 1886, from office of the Chief of Engineers, the duty was assigned to me.

Coast Survey chart No. 311 of the Penobscot River and Belfast Bay, Maine, and Coast Survey chart Penobscot Bay, Maine, contain very complete maps, though on a small scale, of the river in question. Upon these charts the name of the river is given as "Bagaduce," and I find through inquiry in the locality that the name indicated by the Coast Survey is correct.

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For maps to explain this report I refer to the charts already mentioned. It will be seen that the Bagaduce River is a tidal water opening into Penobscot Bay at Castine. The lower part or mouth of the river forms the harbor of Castine, where the mean rise of the tide is 9.3 feet.

About 5 miles above the mouth of the river is a place known as the "narrows," though even here the banks are at least 700 feet apart, and the channel for the largest vessels is more than half that width.

Immediately above the "narrows" the river is much broader and divides into the North and South Forks. The tidal portion of the North Fork terminates in the Northern Bay, while that of the South Fork passes through the "South Bay" and thence in a tortuous channel through various "narrows" and broad places to the town, or rather village, of Brooksville, a distance of about 8 miles. The river between Penobscot and Brooksville consists of the two forks mentioned, a total distance by the channel of about 11 miles.

From the "narrows" to Penobscot the North Fork is broad and has a good channel, though somewhat indirect, as far as Bridge's Point. This point is on the east shore where the river widens into Northern Bay, about 3 miles from the "narrows," and a little more than three-fourths of a mile below the head of the channel at Penobscot.

* * * * *

The town has two villages, known, respectively, as "Penobscot" and "South Penobscot." The latter is at the head of the tidal channel of the river on the southeast shore of the bay, while the former is 1 mile further north.

Owing to the very crooked channel in the broad waters of the two forks, and of the very rapid tidal current through the "narrows," there is a great desire expressed to have the shallow places suitably marked by buoys, and it would seem that the necessity is not exaggerated.

Although the question of buoyage does not properly form a part of this report, it is here mentioned for the reason that this examination seems to have been asked by the people, partly to secure the proper marking of the channel, which is one of the greatest needs of the navigation.

Above Bridge's Point, in the Northern Bay, the channel is narrow and at low water has not sufficient depth for even the smaller coasting vessels which carry freights to distant points. Even this small channel is greatly obstructed by points of ledge and by bowlders where it passes between Winslow's Island and the mainland.

The ledge and bowlders mentioned form such an obstruction that vessels are compelled to leave the channel entirely and pass over the flats on the other side of the island; this can only be done at high water and with vessels of comparatively small draught. Any regular or reliable communication by water are, therefore, at present impracticable, though the shipments by water from this point are sufficient to make freights for 210 vessels, many of them so large that they have to be loaded below Bridge's Point, at great additional expense.

At the time of my examination of the river, an order for a large shipment of bricks was received from a sea-port town in Massachusetts, but after a long search no vessel could be found with sufficient size and light draught of water. This is mentioned to illustrate the situation.

To fulfill the requirements, the channel should be straightened and deepened so as to give a width of 150 feet from Bridge's Point to Winslow's Island, and thence a width of 100 feet to the village of South Penobscot, with a depth of 6 feet at low water throughout.

The Coast Survey chart is not sufficiently in detail to furnish the information needed for a definite estimate of the expense; it may, however, be approximated very closely, as follows:

Dredging, 90,000 cubic yards, at 25 cents per yard	\$22,500
Removing 500 cubic yards of ledge and bowlders, at \$10	5,000
Contingent expenses	2,500
Total	30,000

To ascertain whether the present and prospective commerce of the place is such as to make the river worthy of improvements by the General Government, I made careful inquiry and obtained the following statistics and information.

There is an extensive industry of brick-making carried on in Penobscot, which is only awaiting better communication to be very largely increased. A large part of the bricks have to be lightered, and it is difficult to obtain the larger class of vessels for freight, so that the expense is increased about 50 cents per thousand for freight, lighterage, breakage, and delay.

The 50 cents per thousand thus lost represents a large part of the entire profit, so that the production is restricted. About 5,000,000 bricks is the present annual average of manufacture on the North Fork, and a good channel would probably result in doubling that number.

About 2,500 cords of wood are shipped from Penobscot annually; also about 3,000 bushels of potatoes and various other agricultural products.

Winston's Creek, which flows into the Northern Bay at South Penobscot Village, furnishes power for two stave-mills, two single-mills, one saw-mill and lath-mill, and one mill for grinding corn meal. There is also in the village a knitting factory.

All these industries would be enabled to ship their products at reduced prices were the freights by water regular and reliable.

The number of freighting vessels arriving on the North Fork of the Bagaduce annually is given as 210, and about an equal number of yachts and small craft in addition.

There is a fine granite quarry which can not now be operated, owing to cost of transporting stone, which may figure among the prospective business of the place.

Penobscot is the natural outlet of quite a large section of country remote from any direct line of railroad, 10 miles over a hilly road from Castine Harbor, and 14 miles to the nearest point of the branch railroad from Bangor to Bucksport.

A regular line of steamers from points on Penobscot Bay is only awaiting a time when the channel above Bridge's Point shall be improved, to make daily trips to South Penobscot village.

On the south fork of the river the freight vessels arriving are given as numbering ninety, with an equal number of smaller craft. There are 500,000 bricks shipped annually, and the number would be increased were the channel freed from obstruction so that large vessels could be employed. Over 2,000 cords of wood are annually shipped in small vessels of from 30 to 40 tons each.

Navigation on this fork at present extends only a short distance from the South Bay, and its only serious obstacle is in Johnson's Narrows, at which point the channel is very narrow and obstructed by ledges of rock. Some years ago the worst parts of the obstruction were removed by individual enterprise, but still only small vessels can pass, and then only when the water is at a high stage.

In my opinion the character of the Bagaduce River when considered with its present and prospective commercial interests, renders it worthy of improvement by the General Government in the places indicated.

An approximate estimate of the expense on the north fork is submitted above, but I have no data upon which to estimate the expense of work in Johnson's Narrows. The latter will probably not be large.

I recommend that a survey be made of the places requiring improvement. The expense of such a survey, including the platting and completing of maps and estimates, will be \$400.

Very respectfully, your obedient servant,

JARED A. SMITH,
Major of Engineers.

Brig. Gen. JAMES C. DUANE,
Chief of Engineers, U. S. A.

SURVEY OF BAYODUCE [BAGADUCE] RIVER, MAINE, BETWEEN THE TOWNS OF PENOBSCOT AND BROOKSVILLE.

UNITED STATES ENGINEER OFFICE,
Portland, Me., February 2, 1888.

SIR: I have the honor to submit the following report upon a survey of the Bagaduce River, Maine (incorrectly printed "Bayoduce" in river and harbor act of August 5, 1886).

The instructions and allotment of funds for this and several other surveys were received in a letter from the Chief of Engineers, dated March 16, 1887.

The large amount of work which has been required to complete the surveys, maps, and estimates for several improvements, some of them extensive, has made it impracticable with the small amount of funds which could be allotted for the purpose to submit this report at an earlier day. The map of the survey is still incomplete, though far enough advanced to furnish a basis for the plan of improvement and an estimate of its cost.

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the map + the
now been printed.

A tracing of the map will be forwarded, as soon as completed, to accompany this report. The commercial features of this river were explained in my preliminary report.

I inclose herewith, to form part of this report, the report of Mr. F. S. Burrowes, assistant engineer, to which I invite attention for the details of the survey.

The plan devised for improvement is essentially the same as was outlined in the preliminary report, but it has not been considered necessary to make any part of the channel more than 100 feet wide, so that the quantity to be dredged is somewhat reduced.

On the other hand, the survey indicates that the rock to be removed to make a clear channel, full width, is more than was estimated from mere observation.

The estimate given in Mr. Burrowes's report, \$45,000, for this improvement, will doubtless be ample, provided appropriations are large enough to complete the dredging and the broken ledge, each by itself, in a single contract. The removal of the rock is the more important, and it is therefore recommended that the first appropriation should be \$25,000, to insure its complete removal in one season, otherwise the expense will be made greater, and but little benefit would result from removing only a part of the rock.

Johnson's Narrows is of less importance than the channel to South Penobscot, and its improvement may properly be left until the other work is completed. The estimate in Mr. Burrowes's report (\$1,875) covers all that is considered necessary for any immediate requirements in this locality.

Very respectfully, your obedient servant,

JARED A. SMITH,
Major of Engineers.

The CHIEF OF ENGINEERS, U. S. A.

REPORT OF MR. F. S. BURROWES, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
PORTLAND, ME., February 1, 1888.

MAJOR: I have the honor to submit the following report upon the survey of the Bagaduce River, Maine, between the towns of Penobscot and Brooksville, made under your direction in August, 1887.

As explained in your preliminary report, the portion of the river between the points named includes two branches, the one through the Northern Bay to South Penobscot, and the other through Johnson's Narrows and Southern Bay to Brooksville.

In accordance with your verbal instructions the survey was restricted to an examination of the channel through Northern Bay, and of Johnson's Narrows. Both surveys have been plotted on one chart to a scale of 1 : 2,000.

An azimuth line carefully measured with a steel tape was run down one shore, the deflection points being marked by drill-holes in the ledge. The soundings were located by intersection with two transits and the depths measured with a graduated rod.

The plane of reference to which the soundings have been referred is that of the lowest tide observed during the survey.

The difference in level between mean high water and mean low water is about 9.5 feet.

A bench-mark was established near wharf at South Penobscot, as shown on the chart, being a drill-hole in large boulder. It is 19.44 feet above the plane of reference.

A bench-mark was established at Johnson's Narrows, as shown on the chart, being a drill-hole in ledge. It is 14.12 feet above plane of reference.

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CHANNEL THROUGH NORTHERN BAY.

The survey of the upper branch included the portion of the channel through Northern Bay from head of tide-water at South Penobscot to Bridge's Point. At present the channel is very narrow, crooked, and shallow, and so obstructed by rock opposite Winslow's Island as to make it hazardous to navigate at all stages of tide, and vessels are compelled to wait for extreme high water so as to be able to pass over the shallower but safer flats to the north of the island.

The plan of improvement upon which the following estimate is based is to obtain by dredging and blasting a nearly straight channel, 100 feet wide and 6 feet deep at low water, from the wharf at South Penobscot to deep water at Bridge's Point, and passing to the south of Winslow's Island, a total distance of 4,000 feet. Most of the material, from an examination made by driving down an iron rod in a number of places, seems to be soft mud and clay, with some gravel, and could be dredged without great difficulty. The loose rock at Winslow's Island could, with proper machinery, be thrown outside of the proposed channel, and only the larger pieces would require blasting.

ESTIMATE.

80,000 cubic yards dredging, at 25 cents	\$20,000
3,417 cubic yards rock to be removed, at \$6.....	20,502
Engineering and contingencies.....	4,498
Total	<u>45,000</u>

JOHNSON'S NARROWS.

The lower or southern channel is contracted at Johnson's Narrows to a low-water width at one point of 150 feet, both banks being ledge. There is an available depth of 4.5 feet at low water through the narrows, and no general improvement, such as the widening of the channel by the removal of large quantities of rock, could be obtained except at a cost greatly in excess of the benefits to be derived therefrom.

Two small rocks immediately below the narrowest part, which project 1.50 feet above low water, are so located as to be a source of danger, and their removal would be a benefit to navigation. The following is an estimate of the cost of their removal to a depth of 6 feet below low water:

Removing 125 cubic yards of rock, at \$15	\$1,875
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Your preliminary report shows the commercial importance of a portion at least of this river, and as it is the only outlet except by wagon road for a large section of country, its improvement would be a great benefit.

Before closing this report I wish to acknowledge the willing and intelligent assistance rendered by Mr. William B. Bennett during the past season, both in the field work of the surveys and in the preparation of the maps.

Very respectfully, your obedient servant,

F. S. BURROWES,
Assistant Engineer.

Maj. JARED A. SMITH,
Corps of Engineers, U. S. A.

5. *Bagaduce River, Maine.*—The river and harbor act of August 5, 1886, required an examination or survey of the Bagaduce River, Maine.

A report, with estimate of cost of works considered necessary, was submitted by the engineer officer in charge, February 2, 1888. (See Report of Chief of Engineers for 1888, page 401.)

The project adopted for the improvement consists of deepening the channel to give a width of 100 feet and a low-water depth of 6 feet from South Penobscot to Bridge's Point. This includes dredging and removing rocks. The project also includes removing a small amount of rock in Johnson's Narrows.

By act of August 11, 1888, Congress appropriated \$3,000 for the improvement. As this small sum could not be judiciously expended in a way to accomplish any beneficial result, work on the improvement has been suspended to await the further appropriations.

An expenditure of \$100 from the appropriation has been incurred in the necessary office work, preparing plans, estimates, etc.

To effect any valuable improvement of the channel all the rock must be first removed; but little result can come from the removal of a portion only.

The estimate of \$24,427.90 for removing all the rock will probably not cover the expense if it can not be done under one contract.

Amount appropriated by act of August 11, 1888.....	\$3,000.00
July 1, 1889, amount expended during fiscal year, exclusive of liabilities outstanding July 1, 1888.....	100.00
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July 1, 1889, balance available.....	2,900.00
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{	Amount (estimated) required for completion of existing project.....	43,875.00
	Amount that can be profitably expended in fiscal year ending June 30, 1891	10,000.00
	Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867.	

(See Appendix A 5.)

A 5.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

The river and harbor act of August 5, 1886, required an examination or survey of the Bagaduce River, Maine.

A report with estimate of cost of works considered necessary was submitted by the engineer officer in charge February 2, 1888. (See Report of Chief of Engineers for 1888, page 401.)

The project adopted for the improvement consists of deepening the channel to give a width of 100 feet and a low-water depth of 6 feet from

South Penobscot to Bridge's Point. This includes dredging and removing rock. The project also includes removing a small amount of rock in Johnson's Narrows.

By act of August 11, 1888, Congress appropriated \$3,000 for the improvement. As this small sum could not be judiciously expended in a way to accomplish any beneficial result, work on the improvement has been suspended to await the further action of Congress.

An expenditure of \$100 from the appropriation has been incurred in the necessary office work, preparing plans, estimates, etc.

To effect any valuable improvement of the channel all the rock must be first removed; but little result can come from the removal of a portion only.

The estimate of \$24,427.90 for removing all the rock will probably not cover the expense if it can not be done in one contract.

The improvement is in the collection district of Castine. The nearest port of entry is Castine. The nearest light-house is Dice's Head light-house.

Money statement.

Amount appropriated by act of August 11, 1888.....	\$3,000.00
July 1, 1889, amount expended during fiscal year, exclusive of liabilities outstanding July 1, 1888.....	100.00
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July 1, 1889, balance available.....	2,900.00
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{ Amount (estimated) required for completion of existing project.....	43,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1891	25,090.00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867.	

5. *Bagaduce River, Maine.*—The river and harbor act of August 5, 1886, required an examination or survey of the Bagaduce River, Maine.

A report, with estimate of cost of works considered necessary, was submitted by the engineer officer in charge, February 2, 1888. (See Report of Chief of Engineers for 1888, page 401.)

The project adopted for the improvement consists of deepening the channel to give a width of 100 feet and a low-water depth of 6 feet from South Kenoscot to Bridge's Point. This includes dredging and removing rocks. The project also includes removing a small amount of rock in Johnson's Narrows.

By act of August 11, 1888, Congress appropriated \$3,000 for the improvement. As this small sum could not be judiciously expended in a way to accomplish any beneficial result, work on the improvement has been suspended to await the further action of Congress.

Previous to June 30, 1889, an expenditure of \$100 from the appropriation was incurred in the necessary office work, preparing plans, estimates, etc.

To effect any valuable improvement of the channel all the rock must be first removed; but little result can come from the removal of a portion only.

July 1, 1889, amount available	\$2,900.00
July 1, 1890, balance available	2,900.00
Amount appropriated by act of September 19, 1890	4,000.00
Amount available for fiscal year ending June 30, 1891	6,900.00

{ Amount (estimated) required for completion of existing project \$39,875.00
 { Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867.

(See Appendix A 5.)

A 5.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

The river and harbor act of August 5, 1886, required an examination or survey of the Bagaduce River, Maine.

A report with estimate of cost of works considered necessary was submitted by the engineer officer in charge February 2, 1888. (See Report of Chief of Engineers for 1888, page 401.)

The project adopted for the improvement consists of deepening the channel to give a width of 100 feet and a low-water depth of 6 feet from South Penobscot to Bridges Point; this includes dredging and removing rocks. The project also includes removing a small amount of rock in Johnson's Narrows.

By act of August 11, 1888, Congress appropriated \$3,000 for the improvement.

As this small sum could not be judiciously expended in a way to accomplish any beneficial result, work on the improvement has been suspended to await the further action of Congress.

Previous to June 30, 1889, an expenditure of \$100 from the appropriation was incurred in the necessary office work, preparing plans, estimates, etc.

To effect any valuable improvement of the channel all the rock must be first removed; but little result can come from the removal of a portion only.

The estimate of \$24,427.90 for removing all the rock will probably not cover the expense if it can not be done in one contract.

The improvement is in the collection district of Castine.

The nearest port of entry is Castine.

The nearest light-house is Dice's Head light-house.

No replies have been received to requests for recent commercial statistics.

Money statement.

July 1, 1889, amount available.....	\$2,900.00
July 1, 1890, balance available.....	2,900.00
Amount appropriated by act of September 19, 1890.....	4,000.00
Amount available for fiscal year ending June 30, 1891.....	6,900.00
{ Amount (estimated) required for completion of existing project.....	39,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1892.....	25,000.00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867.	

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7. *Bagaduce River, Maine.*—The river and harbor act of August 5, 1886, required an examination or survey of the Bagaduce River, Maine.

A report, with estimate of cost of works considered necessary, was submitted by the engineer officer in charge, February 2, 1888. (See Report of Chief of Engineers for 1888, page 401.)

The project adopted for the improvement consists of deepening the channel to give a width of 100 feet and a low-water depth of 6 feet from South Penobscot to Bridge Point. This includes dredging and removing rocks. The project also includes removing a small amount of rock in Johnson Narrows.

By act of August 11, 1888, Congress appropriated \$3,000, and by act of September 19, 1890, the further sum of \$4,000, for the improvement.

Previous to June 30, 1890, the sum of \$100 had been expended for making plans, etc.

The amount now available is too small to carry on such a work to any advantage.

It may be found advisable to defer commencing work until the season of 1892, when, should a further appropriation be made, it may be added to funds now available.

The estimate for removal of rock alone is about \$25,000, and this should be done before any dredging is commenced.

July 1, 1890, balance unexpended.....	\$2,900.00
Amount appropriated by act approved September 19, 1890	4,000.00
	6,900.00
July 1, 1891, balance unexpended	6,900.00

{ Amount (estimated) required for completion of existing project.....	39,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1893	39,875.00
{ Submitted in compliance with requirements of sections 2 of river and	
{ harbor acts of 1866 and 1867.	
(See Appendix A 7.)	

A 7.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

The channel near South Penobscot is very crooked and obstructed in one place by ledges of rock, and has a low-water depth not exceeding 2 feet in places. The channel at this place is in the southern part of the broad place known as Northern Bay. Its situation is fully shown upon Coast Survey Chart No. 311.

The project for its improvement is to dredge the channel and remove the rock to give a width of 100 feet and a low-water depth of 6 feet from South Penobscot to Bridge Point; it also includes the removal of a small amount of rock in Johnson Narrows near Southern Bay.

By act of August 11, 1888, Congress appropriated \$3,000 for the improvement. This small sum could not be judiciously expended, and it was therefore held to await further action of Congress, save the amount of \$100 expended in preparing plans, etc.

By act of September 19, 1890, Congress appropriated the further sum of \$4,000.

The entire improvement was estimated to cost \$46,875, of which about \$25,000 is for the removal of rock. To effect any permanent and valuable improvement the rock should be first removed.

The funds now available are insufficient to effect any radical improvement, as the expense of tools, etc., is considerable.

If done by contract there could be no competition for the work and prices would be high.

It has therefore been considered most expedient to do the work by hired labor and purchases in open market as far as funds will permit.

It is probable that operations can not be conveniently commenced until the summer of 1892, when any further appropriation, if made, may be added to amount now available.

No recent statistics have been obtained. At the time of the examination and survey in 1886 and 1888 the exports of bricks and wood were about 21,000 tons annually.

The improvements would reduce the cost of freight at least 25 cents per ton, by the use of larger vessels and saving of lighterage.

The improvement is in the collection district of Castine. The nearest port of entry is Castine, at the mouth of the river. The nearest light-house is at Dice Head.

Money statement.

July 1, 1890, balance unexpended.....	\$2,900.00
Amount appropriated by act approved September 19, 1890.....	4,000.00
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July 1, 1891, balance unexpended.....	6,900.00
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{ Amount (estimated) required for completion of existing project.....	39,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1893	39,875.00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867.	

7. *Bagaduce River, Maine.*—When the project for improving this locality was adopted the channel near South Penobscot was crooked and obstructed by ledges of rock, and the least depth at low tide did not exceed 2 feet.

The approved project is to obtain, by dredging and rock excavation, a channel 100 feet wide, and 6 feet deep at low tide, from Bridges Point to Bowden's Wharf, South Penobscot, a distance of about 4,000 feet, the cost being estimated at \$45,000. It was also intended to remove a small quantity of rock obstructing the southern channel at Johnsons Narrows, at an estimated cost of \$1,875.

The expenditures to the close of the fiscal year ending June 30, 1891, amounted to \$100, which were for preparation of plans, etc. No work had been done. The first appropriation, \$3,000, was too small to be judiciously expended. Enough rock excavation to be of any practical benefit could not be accomplished with that amount, and the situation was such that without the removal of rock no practical benefits could be acquired by dredging.

There were no expenditures during the fiscal year ending June 30, 1892, and no work was done.

July 1, 1891, balance unexpended	\$6,900.00
July 1, 1892, balance unexpended	6,900.00
Amount appropriated by act approved July 13, 1892	5,000.00
Amount available for fiscal year ending June 30, 1893	11,900.00
{ Amount (estimated) required for completion of existing project.....	34,875.00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867.	
(See Appendix A 7.)	

A 7.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

When the project for improving this locality was adopted the channel near South Penobscot was crooked and obstructed by ledges of rock, and the least depth at low tide did not exceed 2 feet. The portion of the channel covered by the project for improvement is in the southern part of Northern Bay, on the easterly side of the Penobscot Bay.

The approved project is to obtain by dredging and rock excavation, a channel 100 feet wide, and 6 feet deep at low tide, from Bridges Point to Bowdens Wharf, South Penobscot, a distance of about 4,000 feet, the cost being estimated at \$45,000.

It was also intended to remove a small quantity of rock obstructing the southern channel at Johnson Narrows, at an estimated cost of \$1,875.

The mean range of tides is about 9.5 feet.

The following appropriations have been made:

By act of August 11, 1888	\$3,000
By act of September 19, 1890.....	4,000
	7,000

The expenditures to the close of the fiscal year ending June 30, 1891, amounted to \$100, which were for preparation of plans, etc. No work had been done.

The first appropriation, \$3,000, was too small to be judiciously expended. Enough rock excavation to be of any practical benefit could not be accomplished with that amount, and the situation was such that without the removal of rock there was no good to be accomplished by dredging. It was, therefore, considered advisable to await additional appropriations.

There were no expenditures during the fiscal year ending June 30, 1892, and no work was done.

The improvement is in the collection district of Castine. The nearest port of entry is Castine, at the mouth of the river. The nearest light-house is at Dice Head.

Money statement.

June 1, 1891, balance unexpended.....	\$6,900.00
July 1, 1892, balance unexpended	6,900.00
Amount appropriated by act approved July 13, 1892	5,000.00
Amount available for fiscal year ending June 30, 1893	11,900.00
{ Amount (estimated) required for completion of existing project.....	34,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1894	25,000.00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867.	

COMMERCIAL STATISTICS.

Receipts and shipments during the calendar year 1891.

	Tons.		Tons.
Bricks	6,000	Hay	100
Coal	2,200	Ice	150
Cotton	150	Lumber.....	2,800
Farm produce	150	Lime, cement, etc	300
Fish, oysters, etc	150	Wood	6,000
Grain	8,000	Total.....	41,900
General merchandise	15,300		

Number of vessels arriving and departing during calendar year 1891.

Vessels of 200 tons to 400 tons each	200
Vessels of 5 tons to 100 tons each	600
Steamers of 1,000 tons to 1,500 tons each	400
Steamers of 50 tons to 200 tons each	800
Barges and flatboats	75
Total	2,075

6. *Bagaduce River, Maine.*—The Bagaduce is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay, and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres in area, the bottom of which for the greater part is bare at low tide. There is a narrow channel that runs from Bridges Point to Bowdens Wharf, which has a depth of less than 2 feet and is obstructed by ledges near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. A project for the improvement of the Northern Bay was adopted in 1890, which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide, from Bridges Point to Bowdens Wharf, at an estimated cost of \$45,000. It is also intended to remove a small quantity of rock obstructing the southern channel at Johnsons Narrows, at an estimated cost of \$1,875.

The expenditures to the close of the fiscal year ending June 30, 1892, amounted to \$100, which were for preparation of plans, etc. No work had been done, the amount available at that date not being sufficient to accomplish enough to be of any material benefit.

The expenditures during the year ending June 30, 1893, were \$119.72, making the total expenditures \$219.72. A contract was made in January, 1893, for dredging a channel 6 feet deep at mean low tide, and 40 feet wide, from Bridges Point to Bowdens Wharf, removing all material except ledge, the work to be done during the present season.

July 1, 1892, balance unexpended	\$6,900 00
Amount appropriated by act approved July 13, 1892	5,000 00
	<hr/>
	11,900 00
June 30, 1893, amount expended during fiscal year.....	119.72
	<hr/>
July 1, 1893, balance unexpended	11,780.28
July 1, 1893, amount covered by uncompleted contracts.....	10,500.00
	<hr/>
July 1, 1893, balance available	1,280.28
	<hr/> <hr/>
(Amount (estimated) required for completion of existing project.....	31,875.00
} Amount that can be profitably expended in fiscal year ending June 30, 1895	25,000.00
} Submitted in compliance with requirements of sections 2 of river and	
harbor acts of 1866 and 1867 and of sundry civil act of March 3, 1893.	
(See Appendix A 6.)	

2. *South Fork of Bagaduce River, Maine.*—Lieut. Col. Hains submitted report of examination under date of August 17, 1892. It is his opinion, concurred in by this office, that the locality is not worthy of improvement by the General Government. The report was transmitted to Congress and printed as House Ex. Doc. No. 17, Fifty-second Congress, second session. (See also Appendix A 23.)

189.3

A 6.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

The Bagaduce is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay.

Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres in area, the bottom of which for the greater part is bare at low tide. There is a narrow channel that runs from Bridges Point to Bowdens Wharf, which has a depth of less than 2 feet and is obstructed by ledges near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows.

A project for the improvement of the Northern Bay was adopted in 1890, which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point to Bowdens Wharf, at an estimated cost of \$45,000.

It is also intended to remove a small quantity of rock obstructing the South Bay at Johnsons Narrows, at an estimated cost of \$1,875.

The mean range of tides is about 9.5 feet.

The following appropriations have been made:

By act of August 11, 1888	\$3,000
By act of September 19, 1890.....	4,000
By act of July 13, 1892	5,000

The expenditures to the close of the fiscal year ending June 30, 1892, amounted to \$100, which were for preparation of plans, etc. No work had been done, the amount available at that date not being sufficient to accomplish enough to be of any material benefit.

The expenditures during the year ending June 30, 1893, were \$119.72, making the total expenditures \$219.72.

A contract was made January 10, 1893, with Edgar P. Lovering, of Boston, Mass., for dredging a channel 6 feet deep at mean low tide, and 40 feet wide, from Bridges Point to Bowdens Wharf, removing all material except ledge, the work to be done during the present season; the contract prices are 25 cents per cubic yard for dredging, and \$3 per ton for removing bowlders weighing not less than 250 pounds each.

The improvement is in the collection district of Castine. The nearest port of entry is Castine, at the mouth of the river. The nearest light-house is at Dice Head."

Money statement.

July 1, 1892, balance unexpended.....	\$6,900.00
Amount appropriated by act approved July 13, 1892	5,000.00
	<hr/>
	11,900.00
June 30, 1893, amount expended during fiscal year.....	119.72
	<hr/>
July 1, 1893, balance unexpended	11,780.28
July 1, 1893, amount covered by uncompleted contracts.....	10,500.00
	<hr/>
July 1, 1893, balance available.....	1,280.28
	<hr/>
{ Amount (estimated) required for completion of existing project.....	34,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1895	25,000.00
{ Submitted in compliance with requirements of sections 2 of river and	
{ harbor acts of 1866 and 1867 and of sundry civil act of March 3, 1893.	

1873

Abstract of proposals for excavating a channel in Bagaduce River, Maine, October 3, 1892.

No.	Bidders.	Price per cubic yard (3,000 cubic yards) situ	Amount.
1	Moore & Wright, Portland, Me.	\$10 00	\$30,000
2	Thomas Symonds, Leominster, Mass.	6 00	18,000

All bids rejected as being too high.

Abstract of proposals for dredging in Bagaduce River, Maine, December 22, 1892.

No.	Bidders.	Mud, etc (50,000 cubic yards).		Boulders, price per ton
		Price	Amount.	
1	Moore & Wright, Portland, Me.	<i>Cents</i> 37	\$18,500 00	\$5 00
2	Robert Hamilton, Cushing, Me.	49	24,500 00	7 50
3	Edgar P. Lovering, South Boston, Mass.	25	12,500 00	8 00

Contract made with Edgar P. Lovering, January 10, 1893.

COMMERCIAL STATISTICS.

Receipts and shipments.

Articles.	1891.	1892.
	<i>Tons.</i>	<i>Tons.</i>
Bricks	4,000	7,500
Coal	2,200	2,350
Cotton	150	150
Farm produce	250	300
Fish	150	300
Grain	8,000	9,000
General merchandise	15,300	17,000
Ice	150	200
Lumber	2,800	3,500
Lime, cement, etc	300	400
Wood	4,000	5,400
Total	41,300	46,100

Most of the above is landed and shipped from Castine, at the mouth of the river.

A 23.

PRELIMINARY EXAMINATION OF SOUTH FORK OF BAGADUCE RIVER, MAINE.

[Printed in House Ex. Doc. No. 17, Fifty second Congress, second session.]

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., December 5, 1892.

SIR: I have the honor to submit herewith a copy of report, dated August 17, 1892, by Lieut. Col. Peter C. Hains, Corps of Engineers, of the results of a preliminary examination of South Fork of Bagaduce River, Maine, made to comply with requirements of the river and harbor act approved July 13, 1892.

Lieut. Col. Hains is of opinion that the locality is not worthy of improvement by the General Government and I concur in his views.

Very respectfully, your obedient servant,

THOS. LINCOLN CASEY,
Brig. Gen., Chief of Engineers.

Hon. S. B. ELKINS,

1893

REPORT OF LIEUT. COL. PETER C. HAINS, CORPS OF ENGINEERS.

UNITED STATES ENGINEER OFFICE,
Portland, Me., August 17, 1892.

GENERAL: In compliance with requirements of Department letter dated July 14, 1892, I have made a preliminary examination of the South Fork of the Bagaduce River, Maine, and have the honor to submit the following report:

The South Fork of the Bagaduce is navigable for vessels of a good draft up as far as Johnsons Narrows. The depth in the Narrows, however, is less than 4 feet at mean low tide, and the current, both on ebb and flood, flows with such velocity that it is not navigable at all for sailing vessels except for about half an hour on each slack of the flood tide, in other words, about one-half an hour of daylight. The tide here rises and falls about 9 feet, so that vessels drawing from 10 to 11 feet can pass through at the high water stage. At no other time, however, can they safely do so, because of the swiftness of the current and the dangerous projecting ledges on either hand.

From Johnsons Narrows to the toll bridge, which is the head of navigation, is a distance of about $1\frac{1}{2}$ miles. The channel over this distance is somewhat crooked, but the depth of water is greater than in the Narrows, and navigation over this portion is less difficult.

The improvements desired are the widening of the Narrows, and the removal of some of the ledges above, so that sailing vessels may safely navigate this portion of the river.

To make this stretch of the river easily navigable for sailing vessels of from 10 to 12 feet draft is an undertaking of some magnitude, involving considerable expense. I have not the data for making an accurate estimate of the cost of such improvement, but from personal examination I am satisfied it would be great. Some amelioration, however, could be effected at less cost.

* * * * *

A steam tug to tow vessels up and down would be of vastly more service than the removal of rocks, and doubtless a tug would be used for the purpose if the number of vessels trading there were sufficient to warrant the employment of one. I am informed that about one schooner a week passes through Johnsons Narrows.

There is a brickkiln of small capacity about halfway between the Narrows and the bridge, and a lumber mill where barrel staves are manufactured near it. Most of the latter are shipped to Boston and New York. There are no other manufacturing establishments on this part of the river in existence or in prospect. Some wood is brought down from above the bridge, but this is carried in lighters. The country adjacent to the stream is fertile and fairly well cultivated.

It does not seem to me that the amount of commerce now on the river would be materially increased by the improvements referred to, and the amount at present would not, in my opinion, justify the Government in undertaking the work.

Moreover, the existing project for the improvement of the Bagaduce River contemplates the expenditure of \$1,875 for the removal of rocks in Johnsons Narrows after the work in Northern Bay, contemplated by the project, is completed.

In view of the above I am of the opinion that the South Fork of the Bagaduce River is not worthy of improvement by the General Government.

Very respectfully, your obedient servant,

PETER C. HAINS,

Lieutenant-Colonel, Corps of Engineers.

Brig. Gen. THOMAS L. CASEY,
Chief of Engineers, U. S. A.

6. *Bagaduce River, Maine.*—The Bagaduce is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay, and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. There is a narrow channel that runs from Bridges Point to Bowdens Wharf, which had a depth of less than 2 feet, and is obstructed by ledges near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. A project for the improvement of the Northern Bay was adopted in 1890, which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide, from Bridges Point to Bowdens Wharf, at an estimated cost of \$15,000. It is also intended to remove a small quantity of rock obstructing the southern channel at Johnsons Narrows, at an estimated cost of \$1,875.

The expenditures to the close of the fiscal year ending June 30, 1893, amounted to \$219.72.

The expenditures during the year ending June 30, 1894, were \$11,780.28, making the total expenditures \$12,000.

In July, 1893, the work of dredging the channel was commenced, under contract with Edgar P. Lovering, and was continued until the latter part of the following November, when the funds were exhausted. Thirty thousand and fifty-two cubic yards of material was dredged and 506½ tons of large bowlders was removed. The channel was dredged its entire length for a width of 40 feet, but the full projected depth was not obtained throughout. There is now an available depth of about 2 feet more than before the improvement was commenced.

July 1, 1893, balance unexpended.....	11,780.28
June 30, 1891, amount expended during fiscal year.....	11,780.28

Amount appropriated by act of August 17, 1891.....	5,000.00
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Amount (estimated) required for completion of existing project.....	29,875.00
Amount that can be profitably expended in fiscal year ending June 30, 1896	25,000.00
Submitted in compliance with requirements of sections 2 of river and	
harbor acts of 1866 and 1867 and of sundry civil act of March 3, 1893.	

(See Appendix A 6.)

A 6.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

The Bagaduce is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay.

Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. There is a narrow channel from Bridges Point to Bowdens Wharf, which had a depth of less than 2 feet and is obstructed by ledges near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows.

A project for the improvement of the Northern Bay was adopted in 1890, which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point to Bowdens Wharf, at an estimated cost of \$45,000.

It is also intended to remove a small quantity of rock obstructing the South Bay at Johnsons Narrows, at an estimated cost of \$1,875.

The mean range of tides is about 9.5 feet.

The following appropriations have been made :

Act of—	
August 11, 1888.....	\$3,000
September 19, 1890.....	4,000
July 13, 1892.....	5,000

The expenditures to the close of the fiscal year ending June 30, 1893, amounted to \$219.72. No work had been done.

1894

The expenditures during the year ending June 30, 1894, were \$11,780.28, making the total expenditures \$12,000.

During July, 1893, under contract with Edgar P. Lovering, of Boston, Mass., the work of dredging the channel was commenced, and was continued until the 21st of the following November, when the funds were exhausted. Under this contract 30,052 cubic yards of material were dredged, and 506½ tons of large bowlders removed. The contract prices were 25 cents per cubic yard for the dredging, and \$3 per ton for removing the bowlders. The channel was dredged its entire length for a width of 40 feet, but the full projected depth was not obtained throughout. There is now an available depth of about 2 feet more than before the improvement was commenced.

The improvement is in the collection district of Castine. The nearest port of entry is Castine, at the mouth of the river. The nearest light-house is at Dice Head.

Money statement.

July 1, 1893, balance unexpended	\$11,780.28
June 30, 1894, amount expended during fiscal year	11,780.28
{ Amount (estimated) required for completion of existing project.....	34,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1896	25,000.00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867 and of sundry civil act of March 3, 1893.	

COMMERCIAL STATISTICS.

Receipts and Shipments.

Articles.	1891.	1892.	1893.
	Tons.	Tons.	Tons.
Rocks.....	6,000	7,500	8,000
Coal.....	2,200	2,350	2,300
Cotton.....	150	150	200
Farm produce.....	250	300	400
Fish.....	150	300	250
Grain.....	8,000	9,000	9,000
General merchandise.....	15,300	17,000	18,000
Ice.....	150	200	250
Lumber.....	2,800	3,500	5,000
Lime, cement, etc.....	300	400	400
Wood.....	6,000	5,400	5,500
Total	41,300	46,100	49,700

Most of the above is landed and shipped from Castine, at the mouth of the river.

6. *Bagaduce River, Maine.*—The Bagaduce is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. There was a narrow channel from Bridges Point to Bowdens Wharf, which had a depth of less than 2 feet, and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. A project for the improvement of the Northern Bay was adopted in 1890, which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point to Bowdens Wharf, at an estimated cost of \$15,000. It is also intended to remove a small quantity of rock obstructing the southern channel at Johnsons Narrows, at an estimated cost of \$1,875.

The expenditures to the close of the fiscal year ending June 30, 1894, amounted to \$12,000. At that date the channel had been dredged its entire length for a width of 40 feet, but the full projected depth had not been obtained throughout.

The expenditures during the year ending June 30, 1895, were \$4,795.09, making the total expenditures \$16,795.09.

The operations consisted in removing bowlders from the channel at Winslows Island, where it was shoalest. About 1,150 tons of bowlders was removed, increasing the depth at that locality to about 2 feet at mean low tide.

Amount appropriated by act of August 17, 1894.....	\$5,000.00
July 30, 1895, amount expended during fiscal year.....	4,795.09
<hr/>	
July 1, 1895, balance unexpended.....	204.91
July 1, 1895, outstanding liabilities.....	200.00
<hr/>	
July 1, 1895, balance available.....	4.91
<hr/>	
{ Amount (estimated) required for completion of existing project.....	29,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1897	10,000.00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867 and of sundry civil act of March 3, 1893.	
(See Appendix A 6.)	

A 6.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

The Bagaduce is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay.

Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. There is a narrow channel from Bridges Point to Bowdens Wharf, which had a depth of less than 2 feet and is obstructed by ledges near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows.

A project for the improvement of the Northern Bay was adopted in 1890, which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point to Bowdens Wharf, at an estimated cost of \$15,000.

It is also intended to remove a small quantity of rock obstructing the South Bay at Johnsons Narrows, at an estimated cost of \$1,875.

The mean range of tide is about 9.5 feet.

1895

The following appropriations have been made:

Act of—	
August 11, 1888.....	\$3,000
September 19, 1890.....	4,000
July 13, 1892.....	5,000
August 17, 1894.....	5,000

The expenditures to the close of the fiscal year ending June 30, 1894, amounted to \$12,000. As a result the channel had been dredged its entire length for a width of 40 feet, but the full projected depth had not been obtained throughout. There was an available depth of about 2 feet more than before the improvement was commenced.

The expenditures during the year ending June 30, 1895, were \$4,795.09, making the total expenditures \$16,795.09.

A contract was made March 13, 1895, with Columbian Dredging Company, of East Boston, Mass., for deepening the channel where it was shoalest by removing bowlders at Winslows Island about midway of the length of the channel. Work was commenced about the middle of April, 1895, and was in progress until May 29, 1895, when the contract was completed.

About 1,150 tons of bowlders were removed, increasing the available depth at that locality to about 2 feet at mean low tide. The price was \$4 per ton of 2,000 pounds.

The improvement is in the collection district of Castine. The nearest port of entry is Castine, at the mouth of the river. The nearest light-house is at Dice Head.

Money statement.

Amount appropriated by act of August 17, 1894.....	\$5,000.00
June 30, 1895, amount expended during fiscal year.....	4,795.09
<hr/>	
July 1, 1895, balance unexpended.....	201.91
July 1, 1895, outstanding liabilities.....	200.00
<hr/>	
July 1, 1895, balance available.....	4.91
<hr/>	
{ Amount (estimated) required for completion of existing project.....	29,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1897	29,875.00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867 and of sundry civil act of March 3, 1893.	

Abstract of proposals for removing bowlders in Bagaduce River, Maine, February 18, 1895.

No.	Name and address of bidder.	2,000 tons of bowlders.	
		Price per ton.	Amount.
1	Columbian Dredging Co., East Boston, Mass.....	\$4.00	\$8,000
2	George Willett Andrews, Biddeford, Me.....	3.73	7,460
3	Joseph F. Curit, Chobogue, Me.....	11.00	22,000
4	Philip H. Doyen, Knightville, Me.....	3.85	7,700
5	John F. Hamilton and Aaron Cleaves, Portland, Me.....	10.00	20,000
6	Towusoid & Johnston, Somers Point, N. J.....	4.75	9,500

Contract made with Columbian Dredging Company, March 13, 1895.

1895

COMMERCIAL STATISTICS.

Receipts and shipments.

Articles.	1891.	1892	1893	1894.
	<i>Tons</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons</i>
Bricks	6,000	7,500	8,000	8,000
Coal	2,200	2,750	2,300	2,500
Cotton	150	150	200	200
Farm produce	250	300	400	400
Fish	150	300	250	300
Grain	8,000	9,000	9,000	9,500
General merchandise	15,300	17,000	18,000	20,000
Granite				5,000
Ice	150	200	250	350
Iron pipe (water)				100
Lumber	2,800	3,500	5,000	15,000
Lime, cement, etc.	300	400	400	1,000
Wood	6,000	5,400	5,500	5,500
Total	41,300	46,100	49,500	67,850

Most of the above is landed and shipped from Castine, at the mouth of the river.

Arrivals in 1894: In summer months, 7 steamers daily; in winter months, 2 steamers daily; no estimate of sailing vessels, but vary in draft from 6 to 15 feet.

7. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. There was a narrow channel from Bridges Point to Bowden's Wharf, which had a depth of less than 2 feet, and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. A project for the improvement of the Northern Bay was adopted in 1890, which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point to Bowden's Wharf, at an estimated cost of \$45,000. It is also intended to remove a small quantity of rock obstructing the channel at Johnsons Narrows, at an estimated cost of \$1,875.

The expenditures to the close of the fiscal year ending June 30, 1895, amounted to \$16,795.09. At that date the channel had been dredged its entire length for a width of 40 feet, but the full projected depth had not been obtained throughout. At Winslows Island, about midway of the channel and where it is shoalest, a depth of about 2 feet at mean low tide has been secured by the removal of bowlders.

The expenditures during the year ending June 30, 1896, were \$200.25, making the total expenditures \$16,995.34.

The commerce for the calendar year 1895 is given as 85,900 tons, chiefly bricks, coal, grain, lumber, and lime, most of which, however, is handled at Castine, at the mouth of the river. The value of the commodities may be estimated at \$500,000.

July 1, 1895, balance unexpended.....	\$204.91
Amount appropriated by act of June 3, 1896.....	5,000.00
	5,204.91
June 30, 1896, amount expended during fiscal year.....	200.25
	5,001.66
(See Appendix A 7.)	

A 7.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

The Bagaduce is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay.

Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. There is a narrow channel from Bridges Point to Bowdens Wharf, which had a depth of less than 2 feet, and is obstructed by ledges near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows.

A project for the improvement of Northern Bay was adopted in 1890, which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point to Bowdens Wharf, at an estimated cost of \$45,000. It is also intended to remove a small quantity of rock obstructing the South Bay at Johnsons Narrows, at an estimated cost of \$1,875, making the cost of the entire project \$46,875.

The mean range of tides is about 9.5 feet.

The following appropriations have been made:

Act of—	
August 11, 1888.....	\$3,000
September 19, 1890.....	4,000
July 13, 1892.....	5,000
August 17, 1894.....	5,000
June 3, 1896.....	5,000

The expenditures to the close of the fiscal year ending June 30, 1895, amounted to \$16,795.09. As a result the channel had been dredged its entire length for a width of 40 feet, but the full projected depth had not been obtained throughout. At Winslows Island, about midway of the channel and where it is shoalest, a depth of about 2 feet at mean low tide has been secured by the removal of boulders.

The expenditures during the year ending June 30, 1896, were \$200.25, making the total expenditures \$16,995.34.

No work was done during the last fiscal year, the available funds having been applied to the work during the year previous.

The improvement is in the collection district of Castine. The nearest port of entry is Castine, at the mouth of the river. The nearest light-house is at Dice Head.

Money statement.

July 1, 1895, balance unexpended.....	\$204.91
Amount appropriated by act of June 3, 1896.....	5,000.00
	5,204.91
June 30, 1896, amount expended during fiscal year.....	200.25
July 1, 1896, balance unexpended.....	5,004.66
	24,875.00
Amount (estimated) required for completion of existing project.....	24,875.00
Amount that can be profitably expended in fiscal year ending June 30, 1898	24,875.00
Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867 and of sundry civil act of March 3, 1893.	

COMMERCIAL STATISTICS,

Receipts and shipments.

Articles.	1891.	1892.	1893.	1894.	1895.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Bricks.....	6,000	7,500	8,000	8,000	8,000
Coal.....	2,200	2,350	2,300	2,500	2,500
Cotton.....	150	150	200	200	300
Farm produce.....	250	300	400	400	400
Fish.....	150	300	250	300	300
Grain.....	8,000	9,000	9,000	9,500	10,000
General merchandise.....	15,300	17,000	18,000	20,000	20,000
Granite.....				5,000	5,000
Ice.....	150	200	250	350	400
Iron pipe.....				100	
Lumber.....	2,800	3,500	5,000	15,000	18,000
Lime, cement, etc.....	300	400	400	1,000	15,000
Wood.....	6,000	5,400	5,500	5,500	6,000
Total.....	41,300	46,100	49,300	67,850	85,900

Most of the above is landed and shipped from Castine, at the mouth of the river.

Arrivals in calendar year 1895.

Steamers drawing 10 feet or more, 500 to 1,500 tons.....	200
Steamers drawing less than 10 feet, 5 to 250 tons.....	500
Sailing vessels drawing 10 feet or more, 150 to 400 tons.....	100
Sailing vessels drawing less than 10 feet, 5 to 100 tons.....	250
Vessels built.....	4

7. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Maine. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay near South Penobscot is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. There was a narrow channel from Bridges Point to Bowden's wharf which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. A project for the improvement of the Northern Bay was adopted in 1890, which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point to Bowden's wharf, at an estimated cost of \$45,000. It is also intended to remove a small quantity of rock obstructing the channel at Johnsons Narrows, at an estimated cost of \$1,875.

The expenditures to the close of the fiscal year ending June 30, 1896, amounted to \$16,995.34. The channel had been dredged its entire length for a width of 40 feet, but the full projected depth had not been obtained throughout. At Winslows Island, about midway of the channel and where it is shoalest, a depth of about 2 feet at mean low tide has been secured by the removal of bowlders.

Proposals for continuing the excavation of the channel with the available funds have been invited, the bids to be opened July 21, 1897.

The tonnage for 1896 is given as 78,000 tons, chiefly brick, grain, lumber, and lime. Probably not over one-fifth of this, however, passed through the improvement.

July 1, 1896, balance unexpended.....	\$5,004.66
June 30, 1897, amount expended during fiscal year.....	29.50
<hr/>	
July 1, 1897, balance unexpended.....	4,975.16
July 1, 1897, outstanding liabilities.....	25.00
<hr/>	
July 1, 1897, balance available.....	4,950.16
<hr/>	
{ Amount (estimated) required for completion of existing project.....	21,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1899	21,875.00
{ Submitted in compliance with requirements of sections 2 of river and	
{ harbor acts of 1866 and 1867 and of sundry civil act of June 4, 1897.	

(See Appendix A 7.)

A 7.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

The approved project and the report of progress of the work to June 30, 1896, will be found in the Report of the Chief of Engineers for 1897, Part I, page 30.

The expenditures during the fiscal year 1897 were \$29.50. No work was done. Proposals for continuing the excavation of the channel with the available funds have been invited, the bids to be opened July 21, 1897.

The improvement is in the collection district of Castine. The nearest port of entry is Castine, at the mouth of the river. The nearest light-house is at Dice Head.

Money statement.

July 1, 1896, balance unexpended.....	\$5,004.66
June 30, 1897, amount expended during fiscal year.....	29.50
<hr/>	
July 1, 1897, balance unexpended.....	4,975.16
July 1, 1897, outstanding liabilities.....	25.00
<hr/>	
July 1, 1897, balance available.....	4,950.16
<hr/>	
{ Amount (estimated) required for completion of existing project.....	21,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1899	21,875.00
{ Submitted in compliance with requirements of sections 2 of river and	
{ harbor acts of 1866 and 1867 and of sundry civil act of June 4, 1897.	

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APPROPRIATIONS.

August 11, 1888	\$3,000
September 19, 1890	4,000
July 13, 1892	5,000
August 17, 1894	5,000
June 3, 1896	5,000

COMMERCIAL STATISTICS.

Receipts and shipments.

Articles	1891.	1892.	1893.	1894.	1895.	1896. •
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Bricks	6,000	7,500	8,000	8,000	8,000	7,000
Coal	2,200	2,350	2,300	2,500	2,500	2,500
Cotton	150	150	200	200	300	300
Farm produce	250	300	400	400	400	350
Fish	150	300	250	300	300	300
Grain	8,000	9,000	9,000	9,500	10,000	10,000
General merchandise	15,000	17,000	18,000	20,000	20,000	20,000
Granite				5,000	5,000	5,000
Ice	150	200	250	450	400	400
Iron pipe				100		
Lumber and cooperage	2,800	3,500	5,000	15,000	18,000	15,000
Lime, cement, etc	300	400	400	1,000	15,000	12,200
Wood	6,000	5,400	5,500	5,500	6,000	5,000
Total	41,300	46,100	49,300	67,850	85,900	78,050

Arrivals in calendar year 1896.

Steamers:	
Drawing 10 feet or more, 500 to 1,500 tons	200
Drawing less than 10 feet, 5 to 250 tons	500
Sailing vessels:	
Drawing 10 feet or more, 150 to 400 tons	90
Drawing less than 10 feet, 5 to 50 tons	250
Vessels built	6
Steamboat line established	1

Most of the above is lauded and shipped from Castine, at the mouth of the river.

7. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay near South Penobscot is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. There was a narrow channel from Bridges Point to Bowden's wharf which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. A project for the improvement of the Northern Bay was adopted in 1890, which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point to Bowden's wharf, at an estimated cost of \$45,000. It is also intended to remove a small quantity of rock obstructing the channel at Johnsons Narrows, at an estimated cost of \$1,875.

The expenditures to the close of the fiscal year ending June 30, 1897, amounted to \$17,024.84. At that date the channel had been dredged its entire length for a width of 40 feet, but the full projected depth had not been obtained throughout. At Winslows Island, about midway of the channel, and where it was shoalest, a depth of about 2 feet at mean low tide had been secured by the removal of bowlders.

The expenditures during the fiscal year 1898 were \$4,765.34, the operations consisting in removing 446.7 tons of bowlders from the channel at Winslows Island. A depth of 2 feet at mean low tide is all that can be carried at Winslows Island, where the channel is shoalest.

The commerce for the last five years is given as follows:

	Tons.
1893	49,300
1894	67,850
1895	85,900
1896	78,050
1897	86,600

Probably a large proportion of this pertains to Castine, at the mouth of the river.

July 1, 1897, balance unexpended.....	\$1,975.16
June 30, 1898, amount expended during fiscal year.....	4,765.34

July 1, 1898, balance unexpended.....	209.82
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{ Amount (estimated) required for completion of existing project.....	24,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1900	10,000.00
{ Submitted in compliance with requirements of sections 2 of river and	
{ harbor acts of 1866 and 1867 and of sundry civil act of June 4, 1897.	

(See Appendix A 7.)

2. *Survey of Bagaduce River, leading up to Penobscot village, Maine.*—Major Hoxie submitted report dated November 23, 1897. Penobscot village and South Penobscot constitute the town of Penobscot, situate on the Northern Bay branch of Bagaduce River, and a project for improvement of this locality by securing a channel 100 feet wide and 6 feet deep at mean low water, from Bridges Point to Bowden's wharf, South Penobscot, adopted in 1890, is now being carried out by the United States. The cost of completing this project is now estimated to be \$52,187.30; and an improvement which would reach Penobscot village would necessitate a duplicate dredged channel, 2,600 feet in length, extending from deep water across intervening mud flats to the wharf, at a cost estimated by Major Hoxie to be \$45,700.

In the opinion of Major Hoxie, the interests of commerce involved will not justify the proposed improvement under present conditions; the existing project provides for a suitable improvement for this locality, and any further expenditure for an additional channel to another point in the same town is not justifiable. His views were concurred in by the division engineer, Col. G. L. Gillespie, Corps of Engineers. The report was transmitted to Congress and printed in House Doc. No. 144, Fifty-fifth Congress, second session. (See also Appendix A 20.)

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A 7.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

The approved project and the report of progress of the work to June 30, 1897, will be found in the Report of the Chief of Engineers for 1898, Part I, page 40.

The expenditures during the fiscal year 1898 were \$4,765.34. The operations consisted in removing bowlders, under a contract with Robert H. Rogers. The work was commenced during the latter part of August. The contract was completed on the 5th of the following October, when 446.7 tons of bowlders had been removed from the channel at Winslows Island.

The improvement is in the collection district of Castine. The nearest port of entry is Castine, at the mouth of the river. The nearest light-house is at Dice Head.

Money statement.

July 1, 1897, balance unexpended	\$4,975.16
June 30, 1898, amount expended during fiscal year	4,765.34
July 1, 1898, balance unexpended	209.82
{ Amount (estimated) required for completion of existing project	21,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1900	24,875.00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867 and of sundry civil act of June 4, 1897.	

APPROPRIATIONS.

August 11, 1888	\$3,000
September 19, 1890	4,000
July 13, 1892	5,000
August 18, 1894	5,000
June 3, 1896	5,000
Total	22,000

Abstract of proposal for removing bowlders, July 21, 1897.

No.	Bidder.	Approximate quantity, 100 tons (price per ton)	Amount.
1	Robert H. Rogers, Plattsburg, N. Y.	\$9.87	\$987.00

Contract made with Robert H. Rogers, September 7, 1897.

Contract in force during the fiscal year ending June 30, 1898.

No.	Contractor.	Date.	Subject.	Price per ton for removing bowlders.	Date of approval.	Beginning of work.	Expiration.
1	Robert H. Rogers, Plattsburg, N. Y.	Sept. 7, 1897	Removing bowlders	\$9.87	Oct. 6, 1897	Aug. 23, 1897	Nov. 23, 1897

Contract completed.

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COMMERCIAL STATISTICS.

Receipts and shipments.

	Tons.	1897—Continued.	Tons.
1891.....	41,300	Fish	300
1892.....	46,100	Grain	11,000
1893.....	49,300	General merchandise	25,000
1894.....	67,850	Granite	5,000
1895.....	85,900	Ice	450
1896.....	78,050	Lumber and cooperage	16,200
		Lime, cement, etc	12,000
1897:		Phosphate	200
Bricks	7,300	Wood	6,000
Coal	2,500		
Cotton	300	Total	86,600
Farm produce.....	350		

Arrivals and departures in calendar year 1897.

Steamers drawing 10 feet or more, 500 to 1,500 tons	400
Steamers drawing less than 10 feet, 5 to 250 tons	1,000
Sailing vessels drawing 10 feet or more, 150 to 400 tons	180
Sailing vessels drawing less than 10 feet, 5 to 150 tons	500
Steam tugs plying on the river.....	1

Most of the foregoing includes receipts and shipments at Castine, at the mouth of the river.

A 20.

SURVEY OF BAGADUCE RIVER, LEADING UP TO PENOBSCOT VILLAGE, MAINE.

[Printed in House Doc. No. 144, Fifty fifth Congress, second session.]

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., December 6, 1897.

SIR: I have the honor to submit the accompanying report of November 23, 1897, with map * by Maj. R. L. Hoxie, Corps of Engineers, of the results of a survey of Bagaduce River, Maine, leading up to Penobscot village, made to comply with requirements of the river and harbor act of June 3, 1896.

Penobscot village and South Penobscot constitute the town of Penobscot, situate on the Northern Bay branch of Bagaduce River, and a project for improvement of this locality by securing a channel 100 feet wide and 6 feet deep at mean low water from Bridges Point to Bowden's wharf, South Penobscot, adopted in 1890, is now being carried out by the United States. The cost of completing this project is now estimated to be \$52,187.30; and an improvement which would reach Penobscot village would necessitate a duplicate dredged channel 2,600 feet in length, extending from deep water across intervening mud flats to the wharf, at a cost estimated by Major Hoxie to be \$45,700.

In his letter transmitting this report Major Hoxie states that, in his opinion, the interests of commerce involved will not justify the proposed improvement under present conditions; that the existing project provides for a suitable improvement for this locality, and that any further expenditure for an additional channel to another point in the same town is not justifiable. His views are concurred in by the division engineer, Col. G. L. Gillespie, Corps of Engineers.

Very respectfully, your obedient servant,

JOHN M. WILSON,
Brig. Gen., Chief of Engineers,
U. S. Army.

Hon. R. A. ALGER,
Secretary of War.

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REPORT OF MAJ. R. L. HOXIE, CORPS OF ENGINEERS.

UNITED STATES ENGINEER OFFICE,
Portland, Me., November 25, 1897.

GENERAL: In compliance with Department letter dated September 5, 1896, I have the honor to submit the following report of survey of

* Not reprinted. Printed in House Doc. No. 144, Fifty-fifth Congress, second session.

"Bagaduce River, Maine, leading up to Penobscot village," provided for by the river and harbor act of June 3, 1896.

A preliminary examination of the Bagaduce River, under the river and harbor act of August 5, 1886, was made during that year, and a survey followed in 1888. This examination and survey furnished the greater part of the information now required under the act of June 3, 1896, and it has only been necessary to supplement them with a survey for a channel from the head of navigation of the North Fork of the Bagaduce River, in Northern Bay, to Penobscot village, on the shores of the bay. From these sources of information the following is compiled:

The Bagaduce River is a tidal water opening into Penobscot Bay at Castine. The lower part of the river forms the harbor of Castine, where the mean rise of the tide is 9.3 feet.

About 5 miles above the mouth of the river are the Narrows. The banks are at least 700 feet apart and the channel for the largest vessels is more than half that width.

Immediately above the Narrows the river is much broader and divides into the North and South forks. The tidal portion of the North Fork terminates in the Northern Bay.

From the Narrows to Penobscot the North Fork is broad and has a good channel, though somewhat indirect, as far as Bridges Point. This point is on the east shore, where the river widens into Northern Bay, about 3 miles from the Narrows, and a little more than three-fourths of a mile below the head of the channel at Penobscot.

The town comprises two villages, known, respectively, as Penobscot and South Penobscot. The latter is at the head of the tidal channel of the river on the southeast shore of the bay, while the former is 1 mile farther north.

Above Bridges Point, in the Northern Bay, the channel is narrow, and at low water has not sufficient depth for even the smaller coasting vessels which carry freights to distant points. Even this small channel is greatly obstructed by points of ledge and by bowlders where it passes between Winslows Island and the mainland.

The ledge and bowlders mentioned form such an obstruction that vessels are compelled to leave the channel entirely and pass over the flats on the other side of the island; this can only be done at high water and with vessels of comparatively small draft. Any regular or reliable communication by water is, therefore, at present impracticable, though the shipments by water from this point are sufficient to make freights for 210 vessels, many of them so large that they have to be loaded below Bridges Point, at great additional expense. In 1888 careful inquiry was made into the actual and prospective commerce of Penobscot, with the result that Major Smith reported as follows:

There is an extensive industry of brickmaking carried on in Penobscot, which is only awaiting better communication to be very largely increased. A large part of the bricks have to be lightered, and it is difficult to obtain the larger class of vessels for freight, so that the expense is increased about 50 cents per thousand for freight, lighterage, breakage, and delay.

The 50 cents per thousand thus lost represents a large part of the entire profit, so that the production is restricted. About 5,000,000 bricks is the present annual average of manufacture on the North Fork, and a good channel would probably result in doubling that number.

About 2,000 cords of wood are shipped from Penobscot annually; also, about 3,000 bushels of potatoes, and various other agricultural products.

Winstons Creek, which flows into the Northern Bay at South Penobscot village, furnishes power for two stave mills, two shingle mills, one sawmill and lath mill, and one mill for grinding corn meal. There is also in the village a knitting factory.

All these industries would be enabled to ship their products at reduced prices were the freights by water regular and reliable.

The number of freighting vessels arriving on the North Fork of the Bagaduce annually is given as 210, and about an equal number of yachts and small craft in addition.

There is a fine granite quarry which can not now be operated, owing to cost of transporting stone, which may figure among the prospective business of the place.

Penobscot is the natural outlet of quite a large section of country remote from any direct line of railroad, 10 miles over a hilly road from Castine Harbor, and 14 miles to the nearest point of the branch railroad from Bangor to Bucksport.

A regular line of steamers from points on Penobscot Bay is only awaiting a time when the channel above Bridges Point shall be improved to make daily trips to South Penobscot village.

Pursuant to the examination and survey of 1886 and 1888, the project for the improvement of the Bagaduce River was adopted, which contemplated the excavation of a channel 4,000 feet long, 100 feet wide, and 6 feet deep at low tide from Bridges Point to Bowden's wharf, South Penobscot, in Northern Bay, the object of the improvement being to enable boats drawing 6 feet of water to reach Bowden's wharf at low tide. The estimated cost of this improvement was \$45,000, and there have been five separate appropriations, aggregating \$22,000, of which \$21,703.43 has been expended in the prosecution of the work.

Coast Survey chart No. 101 of Penobscot Bay, Maine, locates Penobscot at the head of the low-water channel which is now under improvement, but local nomenclature makes this South Penobscot and the village about 1 mile farther north is called Penobscot village. The two villages constitute the town of Penobscot. Deep water of the Bagaduce River extends about 1,600 feet beyond the entrance of the present dredged channel in the direction of Penobscot village, but terminates abruptly in the mud flats about 2,600 feet from the wharf. An improvement which would reach Penobscot village would necessitate a duplicate dredged channel, 2,600 feet in length, extending across these flats where no low-water channel now exists. The cost of completing work under the present project for improving the low-water channel to South Penobscot has been increased by insufficient appropriations and the development of more bowlder excavation than was anticipated. It is now estimated as follows, assuming adequate appropriations:

Dredging 43,500 cubic yards of clay, at 25 cents per yard.....	\$10,875.00
Removing 1,899 tons of bowlders, at 47 per ton	34,293.00
Redredging 6,500 cubic yards clay, at 35 cents per yard.....	2,275.00
Engineering, supervision, and contingencies, 10 per cent.....	4,744.30
<hr/>	<hr/>
Total	52,187.30

In estimating the cost of a channel from deep water in the Bagaduce River to Penobscot village the same dimensions of channel are assumed, 100 feet in width and 6 feet in depth, and in the absence of sufficient information by multiplied borings on the line of this channel the proportion of bowlder excavation is predicated upon the work done in the channel to South Penobscot, up to but not including the rocky reef at Winslows Island. The shores of the bay present the same appearance at both localities, being covered with large bowlders, which also project at low tide from the mud flats in the vicinity of either channel, but the flats in the direction of North Penobscot are covered with a greater depth of clay. It is possible that in this way the proportion of bowlders in the channel leading up to Penobscot village is overestimated, but scattered borings can not be relied upon to give any indication

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whatever of the proportion of bowlders present. The estimate is as follows, assuming adequate appropriations:

107,000 cubic yards clay and mud, at 25 cents.....	\$26,750
2,100 tons bowlders, at \$7 per ton	14,700
Engineering, superintendence, and contingencies	4,250
Total	45,700

The channel to South Penobscot, already dredged 40 feet wide, has silted up to some extent, probably on account of the fall of the side slopes into the excavation. The maintenance of the channel after completion to full width may require a small annual appropriation, but it follows the line of the existing low-water channel, which is also the outlet for Winstons Creek, so that it is evident that the tidal currents of the bay and the flow of Winstons Creek will combine to keep this channel clear. The channel to Penobscot village would not follow any indicated natural line of tidal current, and would probably silt up more rapidly. The annual cost of maintenance can not now be estimated.

A tracing, showing results of three surveys of Northern Bay and the compilation from Coast Survey chart No. 311, is transmitted herewith, and upon this is shown the present condition of the channel now under improvement and the location which will probably be the most favorable for the proposed channel to Penobscot village.

Very respectfully, your obedient servant,

R. L. HOXIE,
Major, Corps of Engineers.

Brig. Gen. JOHN M. WILSON,
Chief of Engineers, U. S. A.

7. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay near South Penobscot is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. There was a narrow channel from Bridges Point to Bowden's wharf which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. A project for the improvement of the Northern Bay was adopted in 1890, which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point to Bowden's wharf, at an estimated cost of \$45,000. It is also intended to remove a small quantity of rock obstructing the channel at Johnsons Narrows, at an estimated cost of \$1,875.

The expenditures to June 30, 1898, were \$21,790.18. At that date the channel had been dredged its entire length for a width of 40 feet, but the full projected depth had not been obtained throughout. At Winslows Island, about midway of the channel, and where it was shoalest, a depth of about 2 feet at mean low tide had been secured by the removal of bowlders.

There were no expenditures during the fiscal year 1899, and no work was done.

By the act of March 3, 1899, the sum of \$3,000 was appropriated for continuing the improvement, which sum it is proposed to apply during the coming fiscal year to removing rock and bowlders at Winslows Island.

The available depth over the shoalest part of the improvement is about 2 feet at mean low tide.

The commerce for the last six years is given as follows:

	Tons		Tons
1893.....	49,300	1896.....	78,050
1894.....	67,850	1897.....	86,600
1895.....	85,900	1898.....	79,965

Probably a large part of this pertains to Castine, at the mouth of the river.

July 1, 1898, balance unexpended.....	\$209.82
Amount appropriated by river and harbor act approved March 3, 1899. . .	3,000.00

July 1, 1899, balance unexpended.....	3,209.82
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(Amount (estimated) required for completion of existing project.....	21,875.00
(Amount that can be profitably expended in fiscal year ending June 30, 1891. . .	21,875.00
(Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867 and of sundry civil act of June 1, 1897.	

(See Appendix A 7.)

A 7.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

The approved project and the report of progress of the work to June 30, 1898, will be found in the Report of the Chief of Engineers for 1899, Part I, page 48.

There were no expenditures during the fiscal year 1899, and no work was done.

By the act of March 3, 1899, the sum of \$3,000 was appropriated for continuing the improvement, which sum it is proposed to expend during the coming fiscal year in removing rocks and bowlders at Winslows Island.

The improvement is in the collection district of Castine. The nearest port of entry is Castine, at the mouth of the river. The nearest light-house is at Vice Head.

Money statement.

July 1, 1898, balance unexpended	\$209.82
Amount appropriated by river and harbor act approved March 3, 1899...	3,000.00
	3,209.82
July 1, 1899, balance unexpended.....	3,209.82
	3,209.82
{ Amount (estimated) required for completion of existing project	21,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1901.	21,875.00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867 and of sundry civil act of June 4, 1897.	

APPROPRIATIONS.

August 11, 1888	\$3,000
September 19, 1890	4,000
July 13, 1892	5,000
August 18, 1894	5,000
June 3, 1896	5,000
March 3, 1899	3,000
	25,000

COMMERCIAL STATISTICS.

Receipts and shipments.

	Tons.
1891	41,300
1892	46,100
1893	49,300
1894	67,850
1895	85,900
1896	78,050
1897	86,600
1898:	Tons.
Bricks	7,500
Coal	2,540
Cotton	300
Farm produce	325
Fish	400
Grain	10,500
General merchandise	21,000
Granite	4,500
Ice	400
Iron pipe	100
Lumber and cooperage	15,000
Lime, cement, etc	12,000
Wood	5,400
Total	79,965

Arrivals and departures in calendar year 1898.

Steamers:	
Drawing 10 feet or more, 500 to 1,500 tons	200
Drawing less than 10 feet, 5 to 250 tons	500
Sailing vessels:	
Drawing 10 feet or more, 150 to 400 tons	95
Drawing less than 10 feet, 5 to 250 tons	260

Most of the above is landed and shipped from Castine, at the mouth of the river.

8. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay near South Penobscot is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. There was a narrow channel from Bridges Point to Bowden's wharf which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. A project for the improvement of the Northern Bay was adopted in 1890 which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point to Bowden's wharf, at an estimated cost of \$45 000. It is also intended to remove a small quantity of rock obstructing the channel at Johnsons Narrows, at an estimated cost of \$1,875.

The expenditures to June 30, 1899, were \$21,790.18. At that date the channel had been dredged its entire length for a width of 40 feet, but the full projected depth had not been obtained throughout. At Winslows Island, about midway of the channel, and where it was shoalest, a depth of about 2 feet at mean low tide had been secured by the removal of bowlders.

Removal of rocks and bowlders at Winslows Island, under contract with Townsend & Olsen, was commenced June 15, 1900, but progress was very slow and by the close of the fiscal year only 83 tons had been removed.

The improvement when completed will be fairly permanent except that a gradual washing into the dredged channel of soft mud from the flats on either side will cause some shoaling.

The small sailing vessels now landing at South Penobscot do not use the new channel on account of the ledges at Winslows Island, and can, therefore, go in or out at high water, drawing not more than about 8 feet. Vessels drawing 12 to 14 feet could pass in and out at high water should the improvement be completed.

The commerce for the last seven years is given as follows:

	Tons		Tons
1893	49,300	1897	86,600
1894	67,850	1898	79,965
1895	55,900	1899	89,500
1896	78,050		

Probably the greater part of this pertains to Castine, at the mouth of the river.

July 1, 1899, balance unexpended.....	\$3,209.82
June 30, 1900, amount expended during fiscal year.....	129.45
July 1, 1900, balance unexpended.....	3,080.37
July 1, 1900, outstanding liabilities.....	\$143.65
July 1, 1900, amount covered by uncompleted contracts.....	2,800.00
	<u>2,943.65</u>
July 1, 1900, balance available.....	136.72
{ Amount (estimated) required for completion of existing project.....	21,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1902, in addition to the balance available July 1, 1900.....	20,000.00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867 and of sundry civil act of June 4, 1897.	

(See Appendix A 7.)

A 7.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

The approved project and report of progress of the work to June 30, 1899, will be found in the Report of the Chief of Engineers for 1900, Part I, page 51.

The expenditures during the fiscal year 1900 were \$129.45. Removal of rocks and boulders at Winslows Island, under contract with Townsend & Olsen, was commenced June 15; but progress was very slow, and by the close of the fiscal year only 83 tons had been removed.

The improvement when completed will be fairly permanent, except that a gradual washing into the dredged channel of soft mud from the flats on either side will cause some shoaling.

The small sailing vessels now landing at South Penobscot do not use the new channel, on account of the ledges at Winslows Island, and can therefore go in or out at high water drawing not more than about 8 feet. Vessels drawing 12 to 14 feet could pass in and out at high water should the improvement be completed.

The improvement is in the collection district of Castine. The nearest port of entry is Castine, at the mouth of the river. The nearest light-house is at Dice Head.

Money statement.

July 1, 1899, balance unexpended	\$3, 209. 82
June 30, 1900, amount expended during fiscal year	129. 45
<hr/>	
July 1, 1900, balance unexpended	3, 080. 37
July 1, 1900, outstanding liabilities	\$143. 65
July 1, 1900, amount covered by uncompleted contracts	2, 800. 00
	2, 943. 65
<hr/>	
July 1, 1900, balance available	136. 72
<hr/>	
{ Amount (estimated) required for completion of existing project	21, 875. 00
{ Amount that can be profitably expended in fiscal year ending June 30, 1902, in addition to the balance available July 1, 1900	21, 875. 00
{ Submitted in compliance with requirements of sections 2 of river and harbor acts of 1866 and 1867 and of sundry civil act of June 4, 1897.	

APPROPRIATIONS.

August 11, 1888	\$3, 000	June 3, 1896	\$5, 000
September 19, 1890	4, 000	March 3, 1899	3, 000
July 13, 1892	5, 000		
August 18, 1894	5, 000	Total	25, 000

Abstract of proposals for removing rocks and boulders, April 12, 1900.

No	Name and address of bidder.	Price per ton 2,000 pounds.	Commence after notification of approval of contract.	Complete after notification of approval of contract.
1	Harries & Letteney, Boston, Mass	\$4. 20	10 days	30 days.
2	Townsend & Olsen, Boston, Mass	1. 59	June 1, 1900	90 days.
3	Charles W. Johnston, Lewes, Del.	2. 24	15 days	Do.
4	Robert H. Rogers, Plattsburg, N. Y.	4. 21	do	45 days
5	George A. Rogers, Plattsburg, N. Y.	5. 00	30 days	Aug. 1, 1900.
6	Denis Toomey, Guilford, Conn	11. 90	20 days	60 days
7	H. Herbert Sturgis, South Standish, Me	5. 22	30 days	90 days.

Contract made with Townsend & Olsen.

1900

Contract in force during fiscal year ending June 30, 1900.

Name of contractor: Townsend & Olsen.
 Date of contract: May 7, 1900.
 Date of approval: May 21, 1900.
 Time for commencement: June 24, 1900.
 Time for completion: September 22, 1900.

COMMERCIAL STATISTICS.

Receipts and shipments.

	Tons.		Tons.
1891	41,300	1895	85,900
1892	46,100	1896	78,050
1893	49,300	1897	86,600
1894	67,850	1898	79,965

Receipts and shipments—Continued.

	Tons.
1899:	
Bricks	8,000
Coal	2,500
Cod and mackerel lines	300
Cotton	350
Farm produce	350
Fish	300
General merchandise	25,000
Grain	12,000
Granite	6,000
Lumber and cooperage	16,500
Lime, cement, etc.	11,000
Phosphate	200
Wood	7,000
Total	89,500

Arrivals and departures during calendar year 1899.

Steamers:	
Drawing 10 feet or more, 500 to 1,500 tons	250
Drawing less than 10 feet, 5 to 250 tons	1,200
Sailing vessels:	
Drawing 10 feet or more, 150 to 400 tons	200
Drawing less than 10 feet, 5 to 150 tons	500
Steam tugs plying on the river	1

Most of the above is landed and shipped from Castine, at the mouth of the river. Only about 15,175 tons applies directly to the locality under improvement.

7. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay near South Penobscot is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. There was a narrow channel from Bridges Point to Bowden's wharf which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. A project for the improvement of the Northern Bay was adopted in 1890 which has for its object the securing of a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point to Bowden's wharf, at an estimated cost of \$45,000. It is also intended to remove a small quantity of rock obstructing the channel at Johnsons Narrows, at an estimated cost of \$1,875.

The expenditures to June 30, 1900, were \$21,919.63. At that date the channel had been dredged its entire length for a width of 40 feet, but the full projected depth had not been obtained throughout. At Winslows Island, about midway of the channel, and where it was shoalest, a depth of about 2 feet at mean low tide had been secured by the removal of bowlders.

The removal of rocks and bowlders from the 40-foot wide channel opposite Winslows Island, which was commenced June 15, 1900, was completed as far as practicable August 11 following, 418 tons being removed during the fiscal year and a total of 501 tons under the contract. An open-market arrangement was then made to continue the removal of bowlders over the entire width of the 100-foot channel. This work was completed September 15, at which time 976 tons additional had been removed, making a total of 1,477 tons removed.

Navigation has not been appreciably benefited by the improvement and probably will not be until the projected channel is fully completed. The small vessels carrying brick and merchandise prefer to go in or out across the flats to the north of Winslows Island, where only vessels drawing not more than 8 feet can pass at high tide, rather than to take the chances of running on the rocks by way of the narrow channel to the southward of the island, where there is a depth of 10 or 12 feet at high tide.

The improvement when completed will be fairly permanent except that a gradual washing into the dredged channel of soft mud from the flats on either side will cause some shoaling.

The commerce for the last eight years is given as follows:

Tons.		Tons.	
1893 ..	49,300	1897 ..	86,600
1894 ..	67,850	1898 ..	79,965
1895 ..	85,900	1899 ..	89,500
1896 ..	78,050	1900 ..	86,000

Probably the greater part of this pertains to Castine, at the mouth of the river.

July 1, 1900, balance unexpended ..	\$3,080.37
June 30, 1901, amount expended during fiscal year ..	2,732.56

July 1, 1901, balance unexpended ..	347.81
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{ Amount (estimated) required for completion of existing project ..	21,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1903, in addition to the balance unexpended July 1, 1901 ..	3,000.00
{ Submitted in compliance with requirements of sundry civil act of June 4, 1897.	

(See Appendix A 6.)

A 6.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

The approved project and report of progress of the work to June 30, 1900, will be found in the report of the Chief of Engineers for 1901, Part I, page 125.

The expenditures during the fiscal year 1901 were \$2,732.56. The removal of rocks and bowlders from the 40-foot wide channel opposite Winslows Island, under contract with Townsend & Olsen, which was commenced June 15, 1900, was completed as far as practicable August 11 following, 418 tons being removed during the fiscal year, and a total of 501 tons under the contract, at the rate of \$1.59 per ton. An open market arrangement was then made with the same parties to continue the removal of bowlders over the entire width of the 100-foot channel at the same price. This work was completed September 15, at which time 976 tons additional had been removed, making a total of 1,477 tons removed under formal contract and informal agreement.

It is proposed to apply the additional appropriation recommended to continuing the channel as originally projected.

The improvement is in the collection district of Castine. The nearest port of entry is Castine, at the mouth of the river. The nearest light-house is at Dice Head.

Money statement.

July 1, 1900, balance unexpended.....	\$3,080.37
June 30, 1901, amount expended during fiscal year.....	2,732.56
	347.81
July 1, 1901, balance unexpended.....	347.81
{ Amount (estimated) required for completion of existing project	21,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1903, in addition to the balance unexpended July 1, 1901	5,000.00
{ Submitted in compliance with requirements of sundry civil act of June 4, 1897.	

APPROPRIATIONS.

August 11, 1888	\$3,000	June 3, 1896	\$5,000
September 19, 1890	4,000	March 3, 1899.....	3,000
July 13, 1892.....	5,000		
August 18, 1894.....	5,000	Total	25,000

Contract in force during fiscal year ending June 30, 1901.

Name of contractor: Townsend & Olsen.
 Date of contract: May 7, 1900.
 Date of approval: May 21, 1900.
 Time for commencement: June 24, 1900.
 Time for completion: September 22, 1900.
 Rate: \$1.59 per ton.
 Contract completed.

1901

COMMERCIAL STATISTICS.

Receipts and shipments

	Tons.
1891.....	41,300
1892.....	46,100
1893.....	49,300
1894.....	67,850
1895.....	85,900
1896.....	78,050
1897.....	86,600
1898.....	79,985
1899.....	89,500
<hr/>	
1900:	
Bricks.....	12,000
Coal.....	2,500
Cod and mackerel lines.....	400
Cotton.....	350
Farm produce.....	250
Fish.....	300
General merchandise.....	25,000
Grain.....	12,000
Granite.....	2,000
Lumber and cooperage.....	17,000
Lime, cement, etc.....	8,000
Phosphate.....	200
Wood.....	6,000
<hr/>	
Total.....	86,000

Arrivals and departures during calendar year 1900.

Steamers drawing 10 feet or more, 500 to 1,500 tons.....	200
Steamers drawing less than 10 feet, 5 to 250 tons.....	1,200
Sailing vessels drawing 10 feet or more, 150 to 400 tons.....	200
Sailing vessels drawing less than 10 feet, 5 to 150 tons.....	500

Most of the foregoing includes receipts and shipments at Castine, at the mouth of the river.

6. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. Before improvement there was a narrow channel from Bridges Point to Bowden's wharf, which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. Mean rise and fall of tide, 9.8 feet.

The approved project is understood to be that published in House Ex. Doc. No. 157, Fiftieth Congress, first session, and at page 398 of the Annual Report of the Chief of Engineers for 1888. Its object is to secure a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point, Northern Bay, to Bowden's wharf, at an estimated cost of \$45,000. The same project provides for removing a small quantity

of rock in the channel at Johnsons Narrows, at an estimated cost of \$1,875. All work done has been in accordance with this project.

The expenditures to June 30, 1902, were \$24,652.19. At that date there had been obtained by dredging and by the removal of rocks and bowlders, mainly at Winslows Island, which was the shoalest place, a channel 40 feet wide and about 2 feet deep at mean low tide. No operations were carried on during the past year.

Navigation has not been appreciably benefited by the improvement. The improvement is of doubtful public benefit.

It is proposed to apply the appropriation of June 13, 1902, in continuing the removal of bowlders at Winslows Island and in dredging.

The commerce for the last eight years is given as follows:

	Tons.			Tons.	
1894	67,850	1898	79,965		
1895	85,900	1899	89,500		
1896	78,050	1900	86,000		
1897	86,600	1901	95,900		

Probably the greater part of this pertains to Castine, at the mouth of the river. The increase has been chiefly in lumber and cooorage.

July 1, 1901, balance unexpended	\$347.81
Amount appropriated by river and harbor act approved June 13, 1902 ..	3,000.00
<hr/>	
July 1, 1902, balance unexpended	3,347.81
July 1, 1902, out-standing liabilities	100.00
<hr/>	
July 1, 1902, balance available	3,247.81

(See Appendix A 6.)

A 6.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

No operations beyond inspection have been carried on during the year.

It is proposed to apply the available balance and the additional appropriation recommended in continuing the excavation of the channel at Winslow Island.

The improvement is a doubtful public benefit.

Money statement.

July 1, 1901, balance unexpended	\$347. 81
Amount appropriated by river and harbor act approved June 13, 1902....	3, 000. 00
July 1, 1902, balance unexpended	3, 347. 81
July 1, 1902, outstanding liabilities	100. 00
July 1, 1902, balance available	3, 247. 81
{ Amount (estimated) required for completion of existing project	18, 875. 00
{ Amount that can be profitably expended in fiscal year ending June 30, 1904, in addition to the balance unexpended July 1, 1902.	5, 000. 00
{ Submitted in compliance with requirements of sundry civil act of June 4, 1897.	

APPROPRIATIONS.

August 11, 1888.....	\$3, 000	March 3, 1899.....	\$3, 000
September 19, 1890.....	4, 000	June 13, 1902.....	3, 000
July 13, 1892.....	5, 000		
August 18, 1894.....	5, 000	Total	28, 000
June 3, 1896.....	5, 000		

COMMERCIAL STATISTICS.

Receipts and shipments, 1901.

	Tons.
Bricks.....	9, 000
Coal.....	2, 700
Cod and mackerel lines.....	300
Cotton.....	350
Farm produce.....	350
Fish.....	450
General merchandise.....	25, 000
Grain.....	12, 000
Granite.....	3, 000
Lumber and cooperage.....	23, 000
Lime, cement, etc.....	12, 000
Phosphate.....	250
Wood.....	7, 500
Total.....	95, 900

Most of the foregoing includes receipts and shipments at Castine, at the mouth of the river.

Arrivals and departures during calendar year 1901.

Steamers:	
Coastwise, draft 10 feet and over, 500 to 1,500 tons.....	250
Coastwise, draft less than 10 feet, 5 to 250 tons.....	1, 500
Sailing vessels:	
Coastwise, 150 to 400 tons.....	200
Coastwise, 5 to 150 tons.....	500

6. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. Before improvement there was a narrow channel from Bridges Point to Bowden's wharf, which had a depth of less than 2 feet and was obstructed by ledges and boulders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. Mean rise and fall of tide, 9.8 feet.

The approved project is understood to be that published in House Ex. Doc. No. 157, Fiftieth Congress, first session, and at page 398 of the Annual Report of the Chief of Engineers for 1888. Its object is to secure a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point, Northern Bay, to Bowden's wharf, at an estimated cost of \$45,000. The same project provides for removing a small quantity of rock in the channel at Johnsons Narrows at an estimated cost of \$1,875. All work done has been in accordance with this project.

The expenditures to June 30, 1903, were \$24,697.19. At that date there had been obtained by dredging and by the removal of rocks and boulders, mainly at Winslows Island, which was the shoalest place, a channel 40 feet wide and about 2 feet deep at mean low tide.

Navigation has not been appreciably benefited by the improvement. The improvement is of doubtful public benefit.

It is proposed to apply the appropriation of June 13, 1902, in continuing the removal of boulders at Winslows Island and in dredging. No operations were carried on during the past year.

The commerce for the last eight years is given, as follows:

	Tons		Tons	
1895	85,900	1899	89,500	
1896	78,050	1900	86,000	
1897	86,600	1901	95,900	
1898	79,965	1902	99,250	

This includes the business done at Castine, at the mouth of the river.

July 1, 1902, balance unexpended	\$3,347.81
June 30, 1903, amount expended during fiscal year	45.00
July 1, 1903, balance unexpended	3,302.81

{ Amount (estimated) required for completion of existing project	18,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1903, in addition to the balance unexpended July 1, 1903	2,000.00
{ Submitted in compliance with requirements of sundry civil act of June 4, 1897.	

(See Appendix A 6.)

1903

A 6.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

No operations beyond inspection have been carried on during the year.

It is proposed to apply the available balance and the additional appropriation recommended in continuing the excavation of the channel at Winslow Island.

The improvement is of doubtful public benefit.

Money statement.

July 1, 1902, balance unexpended	\$3,347.81
June 30, 1903, amount expended during fiscal year.....	45.00
	3,302.81
July 1, 1903, balance unexpended	3,302.81
{ Amount (estimated) required for completion of existing project ...	18,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1905, in addition to the balance unexpended July 1, 1903	5,000.00
{ Submitted in compliance with requirements of sundry civil act of June 1, 1897.	

APPROPRIATIONS.

August 11, 1888.....	\$3,000	March 3, 1899.....	\$3,000
September 19, 1890.....	4,000	June 13, 1902.....	3,000
July 13, 1892.....	5,000		
August 18, 1894.....	5,000	Total.....	28,000
June 3, 1896.....	5,000		

COMMERCIAL STATISTICS.

Receipts and shipments, 1902.

	Tons.
Brick ..	12,500
Coal	3,000
Cod and mackerel lines	450
Cotton	300
Farm produce.....	300
Fish	300
General merchandise	30,000
Grain	12,000
Granite	1,500
Lumber and cooperage	19,500
Lime and cement.....	12,000
Phosphate	200
Wood	7,200
Total ..	99,250

Arrivals and departures in calendar year 1902.

Steamers:	
Coastwise, draft 10 feet or more, 500 to 1,500 tons ..	100
Coastwise, draft less than 10 feet, 5 to 250 tons ...	1,600
Sailing vessels:	
Coastwise, draft 10 feet or more, 150 to 400 tons ...	150
Coastwise, draft less than 10 feet, 5 to 150 tons ...	500

The foregoing statement includes the business done at Castine at the mouth of the river.

1904

6. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. Before improvement there was a narrow channel from Bridges Point to Bowden's wharf, which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. Mean rise and fall of tide, 9.8 feet.

The approved project is understood to be that published at page 398 of the Annual Report of the Chief of Engineers for 1888. Its object is to secure a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point, Northern Bay, to Bowden's wharf, at an estimated cost of \$45,000. The same project provides for removing a small quantity of rock in the channel at Johnsons Narrows, at an estimated cost of \$1,875. All work done has been in accordance with this project.

The expenditures to June 30, 1904, were \$24,745.41. At that date there had been obtained by dredging and by the removal of rocks and bowlders, mainly at Winslows Island, which was the shoalest place, a channel 40 feet wide and about 2 feet deep at mean low tide.

Navigation has not been appreciably benefited by the improvement, which is of doubtful public value.

It is proposed to apply the appropriation of June 13, 1902, in continuing the removal of bowlders at Winslows Island and in dredging.

There were no operations during the fiscal year 1904. The work was advertised but no bids were received.

The commerce for the last eight years is given as follows, but it is to be remarked that this includes the business of Castine, a place of some importance at the mouth of the river:

	Tons.		Tons.
1896	78,050	1900	86,000
1897	86,600	1901	95,900
1898	79,965	1902	99,250
1899	89,500	1903	99,775
July 1, 1903, balance unexpended			\$3,302.81
June 30, 1904, amount expended during fiscal year for works of improvement			48.22
July 1, 1904, balance unexpended			3,254.59
July 1, 1904, outstanding liabilities			89.35
July 1, 1904, balance available			3,165.24
{ Amount (estimated) required for completion of existing project			18,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1906, for works of improvement, in addition to the balance unexpended July 1, 1904			2,000.00
{ Submitted in compliance with requirements of sundry civil act of June 4, 1897.			

(See Appendix A 6.)

A 6.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

There were no operations during the year. The work of continuing the excavation of bowlders at Winslows Island and the dredging of a basin at Bowden's wharf was offered by public advertisement, dated March 29, 1904, but no bids were received, this due to the fact that the small amount to be earned (about \$3,000) does not seem to warrant the expense of moving the necessary working plant to that somewhat remote locality.

Probably not more than 25 per cent of the work included in the original project has been accomplished.

It is proposed to apply the available balance and the additional appropriation estimated in continuing the excavation of the channel at Winslow Island.

The improvement is regarded as of doubtful public benefit.

Money statement.

July 1, 1903, balance unexpended	\$3,302.81
June 30, 1904, amount expended during fiscal year for works of improvement	48.22
July 1, 1904, balance unexpended	3,254.59
July 1, 1904, outstanding liabilities	89.35
July 1, 1904, balance available.....	3,165.24
{ Amount (estimated) required for completion of existing project.....	18,875.00
{ Amount that can be profitably expended in fiscal year ending June 30, 1906, in addition to the balance unexpended July 1, 1904.....	5,000.00
{ Submitted in compliance with requirements of sundry civil act of June 4, 1897.	

APPROPRIATIONS.

August 11, 1888.....	\$3,000	March 3, 1899.....	\$3,000
September 19, 1890.....	4,000	June 13, 1902.....	3,000
July 13, 1892.....	5,000		
August 18, 1894.....	5,000	Total.....	28,000
June 3, 1896.....	5,000		

COMMERCIAL STATISTICS.

Receipts and shipments, 1903.

	Tons.
Bricks.....	9,500
Coal.....	3,000
Cod and mackerel lines.....	350
Cotton.....	350
Farm produce.....	375
Fish.....	450
General merchandise.....	25,000
Grain.....	12,000
Granite.....	3,000
Lumber and cooperage.....	23,000
Lime, cement, etc.....	15,000
Phosphate.....	250
Wood.....	7,500
Total.....	99,775

Arrivals and departures during calendar year 1903.

Steamers:	
Coastwise, draft 10 feet and over, 500 to 1,500 tons.....	250
Coastwise, less than 10 feet, 5 to 250 tons.....	1,500
Sailing vessels:	
Coastwise, 150 tons to 400 tons.....	200
Coastwise, 5 to 150 tons.....	500

The foregoing statement includes the business done at Castine, at the mouth of the river.

6. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. Before improvement there was a narrow channel from Bridges Point to Bowden's wharf, which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. Mean rise and fall of tide, 9.8 feet.

The approved project is understood to be that published at page 398 of the Annual Report of the Chief of Engineers for 1888. Its object is to secure a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point, Northern Bay, to Bowden's wharf, at an estimated cost of \$45,000. The same project provides for removing a small quantity of rock in the channel at Johnsons Narrows, at an estimated cost of \$1,875. All work done has been in accordance with this project.

The expenditures to June 30, 1905, were \$24,865.21. At that date there had been obtained by dredging and by the removal of rocks and bowlders, mainly at Winslows Island, which was the shoalest place, a channel 40 feet wide and about 2 feet deep at mean low tide.

Navigation has not been appreciably benefited by the improvement, which is of doubtful public value.

There were no operations during the fiscal year 1905. A contract has just been made under which it is expected during the present working season to secure about 4 feet depth through the 40-foot cut already made.

The commerce for the last eight years is given below, but it is to be remarked that this includes the business of Castine, a place of some importance at the mouth of the river:

	Tons.		Tons.
1897	86,600	1901	95,900
1898	79,965	1902	99,250
1899	89,500	1903	99,775
1900	86,000	1904	102,950
July 1, 1904, balance unexpended			\$3,254.59
June 30, 1905, amount expended during fiscal year, for works of improvement			119.80
July 1, 1905, balance unexpended			3,134.79
July 1, 1905, outstanding liabilities			2.86
July 1, 1905, balance available			3,131.93
July 1, 1905, amount covered by uncompleted contracts			2,713.80
Amount (estimated) required for completion of existing project			18,875.00

(See Appendix A 6.)

1905

A 6.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

There were no operations during the year. The work of continuing the excavation of bowlders at Winslows Island and the dredging of a basin at Bowden's wharf was again offered by public advertisement dated April 28, 1905, but no bids were received. The appropriation is so small that bidders hesitate to undertake the expense of moving a plant to this remote locality. An arrangement has, however, been made with a contractor for dredging at New Harbor and Damariscotta River to undertake this job also at reasonable prices, and the work will be done during the present season.

Probably not more than 25 per cent of the work included in the original project has been accomplished.

It is proposed to apply the available balance and the additional appropriation estimated in continuing the excavation of the channel at Winslows Island.

The improvement is regarded as of doubtful public benefit, but if it is to be continued in the interest of economy appropriations should be made in larger amounts for the reason above noted.

Money statement.

July 1, 1904, balance unexpended.....	\$3, 254. 59					
June 30, 1905, amount expended during fiscal year, for works of improvement	119. 80					
July 1, 1905, balance unexpended.....	3, 134. 79					
July 1, 1905, outstanding liabilities.....	2. 86					
July 1, 1905, balance available.....	3, 131. 93					
July 1, 1905, amount covered by uncompleted contracts.....	2, 713. 80					
Amount (estimated) required for completion of existing project.....	18, 875. 00					
<table border="0" style="width: 100%;"> <tr> <td rowspan="3" style="font-size: 3em; vertical-align: middle;">{</td> <td>Amount that can be profitably expended in fiscal year ending June 30, 1907, for works of improvement, in addition to the balance unexpended July 1, 1905.....</td> <td>5, 000. 00</td> </tr> <tr> <td>Submitted in compliance with requirements of sundry civil act of June 4, 1897.....</td> <td></td> </tr> </table>		{	Amount that can be profitably expended in fiscal year ending June 30, 1907, for works of improvement, in addition to the balance unexpended July 1, 1905.....	5, 000. 00	Submitted in compliance with requirements of sundry civil act of June 4, 1897.....	
{	Amount that can be profitably expended in fiscal year ending June 30, 1907, for works of improvement, in addition to the balance unexpended July 1, 1905.....		5, 000. 00			
	Submitted in compliance with requirements of sundry civil act of June 4, 1897.....					

APPROPRIATIONS.

August 11, 1888.....	\$3, 000	March 3, 1899.....	\$3, 000
September 19, 1890.....	4, 000	June 13, 1902.....	3, 000
July 13, 1892.....	5, 000		
August 18, 1894.....	5, 000	Total.....	28, 000
June 3, 1896.....	5, 000		

CONTRACT IN FORCE.

Name of contractor: Eastern Dredging Company.
 Date of contract: June 28, 1905.
 Date of approval: July 21, 1905.
 Time for commencement: 150 days after notification of approval.
 Time for completion: 90 days after commencement.
 Rate:
 Shoals A and B, \$2 per cubic yard.
 Area near Bowden's wharf, 30 cents per cubic yard.

1905

COMMERCIAL STATISTICS.

Receipts and shipments, 1904.

	Tons.
Bricks	10,000
Coal	3,200
Cod and mackerel lines.....	400
Cotton	350
Fish	300
General merchandise.....	30,000
Grain	14,000
Granite	1,500
Lumber and cooperage.....	27,000
Lime, cement, etc.....	10,000
Phosphate	200
Wood	6,000
Total	102,950

The foregoing statement includes the business done at Castine, at the mouth of the river.

6. *Bagaduce River, Maine.* This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. Before improvement there was a narrow channel from Bridges Point to Bowden's wharf, which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. Mean rise and fall of tide, 9.8 feet.

The approved project is understood to be that published at page 398 of the Annual Report of the Chief of Engineers for 1888. Its object is to secure a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point, Northern Bay, to Bowden's wharf, at an estimated cost of \$45,000. The same project provides for removing a small quantity of rock in the channel at Johnsons Narrows, at an estimated cost of \$1,875. All work done has been in accordance with this project.

The expenditures to June 30, 1906, were \$27,948.90. At that date there had been made, by dredging and the removal of rocks and bowlders, a channel 40 feet wide and 6 feet deep at mean low tide except at Winslows Island, where a depth of only 4 feet has been secured. The total length of channel is about 4,000 feet.

The improvement has been regarded as of doubtful public value, and it is only recently that any use has apparently been made of the dredged channel. A small power boat now makes regular trips from Castine carrying passengers and freight.

It is proposed to apply the additional appropriation recommended in continuing the excavation of the channel at Winslows Island.

For reports on examinations and surveys, see Annual Reports of the Chief of Engineers for 1888, page 398; 1893, page 724, and 1898, page 842.

The commerce for the last eight years, which includes the business of Castine, a place of some importance at the mouth of the river, is, in tons: 1898, 79,965; 1899, 89,500; 1900, 86,000; 1901, 95,900; 1902, 99,250; 1903, 99,775; 1904, 102,950; 1905, 118,650.

July 1, 1905, balance unexpended.....	\$3,134.79
June 30, 1906, amount expended during fiscal year, for works of improvement..	3,083.69

July 1, 1906, balance unexpended.....	51.10
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Amount (estimated) required for completion of existing project.....	18,875.00
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} Amount that can be profitably expended in fiscal year ending June 30, 1908, for works of improvement, in addition to the balance unexpended July 1, 1906.....	2,000.00
	Submitted in compliance with requirements of sundry civil act of June 4, 1897.

(See Appendix A 6.)

A 6.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

Operations during the year consisted in excavation of bowlders at Winslows Island and the dredging of a basin at Bowden's wharf. Work was commenced August 29, 1905, suspended October 24, and was resumed in May, 1906, and completed June 9. It included the excavation and removal of 1,034 cubic yards of rocks and bowlders at Winslows Island at a contract price of \$2 per cubic yard, and the dredging of 2,166 cubic yards of material near Bowden's wharf at 30 cents

1906

per cubic yard, all place measurement. The project calls for a channel 100 feet wide and 6 feet deep at low tide. Operations to the present time have included dredging to a width of 40 feet to the depth of 6 feet, except at Winslows Island, where a depth of only about 4 feet has been secured. About one-third of the work covered by the project may be said to have been completed.

APPROPRIATIONS.

August 11, 1888.....	\$3,000	March 3, 1899.....	\$3,000
September 19, 1890.....	4,000	June 13, 1902.....	3,000
July 13, 1892.....	5,000		
August 18, 1894.....	5,000	Total.....	28,000
June 3, 1896.....	5,000		

CONTRACT IN FORCE.

Name of contractor: Eastern Dredging Company.
 Date of contract: June 28, 1905.
 Date of approval: July 21, 1905.
 Time for commencement: 150 days after notification of approval.
 Time for completion: 90 days after commencement.
 Rate:
 Shoals A and B, \$2 per cubic yard.
 Area near Bowden's wharf, 30 cents per cubic yard.
 Completed.

COMMERCIAL STATISTICS.

Receipts and shipments.

	Tons.
Bricks and clay.....	11,000
Cement.....	3,000
Coal.....	3,500
Cooperage.....	9,000
Cotton and cotton goods.....	800
Fertilizer.....	250
Fish.....	500
Flour.....	6,000
General merchandise.....	30,000
Grain.....	12,000
Hay and straw.....	300
Lime.....	10,000
Lumber.....	20,000
Machinery and iron.....	100
Molasses and sugar.....	200
Oil.....	1,000
Provisions.....	4,000
Wood.....	7,000
Total.....	118,650

Arrivals and departures during calendar year ending December 31, 1905.

Steamers, average draft 7 feet.....	2,000
Sailing vessels, average draft 7 feet.....	1,200

Number of passengers carried during the year, 30,000.
 One new transportation line from South Penobscot to Castine.
 The foregoing statement includes the business done at Castine, at the mouth of the river.

6. *Bagaduce River, Maine.*— This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. Before improvement there was a narrow channel from Bridges Point to Bowden's wharf, which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. Mean rise and fall of tide, 9.8 feet.

The approved project is understood to be that published at page 398 of the Annual Report of the Chief of Engineers for 1888. Its object is to secure a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point, Northern Bay, to Bowden's wharf, at an estimated cost of \$45,000. The same project provides for removing a small quantity of rock in the channel at Johnsons Narrows, at an estimated cost of \$1,875. All work done has been in accordance with this project. About one-third of the work covered by the project may be said to have been completed.

The expenditures to June 30, 1907, were \$28,000. At that date there had been made, by dredging and the removal of rocks and bowlders, a channel 40 feet wide and 6 feet deep at mean low tide, except at Winslows Island, where a depth of only 4 feet has been secured. The total length of channel is about 4,000 feet.

The improvement has been regarded as of doubtful public value, and it is only recently that any use has apparently been made of the dredged channel. A small power boat now makes regular trips from Castine, carrying passengers and freight.

For reports on examinations and surveys, see Annual Reports of the Chief of Engineers for 1888, page 398; 1893, page 724, and 1898, page 842.

The tonnage for 1906 is given as 105,990 tons, but this includes the business of Castine, at the mouth of the river. The commerce of the Bagaduce proper is put at about 27,000 tons, with an estimated value of about \$175,000.

July 1, 1906, balance unexpended.....	\$51. 10
June 30, 1907, amount expended during fiscal year, for works of improvement.....	51. 10

Amount (estimated) required for completion of existing project.....	18, 875. 00
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(See Appendix A 6.)

A 6.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

There was no work during the year.

Money statement.

July 1, 1906, balance unexpended.....	\$51. 10
June 30, 1907, amount expended during fiscal year, for works of improvement	51. 10
	18, 875. 00
Amount (estimated) required for completion of existing project.	18, 875. 00
{ Amount that can be profitably expended in fiscal year ending June 30, 1909, for works of improvement, in addition to the balance unexpended July 1, 1907.....	5, 000. 00
{ Submitted in compliance with requirements of sundry civil act of June 4, 1897.	

APPROPRIATIONS.

August 11, 1888	\$3, 000	March 3, 1899.....	\$3, 000
September 19, 1890	4, 000	June 13, 1902.....	3, 000
July 13, 1892.....	5, 000		
August 18, 1894	5, 000	Total	28, 000
June 3, 1896	5, 000		

COMMERCIAL STATISTICS.

Receipts and shipments.

	Tons.
Apples	20
Beef	100
Cattle	20
Canned goods.....	100
Cement, bricks, and clay.....	13, 000
Coal	3, 500
Cotton and cotton goods.....	800
Fertilizer.....	200
Fish	300
General merchandise.....	25, 000
Grain, flour, hay, and straw.....	18, 250
Lime	7, 000
Lumber and cooperage.....	25, 900
Potatoes.....	100
Machinery and iron.....	300
Molasses and sugar.....	200
Oil.....	1, 100
Provisions.....	3, 500
Sand	500
Stone	100
Wood	6, 000
Total	105, 990

Arrivals and departures during calendar year ending December 31, 1906.

Steam vessels, average draft 7 feet.....	2, 000
Sailing vessels, average draft 7 feet.....	1, 200

Two new lines of transportation established.
 Number of passengers carried, 30,000.
 The foregoing statement includes the business done at Castine, at the mouth of the river.
 The tonnage of Bagaduce River proper amounted to about 27,000 tons.

5. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. Before improvement there was a narrow channel from Bridges Point to Bowden's wharf, which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. Mean rise and fall of tide, 9.8 feet.

The approved project is understood to be that published at page 398 of the Annual Report of the Chief of Engineers for 1888. Its object is to secure a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point, Northern Bay, to Bowden's wharf, at an estimated cost of \$45,000. The same project provides for removing a small quantity of rock in the channel at Johnsons Narrows, at an estimated cost of \$1,875. All work done has been in accordance with this project. About one-third of the work covered by the project may be said to have been completed.

The expenditures to June 30, 1908, were \$28,000. At that date there had been made, by dredging and the removal of rocks and bowlders, a channel 40 feet wide and 6 feet deep at mean low tide, except at Winslows Island, where a depth of only 4 feet has been secured. The total length of channel is about 1,000 feet.

The improvement has been regarded as of doubtful public value, and it is only recently that any use has apparently been made of the dredged channel. A small power boat now makes regular trips from Castine, carrying passengers and freight.

For reports on examinations and surveys, see Annual Reports of the Chief of Engineers for 1888, page 398; 1893, page 724; and 1898, page 842.

The new appropriation recommended is for continuing the excavation of the channel at Winslows Island.

The tonnage for 1907 is given as 122,395 tons, but this includes the business of Castine, at the mouth of the river. The commerce of the Bagaduce proper is put at about 29,000 tons, with an estimated value of about \$213,000.

Amount (estimated) required for completion of existing project... \$18,875.00

{	Amount that can be profitably expended in fiscal year ending June 30, 1910, for works of improvement.....	5,000.00
	Submitted in compliance with requirements of sundry civil act of June 4, 1897.	

(See Appendix A 5.)

1908

A 5.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

There were no operations during the year and no expenditures.

Money statement.

Amount (estimated) required for completion of existing project... \$18,875.00

{ Amount that can be profitably expended in fiscal year ending June 30, 1910, for works of improvement, in addition to the balance unexpended July 1, 1908..... 5,000.00
Submitted in compliance with requirements of sundry civil act of June 4, 1897.

APPROPRIATIONS.

August 11, 1888.....	\$3,000	March 3, 1899.....	\$3,000
September 19, 1890.....	4,000	June 13, 1902.....	3,000
July 13, 1892.....	5,000		
August 18, 1894.....	5,000	Total.....	28,000
June 3, 1896.....	5,000		

COMMERCIAL STATISTICS.

Receipts and shipments.

	Tons.
Apples.....	20
Beef.....	100
Bricks and clay.....	12,000
Cattle.....	3,500
Canned goods.....	1,200
Cement.....	1,200
Coal.....	3,500
Cooperage.....	1,500
Cotton and cotton goods.....	800
Fertilizer.....	200
Fish.....	400
General merchandise.....	25,000
Grain, flour, hay, and straw.....	17,800
Knit goods and yarn.....	300
Iron and steel.....	7,000
Lime.....	6,000
Lumber.....	27,000
Leather and hides.....	25
Potatoes.....	400
Machinery.....	100
Molasses and sugar.....	600
Miscellaneous.....	2,000
Oil.....	800
Provisions.....	4,000
Salt.....	150
Sand and stone.....	800
Wood.....	6,000
Total.....	122,395

Arrivals and departures during calendar year ending December 31, 1907.

Steam vessels, average draft 6½ feet.....	3,000
Sailing vessels, average draft 6½ feet.....	1,600
Number of passengers landing and departing by water.....	32,000

The foregoing statement includes the business done at Castine at the mouth of the river.

5. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. Before improvement there was a narrow channel from Bridges Point to Bowden's wharf, which had a depth of less than 2 feet and was obstructed by ledges and boulders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows. Mean rise and fall of tide, 9.8 feet.

The approved project is understood to be that published at page 398 of the Annual Report of the Chief of Engineers for 1888. Its object is to secure a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point, Northern Bay, to Bowden's wharf, at an estimated cost of \$45,000. The same project provides for removing a small quantity of rock in the channel at Johnsons Narrows, at an estimated cost of \$1,875. All work done has been in accordance with this project. About one-third of the work covered by the project may be said to have been completed.

The expenditures to June 30, 1909, were \$28,000. At that date there had been made, by dredging and the removal of rocks and boulders, a channel 40 feet wide and 6 feet deep at mean low tide, except at Winslows Island, where a depth of only 4 feet has been secured. The total length of channel is about 4,000 feet.

The improvement has been regarded as of doubtful public value.

There were no expenditures during the fiscal year 1909, and there was no work in progress.

From the mouth of the river at Castine to the head of navigation, in Northern Bay, is about 9 miles.

The tonnage for 1908 is given as 117,795 tons, but this includes the business of Castine, at the mouth of the river. The commerce for that part of the Bagaduce covered by the project for improvement is put at 29,030 tons, the chief commodities, in weight, being bricks, clay, lumber, wood, and grain, with a total estimated value of about \$400,000.

The new appropriation recommended is for continuing the excavation of the channel at Winslows Island.

For reports on examinations and surveys, see Annual Reports of the Chief of Engineers for 1888, page 398; 1893, page 724; and 1898, page 842.

Amount (estimated) required for completion of existing project. \$18,875.00

{	Amount that can be profitably expended in fiscal year ending June 30, 1911, for works of improvement.	5 000.00
	Submitted in compliance with requirements of sundry civil act of June 4, 1897.	

(See Appendix A 5.)

A 5.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

There were no operations during the year and no expenditures.

Estimate of additional funds required.

Amount that can be profitably expended in fiscal year ending June 30, 1911, exclusive of the balance unexpended July 1, 1909, for works of improvement. \$5, 000
Submitted in compliance with requirements of sundry civil act of June 4, 1897.

APPROPRIATIONS.

August 11, 1888.....	\$3, 000	March 3, 1899.....	\$3, 000
September 19, 1890.....	4, 000	June 13, 1902.....	3, 000
July 13, 1892.....	5, 000		
August 18, 1894.....	5, 000	Total.....	28, 000
June 3, 1896.....	5, 000		

COMMERCIAL STATISTICS.

Receipts and shipments.

	Tons.
Apples.....	20
Beef.....	100
Bricks, clay, and cement.....	11, 300
Cattle.....	3, 500
Canned goods.....	200
Coal.....	3, 500
Cotton and cotton goods.....	800
Fertilizer.....	200
Fish.....	600
General merchandise.....	27, 000
Grain, flour, hay, and straw.....	17, 800
Iron, steel, and machinery.....	6, 100
Lime.....	6, 000
Lumber and cooperage.....	28, 500
Leather and hides.....	25
Molasses and sugar.....	300
Oil.....	800
Provisions.....	4, 500
Salt.....	150
Sand and stone.....	400
Wood.....	6, 000
Total.....	117, 795

Arrivals and departures during calendar year ending December 31, 1908.

Steamers, average draft 6½ feet.....	3, 000
Sailing vessels, average draft 6½ feet.....	1, 800
Number of passengers arriving and departing by water.....	32, 000

The foregoing statement includes the business done at Castine, at the mouth of the river.

6. *Bagaduce River, Maine.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. Before improvement there was a narrow channel from Bridges Point to Bowden's wharf, which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows.

The approved project is understood to be that published at page 398 of the Annual Report of the Chief of Engineers for 1888. Its object is to secure a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point, Northern Bay, to Bowden's wharf, at an estimated cost of \$45,000. The same project provides for removing a small quantity of rock in the channel at Johnsons Narrows, at an estimated cost of \$1,875. All work done has been in accordance with this project. About one-third of the work covered by the project may be said to have been completed.

The expenditures to June 30, 1910, were \$28,000. At that date there had been made, by dredging and the removal of rocks and bowlders, a channel 40 feet wide and 6 feet deep at mean low tide, except at Winslows Island, where a depth of only 4 feet has been secured.

There were no expenditures during the fiscal year 1910 and there was no work in progress. The mean range in tide is 9.8 feet. The total length of channel is about 4,000 feet. From the mouth of the river to the head of navigation, in Northern Bay, is about 9 miles.

The tonnage for 1909 is given at 121,325 short tons, but this includes the business at Castine, at the mouth of the river. The commerce for that part of the Bagaduce covered by the project for improvement is put at 29,135 short tons, the chief items being brick and clay, lumber, and wood, with a total estimated value of about \$468,000.

For reports on examinations and surveys, see Annual Reports of the Chief of Engineers for 1888, page 398; 1893, page 724; and 1898, page 842.

It is not believed that there has been any serious deterioration. The improvement has been for some years regarded as of doubtful public value. The commerce is small, and it is questionable as to how much of the limited business would be benefited by the projected channel.

As no appropriation has been made for this work since 1902, further improvement of the locality should be dependent on a reexamination showing such work to be advisable at this time.

Amount (estimated) required for completion of existing project..... \$18,875
(See Appendix A 6.)

1910

A 6.

IMPROVEMENT OF BAGADUCE RIVER, MAINE.

There were no operations during the year and no expenditures.

APPROPRIATIONS.

August 11, 1888.....	\$3,000	March 3, 1899.....	\$3,000
September 19, 1890.....	4,000	June 13, 1902.....	3,000
July 13, 1892.....	5,000		
August 18, 1894.....	5,000	Total.....	28,000
June 3, 1896.....	5,000		

COMMERCIAL STATISTICS.

Receipts and shipments.

	Short tons.
Apples.....	20
Beef and cattle.....	3,100
Bricks, clay, lime, and cement.....	18,450
Canned goods.....	250
Coal.....	3,600
Cotton and cotton goods.....	800
Fertilizer.....	250
Fish.....	650
General merchandise.....	28,520
Grain, flour, hay, and straw.....	19,300
Lumber and cooperage.....	28,950
Machinery and iron.....	5,110
Molasses and sugar.....	300
Oil.....	800
Provisions.....	4,700
Sand and stone.....	525
Wood.....	6,000
Total.....	121,325

Arrivals and departures during calendar year ending December 31, 1909.

Steamers, coastwise, average draft 6½ feet, tonnage unknown.....	3,000
Sailing vessels, coastwise, average draft 6½ feet, tonnage unknown.....	1,800
Number of passengers arriving and departing by water.....	30,000

The foregoing statement includes the business done at Castine, at the mouth of the river.

NOTE.

No work was done during the year.

About 33 1/2% of work is completed.

The depths obtained are 6 ft & 4 ft. at M.L. Water

The mean range of tides is 9.8

Total amount expended on project to July 31, 1900, \$28,000.

Commercial Statistics.

Receipts and shipments ----- 29,000 tons

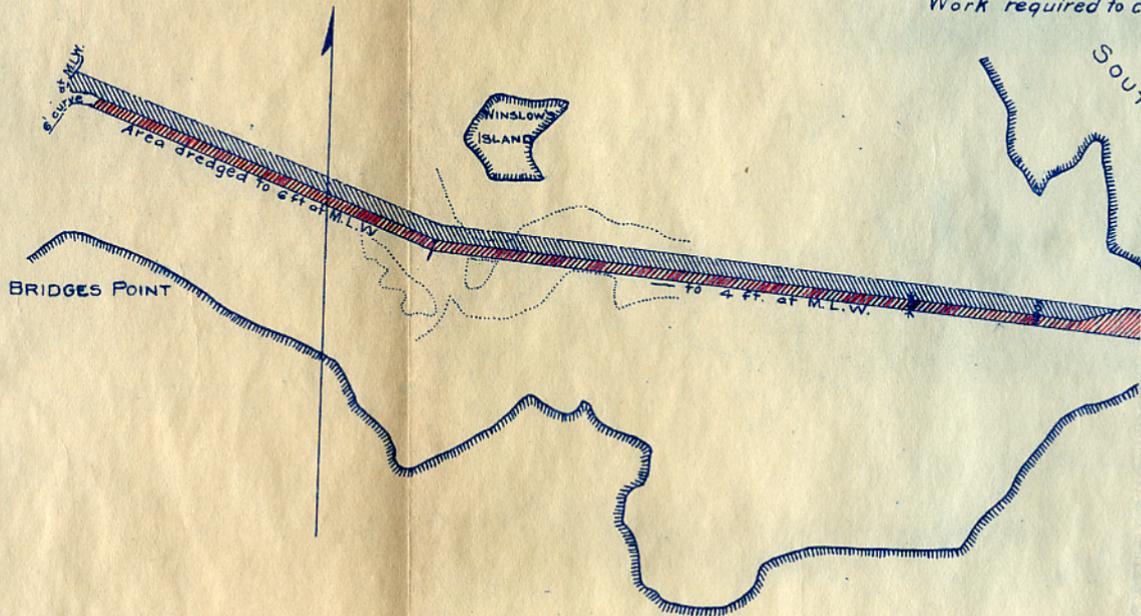
MAP
BAGADUCE R

SCALE 01



LEGEND

Completed Channel
Work required to co



6. *Bagaduce River, Me.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. Before improvement there was a narrow channel from Bridges Point to Bowden's wharf, which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows.

The approved project is understood to be that published at page 398 of the Annual Report of the Chief of Engineers for 1888 (H. Doc. No. 157, 50th Cong., 1st sess.). Its object is to secure a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point, Northern Bay, to Bowden's wharf, at an estimated cost of \$45,000. The same project provides for removing a small quantity of rock in the channel at Johnsons Narrows, at an estimated cost of \$1,875. All work done has been in accordance with this project. About one-third of the work covered by the project may be said to have been completed.

The expenditures to June 30, 1911, were \$28,000. At that date there had been made, by dredging and the removal of rocks and bowlders, a channel 40 feet wide and 6 feet deep at mean low tide, except at Winslows Island, where a depth of only 4 feet has been secured.

There were no expenditures during the fiscal year 1911 and there was no work in progress. The mean range in tide is 9.8 feet. The total length of channel is about 4,000 feet. From the mouth of the river to the head of navigation, in Northern Bay, is about 9 miles.

The tonnage for 1910 is given at 120,927 short tons, but this includes the business at Castine, at the mouth of the river. The commerce for that part of the Bagaduce covered by the project for improvement is put at 37,460 short tons, the chief items being brick and clay, lumber, and wood, with a total estimated value of about \$746,960.

For reports on examinations and surveys, see Annual Reports of the Chief of Engineers, for 1888, page 398 (H. Doc. No. 157, 50th Cong., 1st sess.); 1893, page 724 (H. Doc. No. 17, 52d Cong., 2d sess.); 1898, page 842 (H. Doc. No. 144, 55th Cong., 2d sess.).

It is not believed that there has been any serious deterioration. The improvement has been for some years regarded as of doubtful public value. The commerce is small, and it is questionable as to how much of the limited business would be benefited by the projected channel.

As no appropriation has been made for this work since 1902, further improvement of the locality should be dependent on a reexamination showing such work to be advisable at this time.

Amount (estimated) required to be appropriated for completion of existing project----- \$18, 875

(See Appendix A 6.)

A 6.

IMPROVEMENT OF BAGADUCE RIVER, ME.

There were no operations during the year and no expenditures. This improvement has been for some years regarded as of doubtful public value. The commerce pertaining to the particular locality under improvement is small, and it is questionable as to how much of the limited business would be benefitted by the projected channel.

APPROPRIATIONS.

Aug. 11, 1888.....	\$3,000	Mar. 3, 1899.....	\$3,000
Sept. 19, 1890.....	4,000	June 13, 1902.....	3,000
July 13, 1892.....	5,000		
Aug. 18, 1894.....	5,000	Total.....	28,000
June 3, 1896.....	5,000		

COMMERCIAL STATISTICS.

Receipts and shipments.

	Short tons.
Apples.....	22
Beef and cattle.....	2,898
Bricks, clay, lime, and cement.....	17,150
Canned goods.....	300
Coal.....	3,700
Cotton and cotton goods.....	850
Fertilizer.....	275
Fish.....	2,000
General merchandise.....	29,100
Grain, flour, hay, and straw.....	19,650
Iron, steel, and machinery.....	5,110
Leather and hides.....	22
Lumber and cooperage.....	26,950
Molasses and sugar.....	325
Oil.....	900
Potatoes.....	700
Provisions.....	4,300
Salt.....	300
Sand and stone.....	375
Wood.....	6,000
Total.....	120,927

Arrivals and departures during calendar year ending Dec. 31, 1910.

Steamers, average draft 6½ feet, tonnage unknown.....	3,000
Sailing, average draft 6½ feet, tonnage unknown.....	1,800
Number of passengers arriving and departing by water.....	30,000

The foregoing statement includes the business done at Castine, at the mouth of the river.

6. *Bagaduce River, Me.*—This is a small stream that empties into Penobscot Bay at Castine, Me. The upper part of the river divides into two branches, one called Northern Bay and the other South Bay. Northern Bay, near South Penobscot, is a shoal sheet of water of about 700 acres area, the bottom of which for the greater part is bare at low tide. Before improvement there was a narrow channel from Bridges Point to Bowden's wharf, which had a depth of less than 2 feet and was obstructed by ledges and bowlders near Winslows Island. The South Bay is obstructed by ledges at Johnsons Narrows.

The river is about 9 miles in length from its mouth at Castine to the head of navigation in Northern Bay. The section which has been under improvement is a channel about 4,000 feet long and lies entirely within Northern Bay.

The approved project is understood to be that published at page 398 of the Annual Report of the Chief of Engineers for 1888 (H. Doc. No. 157, 50th Cong., 1st sess.). Its object is to secure a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point, Northern Bay, to Bowden's wharf, at an estimated cost of \$45,000. The same project provides for removing a small quantity of rock in the channel at Johnsons Narrows, at an estimated cost of \$1,875.

References to examination or survey reports and maps or plans not in project documents.

Section covered	Congressional documents			Annual reports of Chief of Engineers.		
	House or Senate	No.	Congress	Session	Year.	Page.
Northern Bay and Southern Bay ¹	House	17	Fiftieth	First	1888	398
South Fork ¹	do	17	Fifty-second	Second	1893	724
Northern Bay ²	do	144	Fifty-fifth	do	1895	842

¹ No maps.

² Contains map.

All work has been done in accordance with the above project, which has not been modified.

There were no operations during the fiscal year 1912, and no expenditures.

The expenditures to June 30, 1912, were \$28,000. At that date there had been made, by dredging and the removal of rocks and bowlders, a channel 40 feet wide and 6 feet deep at mean low tide, except at Winslows Island, where a depth of only 4 feet has been secured.

The mean tidal range is 9.8 feet.

The tonnage for 1911 is given at 77,159 short tons, but this includes the business at Castine, at the mouth of the river. The commerce for that part of the Bagaduce covered by the project for improvement is put at about 30,000 short tons, the chief items being brick and clay, lumber, and wood.

The improvement has been for some years regarded as of doubtful public value. The commerce is small, and it is questionable as to how much of the limited business would be benefited by the projected channel.

As no appropriation has been made for this work since 1902, further improvement of the locality should be dependent on a re-examination showing such work to be advisable at this time. Pending action by Congress, no further annual reports will be submitted.

Amount (estimated) required to be appropriated for completion of existing project..... \$18,875

(See Appendix A 6.)

A 6.

IMPROVEMENT OF BAGADUCE RIVER, ME.

There were no operations during the year and no expenditures.

APPROPRIATIONS.

Aug. 11, 1888.....	\$3,000	Mar. 3, 1899.....	\$3,000
Sept. 19, 1890.....	4,000	June 13, 1902.....	3,000
July 13, 1892.....	5,000		
Aug. 18, 1894.....	5,000	Total.....	28,000
June 8, 1896.....	5,000		

COMMERCIAL STATISTICS.

Receipts and shipments.

	Short tons.		Short tons.
Apples.....	19	Hay and straw.....	150
Beef.....	95	Iron, steel, and machinery.....	4,000
Bricks and clay.....	10,350	Lumber and cooperage.....	25,500
Cattle.....	20	Leather and hides.....	20
Canned goods.....	350	Molasses and sugar.....	350
Cement and lime.....	1,750	Oil.....	1,030
Coal, anthracite.....	4,000	Potatoes.....	400
Coal, bituminous.....	300	Provisions.....	3,400
Cotton and cotton goods.....	800	Salt.....	350
Fertilizer.....	300	Sand and stone.....	350
Fish.....	2,500	Wood.....	5,000
General merchandise.....	2,425		
Grain and flour.....	13,700	Total.....	77,159

Arrivals and departures during calendar year ending Dec. 31, 1911.

Steamers, coastwise, average draft 6½ feet.....	3,250
Sailing, coastwise, average draft 6½ feet.....	1,500
Number of passengers landing and departing by water.....	29,000
Number of vessels built during the year.....	1

BAGADUCE RIVER, ME.

L E T T E R

FROM

THE ACTING SECRETARY OF WAR,

TRANSMITTING,

WITH A LETTER FROM THE CHIEF OF ENGINEERS, REPORT ON
PRELIMINARY EXAMINATION OF BAGADUCE RIVER, ME.

MARCH 31, 1914.—Referred to the Committee on Rivers and Harbors and ordered to
be printed, with illustration.

WAR DEPARTMENT,
Washington, March 28, 1914.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: I have the honor to transmit herewith a letter from the Chief of Engineers, United States Army, of this date, together with copy of report from Lieut. Col. W. E. Craighill, Corps of Engineers, dated January 27, 1914, with map, on preliminary examination of Bagaduce River, Me., made by him in compliance with the provisions of the river and harbor act approved March 4, 1913.

Very respectfully,

HENRY BRECKINRIDGE,
Acting Secretary of War.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, March 28, 1914.

From: The Chief of Engineers, United States Army.

To: The Secretary of War.

Subject: Preliminary examination of Bagaduce River, Me.

1. There is submitted herewith, for transmission to Congress, report dated January 27, 1914, with map, by Lieut. Col. W. E. Craighill, Corps of Engineers, on preliminary examination of Bagaduce River, Me., called for by the river and harbor act approved March 4, 1913.

2. Bagaduce River is a tidal estuary or arm extending from the eastern side of the upper part of Penobscot Bay. At a distance of about 4 miles from its mouth it divides into two branches, one extending southeastwardly and the other terminating in a shallow basin called Northern Bay. The locality was under improvement by the United States between 1888 and 1902, with a view to obtaining a channel 100 feet wide and 6 feet deep at mean low tide from Bridges Point to South Penobscot. The project depth was secured, except at Winslows Island, but only for a width of 40 feet. The improvement now apparently desired is the completion of the original project. The district officer states that the desired improvement can be obtained only at a cost in excess of that justified by the amount of commerce involved, present and prospective, and he therefore expresses the opinion that the locality is not worthy of improvement by the General Government. In this view the division engineer concurs.

3. This report has been referred, as required by law, to the Board of Engineers for Rivers and Harbors, and attention is invited to its report herewith, dated March 10, 1914, concurring with the views of the district officer and division engineer.

4. After due consideration of the above-mentioned reports, I concur with the views of the district officer, the division engineer, and the Board of Engineers for Rivers and Harbors, and therefore report that the improvement by the United States of Bagaduce River, in the manner apparently desired by the interests concerned, is not deemed advisable at the present time.

DAN C. KINGMAN,
Chief of Engineers, United States Army.

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS.

[Third indorsement.]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
March 10, 1914.

TO THE CHIEF OF ENGINEERS, UNITED STATES ARMY.

1. Bagaduce River is a tidal estuary or arm of Penobscot Bay. About 4 miles from its mouth it divides into two branches. The northern one, a very shallow bay with the bottom exposed at low tide, is where improvement is desired. The range of tide is about 10 feet. The adjacent villages and tributary country have a population of about 1,500 persons, depending largely upon water transportation. The amount of commerce reported for this section of the waterway is 7,280 tons, having a value of about \$90,000.

2. The river has been improved at a cost of about \$28,000 under a project which provided for a channel leading to South Penobscot village, having a depth of 6 feet and a width of 100 feet. The depth was secured except at Winslows Island, but for a width of 40 feet only. It is stated that the improvement now apparently desired is that the original project shall be carried to completion, so that 6 feet at mean low tide may be had up to the wharf at South Penobscot. No appropriation for this locality has been made since 1902.

3. The district officer states that the improvement desired can be obtained only at a cost in excess of that justified by the amount of commerce involved, present or prospective, and therefore it is his opinion that the locality is not worthy of improvement by the General Government. In this view the division engineer concurs.

4. Interested parties were advised of the unfavorable report of the district officer and given an opportunity of submitting their views to the board, but no communications on the subject have been received.

5. While better navigation facilities would be of advantage and benefit to the community at and adjacent to South Penobscot village, the present commerce to be affected is small in amount and value, and there is nothing to indicate any material increase if the improvement is carried out. Believing that the improvement desired would not result in commensurate benefits, the board concurs with the district officer and the division engineer and reports that in its opinion it is not advisable for the United States to undertake the work.

6. In compliance with law, the board reports that there are no questions of terminal facilities, water power, or other related subjects which could 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. M. BLACK,
*Colonel, Corps of Engineers,
Senior Member of the Board.*

PRELIMINARY EXAMINATION OF BAGADUCE RIVER, ME

UNITED STATES ENGINEER OFFICE,
Portland, Me., January 27, 1914.

From: The District Engineer Officer.

To: The Chief of Engineers, United States Army
(Through Division Engineer).

Subject: Preliminary examination of Bagaduce River, Me.

1. The river and harbor act approved March 4, 1913, directs a preliminary examination of Bagaduce River, Me.

2. Bagaduce River is a tidal estuary or arm extending from the eastern side of the upper part of Penobscot Bay, Me. Castine, a town of some importance, is located on the northerly side of the mouth of Bagaduce River, where it widens and is given the name of Castine Harbor. The river, so-called, extends northeastwardly for about 4 miles from its mouth. It then branches. One branch flows southeastwardly and the other terminates almost at once at a broadened end called Northern Bay, a very shallow basin of about 700 acres area. This bay is almost entirely exposed at low tide, the flats ranging from the level of low tide to about 4 feet above that level. The bottom is for the most part clay with some ledge and very many boulders. The mean tidal range in Northern Bay approaches 10 feet. The depth at Bridges Point, at the mouth of the bay, is about 14 feet at mean low tide, though for most of the river from thence to the mouth the depth is very much greater and the width fairly good. The existence of extensive basins produces rather strong

tidal currents in the narrowest parts of the stream, but not sufficiently so to greatly interfere with navigation. A reconnaissance map accompanies this report, on which have been indicated the present approximate depths in the channel which had been previously dredged.

3. On the shores of Northern Bay, which is the portion of the river specifically covered by this examination, there are two small villages—Penobscot village on the northeasterly shore, and South Penobscot village on the southeasterly shore. These, with parts of adjacent towns have an aggregate population of about 1,500 persons, who are served more or less directly by the transportation facilities afforded by Bagaduce River. Communication to regular transportation lines at other places is by team to West Penobscot, where a steamboat touches, or by stage to Bucksport, a distance of about 14 miles, where the Maine Central Railroad may be reached. Castine, at the mouth of the river, has steamboat service and can be reached by water via Bagaduce River, or by road, the latter distance being about 10 miles. There are eight stores at the two villages above named, two brickyards, two sawmills, a concern making knit goods and one making barrel hoops. Other business consists in the agricultural products of the region. The annual water borne traffic from this portion of the Bagaduce River is about as follows:

	Short tons.
Lumber.....	2,570
Bricks.....	1,500
Kiln wood.....	1,110
Hay, grain, and tear.....	1,030
Potatoes.....	900
General merchandise.....	100
Fertilizer.....	60
Yarn and knit goods.....	10
Total.....	7,280

The estimated value of these commodities is about \$90,000.

4. The reports on a preliminary examination and survey, made as a result of an order in the river and harbor act of August 5, 1886, were printed in House Executive Document No. 157, Fiftieth Congress, first session. A project was suggested for excavating a channel 100 feet wide, and 6 feet deep at mean low tide, for a distance of about 4,000 feet from Bridges Point to South Penobscot. The estimated cost was \$45,000, in addition to which an estimate was submitted for removing about 125 cubic yards of rock at Johnsons Narrows in the southerly branch, at an estimated cost of \$1,875. By act of August 11, 1888, Congress appropriated \$3,000 for this improvement and from that date to 1902 made six additional appropriations (one of \$4,000, three of \$5,000 each, and two of \$3,000 each), amounting in all to \$28,000. The work was commenced, but the amounts available at any one time were so small that but little could be accomplished. After expenditure of the last appropriation the result was that the channel had been excavated its entire proposed length, but for only 40 feet width. The project depth of 6 feet had been obtained except at Winslows Island, about midway of the length of the channel, where only about 4 feet at mean low tide had been secured. In the Annual Report for 1912 it was stated that as no appropriation has been made for this work since 1902 further

provided for, and at the present time it is not thought that the outlook would by any means justify the Government in considering such a scheme.

8. The people who are asking for completion of the improvement in Bagaduce River are energetic and enterprising within the scope of the possibilities of the environment, and the business they are doing is worthy of encouragement and of better facilities for transportation, but unfortunately the physical conditions at that locality are such that betterment can be obtained only at a cost so far in excess of that justified by the amount of commerce, either present or prospective, involved, that I feel obliged to give it as my opinion that the locality is not worthy of improvement by the General Government.

W. E. CRAIGHILL,
Lieut. Col., Corps of Engineers.

[First indorsement.]

OFFICE DIVISION ENGINEER, NORTHEAST DIVISION,
New York City, January 30, 1914.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY.

Forwarded, concurring in the opinion of the district engineer officer.

FREDERIC V. ABBOT,
Colonel, Corps of Engineers.

[For Report of the Board of Engineers for Rivers and Harbors, see page 2.]



improvement of the locality should be dependent on a reexamination showing such work to be advisable at this time. It is understood that the order for the new examination in the river and harbor act of 1913 is the result of the above statement in the Annual Report.

In 1892 a report on a preliminary examination of the South Fork of the Bagaduce River, Me., made under the requirements of the river and harbor act of that year, was submitted and printed in House Executive Document No. 17, Fifty-second Congress, second session. The report was adverse.

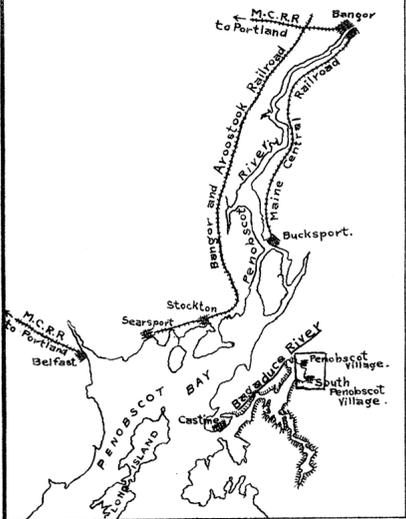
In 1897 a survey was made under the provisions of the river and harbor act of June 3, 1896, for a channel leading up to Penobscot village, on the northeastern shore of the bay, and the report was printed in House Document No. 144, Fifty-fifth Congress, second session. The report was accompanied by a map. The improvement considered at that time was the dredging of a channel from the 6-foot contour to Penobscot village, 100 feet wide and 6 feet deep at mean low tide. The length was about 2,600 feet and the estimate of cost was \$45,700. This project also failed to receive favorable recommendation.

5. It appears upon developing the situation that what is now desired by the people on the easterly shore of Northern Bay is that the original project shall be carried to completion so that 6 feet at mean low tide may be had up to the wharf at South Penobscot and thus better water transportation for that locality, as well as for Penobscot village, which is about 1 mile distant, and for the country back of these settlements. It is claimed that could this be secured regular steamboat transportation could be established, and that parties stand ready to undertake it. It is further stated that rates are high because vessels are obliged to go out about half laden because of lack of sufficient depth, although there is ample cargo to fill them. Many passengers and much goods would go in and out via such a channel, which now have to be hauled from 4 to 5 miles or more to other points. The extent or quantity of passenger and freight business which is obliged to seek other terminals is not definitely stated, and perhaps can not be. Neither have I been able to secure a satisfactory statement as to what annual saving would result were the additional facilities provided. The population involved, however, and the amount of business already done via Bagaduce River will give a good general idea of the relative importance of the locality from a business point of view, and will enable the formation of an opinion as to the extent of the benefit which would be secured were the improvement completed as originally planned.

6. The wharves at Penobscot and South Penobscot are ample to supply all business existing or immediately prospective, and there appears to be no lack of accommodation for anyone desiring to use the wharves. One of those at South Penobscot is open to use by the public on common terms and at very reasonable rates.

7. There are no questions connected with any project at present suggested, in the way of water power development or land reclamation, which could be advanced as instruments for lessening the cost to the Government. A project was suggested some two years ago by private parties to throw a dam across the Bagaduce River below Northern Bay, with a view to developing and utilizing power, but the expense would be considerable, navigation would have to be

VICINITY OF BAGADUCE RIVER, ME.
From U.S.C. & G. Survey Chart No. 6.
SCALE, 1 TO 400000



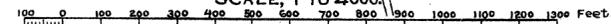
NORTHERN BAY

Flats, Dry at Low Tide.

Magnetic North

BAGADUCE RIVER, MAINE,
CHANNEL TO SOUTH PENOBSCOT.
Shore line, low water line and curves
of depth, from map of 1897.
Soundings, corrections and additions
made and sketched during examination
of Nov. 20, 1913, made under direction of
LIEUT. COL. W. E. CRAIGHILL, CORPS OF ENGRS, U.S. ARMY,
By E. M. HUNT, JUNR ENGR.

Soundings approximately located and
referred to Mean Low Water.
SCALE, 1 TO 4000.

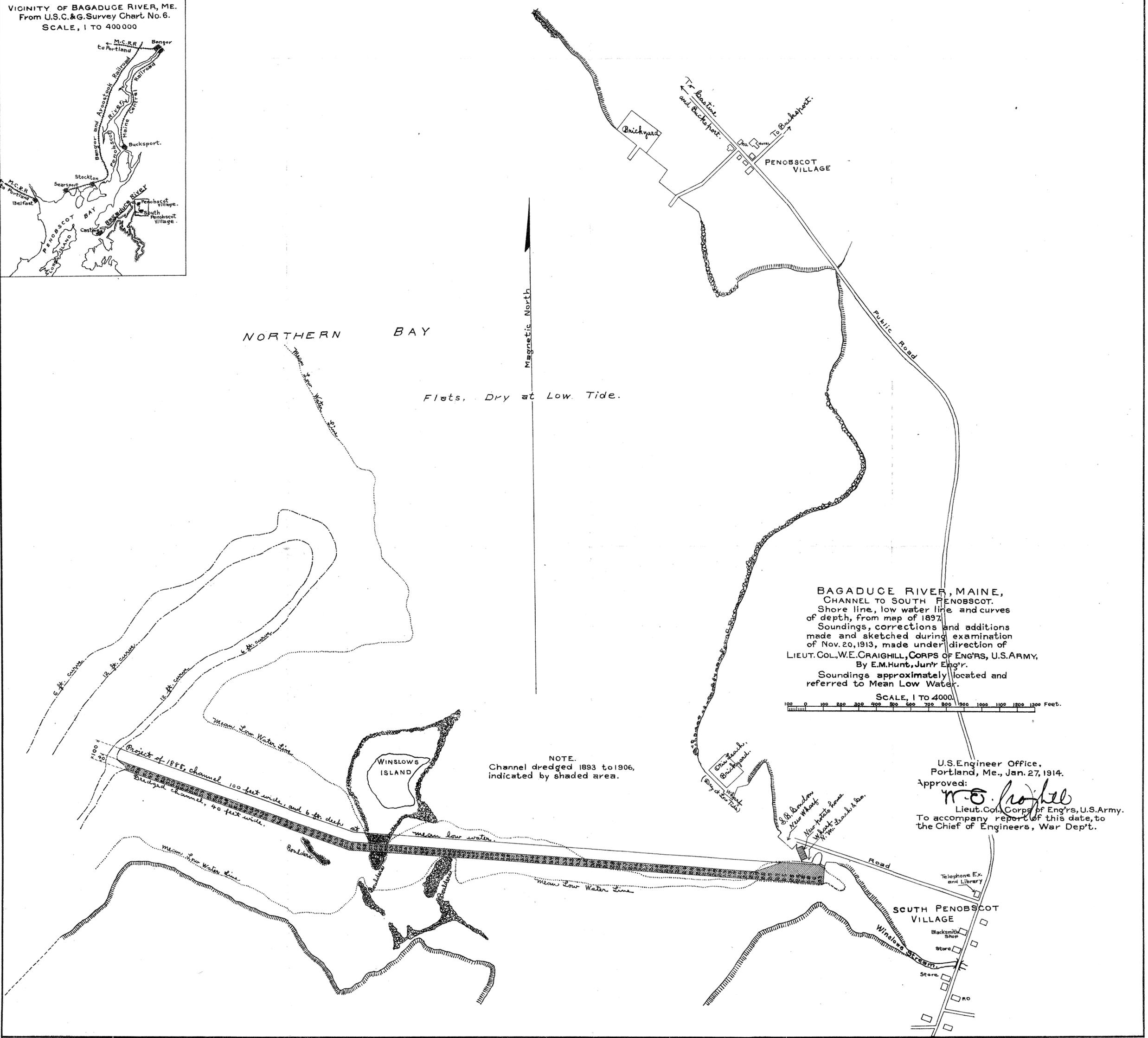


NOTE.
Channel dredged 1893 to 1906,
indicated by shaded area.

U.S. Engineer Office,
Portland, Me., Jan. 27, 1914.
Approved:

W. E. Craighill
Lieut. Col., Corps of Engrs, U.S. Army.

To accompany report of this date, to
the Chief of Engineers, War Dept.



2. *Preliminary examination of Bagaduce River, Me.*—Report dated January 27, 1914, with map, is printed in House Document No. 870, Sixty-third Congress, second session. The improvement of this locality by the United States in the manner proposed is not deemed advisable at the present time.