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PROPOSED COLUMBIA BASIN IRRIGATION PROJECT

LETTER

FROM

THE SECRETARY OF THE INTERIOR

TRANSMITTING

REPORT OF THE INVESTIGATIONS OF THE PROPOSED COLUMBIA BASIN IRRIGATION PROJECT CONDUCTED UNDER AUTHORITY OF SENATE JOINT RESOLUTION 157, OF DECEMBER 22, 1924; ALSO A FINANCIAL STATEMENT SHOWING THE EXPENDITURES OF MONEY APPROPRIATED BY THE ACTS OF CONGRESS APPROVED FEBRUARY 21, 1923, AND DECEMBER 22, 1924

DECEMBER 8, 1925.—Referred to the Committee on Irrigation and Reclamation, and ordered to be printed

DEPARTMENT OF THE INTERIOR,
Washington, December 7, 1925.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES,
Washington, D. C.

SIR: I have the honor to transmit herewith the report of the investigations of the proposed Columbia Basin irrigation project conducted under the authority contained in Senate joint resolution 157, of December 22, 1924 (43 Stat. 721). This investigation was made through a commission appointed by the Secretary of the Interior, consisting of Dr. Elwood Mead, Commissioner of Reclamation, and Hon. John H. Edwards, Assistant Secretary of the Interior.

There is also transmitted a financial statement, showing the expenditures of money appropriated by the acts of Congress approved February 21, 1923 (42 Stat. 1540), and December 22, 1924, supra.

Very truly yours,

HUBERT WORK.

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington, November 5, 1925.

The SECRETARY OF THE INTERIOR.

DEAR MR. SECRETARY: The deficiency act of March 4, 1923 (42 Stat. 1540) appropriated $100,000 for investigations of the feasibility of irrigation by gravity or pumping, water sources, water storage, and related problems on the Columbia Basin project in Washington, to remain available to December 31, 1924. The availability of this appropriation was extended to February 15, 1925, by public resolution of December 22, 1924 (43 Stat. 721).

The investigations of the Columbia Basin project, authorized by this act, cost $96,761.97, itemized by classes of work as follows:

Available funds:	
Appropriation—general investigations, Reclamation Service, March, 1923, to Dec. 31, 1924	$100, 000. 00
Increase of compensation	1, 785. 58
Total	101, 785. 58
Expenditures and obligations	96, 761. 97
Balance of appropriation unexpended	5, 023. 61
Items of cost:	
Estimates	15, 330. 87
Hydrometry	21. 92
Reconnaissance	3, 176. 28
Soil surveys	8, 499. 93
Topography	3, 871. 99
Trial lines	2, 349. 19
Wash borings	8, 900. 25
Core drillings (diamond)	4, 650. 65
Consulting boards	26, 805. 63
Geological examinations	7, 402. 43
Engineering and superintendence	7, 757. 74
General expense	7, 818. 52
Equipment (balance not depreciated)	176. 57
Total	96, 761. 97

Very truly yours,

ELWOOD MEAD, *Commissioner.*

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington, August 25, 1925.

Hon. HUBERT WORK,
Secretary of the Interior.

DEAR MR. SECRETARY: The Sixty-seventh session of Congress authorized, by joint resolution, the appropriation of $100,000 for an investigation of the feasibility of what is known as the Columbia Basin irrigation project, in the State of Washington. The appropriation was made under the act of Congress dated February 21, 1923 (42 Stat. 1540). The investigation carried out under that appropriation has been conducted through a commission appointed by you to look after details. This commission now reports that the investigation has been completed, and transmits its findings here-

with for your information in order that you may in your discretion cause the same, with your comments, to be reported through the President to Congress.

Prior to this appropriation the Columbia Basin project had been investigated by the State of Washington, which has expended $150,000 on this work.

Mr. Homer J. Gault, for many years an engineer in the Reclamation Service, was selected, with your approval, to conduct the work in the field; he made a thorough survey and investigation of the engineering problems of the project during 1923, being assisted by soil experts from the Department of Agriculture and representatives of the Geological Survey, who made studies of the water resources and of geological conditions as related to the location of various features. Mr. Gault's report was submitted in March, 1924. In this he outlined the result of his field work, discussed various alternative plans, and included the findings of the soil, geological, and water experts. A summary of the two alternative projects submitted by him is contained in the following table:

Comparison of gravity and pumping projects

Plan	Gravity	Pumping
Irrigable area (acres)	1, 406, 000	1, 133, 000
Estimated cost	$325, 340, 790	$279, 310, 420
Cost per acre	$231. 40	$246. 58
Interest on cost at 5 per cent	$11. 57	$12. 33
O. and M. charges and depreciation	$2. 66	$4. 65
Sum of annual costs per acre	$14. 23	$16. 98
Commercial power at Grand Coulee (horsepower)		[1] 545, 000
Difference in power possibilities (horsepower)		[2] 316, 000

[1] Without storage. [2] With storage for power.

In Mr. Gault's report he calls attention to his omission of the following economic features:

There are a number of pertinent subjects that are not discussed in this report, some of which are:

(*a*) Restriction of speculation in land.
(*b*) Organization of irrigation district.
(*c*) Means of financing the project.
(*d*) Terms of repayment.
(*e*) Limitation of land ownership.
(*f*) Probable rate of settlement.
(*g*) Market for and value of power produced.
(*h*) Feasibility from the financial standpoint.
(*i*) Demand for irrigated land.
(*j*) Capital required by the farmer.

The report was reviewed by a board of engineers taken from the staff of the Bureau of Reclamation, the members being A. J. Wiley, James Munn, and J. L. Savage. Their report devotes itself largely to a discussion of the reasons for the large increase in the estimates in the Gault report over those of former reports prepared under the direction of the State of Washington. Their conclusion was that this arises from differences in the estimates as to carrying capacities of the canals, the quantity of water required, its losses in transit, and allowances for overhead expenditures and contingencies; and that the Gault report presents a fair estimate of cost under the conditions prevailing at that time.

On further consideration it was decided, however, by your commission to have a further review of Mr. Gault's report, and an independent investigation of the project which would include, along with engineering features, the settlement and farm development problems. This was required to make this report conform to the recommendations of the committee of special advisers on reclamation. This board of review was therefore selected to include men who were not only eminent as construction engineers but who were also familiar with the economic and agricultural aspects of reclamation. It was composed of six members: Louis C. Hill, of California; Charles H. Locher, of Maryland; Richard R. Lyman, of Utah; Arthur J. Turner, O. L. Waller, and Joseph Jacobs, of Washington. The report of this board was submitted in February, 1925. It considered five different plans or schemes of development. The one favored embraces 1,224,000 acres which, with the exception of 170,000 acres of pumping lands, is to be irrigated by gravity, using the waters of the Pend Oreille and Spokane Rivers. The construction cost of the works is fixed at $193,360,000, which is $158 an acre. This estimate includes provision for drainage and contemplates the lining of canals to the border of each unit. The reduction in cost below that of the Gault estimate is accomplished principally by changes in engineering design, including:

(*a*) Utilizing return flow and lining all canals, thus reducing diversion requirements and effecting large saving in size and cost of main canal system.

(*b*) Readjustment of gradients of main canal, reducing cost of tunnels and siphons.

(*c*) Utilization of Spokane River with Cœur d'Alene storage as an auxiliary water supply.

An alternative plan which would use Priest Lake as a storage instead of Lake Cœur d'Alene is included in the engineers' report, the cost being slightly larger.

This report agrees with previous reports in regarding the project physically feasible; the land is fertile, the water supply adequate, and climatic conditions make possible large yields of general farm crops and a variety of orchard and garden products.

The outstanding feature of this report is the attention given to the agricultural and economic requirements of the project along the lines of the recommendation of your committee of special advisers on reclamation. Two of the board's economic conclusions contained the following recommendations:

> That the State should assume its proper share of responsibility for collecting payments from the settlers, and should also bear its proper share of the losses, if any, incident to the development of the project.
>
> That the Government should clear and level the land and provide a reasonable financial credit for necessary farm improvements. Also, as a guaranty against land speculation, and to insure that the settler secures the land at its fair value, that the Government require title to all the irrigable land within the project. (Pars. G and K, pp. 2 and 3, Summary of Conclusions.)

Your commission has no doubt that the time will come when local and national interests will require the construction of these works and the utilization of these immeasurably valuable resources. It does not believe, however, that this time has arrived or that the Bureau of Reclamation is possessed of either the information or the

experience needed to formulate a development program as costly and complex as the one outlined and advocated in this report.

So far as construction is concerned, the procedure of the past could be followed, but building these irrigation works would not of itself insure solvent development or create real opportunities for settlers. Past experience in this and other irrigated countries is conclusive that solvent reclamation requires a program of settlement and farm development.

We are in accord with the essential features of the settlement and farm development program outlined in this report and believe that its economic features are sound and feasible.

This would involve, however, control of the prices at which privately owned land would be sold either through purchase by the authorities who build the works or through securing control for settlement from private owners. The subdivision of over 1,000,000 acres of land with about 20,000 farms would have to be thought out, and settlers secured who have the equipment and experience needed to cultivate this land so as to secure satisfactory returns. The report of the last reviewing board states that financial aid and practical advice to settlers are essential to successful development of this project. The methods of doing these things are still largely untried in this country, and the first attempts to utilize them should be on a small scale. Only after enough experience has been had to determine what can be wisely and safely attempted, should they be applied on as gigantic a scale as will be necessary in the development of this project.

It is believed that the Gault report and the reviewing reports should be published. The information will be of great value to all directly interested. It will inform the Nation at large of some of the requirements of future reclamation policy. No recommendation looking to further action by Congress is made.

COLUMBIA BASIN COMMISSION,
ELWOOD MEAD, *Chairman.*
JOHN H. EDWARDS.

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