

# REPORT

OF THE

# SECRETARY OF WAR;

BEING PART OF

## THE MESSAGE AND DOCUMENTS

COMMUNICATED TO THE

## TWO HOUSES OF CONGRESS

AT THE

BEGINNING OF THE THIRD SESSION OF THE FORTY-FIFTH CONGRESS.

---

VOLUME II.  
PART I.

---

WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1878.

---

---

REPORT  
OF  
THE CHIEF OF ENGINEERS.

---

---

July 1, 1877, amount available .....	\$19,923 20
July 1, 1878, amount expended during fiscal year .....	19,363 29
July 1, 1878, amount available .....	629 91
(See Appendix I I 2.)	

## EXAMINATIONS AND SURVEYS FOR IMPROVEMENT.

To comply with the provisions of the river and harbor act, June 18, 1878, Lieutenant-Colonel Stewart has been charged with and is now engaged upon examinations and surveys at the following localities, the results of which will be duly submitted when received:

1. *The harbor of San Luis Obispo, California, with a view to the practicability of building breakwater.*
2. *The harbor of San Buenaventura, California, with a view to the practicability of building breakwater.*
3. *The harbor of Santa Barbara, California, with a view to the practicability of building breakwater.*
4. *Colorado of the West, from Fort Yuma to El Dorado Cañon.*

## IMPROVEMENT OF RIVERS IN OREGON AND IN WASHINGTON TERRITORY—CONSTRUCTION OF CASCADES CANAL, COLUMBIA RIVER.

Officer in charge, Maj. John M. Wilson, Corps of Engineers.

1. *Improvement of the Lower Willamette and Columbia Rivers, Oregon.*—Operations during the year have consisted of dredging at the mouth of the Willamette and at Swan Island Bar, Willamette River, and at Saint Helen's Bar, Columbia River.

Surveys have been made at Swan Island, Post Office, mouth of Willamette and Saint Helen's Bars, and at Sand Island, mouth of Columbia River.

Extensive repairs have been made upon the United States dredge and scows.

During the present season it is proposed to continue dredging the channel over the bars in the Willamette River and at Saint Helen's in the Columbia, and to scrape the bar at Snag Island, Lower Columbia.

July 1, 1877, amount available .....	\$18,584 54
Amount appropriated by act approved June 18, 1878 .....	30,000 00
July 1, 1878, amount expended during fiscal year .....	48,584 54
July 1, 1878, amount available .....	11,772 65
July 1, 1878, amount available .....	36,811 89

Amount (estimated) required for completion of existing project .....	268,984 00
Amount that can be profitably expended in fiscal year ending June 30, 1880.	150,000 00

(See Appendix J J 1.)

2. *Improvement of the Upper Willamette River, Oregon.*—Operations during the fiscal year have consisted of the removal of snags and stumps, construction of wing-dams, making surveys, and preparing charts. Three thousand eight hundred and forty linear feet of wing-dams have been built, 673 trees, stumps, &c., removed from the channel, and over 100 overhanging trees cut from the banks of the river.

During the present season it is proposed to continue the removal of snags, &c., from the channel, to remove portions of Bissell's and Dove's rocks, to repair wing-dams, build short dams for sluicing out bars, and to scrape the bars where it may be found necessary.

July 1, 1877, amount available .....	\$14,246 54	
Amount appropriated by act approved June 18, 1878.....	20,000 00	
		\$34,246 54
July 1, 1878, amount expended during fiscal year .....		14,120 29
		<hr/>
July 1, 1878, amount available .....	20,126 25	
		<hr/>
Amount (estimated) required for completion of existing project .....	60,000 00	
Amount that can be profitably expended in fiscal year ending June 30, 1880.....	40,000 00	

(See Appendix J J 2.)

3. *Improvement of the Upper Columbia and Snake Rivers, Oregon and Washington Territory.*—Operations during the fiscal year were carried on in November and December, 1877, removing rocks from the channel at the Upper Umatilla Rapids.

A survey was made of the Upper Umatilla Rapid, and a buoy located at the upper entrance to the channel.

During the coming winter it is proposed to continue work of removing rock at Five-mile and Pine Tree Rapids in the Snake River.

July 1, 1877, amount available .....	\$5,750 09	
Amount appropriated by act approved June 18, 1878 .....	20,000 00	
		\$25,750 09
July 1, 1878, amount expended during fiscal year .....		5,750 09
		<hr/>
July 1, 1878, amount available .....	20,000 00	
		<hr/>
Amount (estimated) required for completion of existing project.....	112,000 00	
Amount that can be profitably expended in fiscal year ending June 30, 1880.....	75,000 00	

(See Appendix J J 3.)

4. *Construction of canal around the Cascades of the Columbia River, Oregon.*—The plans and estimates for this canal, submitted by the officer in charge, were referred to the Board of Engineers for the Pacific Coast for examination, and having been approved by the board, with some minor changes as to the size of locks and height of the breakwater below them, the plan was finally approved by this office and by the Secretary of War. (See Appendix J J 4.)

To meet the possible future wants of commerce, the width of 50 feet recommended by the board of engineers has been increased, with the approval of the Secretary of War, to 70 feet, at an estimated increase of cost of about \$30,000.

Proceedings for the condemnation of the land required for the canal were still pending at the close of the fiscal year. The amount of work that can be accomplished during the next fiscal year depends upon the time at which possession can be had.

July 1, 1877, amount available .....	\$85,383 35	
Amount appropriated by act approved June 18, 1878.....	150,000 00	
		\$235,383 35
July 1, 1878, amount expended during fiscal year.....		5,854 05
		<hr/>
July 1, 1878, amount available .....	229,529 30	
		<hr/>
Amount (estimated) required for completion of existing project .....	1,524,338 00	
Amount that can be profitably expended in fiscal year ending June 30, 1880 .....	500,000 00	

(See Appendix J J 4.)

#### EXAMINATIONS AND SURVEYS FOR IMPROVEMENT.

To comply with provisions of the river and harbor act of June 18, 1878, Major Wilson has been charged with and is now engaged upon