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DEPARTMENT OF
WATER RESOURCES

Orr Affidavit

Exhibit 76

“Information Bulletin On A Study Of Water
Resource Development Possibilities – Upper
Snake River Basin,” by the U.S. Army Corps of
Engineers and the U.S. Bureau of Reclamation
(Sept. 29, 1960)

Fourth Orr Affidavit
Exhibit 13:

**Information Bulletin on a Study of Water
Resource Development Possibilities –
Upper Snake River Basin (U.S. Bureau of
Reclamation & U.S. Army Corps of
Engineers) (Sept. 29, 1960)**

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P.W.
Upper Snake

U. S. Bureau of Reclamation
Region 1 - Box 937
Boise, Idaho

U. S. Army Engineer District, Walla Walla
Building 602, City-County Airport
Walla Walla, Washington

September 29, 1960

STATUS OF
UPPER SNAKE RIVER BASIN INVESTIGATION

Pursuant to resolution adopted 19 March 1954 by the Committee on Public Works of the United States Senate, directed to the Corps of Engineers, and in accordance with the authority granted by Federal Reclamation Laws (Act of June 17, 1902, 32 Stat. 388 and acts amendatory thereof or supplementary thereto), a joint study was undertaken by the Corps and Bureau of Reclamation to investigate and report on the need for and potential of development of the land and water resources of the Snake River Basin from its headwaters in Wyoming downstream to and including the Powder River in Oregon.

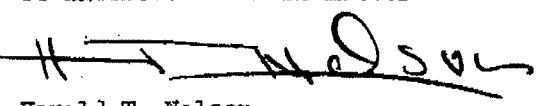
A series of preliminary hearings were held in February 1955 for the purpose of obtaining views and comments of those interested in water resource development.

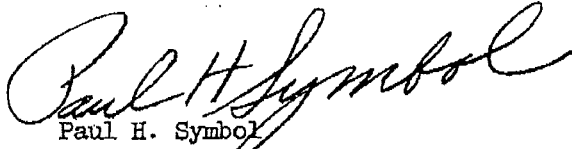
A resume of the resultant findings of the Upper Snake River Basin study to date, together with limited project information on water resource development possibilities, are presented in the attached information bulletin.

A summary report on the Upper Snake River Basin, which will present the findings of the study in much more detail, will be made available for public examination in the near future. Following release of this report and in order that all interested parties may be afforded an opportunity to express their views concerning the development possibilities or other water resource potentials that are pertinent, additional public hearings will be held jointly by the District Engineer, U. S. Army Engineer District, Walla Walla, and the Regional Director, Region 1, Bureau of Reclamation, Boise, Idaho. These hearings are tentatively scheduled to be held in Idaho Falls and Boise, Idaho, in December. Definite dates will be announced later.

Persons having specific questions on the studies as summarized in the bulletin are invited to correspond with or visit the office of the Regional Director or District Engineer, preferably in advance of the hearings.

Please bring the foregoing to the attention of persons known to you to be interested in the matter.


Harold T. Nelson
Regional Director, Region 1
U. S. Bureau of Reclamation
P. O. Box 937
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Paul H. Symbol
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INFORMATION BULLETIN ON A STUDY OF
WATER RESOURCE DEVELOPMENT POSSIBILITIES
UPPER SNAKE RIVER BASIN

The Upper Snake River Basin investigation, a joint effort by the Corps of Engineers and the Bureau of Reclamation, covers an area of about 73,000 square miles drained by Snake River and tributaries from its headwaters in Wyoming downstream to and including the Powder River in Oregon. Included are the streams in southeast Idaho north of Snake River which are tributary from a ground-water standpoint but do not reach Snake River as surface flows. This reach of Snake River drains western Wyoming, all of south Idaho except the extreme southeast corner, the extreme northwest corner of Utah, the northeast corner of Nevada, and the southeastern part of Oregon.

Objectives of this investigation are to identify unused and uncontrolled components of water and land resources and to set forth development possibilities to meet the many related needs of the area.

The investigation was begun using as a starting basis the physical data, development plans, and reports accumulated over the past half century by public and private agencies and individuals having responsibilities for water and land-resource development.

From this extensive record, the knowledge of the area by the Bureau of Reclamation, the Corps of Engineers, and other interested State and Federal agencies, and from consultation with other organizations and individuals, a master listing of all identified developments was compiled. This listing included over 500 potentials. Study criteria were formulated and applied to this inventory and available information on physical characteristics and limitations was considered. Alternatives were evaluated and situations where developments were found mutually exclusive were analyzed. This elimination process reduced the listing to some 100 possibilities which were then given more thorough study.

Essential physical data not available from earlier project-type studies were obtained. Subsurface explorations were performed at 27 dam and other major structure sites. About 45 reservoir and damsites were mapped topographically. A land-resource inventory covering nearly 9,000,000 acres was performed. Flood damage data were collected, and streamflow conditions studied. From this investigative effort, design and water supply studies, and preliminary identification of project benefits the list was further refined. Engineering, hydrologic, power, flood control, and other specific studies were then performed to more definitely determine the characteristics of each development possibility.

Unused ground-water resources were recognized early in the investigation as an important water-supply factor, the extent and nature of which

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would determine to an important degree the amount of future irrigation that might be possible in some major areas. To evaluate the ground water potential for various uses, it was necessary to determine so far as possible the quantity of ground water available in various parts of the basin, depth to water, water quality, quantity that could be withdrawn, and the effects that would result from making sizable withdrawals. The Ground Water Branch of the Geological Survey undertook this determination on a cooperative basis.

Studies relating to other uses of the water resources were undertaken in collaboration with other agencies such as the National Park Service, Fish and Wildlife Service, Public Health Service, Soil Conservation Service, and the Forest Service. Agencies cooperating in the investigation were kept informed and their work guided by preliminary data as such data became available.

BASIN RESOURCES

Land elevations in the basin range from 13,700 feet, the highest peak in the Grand Tetons, to 1845 at the mouth of the Powder River. The total fall of the river from Jackson Lake Reservoir downstream to Brownlee pool is about 4,700 feet. Runoff is largely of snowmelt origin and is subject to forecasting.

Control of many reaches of the Snake River and its tributaries against flooding has been accomplished by levee and channel works and storage regulation. There are now over 100 miles of levee and channel works scattered throughout the basin, protecting highly developed urban and agricultural areas. In addition, three multipurpose storage projects have authorized flood control features while many others built primarily for irrigation effect considerable flood regulation.

There are about 3,190,000 acres now under irrigation in this basin. Of this total, some 1,462,000 acres are irrigated from the surface waters of the Snake River and tributaries above Milner Dam. This includes the service areas from those streams which enter the plain from the north but which do not reach the Snake River as surface flows. In this reach above Milner, there are about 478,000 acres that are irrigated, using underground water as a supply. Below Milner, there are 1,178,000 acres served from surface waters and 72,000 acres served from ground water.

Some 49 reservoirs with a capacity greater than 5,000 acre-feet each have been developed over the years. They have a total capacity of 9,900,000 acre-feet, of which some 8,600,000 acre-feet are considered as usable. The greatest share of this capacity is operated to meet irrigation requirements.

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Production of power is an important water-resource use in the basin and some 18 non-Federal hydroelectric plants with a total capacity of about 362,200 kilowatts have been installed. There are five Federal hydroelectric plants with a total capacity of 163,900 kilowatts. Other important water uses are for municipal, industrial, sanitation, fish and wildlife, and recreational purposes.

It is estimated that there are about 5,800,000 acres of unirrigated arable lands in the basin which have favorable physical characteristics for irrigation if water could be made available. Most of these lands are in southern Idaho. Some 800,000 acres of this total are now dry farmed to the extent that natural precipitation and accumulated soil moisture will support crops. About 2,300,000 acres of the total are within that part of the drainage basin above Milner Dam and the remainder of 3,500,000 acres are below. The individual areas of greatest significance to future development occur in the broad flat valley of Raft River, the Salmon Falls area, the Bruneau Plateau, the Mountain Home Plateau, and portions of the plain north of Snake River. Soils of the arable areas, for the most part, are fine-textured loessal type with high mineral fertility and excellent water-holding capacity. The abundant production from sustained irrigation of similar lands over more than half a century attest to the high capability of such soils under irrigation.

The historical runoff of Snake River, adjusted to reflect the present stage of development, averages 1,020,000 acre-feet annually at Moran, Wyoming. The average runoff under the same conditions at Weiser, Idaho, is some 11,700,000 acre-feet. Between these two points, there are wide variations in runoff. The flow of the river in below-normal years is largely stored and diverted above Milner Dam for irrigation uses. Below Milner, return flows from irrigation and the outflow of a large number of springs enter the Snake River to largely make up the flow measured at King Hill. Average annual runoff of the river at King Hill is estimated at 6,760,000 acre-feet. Discharge of the springs which enter mostly between Twin Falls and Bliss averages 6,500 cubic feet per second, or 4,700,000 acre-feet per year. The inflow from the Bruneau, Owyhee, Boise, Payette, Malheur, and Weiser Rivers, together with lesser tributaries, combine to make up the total average flow at Weiser.

The present water-resource picture of the Snake River is generally one of complete surface water utilization in dry periods above Milner Dam, with quick recovery in the river from inflows below Milner Dam. These inflows represent a sizable usable water supply that increases progressively downstream from Milner Dam.

Another water resource of great importance to future land development is underground water. That part of the Snake River Plain, principally on the north side of the river, from the upper topographic limits of the plain down to the Thousand Springs area near Bliss, Idaho, includes

a large ground-water resource. This comprises a hydraulic system in which aquifers of the Snake River basalts and interbedded sediments serve both as a vast storage reservoir and as a ground-water conduit. Transmissibilities are high, and the virtually evaporation-free storage capacity is tremendous. The plain itself is about 250 miles long, averages 60 to 70 miles wide, and includes some 13,000 square miles. Tributary valleys furnish the principal recharge to the aquifers of the plain which also receive substantial contributions from percolating irrigation water.

DEVELOPMENT NEEDS

There are many well-recognized needs for an orderly continuing program of development of unused water and land resources.

Opportunities for establishing new farm families, economic growth, greater agricultural production for an expanding population and stabilization of farming in supplemental water areas are among such needs for the expansion of irrigation. During 1957 crops valued at an estimated \$257,000,000 were produced from the irrigated lands in the investigated area of the Snake River Basin. This production and the related economic activity in the communities and agricultural product processing industries are a measure for judging the value of future irrigation.

Residential, commercial, and agricultural developments at a number of locations in the basin suffer flood damages. Greatly increased demands are predicted by private utilities and public agencies concerned with power development for future power requirements in the Snake Basin area. Power demand is expanding as a result of many factors, including unprecedented growth of irrigation pumping, population increases, increased per capita power consumption, industrial expansion, and greater variety of domestic uses. It is strongly apparent that the hydroelectric potential of the area will be utilized as rapidly as it can be developed under any presently foreseeable schedule. Municipal and industrial water needs are climbing as cities grow and new commercial activity becomes established.

There is tremendous interest in water-associated sports, and pressures on fish and wildlife habitat that depend on surface waters and watersheds are at an alltime high and increasing. Increasing urban populations have made pollution control and provision of safe water supplies a problem of great importance in many communities in the basin.

DEVELOPMENT PROBLEMS AND CONSIDERATIONS

The mature stage of present development together with the unique physical characteristics of the area will have a strong influence on future development in the Snake River Basin. Surface waters are fully

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used during dry periods at some locations, and most of the readily attainable, inexpensive developments for irrigation, flood control, and power have been in operation for many years. Future development is now limited to the fairly difficult, intricate, and costly situations.

From a land and water resource development standpoint, the Basin is divided at Milner Dam. Above Milner, all of the surface water in dry cycles is already storable, appropriated and used for the present development.

During the period 1928 through 1957, with the present development in the Snake River Basin, estimated flows past Milner Dam would average 1,305,000 acre-feet a year. Studies show that the only flows passing Milner Dam during the dry periods of 1931-1938 and 1940-1942 would be those required to satisfy prior downstream rights. Including a small amount of spill in 1930 and 1939, the flows past Milner Dam would average only about 260,000 acre-feet a year during the entire 13-year dry period (1930-1942). If the flows now passing Milner Dam were stored and held for irrigation use, an additional 685,000 acre-feet of water a year would be required to satisfy the new water requirements in the 13-year dry period. Holdover storage was considered as a possible means of meeting these depletions. It was determined that nearly 9,000,000 acre-feet of active capacity in new storage reservoirs would be required. Because of the lack of feasible reservoir sites where large amounts of relatively inexpensive storage could be provided, other means of meeting these water shortages are required.

There are several opportunities for obtaining a new water supply for irrigation use above Milner Dam during dry years. The most promising source is the ground-water resource known to exist beneath the Snake River Plain. In a sense, the ground water is storage. In considering future development it could be used much as a conventional surface storage reservoir. However, the use of ground water raises new problems. Most of the ground water occurs where there are no suitable lands that can be served directly or it occurs beneath lands now irrigated. This creates a need for exchanging ground water for present surface-water uses so that the surface water might be diverted to new developments in that part of the area served by diversion above Milner.

Most new developments above Milner, because of their location and elevation, must be served by pumping. Because of this factor and use of ground water on an exchange basis, double pumping is required with high annual costs and heavy demands for power.

These requirements have led to consideration of plans to use storage in the periods of normal or wet years and ground water during the dry periods. The complimentary use of surface and ground water would permit irrigation development to proceed in Upper Snake Basin. Also, surface

waters could be used in wet years on lands now served exclusively from ground water to relieve overdrafting of local ground-water supplies. In such situations ground water would be the dry year water supply. These concepts of combined ground and surface water applications would achieve a fuller use of the basin water resources.

Even though the existing $4\frac{1}{2}$ million acre-feet of usable storage above Milner Dam affords a good degree of stream regulation during flood periods, there are many reaches still subject to flood damage. Multiple-purpose storage is the most desirable way of affording additional control. Such storage, together with the presently undeveloped head, would also help to meet future power needs in the area.

In the area below Milner Dam, problems also stem from the relative location of land to water supply. For example, to reach the arable land area of the Bruneau Plateau in the vicinity of Thousand Springs, pump lifts of up to 600 feet would be involved. The Mountain Home Plateau is more than 800 feet in elevation above the pool of C. J. Strike Reservoir.

Further the tributary streams below Milner Dam have their own peculiarities. On the Boise River there is a high degree of present water use with little remaining water, but there are large blocks of irrigable land nearby needing a water supply. The 1928 through 1957 annual average runoff at the Boise River Diversion Dam is 1,890,000 acre-feet. The present water requirements at Boise Diversion Dam are estimated to be 1,450,000 acre-feet, leaving a surplus of 440,000 acre-feet.

In contrast, there is presently an average of 2,074,000 acre-feet annually which flows from the Payette River Basin. Even if irrigation of all lands that have a potential for development in the Payette Basin was accomplished, 1,400,000 acre-feet of unused water would still pass Black Canyon Dam annually.

On the Owyhee River, the Owyhee Reservoir with present development would have spilled in only 12 years during the 30-year period from 1928 through 1957. In contrast, there is an estimated 724,000 acre-feet of water annually leaving the Weiser River Basin with only very minor remaining undeveloped land areas.

With this varying range of stream control and water utilization there are still many areas in the basin below Milner Dam in need of additional regulation for irrigation, flood control, and other multiple uses. For instance, flood control facilities are needed on the lower valleys of most of the tributaries and along Snake River from Marsing to Weiser. Also, sites below Milner Dam, both in the Snake River channel and on major tributary streams, offer excellent opportunities for development of the hydro-electric power potential. In addition to regulation of the Payette River for local use and protection, control of this stream at critical times of flooding in the lower Columbia River will afford measurable downstream benefits.

In considering the future basin development potentialities, it was found necessary to establish some criteria to guide the planning process. Six basic premises are as follows:

1. There would be no export or import of water between the Snake River Basin and neighboring drainages.
2. All existing irrigation and domestic water rights and uses would be recognized and fully provided for in any analysis of future developments and in determining resources available for new uses.
3. That development plans would not be formulated on the basis of projects being completed on a predetermined time schedule but the possibilities presented would represent the full level of development considered practical from a physical and engineering viewpoint.
4. That economic justification on current levels would not be a limiting criteria for including or excluding particular development possibilities in the overall plans.
5. Water and land-resource development possibilities evaluated and considered for the future would not be located within National Parks or Monuments.
6. That plans for potential land development would be formulated with anticipation that an exchange of water source between new and existing uses could be expected.

POTENTIAL PROJECTS

The attached tabulation is a summary of 80 potential developments analyzed for this study which meet the criteria established. Taken together they represent a rather full utilization of the land and water resources of the Basin. Some of the development possibilities listed are not presently feasible or acceptable and their development or an alternate may not come about for many years in the future.

The tabulation includes a total of 46 reservoirs, most of which are multipurpose and have a combined active capacity of 7,041,000 acre-feet. Granite Creek, Elbow, Alpine and Burns Creek Reservoirs, all above Heise, could supplement the existing Jackson Lake and Palisades Reservoirs for irrigation, power, and regulation of floods from near Heise to the mouth of Henrys Fork. Driggs and Fremont Reservoirs on Teton River could be operated for local irrigation and to regulate floods on lower Teton River and adjacent Henrys Fork reaches. Warm River and Ashton are primarily power projects and together with Driggs and Fremont could be used

to reduce floods on Henrys Fork near Rexburg. These reservoirs would provide additional regulation on the Snake River above American Falls to create irrigation, flood control, power, recreation, fish and wildlife, and related benefits.

Below Milner Dam, Clear Lakes Reservoir could provide storage for major irrigation development. The potential Thousand Springs Reservoir could provide storage for power and limited flood control. The Guffey Reservoir, with irrigation and power facilities, could also make possible the exchange of Boise River water supply for use on a large irrigable area. The potential Twin Springs Reservoir and a power installation at existing Lucky Peak Dam could afford additional and more flexible utilization of all storage on Boise River for irrigation, flood control, and power production. Duncan Ferry Reservoir on Owyhee River and Mason Dam and Reservoir on Powder River could provide additional irrigation water supply and local flood control. On Payette River, the Garden Valley Reservoir could provide a substantial water supply for new lands, flood control both local and downstream on Columbia River, and a large quantity of power. Storage on the Weiser River would be for irrigation and local flood control. There are a number of additional reservoirs throughout the Basin which could provide local irrigation and flood control benefits. The control of floods would be accomplished without detriment to primary use of the projects for irrigation and with only minor effect on operation of the projects for other uses.

Seventeen projects included in the tabulation have been found practical for producing hydroelectric power and could have a total installed capacity of 1,241,500 kilowatts. This future power potential would greatly expand the present generating capacity in the Basin. The Brownlee, Oxbow, Hells Canyon plants, just downstream from the basin area, will have 1,138,000 kilowatts of capacity. The total hydroelectric capacity available to the area with these projects would be some 2,874,000 kilowatts.

When compared to the load growth as analyzed by the Federal Power Commission for this study, the potential plants, in combination with the existing system, would be adequate for only about 20 years of growth, or until about 1980. It is understood, of course, that the potential power facilities cannot be realized in such a short space of time, and accordingly, a large segment of future load growth for the Basin must be supplied from other sources. Analysis of the irrigation pumping power requirements for the possible future irrigation projects presented in the table indicates that such a load will consume on an average about 35 to 40 percent of the incremental power production at the listed potential hydro plants. Accordingly, economical hydroelectric power development must precede or accompany the development of new irrigation projects.

For the area diverting above Milner Dam, there are some 294,000 acres of new lands, located principally south of Snake River and including such

areas as Fremont, Raft River, Oakley Fan and Salmon Falls, considered to be within practical reach of identified water sources. There are also 823,000 acres requiring supplemental water that might be served. A replacement or exchange water supply is considered prerequisite to development of most of these new and supplemental lands. The most reasonable approach to providing a water supply to serve identified lands would be through a combination of ground-water pumping and storage. Ground water would be utilized when surplus surface waters were not available. Exchange or replacement water could be obtained in three selected ground-water pumping areas in the plain, and by pumping from two streams that enter below Milner Dam.

An optimum level of irrigation development can be achieved only on the basis of a coordinated and integrated group or system of projects involving both surface storage and ground-water pumping. This group or system would have to be considered as a single development composed of land areas, multipurpose storage reservoirs, and facilities for producing the exchange and replacement water supplies at various locations.

Associated with the vast underground reservoir beneath the plain is the possibility of artificially recharging it by diverting surplus flows, beyond requirements of existing and future developments, from the Snake River during the flood season into highly permeable areas of raw volcanics. In this manner, drawdown from expanded pumping could be decreased, the flow of the river might be smoothed out to the benefit of downstream power, and a measure of flood control could be realized from diversion of spring-time flow peaks.

Of the total area above Milner Dam, there are 3,250 acres of new land and 26,000 acres requiring supplemental water in Wyoming that could be developed under terms of the Idaho-Wyoming Compact.

Expansion of private ground-water development of 245,000 acres in Snake Plain is anticipated.

Below Milner Dam multipurpose developments primarily for irrigation appear possible for the Bruneau Plateau; on the broad upland between the Boise and Snake Rivers near Mountain Home; and in the basins of Payette, Weiser, Owyhee, Burnt, Malheur, and Powder Rivers. Also, there are developments for the future which appear practical in the basins and on the alluvial fans of the streams north of the plain which sink into the lavas before reaching Snake River above Milner Dam. Altogether, optimum development in these areas would provide for the irrigation of about 591,000 acres of new lands and provide supplemental or replacement water to about 278,000 acres.

There are six levee and channel projects scattered throughout the Basin to protect particular local flood problem areas which need such

local protective works in addition to any storage facilities, existing or proposed.

SUMMARY

For the basin area as a whole, and from an engineering and physical viewpoint only, it appears that 1,130,000 acres of new lands could be served, and a supplemental water supply provided to 1,101,000 acres now in need of supplemental water. The 46 new reservoirs, included in the tabulation, with a total capacity of 7,041,000 acre-feet, in addition to serving irrigation requirements, could afford much needed flood control, increase recreational opportunities, and allow for the production of substantial blocks of hydroelectric power at some 17 powerplants with an estimated capacity of 1,241,500 kilowatts.

Snake River runoff past Milner Dam under 1960 conditions of development and water use are estimated to average 1,305,000 acre-feet per year. Further depletions of streamflow by the development of additional lands as presented in this study would amount to an estimated average of 910,000 acre-feet annually. Existing and future flow conditions past Milner, assuming a repetition of the 1928 through 1957 runoff pattern, are illustrated on the accompanying chart titled "Flows past Milner." A similar reduction and reregulation of flows in the Snake River below Thousand Springs would be experienced. The present runoff at the Murphy gage, below Guffey damsite, estimated to average 7,048,000 acre-feet annually for the same 30-year period, would be reduced by about 1,471,000 acre-feet annually. This reduction is illustrated on the attached typical monthly flow chart titled "Monthly Runoff - Snake River below Guffey Damsite."

Full utilization of the land and water resources of the Upper Snake Basin will require a great many years; however, additional incremental or stage development can be achieved as economic conditions dictate. Any consideration of full comprehensive development must recognize that there are many complex and very difficult water use, economic, and legal problems that must be solved. Foremost among them is agreement to the water exchanges involved.

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POTENTIAL PROJECTS
UPPER SNAKE RIVER BASIN

Sheet 1 of 2

Project	Total Res. Capacity Ac.-ft.	Active Res. Capacity Ac.-ft.	Power Plant Capacity Kilowatts	Area Served Acres		Exchange Water Ac.-ft.	Source of Water Supply	Construction Cost Dollars	Remarks
				New	Supp.				
Jackson Hole Irrig. Proj.	-	-	-	2,050	4,300	-	Snake Riv.	800,000	
Lower Jackson Hole Channel Proj.								418,000	Levee and channel work - Fish Cr. to South Park Feed Grounds.
Granite Cr. Dam & Res.	470,000	403,000	16,000	-	-	-	Hoback	27,610,000	
Snake-Harrows Proj.	1,078,000	878,000	270,000	-	(650,000)	-	Snake Riv.	101,840,000	
Alpine Irr. Proj.	-	-	-	1,200	-	-	Snake Riv.	673,000	
Elbow Dam & Res.	406,000	310,000	14,000	-	-	-	Greys Riv.	30,330,000	
Upper Star Valley Proj.	27,000	24,500	-	-	21,700	-	Crow Cr.	4,140,000	
Swan Valley Proj.				400	1,500	-	Snake Riv.	790,000	
Palisades Proj. Burns Cr. Dam, Res. & Power Plant	234,000	117,000	90,000	-	650,000	-	Snake Riv.	42,712,000	
Hess Falls Proj.	-	-	15,000	-	-	-	Henry's Fork	6,120,000	
Warm River Proj.	140,000	75,000	30,000	-	-	-	Henry's Fork	23,674,000	
Ashton Res. Project	48,700	40,000	12,000				Henry's Fork	7,428,000	Rebuild & enlarge existing dam & power plant.
Squirrel Meadows Proj.	10,740	10,000	-	3,100	3,000		Squirrel Cr.	2,145,000	
Snake Plain Recharge	Diversion of flood flows up to 1,500 cfs maximum from Henry's Fork or Snake River from St. Anthony to about Shelley.								
Upper Teton Proj.	50,000	35,000	-	15,200	27,800	-	G.W. & Teton Riv.	14,000,000	Pump 25,000 a-f from G.W. for 27,800 acs. eastside lands.
Alta Proj.	3,420	3,400	-	-	3,400	-	Teton Cr.		Small project sponsorship.
Lower Teton Dev. Proj. Fremont Dam & Res. Irrigation Proj.	315,000	200,000	22,000	39,000	30,000	-	Teton R. Teton R.	21,370,000 17,030,000	
Heise-Roberts Channel Proj.								2,294,000	Levee and channel works - Heise to Henry's Fork.
Kirie Beach Dev. Proj. Kirie Dam & Res. Irrigation Proj.	135,000	125,000	-	4,350	-	-	Willow Cr. Willow Cr.	5,420,000 2,180,000	Storage in Kirie Res.
Water Replacement Works Jerome-Wendell Area District Area Roberts-Morland Area Rock Creek Surface Water						110,000 110,000 600,000 90,000	G.W. G.W. G.W. Rock Cr.	2,900,000 2,920,000 4,250,000 2,640,000	
Blackfoot Riv. Res.	451,000	451,000	-	-	-	-	Blackfoot R.	607,000	Enlarge exist. Res. by 38,000 a-f
Fort Hall Indian Reservation	11,500	9,000	-	14,900	600	-	G.W., Blackfoot R., Bannock Cr & Misc.		Bureau of Ind. Affairs.
St. Anthony-American Falls W. Side Area	-	-	-	245,000	-	-	G.W.		Probable development Scattered tracts by private interests.
Minidoka Proj., American Falls Power Div.	-	-	30,000	-	-	-	Snake R.	10,130,000	
Eagle Rock Power Proj.	-	-	30,000	-	-	-	Snake R.	17,190,000	
Rockland Proj.	7,200	6,500	-	560	3,140	-	Rock Cr.	2,550,000	
Lake Channel Proj.	-	-	-	1,500	-	-	Snake R.	690,000	
Reft River Proj.	-	-	-	96,000	-	-	Snake R.	79,680,000	
Alao Proj.	3,300	3,000	-	-	3,140	-	Reft R.	1,635,000	
Cassia Cr. Proj.	7,000	7,000	-	-	11,000	-	Cassia Cr.		2 small reservoirs (small proj. auth.)
Oakley Fan Proj.	-	-	-	62,000	2,000	-	Snake R.	52,190,000	
Selmon Falls Proj.	-	-	-	51,600	61,800	-	Snake R. & G.W.	86,330,000	
Mud Lake & Little Lost Irrig. Dev.	-	-	-	30,000	13,500	-	G.W.		Probable development by private interests.
Medicine Lodge Proj.	12,120	12,000	-	-	5,040	-	Med. Lodge Cr.	3,510,000	
Birch Cr. Proj.	24,000	22,000	-	6,500	-	-	Birch Cr.	5,324,000	
Big Lost Riv. Proj. Arco Div. G.W. Division	8,000	7,500	-	-	16,000	-	Antelope Cr. G.W.	3,190,000 6,270,000	
Big Lost Riv. Channel Proj.								187,000	Levee and channel work vicinity Arco.

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JRP013995

POTENTIAL PROJECTS
UPPER SNAKE RIVER BASIN

Sheet 2 of 2

Project	Total Res. Capacity Ac.-ft.	Active Res. Capacity Ac.-ft.	Power Plant Capacity Kilowatts	Area Served Acres		Exchange Water Ac.-ft.	Source of Water Supply	Construction Cost Dollars	Remarks
				New	Supp.				
Brunseau Proj. Brunseau Div.	1,070,000 115,000	186,000 102,000	-	187,000	-	-	Snake R.	205,500,000	Pumping from Snake R.
Thousand Springs	750,000	400,000	150,000	-	-	-	Snake R.	40,884,000	
Boulder Flats Dam & Res.	61,500	60,000	-	-	-	-	Big Wood	7,270,000	
Big Wood Riv. Proj.	-	-	-	-	15,000	-	G.W. or Big Wood	790,000	G.W. pumping
Big Wood Riv. Channel Proj.	-	-	-	-	-	-	-	-	Levee and channel works vicinity Holey and Bellevue.
Bennett Cr. Proj.	2,600	2,300	-	-	1,500	-	Bennett Cr.	762,000	
Snake River Proj. Mt. Home Div., Guffey, & Long Tom, & Hillcrest Units	330,000	27,000	85,000 25,000 30,000	119,140	12,460	-	Snake R. Boise R. & G.W.	172,635,000	
Twin Springs Proj.	410,000	285,000	40,000	-	-	-	M.F. of Boise R.	29,700,000	
Lucky Peak Power Plant	-	-	(60,000)	-	-	-	Boise R.	17,249,000	Addition to existing dam & res.
Snake River Project Garden Valley Div: Gold Fork Unit Long & Round Valley Unit Garden Valley E. Scraper Cr. Units Montour M & S Units Northside Unit Willow Cr. Unit	80,000 - - 2,400,000 - - 6,500 -	78,000 - - 1,940,000 - - 6,000 -	- - - 368,500 - - - -	9,210 9,600 - - 2,500 25,000 10,000	18,150 10,500 - - - - -	- - - - - - -	Gold Fork M.F. Payette Payette R. Payette R. Payette R. Payette R.	6,600,000 7,060,000 159,890,000 1,485,000 34,382,000 9,860,000	Pump from Cascade Res.
Snake River Proj. Mt. Home Div Initial Butte Unit	-	-	-	82,000	-	-	Payette R.	137,040,000	Involves Boise R. exchange
Boise Proj. Payette Div Payette Heights Unit	-	-	-	1,143	-	-	Payette R.	675,000	
Council Proj.	50,500	49,200	-	1,656	2,560	-	Lost Cr.	2,165,000	
Hornet Cr. Proj.	2,000	1,900	-	-	1,760	-	Hornet Cr.	635,000	
Main Weiser Proj.	250,000	200,000	-	14,270	3,150	-	Weiser R.	27,120,000	
Little Weiser Riv. Irr. Proj.	12,450	12,200	-	2,000	-	-	L. Weiser Riv.	2,770,000	
Mann Cr. Proj.	13,000	11,000	-	595	4,465	-	Mann Cr.	2,965,000	
Indian Cove Proj	-	-	-	5,620	-	-	Snake R.	3,865,000	
Edgington Proj	-	-	-	8,060	-	-	Snake R.	6,120,000	
Brunseau Proj. Vickahoney Div.	-	-	-	36,950	1,800	-	Snake & Brunseau R.	26,170,000	
Castle Cr. Proj.	8,700	7,500	-	830	570	-	Castle Cr.	3,430,000	
Sinker Cr. Proj.	3,000	2,500	-	-	860	-	Sinker Cr.	1,370,000	
Sucker Cr. Proj.	8,000	7,200	-	-	1,600	-	Sucker Cr.	1,317,000	
Sucker Cr. Channel Proj.	-	-	-	-	-	-	-	-	Channel and levee work vicinity Homedale.
Duck Valley Irr. Proj.	95,500	95,000	-	19,400	16,800	-	Owyhee R.	-	Part of Indian Affairs Proj.
Upper Owyhee Proj. Jordan Cr Dam & Res. Duncan Ferry Dam & Res	60,000 1,000,000	57,000 743,000	- 14,000	- -	8,860 118,000	- -	Jordan Cr. Owyhee R.	4,323,000 20,475,000	
Jacobson Gulch Proj.	-	-	-	4,660	-	-	Snake R.	5,210,000	
Burnt R. Proj. M.F. Div S.F. Div Dark Canyon Div.	5,600 11,000 8,300	6,000 10,000 5,000	- - -	200 800 1,220	1,350 3,700 680	- -	M.F. Burnt R. S.F. Burnt R. Burnt R.	1,500,000 1,575,000 3,270,000	
Baker Project Upper Div. Wolf Cr. Div.	100,000 17,800	95,000 16,400	- -	4,010 -	13,990 5,600	- -	Powder R. Wolf Cr.	6,550,000 5,050,000	
Powder Riv. Channel Proj.	-	-	-	-	-	-	-	-	Local protection through and below Baker.

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SNAKE RIVER - FLOWS PAST MILNER DAM

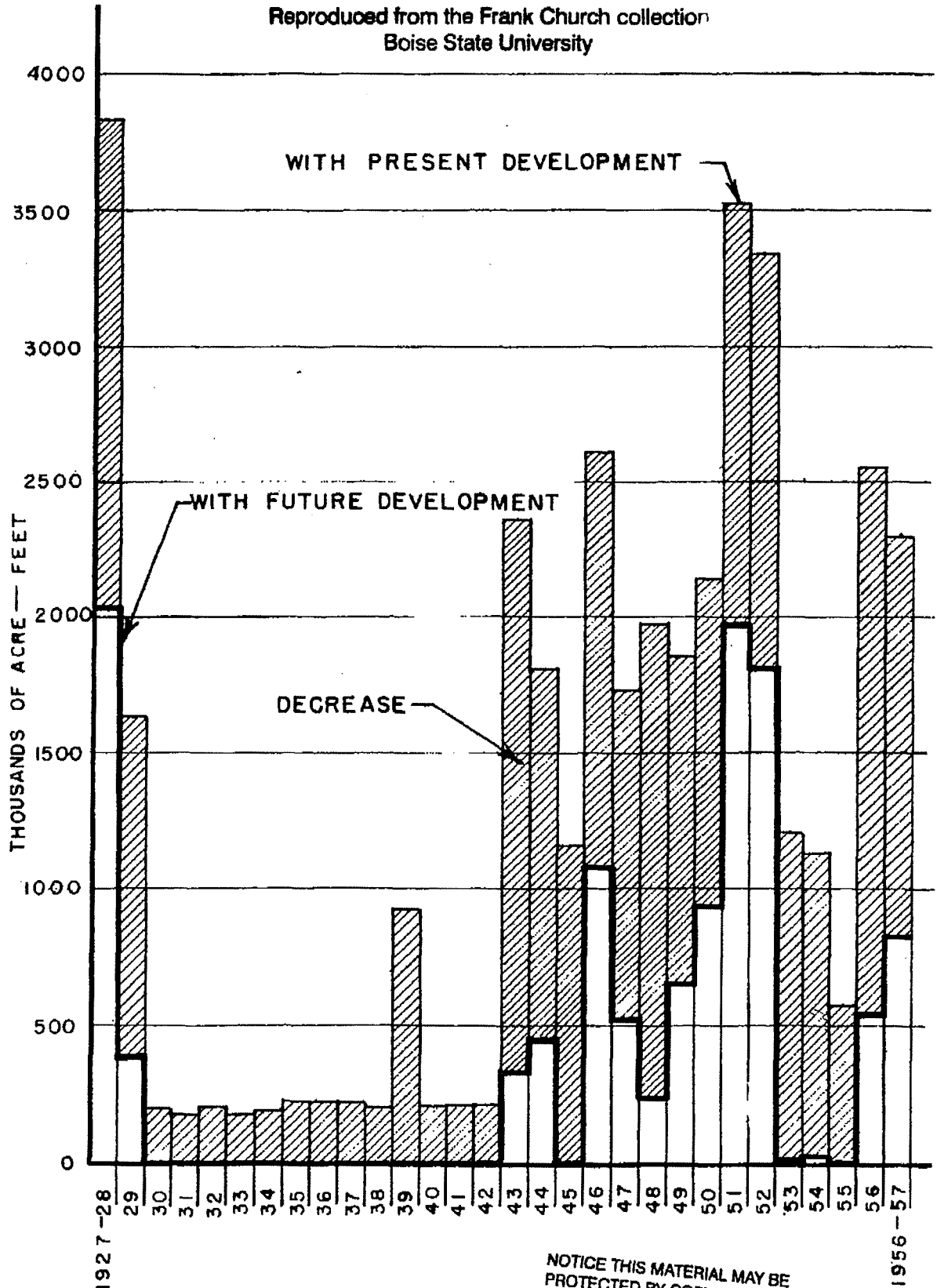
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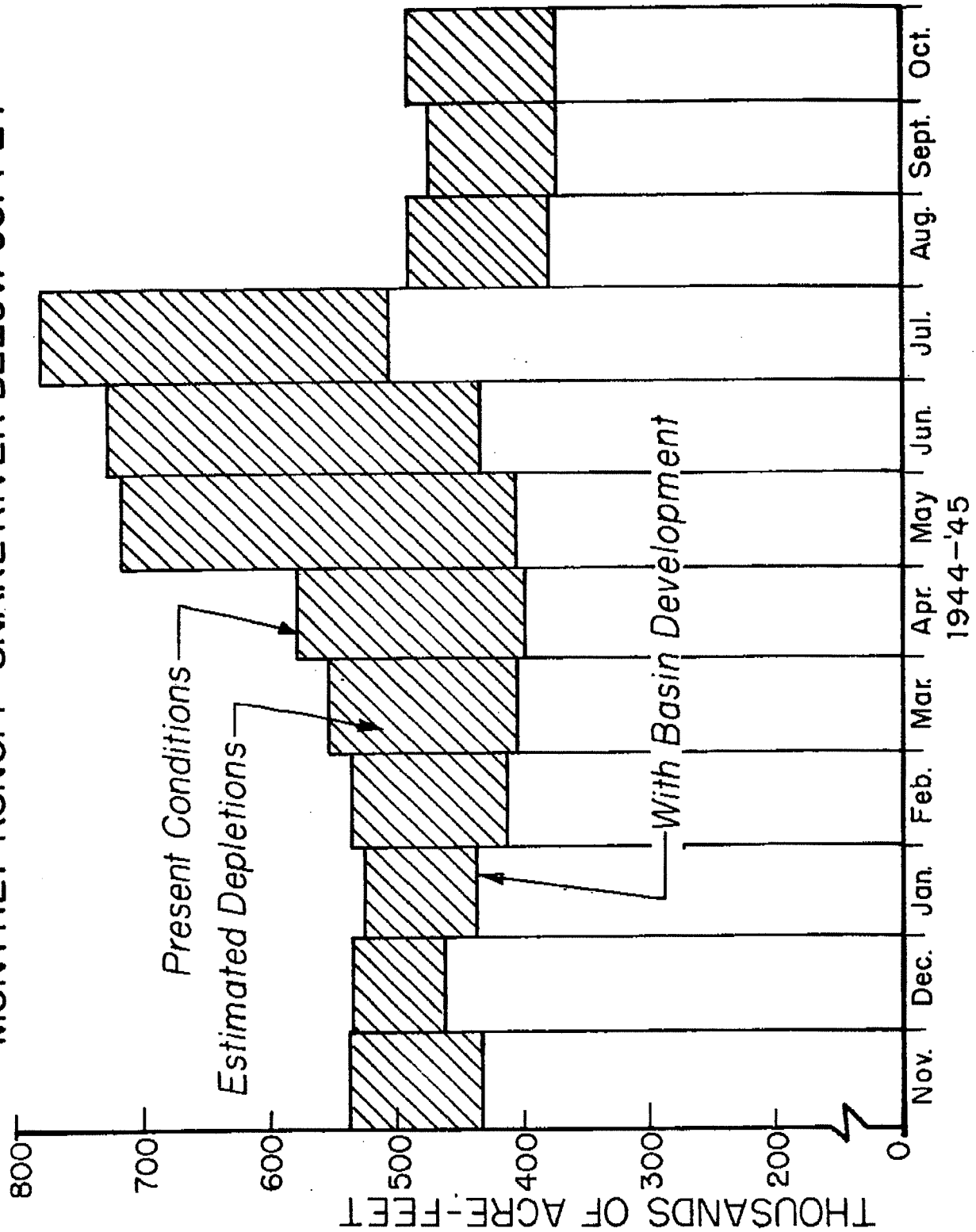
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MONTHLY RUNOFF-SNAKE RIVER BELOW GUFFEY



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P.W.
Upper Snake
River Valley
Basin

October 25, 1960

Mr. J. A. Brown
The College of Idaho
Athletic Department
Caldwell, Idaho

Dear Mr. Brown:

I have received your recent letter in which you urge me to support and actively promote legislation to get the Guffey Irrigation Project underway.

On September 29, Col. Paul H. Symbol, of the Corps of Engineers, delivered to me a preliminary report on the joint studies which are being made by the Corps of Engineers and the Bureau of Reclamation on water resources of the Upper Snake River. The report states that there are about 80 potential development projects for the Upper Snake River Basin which, from an engineering and physical viewpoint, appear capable of adding some 1,130,000 acres of irrigable land, which would result from the creation of 46 new storage reservoirs with a total capacity of 7,041,000 acre feet, and which would allow for the production of 1,241,500 kilowatts of electricity. Among the projects included in this group are the Guffey, Long Tom, and Millcrest units (all dependent upon the Guffey power and storage reservoir), which would irrigate 119,140 new acres, and provide supplemental water for an additional 12,460 acres of land. Total cost for these projects is now estimated at \$172,635,000. The report states that their feasibility hinges upon agreements for water exchanges.

Now my position is this: I favor the maximum development and utilization of the water and land resources of the Upper Snake River Valley. When the studies now underway are completed, I expect to favor authorization of the various projects which prove to be feasible, as funds become available, and as the need for new crop land and hydro-electric power arises. I think the order of development should depend chiefly upon technical considerations, and I am not prepared at this time to assign a specific priority to the Guffey and related projects. In this, I will be guided, in part, by the recommendations of the experts in the Corps and in the Bureau. Idaho's growth and prosperity are clearly dependent upon the orderly development of these vast unused resources, however, and you may be sure that I will work for that objective.

Sincerely,

Frank Church

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