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Exhibit 29

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DEPARTMENT OF
WATER RESOURCES

Excerpted pages of the
“Report Of Board Of Engineers To Consider
Projects In Snake River Valley Which May
Affect The Proposed American Falls Reservoir”
(Apr. 10, 1920)

REPORT OF BOARD OF ENGINEERS

to consider Projects in Snake River
Valley which may affect the proposed
AMERICAN FALLS RESERVOIR and the
Available Water supply therefor.

Prepared by Board of Engineers, composed of

Mr. I. W. McConnell
Mr. F. W. Hanna
Mr. E. B. Darlington
Mr. W. G. Swendsen
Mr. J. C. Wheelon
Mr. James Munn

April 10, 1920

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April 10, 1920

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APPENDIX

Chief of Construction's letter of March 30, 1920 instructing Board of Engineers.	Exhibit "A"
Map of Snake River Basin.	Exhibit "B"
Relation of Irrigation Draft to Reservoir Capacity (blue print)	Exhibit "C"
Shortages and Wastes for assumed Irrigation drafts and storage for period of 1896 to 1918 based on Snake River records at Neeley (tabulation)	Exhibit "D"
Paul S. A. Bickel's report on Shelley Canal	Exhibit "E"
Map of Bruneau Project.	Exhibit "F"

DEPARTMENT OF THE INTERIOR
UNITED STATES RECLAMATION SERVICE

Burley, Idaho, April 10, 1920.

Chief of Construction,
U. S. Reclamation Service,
Denver, Colorado.

Dear Sir:

There is transmitted herewith a report of the Board of Engineers called to consider projects in the Snake River Valley, which may affect the proposed American Falls Reservoir. The conclusions of the Board are set out in detail in the body of the report, which may be briefly summarized as follows:

The Board convened at Burley, Idaho, on April 5 to consider matters referred to it by the Chief of Construction of the U. S. Reclamation Service, and related problems which subsequently developed. The studies of the Board have covered:

- (a) Water supply of Snake River
- (b) The lands irrigable from Snake River
- (c) Storage capacity required for the utilization of the waters applicable to irrigation.
- (d) The relation of the proposed American Falls reservoir to the storage problem.
- (e) The substitution of power rights which will be destroyed at American Falls by the construction of American Falls Reservoir.

(f) Shelley Canal as proposed by Mr. Paul S. A. Bickel.

(g) The Bruneau project and its relation to the general irrigation program.

(h) Storage in Yellowstone Lake.

The board is of the opinion that all of the water of Snake River susceptible of economical diversion should be dedicated to irrigation. The lowest point on the river at which diversion is practicable in large amounts is Milner Dam. The unappropriated water of Snake River can be made available by the development of approximately 5,900,000 acre-feet of storage capacity. In addition to the draft already prevailing for the existing irrigation enterprises in the upper valley, there will be provided a draft of 5,720,000 acre-feet which will supply (a) supplementary rights for existing enterprises above American Falls Dam; (b) total present requirements including supplementary rights for all existing enterprises below American Falls Dam; (c) water necessary for the development of about 450,000 acres of new land.

The available water supply is not sufficient for the irrigation of all the land which can be reached from the river. New areas above American Falls amount to about 400,000 acres; areas below American Falls amount to

approximately a million acres. There is insufficient information available to pass upon the relative feasibility of various projects. It is pointed out however that extensive development above American Falls will preclude extensive development below American Falls and vice versa.

The American Falls reservoir will be essential to a complete development of the irrigation resources. In the plans for irrigation discussed in the report, which are used as illustrations only the storage requirement at American Falls reservoir would vary from 1,400,000 acre-feet to 2,800,000 acre-feet. Manifestly any storage not provided in American Falls reservoir must be provided in other sites. The Board recommends the early construction of the American Falls Reservoir as a progressive step in the final development of irrigation resources. In the absence of any other definite plan, the present plan for development proposed by the Reclamation Service should be supported and advanced by all interests involved.

The construction of American Falls reservoir will destroy developed power to the amount of 6000 horse power, more or less and a partially developed site for a total

capacity of about 30,000 horse power. As a substitution for American Falls power, the Board recommends the development of some suitable site to be subsequently determined, which will eliminate any loss of irrigation water.

The construction of American Falls reservoir involves no loss of power for irrigation pumping since the flow in the river during the irrigation season will be ample for all pumping requirements.

The Shelley Canal as proposed by Mr. Paul S. A. Bickel is not regarded as a practicable source of power for substitution at American Falls.

The Shelley Canal may be feasible as an irrigation enterprise for watering lands between Shelley and American Falls; information available on this point is not sufficient to form a basis for conclusion. For the irrigation of lands in the proposed Minidoka Pumping Project and lands to the westward thereof, the Shelley Canal is not considered feasible.

The unappropriated water supply of the Snake River is sufficient for the development of the Bruneau Project provided that development is undertaken prior to the inauguration of

other similar enterprises of large extent. If the Bruneau Project is initiated however, it will absorb a large portion of the unappropriated waters and will preclude the development of large projects in other portions of the river. The development of the Bruneau Project would not necessarily interfere with the supply of supplementary rights to existing enterprises and the development of the Minidoka Pumping Project. The Board expresses no opinion as to the feasibility of the Bruneau Project.

The Board makes no recommendation as to the feasibility of diverting water from Yellowstone Lake into the Snake River drainage.

Very truly yours

J. W. McCance

Chairman, Board of Engineers

DEPARTMENT OF THE INTERIOR
UNITED STATES RECLAMATION SERVICE

Burley, Idaho, April 10, 1920

From: the Board of Engineers to consider projects in the Snake River Valley which may affect the proposed American Falls Reservoir

To: the Honorable D. W. Davis, Governor of Idaho, and the Chief of Construction of the U. S. Reclamation Service.

1. In conformity with an understanding had between the Director of the U. S. Reclamation Service and the Governor of Idaho, a joint Board of Engineers was designated to consider projects in the Snake River Valley, particularly those affecting the proposed American Falls Reservoir.

2. Under date of March 30, 1920, the Chief of Construction of the U. S. Reclamation Service directed the designated Chairman of the Board as to the matters to be considered. Copy of this letter is attached hereto as Exhibit "A".

3. The instructions cover specifically the following points:

(1) The examination of a project proposed by Mr. I. B. Perrine contemplating a diversion near Shelley, Idaho, the canal line extending thence to the vicinity of American Falls, where the water carried during winter is to be turned back into the reservoir above the

American Falls dam for the purpose of producing power.

By a proposed extension this canal could also cover the lands of the Minidoka Pumping Project and other lands to the westward thereof.

(2) The consideration of a proposal by Mr. Perrine for the Bruneau project.

(3) The consideration of the various proposals for power to replace the power developed and undeveloped now controlled by the Idaho Power Company at American Falls.

4. In addition to these specific instructions the Board was directed to consider any other matters which might be presented by the Governor of Idaho, or Project Manager Dibble, having a bearing on the construction of the American Falls Reservoir.

5. This board convened at Burley, Idaho, on April 5 with the following members present:

I. W. McConnell, Chairman

W. G. Swendsen, State Commissioner of Reclamation

E. B. Darlington, Chief Engineer, Twin Falls North Side Land and Water Co.

J. C. Wheelon, General Manager, Twin Falls Canal Co.

James Munn, Consulting Engineer, U. S. Reclamation Service

F. W. Hanna, Consulting Engineer " " "

6. At the first session, it was pointed out by Mr. Swendsen that the State officials believed the time had come for the formation of a definite plan for the

development of the remaining resources of the Snake River water supply on a broad and comprehensive basis which would insure to the state the maximum utility of the possibilities of the stream.

7. Mr. Paul S. A. Bickel presented a plan for the utilization of the waters which might be available for irrigation; said plan involving the construction of the American Falls reservoir; the Shelley Canal, with its extension to the Wood River country, and the irrigation of the Bruneau tract.

8. It became apparent from preliminary consideration of the subject that no one of the principal problems involved could be properly considered without taking into account its effect upon the general problem of the conservation of the waters of Snake River. The Board has therefore given consideration to the following questions:

(1) The total water supply available in the Snake River basin for irrigation.

(2) The quantity of storage required for the utilization of the water supply and the relation of that supply to the size of the American Falls Reservoir and other reservoirs which may be necessary.

(3) The power rights to be lost at American Falls thru the appropriation of all waters available for irrigation and the possible substitution by which such loss of power rights can be compensated.

(4) The Shelley Canal as proposed by Mr. Bickel.

(5) The various irrigation projects which can be developed in the Snake River Valley.

(6) Storage in Yellowstone Lake.

9. The Board spent two days in examination of the field conditions in connection with the Shelley Canal. The study of data available was then taken up at the Burley Office. On April 9th Governor Davis came to Burley and discussed the situation with the Board.

10. The Board has had access to a large number of reports and estimates and has had the advice of the officials of the Reclamation Service at Burley who have studied the problems involved for a number of years past. Most of the maps, tabulations, graphic curves, and other information introduced into this report as exhibits were obtained from the records of the Burley office, including reports by Mr. A. J. Wiley, or from Reports furnished by the State Engineer of Idaho, and from the report by Mr. Bickel in connection with his proposal for the Shelley Canal and the Bruneau project. Specific acknowledgment is made of valuable assistance rendered the Board by Project Manager Dibble, Engineer Banks, and Engineer Phelps.

11. The Board expresses the opinion that the greatest use of the water of Snake River will be found in the dedication of the entire flow of the stream to irrigation in so far as the water can be economically appropriated. The physical conditions surrounding the problem render it possible to divert from the stream at numerous points in its course, and with the requisite storage to utilize a very large percentage of all the waters originating in the watershed above Milner dam. It is demonstrated by the data available to the Board that the amount of water available in the river is the limiting factor. There is an excess of land for the amount of water which can probably be brought upon it. The net effect of this condition will be to dry up the river below Milner Dam during the irrigation season, also to as great an extent as possible below American Falls Reservoir, during the non-irrigation season. The waters flowing in the stream below Milner Dam are not susceptible of diversion to any considerable amount, and therefore become of primary use in connection with the production of power. The principle involved therefore is to secure as nearly as possible a total use of the waters for irrigation above Milner Dam, and to secure the greatest possible use for power below Milner Dam. To a moderate extent these

interests conflict with each other but fortunately on account of the large accretions to the stream below Milner Dam the power resource is restored at Upper Salmon Falls and the injury to that resource which would be susceptible of future development is relatively not very great.

AMERICAN FALLS RESERVOIR

12. The American Falls Reservoir is clearly a necessity for the maximum utilization of the waters of the Snake River. This point is generally conceded, and the efforts of all interests involved should be concentrated and directed towards the commencement of work upon this facility at the earliest possible date. The Reclamation Service now has under consideration a contract to be entered into by the various water users concerned, wherein these water users agree to provide funds for the early development of the reservoir. This plan, contemplating as it does the eventual completion of the reservoir to full capacity of approximately 3,000,000 acre-feet, offers a definite basis for early progress. In the absence of any other definite proposal looking to the same end, it is believed that the interests of all parties concerned will be best advanced by concentrating support behind the Reclamation Service proposal with a view to securing the early completion of the entire reservoir in order that this very essential facility may be available as rapidly as enterprises can be initiated to bring additional lands under cultivation.

Table 5

Power Possibilities on the Snake River from American Falls to Swan Falls, inclusive.

SITE	Head Feet	Flow de- veloped H.P.	Firm Power at site un- der pres- ent con- ditions. H.P.	Firm Power at site under Pro- posed con- ditions H.P.	Power at site for Irrig. Pumping H.P.
American Falls	45	6,000	18,000	0	55,000
Eagle Rock	45		18,000	0	35,000
Minidoka	45	10,000	15,000	0	23,000
Milner	45			0	0
Cedar Rapids	90			0	0
Dry Creek Falls	125			0	0
Twin Falls	125		5,000	5,000	Firm Power
Shoshone Falls	200	1,500	8,000	8,000	" "
Auger Falls	120		7,000	7,000	" "
Upper Salmon Falls	85		38,000	38,000	" "
Lower Salmon Falls	50	4,000	20,000	20,000	" "
Crane Falls	27		13,000	13,000	" "
Swan Falls	23	13,500	10,500	10,500	" "

*Proposed Conditions: All flow stopped at American Falls in non-irrigation season. All flow except waste waters to be diverted at Milner Dam or above in all seasons.

37. It is recognized generally that the establishment of the American Falls Reservoir is essential to the further development of dependable irrigation possibilities on the Snake River, also that the development of that reservoir will shut off the winter flow at that point which will thereby to a very large extent deprive the remaining power sites of the winter water which now passes American Falls. This condition is complicated however, by the fact that the diversions for irrigation at Minidoka Dam and at Milner Dam are prior rights over any of the power rights lower down and consequently under natural flow conditions the power sites below Milner Dam reach the condition of lowest flow and therefore their period of least firm power production in the summer season, when practically all water is taken from the river at Milner Dam. It is well understood however, that accretions from springs and return flow accrue to the stream to a slight extent between Milner Dam and Twin Falls, which is the next lower power site, and to a very large extent below Shoshone Falls and above Upper Salmon Falls.

38. It will appear therefore from an analysis of the situation that the stoppage of winter flow at American Falls Reservoir will to a large extent eliminate the flow of the power sites above Salmon Falls, but will not materially modify the value of that site and sites lower down from the standpoint of the production of firm power.

power value or the cost of substitution from other sources. From the standpoint of this report, it is believed that dependable information as to return flow and other accretions to the stream usable for power above Upper Salmon is not sufficient to permit the prediction of value as to reasonable expansions to be expected in that field, and the opinion is expressed that the best position at this time is to lay out future development on the basis of the dedication of all water to irrigation use. Under this proposal commercial power plants from American Falls to Shoshone Falls inclusive, would require adjustment for the near future with subsequent development as circumstances permit.

45. There will be an abundant power resource at American Falls, Eagle Rock and Minidoka Dam for all probable demands for irrigation pumping. This resource will arise from the waters turned down the river to be diverted at Minidoka Dam and Milner.

46. Since the complete utilization of the Snake River water supply above Milner Dam for irrigation purposes will, under normal conditions require a considerable length of time, it is possible that power plants constructed in the near future for pumping purposes may, until such time as irrigation developments are completed, be used to supply

commercial winter power, and by reason of such possible use winter power rights might initiate which would mitigate later against a complete use of this water resource for irrigation purposes. In granting power rights in the future the Federal Government and the State should so far as possible provide restrictions requiring its eventual surrender when and as the waters are required for application to the land.

SHELLEY CANAL

47. Mr. Bickel's proposal is to construct a diversion dam at Shelley and a lined canal 84 miles long with capacity of about 6700 second-feet from that point to a point west of American Falls, where a drop, for the development of power, is contemplated, at the same time returning the water into the proposed reservoir at American Falls. From the power drop an extension is contemplated to carry a sufficient supply of water to serve 240,000 acres, including 120,000 acres on the proposed North Side Minidoka Extension project and other lands beyond; the purpose being to eliminate pumping to the Minidoka tract. The maps indicate that the length of this extension would be about 120 miles, or a total length of about 200 miles of Main canal. He estimates the cost of construction for 387,000 acres at \$23,560,000, which with