

R 3 W

16

Lot 1 P.D. Hells Canyon Dam

Q = 9,000 cfs

See Condition on permit

priorly may 29 + 1964

03-2017 79

Permit No. 31990

Name of Applicant Idaho Power Company

Source of Water Snake River

a tributary of Columbia River

Location of P.D. Lot 1, Sec. 16, T. 22 N., R. 3 W.

Adams County

Water is used for Generation of electric power

Quantity of water claimed: Permit 9000 c.f.s. add. Depositions 30,000

Type of measuring device installed or method of measurement and general description of diversion works reservoir, concrete dam and hydroelectric plant with 3 turbine generator units - 3 - 24' steel penstocks

See Permit No. 24393 - 21,000 c.f.s.

Land to be irrigated or place of use:

TWP.	RGE.	SEC.	Description
22 N	3 W	16	Lot 1

Date Filed: May 29, 1964 Total acreage

Proof due: July 17, 1969

Proof Made: July 10, 1968

Priority: May 29, 1964

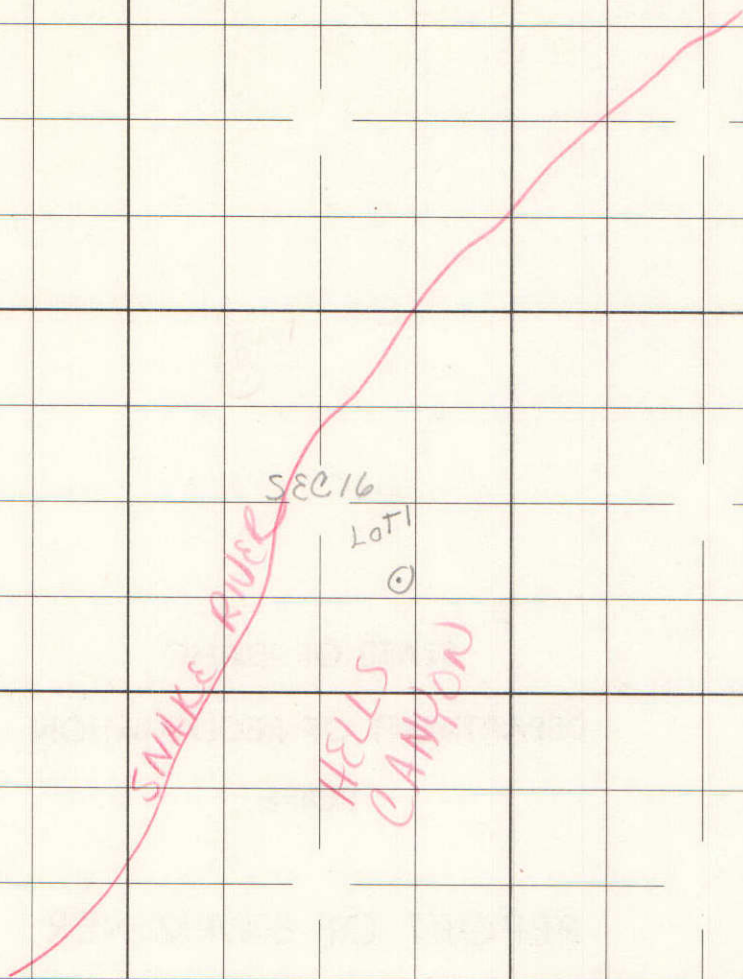
Other rights and acreage covered: (Indicate amounts, source, licensed or decreed, and acreage covered by subdivision; also show land covered on the map.)

Permit 24393 - 21,000 c.f.s.

3 2017

R. 3 W

T
22
N



RECEIVED

JUL 17 1968

Department of Reclamation

Affidavit of Publication

State of Idaho, County of Adams, ss:

I, Bert J. Rogers, being first duly sworn upon my Oath, depose and say that I am the publisher of The Adams County

Leader, a newspaper; that a copy of the " Notice Applicati

Permit # 31990 as per clipping

hereto attached, was published in the regular and entire issue of said newspaper, and not in any supplement thereof, for

four (4) consecutive weeks, the first publication of the

same being made in the issue dated June 13.1968

and the last in the issue dated July 4.1968 that said newspaper is of general circulation in Adams County Idaho, printed and published weekly at Council therein and that said newspaper has been continuously and uninterruptedly published in said county during a period of more than seventy-eight consecutive weeks prior to the first publication of

said " Notice " as aforesaid.

Bert J. Rogers

Subscribed and sworn to before me this 8th

day of July, 1968.

William E. Daniel

Notary Public for Idaho,
Residing at Council, Idaho



NOTICE OF PROOF OF COMPLETION OF WORKS AND APPLICATION OF WATER TO BENEFICIAL USE

Notice is hereby given that on July 10, 1968 at Boise, County of Ada, State of Idaho, before notary public GALE C. FARLEY, 1220 Idaho Street, Boise, Idaho, proof will be submitted of the completion of works for the diversion of 9,000 additional c.f.s. of the waters of the Snake River, and the application to beneficial use of said water, in accordance with the terms and conditions of permit 31990, heretofore issued by the Department of Reclamation of the State of Idaho.

1. The name and address of permit holder is Idaho Power Company, 1220 Idaho Street, Boise, Idaho.

2. Said works of diversion will be fully completed on the date for such completion, and the amount of water which said works are capable of conveying to the place of use is 9,000 additional cubic feet per second.

3. The use to which said water has been applied is generation of electric power purposes, and the amount applied to beneficial use is 9,000 additional c.f.s.

4. The point of diversion of said water is Lot 1, Sec. 16, T. 22 N, R. 3 W, B.M., Adams County.

5. The place where said water is used is Lot 1, Sec. 16, T. 22 N, R. 3 W, B.M.

6. The date of priority which said user is prepared to establish is May 29, 1964.

R. KEITH HIGGINSON
State Reclamation Engineer
Pub. June 13, 20, 27, July 4.

31990

RECEIVED
JUL 1 1964

Department of Reclamation

Affidavit of Publication

State of Idaho, County of Adams, ss:

I, Bert J. Rogers, being first duly sworn upon my Oath, depose and say that I am the publisher of The Adams County

Leader, a newspaper; that a copy of the "Notice of Application

for Permit " as per clipping hereto attached, was published in the regular and entire issue of said newspaper, and not in any supplement thereof, for

three (3) consecutive weeks, the first publication of the

same being made in the issue dated June 11, 1964

and the last in the issue dated June 25, 1964; that said newspaper is of general circulation in Adams County Idaho, printed and published weekly at Council therein and that said newspaper has been continuously and uninterruptedly published in said county during a period of more than seventy-eight consecutive weeks prior to the first publication of

said "Notice" as aforesaid.

Subscribed and sworn to before me this

day of JUN 26 1964, 1964

Notary Public for Idaho,
Residing at Council, Idaho

NOTICE OF APPLICATION FOR PERMIT TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF IDAHO, IN ACCORDANCE WITH THE PROVISIONS OF SECTION 42-203, IDAHO CODE

NOTICE IS HEREBY GIVEN, That Idaho Power Company of Boise, Idaho, has made application No. 40050, on the 29th day of May, 1964, to appropriate 9,000 cubic feet per second of the waters of Snake River for the generation of electric power, subject to future depletion and diversion of water for irrigation and consumptive uses in the Snake River Watershed.

That the point of diversion and place of use of said waters are described as being in Lot 1, Section 16, Township 22 North, Range 3 West, B. M.

That any protests against the approval of this application must be filed in the Department of Reclamation at Boise, Idaho, within forty (40) days from the date of this notice, and such protests shall state the name and address of the protestant, and shall clearly set forth his objection to the approval of said application.

Dated this 3rd day of June, 1964.

RALPH W. THOMAS
Deputy State Reclamation Engineer.

Date of First Publication, June 11, 1964.

Date of last Publication, June 25, 1964.

Last date for Protests: July 12, 1964.

SERVICE OF THE FOREGOING, by copy, is hereby acknowledged this 4th day of June, 1964.
IDAHO POWER COMPANY

By: James E. Bruce

B31990

✓RT

State of Idaho
Department of Water Administration
LICENSE OF WATER RIGHT

License of Water Right No. 03-2017 Priority 5-29-64 Amount 9,000 c.f.s. *

THIS IS TO CERTIFY, that IDAHO POWER COMPANY
of Boise, Idaho, has complied with the terms and conditions of Permit
No. 03-2017 issued pursuant to Application for Permit dated 5-29-64,
and has submitted proof to the Department of Water Administration on 7-17-68,
that he has applied water to a beneficial use: an examination by the Department indicates that the
works have a capacity of 32,880 c.f.s., and that the water has in fact been applied to a
beneficial use: a right to the use of water from Snake River
tributary of Columbia River, is hereby confirmed in the following amounts:

*Amount 9,000 c.f.s. for Electric Power from Jan. 1 to Dec. 31 (both dates inclusive)
Generation

Amount _____ for _____ from _____ to _____ (both dates inclusive)

Amount _____ for _____ from _____ to _____ (both dates inclusive)

Subject, however, to the condition that no more than 30,000 c.f.s. of water be diverted at
any one time/ when used in conjunction with Permit No. 03-2020
said waters to be diverted within the _____

Lot 1 Sec. 16, Twp. 22 N., Rge. 3 W., B.M.

in the county of Adams; and that the amount of water so diverted and to which such
right is entitled and confirmed is for the purposes aforesaid and is limited to the amount which can
actually be beneficially used and shall not exceed N.A. acre feet per year or
N. A. acre feet per acre.

Description and location of place of use: Hells Canyon Dam

TWP.	RANGE	SEC.	NE 1/4				NW 1/4				SW 1/4				SE 1/4				TOTALS
			NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	NE 1/4	NW 1/4	SW 1/4	SE 1/4	

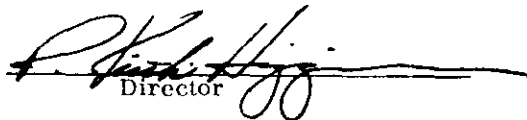
Total number of acres irrigated _____

The electric power generated at Hells Canyon Dam is 601,885 horse power

* The quantity of water diverted under this permit shall not exceed 30,000 c.f.s. when
used in conjunction with Permit No. 03-2020

The right to the use of the water hereby confirmed is restricted and appurtenant to the lands
or place of use herein described, as provided by the laws of Idaho.

Witness the seal and signature of the Director, affixed at Boise, Idaho, this 21st day of
October, 19 70.


Director

Application For Permit To Appropriate the Public Waters of the State of Idaho

79

03-2017

APPLICATION No. 40050
PERMIT No. 31990
DISTRICT No.

1. Name of Applicant: Idaho Power Company

Postoffice address: 1220 Idaho St., Boise County: Ada State: Idaho

I. If applicant is a corporation, give:

(a) Date and place of incorporation: Maine - May 6, 1915

(b) Amount of authorized capital stock: \$120,000,000.00

(c) Amount paid in: \$93,382,301

(d) Names and addresses of directors: R.F. Ball, Boise, Idaho; P.G. Batt, Caldwell, Idaho; L.W. Brainard, Pocatello, Idaho; J.F. Emery, Boise, Idaho; B. Glavin, Twin Falls, Idaho; R.V. Hansberger, Boise, Idaho; M.L. Horsley, Boise, Idaho; W.M. Lloyd, Nampa, Idaho; C.E. Palmer, Ontario, Oregon; T.E. Roach, Boise, Idaho; A.C. Inman, Boise, Idaho; J.H. Rogers, Boise, Idaho; J.R. Simplot, Boise, Idaho; H.B. Soulen, Weiser, Idaho;

II. The financial resources of the applicant are: See Balance Sheet in file

(a) Cash on hand:

(c) Bond to be issued:

(b) Treasury stock:

(d) Other resources:

2. Quantity of water claimed: 30,000, 9,000 additional cubic feet per second.

3. Source of water supply: Snake River which is a tributary of Columbia River

4. Location of point of diversion: N 15° 31' W 1532.6 feet distant from the common corner of Section 21, 22, T. 22 N, R. 3 W., B.M., and is in ~~the~~ Lot 1 of section 16, T. 22 N, R. 3 W., B.M., County of Adams

5. Water is to be used for Generation of electric power

6. If for mining, milling, power or manufacturing purposes, give:

(a) Point of use of water: N. 80° 51' W 1725.5 feet distant from the common corner of Sections 15, 16, 21, 22

T. 22 N, R. 3 W, B.M., in ~~the~~ Lot 1 of Section of 16, T. 22 N, R. 3 W, B.M.

(b) Amount of power generated: 585,000 H.P., under 210 feet head.

(c) Water is to be returned to Snake River at a point 1725.5 feet

distant from the common corner of Sections 15, 16, 21, 22, T. 22 N, R. 3 W, B.M., in ~~the~~ Lot 1 of Section 16, T. 22 N, R. 3 W, B.M.

7. Estimated cost of works: \$ 69,300,000

8. Kind of works: Reservoir, dam and power plant

9. Height of dam 320 feet; length of dam at top 995 feet; length of dam at bottom 220 feet; material used in dam: concrete - gravity

10. Size of headgate: Width feet; height feet.

11. Ditch: Width at bottom feet; width at water line feet; depth of water feet; dimensions of flume:

Diameter of pipe inches; length of conduit miles.

Average grade per mile feet.

12. The time required for the completion of such work is 5 years.

13. The time required for the complete application of the water to the proposed use is 6 additional years.

14. The land to be irrigated is described in the following tabulation: See remarks.

15. Existing water rights and/or valid permits appurtenant to the lands to be irrigated are:

No. 24393 - 21,000 cfs

16. (a) Is reservoir to be used? See Remarks If so, fill in (b) and (c) below:
 (b) Name of Reservoir and number of Storage Permit:
 (c) Date of filing of Application for Storage Permit and Name of Applicant:

BE IT KNOWN THAT The undersigned hereby makes application for permit to appropriate the public water of the State of Idaho as herein set forth.

IDAHO POWER COMPANY

Applicant.

By s/ J. F. Emery Agent.
J. F. Emery, Vice President

Date of first receipt at Department of Reclamation: 10:15 A.M. May 29, 1964

Returned to applicant for correction:

Corrected application received:

Approval of State Reclamation Engineer

The number of this permit is 31990

Recorded in Book 112

Page 31990

Approved

July 17, 1964

This is to certify that I have examined the within application for a permit to appropriate the public waters of the State of Idaho, and hereby approve the same, subject to the following limitations and conditions:

Bond in the sum of \$ 1000.00 to be filed on or before September 17, 1964

Work to begin on or before _____ and to continue diligently and uninterruptedly to completion, unless temporarily interrupted by circumstances over which permit holder has no control.

One-fifth of the work above specified to be completed on or before January 17, 1967

The whole of said work to be completed on or before July 17, 1969

Beneficial use of water appropriated in accordance herewith, to be made on or before July 17, 1975

WITNESS My hand this 17th day of July, 1964

s/ CARL E. TAPPAN
State Reclamation Engineer.

IN TESTIMONY WHEREOF, We, ROBERT E. SMYLLIE, Governor of the State of Idaho,
and ARNOLD WILLIAMS, Secretary of State of the State of Idaho, have caused this instrument to

be executed in the name of the State of Idaho, and caused the Great Seal of the State of Idaho to be hereunto affixed, this 17th day of July, 1964.

STATE OF IDAHO

STATE OF IDAHO

Countersigned:

(SEAL)

By s/ ARNOLD WILLIAMS

Secretary of State.

By s/ ROBERT E. SMYTHE

.....
Governor.

REMARKS: Fore bay above dam will be fluctuated a maximum of 10 feet for daily power production and peaking purposes. A spillway, integral with the dam, will provide a flood flow capacity of 300,000 cfs. Water will be diverted from the Snake River common to the states of Idaho and Oregon and will be conducted through the dam by penstocks to a power house located in the stream channel where it will be returned to the Snake River.

Twp.	Range	Sec.	NE $\frac{1}{4}$				NW $\frac{1}{4}$				SW $\frac{1}{4}$				SE $\frac{1}{4}$				Totals
			NE $\frac{1}{4}$	NW $\frac{1}{4}$	SW $\frac{1}{4}$	SE $\frac{1}{4}$	NE $\frac{1}{4}$	NW $\frac{1}{4}$	SW $\frac{1}{4}$	SE $\frac{1}{4}$	NE $\frac{1}{4}$	NW $\frac{1}{4}$	SW $\frac{1}{4}$	SE $\frac{1}{4}$	NE $\frac{1}{4}$	NW $\frac{1}{4}$	SW $\frac{1}{4}$	SE $\frac{1}{4}$	
			This application is in addition and supplementary to the water and water right covered by Application No. 24393 CONDITION: The project shall be operated in such manner as will not conflict with the future depletion in flow of the waters of Snake River and its tributaries, or prevent or interfere with the future upstream diversion and use of such waters above the back-water created by said dam, for the irrigation of lands and other beneficial consumptive uses in Snake River watershed.																

9,000

SEE RECORD FOR ~~24393~~ REC. F.

LICENSE PAGE NO.

RECEIVED

FEB 18 1997

FEDERAL ENERGY REGULATORY COMMISSION

WASHINGTON, D. C. 20426

Department of Water Resources

FEB 12 1997

Project Nos. 503, 1971, 1975, 2055,
2061, 2726, 2777, 2778--Idaho
Idaho Power Company

03-2017
03-2020

To The Party Addressed:

In early January, we mailed you a copy of a discussion paper titled "Approaches to Cumulative Analysis for the Snake River Basin Relicensing," and notified you of a February 4, 1997, meeting in Boise, Idaho, to discuss the approaches. A number of entities have requested 30 days to provide written comments on the various approaches.

As we stated at the February 4, 1997, meeting, you will have 30 days to file written comments. Comments are due no later than March 6, 1997.

If you have any questions concerning this matter, please contact Mr. Alan Mitchnick at (202) 219-2826.

Sincerely,



J. Mark Robinson
Director, Division of
Licensing and Compliance

Distribution:

- (1) Snake River relicensing collaborative team mailing list
- (2) Bliss, Lower Salmon Falls, and Upper Salmon Falls
Projects mailing list

03-2017

RECEIVED

OCT 13 1981

Department of Water Resources

16 FERC 162,600

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

- 2 -

Idaho Power Company) Project No. 1971-010

ORDER APPROVING AS-BUILT EXHIBITS AND
AMENDING LICENSE
(Issued September 29, 1981)

On August 8, 1980, Idaho Power Company, Licensee for the Hells Canyon Project No. 1971, filed for Commission approval, pursuant to Article 31 of its license, as-built Exhibits J and K drawings. 1/ These exhibits show the Hells Canyon Development of Project No. 1971 as constructed, incorporating minor changes in project boundary.

The Hells Canyon Development occupies 1772.59 acres of United States lands. Article 44(C) of the license is amended to reflect the correct acreage for computing the annual charges for use of the United States lands within the project boundary for the entire project.

Approval of these exhibits does not constitute a major Federal action significantly affecting the quality of the human environment because approval is an administrative action which does not authorize any construction or change in project operation.

It is ordered that:

(A) The following as-built Exhibits conform to the Commission's regulations and are approved as part of the license:

<u>Exhibit</u>	<u>FERC No. 1971-</u>	<u>Title</u>
J	288	Hells Canyon Development (General Map)
K-1	289	Hells Canyon (Detail Map)
K-2	290	" " " "
K-3	291	" " " "
K-4	292	" " " "
K-5	293	" " " "
K-6	294	" " " "
K-7	295	" " " "
K-8	296	" " " "
K-9	297	" " " "

(B) Exhibit K (FERC No. 1971-25) is superseded and removed from the license.

(C) Subparagraph (C) of Article 44 of the license for Project No. 1971 is amended to read.

(b) Effective August 1, 1955, for the purpose of recompensing the United States for the use, occupancy and enjoyment of 10,850.83 acres of its lands exclusive of transmission line right-of-way, an amount as may be determined from time to time pursuant to the Commission's regulations.

(D) This order is final unless a petition appealing it to the Commission is filed within 30 days from the date of its issuance, as provided in Section 1.7(d) of the Commission's regulations, 18 C.F.R. 1.7(d) (1979), as amended, 44 Fed. Reg. 46449 (1979). The filing of a petition appealing this order to the Commission or an application for rehearing as provided in Section 313(a) of the Act does not operate as a stay of the effective date of this amendment or of any other date specified in this order, except as specifically ordered by the Commission.

William W. Lindsay
William W. Lindsay
Director, Office of Electric
Power Regulation

1/ Authority to act on this matter is delegated to the Director, Office of Electric Power Regulations under 18 C.F.R. §375.308 (1980), as amended by 46 Fed. Reg. 14119 (1981).

FEDERAL ENERGY
REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID
FEDERAL ENERGY
REGULATORY COMMISSION
FERC 351



Idaho Water Resource Board P-1971
State of Idaho
430 State House
Boise, Idaho 83701

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Idaho Power Company

Project No. 1971-027
Idaho

ORDER GRANTING AND MODIFYING A REQUEST TO TEMPORARILY
WAIVE RESERVOIR ELEVATION REQUIREMENTS

(Issued February 27, 1991)

Idaho Power Company (licensee) filed on February 5, 1990, and amended on February 21, 1990, a request for temporary waiver of the requirements of article 42(b) of the license issued August 4, 1955. This article requires the licensee to reduce the elevation of Brownlee Reservoir to 2034 feet mean sea level (msl) by March 1 of each year. This measure ensures Brownlee Reservoir has sufficient storage for flood control purposes. The licensee seeks the waiver from February 28, 1991 through February 27, 1992.

Based on predicted weather and runoff forecasts, the licensee requests authority to maintain Brownlee Reservoir at 2002.1 feet msl. In a letter dated February 13, 1991, the North Pacific Division of the Corps of Engineers (Corps) concurred with the licensee's request. The Corps states that, since the forecasted inflow to Brownlee Reservoir is expected to be 61% below normal, the Corps will need only 40% of the 500,000 acre-feet of storage provided when the reservoir is at 2034 feet msl. The Idaho Department of Fish and Game and the Oregon Department of Fish and Wildlife also concur with the licensee's request.

The licensee's request should be approved since it would benefit project purposes without adversely affecting environmental resources or the Corps' Snake River flood control capabilities. If emergencies beyond the licensee's control occur, or if the Corps determines the need to increase Brownlee Reservoir's storage capacity to 500,000 acre-feet, the licensee should immediately institute procedures to ensure compliance with article 42(b).

The Director orders:

(A) The licensee's request to temporarily waive the requirements of article 42(b) from February 28, 1991 through February 27, 1992, as modified in paragraph B, is granted.

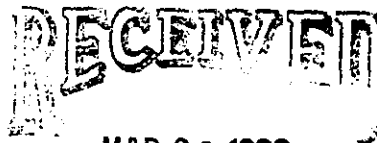
(B) If emergencies beyond the licensee's control occur, or if the Corps determines the need to increase Brownlee Reservoir's storage capacity to 500,000 acre-feet, the licensee shall immediately institute procedures to ensure compliance with article 42(b).

-2-

03-2017
03-2020
(C) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. §385.713.

JMR
J. Mark Robinson
Director, Division of Project
Compliance and Administration

RECEIVED
MAR 06 1991
Department of Water Resources

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

The Idaho Power Company

Project No. 1971-024
Idaho

MAR 29 1990

- 2 -

(D) This order is issued under authority issued to the Director and is final unless appealed to the Commission under Rule 1902 within 30 days of the date of this order.

ORDER GRANTING AND MODIFYING A REQUEST TO TEMPORARILY
WAIVE RESERVOIR ELEVATION REQUIREMENTS
(Issued March 23, 1990)
Department of Water Resources

On February 28, 1990, the Idaho Power Company (licensee) filed a request for temporary waiver of the requirements of article 42(b) of the license issued August 4, 1955. This article requires the licensee to reduce the elevation of Brownlee Reservoir to 2034 feet, mean sea level (msl) by March 1 of each year. This measure ensures Brownlee Reservoir has sufficient storage for flood control purposes.

Based on predicted weather and runoff forecasts, the licensee requests authority to maintain Brownlee Reservoir at 2054 ft, msl. In a letter dated February 22, 1990, the North Pacific Division of the Corps of Engineers (Corps) concurs with the licensee's request. The Corps states that since the forecasted inflow to Brownlee Reservoir is 54 percent below normal, the Corps will need only 60 percent of the 500,000 acre feet of storage provided when the reservoir is at 2034 ft, msl.

The licensee's request should be approved since it would benefit project purposes without adversely affecting environmental resources or the Corps' Snake River flood control capabilities. However, modifications are needed to define the duration of the waiver and to accommodate emergencies beyond the licensee's control. This waiver should be effective from the date of this order until February 28, 1991. If emergencies beyond the licensee's control occur, or if the Corps determines the need to increase Brownlee Reservoir's storage capacity to 500,000 acre feet, the licensee should immediately institute procedures to ensure compliance with article 42(b).

The Director orders:

(A) The licensee's request to temporarily waive the requirements of article 42(b), as modified in paragraphs B and C, is granted.

(B) This order shall be effective until February 28, 1991.

(C) If emergencies beyond the licensee's control occur, or if the Corps determines the need to increase Brownlee Reservoir's storage capacity to 500,000 acre feet, the licensee shall immediately institute procedures to ensure compliance with article 42(b).

J. Mark Robinson
J. Mark Robinson
Director, Division of Project
Compliance and Administration

INT - Rec

COPY

January 18, 1954

MATERIAL REPRODUCED FROM THE MANUSCRIPTS ARCHIVES
COLLECTIONS OF THE IDAHO HISTORICAL SOCIETY

Mr. Lynn Crandall
363 North Placer Avenue
Idaho Falls, Idaho

Dear Lynn:

It was thoughtful of you to send me a copy of your letter of January 8 written to Congressman Budge.

I assure you that I shall give consideration to the views you have presented, as I know you probably have more factual information available on the Snake River than any other person.

When the reports of the Bureau of Reclamation and of the Army Engineers are submitted to Congress and submitted to the public, there will be an opportunity to give attention to all of the related information. Every effort is now being made to balance the budget and reduce taxes, and it is not likely that any large public works project will be started soon.

With kindest personal regards, I remain

Very truly yours,

HCD:js

REC-3 JAN 11 1954

Idaho Falls, Idaho

January 8, 1954

Honorable Hamer H. Budge
Member of Congress
Washington, D. C.

Dear Mr. Budge:

In reply to yours of January 5th:

I am enclosing a copy of a report giving my estimates of future upstream depletion above Hells Canyon. Assuming that Hells Canyon or Sheep Mountain project would be constructed by 1960 I estimated that the average new depletion would amount to 1,650,000 acre-feet annually during the 50 year payout period. This is only about 1% of the average annual run-off of the river at Oxbow from 1919-52, inclusive. You will note from the diagram accompanying the enclosed report that the river run-off has ranged from 8,000,000 to 20,000,000 acre-feet annually so the new depletion is of much less magnitude than the difference in run-off between wet and dry years. I estimated that the depletion during a low water period like 1929-37 would be about 1,300,000 acre-feet annually.

I think this whole subject of future upstream depletion has been greatly over-emphasized in public discussions and testimony before the Federal Power Commission. The Idaho Power Company with its long years of experience and study on Snake River appears quite willing to invest a large amount of its money at Hells Canyon, taking its chances on future depleted flows. This appears to me to be prima facie evidence that they don't expect future depletions to be of enough magnitude to threaten financial success of the project.

You have or can procure from the Bureau of Reclamation a report by J. R. Riter dated June 15, 1953 entitled "Report on Prime Power production and costs of generation, High Hells Canyon Dam, etc." which I assume contains the Bureau's latest estimates of future upstream depletion. In this report Mr. Riter estimates average annual depletion during a future dry period similar to 1928-37 at 1,120,000 acre-feet annually, which is in fairly good agreement with my estimate of 1,300,000 acre-feet annually during such a period. I leaned towards the high side in my estimates of future depletion which I consider a proper procedure in a project of this magnitude.

Page 2
H. H. Budge
1-8-54

On pages 23 and 24 of the Riter report are shown his estimates during various low water periods of possible power output using historic flows and depleted flows as computed by him. These figures show relatively little difference.

A great variety of calculations can be made depending on various assumptions and the period of time used. It is my personal opinion that the firm power output at Hells Canyon or Sheep Mountain will not be decreased by more than 15% during the 50 year payout period by reason of future depletion over what it would have been using actual historic flows that occurred in past years.

Very truly yours,

Lynn Crandall
Watermaster

cc: Henry Dworshak,
Washington, D. C.

FILE REFERENCES:

Pray - Hells Canyon

100-17
H. H. H. H.
1946 5

April 6, 1953

FUTURE UPSTREAM DEPLETION ABOVE HELLS CANYON

By Lynn Crandall 1/

The discussion of this subject will be divided into various sections as follows:

1. The Snake River Plain

This term as used herein applies to the area north of Snake River extending southwest from St. Anthony to Bliss, beneath which the great Snake River ground-water flow moves. Generally speaking, the soils in this area, where they exist, are of a satisfactory quality for agricultural use outside of local areas of sand dunes. There exists, however, a wide range of soil depths and depths to ground water. A large portion of the area is either bare lava rock or shallow soils. About 300 feet is assumed to be the maximum pumping lift likely to be sustained during the Hells Canyon payout period for profitable farming operations in this region. It is possible that greater lifts than this may prove feasible under certain conditions but the additional acreage involved is not likely to be of great magnitude. After examining the available information on this area, including my own observations from driving over it for many years, I believe that possibly 400,000 acres may be feasible of development by ground-water pumping. This figure and other similar ones in this report include the pumping developments already made since 1947. In this section the ground-water supply is believed to be adequate generally and the controlling elements are good land and feasible pumping lifts.

2. Minor tributary streams from the North, Camas Creek to Big Wood River

In this section ground-water pumping will be limited in some cases by available supplies contributed from the tributary streams. In some of the valleys pumping may be used as supplemental supply for lands that do not now receive a full supply in dry years. It is believed that the total use might be the equivalent of supplying about 45,000 acres of new lands. This would include any new storage developments on these streams.

3. Fort Hall Project

There are about 40,000 acres of new land on this project susceptible of irrigation, probably mostly by pumping from ground water. Some lawyers claim that the Indians' treaty rights would entitle them to so use the water even if it interfered with downstream Snake River rights. Some small developments are already under way by leasing the land for a term of years to whites who agree to provide a well on the land. About half of this area is south of the Portneuf River in the Michaud Flat-Bannock Creek region and about half in the vicinity of Fort Hall. The lands around Fort Hall have mostly somewhat sandy soils.

1/ District Engineer, U. S. Geological Survey, Idaho Falls, Idaho, and Snake River Watermaster, Idaho State Department of Reclamation.

4. Marginal increases to existing projects above American Falls

There is a narrow fringe of good land along the benches bordering the lands at present irrigated from Snake River along the east side of the valley between Ririe and Blackfoot. This may be irrigated partly by pumping from ground-water and partly by pumping from existing canals whose water supply will be augmented from Palisades reservoir. Some similar areas exist west of Snake River between Roberts and Shelley. During recent years there has been considerable clearing of brush lands and those subject to flooding in high-water years between Heise and Roberts. All these and others somewhat similar elsewhere are estimated to total 15,000 acres starting from 1947.

5. Tributary valleys south of Snake River, from Portneuf River to Salmon Falls River, inclusive.

In most of this section ground-water pumping developments will be limited by water supply or pumping lift. In some of the tributary valleys ground-water pumping might be used as supplemental supply; in others it would be used on new land. It is estimated that the total use for both purposes might be equivalent to irrigating 60,000 acres of new land.

6. Bruneau Project

The Bruneau Project of about 400,000 acres as heretofore proposed required the construction of a dam about 500 feet high on Snake River near Bliss, Idaho, and the creation of a reservoir which would flood Hagerman Valley, including about 10,000 acres of irrigated land and 4 power plants of the Idaho Power Company. Owing to the likelihood of large leakage thru the porous inter-canyon lava fill at the damsite it does not now appear feasible to construct the proposed dam. This fact, together with the large costs for property damage, appears to me to warrant discarding the proposed large Bruneau project for consideration within the foreseeable future. A possibility exists, however, of building a smaller dam on Snake River in the vicinity of the mouth of Salmon Falls Creek that would back the water upstream to the foot of Shoshone Falls and water could be diverted from above this dam to irrigate a portion of the Bruneau Project. Snake River at this point has at present a dependable flow of about 2800 second-feet that enters the river below Milner which would be sufficient to irrigate about 110,000 acres of the Bruneau Project. This flow may be appreciably lessened by future pumping developments on the Snake River Plains. This plan has not been studied in detail as to its feasibility and although it would doubtless be quite costly per acre of land irrigated I have included 80,000 acres in the list of projects that might conceivably be built during the 50-year payout period for the Hells Canyon project; assuming some decrease in present water supply due to upstream ground-water pumping.

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7. Mountain Home Project

If the high dam near Bliss heretofore proposed for the Bruneau Project is discarded it will not be possible to supply the second unit of the Mountain Home project as contemplated in previous plans of the Bureau of Reclamation. Mr. W. G. Sloan has proposed a plan for irrigation of 123,000 acres of the Mountain Home project, by a combination of pumping from Snake River to Deer Flat Reservoir and ground-water pumping in Boise Valley. If this is done it would then be possible to irrigate an additional 192,000 acres from Payette-Boise River sources making a total of 315,000 acres on the Mountain Home project without use of the high diversion dam near Bliss. If this area is placed under irrigation on the Mountain Home project the ground-water levels beneath the project could very well rise to a level that would permit of ground-water pumping for the remaining 57,000 acres on the Mountain Home project heretofore proposed. Although these matters are somewhat speculative, the good quality of land and favorable location of this project appear to me to warrant the belief that some plan will eventually be devised for irrigating the full acreage of 372,000 acres.

Permits granted by the State of Idaho for ground-water pumping since interest in this subject started in 1947 are as follows:

<u>Year</u>	<u>New Land (acres)</u>	<u>Supplemental supply for lands now irrigated (acres)</u>
1947	12,400	7,600
1948	192,600	34,200
1949	39,000	73,000
1950	75,200	18,600
1951	104,400	104,600
1952	<u>114,270</u>	<u>6,500</u>
Total	537,870	244,500

Figures are for the entire State but nearly all are in the Snake River drainage area in southern Idaho. Some of these permits or water filings are no doubt speculative and will be canceled for failure to do the development work within the time allowed by the permits. In some areas also the permits cover more land than can be irrigated from the locally available water supply. However, additional filings are being made all the time at the rate of 100,000 acres annually and many wells are being drilled by individuals without permits. Under the provisions of the Idaho Constitution water rights can be so established without requiring authorization by the State and about 20% of irrigation wells drilled to date have been developed without applying to the State for a permit. Considering these various matters it appears from these water permit figures that the total acreage

of feasible ground-water pumping projects in Idaho on Snake River above Hells Canyon could possibly be as much as 700,000 acres of new land since 1947.

New land areas (acres) that might be irrigated by 2010
(Figures include developments since 1947)

Michaud Flat to Neeley (outside of Fort Hall Reservation)	25,000
Minidoka North Side Extension from river flow	13,000
*Snake River plains ground-water pumping	400,000
*Minor tributaries Camas Creek to Big Wood River	45,000
*Fort Hall Reservation	40,000
*Marginal increases to existing projects	15,000
*Tributaries Portneuf to Salmon Falls River	60,000
Bruneau Project	80,000
Bruneau River	40,000
*Mountain Home project	372,000
Grandview pumping	18,000
*Weiser River basin	25,000
*Owyhee River basin	15,000
*Other tributaries below King Hill	20,000
*Miscellaneous ground-water pumping areas not listed above	132,000
Total	1,300,000

*All or partly ground-water pumping

The total consumptive use of water in this area will average about 2.3 acre-feet per acre actually irrigated. Assuming that 0.3 acre-foot per acre of this will be available from precipitation now used by native vegetation and that 10% of the area will be occupied by roads, buildings, small rocky areas, etc., we arrive at a consumptive water use of 1.8 acre-feet per acre from sources other than local precipitation applicable to the gross acreage.

Supplemental use on currently irrigated lands either by ground-water pumping, or from storage in reservoirs such as Palisades and Anderson, will also increase the consumptive use. This is a matter that cannot be calculated with any exactness because it would be small in good water years and larger in dry years. It might be estimated roughly at 270,000 acre-feet annually which would supply 1,000,000 acres with one-half of its consumptive use in three out of 10 years.

Evaporation losses on new reservoirs constructed since 1947 or proposed for new construction, in excess of water losses on the flooded areas prior to reservoir construction, will be of the magnitude of 130,000 acre-feet annually.

The sum of these three items, consumptive use on 1,300,000 acres of new lands, additional consumptive use from supplemental supply on lands now irrigated, and evaporation losses from new reservoirs will amount to about 2,740,000 acre-feet annually at the end of the 50 years Hells Canyon payout period.

If we assume that the Hells Canyon project will be completed by 1960, the end of the 50-year period would be 2010. The figures heretofore given refer to developments beginning in 1947 when the ground-water pumping projects started. Probably close to 150,000 acres of new lands have already been developed since 1947, mostly from ground-water pumping. Assuming a uniform rate of increase from now until 2010 the average additional consumptive use since 1947, during the Hells Canyon payout period, would be 1,650,000 acre-feet annually.

This additional consumptive use will not, however, decrease the stream flow at a uniform similar annual rate. The flood waters in years of ample runoff will be stored in new reservoirs such as Palisades and will be fed out onto the lands in dry years. Ground-water pumping will draw to some extent during dry years on water stored in the ground, with the ground-water supply being replenished in wet years. As a result the stream flow at Hells Canyon will generally be depleted more than the average in wet years and less than the average in dry years.

By reference to the attached Plate No. 1 it will be observed that the gain, excluding surface runoff from Big Wood River, in Snake River between Milner and King Hill has been steadily increasing during the past decade and from 1946-50 was running over 300,000 acre-feet annually greater than it was during the 1928-30 and 1938-41 periods in spite of steadily increasing irrigated acreage upstream. This would appear to be a permanent increase during the future as compared to past years except as it would be modified by new upstream ground-water pumping, and is doubtless due to increased canal diversions shown on the diagram. If the increased gain noted in 1951 and 1952 continues in future years the permanent gain would be greater than the 300,000 acre-feet above mentioned.

The Gooding project which began sizable diversions from Snake River in 1931 probably is responsible to a considerable extent for the increased gain as this project has contributed about 300,000 acre-feet of Snake River water annually to the ground water for a number of years past. The project had previously contributed a lesser amount when it received an inadequate water supply from Big Wood River. The recent gain is even greater if compared to the 1931-35 period but it is believed that the comparison will be more useful if made with years of similar precipitation on the plains and similar discharge from the streams whose runoff reaches the plains from the north. From Plate No. 1A it will be noted that a moderate decrease in the gain occurred from 1946 to 1950. This may represent the decreased contributions from river losses and canal diversions in the upper valley above American Falls in 1931 and 1934 indicating a time of travel of around 15 years before the ground water from those sources appears in the Hagerman Valley springs. In any event the gain appears to have resumed its upward trend in 1951 and 1952.

The years of critical water supply for power production at Hells Canyon occur in the period 1929-37 as shown on accompanying Plate No. 2. From the mid-date, 1933, until 1947, when the increased consumptive use figures

used herein start, there was an increase of about 200,000 acres in the irrigated area above Hells Canyon which would consume 360,000 acre-feet annually. This factor, as far as flow during low-water periods is concerned, is probably more than offset by new supplemental storage in such reservoirs as Anderson, Lucky Peak, and Palisades that will increase the river flow in low-water periods over that which occurred in the past.

Past experience on the river has been that irrigation of new land from surface flow of the streams above return-flow sections has increased downstream flow during low-water periods. Future expansion of the irrigated area by pumping from ground water or diversion of water from the stream in or below the return-flow sections will, however, directly reduce the downstream flow during low-water periods.

The drought during the early 1930's was the most severe and prolonged of any that have occurred during the 62 past years of stream-flow records on Snake River. The possibility exists that one of equal severity might not occur during the Hells Canyon payout period. If one should occur at the midpoint of the payout period, it is my opinion, considering all the matters herein discussed, that it might result in a runoff at Hells Canyon of about 1,900,000 acre-feet less annually than the historic flows that occurred 1929-37. If a dry period of this severity should occur at the end of the payout period rather than the midpoint, with more land in cultivation, the decrease below the historic flows of 1929-37 might be of the magnitude of 2,200,000 acre-feet annually.

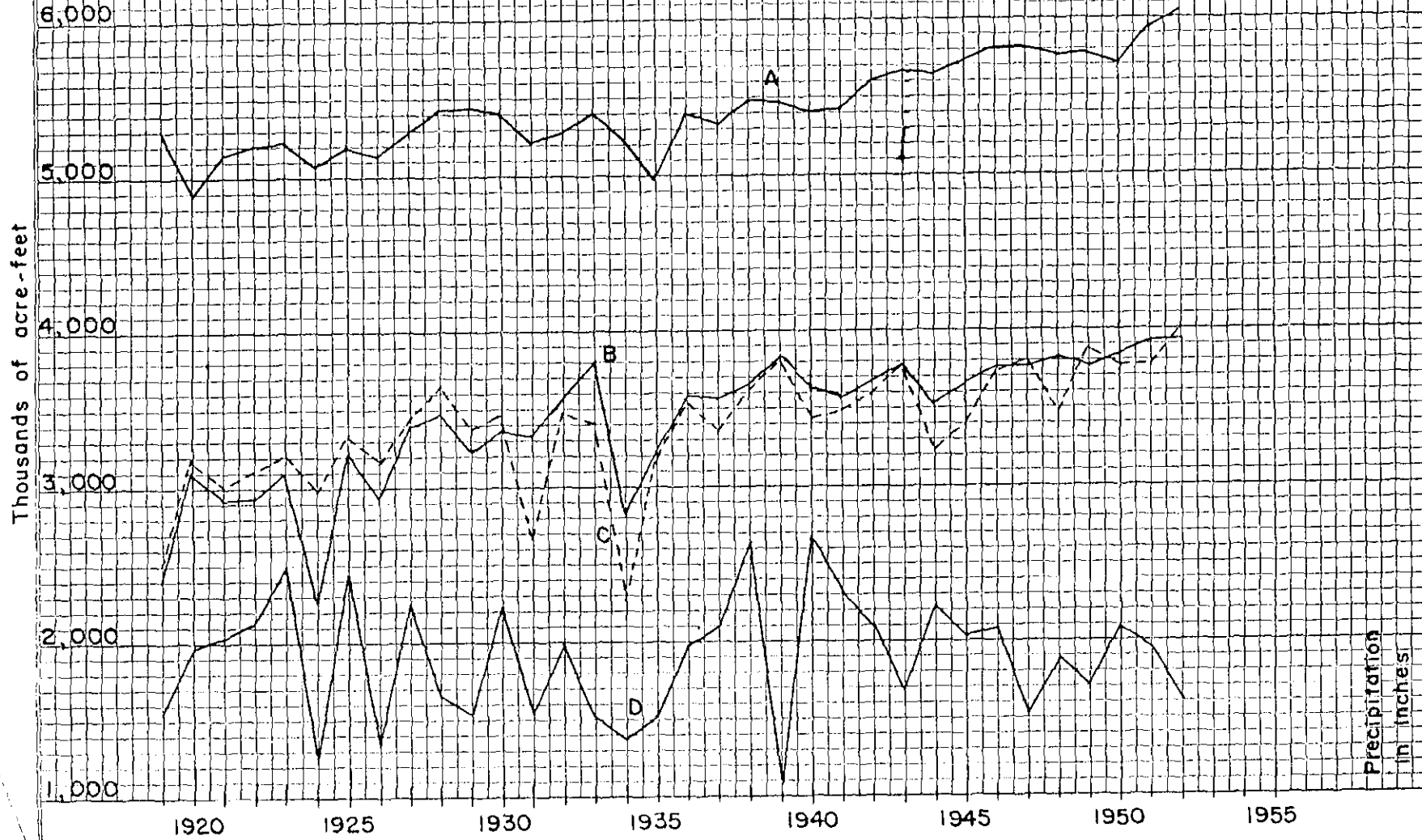
Except in years of well above normal runoff it is quite likely that future years will see the flow of upper Snake River controlled so as to practically eliminate spills past Milner except for storage rights owned by the Idaho Power Company that usually require the discharge of about 155,000 acre-feet annually over Milner dam for downstream use by the Power Company.

Additional storage of about 350,000 acre-feet may be developed on the river above Heise and surplus flood flows that would otherwise spill past Milner can be diverted by new canals onto the Snake River plains, allowed to spread over as large an area as possible, and be dissipated by percolation and recharge wells into the lavas, thereby replacing in part the water consumed by ground-water pumping. Such a project would be expensive and would probably require government financial aid. Similarly any surplus flood waters of Big Wood River could in wet years be diverted onto the lava beds north of Shoshone. The ground-water reservoir beneath these plains is of great capacity. Water contributed to it in the vicinity of Idaho Falls, for example, has to travel 150 miles underground before it reappears in Hagerman Valley, probably requiring a number of years to do so. Return flow from irrigation use below American Falls will of course reappear in lesser time, ranging from several months on portions of the North Side Canal Project to perhaps a year or more from the Minidoka project. If new upstream reservoirs are built and if the surplus flood waters are diverted to this ground-water reservoir it would result in a nearly equalized flow of Snake River at King Hill with an increased flow during low-water periods and less future depletion at Hells Canyon during low-water years than the figures herein suggested.

GPO 16-13468-1

PLATE NO. 1

- A Annual gain Milner to King Hill excluding surface spill from Big Wood River.
- B Annual diversions by canals American Falls to Milner.
- C Irrigation Season diversions by canals above American Falls.
- D Calendar Year Precipitation on Snake River Plains. Average of records at Idaho Falls, Blackfoot, Aberdeen, Rupert, Shoshone and Arco.



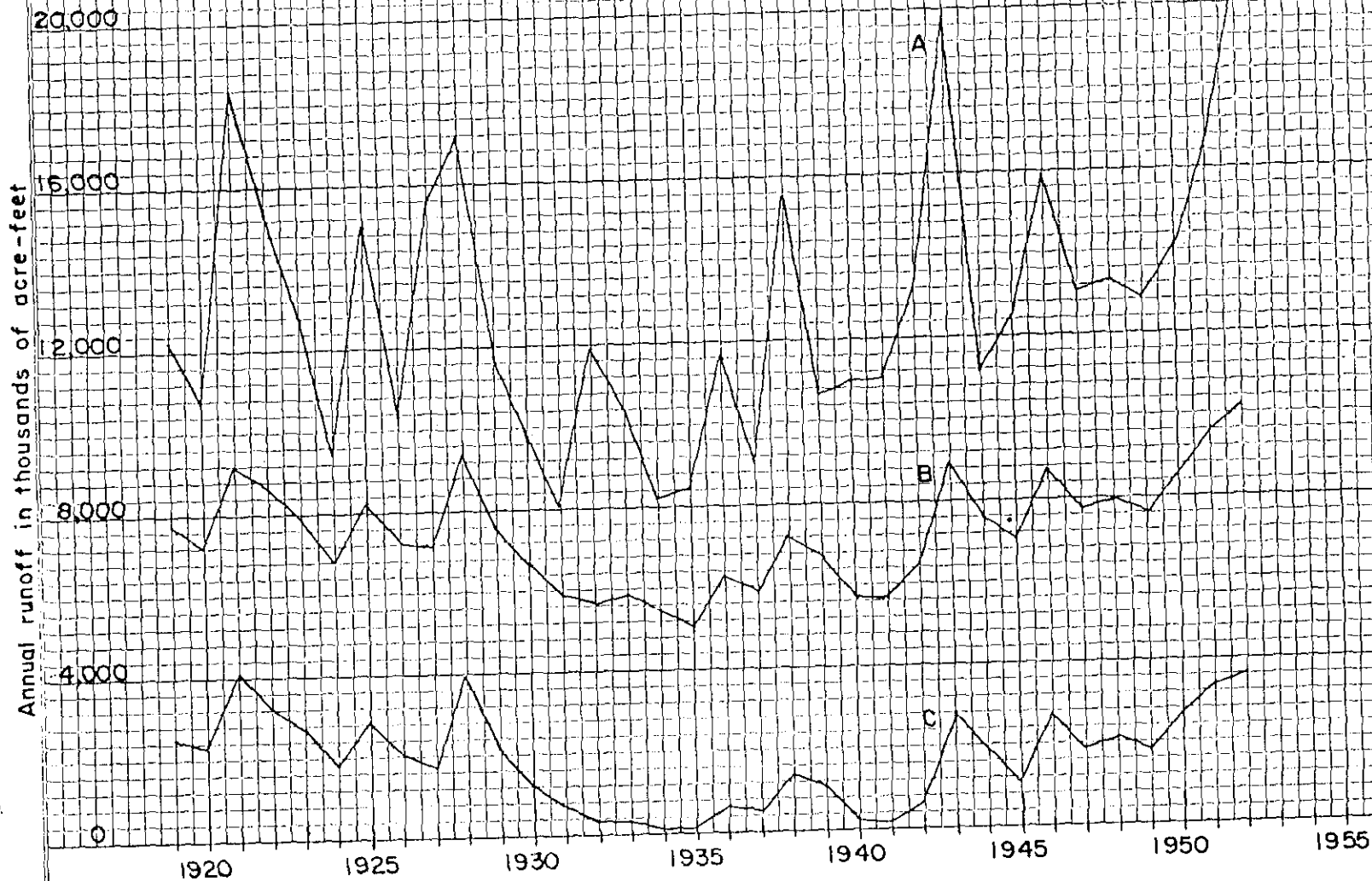
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PLATE NO. 2 ANNUAL RUNOFF OF SNAKE RIVER

- A At Oxbow (Weiser prior to 1924)
- B At King Hill
- C At Milner



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Honorable Henry Dworshak
United States Senate
Washington, D. C.

Estimate of Power Production
and Costs of Generation—High Hells Canyon Dam

by

J. R. Riter, Development Engineer
Commissioner's Office, Denver, Colorado

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April 27, 1955

Estimate of Power Production
and Costs of Generation--High Hells Canyon Dam
by
J. R. Riter, Development Engineer
Commissioner's Office, Denver, Colorado

The purpose of this statement is to present estimates of power production and costs of generation for the High Hells Canyon Dam located on the Snake River downstream from Weiser, Idaho. The Hells Canyon Dam would create a maximum power head of 602 feet, a total storage capacity of 4,400,000 acre-feet, and an ultimate powerplant capacity of 900,000 kw. The cost estimates presented by Mr. Hoisington are for a powerplant of 800,000-kw capacity with space to permit the future installation of a ninth unit. The reservoir would be operated for the multiple purposes of flood control, navigation, and power development. The operations of the project would be coordinated with other developments within the Columbia River Basin.

Stream Flow

The Snake River has been measured at Oxbow (located 28 miles upstream from the Hells Canyon Dam site) since 1923 and at Weiser, Idaho, (located 95 miles upstream from the Hells Canyon Dam site) since October 1910. The following table shows the historic flows of the Snake River at the Hells Canyon Dam site and the estimated depleted flows for three levels of upstream irrigation development:

- (1) Present (1948) level of development as determined in 1951 by the Technical Subcommittee of the Columbia Basin Inter-agency Committee.

(2) Irrigation anticipated by 1985 A.D. as estimated by J. R. Riter in 1953.

(3) Future irrigation development as envisioned in May 1951 by the Technical Subcommittee of the Columbia Basin Inter-agency Committee.

Table 1

Discharges Snake River at Hells Canyon Dam Site

		(1000 AF)			
Year	Historic	Estimated Depleted Flows (2)			
Ending	Flows	Present	1985	Future	
Sept. 30	(1)	1948 Level (3)	Level (4)	Development (3)	
1911	16,800				
1912	17,600				
1913	17,000				
1914	17,000				
1915	10,900				
1916	17,900				
1917	18,900				
1918	15,300				
1919	12,800				
1920	11,200				
1921	19,200				
1922	16,200				
1923	13,400				
1924	9,420				
1925	15,000				
1926	10,300				
1927	15,500				
1928	17,200				
1929	11,368	11,033	9,012		8,724
1930	9,794	9,605	8,475		7,331
1931	8,081	8,297	7,806		6,218
1932	11,948	10,244	9,505		7,483
1933	10,510	10,080	9,624		7,811
1934	8,197	8,521	8,170		6,658
1935	8,512	8,433	7,865		6,022
1936	11,747	10,919	10,157		8,169
1937	9,058	8,964	8,607		6,852
1938	15,512	13,627	12,849		10,891
1939	10,671	11,788	9,743		9,101
1940	10,981	10,676	10,205		8,443
1941	11,008	10,956	10,260		8,376
1942	13,156	12,251	11,784		9,679
1943	19,750	18,831	16,340		15,742
1944	11,272	11,377	9,634		9,165
1945	12,424	11,808	10,207		9,180
1946	15,945	16,516	13,196		14,173
1947	13,194	13,275	11,201		10,851
1948	13,455	13,284	11,325		10,912
1949	12,900				
1950	14,104				
1951	16,490				
1952	20,427				
1953	13,861				
Ave. 20 yrs:					
1929-1948:	11,829	11,524	10,298		9,089
Ave. 43 yrs:					
1911-1953:	13,630	---	---		---

(Footnotes on attached sheet)

- (1) 1924 to 1952, inclusive, from Water Supply Papers of U. S. Geological Survey, "Snake River at Oxbow, Oregon." 1911 to 1923 estimated from USGS records of Snake River at Weiser, Idaho.
- (2) Estimated only for 20 years, 1929 to 1948, inclusive.
- (3) From May 1951 "Report on Snake River Streamflow Depletions" by Columbia Basin Inter-Agency Committee Technical Subcommittee for Operating Plan.
- (4) Estimate by J. R. Riter. Method discussed on pages 2 to 16, inclusive, of Exhibit 186 in Federal Power Commission Hearings on Projects 1971, 2132, and 2133.

Upstream Irrigation Development

The stream flows as recorded have been influenced by upstream developments for irrigation and the operation of storage reservoirs on the Snake River and its tributaries. The area irrigated in the Snake River Basin above the Hells Canyon Dam site has increased from 1,400,000 acres in 1910 to 2,610,000 acres in 1948. Since 1948, there have been some increases in the irrigated area, both from the use of surface streams and by pumping from ground water. In the period, 1910 to 1948, the capacity of storage reservoirs within the basin above the Hells Canyon Dam site increased from 1,600,000 acre-feet in 1910 to 7,300,000 acre-feet in 1948. The Lucky Peak Reservoir with an active capacity of 280,000 acre-feet has since been completed on the Boise River, and the Palisades Reservoir with an active storage capacity of 1,200,000 acre-feet is now under construction on the Snake River above Idaho Falls, Idaho. The stream flows are influenced also by the operations of an undetermined capacity of underground storage beneath the Snake River plains in Idaho.

For the 1985 level of development, it is estimated that the irrigated area will increase to a total of about 3,250,000 acres. The "future development" envisioned by the CHAC contemplates that the irrigated area above the Hells Canyon Dam site will increase to 3,806,000 acres. It is possible that the depletion represented by such "future development" may be attained by the end of the repayment period for a Hells Canyon development.

Major Federal Power System in the Columbia River Basin

Table 2 summarizes data pertaining to major Federal power developments within the Columbia River Basin. It is anticipated that the operations of the Hells Canyon development will be coordinated with these and future plants to be built within the Columbia River Basin to attain the maximum practical amount of system power output.

Table 2

Major Federal Power Developments
Within Columbia River Basin

Name	River	Average Head (feet)	Live Storage (1000 AF)	Status (1)
Hungry Horse	S. F. Flathead	426	2,980	O
Libby	Kootenai	290	5,010	A
Alberi Falls	Pond Oreille	22	1,153	C O
Grand Coulee	Columbia	314	5,118	O
Chief Joseph	Columbia	169	Pondage	C O
Priest Rapids	Columbia	116	"	A
Lower Granite*	Snake	81	"	A
Little Goose*	Snake	99	"	A
Lower Monumental*	Snake	92	"	A
Ice Harbor*	Snake	98	"	A
McNary* ✓	Columbia	83	"	C O
John Day*	Columbia	94	"	A
The Dalles* ✓	Columbia	85	"	C
Bonneville* ✓	Columbia	55	"	O
Total		2,054	14,261	—

- (1) A = Authorized but not constructed.
C = Under construction.
O = Operating

* Can utilize storage releases from Hells Canyon Reservoir site.

Operation of Hells Canyon Reservoir

A study of the possible power output at the sites listed in Table 2 shows:

- (1) An abundance of power in the flood season of each year, and
- (2) A critical low period in the fall and winter season.

In view of this situation, it is contemplated that the power output of the Hells Canyon development will be concentrated in the fall and winter months, with the output at the site held to a minimum during the flood season on the Columbia River to assist in refilling of the live storage capacity. The Hells Canyon development will be coordinated in operation with the other units of the Federal system to secure maximum system benefits for flood control and prime power output. The release of storage will be governed by system requirements for these purposes. It is anticipated also that use will be made of runoff forecasts early in the spring to secure optimum use of system storage and power production capability.

A review of system operation studies heretofore made by the Corps of Engineers, the Bonneville Power Administration, the Bureau of Reclamation, and other agencies, indicates that with present developments (operating and under construction) within the Columbia River Basin, the critical storage drawdown season which determines system prime power output is the 8-month period, September 1936 to April 1937, inclusive.

As the power system is expanded by the addition of other major storage and power units to meet increasing power needs, the length of the critical period which determines system prime power capability will increase to require storage releases over several seasons. At some future time, the storage release period will extend through the 42 months, September 1928 to February 1932, inclusive. The operation plan for the Hells Canyon development will need be modified, from time to time, in the future to permit the development to best be coordinated with the power system.

Storage released from the Hells Canyon Reservoir during the low water season will increase the stream flow and hence the power output at downstream sites along the Snake River and Lower Columbia River. The amount of such downstream power head which can thus utilize storage releases from the Hells Canyon development varies with the stage of development as follows:

- (1) Existing (operating and under construction)
downstream developments - - - - - 223 feet
- (2) Existing and authorized downstream
developments- - - - - 687 feet
- (3) Existing, authorized and future potential
developments about - - - - - 1,350 feet

Power Output

The power output has been estimated on two basic assumptions:

- (1) Hells Canyon will be operated as a unit of the system to produce maximum system prime power output (1 kw system prime power equals 8,760 kwhrs per year).

(2) Hells Canyon will be operated to produce the maximum amount of saleable energy without impairing the at-site dependable capacity.

Prime Power production

These studies have been made only on the basis of stream flow (Table 1) for the historic flows and the 1985 level of irrigation development. Various assumptions were made regarding the length of critical period which determines the system prime power output and the amount of downstream head developed. The results of the studies are summarized in Table 3.

Table 3

Estimate of Prime Power Added to System
by Hells Canyon Development

(1000 kw)									
Length of Critical Period	Using Historic			Using Stream Flows with 1985					
	Stream Flows			Level of Development					
	Production: Increase :			Production: Increase :					
	at Site	Downstream	Total	at Site	Downstream	Total			
8 Months									
(1936-37)	681	(1) 129	810	710	(1) 129	839			
	661	(2) 398	1,079	710	(2) 398	1,108			
31 Months									
(Nonflood seasons									
1928-32)	705	(2) 257	962	654	(2) 257	911			
42 Months									
(Sept. 1928 to									
Feb. 1932; incl.)	585	(3) 145	730	534	(3) 145	679			

- (1) Downstream power head 223 feet (existing downstream developments).
- (2) Downstream power head 687 feet (existing and authorized downstream developments).
- (3) Downstream power head 1,350 feet (existing, authorized, and potential downstream developments).

From the data contained in the preceding table, it is estimated that the average amount of prime power added to the system by Hells Canyon during a 50-year amortization period would be about 900,000 kilowatts. This figure is based on the contribution of Hells Canyon development during critical periods which determine system prime power output.

Unit Cost of Prime Power Production

The estimated construction cost (April 1955 prices) of the Hells Canyon Dam, Reservoir, and Powerplant (800,000 kw) is \$353,740,000.

From advance information secured from the Corps of Engineers on their recent review of flood control and navigation benefits, it is tentatively estimated that nonreimbursable allocations of approximately \$48,000,000 would be justified for the Hells Canyon development.

Table 4 presents the results of a short-cut financial study to determine the average cost of generation of prime power added to the system by the Hells Canyon development.

Table 4

Item	Unit	Amount
Estimated construction cost	\$	353,740,000
Interest during construction (1)	\$	26,530,000
Total investment	\$	380,270,000
Nonreimbursable allocation	\$	48,000,000
Allocation to Power	\$	332,270,000
<u>Annual Cost of Generation</u>		
Interest and amortization (2)	\$	11,716,000
Operation, maintenance, & replacements	\$	2,631,000
Subtotal at site	\$	14,347,000
Installations at other plants in system (3)	\$	2,932,000
Total Annual Cost of Generation	\$	17,279,000
Prime power added to system	kw	900,000
Unit cost of prime power added to system	\$/kw	19.20

- (1) Six-year construction period assumed; interest rate $2\frac{1}{2}\%$.
- (2) .03526 times allocation to power (50-year amortization period with interest at $2\frac{1}{2}\%$).
- (3) This item represents the annual cost (interest $2\frac{1}{2}\%$, amortization in 50 years, operation, maintenance and replacements) of units (700,000 kw) added to other major plants in the system to permit load factor of the added system prime power output, considering the reduced capability at the Hells Canyon plant at extreme drawdown in critical periods. Estimates based on preliminary cost data secured from the Corps of Engineers.

Assuming annual transmission costs of \$7.00 per kw of installation, 75% system load factor, transmission losses of 10% at peak and 7% average between the powerplant and load centers, and a diversity factor of 1.05,

the equivalent annual cost at load centers of the indicated increased system prime power output would be computed as follows:

Prime power generation - - - - -	900,000 kw
Saleable power at load centers (75% load factor, 1.05 diversity, and 10% loss)-	1,134,000 kw
Firm energy at load centers (7% transmission loss in energy)- - - - -	³ 73 ³ / ₂ Million kwhrs
Annual cost of transmission (\$7.00 x 1,500,000)- - - - -	\$10,500,000
Annual cost of generation (Table 4)- -	\$17,300,000
Total Annual Cost - - - - -	\$27,800,000

Unit Costs at Load Centers

Per kw increase saleable power - -	\$24.50
Per kwhr increased energy - - - -	3.78 ⁷ mills

(Note: Part of the indicated increased system energy will be generated at other plants in the power system.)

Evaluation of Hells Canyon Power Output by Use of Dependable Capacity and Average Annual Saleable Generation

In recent years, in an attempt to envision the value of potential hydroelectric developments when integrated into a system which involves substantial amounts of steam-generated energy as well as hydroelectric energy, there has been utilized a method of analysis which compares the at-site power costs with the projected future value of power in the Northwest power system. The following procedures are used in this method of evaluation:

(a) Determine the average at-site saleable energy generation and the increased energy generation by use of project storage at downstream sites. For the Columbia System, the output during the 9 months of August to April, inclusive, is considered to be saleable.

(b) Determine the dependable capacity by application of a 75% load factor to the at-site saleable generation described in (a). However, such dependable capacity should not be greater than the installed capacity at the site.

(c) Evaluate (a) and (b) by use of future power values projected by the Federal Power Commission for hydroelectric power in the Northwest. These values (at load centers) are \$16.50 per kwyr of dependable capacity and 3.34 mills per kwhr of saleable energy. With allowances for estimated transmission losses and transmission costs, the estimated at-power-site values become ^{7.85}~~\$8.50~~ per kwyr of dependable capacity and 3.11 mills per kwhr of energy.

(d) Compare the annual at-site power values determined in (c) with the annual at-site power costs.

The method outlined herein has been applied to the Hells Canyon development, using reconnaissance estimates of average annual generation for the 20-year period, 1929 to 1948, inclusive. In the application of this method, it was assumed that all of the authorized downstream power

developments shown in Table 2 would be completed. The studies indicated the need for installation of the ninth unit at the Hells Canyon power site. Addition of this unit is estimated to increase the project construction cost at Hells Canyon by \$8,150,000 and to increase the annual operation, maintenance, and replacement costs by \$253,000. With the ninth unit added, the output capacity at Hells Canyon would be 900,000 kw.

Table 5 presents the estimates of average annual generation for various levels of upstream irrigation development. Table 6 compares the estimated value of the power output with the annual costs of generation.

Table 5

Item	Units	With "Present" Flows	With 1985 Flows	With Future Flows
20-year Average Flows (1)	1000 AF	11,524	10,298	9,089
Average Annual Storage Drawdown (2)	1000 AF	2,280	2,193	1,174
Average Annual Generation	Million			
At Site May to July, incl. (3)	kwhrs	340	320	200
At Site Aug. to April, incl. (4)	"	5,230	4,700	4,410
Increase downstream (5)	"	1,300	1,250	670
Saleable Generation (6)	"	6,530	5,950	5,080
Dependable Capacity	Kw	900,000	900,000	900,000

- (1) From Table 1.
- (2) Maximum permissible drawdown 2,600,000 AF to avoid impairment of dependable capacity at Hells Canyon Powerplant.
- (3) Generation in this period assumed to be nonsaleable, since it occurs at a time when there is generally a large surplus of energy in the system.
- (4) Assumed to be saleable.
- (5) By use of Hells Canyon storage through existing and authorized downstream units (total downstream head 687 feet).
- (6) Sum of at-site in August to April period and increase downstream.

From the studies summarized in Table 5, it is estimated that the average saleable generation will be about 5,850 million kwhrs annually.

Table 6

Item	Unit	Amount
Estimated construction cost (1)	\$	361,890,000
Interest during construction (2)	\$	27,110,000
Total investment	\$	389,030,000
Nonreimbursable allocation	\$	48,000,000
Allocation to power	\$	341,030,000
Installation at site	Kw	900,000
Average saleable generation (3)	Million Kwhrs.	5,850
Annual at-site value of power		
Dependable capacity (4)	\$	⁰⁶⁵ 7,650 ,000
Saleable energy (5)	\$	18,194,000
Total	\$	²⁵⁹ 25,844 ,000
Annual at-site costs		
Interest and amortization (6)	\$	12,025,000
OM&R	\$	2,884,000
Total	\$	14,909,000
Ratio of value to costs		^{1.69} 1.73 to 1.00

(1) Estimate shown in Table 4 increased by \$8,150,000 for ninth power unit.

(2) Six-year construction period assumed. Interest rate $2\frac{1}{2}\%$.

(3) From studies summarized in Table 5.

(4) Unit value ^{7.85}
~~\$8.50~~ per kw.

(5) Unit value 3.11 mills per kwhr.

(6) $2\frac{1}{2}\%$ interest and 50-year amortization.

April 6, 1953

FUTURE UPSTREAM DEPLETION ABOVE HELLS CANYON

MATERIAL REPRODUCED FROM THE MANUSCRIPTS ARCHIVES
By Lynn Crandall 1/
COLLECTION OF THE GEOLOGICAL SOCIETY

The discussion of this subject will be divided into various sections as follows:

1. The Snake River Plain

This term as used herein applies to the area north of Snake River extending southwest from St. Anthony to Bliss, beneath which the great Snake River ground-water flow moves. Generally speaking, the soils in this area, where they exist, are of a satisfactory quality for agricultural use outside of local areas of sand dunes. There exists, however, a wide range of soil depths and depths to ground water. A large portion of the area is either bare lava rock or shallow soils. About 300 feet is assumed to be the maximum pumping lift likely to be sustained during the Hells Canyon payout period for profitable farming operations in this region. It is possible that greater lifts than this may prove feasible under certain conditions but the additional acreage involved is not likely to be of great magnitude. After examining the available information on this area, including my own observations from driving over it for many years, I believe that possibly 400,000 acres may be feasible of development by ground-water pumping. This figure and other similar ones in this report include the pumping developments already made since 1947. In this section the ground-water supply is believed to be adequate generally and the controlling elements are good land and feasible pumping lifts.

2. Minor tributary streams from the North, Camas Creek to Big Wood River

In this section ground-water pumping will be limited in some cases by available supplies contributed from the tributary streams. In some of the valleys pumping may be used as supplemental supply for lands that do not now receive a full supply in dry years. It is believed that the total use might be the equivalent of supplying about 45,000 acres of new lands. This would include any new storage developments on these streams.

3. Fort Hall Project

There are about 40,000 acres of new land on this project susceptible of irrigation, probably mostly by pumping from ground water. Some lawyers claim that the Indians' treaty rights would entitle them to so use the water even if it interfered with downstream Snake River rights. Some small developments are already under way by leasing the land for a term of years to whites who agree to provide a well on the land. About half of this area is south of the Portneuf River in the Michaud Flat-Bannock Creek region and about half in the vicinity of Fort Hall. The lands around Fort Hall have mostly somewhat sandy soils.

1/ District Engineer, U. S. Geological Survey, Idaho Falls, Idaho, and Snake River Watermaster, Idaho State Department of Reclamation.

4. Marginal increases to existing projects above American Falls

There is a narrow fringe of good land along the benches bordering the lands at present irrigated from Snake River along the east side of the valley between Ririe and Blackfoot. This may be irrigated partly by pumping from ground-water and partly by pumping from existing canals whose water supply will be augmented from Palisades reservoir. Some similar areas exist west of Snake River between Roberts and Shelley. During recent years there has been considerable clearing of brush lands and those subject to flooding in high-water years between Heise and Roberts. All these and others somewhat similar elsewhere are estimated to total 15,000 acres starting from 1947.

5. Tributary valleys south of Snake River, from Portneuf River to Salmon Falls River, inclusive.

In most of this section ground-water pumping developments will be limited by water supply or pumping lift. In some of the tributary valleys ground-water pumping might be used as supplemental supply; in others it would be used on new land. It is estimated that the total use for both purposes might be equivalent to irrigating 60,000 acres of new land.

6. Bruneau Project

The Bruneau Project of about 400,000 acres as heretofore proposed required the construction of a dam about 500 feet high on Snake River near Bliss, Idaho, and the creation of a reservoir which would flood Hagerman Valley, including about 10,000 acres of irrigated land and 4 power plants of the Idaho Power Company. Owing to the likelihood of large leakage thru the porous inter-canyon lava fill at the damsite it does not now appear feasible to construct the proposed dam. This fact, together with the large costs for property damage, appears to me to warrant discarding the proposed large Bruneau project for consideration within the foreseeable future. A possibility exists, however, of building a smaller dam on Snake River in the vicinity of the mouth of Salmon Falls Creek that would back the water upstream to the foot of Shoshone Falls and water could be diverted from above this dam to irrigate a portion of the Bruneau Project. Snake River at this point has at present a dependable flow of about 2800 second-feet that enters the river below Milner which would be sufficient to irrigate about 110,000 acres of the Bruneau Project. This flow may be appreciably lessened by future pumping developments on the Snake River Plains. This plan has not been studied in detail as to its feasibility and although it would doubtless be quite costly per acre of land irrigated I have included 80,000 acres in the list of projects that might conceivably be built during the 50-year payout period for the Hells Canyon project, assuming some decrease in present water supply due to upstream ground-water pumping.

7. Mountain Home Project

If the high dam near Bliss heretofore proposed for the Bruneau Project is discarded it will not be possible to supply the second unit of the Mountain Home project as contemplated in previous plans of the Bureau of Reclamation. Mr. W. G. Sloan has proposed a plan for irrigation of 123,000 acres of the Mountain Home project, by a combination of pumping from Snake River to Deer Flat Reservoir and ground-water pumping in Boise Valley. If this is done it would then be possible to irrigate an additional 192,000 acres from Payette-Boise River sources making a total of 315,000 acres in the Mountain Home project without use of the high diversion dam near Bliss. If this area is placed under irrigation on the Mountain Home project the ground-water levels beneath the project could very well rise to a level that would permit of ground-water pumping for the remaining 57,000 acres on the Mountain Home project heretofore proposed. Although these matters are somewhat speculative, the good quality of land and favorable location of this project appear to me to warrant the belief that some plan will eventually be devised for irrigating the full acreage of 372,000 acres.

Permits granted by the State of Idaho for ground-water pumping since interest in this subject started in 1947, are as follows:

<u>Year</u>	<u>New Land (acres)</u>	<u>Supplemental supply for lands now irrigated (acres)</u>
1947	12,400	7,600
1948	192,600	34,200
1949	39,000	73,000
1950	75,200	18,600
1951	104,400	104,600
1952	114,270	6,500
Total	537,870	244,500

Figures are for the entire State but nearly all are in the Snake River drainage area in southern Idaho. Some of these permits or water filings are no doubt speculative and will be canceled for failure to do the development work within the time allowed by the permits. In some areas also the permits cover more land than can be irrigated from the locally available water supply. However, additional filings are being made all the time at the rate of 100,000 acres annually and many wells are being drilled by individuals without permits. Under the provisions of the Idaho Constitution water rights can be so established without requiring authorization by the State and about 20% of irrigation wells drilled to date have been developed without applying to the State for a permit. Considering these various matters it appears from these water permit figures that the total acreage

of feasible ground-water pumping projects in Idaho on Snake River above Hells Canyon could possibly be as much as 700,000 acres of new land since 1947.

New land areas (acres) that might be irrigated by 2010
(Figures include developments since 1947)

Michaud Flat to Neeley (outside of Fort Hall Reservation	25,000
Minidoka North Side Extension from river flow	13,000
*Snake River plains ground-water pumping	400,000
*Minor tributaries Camas Creek to Big Wood River	45,000
*Fort Hall Reservation	40,000
*Marginal increases to existing projects	15,000
*Tributaries Portneuf to Salmon Falls River	60,000
Bruneau Project	80,000
Bruneau River	40,000
*Mountain Home project	372,000
Grandview pumping	18,000
*Weiser River basin	25,000
*Owyhee River basin	15,000
*Other tributaries below King Hill	20,000
*Miscellaneous ground-water pumping areas not listed above	132,000
Total	1,300,000

*All or partly ground-water pumping

The total consumptive use of water in this area will average about 2.3 acre-feet per acre actually irrigated. Assuming that 0.3 acre-foot per acre of this will be available from precipitation now used by native vegetation and that 10% of the area will be occupied by roads, buildings, small rocky areas, etc., we arrive at a consumptive water use of 1.8 acre-feet per acre from sources other than local precipitation applicable to the gross acreage.

Supplemental use on currently irrigated lands either by ground-water pumping, or from storage in reservoirs such as Palisades and Anderson, will also increase the consumptive use. This is a matter that cannot be calculated with any exactness because it would be small in good water years and larger in dry years. It might be estimated roughly at 270,000 acre-feet annually which would supply 1,000,000 acres with one-half of its consumptive use in three out of 10 years.

Evaporation losses on new reservoirs constructed since 1947 or proposed for new construction, in excess of water losses on the flooded areas prior to reservoir construction, will be of the magnitude of 130,000 acre-feet annually.

The sum of these three items, consumptive use on 1,300,000 acres of new lands, additional consumptive use from supplemental supply on lands now irrigated, and evaporation losses from new reservoirs will amount to about 2,740,000 acre-feet annually at the end of the 50 years Hells Canyon payout period.

If we assume that the Hells Canyon project will be completed by 1960, the end of the 50-year period would be 2010. The figures heretofore given refer to developments beginning in 1947 when the ground-water pumping projects started. Probably close to 150,000 acres of new lands have already been developed since 1947, mostly from ground-water pumping. Assuming a uniform rate of increase from now until 2010 the average additional consumptive use since 1947, during the Hells Canyon payout period, would be 1,650,000 acre-feet annually.

This additional consumptive use will not, however, decrease the stream flow at a uniform similar annual rate. The flood waters in years of ample runoff will be stored in new reservoirs such as Palisades and will be fed out onto the lands in dry years. Ground-water pumping will draw to some extent during dry years on water stored in the ground, with the ground-water supply being replenished in wet years. As a result the stream flow at Hells Canyon will generally be depleted more than the average in wet years and less than the average in dry years.

By reference to the attached Plate No. 1 it will be observed that the gain, excluding surface runoff from Big Wood River, in Snake River between Milner and King Hill has been steadily increasing during the past decade and from 1946-50 was running over 300,000 acre-feet annually greater than it was during the 1928-30 and 1938-41 periods in spite of steadily increasing irrigated acreage upstream. This would appear to be a permanent increase during the future as compared to past years except as it would be modified by new upstream ground-water pumping, and is doubtless due to increased canal diversions shown on the diagram. If the increased gain noted in 1951 and 1952 continued in future years the permanent gain would be greater than the 300,000 acre-feet above mentioned.

The Gooding project which began sizable diversions from Snake River in 1931 probably is responsible to a considerable extent for the increased gain as this project has contributed about 300,000 acre-feet of Snake River water annually to the ground water for a number of years past. The project had previously contributed a lesser amount when it received an inadequate water supply from Big Wood River. The recent gain is even greater if compared to the 1931-35 period but it is believed that the comparison will be more useful if made with years of similar precipitation on the plains and similar discharge from the streams whose runoff reaches the plains from the north. From Plate No. 1A it will be noted that a moderate decrease in the gain occurred from 1946 to 1950. This may represent the decreased contributions from river losses and canal diversions in the upper valley above American Falls in 1931 and 1934 indicating a time of travel of around 15 years before the ground water from those sources appears in the Hagerman Valley springs. In any event the gain appears to have resumed its upward trend in 1951 and 1952.

The years of critical water supply for power production at Hells Canyon occur in the period 1929-37 as shown on accompanying Plate No. 2. From the mid-date, 1933, until 1947, when the increased consumptive use figures

used herein start, there was an increase of about 200,000 acres in the irrigated area above Hells Canyon which would consume 360,000 acre-feet annually. This factor, as far as flow during low-water periods is concerned, is probably more than offset by new supplemental storage in such reservoirs as Anderson, Lucky Peak, and Palisades that will increase the river flow in low-water periods over that which occurred in the past.

Past experience on the river has been that irrigation of new land from surface flow of the streams above return-flow sections has increased downstream flow during low-water periods. Future expansion of the irrigated area by pumping from ground water or diversion of water from the stream in or below the return-flow sections will, however, directly reduce the downstream flow during low-water periods.

The drought during the early 1930's was the most severe and prolonged of any that have occurred during the 62 past years of stream-flow records on Snake River. The possibility exists that one of equal severity might not occur during the Hells Canyon payout period. If one should occur at the midpoint of the payout period, it is my opinion, considering all the matters herein discussed, that it might result in a runoff at Hells Canyon of about 1,300,000 acre-feet less annually than the historic flows that occurred 1929-37. If a dry period of this severity should occur at the end of the payout period rather than the midpoint, with more land in cultivation, the decrease below the historic flows of 1929-37 might be of the magnitude of 2,200,000 acre-feet annually.

Except in years of well above normal runoff it is quite likely that future years will see the flow of upper Snake River controlled so as to practically eliminate spills past Milner except for storage rights owned by the Idaho Power Company that usually require the discharge of about 155,000 acre-feet annually over Milner dam for downstream use by the Power Company.

Additional storage of about 350,000 acre-feet may be developed on the river above Heise and surplus flood flows that would otherwise spill past Milner can be diverted by new canals onto the Snake River plains, allowed to spread over as large an area as possible, and be dissipated by percolation and recharge wells into the lavas, thereby replacing in part the water consumed by ground-water pumping. Such a project would be expensive and would probably require government financial aid. Similarly any surplus flood waters of Big Wood River could in wet years be diverted onto the lava beds north of Shoshone. The ground-water reservoir beneath these plains is of great capacity. Water contributed to it in the vicinity of Idaho Falls, for example, has to travel 150 miles underground before it reappears in Hagerman Valley, probably requiring a number of years to do so. Return flow from irrigation use below American Falls will of course reappear in lesser time, ranging from several months on portions of the North Side Canal Project to perhaps a year or more from the Minidoka project. If new upstream reservoirs are built and if the surplus flood waters are diverted to this ground-water reservoir it would result in a nearly equalized flow of Snake River at King Hill with an increased flow during low-water periods and less future depletion at Hells Canyon during low-water years than the figures herein suggested.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCH

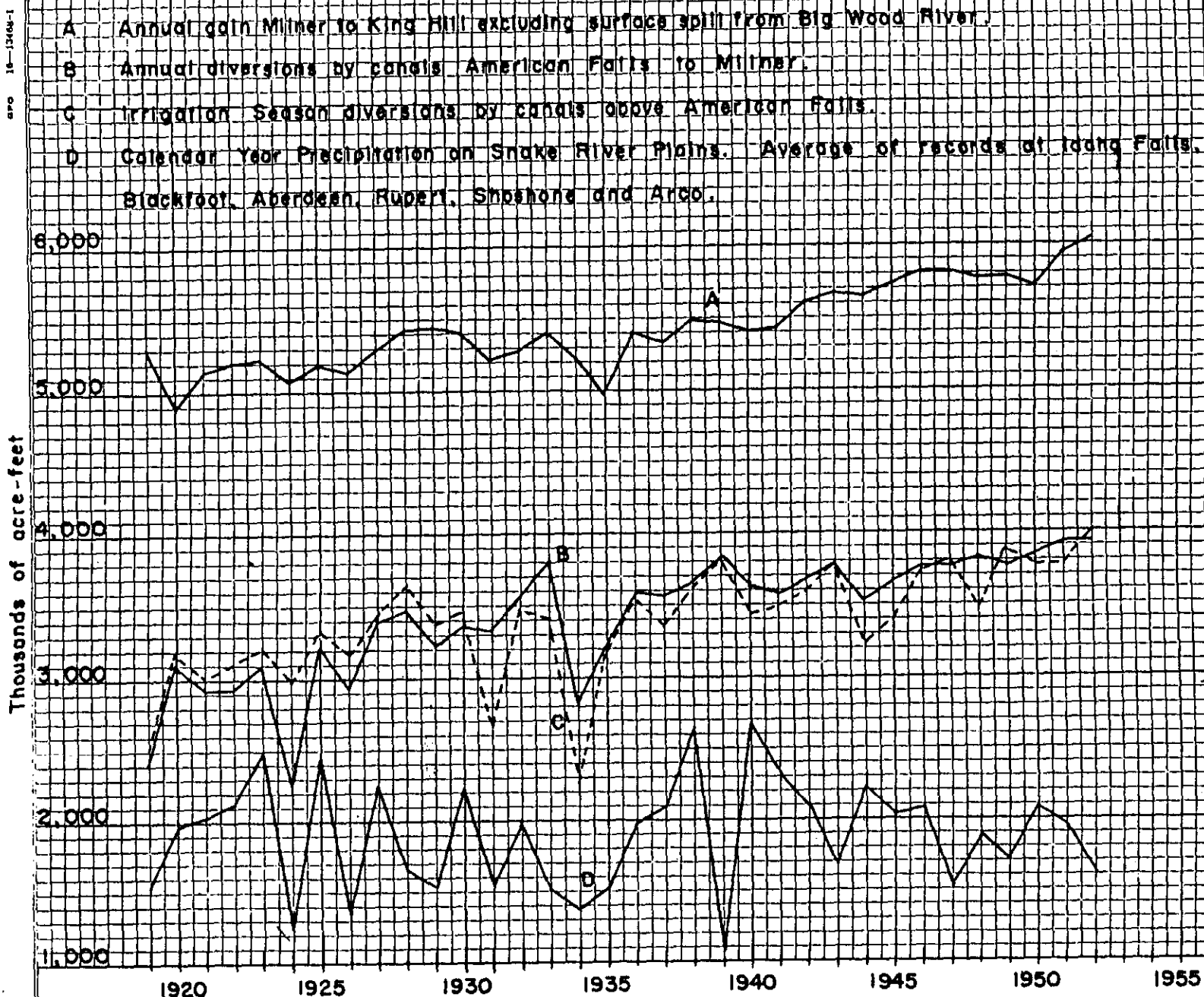
Washington

File Number

District

WFO 16-13404-1

PLATE NO. I



(DO NOT USE THIS SPACE EXCEPT FOR BINDING PURPOSES)

Sheet No. _____ of _____ sheets. Prepared by _____ Date _____ Checked by _____ Date _____

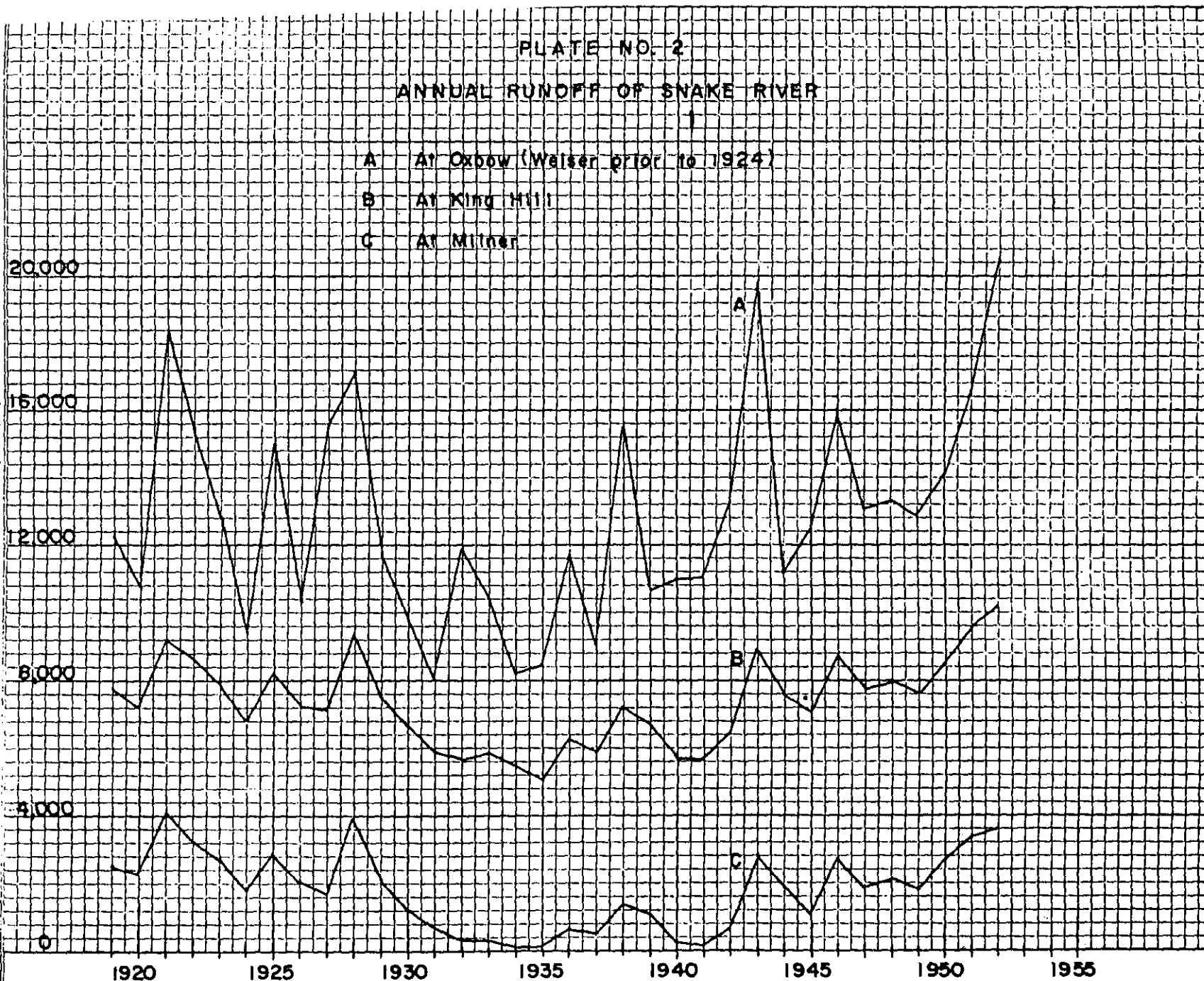
in the
acre-feet
to con-

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCH

Washington
File Number
District

gpo 16-13468-1

Annual runoff in thousands of acre-feet



(DO NOT USE THIS SPACE EXCEPT FOR BINDING PURPOSES)

Sheet No. _____ of _____ sheets. Prepared by _____ Date _____ Checked by _____ Date _____

October 21, 1970

Re: Permit Nos. 03-2017 & 03-2020

Idaho Power Company
1220 Idaho Street
Boise, Idaho

Dear Sirs:

Enclosed herewith are your Water Licenses issued on the above numbered permits.

Also enclosed is departmental receipt No. 5233 in the amount of \$10.

Very truly yours,

BOBBY D. FLEENOR
Assistant Director

BDF:kh

Enclosures

3 2017

October 7, 1970

Re: Permit No. 03-2017

Idaho Power Company
1220 Idaho Street
Boise, Idaho

Dear Sirs:

A representative of this department has made an examination of the works covered by your Permit No. 03-2017 and has found the following:

Quantity of water diverted: 32,880 c.f.s.

Amount of water that can be recognized as beneficially used under Idaho law: 9,000 c.f.s. or a total of 30,000 c.f.s. when combined with Permit No. 03-2020.

The maximum quantity of water diverted shall not exceed N.A. acre feet per season.

Beneficial Use: Electric Power Generation at Hells Canyon Dam
601,385 Horse Power generated when combined with Permit No. 03-2020

The priority date established is : May 29, 1964

A fee totaling \$ 5.00 must be received within 30 days from the date of this letter in order that we can issue you a Water License as set forth in this letter.

Very truly yours,

BOBBY D. FLEENOR
Assistant Director
BDF/kh

3 2017

1 3 16

Flow

Lot 1 P.D. Helk Canyon Dam

$Q = 9,000 \text{ cfs}$

see Condition on permit

priorily may 29, 1964

03-2017
 Permit No. 31990
 Name of Applicant Idaho Power Company
 Source of Water Snake River
 a tributary of Columbia River
 Location of P.D. Lot 1, Sec. 16, T. 22 N., R. 3 W.
 Adams County

Water is used for Generation of electric power
 Quantity of water claimed: Permit 9000 c.f.s. add. Depositions 30,000
 Type of measuring device installed or method of measurement and general description
 of diversion works reservoir, concrete dam and hydroelectric
 plant with 3 turbine generator units - 3 - 24' steel penstocks

See Permit No. 24393 - 21,000 c.f.s.

Land to be irrigated or place of use:

TWP.	RGE.	SEC.	Description
22 N	3 W	16	Lot 1

Date Filed: May 29, 1964 Total acreage
 Proof due: July 17, 1969
 Proof Made: July 10, 1968
 Priority: May 29, 1964

Other rights and acreage covered: (Indicate amounts, source, licensed or decreed, and
 acreage covered by subdivision; also show land covered on the map.
 Permit 24393 - 21,000 c.f.s.

3 2017

Source of supply Snake River

a tributary of Columbia River

Location of P.D.(s) N 15° 19' W 1140' from SE Corner
Section 16 T22N, R3W, B.M.

Water is used for Electric power generation

Quantity of water found 32,880 cfs

How was the measurement made? U.S.G.S. recorder located
immediately D/S from dam
Measurement calculations _____

U.S.G.S. gage reading 72.3 ~ 32,880 cfs
see rating table attached to # 03-2020

Diversion works description and diagram

Hells Canyon Dam constructed
in accordance to plans & specs.

3 2017

Indicate area irrigated in each subdivision on the map.

Total acreage irrigated _____

If water is used for purposes other than irrigation, fully describe how the water is used and what is done with it after the use.

Water is released from storage through turbines for
power generation and returned directly to the
Snake River. Dam diverts entire flow of
Snake River

Who represented the permit holder at the examination?

Recommended allowance for licensing 9,000 cfs

Description of required amendments. Comments. _____

See data attached to # 03-2020 For generator
and turbine nameplate data

21,000 cfs covered under permit 03-2020

H.P. Generated $449,000 \text{ KW} \times 1.3405 = 601,885$
H.P. Generated includes that under
permit 03-2020

Report checked? _____

Examination date 4-2-70

Signature A.K. Quinn

Plot ✓

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE

REPORT OF EXAMINER

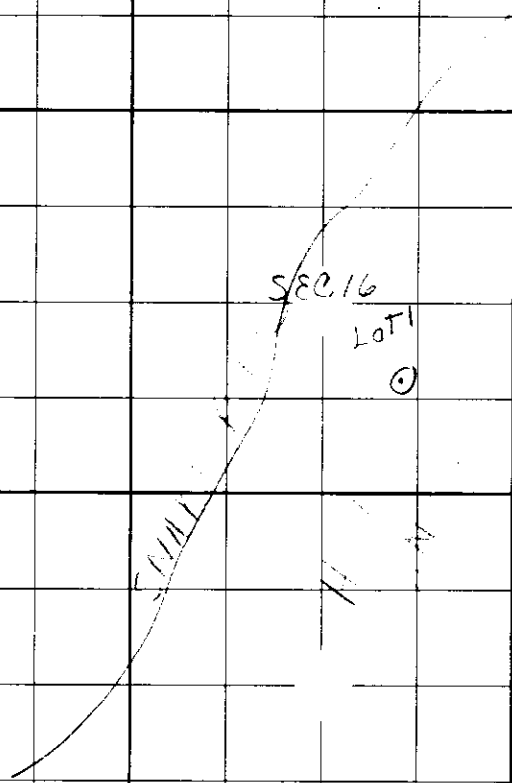
PERMIT NO. 31990/03-2017

REPORT ON PROOF OF B/U - Idaho Power Co.

3 2017

A. 3 W

T
22
N



March 24, 1970

C
O
P
Y

Mr. Albert Carlson, President
Idaho Power Company
1221 Idaho
Boise, Idaho

Dear Mr. Carlson:

In order for this office to issue a license which will, in part, confirm the use of water stored in Hall's Canyon Reservoir for power purposes under Permit Nos. 02-2125 and 03-2012, it will be necessary to inspect and observe the power plant at maximum production. The department wishes to make this examination at an early date; however, we realize that you would undoubtedly wish to have this examination made when you have maximum head available, in order to obtain the maximum kilowatt hour output.

It will be necessary to run the turbines at maximum productions for short periods of time. During this period of time, we will need to know the discharge in cubic feet per second through the turbine penstocks and the power output of the power plant.

I would appreciate your comments as to when we might be able to make this inspection.

Sincerely,

A. KENNETH DUHN, Assistant
State Reclamation Engineer

ARD:mjl

3 2017

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
BOISE, IDAHO
REPORT OF EXAMINER

Permit No. 31990/03-2017

This proof is for b/u In Water District No.

1. Name of applicant Idaho Power Co., 1220 Idaho St., Boise, Idaho

2. Source of water supply: Snake River, trib. Columbia River

3. Location of point of diversion: Is in the Lot 1 of Section 16

T. 22 N R. 3 W County of Adams

4. Describe works as they exist, giving dimensions and capacities of same: reservoir, dam, power plant

5. Water is used for: generation of electric power

6. State whether or not water has been turned into works of diversion:

7. List legal subdivisions of lands to be irrigated. If proof is for beneficial use, give exact number of acres under cultivation in each forty-acre tract. (Describe manner and place of use if other than irrigation):

(Submit map on attached plat, showing location and details of above description.)

8. What large stream would the water here appropriated finally reach?

Remarks: see attached letter, check amount of water used

This examination was made on the day of , 19

(Signed) Examiner.

ASCS : Council
SCS : Council

Permit No. 31990/03-2017 - Idaho Power Co.

Examination for b/u

County Adams

Quantity: (permit) Sec. 16 T. 22NR. 3W 9,000 cfs (proof) 30,000 cfs

Source: Snake River, trib. Columbia River

P.D.: Lot 1

Use: generation of electric power

Extension:

Protest:

Completion of Works: made July 17, 1968

Other Rights: 24393

Filed: May 29, 1964 MADE: July 17, 1968

Due: July 17, 1975 PRIORITY: May 29, 1964

INSTRUCTIONS TO EXAMINERS

1. Always carefully note the location of the point of diversion and accurately plat same.
 2. When proof is for beneficial use, carefully check up the number of acres actually irrigated in each forty and accurately plat same.
 3. Make a map showing the correct location of streams and ditches, and the irrigated lands, and any adjacent permanent landmarks, such as towns, lakes, large streams and public roads.
 4. If any unusual conditions are discovered, make plain statement of them under remarks.
 5. Always see the holder, if possible, and go over the whole ground with him and make your report only upon actual existing facts and conditions.
 6. Give general characteristics of soils, topography, and crops raised.
-

NAME AND ADDRESS OF SENDER

Department of Reclamation

Indicate type of mail

☐ INSURED

☐ C. O. D.

☒ CERTIFIED

Affix stamp here if issued as certificate of mailing or for additional copies of this bill.

POSTMARK AND DATE OF RECEIPT

NUMBER OF ARTICLE	NAME OF ADDRESSEE, STREET, AND POST-OFFICE ADDRESS	POSTAGE	FEE	DUE SENDER IF C. O. D.	ENDORSEMENT ¹	R. R. FEE	S. D. FEE	S. H. FEE ²	RESTRICTED DELIVERY FEE	REMARKS
1	22016 Idaho Power Company, 1111 Idaho	00	50			15				03-2017
2	Idaho Power, Idaho									
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TOTAL NUMBER OF PIECES LISTED BY SENDER		TOTAL NUMBER OF PIECES RECEIVED AT POST OFFICE		POSTMASTER, PER (Name of receiving employee)		¹ Mark "F" if "Fragile," "P" if "Perishable," "E" if "Eggs," "EH" if "Eggs for Hatching," "B" if "Butter," "FL" if "Fragile-Liquid," and "FLU" if "Fragile-Liquid-This Side Up." ² Special-handling charges apply only to fourth-class parcels. Special-delivery service also includes special-handling service.				

POST OFFICE DEPARTMENT
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PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE: \$300

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POD Form 3811 Apr. 1967

4402 2

POST OFFICE
DELIVERING OFFICE

JUL
1
1970

USPO

RETURN
TO

INSTRUCTIONS: Show name and address below and complete instructions on other side, where applicable. Moisten gummed ends, attach and hold firmly to back of article. Print on front of article **RETURN RECEIPT REQUESTED**.

NAME OF SENDER

STREET AND NO. OR P.O. BOX

Department of Reclamation
Annex #2 Statehouse

POST OFFICE, STATE, AND ZIP CODE

Boise, Idaho 83707

INSTRUCTIONS TO DELIVERING EMPLOYEE

☐ Show to whom, date, and
address where delivered

☐ Deliver ONLY
to addressee

(Additional charges required for these services)

Received the **IDAHO POWER COMPANY** as the deliverer below

REGISTERED NO.

SIGNATURE OR NAME OF ADDRESSEE (Must always be filled in)

CERTIFIED NO.

22016

INSURED NO.

DATE DELIVERED

1

2

3

P. O. BOX 770

SIGNATURE OF ADDRESSEE'S AGENT

4402 3

JUL 1 1970

03-2017

GENERAL INSURANCE COMPANY OF AMERICA

Home Office: 4347 Brooklyn Ave. N.E., Seattle, Washington 98105



State of Idaho
State Reclamation Engineer
Boise, Idaho

NOTICE OF CANCELLATION

OF BOND

Idaho Power Co.
Box 770
Boise, Idaho

You are hereby notified that GENERAL INSURANCE COMPANY OF AMERICA, Surety on the bond described below, desires to cancel and does hereby cancel said bond, in accordance with the cancellation provisions contained therein or in applicable laws or regulations:

BOND NO. 516549

PRINCIPAL Idaho Power Co.

EFFECTIVE DATE July 17, 1964

DESCRIPTION Permit # 31990- Divert Public waters

This notice is mailed to you on June 24, 19 70, and becomes effective
thirty(30) days after receipt of this notice

Cancellation Acknowledged:

GENERAL INSURANCE COMPANY OF AMERICA

By _____

By Mildred W. Sullivan
Mildred W. Sullivan Attorney-in-fact

Dated _____, 19 _____

Address 4347 Brooklyn N. E.
Seattle, Washington
98105



PLEASE SIGN THE DUPLICATE OF THIS NOTICE AND RETURN IT
IN THE ENCLOSED SELF-ADDRESSED ENVELOPE

June 29, 1970

Re: Permit No. 03-2017

Idaho Power Company
1220 Idaho Street
Boise, Idaho

Gentlemen:

On August 1, 1968, the Department of Reclamation adopted Rules of Practice and Procedure for the processing of permits issued prior to May 31, 1967. These Rules of Practice and Procedure abolished the requirement that a permit holder secure a bond. It is hereby ordered that you be relieved of the bond requirement placed upon your permit at the time the permit was approved.

Very truly yours,

C. Stephen Allred, Deputy
State Reclamation Engineer

CSA:kh

Certified Mail # 22016

cc. General Insurance Company of America
4347 Brooklyn Ave. N.E.
Seattle, Washington 98105

3 2017

March 24, 1970

C
O
P
Y

Mr. Albert Carlson, President
Idaho Power Company
1221 Idaho
Boise, Idaho

Dear Mr. Carlson:

In order for this office to issue a license which will, in part, confirm the use of water stored in Hell's Canyon Reservoir for power purposes under Permit Nos. 02-2125 and ~~03-2012~~, it will be necessary to inspect and observe the power plant at maximum production. The department wishes to make this examination at an early date; however, we realize that you would undoubtedly wish to have this examination made when you have maximum head available, in order to obtain the maximum kilowatt hour output.

It will be necessary to run the turbines at maximum productions for short periods of time. During this period of time, we will need to know the discharge in cubic feet per second through the turbine penstocks and the power output of the power plant.

I would appreciate your comments as to when we might be able to make this inspection.

Sincerely,

A. KENNETH DUNN, Assistant
State Reclamation Engineer

ARD:mjl

*exam made
4-2-70*

03 2017
31990

IDAHO POWER COMPANY
BALANCE SHEET, MARCH 31, 1964
(Subject to Approval of Independent Auditors)

<u>Assets</u>	
ELECTRIC PLANT:	
In service (at original cost)	\$342,678,209
Less accumulated provision for property retirements (Note 1)	43,923,846
In service - Net	298,754,363
Construction work in progress	9,165,168
Electric plant - Net	307,919,531
OTHER PROPERTY AND INVESTMENTS	433,617
CURRENT ASSETS:	
Cash	8,175,317
Special deposits	651,400
Accounts receivable (less accumulated provision for uncollectible accounts, \$87,763)	3,790,853
Materials and supplies (at average cost)	1,030,606
Prepayments	487,041
Total current assets	14,135,217
DEFERRED DEBITS:	
Unamortized debt discount and expense	613,738
Preliminary survey and investigation charges	543,236
Unamortized cost of power purchased	561,975
Other (Note 2)	1,625,892
Total deferred debits	3,344,841
CAPITAL STOCK EXPENSE	816,063
TOTAL	\$326,649,269

<u>Liabilities</u>	
PROPRIETARY CAPITAL:	
Common stock, \$5 par; authorized 12,000,000 shares; outstanding 6,350,000 shares	\$ 31,750,000
4% preferred stock, cumulative, \$100 par; authorized 600,000 shares; outstanding 215,000 shares ...	21,500,000
Premium on capital stock	40,132,301
Earned surplus	32,914,611
Total proprietary capital	126,296,912
LONG-TERM DEBT (Note 3)	169,753,000
CURRENT LIABILITIES:	
Notes payable	3,800,000
Accounts payable	348,454
Taxes accrued	7,226,765
Interest accrued (Cash in special deposits - \$649,790)	2,756,223
Other	1,232,480
Total current liabilities	15,363,922
DEFERRED CREDITS:	
Unamortized premium (less expense) on debt	253,634
Customer advances for construction	1,706,115
Other	730,374
Total deferred credits	2,690,123
OPERATING RESERVES	96,685
CONTRIBUTIONS IN AID OF CONSTRUCTION	489,518
ACCUMULATED DEFERRED INCOME TAXES	11,959,109
TOTAL	\$326,649,269

The accompanying Notes to Financial Statements are an integral part of this balance sheet.

31990
Permit Map No. _____
As Approved JUL 17 1964
CARL E. TAPPAN
State Reclamation Engineer

31990

244-17
03-2017

SNAKE RIVER



HYDRO POWER

GLENN J HALL
VICE PRESIDENT

IDAHO POWER COMPANY

BOX 770 • BOISE, IDAHO 83701

March 27, 1970

Mr A Kenneth Dunn, Assistant
State Reclamation Engineer
Department of Reclamation
Statehouse - Annex 2
Boise, Idaho 83707

Dear Mr Dunn;

Mr Carlsen referred your letter to me and asked me to take the necessary action to comply with your request.

I talked with Mr Steve Allred of your office, and we arranged to make these tests on April 2, 1970. Mr Heikes or Mr Garlinghouse from the Idaho Power Company will contact you or Mr Allred and arrange the details.

From our standpoint, we need to do this as soon as possible in order to cause the least inconvenience to boaters below Hells Canyon.

Sincerely yours,

Glenn J Hall
Vice President

GJH/ap

cc: Mr A Carlsen
" T Heikes
" L Garlinghouse

03-2017

July 30, 1968

Re: Permit No. 31990
Idaho Power Company

Idaho Power Company
1220 Idaho Street
Boise, Idaho 83701

Gentlemen:

We acknowledge receipt of the depositions and affidavit of publication in the Adams County Leader submitted as proof of completion of works and beneficial use on Permit 31990.

Before a certificate and license of water right can be issued, a field examination must be made by a representative from this department. We cannot tell just when this examination will be made, but our field examiner will try to contact you at the time he makes the examination so that you may show him the system.

Very truly yours,

Donald W. McEldowney
Appropriation Examiner

DWM:dj

31990

SNAKE RIVER



HYDRO POWER

IDAHO POWER COMPANY

BOX 770 • BOISE, IDAHO 83701

July 16, 1968

RECEIVED

JUL 17 1968

Department of Reclamation

R Keith Higginson, State Reclamation Engineer
State of Idaho, Department of Reclamation
107 State House
Boise, Idaho 83701

Re: Permits 24393 and 31990

Dear Mr Higginson:

Enclosed are Affidavit of Publication, Deposition of Holder and each of two witnesses, which we wish to file in connection with the above numbered permits.

Please advise when an inspector from your office will be available to make his inspection of the Hells Canyon Hydroelectric Power Plant.

Very truly yours,

Gale C. Farley
Gale C Farley
Agent

GCF:bp

Encls

31990

STATE OF IDAHO
DEPARTMENT OF RECLAMATION

Boise, Idaho

Permit No. 31990

RECEIVED

JUL 17 1968

Department of Reclamation

PROOF OF APPLICATION OF WATER TO BENEFICIAL USE
and Completion of Works

DEPOSITION OF HOLDER

Ques. 1. State your name, residence occupation and postoffice address: Idaho Power
Company, 1220 Idaho Street, Boise, Idaho; generation and sale of electric power.

Ques. 2. If acting in behalf of corporation, state its name, principal place of business
(if foreign corporation, give name of postoffice of statutory agent), your
position with reference to same, and your authority for appearing in its behalf:

Idaho Power Company, 1220 Idaho Street, Boise, Idaho, Albert Carlsen, President,
James E Bruce, Secretary.

Ques. 3. State number, approval date of permit, and date of priority: Permit No 31990,
Approved July 17, 1964. Date of Priority, May 29, 1964.

Ques. 4. State source of water supply: Snake River
Give location of point of diversion, showing subdivision, section, township and range
Within Lot 1, Section 16, T22N, R3W, BM, Adams County, Idaho

Ques. 5. Describe your works of diversion: Reservoir, concrete dam and hydroelectric
plant with 3 turbine generator units; state amount of water they are capable of con-
veying from point of diversion to place of use: 30,000; Give name of canal or ditch
or other works by which water is conducted to such place of use: - - 3 24' steel penstocks
- -; if a well, state depth of well - -; depth and size of
casing - -; depth to water - -; if pump is used,
state discharge of pump: - -; tell how it was measured or determined - -
- -; if sprinkler irrigation, give number and size
of nozzles and operating pressure: - -

Ques. 6. State for what purpose water is used: Generation of electric power
(If for irrigation, name each subdivision in which used and number of acres in
each subdivision that have actually been irrigated with said water:

Not Applicable

*examined
5-25-70
dq*

31990

State nature of all improvements which have been made as a direct result of said use:

Complete hydroelectric installation

Ques. 6-a: If this is a ground water permit, give name and address of person that drilled the well: Not Applicable

Ques. 7. If for other than irrigation purposes, show full legal description of place of use and state purpose for which water is used:

Place of use - Lot 1, Section 16, T22N, R3W, BM, Adams County, Idaho

Water used for generation of electric power.

Ques. 8: If you are not the person or representative of the corporation to whom above mentioned permit was originally issued, please state how ownership was acquired by present holder:

Not Applicable

Quest. 9: State when and in what amount the water diverted under above mentioned permit has been first used: November, 1967 - Time used since first use:

Water used since November, 1967, for generation of electric power.

Ques. 10. Describe all other water rights appurtenant to same place of use: _____

Permit No 24393 with priority date of May 18, 1953, for 21,000 cfs.

(sign)

Albert J. Carlson

President

I hereby certify that the foregoing testimony was read to the above subscribed, before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me, at my office in

Boise, County of Ada

State of Idaho, on this 10th day of July, A. D. 1968.

My commission expires: May 15, 1970

Gale C. Farley

931990

STATE OF IDAHO
DEPARTMENT OF RECLAMATION
Boise, Idaho

RECEIVED

JUL 17 1968

Department of Reclamation

Permit No. 31990

* * * * *

PROOF OF APPLICATION OF WATER TO BENEFICIAL USE
and Completion of Works

DEPOSITION OF WITNESS

The deposition of two witnesses on this form, taken separately, required in each case.

Ques. 1 State your name, age, residence, occupation and postoffice address:

Earl C Reynolds Jr, Age 45, Residing in Boise, Idaho, consulting engineer at
414 N First Street, Boise, Idaho.

Ques. 2 Are you acquainted with Idaho Power Company, the holder of
Permit No. 31990? How long have you known him and where does he reside?

Acquainted with Idaho Power Company since 1950.

Ques. 3. Have you read or heard said Permit No. 31990 read, and are you familiar
with its provisions and conditions: Yes x No.

Ques. 4. State source of water supply: Snake River

Give location of place of diversion, showing subdivision, section, township and range
Lot 1, Section 16, Township 22 North, Range 3 West, BM.

Describe works for conveying water to place of use: Concrete dam - Three penstocks
conducting water from reservoir to hydroelectric power plant below dam in stream
channel.

Ques. 5. How many second feet of water do you estimate said works will safely conduct
to place of use: 32,000 cfs * How much water have you seen being so
conveyed? 31,500 cfs on 18 June, 1968

Ques. 6 If for irrigation, show number of acres irrigated in each subdivision, giving
full legal description:

Not Applicable

*

Estimate of flow which can be delivered through penstocks and productively utilized for
power generation. Higher flows are hydraulically possible under abnormal conditions
brought about by sudden loss of load on generators.

531990

Ques. 7. If for other than irrigation purposes, show full legal description of place of use, and state purpose for which water is used.

Used in Lot 1, Section 16, T22N, R3W, BM. for generation of electric power.

Ques. 8. (If for irrigation) state character of land that has been reclaimed, and give your estimate of the amount of water required for its profitable cultivation.

Not Applicable

Ques. 9. Have you any ownership interest in the works, water or lands above mentioned?

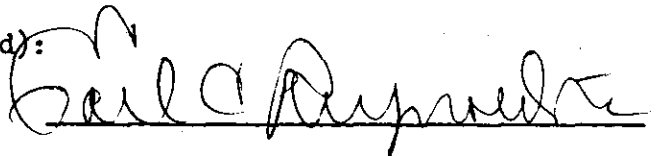
If so, in what way and to what extent? Minor interest as owner of 30 shares Idaho Power

Company common stock

Ques. 10. When did you first see this water used? 18 June 1968

Other times you have seen such use: None

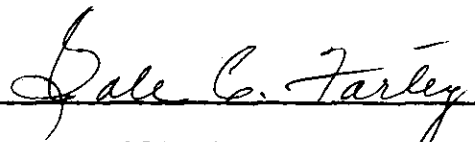
(Signed):



I hereby certify that the foregoing testimony was read to the above subscriber before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me in Boise

 , County of Ada, State of Idaho, on

this 10th day of July, A. D. 1968



Notary Public for the State of Idaho

Residing Boise, Idaho

My commission expires May 15, 1970

831990

STATE OF IDAHO
DEPARTMENT OF RECLAMATION

Boise, Idaho

Permit No. 31990

PROOF OF APPLICATION OF WATER TO BENEFICIAL USE
and Completion of Works

DEPOSITION OF WITNESS

The deposition of two witnesses on this form, taken separately, required in each case.

Ques. 1 State your name, age, residence, occupation and postoffice address:

Keith E Anderson, Age 48, Consulting Engineer

Anderson & Kelly, P O Box 1411, Boise, Idaho 83701

Ques. 2 Are you acquainted with Idaho Power Company, the holder of
Permit No. 31990? How long have you known him and where does he reside?

Yes. 17 years, Boise, Idaho

Ques. 3. Have you read or heard said Permit No. 31990 read, and are you familiar
with its provisions and conditions: Yes x No.

Ques. 4. State source of water supply: Snake River

Give location of place of diversion, showing subdivision, section, township and range
Lot 1, Section 16, T22N, R3W, BM

Describe works for conveying water to place of use: Concrete dam with 3 penstocks
and 3 turbine generator units.

Ques. 5. How many second feet of water do you estimate said works will safely conduct
to place of use: 32,000 How much water have you seen being so
conveyed? 31,500

Ques. 6 If for irrigation, show number of acres irrigated in each subdivision, giving
full legal description:

Not Applicable

831990

Ques. 7. If for other than irrigation purposes, show full legal description of place of use, and state purpose for which water is used.

Lot 1, Section 16, T22N, R3W, BM. Water used for generation of electric power.

Ques. 8. (If for irrigation) state character of land that has been reclaimed, and give your estimate of the amount of water required for its profitable cultivation.

Not applicable

Ques. 9. Have you any ownership interest in the works, water or lands above mentioned?

If so, in what way and to what extent? No

Ques. 10. When did you first see this water used? June 18, 1968

Other times you have seen such use: None

(Signed):

Keith E. Anderson

I hereby certify that the foregoing testimony was read to the above subscriber before its signing, that I believe him to be the person he represents himself to be, and that said testimony was subscribed and sworn to before me in Boise

 , County of Ada, State of Idaho, on

this 10th day of July, A. D. 19 68

Belle C. Farley

Notary Public for the State of Idaho

Residing Boise, Idaho

My commission expires May 15, 1970

831990

Affidavit of Publication

State of Idaho, County of Adams, ss:

I, Bert J. Rogers, being first duly sworn upon my Oath, depose and say that I am the publisher of The Adams County

Leader, a newspaper; that a copy of the "Notice Application

Permit # 31990 as per clipping

hereto attached, was published in the regular and entire issue of said newspaper, and not in any supplement thereof, for

four (4) consecutive weeks, the first publication of the

same being made in the issue dated June 13.1968

and the last in the issue dated July 4.1968 that said newspaper is of general circulation in Adams County Idaho, printed and published weekly at Council therein and that said newspaper has been continuously and uninterruptedly published in said county during a period of more than seventy-eight consecutive weeks prior to the first publication of

said " Notice " as aforesaid.

Subscribed and sworn to before me this 8th

day of July, 1968

William E. Daniel

Notary Public for Idaho,
Residing at Council, Idaho

NOTICE OF PROOF OF COMPLETION OF WORKS AND APPLICATION OF WATER TO BENEFICIAL USE

Notice is hereby given that on July 10, 1968 at Boise, County of Ada, State of Idaho, before notary public GALE C. FARNEY, 1220 Idaho Street, Boise, Idaho, proof will be submitted of the completion of works for the diversion of 9,000 additional c.f.s. of the waters of the Snake River, and the application to beneficial use of said water, in accordance with the terms and conditions of permit 31990, heretofore issued by the Department of Reclamation of the State of Idaho.

1. The name and address of permit holder is Idaho Power Company, 1220 Idaho Street, Boise, Idaho.

2. Said works of diversion will be fully completed on the date for such completion, and the amount of water which said works are capable of conveying to the place of use is 9,000 additional cubic feet per second.

3. The use to which said water has been applied is generation of electric power purposes, and the amount applied to beneficial use is 9,000 additional c.f.s.

4. The point of diversion of said water is Lot 1, Sec. 16, T. 22 N, R. 3 W, B.M., Adams County.

5. The place where said water is used is Lot 1, Sec. 16, T. 22 N, R. 3 W, B.M.

6. The date of priority which said user is prepared to establish is May 29, 1964.

B. KEITH HIGGINSON
State Reclamation Engineer
Pub. June 13, 20, 27, July 4.

31990

Re: Permit No. 31990
Idaho Power Company

May 29, 1968

Gale C. Farley, Agent
1220 Idaho Street
Boise, Idaho 83701

Dear Mr. Farley:

This acknowledges receipt of the notice of intent to make proof of completion of works and application of water to beneficial use for permit No. 31990.

We have mailed the notice to the Adams County Leader to be published once a week for four consecutive weeks prior to July 10, 1968, which is the hearing date when the permit holder Idaho Power Company

and two disinterested witnesses must appear before Gale C. Farley, notary public, to complete the enclosed depositions. The witnesses must be familiar with the works and permit.

After the hearing, the depositions and an affidavit of publication must be submitted to this office. The affidavit may be obtained from the newspaper when the advertising bill is paid by Gale C. Farley. Be sure all the forms have the notary's seal and are signed. Please feel free to contact us if we may be of any assistance.

Very truly yours,

Donald A. McEldowney
Appropriation Examiner

DWM:dj

Enc: Depositions

cc: Applicant

31990

May 20, 1968

Re: Permit No. 31990
Idaho Power Company

Adams County Leader
Council, Idaho 83612

Gentlemen:

Enclosed is a legal notice which we wish to have published for four consecutive weeks prior to July 10, 1968. The expense of the publication is to paid by Gale C. Farley, Agent, Idaho Power Co., 1220 Idaho Street, P. O. Box 770, Boise, Idaho 83701.

to whom you should furnish the affidavit of publication on or before the above date. Please acknowledge receipt of this notice by furnishing this office with a tear sheet for checking prior to the first publication.

Very truly yours,

Donald W. McEldowney
Appropriation Examiner

DWM:dj

Enc: legal notice

931990

(This completed form authorizes the Department of Reclamation to publish the required notice at your expense.)

State Reclamation Engineer:

You are hereby authorized to have the attached notice published at my expense in the Adams County Leader of Council, Idaho 83612; published in the county in which the works are situated.

IDAHO POWER COMPANY

Dale C. Farley Agent
(signature)

P O BOX 770

BOISE, IDAHO
(address)

April 30, 1968
(date)

In case of canals or other works designed to divert and carry more than 50 cubic feet of water per second, the following certificate must be signed by a well known and competent engineer when proof is for completion of works.

I hereby certify that the facts set forth in the attached notice are true.

Al Moore
Engineer

b31990

NOTICE OF PROOF OF COMPLETION OF WORKS AND
APPLICATION OF WATER TO BENEFICIAL USE

Notice is hereby given that on July 10, 1968 at Boise,
County of Ada, State of Idaho, before notary public (name & address) _____
GALE C. FARLEY, 1220 Idaho Street, Boise, Idaho, proof will be
submitted of the completion of works for the diversion of 9,000 ^{additional} ft. c.f.s. of the waters
of the Snake River, and the application to beneficial use of said water,
in accordance with the terms and conditions of permit 31990, heretofore issued by
the Department of Reclamation of the State of Idaho.

1. The name and address of permit holder is Idaho Power Company, 1220 Idaho Street, Boise, Idaho.
2. Said works of diversion will be fully completed on the date for such completion, and the amount of water which said works are capable of conveying to the place of use is 9,000 ^{additional} ft. cubic feet per second.
3. The use to which said water has been applied is generation of electric power purposes, and the amount applied to beneficial use is 9,000 ^{additional} ft. c.f.s.
4. The point of diversion of said water is Lot 1, Sec. 16, T. 22 N, R. 3 W, B.M., Adams County.
5. The place where said water is used is Lot 1, Sec. 16, T. 22 N, R. 3 W, B.M.
6. The date of priority which said user is prepared to establish is May 29, 1964.

R. KEITH HIGGINSON
State Reclamation Engineer

631990

May 14, 1968

Re: Permits 24393 & 31990
Idaho Power Company

Gale C. Farley, Agent
Idaho Power Company
P. O. Box 770
Boise, Idaho 83701

Dear Mr. Farley:

Please be advised that only Permit No. 24393 needs to be amended; therefore, we are accepting the application for amendment submitted earlier as soon as we are in receipt of the \$5.00 filing fee.

We are proceeding with the advertising of the above referenced permits. Please remit the \$5.00 fee promptly.

Very truly yours,

Donald W. McEldowney
Appropriation Examiner

DWM:DJ

31990

SNAKE RIVER



HYDRO POWER

IDAHO POWER COMPANY

BOX 770 • BOISE, IDAHO 83701

May 7, 1968

RECEIVED

MAY 9 1968

R Keith Higginson, State Reclamation Engineer
State of Idaho, Department of Reclamation
107 State House
Boise, Idaho 83701

Department of Reclamation

Re: Permit No 24393 & No 31990

Dear Sir:

Enclosed are one copy of your Form 11 for each of the above-numbered permits together with Application For Amendment which we wish to file. One print of our map numbered D-11518 is also enclosed as a part of the application for amendment.

Should further information be required, please let us know.

Very truly yours,

Gale C. Farley
Gale C Farley
Agent

bp

Enc

h31990

May 1, 1968

Re: Permit Nos. 31920 & 31990
Idaho Power Company

Gale Farley
Idaho Power Company
P. O. Box 770
Boise, Idaho

Dear Mr. Farley:

Pursuant to your request, we are forwarding two application
for amendment forms for your use.

If we can be of further help, please contact us.

Very truly yours,

Donald W. McEldowney
Appropriation Examiner

DWM:dj

Enc: App. for Amendment forms (2)

31990

April 23, 1968

Re: Permit Nos. 24393 & 31990
Idaho Power Company

Gale C. Farley, Agent
Idaho Power Company
P. O. Box 770
Boise, Idaho

Dear Mr. Farley:

Pursuant to your request of April 22, 1968, we are forwarding a set of proof forms for each of the above referenced permits.

Please follow the instructions in the enclosed Form 36A in completing Forms 36 and 11.

Very truly yours,

Dean R. Reynolds
Field Examiner

DRR:dj

Enc: Form 36A (1)
Form 36 (2)
Form 11 (2)

931990

SNAKE RIVER



HYDRO POWER

IDAHO POWER COMPANY

BOX 770 • BOISE, IDAHO

July 31, 1964

RECEIVED
AUG 3 1964
Department of Reclamation

Mr Carl E Tappan
State Reclamation Engineer
Department of Reclamation
107 State House
Boise, Idaho 83701

Re: Permits #31981 and #31990

Dear Mr Tappan:

Enclosed are copies of bonds to be filed in
accordance with the terms and conditions of the above-numbered
permits.

Very truly yours,

Gale C. Farley
Gale C Farley
Agent

GCF:mlm

Encls

h 31990

**GENERAL
INSURANCE COMPANY
OF AMERICA**
SEATTLE, WASHINGTON

RECEIVED
APR 1 1964

Department of Reclamation

KNOW ALL MEN BY THESE PRESENTS:

That we, IDAHO POWER COMPANY, a corporation
as Principal, and the GENERAL INSURANCE COMPANY OF AMERICA, a corporation organized under the laws of
the State of Washington, and authorized to transact the business of surety in the State of Idaho
as surety, are held and firmly bound unto State of Idaho (hereinafter called the Obligee)

_____ in the just and full sum
of ----- One Thousand and No/100 ----- Dollars (\$ 1,000),
for which sum, well and truly to be paid, we bind ourselves, our heirs, executors, administrators, successors and
assigns, jointly and severally, firmly by these presents.

Sealed with our seals, and dated this 28th day of July, 19 64.

THE CONDITION OF THIS OBLIGATION IS SUCH, That, WHEREAS the above named Principal, on
the 29th day of May, 1964, filed in the office of the State Reclamation Engineer, in
Boise, Idaho, a certain application for permit to appropriate the Public Waters of the
State of Idaho, the said application being thereupon numbered No. 40050, in accordance
with which said application the State Reclamation Engineer granted and issued to the
said Principal herein a certain permit numbered No. 31990, a full, true and complete
copy of which application No. 40050 and Permit No. 31990, was recorded in the office
of the State Reclamation Engineer in Book 112 of Permits, at Page 31990, on July 17,
1964.

NOW, THEREFORE, If the said Principal, shall faithfully carry to completion the said
works of diversion as specified in said Application No. 40050 and Permit No. 31990,

then this obligation to be void; otherwise, to remain in full force and effect.

IDAHO POWER COMPANY

(Principal) (SEAL)
BY LS Bailey (SEAL)
(Principal)
VICE PRESIDENT

(Principal) (SEAL)

Countersigned:
LS Mc Curry
Resident Agent
Box 1698, Boise, Idaho
S-150

GENERAL INSURANCE COMPANY OF AMERICA
By Violet Douglas
Attorney-In-Fact

31990

July 23, 1964

Re: Permit No. 31990
Idaho Power Company

Mr. Gale C. Farley, Agent,
Idaho Power Company,
P. O. Box 770,
Boise, Idaho.

Dear Mr. Farley:

We enclose Permit No. 31990 in which we direct your attention to the limitations and conditions as given on the fourth page under approval of the State Reclamation Engineer.

We also enclose Departmental Receipt No. 32268 which was issued covering payment in the amount of \$ 2251.75 for the filing fee of the above mentioned permit.

Very truly yours,

CARL E. TAPPAN
State Reclamation Engineer
By

(MRS.) EDNA P. RULE
Chief Clerk

Encl.
EPR:pmk

631990

SNAKE RIVER

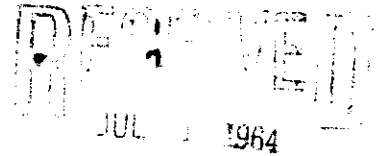


HYDRO POWER

IDAHO POWER COMPANY

BOX 770 • BOISE, IDAHO

June 30, 1964



Department of Reclamation

Mr Carl E Tappan
Commissioner of Reclamation
Department of Reclamation
State House
Boise, Idaho

Dear Mr Tappan:

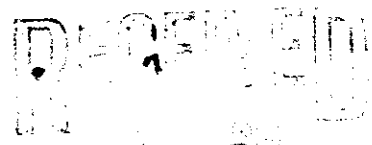
Enclosed is Affidavit of Publication from the Adams
County Leader in connection with our Hells Canyon Project,
Application No 40050 for 9,000 cfs of water from Snake River.

Very truly yours,

Gale C. Farley
Gale C Farley
Agent

GCF:ghs
Encl

631990



Department of Information

Affidavit of Publication

State of Idaho, County of Adams, ss:

I, Bert J. Rogers, being first duly sworn upon my Oath, depose and say that I am the publisher of The Adams County

Leader, a newspaper; that a copy of the "Notice of Application

for Permit" as per clipping hereto attached, was published in the regular and entire issue of said newspaper, and not in any supplement thereof, for

three (3) consecutive weeks, the first publication of the

same being made in the issue dated June 11, 1964

and the last in the issue dated June 25, 1964; that said newspaper is of general circulation in Adams County Idaho, printed and published weekly at Council therein and that said newspaper has been continuously and uninterruptedly published in said county during a period of more than seventy-eight consecutive weeks prior to the first publication of

said "Notice" as aforesaid.

Bert J. Rogers

Subscribed and sworn to before me this

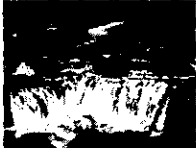
day of JUN 26 1964, 1964

Paul D. Wood

Notary Public for Idaho,
Residing at Council, Idaho

B31990

SNAKE RIVER



HYDRO POWER

IDAHO POWER COMPANY

BOX 770

RECEIVED
JUN 5 1964

June 4, 1964

Department of Reclamation

State of Idaho
Department of Reclamation
State House
Boise, Idaho

Attention: Mr Ralph W Thomas, Deputy
State Reclamation Engineer

Re: Application for Permit #40050

Dear Mr Thomas:

In accordance with your letter of June 2, 1964, I am returning herewith copy of Notice of Application for Permit showing service on Idaho Power Company on the 4th day of June, 1964.

I have as of this date forwarded to the Adams County Leader for publication the original. Upon completion thereof the Affidavit of Publication will be returned to you.

Very truly yours,

James E Bruce
James E Bruce
Attorney

JEB:mlm

Encl

831990

RECEIVED
JUN 5 1964

NOTICE OF APPLICATION FOR PERMIT TO APPROPRIATE THE PUBLIC WATERS OF THE STATE OF IDAHO, IN ACCORDANCE WITH THE PROVISIONS OF

SECTION 42-203, IDAHO CODE

NOTICE IS HEREBY GIVEN, That Idaho Power Company of Boise, Idaho, has made application No. 40050, on the 29th day of May, 1964, to appropriate 9,000 cubic feet per second of the waters of Snake River for the generation of electric power, subject to future depletion and diversion of water for irrigation and consumptive uses in the Snake River Watershed.

That the point of diversion and place of use of said water are described as being in Lot 1, Section 16, Township 22 North, Range 3 West, B. M.

That any protests against the approval of this application must be filed in the Department of Reclamation at Boise, Idaho, within forty (40) days from the date of this notice, and such protests shall state the name and address of the protestant, and shall clearly set forth his objection to the approval of said application.

Dated this 3rd day of June, 1964

Ralph W Thomas

Deputy State Reclamation Engineer

Date of First Publication - June 11, 1964

Date of Last Publication

Last date for Protests: July 12, 1964

SERVICE OF THE FOREGOING , by copy, is hereby acknowledged
this 4th day of June, 1964.

IDAHO POWER COMPANY

By:

James E. Porter

631990

June 2, 1964

Re: Application for Permit
#40050

Idaho Power Company
P. O. Box 770
Boise, Idaho

Dear Sir:

Enclosed are three copies of a legal notice in regard to your application for permit.

Complete the three copies by inserting dates of first and last publication and acknowledge receipt of notice.

Send original to a paper published in Adams County for publication in three successive weekly issues, first publication to be within ten days of your receipt of notice. Return one copy to this office and retain one copy for your file.

Send this office the affidavit of publication promptly after the last publication.

Very truly yours,

RALPH W. THOMAS, Deputy
State Reclamation Engineer

RT:ew

Enc. three copies of
legal notice

B 3 1990

NOTICE OF APPLICATION FOR PERMIT TO APPROPRIATE THE PUBLIC WATERS OF
THE STATE OF IDAHO, IN ACCORDANCE WITH THE PROVISIONS OF
SECTION 42-203, IDAHO CODE

NOTICE IS HEREBY GIVEN, That Idaho Power Company of Boise, Idaho, has made application No. 40050, on the 29th day of May, 1964, to appropriate 9,000 cubic feet per second of the waters of Snake River for the generation of electric power, subject to future depletion and diversion of water for irrigation and consumptive uses in the Snake River Watershed.

That the point of diversion and place of use of said water are described as being in Lot 1, Section 16, Township 22 North, Range 3 West, E. M.

That any protests against the approval of this application must be filed in the Department of Reclamation at Boise, Idaho, within forty (40) days from the date of this notice, and such protests shall state the name and address of the protestant, and shall clearly set forth his objection to the approval of said application.

Dated this 3rd day of June, 1964

Deputy State Reclamation Engineer

Date of First Publication

Date of Last Publication

Last date for Protests: July 12, 1964

SERVICE OF THE FOREGOING , by copy, is hereby acknowledged
this ____ day of June, 1964.

IDAHO POWER COMPANY

By: _____

631990

SNAKE RIVER



HYDRO POWER

IDAHO POWER COMPANY

BOX 770 • BOISE, IDAHO

May 27, 1964

Mr Carl E Tappan
Commissioner of Reclamation
Department of Reclamation
State House
Boise, Idaho

Dear Mr Tappan:

Enclosed is Idaho Power Company's application, your Form 1, to appropriate an additional 9,000 cfs of water from Snake River for use at our Hells Canyon Hydroelectric Development, together with check for \$2,254.75 to cover filing fees. Also enclosed are three sets of map numbered 20E-18262, three sheets each, General Plan of Hells Canyon H E Development for your approval.

Very truly yours,

Gale C. Farley
Gale C Farley
Agent

GCF:mlm

Encls

531990

**NOTICE OF PROOF OF
COMPLETION OF WORKS AND
APPLICATION OF WATER TO
BENEFICIAL USE**

Notice is hereby given that on July 10, 1968 at Boise, County of Ada, State of Idaho, before notary public GALE C. FARLEY, 1220 Idaho Street, Boise, Idaho, proof will be submitted of the completion of works for the diversion of 9,000 additional c.f.s. of the waters of the Snake River, and the application to beneficial use of said water, in accordance with the terms and conditions of permit 31990, heretofore issued by the Department of Reclamation of the State of Idaho.

1. The name and address of permit holder is Idaho Power Company, 1220 Idaho Street, Boise, Idaho.

2. Said works of diversion will be fully completed on the date for such completion, and the amount of water which said works are capable of conveying to the place of use is 9,000 additional cubic feet per second.

3. The use to which said water has been applied is generation of electric power purposes, and the amount applied to beneficial use is 9,000 additional c.f.s.

4. The point of diversion of said water is Lot 1, Sec. 16, T. 22 N, R. 3 W, B.M., Adams County,

5. The place where said water is used is Lot 1, Sec. 16, T. 22 N, R. 3 W, B.M.

6. The date of priority which said user is prepared to establish is May 29, 1964.

R. KEITH HIGGINSON
State Reclamation Engineer
Pub. June 13, 20, 27, July 4.

**NOTICE OF APPLICATION FOR
PERMIT TO APPROPRIATE
THE PUBLIC WATERS OF THE
STATE OF IDAHO, IN AC-
CORDANCE WITH THE PRO-
VISIONS OF SECTION 42-203,
IDAHO CODE**

NOTICE IS HEREBY GIVEN, That Idaho Power Company of Boise, Idaho, has made application No. 40050, on the 29th day of May, 1964, to appropriate 9,000 cubic feet per second of the waters of Snake River for the generation of electric power, subject to future depletion and diversion of water for irrigation and consumptive uses in the Snake River Watershed.

That the point of diversion and place of use of said waters are described as being in Lot 1, Section 16, Township 22 North, Range 3 West, B. M.

That any protests against the approval of this application must be filed in the Department of Reclamation at Boise, Idaho, within forty (40) days from the date of this notice, and such protests shall state the name and address of the protestant, and shall clearly set forth his objection to the approval of said application.

Dated this 3rd day of June, 1964.

RALPH W. THOMAS
Deputy State Reclamation En-
gineer.

Date of First Publication, June 11, 1964.

Date of last Publication, June 25, 1964.

Last date for Protests: July 12, 1964.

SERVICE OF THE FOREGO-
ING, by copy, is hereby acknow-
ledged this 4th day of June, 1964.
IDAHO POWER COMPANY

By: James E. Bruce

NOTICE TO CREDITORS

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C.

Office of Hydropower Licensing

Project Nos. 503, 1971,
1975-014, 2055, 2061-004,
2726, 2777-007, 2778-005

DATE: DEC 18 1997

MEMORANDUM TO: The Party Addressed

SUBJECT: Scoping document 2 for the (1) cumulative analysis of the Snake River Basin and (2) the project-specific analysis for the Bliss Project (FERC No. 1975-014), Lower Salmon Falls Project (FERC No. 2061), Upper Salmon Falls Project (FERC No. 2777), and Shoshone Falls Project (FERC No. 2778-005)--Idaho

The Federal Energy Regulatory Commission is evaluating issues associated with new licenses for the continued operation of the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Hydroelectric Projects, located on the Snake River in Twin Falls, Elmore, Gooding, and Jerome Counties, Idaho, along with the cumulative effects of these four projects and four other Idaho Power Company projects (C.J. Strike, Upper and Lower Malad, Hells Canyon, and Swan Falls Projects).

Scoping Document 2 is enclosed for your information. We revised Scoping Document 1, dated June 1997, based on your written comments. Key changes to Scoping Document 1 are identified in italicized, bold type.

We will be issuing an additional information request and responding to pending additional study requests shortly.

You may direct questions to Alan Mitchnick at (202) 219-2926, or John Blair at (202) 219-2845.

Attachment: Scoping Document 2

SCOPING DOCUMENT 2



I. CUMULATIVE ANALYSIS OF THE SNAKE RIVER BASIN

and

II. PROJECT-SPECIFIC ANALYSIS

BLISS PROJECT (P-1975)
LOWER SALMON FALLS PROJECT (P-2061)
UPPER SALMON FALLS PROJECT (P-2777)
SHOSHONE FALLS PROJECT (P-2778)

December 1997

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Washington, D.C.

RECEIVED

DEC 30 1997

Department of Water Resources

02-02017

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Appendix C.	Description of past, present, and future actions in the Snake River Basin
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SCOPING DOCUMENT 2

I. CUMULATIVE ANALYSIS OF THE SNAKE RIVER BASIN

II. PROJECT-SPECIFIC ANALYSIS

Bliss (P-1975)
Lower Salmon Falls (P-2061)
Upper Salmon Falls (P-2777)
Shoshone Falls (P-2778)

1.0 INTRODUCTION

On December 20, 1995, Idaho Power Company (Idaho Power) filed license applications with the Federal Energy Regulatory Commission (Commission) for the continued operation and maintenance of the existing Bliss, Lower Salmon Falls, and Upper Salmon Falls Hydroelectric Projects.¹ Idaho Power filed an application for the Shoshone Falls Project on May 29, 1997. These four projects are located within a 57-mile-long reach of the Snake River. Between November 1998 and June 2008, Idaho Power Company is expected to file applications to relicense an additional four projects (7 dams) in the Snake River Basin. The location of the eight projects is shown in figure 1 and summarized in table 1.

The Commission, under the authority of the Federal Power Act (FPA),² may issue licenses for up to 50 years for the construction, operation, and maintenance of non-federal hydroelectric developments.

Under the Commission's regulations, issuing a licensing decision for any project first requires preparation of either an Environmental Assessment (EA) or Environmental Impact Statement (EIS), in accordance with the National Environmental Policy Act (NEPA) of 1969.³

¹ The licenses for the Lower Salmon Falls and Bliss Projects expire on December 23, 1997, and February 28, 1998, respectively. The Commission authorized the advancement of the expiration date of the Upper Salmon Falls Project from May 31, 1999, to November 1, 1998.

² U.S.C. Sect. 791(a)-825(r).

³ Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, §4(b), Sept. 13, 1982.

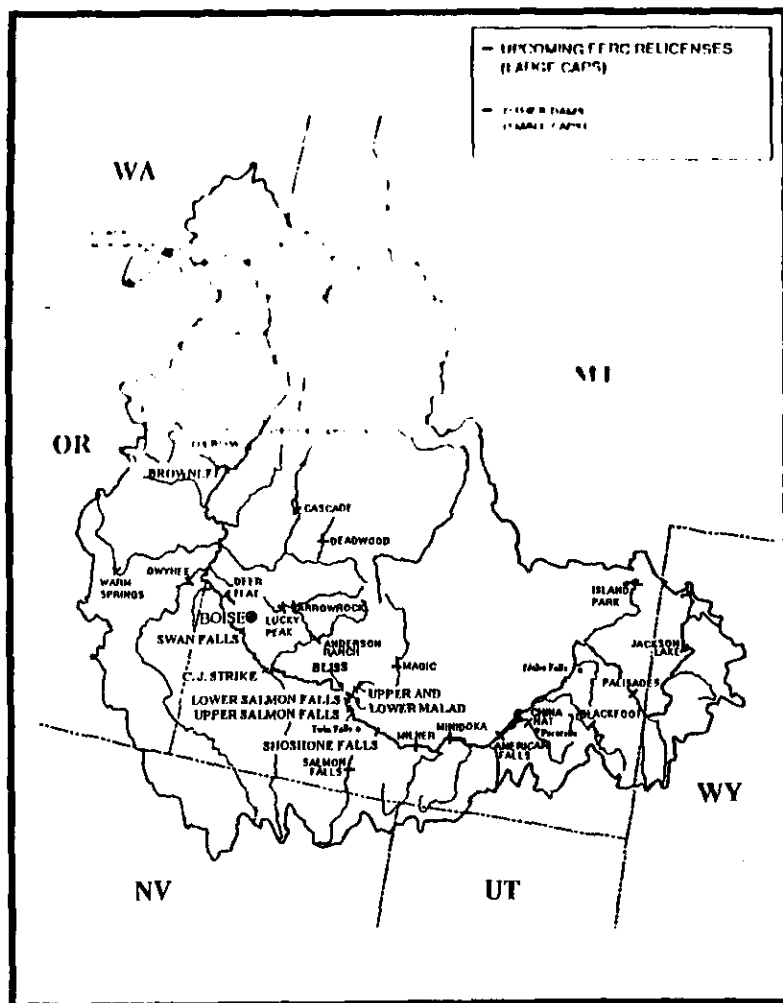


Figure 1. Location of eight Idaho Power Company projects (11 dams) coming up for relicensing in next 15 years along with other selected dams in the Snake River Basin.

Table 1. Description of Idaho Power relicense projects.

Project Name		Location	FERC No.	Expected Filing Date*	Snake River mile
Bliss		mainstem Snake River, about 6 miles west of Bliss, in Gooding, Twin Falls, and Elmore Counties, Idaho	1975	December 1995	560.0
Lower Salmon Falls		mainstem Snake River, about 2 miles south of Hagerman, in Gooding and Twin Falls Counties, Idaho	2061	December 1995	573.0
Upper Salmon Falls		mainstem Snake River, about 3 miles south of Hagerman, in Gooding and Twin Falls Counties, Idaho	2777	December 1995	580.0
Shoshone Falls		mainstem Snake River, about 4 miles east of Twin Falls, in Jerome and Twin Falls Counties, Idaho	2778	May 1997	615.0
C.J. Strike		mainstem Snake River about 20 miles southwest of Mountain Home, in Owyhee County, Idaho	2055	Nov. 1998	494.0
Upper and Lower Malad	Upper Malad development	Malad River, lowermost part of project located 300 feet from the confluence with the Snake River, about 2 miles south of Hagerman and 3 miles north of Bliss, in Gooding County, Idaho	2726	July 2002	enters the Snake River at river mile 571.5
	Lower Malad development				
Hells Canyon	Brownlee development	mainstem Snake River, in Washington and Adam Counties, Idaho, and Walla and Baker Counties, Oregon	1971	July 2003	284.6
	Oxbow development				272.2
	Hells Canyon development				247.0
Swan Falls		mainstem Snake River, about 35 miles south of Boise, Ada and Owyhee Counties, Idaho	503	June 2008	458.0

* Commission regulations require applicants for a new license to file an application at least 2 years prior to expiration of the project license.

We have concluded that issuing licenses for the first four projects would be a major federal action significantly affecting the quality of the human environment--thus we would prepare a multi-project EIS for these four projects.

Approaches to Site-specific and Cumulative Impacts

Evaluating cumulative effects of the Idaho Power projects in the Snake River Basin provides a challenge given that four applications have already been filed and applications for the remaining four projects will be filed during the next 12 years. In developing approaches for assessing cumulative impacts, staff considered the following factors--the timing of the expiration of the licenses, the geographic location of these projects, and the availability of data with which to conduct a cumulative impact assessment.

Because of the substantial interest in relicensing the Snake River projects, staff initially prepared a discussion paper outlining two approaches (approaches A and B), held a public meeting, and solicited comments. Based on the comments, we agreed to delay selection of an approach until after scoping. We also added two additional approaches (approaches C and D) to Scoping Document 1. The four approaches are summarized below. (See appendix A for more detailed information on the approaches.)

Approach A--Staff would prepare a site-specific EIS for the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects, which would include a cumulative analysis of all eight Idaho Power relicense projects--but only for resources affected by the first four projects (anadromous fish would be deferred). Separate environmental documents would be prepared for the remaining projects (C.J. Strike, Upper and Lower Malad, Hells Canyon, and Swan Falls Projects) as these applications are filed; additional or revised cumulative analyses would be included as appropriate.

Approach B--Staff would first conduct a basin-wide cumulative analysis for all resources, then proceed with site-specific EIS's tiering off the cumulative analysis. The analysis would stand apart from, but be integrated with, separate and more detailed EIS's covering the project-specific impacts of the projects. The cumulative analysis would be updated as new information is developed.

Approach C--Staff would initiate a basin-wide cumulative analysis for all resources (as in approach B), but would simultaneously begin preparation of the project-specific EIS for the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls (as in approach A). Both documents would be issued concurrently. Subsequent environmental documents would tier off of the cumulative analysis.

Approach D--similar to C, but staff would produce separate reports for certain key resources.⁴

Scoping Comments

In response to SDI, we received six recommendations on the approach (see Section 2.2). Idaho Department of Fish and Game recommended approach A, but recommended that we proceed now with multi-project analysis for sturgeon and anadromous fish. The National Marine Fisheries Service prefers approach B. Idaho Power recommends approach C because it believes that this approach best addresses its concern with the potential for extensive reopeners. The Forest Service also recommends approach C, but requests that study plans for the Hells Canyon Project that are relevant to the cumulative analysis be identified and deferred until the cumulative analysis is completed. The Environmental Protection Agency supports a combination of approaches A and B by using either approach C or D. American Rivers et al. favors approach D. Interior, although not endorsing a specific approach, recommends that the Commission should begin the cumulative effects analysis now, with initiation of the site-specific analysis for the first four projects.

Although no consensus on the approach was reached during scoping, it is clear that there is little support for any approach that substantially delays consideration of the first four projects and that there is support for beginning a cumulative analysis on the anadromous fish issue now.

Selected Approach

We have selected approach A, along with an initiation of a review of anadromous fish issues involved in the relicensings of the Idaho Power projects.

Using this approach, we would minimize the delays in acting on the first four relicense applications; analyze cumulative effects on the resources affected by these projects; and evaluate projects located close to each other at the same time to the extent possible. Separate reports (or appendices) on certain cumulative issues (e.g., water quality) would be issued simultaneously with the DEIS where appropriate.

We see no need to analyze the anadromous fish issue in detail in the environmental document for the first four projects for the following reasons:

⁴ American Rivers approach contemplates the Commission issuing annual licenses with protection measures in the event the cumulative analysis is delayed. In the past, the Commission has only conditioned annual licenses in extraordinary circumstances.

⁵ The EIS will include a limited analysis of the anadromous fish issue, focusing primarily on the reservation of authority needed to address future anadromous fish passage issues.

- *The relationship between the first four projects and the downstream projects in terms of anadromous fish is limited given the limited storage of these four projects and the downstream obstacles that must be overcome before serious consideration can be given to restoring anadromous fish upstream of Bliss dam*
- *Any unresolved anadromous fish issues (such as future fish passage) at the first four projects can be dealt with through reopeners*
- *Information on anadromous fish for the Hells's Canyon Project is incomplete-- Idaho Power is just initiating its relicensing studies (most won't be complete until 2000-2001)*
- *The Bureau of Reclamation's Snake River Resources Review, which would provide information that could be used by the Bureau to alter operation of its projects--and thus could significantly affect the timing and quantity of flows in the project reaches--won't be completed until 2000*
- *The National Marine Fisheries Service's existing Biological Opinion on endangered Snake River salmon species will be reissued after 1998*

Although we do not plan to initiate a cumulative analysis of anadromous fish at this time, we do not plan to ignore the anadromous fish issue. We will initiate a preliminary review of the anadromous fish issues associated with the relicensing of the Idaho Power projects. Given the great regional interest and the expected controversy in this issue, getting an early start evaluating the anadromous fish issue would be prudent. Our early involvement will allow us to: evaluate information and study needs; coordinate with the collaborative team and with the Bureau of Reclamation's Snake River resources review; and develop analytical tools earlier in the process. This effort will compliment and be coordinated with the Commission's discussions with the National Marine Fisheries Service on the impacts of the Hells Canyon Project on listed salmon species.⁶

Concerning reopeners, we have determined that the need for reopeners to address unresolved issues for the first four projects would be limited. Based on a review of scoping comments and our preliminary analysis, potential reopeners would likely be limited to fish passage questions.

We will hold workshops and work with the Snake River Relicensing Collaborative resource workgroups as necessary to better define issues and develop analytical techniques to

⁶ Letter from James J. Hoecker, Chairman, Federal Energy Regulatory Commission, Washington, D.C., to William Stette, Jr., Regional Administrator, National Marine Fisheries Service, Seattle, Washington, December 3, 1997.

deal with certain issues (such as water quality modeling) for both the cumulative analysis and anadromous fish review.

Questions concerning Snake River relicensing should be directed to Alan Mitchnick, Chief, Lands Review Section, West Branch, FERC, at (202) 219-2826, or John Blair, Snake River Relicensing Environmental Coordinator, FERC, at (202) 219-2845.

2.0 SCOPING

Scoping is the process used to identify issues, concerns, and opportunities associated with a proposed action.

2.1 Purposes of Scoping

The purposes of the scoping process are as follows:

- Invite participation of federal, state, and local agencies, Indian tribes, and other interested persons to identify significant environmental and socioeconomic issues related to the proposed action
- Determine the depth of analysis and significance of issues to be addressed in the EIS
- Identify how the projects would or would not contribute to cumulative impacts to the project area and the Snake River Basin
- Identify reasonable alternatives to the projects that we should evaluate
- Eliminate from detailed study the issues and resources that don't require detailed analysis during review of the projects

We issued Scoping Document 1 (SD1) on June 5, 1997,⁷ to enable appropriate resource agencies, Indian tribes, and other interested parties to more effectively participate in and contribute to the scoping process. In SD1, we requested clarification of preliminary issues concerning the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects and the Cumulative Analysis of the Snake River Basin and identification of any new issues that needed to be addressed in the environmental documents. We revised SD1

⁷ Copies of SD1 were mailed to all entities included in appendix F on June 11, 1997. A notice of intent to prepare an EIS and conduct scoping meetings and a site visit was published in the Federal Register on June 11, 1997 (volume 62, no. 112, pp. 31815-31816), and in local newspapers on July 1, and July 8, 1997.

following the scoping meetings and after reviewing comments filed during the scoping comment period. Scoping Document 2 presents our current view of issues and alternatives to be considered in the EIS. Additions are in bold and italic type.

2.2 Scoping Meetings and Written Comments

We conducted two scoping meetings concerning project-specific impacts associated with the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects--on July 15, 1997, in Twin Falls, Idaho, and on July 17, 1997, in Boise, Idaho. We also held a separate scoping meeting on July 18, 1997, in Boise, Idaho, regarding the cumulative analysis of Idaho Power's eight relicense applications in the Snake River Basin. Announcement of the scoping meetings and site visit was published in local newspapers and in the Federal Register. A court reporter recorded the scoping meetings.

We also held a site visit to the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects on July 16, 1997.

In addition to comments received at the scoping meetings, the following entities filed written comments on scoping document 1:

Entity	Date of Letter
Duane Reynolds	July 6, 1997
Middle Snake River Recreation Work Group	July 13, 1997
Vince Thompson	July 15, 1997
Dana Olson-Elle	July 15, 1997
Magic Valley Fly Fishers	July 16, 1997
Country Club Estates	July 21, 1997
Elmore County Wildlife Club	August 5, 1997
Twin Falls Area Chamber of Commerce	August 11, 1997
Idaho Department of Water Resources	August 14, 1997
Columbia River Inter-Tribal Fish Commission	August 14, 1997
Twin Falls County Parks and Recreation Advisory Commission	August 14, 1997
Environmental Protection Agency	August 14, 1997
American Rivers, Idaho Rivers United, Hells Canyon Preservation Council, Idaho Conservation League, Idaho Wildlife Federation, Friends of the Earth, and Federation of Fly Fishers	August 15, 1997

Entity	Date of Letter
Idaho Power Company	August 15, 1997
Wallowa-Whitman National Forest	August 15, 1997
Idaho Departments of Fish and Game and Parks and Recreation	August 15, 1997
George Coiner	August 15, 1997
Nez Perce Tribal Executive Committee	August 18, 1997
Department of the Interior	September 3, 1997
Oregon Department of Fish and Wildlife	October 23, 1997
National Marine Fisheries Service	November 10, 1997

All comments received are part of the Commission's official file for the projects. Copies of the official file are available through the Records and Information Management System (RIMS) in the Public Reference Room. Copies can also be obtained by writing or faxing (202-208-2320) your request to the Public Reference Room at the following address:

Federal Energy Regulatory Commission
Public Reference & Files Maintenance Branch
888 First Street, NE, Room 2-A
Washington, DC 20426
Attention: Mr. William G. McDermott, Chief

After careful consideration of all scoping input, we've revised SD1. Our responses to comments and any respective changes in the scoping document are shown as bold type. The general concerns raised by participants in the scoping process are summarized below by subject area. The summaries don't include every oral and written comment made during the scoping process. For instance, we have not addressed comments that are recommendations for specific information requests or license conditions. Such comments will be addressed in future additional information requests and in the EIS. We will request final terms, conditions, recommendations, and comments when we issue our Ready for Environmental Analysis notice after all additional information that we may request is filed.

Project-specific Issues

No Action Alternative

Many commenters (Interior, Nez Perce Tribal Executive Committee, American Rivers et al.) disagree with our no-action alternative. They believe that the no-action alternative should be license denial.

The no-action alternative is a difficult concept to apply to relicensing.⁹ Because there could be very serious socioeconomic and environmental impacts from license denial, our position has and continues to be that license denial, which would involve project retirement, is an action alternative; whereas, continued project operation under the terms of the existing license (status quo) is the better fit for the no-action concept in relicensing. The existing conditions represent the results of implementing past resource management decisions, and we agree with the Council on Environmental Quality's (CEQ) interpretation that in such a case, "no action" represents "no change" from current management direction.

Baseline

Many entities continue to recommend that the environmental baseline must be the pre-project environment.¹⁰ This issue has been addressed previously (see appendix A).

Project Retirement

EPA and American Rivers et al. recommend that we consider the alternative of project retirement in the project-specific EIS, but provided no specifics as to what project retirement should entail.

Because of the agency comments, we will examine project retirement in the project-specific EIS for the projects, but we do not believe that it's reasonable to look at dam removal. We provide additional support for not evaluating dam removal as a reasonable alternative in Section 3.3.4.

Thousand Springs Project

Interior recommends that the Commission investigate the benefits of removing Idaho Power's unlicensed Thousand Springs Hydroelectric Project, located upstream of the Upper Salmon Falls Project. This project is not under the Commission's jurisdiction, and thus the Commission has no authority to remove this project.

⁹ For a detailed discussion of this issue, see *Public Service Company of New Hampshire* Order granting application for a new license, 68 FERC 161,177 (August 1, 1994).

⁹ Council on Environmental Quality, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations* (40 CFR 1500-1508), printed in *Federal Register* volume 46, no. 55, pp. 18026-18038, March 23, 1981.

¹⁰ The Commission's policy on baseline is found in the following two orders for the Cushman Project (FERC No. 460): (1) Declaratory order on nature of proceeding on application for a subsequent license after a minor part license expires, 67 FERC 161,152 (May 4, 1994); and (2) Order granting intervention and denying rehearing, 71 FERC 161,381 (June 22, 1995).

Economic Evaluation of Non-power Resources

EPA and American Rivers et al. recommend including an economic evaluation of non-power resources for comparison with the value of project power. We consider this recommendation to be directed towards our methods of analyses and outside the issue-identification purposes of this scoping document. We would, however, include the economic value of environmental resources in our analyses, if we can reasonably determine what they are, and if this information would help us decide what level of enhancement to recommend.

Cumulative Issues

Non-FERC-jurisdictional Upper Basin Projects

The Columbia River Inter-Tribal Fish Commission commented that we should evaluate various alternative operational and structural configurations of non-jurisdictional hydroelectric and non-hydroelectric developments, including those of the Bureau of Reclamation and U.S. Army Corps of Engineers in the upper basin, in order to provide augmented flows for anadromous fish:

The EIS should provide alternatives that assure the timely passage of upper Snake irrigation water through all dams in the upper Snake Basin so that water can be delivered to best benefit anadromous fish production needs downstream of the projects...FERC should also identify alternatives that address the basin-wide modifications of federal and private dam operations to determine how flows for anadromous fish production can be provided.

American Rivers et al. (Conservation Groups) "state:

The Conservation Groups believe that a rigorous analysis of existing water management above Milner Dam and in the major tributaries is required to determine how water management can be improved to reduce the environmental impacts caused by the lethal combination of low flows and hydroelectric dams, and to determine if there are opportunities for Idaho Power to increase flows through water acquisition or rental...the Conservation Groups recommend that FERC consult closely with the Bureau of Reclamation and the Idaho Department of Water Resources, to ensure that all relevant information is considered and potential flow improvement measures identified.

The Federal Power Act only provides the Commission with the exclusive authority to issue and condition licenses for nonfederal hydropower projects on navigable waterways and federal lands. The Commission does not have authority to issue and condition licenses for non-hydropower projects, any federally operated project, or non-federal hydropower projects on unnavigable waters. Accordingly, the Commission does not have the authority to direct

We will, however, evaluate how the eight Idaho Power projects could be operated to be consistent with all relevant federal or state comprehensive plans for improving, developing, or conserving the waters of the Snake River Basin, including plans for augmenting flows for anadromous fishes. In addition, we will evaluate how the operation of the Idaho Power projects will be consistent with the Snake River management plan of the Bureau of Reclamation, Snake River Basin, and the Snake River Basin Comprehensive plans and projects for the Snake River Basin. The Snake River Basin Comprehensive plan can be found in Appendix A.

Basin wide H₂O fugacity = 0.867 atm.

Alaska Department of Water Resources commented that the reallocation process is not intended to impose a reallocation of water in ways that interfere with proprietary water rights."

Idaho Departments of Fish and Game and Recreation and Parks commented that the Commission "intended to examine the effects of all salmon-related flow augmentation actions throughout the Snake River Basin whether or not the flow augmentation was related to the relicensing of the Idaho Power projects."

Our evaluation of flow augmentation will be limited to evaluating how flow augmentation would change baseline conditions in the Idaho Power reach; how Idaho Power projects could be coordinated with the flow augmentation; what changes are needed at the Idaho Power projects; and the effects of these changes on economic and environmental resources.

Watershed Analysis

The Forest Service requests that a watershed analysis be conducted for the Hells Canyon Project and that riparian/wetland habitat, bald eagles, peregrine falcons, MacFarlane's four-o'clock, and native grassland and shrubs be evaluated at the 5th field hydrologic unit. The Forest Service suggests that a watershed analysis is a necessary part of the cumulative analysis.

The Forest Service's request for a watershed analysis for all of these resources focuses on the Hells Canyon Project area--thus we will defer consideration of a watershed analysis. Our cumulative effects analysis for MacFarlane's four-o'clock will be addressed in

3.0 IDAHO POWER RELICENSES AND ALTERNATIVES

3.1 Bliss, Lower Salmon Falls, and Upper Salmon Falls Projects

The Bliss Project, built in 1941, involves 183.95 acres of Bureau of Land Management (BLM) land. The Lower Salmon Falls Project, built in 1910 involves 29.2 acres of BLM land and 58.06 acres of National Park Service (NPS) land (Hagerman Fossil Beds National Monument). The Upper Salmon Project, built in 1910, doesn't involve any federal lands. The location of the three projects is shown in figure 2.

3.1.1 Project Facilities

The Alaska Project (figure 3) consists of:

- A 364-foot-long, 38-foot-high concrete gravity dam and 216-foot-long spillway
- A 5-mile-long, 255-acre reservoir at elevation 2,654.0 feet above mean sea level (msl), with a total storage capacity of 11,100 acre-feet
- A powerhouse (integral with the dam) with a total capacity of 75 megawatts (MW), producing about 493 gigawatthours (GWh) annually
- A 10.5-mile-long, 138-kilovolt (kV) primary transmission line

The Lower Salmon Falls Project (figure 4) consists of:

- A 700-foot-long, 38-foot-high dam, consisting of a 31-foot-long powerhouse section, a 97-foot-long concrete bulkhead section, which includes an intake to the fish ladder; a 312-foot-long gated spillway section; a 180-foot-long overflow dam section, and an 80-foot-long left (west) abutment
- A 6.6-mile-long, 750-acre reservoir at elevation 2,798.0 feet msl, with a total storage capacity of 10,900 acre-feet
- A powerhouse with a total capacity of 60 MW producing about 343 GWh annually

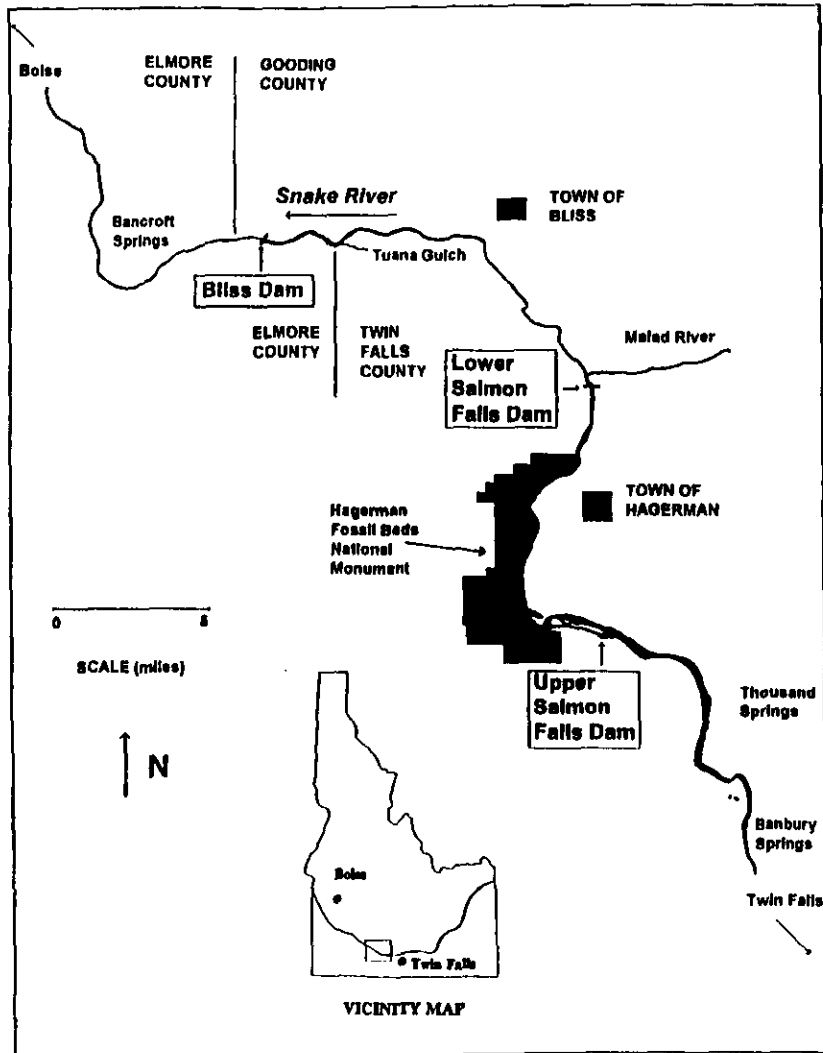


Figure 2. Location of the Bliss, Lower Salmon Falls, and Upper Salmon Falls Projects.

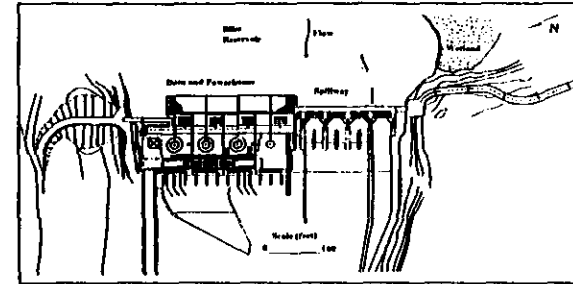


Figure 3. Project facilities for the Bliss Project (Source: Idaho Power, as modified by staff).

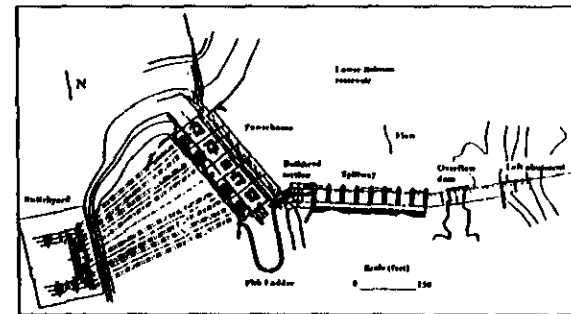


Figure 4. Project facilities for the Lower Salmon Falls Project (Source: Idaho Power, as modified by staff).

- Two 138-kV primary transmission lines (0.10- and 0.15-mile-long) from the switchyard to the King substation

The Upper Salmon Falls Project (figure 5) consists of:

- A 1,620-foot-long, 14-foot-high concrete dam, consisting of a 240-foot-long gated spillway section; a 610-foot-long gravity dam with flashboards; a 275-foot-long intake structure; and a 420-foot-long abutment gravity section
- A 5.8-mile-long, 50-acre reservoir at elevation 2,878.2 feet msl, with a total storage capacity of 600 acre-feet

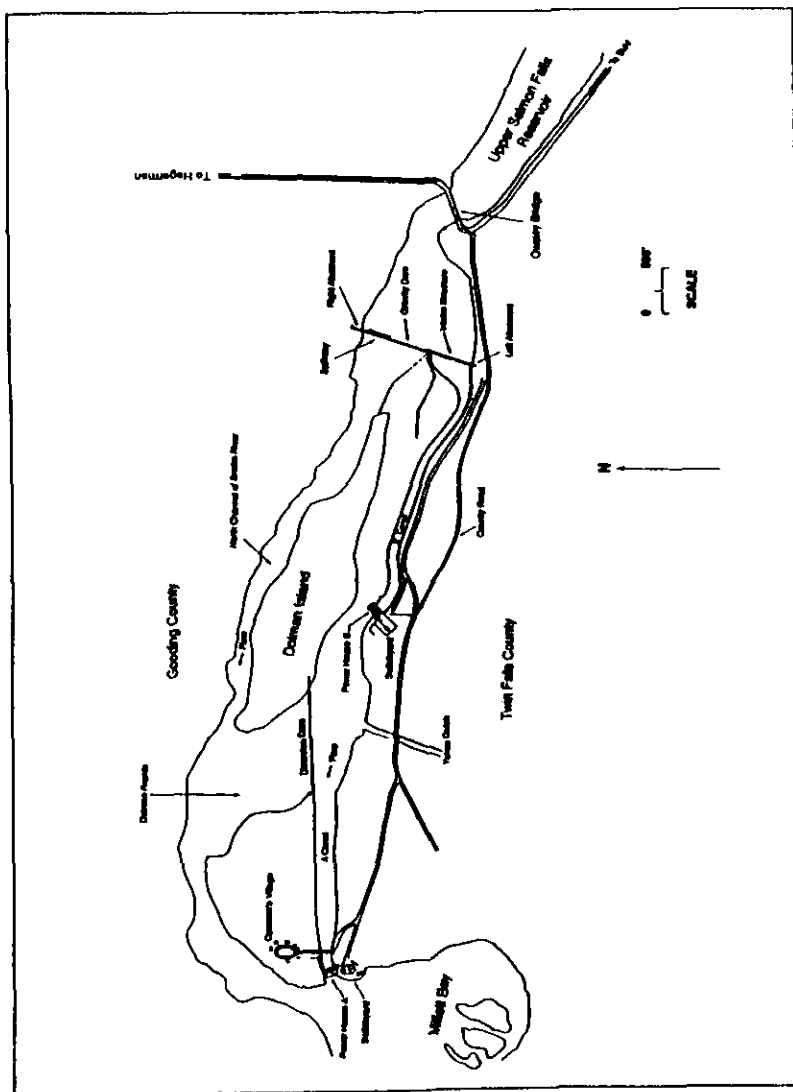


Figure 5. Project facilities for the Upper Salmon Falls Project.

- A 3,200-foot-long, concrete-lined canal
- A 1,380-foot-long, diversion structure across Dolman Rapids, separating the north channel from the main channel of the Snake River
- Two powerhouses (A and B), with a total capacity of 34.5 MW producing about 321 GWh annually
- A 1.8-mile-long bypassed reach

3.1.2 Proposed Project Operation

Figure 6 shows, schematically, the river-mile location, reservoir size, plant hydraulic capacity, and method of operation for the Bliss, Lower Salmon Falls, and Upper Salmon Falls Projects on the middle Snake River. Except for automating some of the plant operations, as described below, Idaho Power is not proposing any changes to the existing mode of operation.

Bliss Project

The Bliss powerhouse was automated in 1995 and is currently staffed 8 hours a day. During the unmanned periods the plant is controlled remotely, by an operator stationed at Idaho Power's Boise Bench Dispatch Center, located southeast of Boise.

Idaho Power operates the Bliss Project to help meet its peak hourly system loads; over a 24-hour period project releases are equal to inflow to the reservoir. The reservoir is maintained between elevation 2654.0 and 2649.0 feet msl. Operating within this range provides 1,250 acre-feet of useable storage.

Lower Salmon Falls

The Lower Salmon Falls Project is manually operated, with personnel on duty 24 hours per day, seven days a week. The project is operated to maintain reservoir levels between the elevations of 2792.0 and 2798.0 feet msl. With 4,100 acre-feet of useable storage, Idaho Power operates the project to help meet short-term (hourly) peak system loads. Idaho Power *automated the project* in 1996 for remote operation from the Boise Bench Dispatch Center. After automation, operators will be on-site eight hours per day and on call during the remaining time.

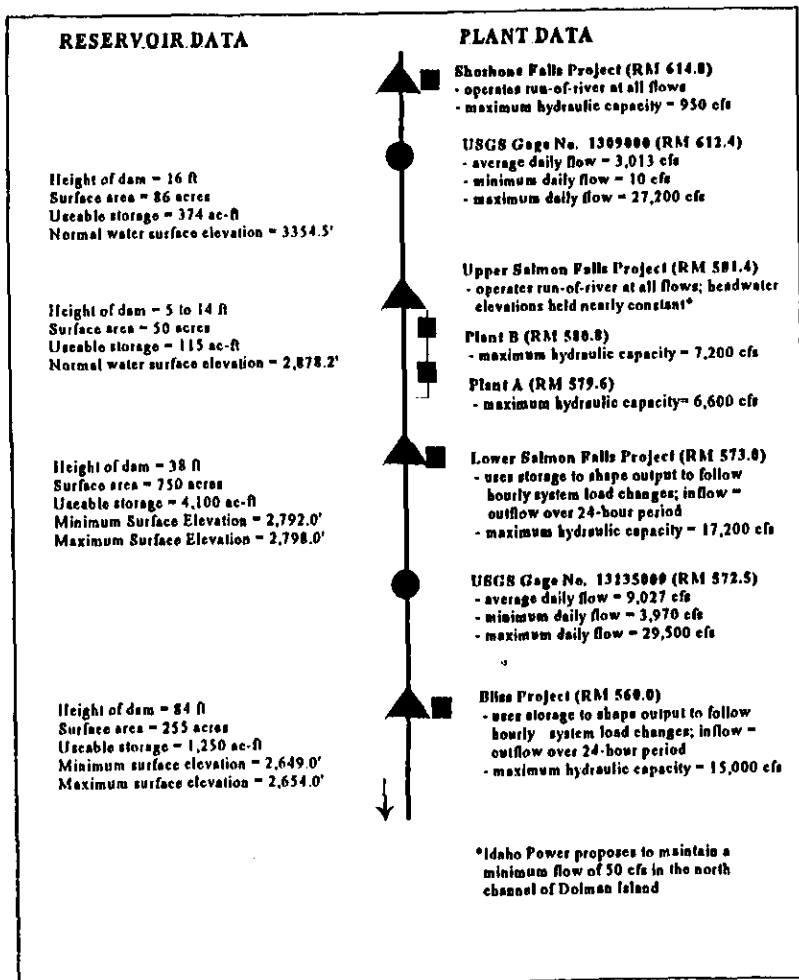


Figure 6. Reservoir and plant data for the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Hydroelectric Projects.

Upper Salmon Falls

The Upper Salmon Falls Project has two powerhouses: plant A is located 1.8 miles downstream of the Upper Salmon Falls dam and plant B is about 0.6 mile below the dam. Plant A is manned 24 hours a day and plant B is manned from 7:30 a.m. to 4:30 p.m.; when plant B is not manned, it is controlled remotely from plant A. Idaho Power *automated plant A in 1997, and plans to automate plant B in 1998.*

Idaho Power proposes to continue to operate the Upper Salmon Falls Project run-of-river under all river flow conditions. Except for minor fluctuations caused by changing inflows, headwater elevation is held constant at 2841.3 feet msl at Plant A and 2878.2 feet msl at Plant B. The project reservoir provides a useable storage of 115 acre-feet.

3.1.3 Proposed Protection and Enhancement Measures

Idaho Power proposes to operate the projects as described above, with the following protection and enhancement measures. These measures are discussed in detail in volume 6 of the technical appendices of the license applications.

Water Quality and Quantity

- Continue its involvement in the Middle Snake River *Watershed* Management Plan
- Harvest aquatic macrophytes at all three projects
- Provide a minimum flow of 50 cfs in the north channel at the Upper Salmon Falls Project
- Monitor temperature and dissolved oxygen at all three projects to ensure that state standards are met

Aquatic Resources

- Stock fish in Bliss (undetermined numbers of warmwater fish species), Lower Salmon Falls (23,000 catchable-sized rainbow trout), and Upper Salmon Falls (6,000 catchable-sized rainbow trout) reservoirs
- Continue its involvement in the development of a white sturgeon conservation plan
- Protect spring habitat for aquatic endangered species, Idaho species of special concern, and rainbow trout spawning

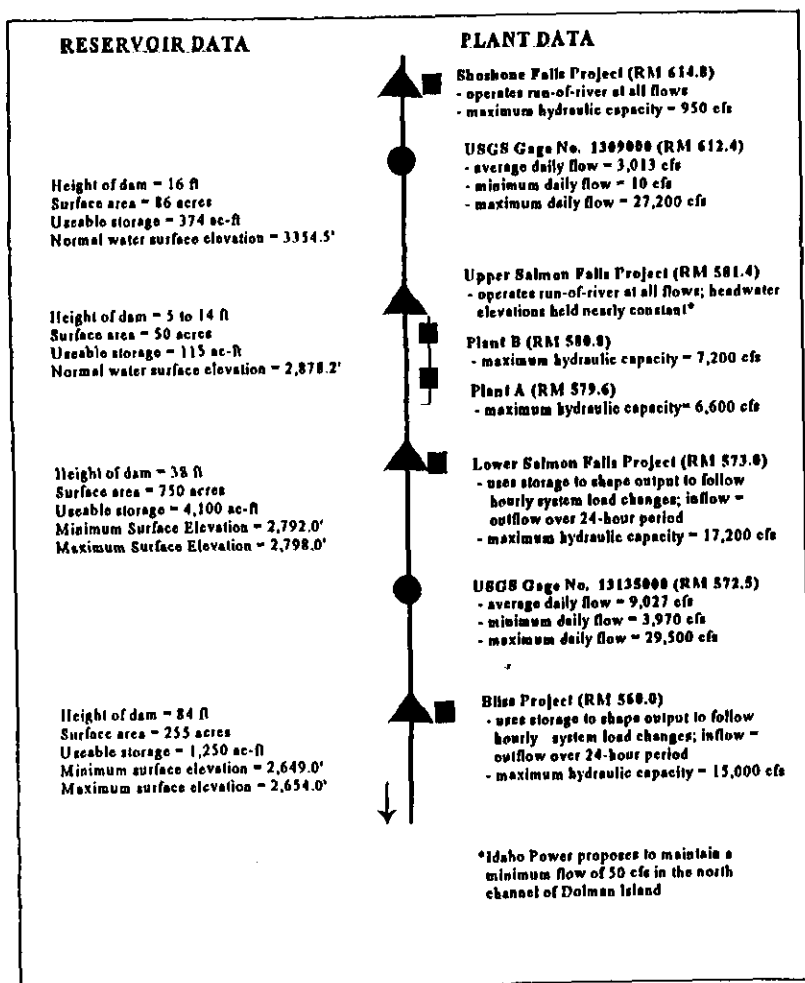


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Aquatic Resources

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- Continue its involvement in the development of a white sturgeon conservation plan
- Protect spring habitat for aquatic endangered species, Idaho species of special concern, and rainbow trout spawning

- Continue its involvement in the development of a snail conservation plan

Terrestrial Resources

- Preserve, enhance, and manage 76 acres of the 425-acre Thousand Springs Preserve, now owned and operated by The Nature Conservancy, which supports sensitive riparian habitats, springs, and sensitive plants (Idaho Power has contributed about \$500,000 towards the purchase of the preserve.)
- Implement the following enhancement/protection measures at Banbury Springs: (1) protect the rare water birch (*Betula occidentalis*) community from further degradation, (2) revegetate disturbed areas, and (3) monitor the revegetation efforts and the continued health of the forest
- Provide long-term protection of the riparian vegetation associated with Dolman Rapids through continued maintenance of the barbed wire fence Idaho Power constructed in 1992 to prevent cattle from straying into the riparian vegetation and entering the streambed
- Preserve riparian resources on the applicant's existing landholdings at Bancroft Springs, Lower Salmon Falls, and Tuana Gulch by: (1) developing a land management plan for each area, (2) removing grazing through fencing or agreements with the Bureau of Land Management, (3) revegetating severely disturbed areas, (4) installing sediment traps at Tuana Gulch, and (5) maintaining and monitoring revegetated areas
- Provide additional protection to heron rookeries by protecting and enhancing habitat conditions of islands owned by Idaho Power
- Create a preserve for chatterbox orchid (*Epipactus gigantea*) at Banbury Springs
- Create a preserve for Torrey's blazingstar (*Mentzelia torreyi* var. *acerosa*) at Tuana Gulch
- Enhance weed control on Idaho Power lands

Aesthetic Resources

- Preserve and protect the aesthetic value of Bancroft Springs, Banbury Springs, and Thousand Springs
- Prepare an Aesthetic Resource Protection Plan

- At Upper Salmon Falls, landscape an area immediately adjacent to an existing visitor overlook

Cultural Resources

- Implement cultural resources management plans to maintain the historical integrity of cultural resources at the projects
- Establish a 375-acre cultural research preserve to protect prehistoric and historic archeological sites in the preserve, and to support innovative archeological research that would be applicable to other projects
- Construct and maintain interpretive kiosks to educate the public about Native American use of the project areas

Recreational Resources

- Continue to operate and maintain the Upper Salmon Falls powerhouse 'A' picnic area
- Enhance the Owsley Bridge boat launch facility by enlarging the parking area, installing a vault toilet, improving the boat ramp and dock facilities, graveling the parking area, and redesigning traffic patterns within the facility
- Enhance the Lower Salmon Falls Park by increasing the parking area, providing a new restroom facility, improving the boat ramp and dock facilities, paving roads and parking areas, adding a group picnic shelter, landscaping, and redesigning traffic patterns within the park
- Enhance the Lower Salmon Falls whitewater access below the Lower Salmon Falls dam by graveling the parking area, providing a portable toilet (seasonal), and improving the float boat ramp
- Enhance the Snake/Malad Rivers whitewater access site by enlarging the parking area, providing a portable toilet (seasonal), and improving the float boat ramp
- Enhance the Bliss reservoir boat launch access area by obtaining a long-term lease of the property, enlarging the parking area, providing a vault toilet and additional picnic sites, and improving the boat ramp and dock
- Continue to operate and maintain the existing Bliss day-use park facility

- Provide buffer zones at developed recreation facilities and special resource value areas--through such things as signs, safety/no wake buoys, and fencing--to ensure public safety and protect natural resources
- Consult with resource agencies every 10 years to decide if a needs assessment is necessary for reviewing the adequacy of the recreation plan
- Provide monetary assistance to the National Park Service to enhance environmental education and visitor information in the Hagerman Fossil Beds National Monument and Upper Salmon Falls and Lower Salmon Falls project vicinities.

3.1.4 Additional Study Requests

In response to the notice of tendering of the application for the Bliss, Lower Salmon Falls, and Upper Salmon Falls Projects, issued on January 4, 1996, nine entities filed 75 study requests (appendix B).

3.2 Shoshone Falls Project

3.2.1 Project Facilities

The project, initially built between 1901 and 1909, involves 4.85 acres of lands administered by BLM. Major facilities (figure 7) include:

- A 779.6-foot-long (average height of 16 feet) concrete diversion dam located above the crest of Shoshone Falls, consisting of four sections separated by rock islands, three of which function as uncontrolled overflow spillway sections, and a fourth, 380-foot-long gated spillway section fitted with 5-foot-high wooden slide gates
- A 1.8-mile-long, 86-acre reservoir at normal operating elevation of 3,354.5 feet msl, with a total storage capacity of 1,500 acre-feet and a usable storage of 374 acre-feet
- A 450-foot-long tunnel and 120-foot-long, 10-foot-diameter penstock
- A powerhouse located on the north bank of the river downstream of Shoshone Falls with three units with a total generating capacity of 12.5 MW, producing about 110 GWh annually
- A 100-foot-long tailrace

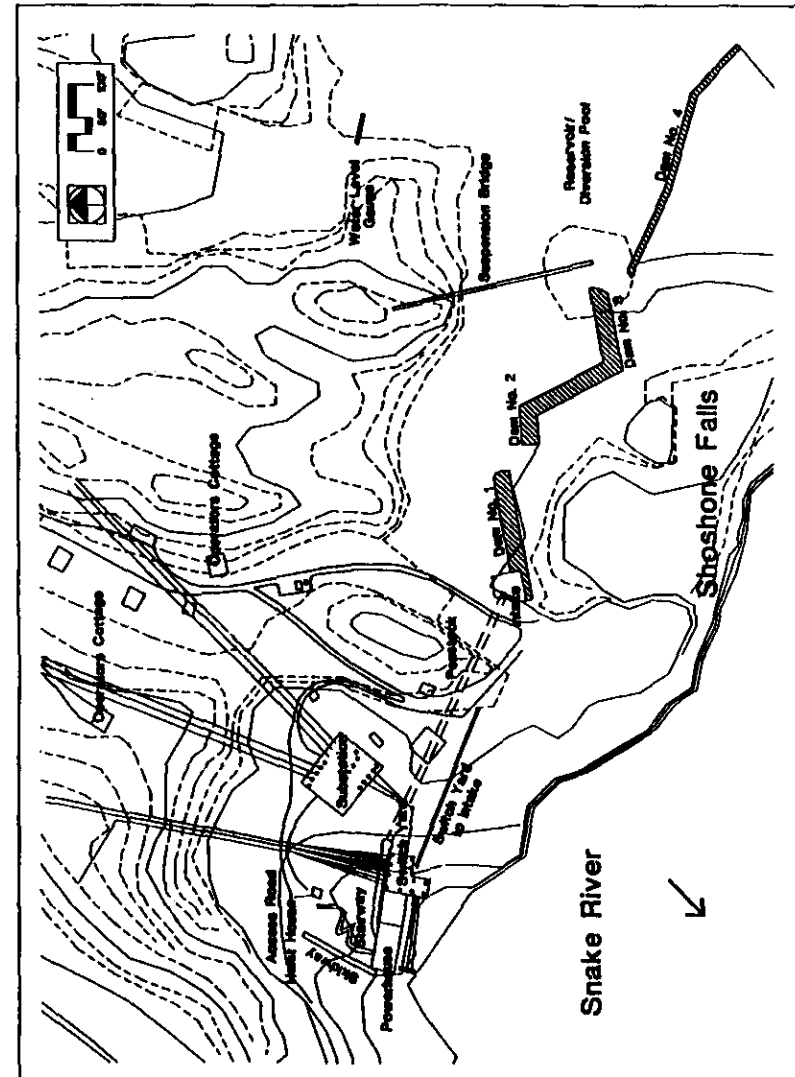


Figure 7. Project facilities for the Shoshone Falls Project (Source: Environmental Vision, October 1996).

- Provide buffer zones at developed recreation facilities and special resource value areas—through such things as signs, safety/no wake buoys, and fencing—to ensure public safety and protect natural resources
- Consult with resource agencies every 10 years to decide if a needs assessment is necessary for reviewing the adequacy of the recreation plan
- Provide monetary assistance to the National Park Service to enhance environmental education and visitor information in the Hagerman Fossil Beds National Monument and Upper Salmon Falls and Lower Salmon Falls project vicinities.

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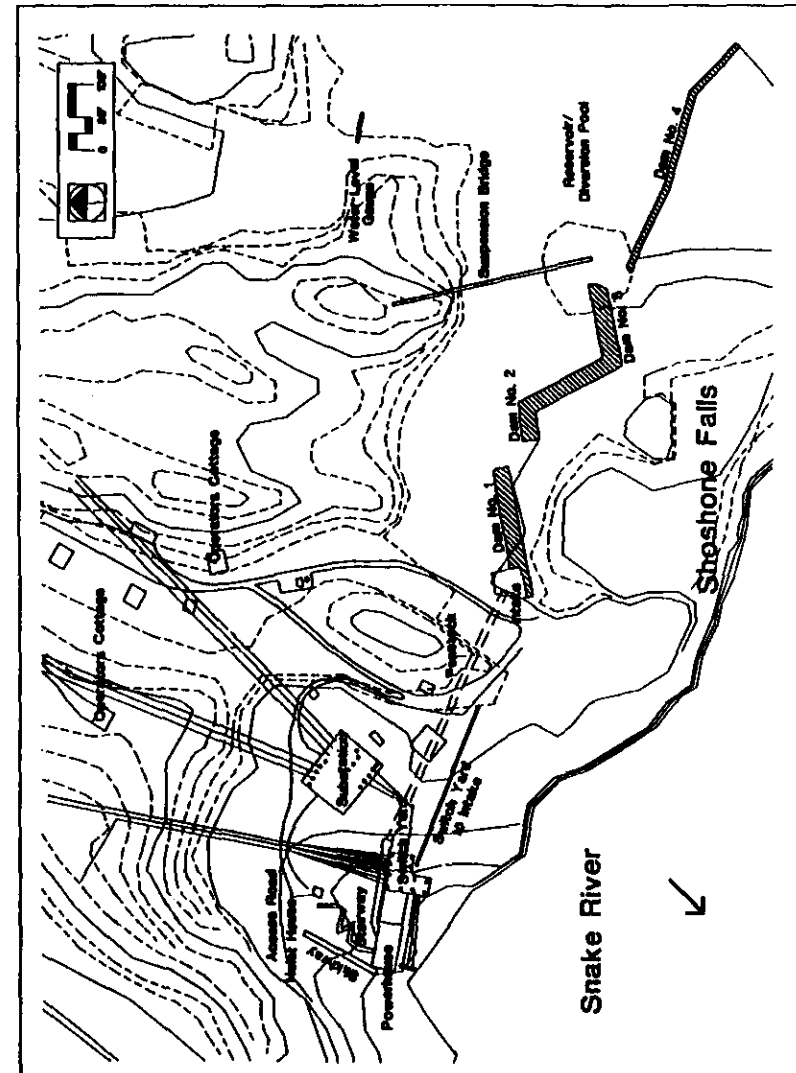


Figure 7. Project facilities for the Shoshone Falls Project (Source: Environmental Vision, October 1996).

Figure 6

121 Proposed Amendments to the Rules of the House of Representatives

Water Quality and Quantity

- Adopt and fully implement the Middle Snake River *Watershed* Management Plan
- Monitor water temperature and dissolved oxygen in powerhouse releases from June 15 through October 15

Aquatic Resources

- Establish a sport fishery in the reservoir by annually stocking 2,500 catchable-sized trout

Terrestrial Resources

- **Develop artificial wetlands at the LO and LS Drains**

Aesthetic Resources

- **Assure a minimum flow over the falls of 300 cfs from April 1 through *Labor Day* during daylight hours**

Cultural Resources

- Construct signs depicting history of hydropower development in the project area
- Conduct limited data recovery at rock shelters within the project area

Recreational Resources

- Invest \$50,000 toward recreational facility enhancements in the vicinity of the Shoshone Falls Project area
- Match, dollar for dollar, expenditures toward recreational or viewing opportunities in Shoshone Falls Park
- Develop and implement an interpretation and information plan for the public

3.2.4 Additional Study Requests

On June 13, 1997, the Commission issued a notice requesting additional study requests for the Shoshone Falls Project. We received requests for three studies from Idaho Department of Fish and Game (appendix B).

3.3 Alternatives

3.3.1 Staff's Modification to Idaho Power's Proposed Action

We will consider alternative mitigation and enhancement measures not proposed by the applicant. Alternative measures could include recommendations by resource agencies, other organizations, Indian tribes, the general public, or the staff. We will assess the environmental effects of these measures. To the extent that these measures would reduce the power production from the proposed project, we will evaluate the costs and any fossil-fueled-generation contributions to airborne pollution.

Specifically, we will consider recommending that the projects operate run-of-river at all times to reduce environmental impacts associated with wide and/or rapid fluctuations in the project reservoirs and in downstream river sections. Environmental, economic, and operational consequences of this alternative will be evaluated.

We will develop a preferred alternative for the projects based on a balancing of the expected benefits and costs of the proposed action and the recommendations provided by all stakeholders.

3.3.2 Project Retirement (No Dam Removal)

This alternative would involve denial of the relicense application and surrender or termination of the existing license with appropriate conditions. This alternative would involve retaining the dams and reservoirs and disabling or removing equipment used to generate power. Project works would remain in place and could be used for historic or other purposes. This would require the Commission to identify another government agency willing and able to assume regulatory control and supervision of the remaining facilities (such as project dams, lakes, and existing recreational facilities).

3.3.3 No Action

Under the no-action alternative, the projects would continue to operate under the terms and conditions of their existing licenses, and no new environmental protection, mitigation, or enhancement measures would be implemented. We will use this alternative to establish the baseline environmental and economic conditions for comparison with other alternatives.

3.3.4 Alternatives Considered But Eliminated from Detailed Study

At present, we are proposing to eliminate the following alternatives from detailed study in the EIS.

Project Retirement (Dam Removal)

Under this alternative, project retirement would be accomplished by removing one or more of the project dams. This alternative would involve surrender or termination of the existing license or licenses with appropriate conditions. Existing recreation facilities would be operated and maintained by other entities or removed. Project retirements with dam removal would have the following effects.

- *The energy generated by one or more of the projects would be lost. Historically, the four projects have produced about 1,267 GWh of electricity per year. If the energy was no longer available, it would have to be replaced by an alternative source of energy with its associated environmental effects (including emissions of air pollutants)*
- *Project-generated employment and project-generated tax revenues would be lost*
- *The environmental enhancements currently proposed by Idaho Power (see sections 3.1.3 and 3.2.3), including preservation of spring habitat and*

recreational enhancements, and any additional enhancement measures required by the Commission, would be foregone

- *Short-term increases in downstream turbidity and sedimentation and temporary increases in noise, dust, exhaust emissions, and traffic in the project vicinity during dam removal activities would result*
- *Loss of over 1,000 acres of flatwater would result if all four projects were removed--the existing recreational benefits attributed to one or more project's reservoirs (water skiing, swimming, boating, fishing) would be lost or substantially reduced, with related economic losses to local communities*
- *Use of existing recreational facilities (picnic areas, restrooms, boat ramps, etc.) operated and maintained by Idaho Power would be lost if not taken over and managed by other entities*
- *The irrigation pump station at Lower Salmon reservoir may be made inoperable*
- *Removal of the dams would increase riverine habitat by as many as 20 miles, benefiting fish, wildlife, and riparian resources; recreational opportunities (rafting, kayaking, fishing) associated with riverine conditions would increase, with related economic benefits to local communities*
- *Cessation of operation would eliminate impacts associated with water-level fluctuations in reservoirs and in downstream reaches, benefiting fish and riparian habitats*
- *Visual benefits would result from removal of project structures and transmission lines*
- *If one or more of the project dams were removed, then improved fish passage and survival would result*

We are not aware of any agency or commenter recommending removal of any or all of the four project dams.

Based on the above, we don't believe dam removal is a reasonable alternative in this case.

Federal Government Takeover

We don't consider federal takeover to be a reasonable alternative. Federal takeover of the project would require congressional approval. While that fact alone wouldn't preclude further consideration of this alternative, there is currently no evidence showing that a federal takeover should be recommended to Congress. No party has suggested that federal takeover would be appropriate and no federal agency has expressed interest in operating the project.

Nonpower License

A nonpower license is a temporary license that the Commission would terminate whenever it determines that another governmental agency will assume regulatory authority and supervision over the lands and facilities covered by the nonpower license. At this point, no agency has suggested a willingness or ability to do so. No party has sought a nonpower license and we have no basis for concluding that the project should no longer be used to produce power. Thus, we don't consider a nonpower license a realistic alternative to relicensing in this circumstance.

3.4 Description of Idaho Power Relicenses with Applications Not Yet Filed

The following is a description of the other Idaho Power projects that will be evaluated in any cumulative analysis.

3.4.1 Upper and Lower Malad Project

The project, built in 1948, is located on the Malad River--the lowermost part of the project is located about 400 feet from the confluence with the Snake River. The project is located adjacent to the Malad Gorge State Park. No federal lands are affected.

The upper development includes:

- A 150-foot-long concrete gravity dam with a maximum height of about 18 feet
- An estimated 10-acre-foot reservoir at elevation 3,013 feet msl
- A 4,600-foot-long concrete flume
- A powerhouse with one unit with a generating capacity of 8,270 kW
- A 0.6-mile, 46-kV transmission line

The lower development includes:

- A 160-foot-long concrete gravity dam with a maximum height of 16 feet
- An estimated 10-acre-foot reservoir at elevation 2,884.3 feet msl
- A 5,450-foot-long concrete flume
- A powerhouse with one unit with a generating capacity of 13,500 kW

The project is operated run-of-river. A minimum flow of 70 cfs is released from each development.

3.4.2 C.J. Strike Project

The project, built in 1951, involves 3,019 acres of BLM land (Snake River Birds of Prey Natural Area). Major facilities include:

- A 3,220-foot-long dam with a maximum height of 115 feet
- A reservoir impounding 32 miles of the Snake River and 7 miles of the Bruneau River, with an area of 7,500 acres and a gross storage of 250,000 acre-feet
- A powerhouse with 3 units with total capacity of 82.8 MW
- Two 138-kV transmission lines spanning a total of 90 miles

The project is operated for peaking generation.

3.4.3 Swan Falls Project

The project, constructed in 1901, involves 211 acres of BLM land within the Birds of Prey Natural Area. A new powerhouse became operational in 1994. Major facilities include:

- A 1,218-foot-long concrete and rockfill dam, consisting of a 440-foot-long spillway section, a 290-foot-long powerhouse section, a 22.5-foot-long intermediate dam section, and a 111.2-foot-long new powerhouse section
- A 900-acre reservoir with a length of 27 miles and gross storage of 4,800 acre-feet at full pool of 2,314 feet msl
- A powerhouse with two units with a total capacity of 25 MW
- A 1.2-mile-long, 138-kV transmission line

The project is operated to reregulate flows from the upstream C.J. Strike Project. A minimum flow of 5,000 cfs is released from April through September and 4,000 cfs from October through March.

3.4.4 Hells Canyon Project

The Hells Canyon Project involves 9,194 acres of federal land administered by the Forest Service (FS) (Payette and Wallowa National Forests and the Hells Canyon National Recreation Area) and the Bureau of Land Management. The Brownlee, Oxbow, and Hells Canyon developments were constructed in 1957, 1958, and 1965, respectively.

The Brownlee development includes:

- A 1,380-foot-long earth and rockfill dam with a maximum height of 395 feet
- A 14,621-acre, 58-mile-long reservoir with a total storage of 1,420,000 acre-feet and usable storage of 975,318 acre-feet at normal maximum elevation of 2077.0 feet msl (minimum elevation of 1976.0 feet msl)
- A powerhouse containing five units with a total generating capacity of 585.4 MW
- About 485 miles of 230-kV and 77.9 miles of 345-kV transmission line

The Oxbow development includes:

- A 945-foot-long earth and rockfill dam with a maximum height of 209 feet
- A 1,150-acre, 12-mile-long reservoir with a total storage of 53,386 acre-feet and usable storage of 11,100 acre-feet at normal maximum elevation of 1805.0 feet msl (minimum elevation of 1795.0 feet msl)
- A powerhouse containing four units with a total generating capacity of 190 MW
- About 75 miles of 230-kV transmission line

The Hells Canyon development includes:

- A 994-foot-long concrete gravity dam with a maximum height of 320 feet
- A 2,412-acre, 25-mile-long reservoir with a total storage of 167,720 acre-feet and usable storage of 23,060 acre-feet at normal maximum elevation of 1688.0 feet msl (minimum elevation of 1678.0 feet msl)

- A powerhouse containing three units with a total generating capacity of 391.5 MW
- 21.9 miles of 69-kV and 37.9 miles of 230-kV transmission line
- A fish trap

The three developments are operated in close coordination. Brownlee drives the operation of the entire complex. Brownlee is normally operated to meet daily load shaping. Oxbow is closely coordinated with the operation of the upstream Brownlee plant, and typically functions as a reregulating dam. Hells Canyon typically follows the general daily load shape. The project is also operated for navigation, flood control, and anadromous fish protection. Operation is subject to the 1980 Hells Canyon Settlement Agreement concerning anadromous fish mitigation.¹¹

4.0 CUMULATIVE ENVIRONMENTAL ISSUES

According to the Council on Environmental Quality's Regulations for implementing NEPA (50 CFR §1508.7), an action may cause cumulative impacts on the environment if its impacts overlap in space and/or time with the impacts of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

Site-specific analyses have the potential to overlook the big picture. For some resources, it may be necessary to look at more than one Idaho Power project or other actions in the basin to understand the relationship between unrelated actions or to develop a comprehensive solution to an existing resource problem. Examples that illustrate the importance of a cumulative look are presented in the box below.

Evaluating cumulative impacts is an iterative process. Issues will be refined based on preliminary analyses and new information. Further workshops will be needed to better develop issues and analyses.

¹¹ Order approving uncontested offer of settlement, February 27, 1980, 10 FERC ¶ 61,190.

BENEFITS OF CUMULATIVE LOOK

Comprehensive solution--In some cases a solution to a resource problem may depend on more than one project. For example, the need for fish passage at an upstream dam may be contingent upon passage at a downstream dam; creation of a multi-day boating trip may require facilities at more than one project; and wildlife enhancement at more than one project may be more effective if lumped together into one larger parcel.

Additive effects--Multiple activities can affect common resources. Adding the impacts or enhancement measures can give an idea of how the activities collectively impact a resource or contribute to meeting management goals for that resource.

Interactions between actions--It is important to look at the interactions of actions. For example, changes in flow at upstream projects may have positive or negative effects at lower projects; and improvement in water quality at upstream projects may eliminate the need for improvement measures at downstream projects.

Tradeoffs--There may be multiple solutions to issues in a basin. A cumulative look can aid in reaching the most effective solution to a resource issue in the basin. For example, a need for one recreational access point may be more cost-effective or desirable at a particular project rather than at any of the other projects.

4.1 Description of the Snake River Basin

The Snake River, the largest tributary of the Columbia River, flows over 1,000 miles from its origin in Yellowstone National Park (elevation 9,840 feet msl) to its confluence with the Columbia River (elevation 340 feet msl). The Snake River flows through much of Idaho and parts of Wyoming, Utah, Nevada, Oregon, and Washington (figure 2). The river drains 109,000 square miles and transports an average of 37 million acre-feet of water each year.

4.2 Evaluating Cumulative Effects

4.2.1 Identifying Cumulatively Affected Resources

Resources are selected based on:

- Whether the resource has been cumulatively affected or is likely to be affected by multiple projects or other activities in the basin
- The economic, ecological, recreational, and *cultural* value of the resource
- The national, regional, or local significance of the resource
- The degree of agency/public concern
- Basin-wide management plans

The goal is to narrow the scope by eliminating resources that are not relevant to the proposed actions or the eventual licensing decisions or if issues can be adequately addressed at the project-specific level (i.e., no need for a multi-project or comprehensive solution is needed). Resources are also eliminated if the potential cumulative effects or benefits are likely to be inconsequential.

The resources we selected to be included in a cumulative analysis are found in section 4.3.

4.2.2 Determining Geographic Scope

The geographic scope defines the physical limits or boundaries of the proposed actions' effects (positive and negative) on a resource. The scope will be based on how the projects interact with, affect, or are affected by other hydropower and non-hydropower activities in the basin. If the scope is too narrow, opportunities for resource mitigation or enhancement or the status or importance of the resource can be missed; if the scope is too broad, licensing decisions can be confounded by impact issues beyond the Commission's control. Not every resource will have the same geographic scope or emphasis.

Our analysis will generally focus on the mainstem Snake River roughly from Milner dam to the confluence with the Lower Granite reservoir ("affected reach") because:

- The reach physically includes the area of the eight Idaho Power relicense projects
- The reach includes the zone of effect of the eight projects, including the downstream effects of storage at the Hells Canyon Project
- This is the segment where the Commission, through its licensing authority, can actually do something
- Flows below Milner dam are typically reduced to about 200 cfs and are replenished downstream as a result of significant spring flows, irrigation return flows, and tributary inflow¹²

We will also be looking at upstream and downstream activities, but in less detail. For example, the effect of existing and future upstream flow regulation, both diversions and storage, on flow-dependent resources (water quality, fish habitat, riparian habitat, etc.) in the affected reach will be considered. Where necessary to understand the context of the resource

¹² The 1993 Idaho State Comprehensive Water Plan recognizes that the exercise of water rights above Milner dam has and may reduce flow at the dam to 0 cfs.

in the basin, the discussion of historic impacts will be broader (e.g., the discussion of the loss of riparian habitat will include the entire basin *and the loss of or blockage of access to fish habitats of key species, including white sturgeon, salmon, and steelhead, will extend to the Snake River tributaries to the extent of the particular species' historical range*).

For anadromous fish, the downstream scope will be *extended to the mouth of the Snake River*, to include efforts to improve salmon passage at the Corps of Engineer's lower Snake River projects.

One resource will have more localized scope:

Mollusc habitat--the area of examination will encompass the Snake River Basin from Banbury Springs to *Grandview*. This scope corresponds to the scope of the U.S. Fish and Wildlife Service recovery plan.

4.2.3 Determining Temporal Scope

The temporal scope defines the time limits or boundaries that will be considered in the analysis and will include past, present, and future actions and their effects on each resource that could be cumulatively affected. We will look at past impacts that have occurred to the degree that information is available and necessary in establishing the value or uniqueness of the resource. Is the resource increasing, decreasing, or stable? Is pre-project information needed to understand the continuing impacts on a resource and establish reasonable mitigation and enhancement measures? To determine how far to look in the future, we evaluate how long project-specific effects will last and time frames for future reasonably foreseeable actions.

For the purposes of our analysis, the temporal scope will look about 45 years into the future (through a potential 30-year new license term for the Swan Falls Project), concentrating on the effect on the resources from these reasonably foreseeable future actions.

4.2.4 Determining Actions to Include in the Analysis

Past and ongoing actions in the basin include: construction of dams and reservoirs for hydropower, irrigation, and flood control; irrigation, industrial, and municipal water diversions and discharges; agricultural development; grazing; logging; aquaculture; and recreational development (see appendix C).

Past activities that have affected or will likely affect the cumulative resource of concern will be incorporated into the analysis. Understanding past actions and their effects on resources can be important to understanding the consequences of future actions. The effects of past and present activities are reflected in the existing environment and provide a context for determining the value and importance of the resource and the potential for cumulative impacts.

For future actions, we will look at those actions that will potentially affect the cumulative resources and that are within the selected geographic boundary or time frames. Speculative or undefined future actions will be excluded.

A description of ongoing and future activities within the Snake River Basin is found in appendix C. The primary future actions that could potentially affect the relicensing of the Idaho Power Projects include:

- BR's Snake River Resources Review
- National Marine Fisheries Service's (NMFS's) Biological Opinion on Operation of the Federal Power System and future opinions
- NMFS's proposed recovery plan for Snake River salmon
- Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program
- FS's and BLM's Interior Columbia Basin Ecosystem Management Project
- Idaho's total daily maximum load plans for the middle Snake River

A list of plans on file with the Commission is found in appendix D.

4.3 Cumulative Effects Resources/Issues

The key cumulative effects issues for the Snake River basin are summarized in table 2.

Based on our preliminary review of Idaho Power's license applications, comments received from agencies and other interested groups, input from the Snake River Relicensing Collaborative Team's resource work groups, and preliminary staff analysis, we've tentatively identified the resources/issues listed below as being potentially cumulatively affected (positively or negatively) by the Idaho Power relicense projects in combination with other hydropower and non-hydropower activities in the Snake River Basin. *Based on the criteria outlined in figure 8, we refined the list of resources and issues (described below) that will be included in our cumulative analysis.*

For each resource, we discuss the specific cumulative resource issues involved and the relationship to the Idaho Power relicenses. *All the issues described below, with the exception of the anadromous fish issue, will be evaluated as part of the EIS for the first four projects. Anadromous fish and MacFarlane's four-o'clock will be deferred until future environmental documents.*

Table 2. Key cumulative effects issues in the Snake River Basin.*			
Issues	Cause	Resources Affected	Effects
Degradation of water quality	flow modifications, agricultural development, urbanization, hydroelectric development, industrial development, impoundments, municipal waste, flood control, mining, forestry, aquaculture, habitat conversion	anadromous fish, native resident fish (includes white sturgeon, bull trout, and redband trout), listed snails, benthic invertebrates, amphibians, bald eagle, aquatic furbearers, aquatic birds, contact recreation, aesthetics	reduced habitat quality; nuisance aquatic plant growth; reduced visual quality and recreational experience
Flow modification (timing and volume)	timing: hydroelectric development, flow augmentation, flood control, dam operations, irrigation (diversions, pumping, and return flows) volume: hydroelectric development, irrigation, municipal water consumption, agricultural development, aquaculture, mining, impoundments	anadromous fish spawning and rearing habitat, native resident fish (includes white sturgeon, bull trout, and redband trout), listed snails, riparian vegetation, riparian vegetation, recreational use, aesthetics, cultural resources	habitat loss; unsuitable water temperature; alteration of sediment transport, resulting in the loss of spawning habitat and loss of sand and gravel bar recruitment; and diminished aesthetic quality
Aquatic habitat loss, alteration, and fragmentation	habitat loss: channelization, levee construction, irrigation, impoundments, mining, logging, removal of riparian vegetation, road construction, clearing of stream channels, irrigation return waters, urbanization fragmentation: creation of barriers (dams, water quality barriers)	anadromous fish, native resident fish (includes white sturgeon, bull trout, and redband trout), listed snails, riparian vegetation	direct habitat loss: loss of habitat for spawning, rearing, and migration resulting from reduced water velocities; accumulation of sediments; poor water quality; loss of wetlands and riparian vegetation; increased competition from exotic species fragmentation: genetic isolation, isolation from critical life stage habitats, loss of metapopulation structure, increased susceptibility to local extinctions or extirpation

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Table 2 (cont.). Key cumulative effects issues in the Snake River Basin.			
Issues	Cause	Resources Affected	Effects
Loss of anadromous ecosystem	hydroelectric development, irrigation, flood control, and other factors	juvenile anadromous salmonids, other resident fish species, black bear, aquatic furbearers, eagles, insects, aquatic plants, riparian plants	loss of nutrient source for fish and invertebrates and wildlife food supply provided by salmon carcasses
Riparian/wetland habitat loss, alteration, and fragmentation	irrigation/water diversions, urbanization, hydroelectric power generation, industrial development, impoundments, flood control, mining, habitat conversion, grazing, recreational use	anadromous and resident fish, native/rare plant communities, seeps, springs, island habitats, bald eagles, aquatic furbearers, birds, insects, big game thermal cover, neotropical migrants	habitat loss: declines in abundance of wetland and riparian habitats, noxious weed infestations, decreased biodiversity and productivity fragmentation: isolation from critical life stage habitats, loss of metapopulation structure, increased susceptibility to local extinctions or extirpation, decreased biodiversity and productivity
Native grassland and shrubland loss, alteration, and fragmentation	agricultural development, industrial development, impoundments, mining, habitat conversion, grazing, roads, transmission lines, recreational use	native/rare plant communities, big game foraging and wintering habitat, birds, and small mammal habitat	habitat loss: declines in abundance of upland habitats and associated wildlife species, noxious weed infestations, decreased biodiversity and productivity fragmentation: isolation from critical life stage habitats, loss of metapopulation structure, increased susceptibility to local extinctions or extirpation, decreased biodiversity and productivity

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* Based on input from the Snake River Relicensing Collaborative's Resource Work Groups.

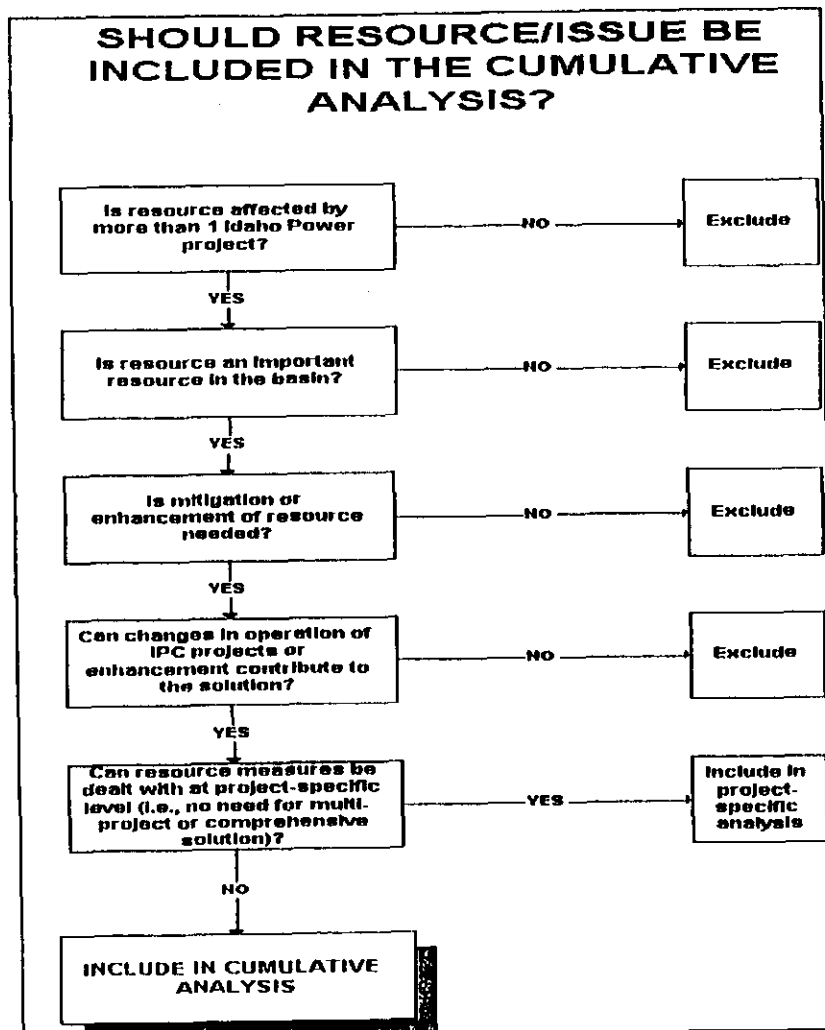


Figure 8. Steps in determining whether to include resources or issues in the cumulative analysis.

4.3.1 Water Quality

- Effects of degraded water quality (*including macrophyte growth*) on fish, snails, aquatic dependant wildlife, aesthetics, and recreation
- How the Idaho Power *projects' effects on flow timing and volume* contribute to water quality problems (dissolved oxygen, heavy metals and toxic sediment, nutrients, temperature, *total dissolved gases*) in the basin
- How the Idaho Power projects could be operated in combination with other actions in the basin to help meet water quality goals for fish habitat, snail habitat, aesthetics, and recreational use and opportunities
- How operation of the Idaho Power projects could be coordinated with future actions, such as the Middle Snake River Watershed Management Plan and future flow augmentation, to improve water quality or increase flows in the basin

4.3.2 Sediment Transport

- *How the Idaho Power projects' effects on flow timing and volume contribute to erosion and sediment deposition and the associated effects on fish habitat, stream bank integrity, island, sand bar and beach formation/loss, cultural resources, and fossil deposits*

4.3.3 Resident Fish (white sturgeon, Shoshone sculpin, rainbow trout, bull trout, and redband trout)

- How resident fish are affected by: barriers to upstream and downstream migration (*including habitat fragmentation effects*); project peaking flows and ramping rates; fish entrainment and turbine related mortalities; and water quality
- What measures are needed to protect and enhance resident fish populations (passage, flows, etc.)
- The effects of future changes in the timing and quantity of flow in the basin on resident fish

4.3.4 Anadromous Fish (spring/summer and fall chinook salmon, sockeye salmon, steelhead, and lamprey)¹³

- How the Hells Canyon, Swan Falls, and C.J. Strike Projects could be operated to enhance flows (timing, quantity) for anadromous fish habitat in the Snake River Basin above and below Hells Canyon Dam and for salmon migration
- What factors are preventing the restoration of anadromous fish upstream of Hells Canyon dam (habitat and food availability, water quality, passage, etc.), is upstream restoration feasible, and what measures are necessary at Idaho Power projects (upstream and downstream passage, habitat improvements, flows, etc.) in combination with other measures in the basin, to allow the restoration of anadromous fish
- How the Idaho Power hatchery program would contribute to the efforts to restore anadromous fish in the basin and what modifications may be needed
- How anadromous fish restoration would affect other resources (resident fish, wildlife, insects, and riparian and aquatic plants)
- How operation of Idaho Power Projects could be coordinated with other actions in the basin to provide flows for anadromous fish and improve passage at downstream dams

4.3.5 Federally Listed Aquatic Molluscs (the endangered Idaho springsnail, Utah valvata snail, Snake River physa snail, and Banbury Springs lanx, and the threatened Bliss Rapids snail)

- The effects of instream flows, water quality, and sediment transport on the quality and quantity of aquatic mollusc habitat.
- What changes in operation of the Bliss, Lower Salmon Falls, and Upper Salmon Falls Projects are needed to protect and enhance mollusc habitat
- How operation of the Idaho Power Projects could be coordinated with other actions in the basin, such as the Snake River Aquatic Species Recovery Plan

¹³ As previously discussed, anadromous fish won't be discussed in detail in the EIS for the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects, but will be addressed in subsequent environmental documents.

4.3.6 Riparian/Wetland Habitat

- How the Idaho Power projects interact with other activities in the basin to reduce and alter riparian/wetland habitat, seeps, and springs
- The effects of altered flows and reduced and fragmented riparian/wetland habitat on abundance and connectivity of native/rare plant communities, aquatic furbearer habitat, waterfowl nesting cover, thermal cover for big game, and habitat for neotropical migrants and other birds
- The effects of altered flow and reduced and fragmented riparian/wetland habitat on noxious weed infestation
- The effects of future changes in the timing and quantity of flow in the basin on riparian/wetland habitat and the effects on riparian/wetland associated wildlife
- What measures are needed to protect and enhance riparian/wetland habitat

4.3.7 Terrestrial Threatened and Endangered Species

- The effects of altered flows and other activities in the basin on germination and survival of native cottonwood trees, which are important sources of nest, perch, and roost sites for bald eagles
- The effects of icing that results from altered flows and impounded conditions at the reservoirs on available foraging habitat for bald eagles
- The effects of human disturbances, including changes in human access patterns and types of human activities associated with the project impoundments, transmission line maintenance, road use, and recreation, on bald eagles, peregrine falcons, and MacFarlane's four-o'clock¹⁴
- The secondary effects of project operations (i.e., water quality, fish resources, and avian prey) on forage bases of the bald eagle and peregrine falcon

¹⁴ As previously discussed, MacFarlane's four-o'clock won't be discussed in detail in the EIS for the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects, but will be addressed in the Hells Canyon EIS.

4.3.8 Native Grasslands and Shrublands

- How the Idaho Power projects interact with other activities in the basin to reduce and alter native grassland and shrublands
- The effects of reduced and fragmented native grassland and shrubland habitat on abundance and connectivity of native/rare plant communities, big game winter range and forage, and habitat for birds and small mammals
- How Idaho Power land management practices and policies interact with other basin-wide activities to affect noxious weed infestation in native grassland and shrubland habitats

4.3.9 Recreational Use Patterns

- How changes in reservoir management and flow changes for anadromous fish and other resources could affect recreational use patterns in the basin

4.3.10 Developmental Resources

- The additive effects of environmental enhancement measures on the economics of continuing to operate the projects *and the cost-effectiveness of operational changes designed for non-power benefits*
- How operational changes for environmental purposes affect other developmental purposes, such as flood control
- How changes at Idaho Power's projects, in combination with potential reductions in generation at other hydropower projects throughout the basin, could affect the power resources that serve the region, *and how these effects would affect consumers on a community, county, and Bureau of Economic Analysis area scale*

4.3.11 Air Quality

- Additive effects of reduced generation at the Idaho Power projects on the need for additional alternative sources of generation and the resulting increases in emissions of air pollutants *in the Snake River Basin and, specifically, relative to Forest Service Class I Airsheds (associated with wilderness areas) and other National Forest System Lands*

5.0 PROJECT-SPECIFIC RESOURCE ISSUES

A preliminary list of resource issues and concerns that we have identified for analysis in an EIS is presented below. Those issues identified by an asterisk (*) will be analyzed for cumulative impact, as well as project-specific effects. In analyzing the issues, we will evaluate various measures to mitigate, protect, or enhance the resources. This list is not intended to be exhaustive or final, but is an initial listing of issues that have been raised and could be potentially significant. For convenience, the issues have been grouped by resource categories.

5.1 Bliss, Lower Salmon Falls, and Upper Salmon Falls Projects

We have determined that there are no issues dealing with geology and soils, given the minimal amount of soil disturbance associated with relicensing these projects.

5.1.1 Water Quality

- * Effects of the projects' operations on water temperature, dissolved oxygen, nutrient levels, *and sediment transport*
- * *Effects of the projects' operations on algal production and the distribution of nuisance plants and their associated effects on water quality*

5.1.2 Aquatic Resources

- * *Effects of project operations on aquatic invertebrates in riverine and reservoir sections*
- * Effects of entrainment and turbine mortality on white sturgeon and other resident fish at the three projects
- * Effects of the project dams on the movement of migratory and non-migratory fish species
- Effects of project-induced water level fluctuations from load-following operations on habitat for aquatic resources in the project reservoirs and downstream of each project
- Effects of instream flows on the quantity and quality of aquatic habitat for fish and other aquatic resources in the Dolman Rapids *and North Channel* bypassed reaches of the Upper Salmon Falls Project and downstream of the *Lower Salmon Falls and Bliss* Projects

- Effects of project facilities and operations on the deposition of fine sediments in impounded areas as it relates to fish spawning habitat
- Effects of project facilities and operations on the supply of and transport of spawning gravel downstream of the project dams
- *What measures are needed to address the future passage of anadromous fish in the project areas*
- *Whether monitoring is necessary to determine the effects of protection, mitigation, and enhancement measures on fishery resources*
- *Effect of the Bliss Project on the Elmore County Wildlife Club fish-rearing pond*

5.1.3 Terrestrial Resources

- Effects of project-induced water level fluctuations from load-following operations on riparian and wetland vegetation, both in the impounded and unimpounded areas
 - Do project operations favor the establishment of Russian olive and other non-native species in the riparian zone?
 - How do project-related changes in flow regimes affect regeneration of riparian tree species, specifically cottonwoods?
 - Whether project operations should be modified to benefit riparian habitat structure and function?
- Whether modifications should be made to Idaho Power's current grazing policies to benefit riparian resources on project lands
- *Effects of project operation and maintenance (e.g. road use and transmission line corridor maintenance) on rare plants and rare plant communities.*
- *Effects of project operation and maintenance on key wildlife species*
- Adequacy of proposed protection and enhancement measures, including noxious weed control, and whether additional enhancement measures are necessary to benefit upland, riparian, wetland, and spring habitats and the wildlife inhabiting these habitats

- Adequacy of proposed measures to protect rare plants (chatterbox orchid, Torrey's blazingstar) and rare plant communities (water birch, hackberry)

5.1.4 Threatened and Endangered Species

- Direct and indirect effects of fluctuating water levels from the projects' load-following operations on the federally listed aquatic molluscs: the endangered Idaho springsnail (*Pyrgulopsis idahoensis*), Utah valvata snail (*Valvata utahensis*), Snake River physa snail (*Physa natricina*), and Banbury Springs lanx (undescribed *Lanx*), and the threatened Bliss Rapids snail (*Taylor concha serpenticola*)
- Effects of instream flows and sediment transport on the quality and quantity of aquatic habitat for federally listed molluscs
- *Direct and indirect effects of project operation and maintenance (including fluctuating water levels from the projects' load-following operations, transmission line maintenance, and road use) on the federally threatened bald eagle and endangered peregrine falcon*

5.1.5 Aesthetic Resources¹⁵

- Effect on visual resources from Idaho Power's grazing policies for project lands owned by Idaho Power
- Effect of water level fluctuations caused by project operations on the aesthetics of the Bliss, Lower Salmon Falls, and Upper Salmon Falls reservoirs, including shoreline sloughing
- Visual impacts of the Lower Salmon Falls Project facilities and operations as viewed from recreation areas and the Hagerman Fossil Beds National Monument, particularly the proposed visitor center, overlooks, and trails
- Visual impacts of the Upper Salmon Falls Project facilities and operations as viewed from Hagerman Fossil Beds National Monument, particularly the overlooks and trails

¹⁵ The issues "Visual impacts of the Upper Salmon Falls Project facilities and operations as viewed from the picnic area at powerhouse A" and "Visual impacts of the Bliss Project facilities and operations as viewed from recreation sites" were deleted based on discussions at the July 17, 1997, scoping meeting.

- Effect of the flow regime on the aesthetic characteristics of the Upper Salmon Falls Project's bypassed reach

5.1.6 Cultural Resources

- Effects of the projects on archeological and historic sites and what measures are necessary to comply with the National Historic Preservation Act

5.1.7 Recreation and Land Use¹⁶

- Whether Idaho Power should develop a float boat put-in directly downstream of Bliss dam
- *Whether Idaho Power should develop a river access site for recreational boating at the Bancroft Springs area*
- Whether a new take-out site for whitewater boaters on the popular Hagerman (Wiley) Reach of the Snake River is needed as a result of the 1993 Wiley landslide
- * Effects of fluctuating water levels from the projects' load following operations on the erosion of fossils at the Hagerman Fossil Beds National Monument
- Whether Idaho Power should participate in any efforts to establish a recreational trail along the Snake River, and if so, how
- Whether Idaho Power should provide monetary assistance (\$5,000 per year) to the NPS, as proposed, to enhance environmental education and research at the Hagerman Fossil Beds National Monument
- Whether the Dolman Island/Falls area should be granted a "protected" land use designation under Idaho Power's land management plan, as recommended by Idaho Power

5.1.8 Developmental Resources

Some of the proposed environmental enhancement measures would change how the projects are operated, thereby reducing the value of the projects for electric power production. Other measures would require direct expenditures by Idaho Power, increasing the cost of

¹⁶ The issue "Effects of fluctuating water levels from the projects' load following operations on boating and fishing on the reservoirs and in the reaches downstream of the projects" was deleted based on discussion at the July 17, 1997, scoping meeting.

operation and decreasing the cost advantage of the projects compared to other sources of power that could be used to meet the electricity needs of Idaho Power's customers. In the EIS, we would consider how the following would affect project generation or cost:

- Effects of providing minimum continuous flows in the Dolman Rapids reach and downstream of project dams on project generation and the value of project power
- Effects of reducing reservoir water surface fluctuations on load following capabilities and the value of project power
- Effects of funding various studies or providing additional protection and enhancement measures on the cost of project power

5.2 Shoshone Falls Project

5.2.1 Water Quality

- * Effects of the project's operation on water temperature, dissolved oxygen, gas supersaturation, and nutrient levels

5.2.2 Aquatic Resources

- * Effects of the project (water temperature, total dissolved gas levels) on downstream white sturgeon populations between Shoshone Falls and Upper Salmon Falls Projects
- Effects of the project on reservoir fishes and the desirability of stocking the reservoir with trout or other species

5.2.3 Terrestrial Resources

- * Adequacy of proposed protection and enhancement measures and whether additional enhancement measures are necessary to benefit riparian resources and spring habitats and the wildlife inhabiting these habitats

5.2.4 Aesthetic Resources

- Effects of the project's flow regime on the aesthetic characteristics of Shoshone Falls and what flows are necessary to adequately enhance the visual quality of the falls

- Visual impacts of the project facilities (dam structures, powerhouse, substation, and transmission lines) as seen from the existing and proposed recreation sites, particularly the overlooks

5.2.5 Cultural Resources

- Effects of the project on the historic and prehistoric resources and what measures are necessary to avoid, minimize, and compensate for adverse effects

5.2.6 Recreation and Land Use

- Effects of the project on the recreation resources and what measures are necessary to avoid, minimize, and compensate for adverse effects
- Adequacy of project facilities to provide for recreation and other uses

5.2.7 Socioeconomics

- Effects of the existing, proposed, and other alternative flow regimes over Shoshone Falls on visitation, the local economy, and tax revenues to local governments

5.2.8 Developmental Resources

- Effects of funding various studies or providing additional protection and enhancement measures on the cost of project power

6.0 SCHEDULE

The short-term schedule for initial processing of the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects and completing scoping is provided below. The long-term schedule will be developed after we finalize the cumulative effects approach (see appendix A).

SCHEDULE		
Milestone	Target Date	
	Bliss, Lower Salmon Falls, and Upper Salmon Falls Projects	Shoshone Falls Project
Applications filed	December 20, 1995	May 29, 1997

Notice requesting additional study requests (ASR's)	January 4, 1996 (due 2/20/96)	June 13, 1997 (due 7/28/97)
Applications accepted	June 7, 1996	October 16, 1997
Notice requesting interventions	June 24, 1996 (due 8/29/96)	October 21, 1997 (due 12/18/97)
Scoping document 1 issued	June 5, 1997 (comments due August 18, 1997)	
Scoping meetings/site visits	July 16-18, 1997	
Scoping document 2 issued	December 1997	
ASR's addressed	January 1998	
Additional information request issued	January 1997 (due 1/99)	
DEIS	Summer/Fall 1999	
FEIS	Spring 2000	

6.0 DRAFT EIS OUTLINE

The tentative outline for the EIS for the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects is as follows:

COVER SHEET FOREWORD TABLE OF CONTENTS EXECUTIVE SUMMARY

1. PURPOSE OF ACTIONS AND NEED FOR POWER
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 - 1.2 Need for Power
 - 1.3 Scope of Environmental Impact Statement
 - 1.3.1 Cumulative Effects
 - 1.3.1.1 Geographic Scope
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 - 2.1 Idaho Power Company's Proposals
 - 2.1.1 Bliss Project
 - 2.1.1.1 Project Facilities
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6. DEVELOPMENTAL ANALYSIS

7. STAFF'S CONCLUSIONS

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 - 7.5.4 National Historic Preservation Act
 - 7.5.5 Americans with Disabilities Act
 - 7.5.6 Other Laws and Policies

8. LITERATURE CITED

9. LIST OF PREPARERS

10. LIST OF RECIPIENTS

7.0 DISTRIBUTION LIST

Copies of this scoping document were sent to agencies, organizations, and individuals on the service list, FERC mailing list for the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects, and Snake River Relicensing Collaborative Team mailing list (see appendix E).

Description of Approaches

Evaluating cumulative effects of the Idaho Power projects in the Snake River Basin provides a challenge given that four applications have already been filed and applications for the remaining four projects will be filed during the next 12 years. In developing approaches for assessing cumulative impacts, the following factors must be considered--the timing of the expiration of the licenses, the geographic location of these projects, and the availability of data with which to conduct a cumulative impact assessment.

We describe four possible approaches below.

APPENDIX A

APPROACHES TO CUMULATIVE IMPACTS IN SNAKE RIVER BASIN revised June 1997

In December 1996, the staff prepared a discussion paper titled "Approaches to Cumulative Analysis for the Snake River Basin," outlining two possible approaches for evaluating the cumulative effects of relicensing the eight Idaho Power projects.¹ These and other approaches are discussed in detail later in this appendix.

The staff conducted a meeting in Boise, Idaho, on February 4, 1997, to solicit input from federal and state agencies, Indian tribes, non-governmental organizations, the licensee, and the public on the approaches. About 75 people attended the meeting.

At the meeting, representatives of the Snake River Relicensing Collaborative Team commented that they were unable to recommend a specific approach until the range of cumulative effect issues that needs to be addressed is known. They recommended the following steps before deciding on an approach:

- Conduct scoping for the cumulative effects analysis
- Scoping should be done as soon as possible, using the Collaborative Team work groups as technical advisors
- Identify cumulative effects issues for the Middle Snake projects (Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects)
- Develop the approach based on scoping

Idaho Power was hesitant to agree to a particular approach until they know the scope of the issues that may require reopeners.

Following the meeting, written comments were received from the following entities:

Entity	Date of Letter
Idaho Wildlife Federation	March 5, 1997
Oregon Department of Fish and Wildlife	March 5, 1997

These analyses would build upon or tier¹ off the previous analyses. Additional resources that could be cumulatively affected would be evaluated as necessary and multi-project issues would be expanded and updated. Ultimately, the series of analyses would represent a comprehensive evaluation of cumulative impacts of the Idaho Power relicense projects.

Approach B

This approach would involve the preparation of one basin-wide cumulative effects analysis for the area of effect of all the Idaho Power relicense projects before any project-specific assessments are begun. The cumulative analysis would also be used to determine the appropriate groupings for processing the individual projects and the resources that...

Wallowa County Court	March 5, 1997
Environmental Protection Agency	March 5, 1997
Shoshone-Bannock Tribes	March 5, 1997
Columbia Inter-Tribal Fish Commission	March 5, 1997
American River/Idaho Rivers United	March 5, 1997
Department of the Interior	March 5, 1997
Middle Snake Regional Water Resource Commission	March 5, 1997
Idaho Power Company	March 6, 1997
Idaho Department of Environmental Quality	March 6, 1997
Nez Perce Tribal Executive Committee	March 6, 1997
National Marine Fisheries Service	March 21, 1997

Summary of Comments Received on the Approaches

We've summarized the written comments below, followed by our response to the comments in *italics*.

General Comments

- (1) Many commentors supported the collaborative teams recommendations.

We agree that scoping would provide a better information base on which to determine an approach. Accordingly, we will conduct scoping on both the project-specific issues associated with the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects and the basin-wide cumulative issues prior to deciding on the approach.

- (2) Many of the commentors, although not endorsing a particular approach, liked the early assessment of the earlier filed applications under approach A and the comprehensive aspects of approach B. Most believed that the project-specific analysis of the first filed application could proceed concurrently with the cumulative analysis.

We developed an additional approach that takes into consideration many of the comments (see approach C below).

- (3) American Rivers/Idaho Rivers United was the only commentor that provided an alternative approach for the Commission's consideration. They recommend that cumulative impacts be analyzed in a series of individual, stand-alone studies addressing specific resources. This approach is supported by Oregon Department of Fish and Wildlife.

¹ Copies of the discussion paper are available from Alan Mitchnick at (202) 219-2826.

We will further explore this approach (see approach D below).

(4) Many of the comments were based on incorrect understanding of the two approaches.

(4a) Many commented that they believed that the cumulative analysis under approach A would only look at cumulative effects of the projects being evaluated in multi- or single project documents and would ignore the effects of the later filed applications. Thus, they believe that the analysis is project based and not basin wide.

The cumulative analysis under approach A would only look at cumulative effects of the projects being evaluated in multi- or single project documents and would ignore the effects of the later filed applications. Thus, they believe that the analysis is project based and not basin wide.

basin (as in approach B), but, instead of waiting until the cumulative assessment is complete, we would concurrently prepare a project-specific, multi-project EIS for the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects (as we would in approach A). Subsequent NEPA documents would tier off of the cumulative analysis. This approach allows us to move forward with the first four projects concurrently with a cumulative effects analysis.

Approach D

The following are selected excerpts from the American Rivers and Idaho Rivers United proposal.⁴

Cumulative impacts would be analyzed in a series of individual, stand-alone studies addressing specific resources that are or may be affected by cumulative impacts.

The individual cumulative impact studies would form the basis for the evaluation of cumulative impacts in each project-specific NEPA document. In other words, the project-specific NEPA documents would tier to or incorporate only relevant individual cumulative impact analyses. The cumulative impact study results, including proposed remedial/protective measures, would then be used to identify specific action alternatives and remedial/protective measures in the project-specific NEPA document.

Each cumulative impact analysis would be designed to identify the causes of resource degradation at a broad spatial scale and over time, and to identify remedial and protective measures to restore and conserve the resource. The studies would identify interactions between Idaho Power's dams and other human activities in the Basin that degrade resources and identify remedial and protective measures at the scale of the analysis (e.g., increase flows by a specified amount, provide passage to potential spawning habitat, restore riparian habitat). Project-specific measures (e.g., the identification of how to provide passage to habitat or how to manage flows at a specific dam) would be analyzed in the project-specific NEPA documents.

Scoping of cumulative impact studies should begin immediately, and studies commence as soon thereafter as possible. The project(s)-specific NEPA documents would go forward as scheduled. If a particular cumulative impacts analysis was not complete in time to prepare a project-specific NEPA document as scheduled, there would be two options. First, if the missing information could substantially alter the alternatives under consideration, the project-specific analyses and final licensing decision would be stayed, and annual licenses would be issued with interim mitigation. If the missing information would not substantially alter the alternatives, then a specific "reopener" would be included in the project license to allow for post-licensing modification.

Comparison of Approaches

The primary difference between approaches A and B is that approach A reviews

define that reserved authority as narrowly and with as much specificity as possible..."

Reopeners create uncertainty for licensees and are not to be used as a substitute for reasoned decision-making. Environmental documents must contain sufficient information to evaluate the environmental and economic consequences of a project. Use of reopeners will not be feasible in all cases.

Conditioning Annual Licenses

project-specific as well as cumulative impacts from the beginning, while approach B focuses on basin-wide cumulative impacts before starting any project-specific documents. Mitigation and enhancement measures could be required at an earlier date under approach A than under approach B.

Approach C incorporates some of the points in approaches A and B. It would allow the project-specific analyses of the earlier filed applications to proceed simultaneously with preparation of a cumulative analysis for the basin.

Approach D is similar to approach C except it envisions separate studies for each resource instead of one document exploring all the cumulatively affected resources.

⁴ See the March 5, 1997, letter from Rob Masonis, American Rivers, 400 East Pine Street, Suite 225, Seattle, Washington 98122. A copy of the complete filing is available from the Commission.

APPENDIX B

SUMMARY OF ADDITIONAL STUDY REQUESTS Bliss (FERC No. 1975), Lower Salmon Falls (FERC No. 2061), Upper Salmon Falls (FERC No. 2777), and Shoshone Falls (FERC No. 2778) Projects			
#	Agency	Study Request	Cross ref.
Bliss, Lower Salmon Falls, and Upper Salmon Falls Projects			
1	FWS	Stream habitat and flow studies related to white sturgeon	13, 22, 28, 36, 64
2	FWS	White sturgeon habitat needs	4, 13, 22-24, 28, 30, 31, 60, 61, 64
3	FWS	Instream flow study downstream of Bliss dam	28, 32, 36, 64
4	FWS	Fish passage for salmon and steelhead and anadromous fish reintroduction feasibility study	2, 12, 23, 30, 35, 60, 66
5	FWS	Analysis of the effects of load following on fish and wildlife and their habitat from upper end of Upper Salmon Falls to upper end of C.J. Strike	8, 14, 22, 27, 28, 61
6	FWS	Sediment and nutrient dynamics	14, 20, 28, 29, 36, 54, 63, 64
7	FWS	Consideration of the Thousand Springs Project's effects on listed species and other terrestrial and aquatic fish and wildlife and their habitats	19, 51, 53
8	FWS	Effects of flow fluctuation on wildlife and their habitats	5, 27
9	FWS	Effects of project construction and operation on wildlife and their habitats--i.e. verification of HEP modeling results	
10	FWS	Habitat evaluation procedures study--effects in scrub-shrub habitat, and comparison of before and after conditions at Upper Salmon Falls	
11	FWS	Accurate valuation of proposed protection, mitigation, and enhancement plans for wildlife--i.e. accurate comparison of HUs lost to project construction to HUs gained from PM&E measures	26
12	FWS	Satisfaction of protection, mitigation, and enhancement needs--i.e. agreement on method to determine type and level of mitigation needed	4, 12, 36, 63-66
13	FWS	Cumulative effects study of serial impoundments on the Snake River on fish and wildlife species in all project areas due to be relicensed in foreseeable future	1, 2, 28, 52-62, 70
14	EPA	Detailed water quality and quantity description	5, 6, 20, 36, 63, 64

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SUMMARY OF ADDITIONAL STUDY REQUESTS Bliss (FERC No. 1975), Lower Salmon Falls (FERC No. 2061), Upper Salmon Falls (FERC No. 2777), and Shoshone Falls (FERC No. 2778) Projects			
#	Agency	Study Request	Cross ref.
15	ECWC	Determine fish stocking at Glenns Ferry to mitigate loss of rearing ponds	
16	IDPR	Hagerman reach river access take-out	19
17	IDPR	Bliss dam river access and recreation use survey below Bliss dam	47
18	IDPR	Suitability analysis of a river access site at Bancroft Springs	48
19	IDPR	Inclusion of the recreation and access facilities at Thousand Springs in the three project license area	7, 46, 51
20	IDEQ	Impacts on nutrient processing and sediment dynamics	6, 14, 29, 36, 54, 55, 63, 64
21	IDEQ	Explanation of water quality analysis methodology and additional data analysis on existing data to explain project impacts on water quality	
22	IDFG	Effects of load following on downstream biological communities--downstream of Lower Salmon Falls Dam and Bliss dam	1, 2, 5, 28, 61
23	IDFG	Improving passage for rainbow trout and white sturgeon	2, 4, 30, 60
24	IDFG	Preventing entrainment for white sturgeon	2, 31
25	IDFG	Detailed wildlife protection and enhancement plan for each parcel proposed by IPC	
26	IDFG	Evaluation of terrestrial habitat units gained through proposed mitigation	11
27	IDFG	Describe and quantify current and future load following operation and their effect on riparian vegetation and associated wildlife	5, 8, 37
28	AR/IRU	Biological effect of load following at Bliss and Lower Salmon Falls--effects on fish and invertebrate communities	1, 2, 3, 5, 6, 13, 22, 61
29	AR/IRU	Effects of flow regulation on sediment transport	6, 20, 36, 54, 63, 64
30	AR/IRU	Fish passage--need and feasibility of passage for white sturgeon, rainbow trout, and other species of interest	2, 4, 23, 60
31	AR/IRU	Fish entrainment	2, 24
32	AR/IRU	Bliss reach IFIM	3, 36, 64
33	AR/IRU	Limiting factors analysis in free-flowing reaches--determine factors limiting cold-water fish production and the role dams play	
34	AR/IRU	Aquatic habitat inventory (pre-project and current)	58

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SUMMARY OF ADDITIONAL STUDY REQUESTS
Bliss (FERC No. 1975), Lower Salmon Falls (FERC No. 2061),
Upper Salmon Falls (FERC No. 2777), and Shoshone Falls (FERC No. 2778) Projects

#	Agency	Study Request	Cross ref.
35	AR/IRU	Anadromous fish reintroduction potential	4, 66
36	AR/IRU	Flow augmentation--need and options for additional flows to benefit aquatic systems	1, 3, 6 12, 14 20, 29, 32, 53, 54, 64
37	AR/IRU	Effects of flow regulation on riparian vegetation	5, 8, 27
38	AR/IRU	Site evaluations for wetland construction or restoration and riparian vegetation restoration	72
39	AR/IRU	Wildlife HIEP along free-flowing reaches	
40	AR/IRU	Evaluation of opportunities for protecting spring habitats	
41	AR/IRU	Economic and power effects of eliminating load-following at Bliss and Lower Salmon Falls	
42	AR/IRU	Cost evaluation of proposed protection, mitigation, and enhancement measures	
43	AR/IRU	Aesthetic effects of Upper Salmon Falls, Lower Salmon Falls, and Bliss Projects	45
44	AR/IRU	Documentation of attempts to obtain historical records and information regarding pre-construction environmental conditions	
45	NPS	Aesthetic evaluation of the impacts of the three projects	43
46	NPS	Bliss Bridge/Hagerman reach boating access	16, 19
47	NPS	Boating access below Bliss dam	17
48	NPS	Public access to the Snake River across from Bancroft Springs	18
49	NPS	Bell Rapids access on the Lower Salmon Falls reservoir	
50	NPS	Multi-day boating trip potential for the Snake River	
51	NPS	Inclusion of the Thousand Springs Project and area--consider these resources in additional studies of recreation needs and opportunities	7, 19
52	CBFWA	Geomorphology--cumulative project effects on mainstem river geomorphology and resulting effects on ecological processes	13, 64
53	CBFWA	Hydrology--cumulative project effects on mainstem river flow regimes and resulting effects on ecological processes	7, 13, 36, 64
54	CBFWA	Sediment dynamics--cumulative project effects on mainstem river sediment recruitment and transport and resulting effects on biophysical processes	6, 13, 20, 29, 36, 63, 64

B-3

SUMMARY OF ADDITIONAL STUDY REQUESTS
Bliss (FERC No. 1975), Lower Salmon Falls (FERC No. 2061),
Upper Salmon Falls (FERC No. 2777), and Shoshone Falls (FERC No. 2778) Projects

#	Agency	Study Request	Cross ref.
55	CBFWA	Water quality--cumulative project effects on mainstem river water quality and quantity and resulting effects on biophysical processes	13, 20, 59, 63, 64
56	CBFWA	Fish inventory--characterization of pre- and post-project fish resources and habitat in the mainstem river and cumulative project impacts on resources	13, 59, 64
57	CBFWA	Aquatic invertebrate inventory of the mainstem river from Milner to Lower Granite	13, 59, 64
58	CBFWA	Aquatic habitat inventory--assessment of pre- and post-project habitat conditions in mainstem river from Milner to Lower Granite	13, 34, 59, 64
59	CBFWA	Evaluation of trophic relationships of the mainstem river and adjacent riparian, wetlands, and uplands from Milner to Lower Granite	13, 55-58, 64
60	CBFWA	Fish passage--need and opportunities to provide fish passage at all projects between Hells Canyon and Shoshone Falls	2, 4, 13, 23, 30, 64
61	CBFWA	Assessment of water level fluctuation effects on aquatic species from Shoshone Falls dam to Hells Canyon and at the Malad projects	2, 5, 13, 22, 28, 64
62	CBFWA	Assessment of IPC's anadromous fish mitigation program	13
63	CBFWA	Water quality protection, mitigation, and enhancement--needs and opportunities on mainstem river from Milner to Lower Granite	6, 12, 14, 20, 29, 54, 55
64	CBFWA	Flow related protection, mitigation, and enhancement	1, 2, 3, 6, 12, 14, 20, 29, 32, 36, 52-60
65	CBFWA	Evaluation of options to shape releases from Brownlee reservoir and provide more water to meet instream targets in the lower Snake River	12
66	CBFWA	Anadromous fish reintroduction	4, 12, 35
67	CBFWA	Develop monitoring criteria for assessing ecological health--integrative monitoring protocol for evaluating PM&E measures and river's health	
68	CBFWA	Vegetation inventory, mapping, and assessment--pre- and current-project vegetation along mainstem river from Milner to Lower Granite	
69	CBFWA	Wildlife inventory of all IPC lands from Milner to Lower Granite	
70	CBFWA	Wildlife habitat inventory and assessment--pre- and current-project habitat conditions from Milner to Lower Granite	13
71	CBFWA	Identification and assessment of operation-related wildlife impacts	

B-4

SUMMARY OF ADDITIONAL STUDY REQUESTS			
Bliss (FERC No. 1975), Lower Salmon Falls (FERC No. 2061), Upper Salmon Falls (FERC No. 2777), and Shoshone Falls (FERC No. 2778) Projects			
#	Agency	Study Request	Cross ref.
72	CBFWA	Wetlands and riparian protection, mitigation, and enhancement needs on all lands between Milner and Lower Granite	38
73	CBFWA	Wildlife protection, mitigation, and enhancement needs on all lands between Milner and Lower Granite	
74	CBFWA	Inventory and analysis of land ownership and use within 1 mile of mainstem and major tributaries from Milner to Lower Granite	
75	CBFWA	Assessment of project-controlled flows and water levels on aquatic recreation	
Shoshone Falls Project			
1	IDFG	Sturgeon population status in the Shoshone Falls Project reach	
2	IDFG	Evaluation of total dissolved gas supersaturation below Shoshone Falls	
3	IDFG	Evaluation of the feasibility of acquisition of Devil's Corral for a fish and wildlife protection, mitigation, or enhancement measure	

Study Requestors:

AR/IRU	American Rivers/Idaho Rivers United (3/19/96)
CBFWA	Columbia Basin Fish and Wildlife Authority (9/23/95; adopted by FWS and AR/IRU)
ECWA	Elmore County Wildlife Club (2/12/96)
EPA	Environmental Protection Agency (3/18/96)
FWS	U.S. Fish and Wildlife Service (3/18/96)
IDBQ	Idaho Department of Environmental Quality (3/19/96)
IDFG	Idaho Department of Fish and Game (3/19/96; 7/28/97)
IDPR	Idaho Department of Parks and Recreation (3/19/96)
NPS	National Park Service (3/19/96)

DESCRIPTION OF PAST, PRESENT, AND FUTURE ACTIONS
IN THE SNAKE RIVER BASIN

C.1 Description of Past and Ongoing Actions in the Snake River Basin

Water Resource Development in the Snake River Basin

There are 23 dams on the mainstem that impound nearly 50 percent of the river. These facilities are described in table C-1.

The Bureau of Reclamation's (BR) projects are largely found in the upper part of the basin. BR operates 21 storage reservoirs in the basin, including four projects on the mainstem (Jackson, Palisades, American Falls, and Minidoka). Hydropower projects operated by BR include Minidoka (Snake River), Palisades (Snake River), Anderson Ranch (South Fork Boise River), Boise River diversion (Boise River), and Black Canyon (Payette River); hydropower at Arrowrock (Boise River), Cascade (North Fork Payette River), American Falls (Snake River), and Island Park (Henry's Fork) is licensed by the Commission.

Idaho Power's projects are located in the middle part of the basin. In addition to the eight relicense projects discussed in this document, Idaho Power operates the American Falls, Milner, Twin Falls, Cascade, Thousand Springs, and Clear Lake Projects--the last two are unlicensed.

The Corps of Engineers' (Corps) projects are found mainly in the lower basin. The Corps operates four projects on the mainstem (Lower Granite, Little Goose, Lower Monumental, and Ice Harbor), along with Lucky Peak (Boise River) and Dworshak (North Fork Clearwater River) reservoirs on tributaries; all these projects have hydropower (hydropower facilities at Lucky Peak are licensed by the Commission).

Including the Idaho Power projects, the Commission has issued 53 licenses and 69 exemptions for projects operating in the Snake River Basin, including 12 projects on the mainstem (see table C-1).

Water resource development in the basin has significantly modified the quantity and timing of flows in the basin. The largest storage facilities, with a total storage capacity of 9.6 million acre-feet, are described in table C-2.

Table C-1. Dams located on the mainstem Snake River, listed in order from upstream to downstream.								
Dam	Owner	FERC Project No.	Year Built	Generating Capacity (megawatts)	Gross Head (feet)	Reservoir length (miles)	Reservoir area (acres)	Snake River mile
Upstream of Idaho Power Relicenses								
Jackson	Bureau of Reclamation	--	1906	none	--	12	25,540	988.9
Palisades	Bureau of Reclamation	--	1957	127.3	244	20 (mainstem) 18 (tributaries)	16,150	901.6
Idaho Falls-upper	City of Idaho Falls	2842	1930	8.0	20	2	100	804.7
Idaho Falls-city	City of Idaho Falls	2842	1913	8.0	21	1	50	798.1
Idaho Falls-lower	City of Idaho Falls	2842	1940	11.0	20	2	100	793.6
Gem State	City of Idaho Falls	2952	1989	22.6	200	4	305	786.8
American Falls	Bureau of Reclamation	2736 ¹	1926 ²	92.3	88	20	56,000	714
Minidoka	Bureau of Reclamation	--	1909	13.6	48	14	11,830	675
Milner	Twin Falls and North Side Canal Companies	2899 ³	1992	59.4	152	22	3,000	639
Twin Falls	Idaho Power Company	18	1935	52.1	142	1	96	618
Idaho Power Relicenses Reach								
Shoshone Falls	Idaho Power Company	2778	1907	12.5	212	1.2	60	615
Upper Salmon Falls	Idaho Power Company	2777	1937	powerhouse A-18.0 powerhouse B-16.5	powerhouse A-44 powerhouse B-36	1	50	581.4
Lower Salmon Falls	Idaho Power Company	2061	1949	60.0	59	6.6	750	572.9
Bliss	Idaho Power Company	1975	1949	75.0	70	5	255	560
C.J. Strike	Idaho Power Company	2055	1952	82.8	88	39	7,500	492
Swan Falls	Idaho Power Company	503	1901 ⁴	25.0	25	27	900	456
Brownlee	Idaho Power Company	1971	1958	585.4	272	60	14,621	285

Table C-1 (cont.). Dams located on the mainstem Snake River, listed in order from upstream to downstream.								
Dam	Owner	FERC Project No.	Year Built	Generating Capacity (megawatts)	Gross Head (feet)	Reservoir length (miles)	Reservoir area (acres)	Snake River mile
Oxbow	Idaho Power Company	1971	1961	190.0	122	12	1,150	273
Hells Canyon	Idaho Power Company	1971	1967	391.5	221	55	15,000	248
Downstream of Idaho Power Relicenses								
Lower Granite	U.S. Army Corps of Engineers	--	1975	810.0	100	43.9	8,900	107.5
Little Goose	U.S. Army Corps of Engineers	--	1970	810.0	98	37.2	10,025	70.3
Lower Monumental	U.S. Army Corps of Engineers	--	1969	810.0	99	28.7	6,600	41.6
Ice Harbor	U.S. Army Corps of Engineers	--	1961	602.9	98	31.9	9,200	9.7

¹ Hydropower projects operated by Idaho Power Company

² Hydropower completed in 1978.

³ Hydropower operated by Idaho Power Company and Milner Dam, Inc.

⁴ New powerhouse completed in 1994.

Water Use

Dominant water uses in the Snake River Basin are:

- Irrigation diversions--occur throughout the basin; more than 14 million acre-feet of water is diverted by canals and pumps
- Hydropower diversions (non-consumptive)--occur throughout the basin, except the Salmon River Basin; the greatest diversions occur in the lower part of the basin
- Commercial, domestic, industrial, livestock, and private use--these uses combined make up about 5 percent of water use in the basin

Land Use

Major land uses in the Snake River include:

- Agriculture--about 85 percent of all irrigated agriculture in Idaho occurs in the Snake River plain, totaling over 3 million acres
- Livestock grazing--occurs primarily in the central part of the basin
- Logging--occurs primarily in the headwaters and Salmon River Basin
- Mining--occurs throughout the basin, but usually not in proximity to the mainstem of the Snake River.

The extent and location of agriculture, grazing, and logging can be seen to some degree from land cover/land use patterns (table C-3).

Other Actions

Other ongoing actions in the Snake River Basin include:

- Aquaculture--approximately 70 percent of the commercially produced trout in the United States are produced in the 60 to 70 hatcheries that use natural spring water from the north shore of the Snake River near Twin Falls.
- Agricultural runoff--occurs throughout the basin except in wilderness and mountainous areas
- Recreation--heavy recreational use occurs at the large reservoirs and lakes throughout the basin

Table C-2. Storage facilities (greater than 100,000 acre-feet) located upstream of Hells Canyon dam.

Facility	Stream	Owner ¹	Storage Capacity (thousands of acre-feet)	Year Storage Began
Jackson Lake	Snake River	BR	847	1906
Palladas reservoir	Snake River	BR	1,400	1956
American Falls reservoir	Snake River	BR	1,700	1926
Lake Walcott	Snake River	BR	107	1906
C.J. Strike reservoir	Snake River	Idaho Power	250	1952
Brownlee reservoir	Snake River	Idaho Power	1,469	1958
Hells Canyon	Snake River	Idaho Power	176	1967
Island Park reservoir	Henrys Fork	BR	127	1938
Ririe reservoir	Willow Creek	Corps	100	1975
Blackfoot reservoir	Blackfoot River	BIA	413	1910
Salmon Falls Creek reservoir	Salmon Falls Creek	Salmon River Canal Co.	182	1910
Magic reservoir	Big Wood River	Big Wood Canal Co.	191	1909
Lake Owyhee	Owyhee River	BR	1,122	1933
Anderson Ranch reservoir	South Fork Boise River	BR	464	1945
Arrowrock reservoir	Boise River	BR	286	1917
Lucky Peak Lake	Boise River	Corps	307	1954
Lake Lowell	Boise River	BR	177	1908
Warm Springs reservoir	Malheur River	BR	190	1919
Cascade reservoir	North Fork Payette River	BR	703	1947
Deadwood reservoir	Deadwood River	BR	160	1930

BIA = Bureau of Indian Affairs; BR = Bureau of Reclamation; Corps = U.S. Army Corps of Engineers; Idaho Power = Idaho Power Company.

Table C-3. Dominant land uses in the Snake River Basin, by geographic region.

Land use	Geographic region						
	Headwaters Snake	Upper Snake	Middle Snake--Bolsé River	Middle Snake--Powder River	Lower Snake	Salmon River	Clearwater River
agriculture (%)	4.9	31.6	14.6	27.4	50.3	15.8	16.8
range (%)	3.3	48.3	62.2	29.9	20.2	16.5	0.3
forest (%)	86.8	18.1	20.1	41.8	28.1	62.4	82.2



C.2 Planned and Future Actions in the Snake River Basin

Various management plans are being developed that may affect the resources of the Snake River. Of particular importance are plans to secure additional flows from the upper Snake River Basin to improve downstream salmon passage, future plans to restore anadromous fish upstream of Hells Canyon, measures to recover federally listed aquatic snail species, plans to improve water quality in the middle Snake River, plans for groundwater recharge in the Hagerman Valley area, growth of irrigated agriculture in the basin, and the results of ongoing water adjudications in the basin. A preliminary list of management plans, recommendation documents, and potential future actions is found in appendix D. Some of the primary actions in terms of their potential effect on the Idaho Power project areas and other FERC projects are described below.

Primary Basin-wide Actions

Snake River Resources Review--BR is preparing a comprehensive review of the operation of its projects upstream of the Idaho Power projects. Their goal is to develop a single model to guide project operation and enable better management of water and related resources in the Snake River Basin. The review began in 1995 and is expected to be completed in 2000. Any changes in upstream BR projects, such as increased flows, would likely have an effect on the river reaches affected by the Idaho Power relicenses.

NMFS Proposed Recovery Plan for Snake River Salmon--General tasks that could interact with the Idaho Power projects include: providing adequate instream flows to rebuild salmon populations; reducing loss of juvenile fish through flow augmentation and improved water management; reducing loss of listed species associated with poor water quality; and restoring chinook salmon by introducing them into historic habitat (one element of the plan concerns the feasibility of reintroducing Snake River fall chinook into native habitat upstream of the Hells Canyon Complex).

NMFS Biological Opinion (BO)--The BO for the federal Columbia River power system calls for BR to secure additional water for flow augmentation after 1998 as may be necessary to further reduce human-caused mortality of endangered salmon in the Snake River. A new BO, which will be issued in 1999, could include a different set of reasonable and prudent measures.

Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program--The program calls for, among other things, an additional 1,000,000 acre-feet of storage for juvenile salmon migration from the Snake River Basin.

Interior Columbia Basin Ecosystem Management Project--FS and BLM are developing an ecosystem-based strategy for management of lands under their jurisdiction in the Upper Columbia River Basin in Idaho, Montana, Utah, Nevada, Wyoming, and parts of Washington. The strategy will focus on ecosystem health, including its forest, rangeland, and aquatic/riparian, landscape and social/economic components, with emphasis on population viability and sustainability of threatened, endangered, and sensitive species. The draft EIS is due to be issued in 1997. The Idaho Power relicenses affect both FS and BLM lands.

Total Daily Maximum Load (TDML) Plans for the mid-Snake River--TDML plans are required for water quality limited reaches. Phase I plans involve total phosphorous; subsequent plans will consider, among others, sediment and nitrogen reduction. These plans have the potential to significantly improve water quality in the section of the Snake River between Milner dam and King Hill, Idaho, which includes five of the Idaho Power relicenses.

FERC Projects in Snake River Basin

Environmental protection measures that have been proposed for the Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects (see sections 3.1.3 and 3.2.3) and additional potential measures for these four projects along with the other four Idaho Power projects up for relicensing (table 1), should enhance many of the resources that have been cumulatively affected in the basin.

In addition to the eight Idaho Power projects up for relicensing, there are other potential new hydropower development and other relicensing activity in the basin. There are four applications for license involving new construction pending before the Commission (table C-4). Four existing licenses expire between 1996 and 2010 (table C-5). Further, the Auger Falls Project (FERC No. 4797)¹ was licensed in 1991, but construction has not yet begun.

Table C-4. Pending applications for new hydropower construction in the Snake River Basin.

Project Name	Project No.	Location	Status	Comments
Sahko	11060	near Filer, Idaho	scoping completed; awaiting additional information	on existing irrigation ditch
Shelley	5090	SNAKE RIVER, downstream of Idaho Falls, Idaho	Commission order denying license issued September 1997	25-foot-high, 300-foot-long dam across Snake River; 2.7-mile-long reservoir
Dworshak Small Hydro	10819	North Fork Clearwater River, near Orofino, Idaho	final EA issued June 1997	at water intake for Dworshak fish hatchery
Swift Creek	1651	Salt River Basin, Utah	final EA issued; awaiting Commission decision	existing project inoperable due to avalanche; proposal to repair and increase capacity

¹ The Auger Falls Project would involve the construction of an 18-foot-high, 340-foot-long dam across the Snake River, about 0.25 mile downstream from Twin Falls, Idaho, and would have a generating capacity of 43.6 MW.

Table C-5. Hydropower licenses in the Snake River Basin that expire between 1996 and 2010, in addition to the Idaho Power projects.

Project name	Project no.	Location	Licensee	Capacity (kW)	Expiration year
Rock Creek	1986	Rock Creek, Powder River Basin, Baker County, Oregon	Oregon Trail Electric Consumers Cooperative	800	1996 ¹
Strawberry ²	2032	Strawberry Creek, Salt River Basin, Wyoming	Lower Valley Power and Light	1,500	1999
Ponds Lodge	1413	Buffalo River, Fremont County, Idaho	Buffalo Hydro L.C.	250	2004
Hettinger	3041	Smith Creek, South Fork Salmon River, Idaho	MacKay Bar Corp.	12	2010

¹ The licensee did not file an application to relicense the project--the license expired on June 29, 1996. An application was filed by Douglas W. Pagar on February 28, 1997.

² Application filed on September 25, 1996.

APPENDIX D

LIST OF MANAGEMENT PLANS AND POTENTIAL FUTURE ACTIVITIES RELEVANT TO THE SNAKE RIVER BASIN (revised December 1997)

- Bonneville Power Administration, Army Corps of Engineers, Bureau of Reclamation. Columbia River system operation review--final environmental impact statement. November 1995.
- Bonneville Power Administration. Endangered Species Act record of decision regarding biological opinions by the National Marine Fisheries Service and U.S. Fish and Wildlife Service on operation of the federal Columbia River power system in 1995 and future years. March 10, 1995.
- Bonneville Power Administration and Idaho Department of Fish and Game. Phase I water rental pilot project: Snake River resident fish and wildlife resources and management recommendations. October 1992.
- Bonneville Power Administration and Idaho Department of Fish and Game. Phase II water rental pilot project: Snake River resident fish and wildlife resources and management recommendations. August 1994.
- Bonneville Power Administration and Idaho Department of Fish and Game. Idaho water rental pilot project probability/coordination study--resident fish and wildlife impacts. Phase III annual report. September 1996.
- Bureau of Land Management. Bennett Hills draft resource management plan and environmental impact statement. Shoshone District. March 1994.*
- Bureau of Land Management. Birds of Prey National Conservation Area management plan. December 1995.
- Bureau of Reclamation. Record of decision implementing actions pursuant to biological opinions of March 1, 1995. March 10, 1995.
- Bureau of Reclamation. Snake River Resources review--blueprint. June 1996.
- Environmental Protection Agency. 1996. Middle Snake River watershed--ecological risk assessment planning and problem formulation. Risk Assessment Group. draft. June 17, 1996.
- *Environmental Protection Agency. 1997. Water quality standards for Idaho: final rule. Federal Register, volume 62, no. 147, pages 41162-41188 (July 31, 1997).*
- Federal Energy Regulatory Commission. Milner, Twin Falls, Auger Falls, and Star Falls Hydroelectric Projects--final environmental impact statement. FERC/EIS-0048F. July 1990.
- Federal Energy Regulatory Commission. Shelley Hydroelectric Project (FERC no. 5090, Idaho)--final environmental impact statement. FERC/EIS-0064F. volumes I and II. February 1994.
- Federal Energy Regulatory Commission. Sahko Hydroelectric Project (FERC no. 11061-001)--scoping document 2. July 1996.

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- Federal Energy Regulatory Commission. Swift Creek Hydroelectric Project (FERC no. 1651)--final environmental assessment. November 1994.
- Federal Energy Regulatory Commission. Dworshak Small Hydro Project (FERC no. 10819)--draft environmental assessment. January 1997.
- Forest Service. Hells Canyon National Recreation Area Comprehensive Management Plan--draft environmental impact statement. Wallowa-Whitman National Forest. 1996.
- Forest Service. Wild and scenic Snake River recreation a management plan--final environmental impact statement. Hells Canyon National Recreation Area, Wallowa-Whitman National Forest. 1994.
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- *Forest Service. Wallowa-Whitman National Forest land and resource management plan. Department of Agriculture, Baker City, Oregon. April 1990.*
- *Forest Service. Integrated noxious weed management plan. Department of Agriculture, Baker City, Oregon. April 1993.*
- *Forest Service. Imnaha River wild and scenic river management plan. Department of Agriculture, Baker City, Oregon. January 1993.*
- *Forest Service. Imnaha River section 7 watershed. Assessment of ongoing and proposed activities. Final report. Wallowa-Whitman National Forest. 1994.*
- *Forest Service. Sheep Creek section 7 watershed. Assessment of ongoing and proposed activities. Final report. Wallowa-Whitman National Forest. 1994.*
- *Forest Service. Snake River section 7 watershed. Assessment of ongoing and proposed activities. Final report. Wallowa-Whitman National Forest. 1994.*
- *Forest Service. Deep Creek section 7 watershed. Assessment of ongoing and proposed activities. Final report. Payette National Forest. 1994.*
- Gooding, Jerome and Lincoln Counties. Coordinated Water Resources Management Plan.
- Idaho Department of Fish and Game. Idaho fisheries management plan--1996-2000. 1995.
- Idaho Department of Health and Welfare. Middle Snake River nutrient management plan--public review draft. Division of Environmental Quality, South Central Idaho Regional Office. February 1995.
- Idaho Department of Health and Welfare. Water quality standards and wastewater treatment requirements. March 20, 1997.*
- *Idaho Department of Parks and Recreation. Idaho statewide comprehensive outdoor recreation and tourism planning: assessment and policy plan. May 1997.**
- Idaho Division of Environmental Quality. The Middle Snake River watershed management plan--public review draft no. 2. Twin Falls Regional Office. October 23, 1996.

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APPENDIX D

LIST OF MANAGEMENT PLANS AND POTENTIAL FUTURE ACTIVITIES RELEVANT TO THE SNAKE RIVER BASIN (revised December 1997)

- Bonneville Power Administration, Army Corps of Engineers, Bureau of Reclamation. Columbia River system operation review--final environmental impact statement. November 1995.
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- *Forest Service. Sheep Creek section 7 watershed. Assessment of ongoing and proposed activities. Final report. Wallowa-Whitman National Forest. 1994.*
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Yakama Indian Nation, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon and the Nez Perce Tribe. Wa-Ran-Uk-Mi-Wa-Ash-Wat (Spirit of the Salmon) 1996

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SCOPING DOCUMENT DISTRIBUTION LIST

1. Service List (List of Intervenor)--Bliss, Lower Salmon Falls, Upper Salmon Falls, and Shoshone Falls Projects¹

Current as of December 15, 1997. #=all four projects; *=Bliss, Lower Salmon Falls, and Upper Salmon Falls Projects; %=Bliss Project; &=Shoshone Falls Project.

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