

# SIXTEENTH ANNUAL REPORT

## BEAR RIVER COMMISSION

1973



For the Report Year October 1, 1972 to

September 30, 1973

LOGAN, UTAH

April 1, 1974

## BEAR RIVER COMMISSION

P. O. BOX 413  
LOGAN, UTAH

April 1, 1974

Mr. President:

Submitted herewith is the Sixteenth Annual Report of the Bear River Commission, as required by Article III D 2 of the Bear River Compact.

A copy of the report is being transmitted to the Governor of each signatory State to the Bear River Compact.

Very truly yours,



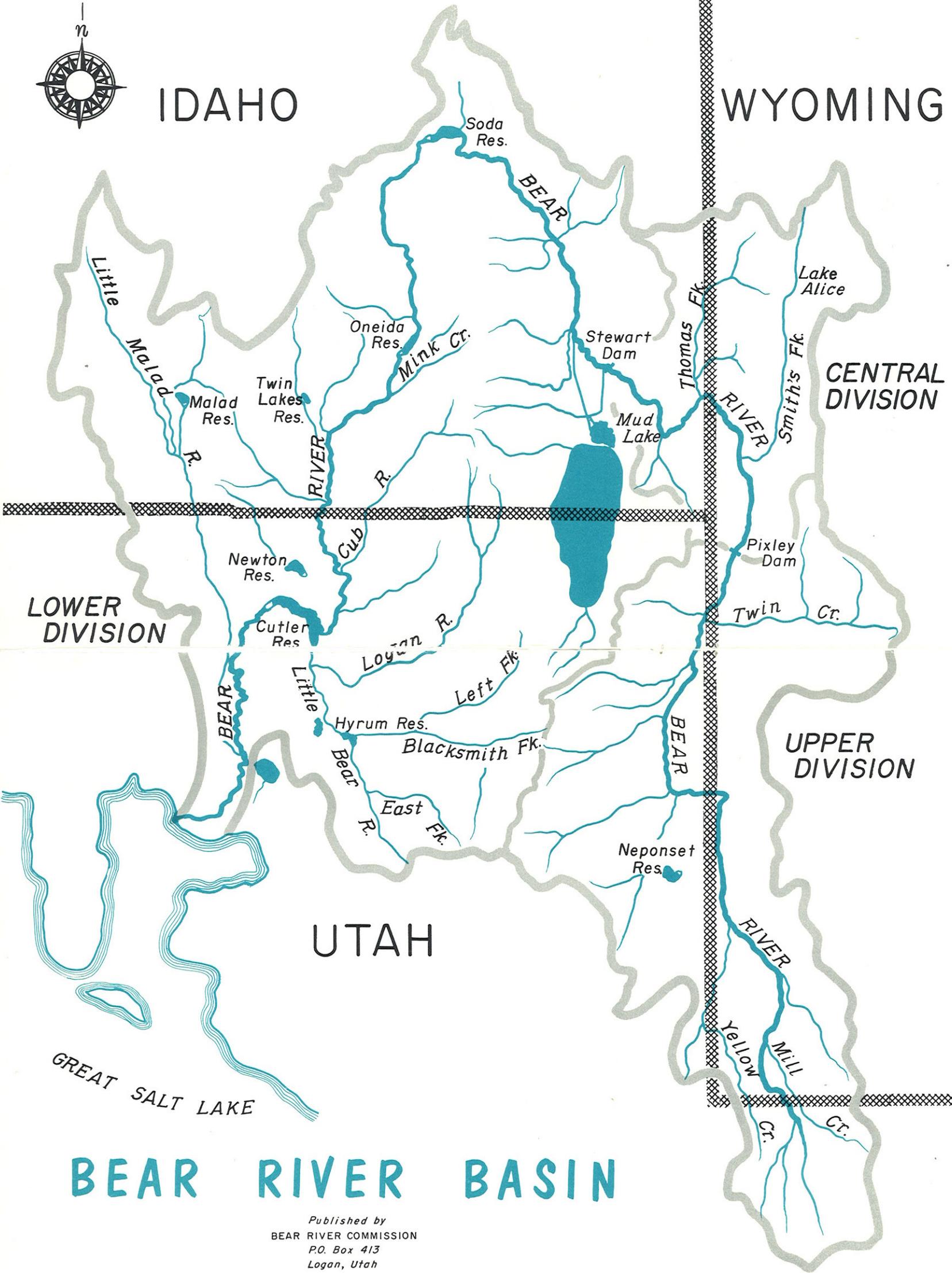
Wallace N. Jibson  
Assistant Secretary

The President  
*The White House*  
Washington, D. C.



IDaho

WYOMING



Published by  
BEAR RIVER COMMISSION  
P.O. Box 413  
Logan, Utah

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# SIXTEENTH ANNUAL REPORT

## of the

## BEAR RIVER COMMISSION

April 1, 1974

### INTRODUCTION

The Bear River Compact determines the rights and obligations of the signatory States of Wyoming, Idaho, and Utah with respect to the waters of Bear River. Federal consent to the Compact was given by the Congress and signed by the President, March 17, 1958. The Bear River Commission was organized as an interstate agency to administer the Compact.

Article III D 2 of the Compact provides that the Bear River Commission shall compile annually a report covering the work of the Commission for the water year ending the previous September 30 and transmit it to the President of the United States and to the Governors of the signatory States on or before April 1 of each year.

Activities of the Bear River Commission during the water year ending September 30, 1973 are summarized in this report. Financial report of the auditors and daily streamflow records are shown in the appendixes.

### ORGANIZATION

Ten commissioners, three representing each State and one the United States, constitute the Bear River Commission. The Federal representative serves as Chairman without vote.

J. W. Myers, Wyoming delegate, was elected in Annual Meeting to serve a first term as Vice-Chairman of the Commission. Other officers of the Commission continue to serve in their respective positions. No changes were made during the year in membership or committee assignments.

## **OFFICERS**

Chairman .....	E. O. Larson, Salt Lake City, Utah
Vice-Chairman.....	J. W. Myers, Evanston, Wyoming
Secretary-Treasurer .....	Daniel F. Lawrence, Bountiful, Utah
Assistant Secretary .....	Wallace N. Jibson, Logan, Utah

## **MEMBERS**

### **Idaho**

Ferris M. Kunz .....	Montpelier, Idaho
William G. Jenkins .....	Malad, Idaho
J. C. Hedin .....	Preston, Idaho
R. Keith Higginson (Ex officio) .....	Boise, Idaho

### **Utah**

Daniel F. Lawrence.....	Bountiful, Utah
Gordon H. Peart .....	Randolph, Utah
S. Paul Holmgren .....	Bear River City, Utah

### **Wyoming**

Floyd A. Bishop .....	Cheyenne, Wyoming
S. Reed Dayton .....	Cokeville, Wyoming
J. W. Myers .....	Evanston, Wyoming

### **United States**

E. O. Larson .....	Salt Lake City, Utah
--------------------	----------------------

### **Budget Committee**

J. W. Myers .....	Evanston, Wyoming
S. Paul Holmgren .....	Bear River City, Utah
Ferris M. Kunz .....	Montpelier, Idaho

### **Operations Committee**

S. Reed Dayton .....	Cokeville, Wyoming
William G. Jenkins .....	Malad, Idaho
Gordon H. Peart .....	Randolph, Utah

## MEETINGS

Two meetings were held during the report year in accordance with the bylaws as follows:

Regular Meeting—December 20, 1972....Salt Lake City, Utah  
 Annual Meeting—April 23, 1973.....Salt Lake City, Utah

## BUDGET AND FISCAL DISBURSEMENTS

### Adopted Budget

<b>Compact Administration</b>	<b>Fiscal Year Ending 6-30-1973</b>	<b>Fiscal Year Ending 6-30-1974</b>	<b>Fiscal Biennium Ending 6-30-74</b>
Personal Services .....	\$ 6,294	\$ 6,708	\$ 13,002
Travel and Subsistence .....	250	200	450
General Office Expense .....	300	250	550
Fiscal and Administrative .....	352	364	716
Washington Office Tech. Charge	704	728	1,432
Printing and Reproduction.....	500	600	1,100
Treasurer (Bond and Audit).....	300	300	600
Transcribing Minutes .....	100	100	200
Legal Retainer Fee .....	300	300	600
Miscellaneous .....	0	0	0
Sub-Total .....	\$ 9,100	\$ 9,550	\$ 18,650

### Stream-Gaging Program

U.S. Geological Survey .....	\$67,200*	\$72,700	\$139,900
Total .....	\$76,300*	\$82,250	\$158,550

\*As revised by \$1,600 decrease.

### Allocation of Budget

U.S. Geological Survey .....	\$33,601	\$36,350	\$ 69,951
State of Idaho .....	14,233	15,300	29,533
State of Utah .....	14,233	15,300	29,533
State of Wyoming .....	14,233	15,300	29,533
Total .....	\$76,300	\$82,250	\$158,550

All disbursements of Commission funds are made by check on vouchers signed by the Secretary-Treasurer, and approved and counter-signed by the Chairman or Vice-Chairman.

The audit of accounts and records, including balance sheet of June 30, 1973 and statement of budget revenue and appropriation accounts for the fiscal year ended June 30, 1973, are included in this report as appendix A.

## STREAM-GAGING PROGRAM

A cooperative, basin-wide program of stream gaging is administered by the Geological Survey project engineer at Logan, Utah. The Geological Survey and Bear River Commission contribute equally to finance the collection of daily streamflow records at about 50 gaging stations. An additional eight gaging stations in the basin are operated by Utah Power & Light Company in connection with Federal Power Commission projects. Streamflow records of significance to the Commission are published herein as appendix B.

Gaging stations were installed as of October 1, 1973 at potential dam sites on the West Fork of Bear River below Deer Creek and on the East Fork of Bear River above diversions. A review of the present stream-gaging program included a recommendation for discontinuance of two stations on the lower Malad River and two on Little Bear River. These will be discontinued in the 1974 water year.

## ADMINISTRATION OF BEAR RIVER COMPACT

Provisions of the Compact are administered and enforced by direction of Bear River Commission. However, water rights within each State are adjudicated and administered in accordance with State law subject to limitations provided in the Compact.

Cooperative stream-gaging agreements with the Geological Survey include a program of administrative and technical assistance to the Commission financed without matching Federal funds. This program is directed by the Geological Survey project engineer at Logan where the project office is also the principal office of the Commission.

The project engineer is Assistant Secretary to the Commission with responsibility of providing technical assistance and current streamflow information required to administer the Compact. He establishes operational procedures, conducts hydrologic studies, compiles annual reports, and maintains the records of the Commission.

Seasonal daily records were collected on about 130 diversions above Bear Lake by district water commissioners under the general supervision of the Geological Survey. These records include all of the diversions from Bear River main stem and Smiths Fork, as they are required to administer the Bear River Compact. Daily discharge records for canals in the Central Division have been published in all annual reports. Records for the Upper Division, beginning in 1971, are now being published. (See frontispiece map for division boundaries and tables 1-10 for the daily records.)

Expenses incurred by the Bear River Commission are paid equally by the signatory States. Compensation and expenses of the Federal representative, each commissioner, and each adviser are paid by the Government which he represents.

## WATER SUPPLY

Water supply was about average from the Uinta watershed in the early part of the irrigation season but dropped rapidly after mid-June. Central and Lower Division supply was only about 80 percent of average during the irrigation season, but shortages were reduced by above-average precipitation in July, August, and September.

The bar charts on the opposite page (figure 1) illustrate a comparison of monthly and yearly streamflow in 1973 with a longtime average. Mean flow in cubic feet per second is shown at three gaging stations representing the Upper, Central, and Lower Divisions of the basin. Streamflow at the two upper stations is the major supply for the Upper and Central Divisions so is shown also on daily hydrographs in figures 2 and 3. Seasonal and water-year discharge at these stations is summarized in acre-feet in the following table:

*Discharge in Acre-feet — May - September*

	Average 1943-73	1972	1973
Upper Bear River .....	116,000	127,400	114,500
Smith Fork .....	109,900	163,700	81,200
Logan River .....	122,600	182,100	102,500

*Water Year*

	Average 1943-73	1972	1973
Upper Bear River .....	138,800	155,600	138,900
Smith Fork .....	142,700	206,200	114,500
Logan River .....	183,800	275,500	166,600

Diversion from Bear River via the Rainbow Inlet Canal to Bear Lake (for storage or bypass) was 339,000 acre-feet in 1973 and, though 37 percent above a longtime average, was much less than the record high of 568,000 acre-feet diverted last year. Outflow during the year exceeded inflow with a resulting net loss in content of 70,600 acre-feet.

The bar charts in figure 4, page 16, illustrate the hydrology of Bear Lake in 1973 compared to the 1924-73 average inflow, outflow, and gain. Gain from tributaries, as shown, represents the effect of peripheral tributary and ground water inflow exclusive of Bear River water. Thus, under natural conditions without Bear River, the Lake in 1973 would have gained 64,000 acre-feet over its evaporation and other losses compared to an average gain of 11,600 acre-feet. Water-year hydrographs of 1972 and 1973 surface elevations are shown in figure 5, page 17.

*Bear Lake Elevation (U.P. & L. Datum)*

Water Year	Beginning of Water Year	End of Storage Period	End of Water Year
1972 .....	5,920.98	5,923.39	5,920.85
1973 .....	5,920.85	5,921.28	5,919.84

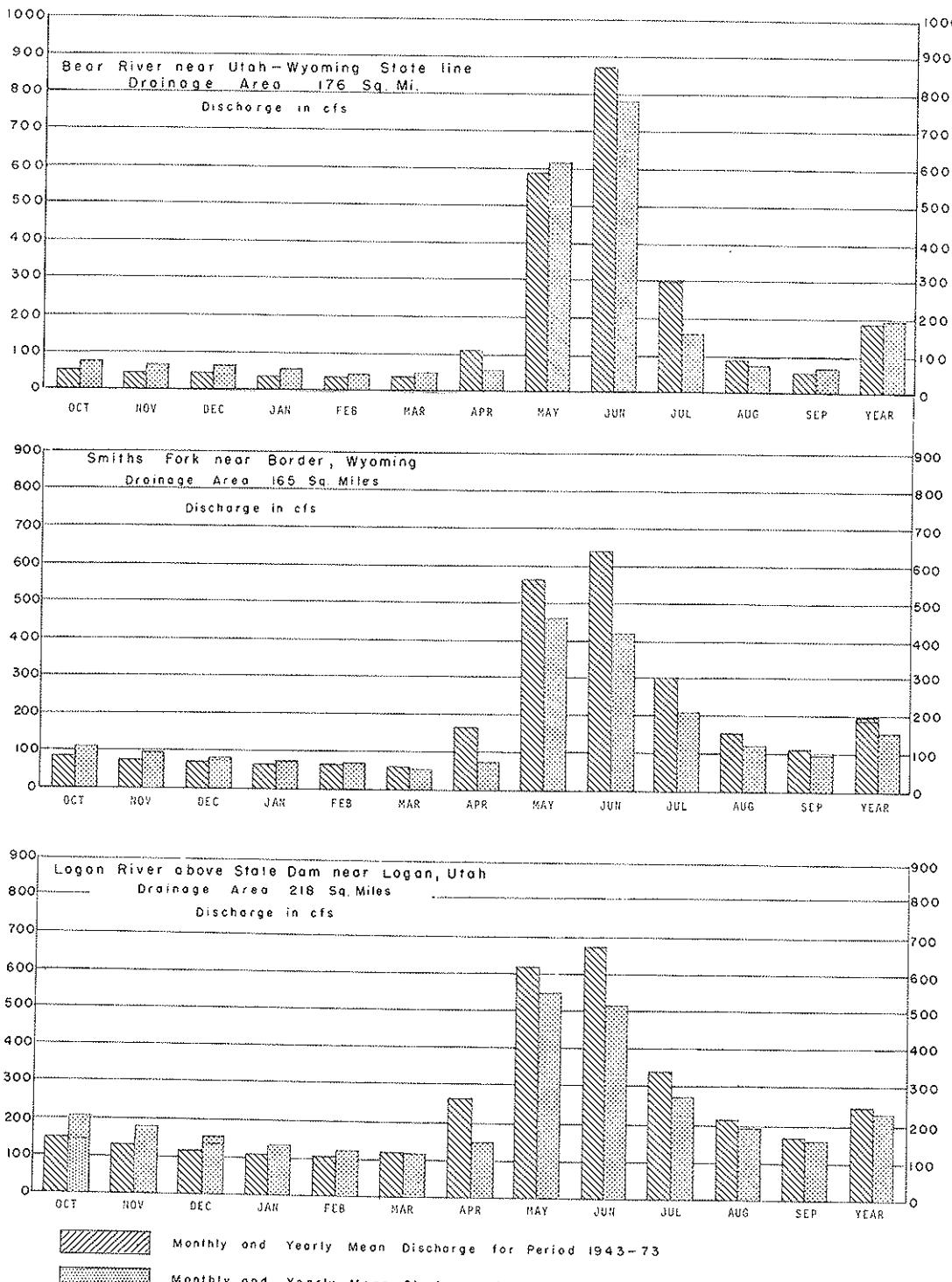
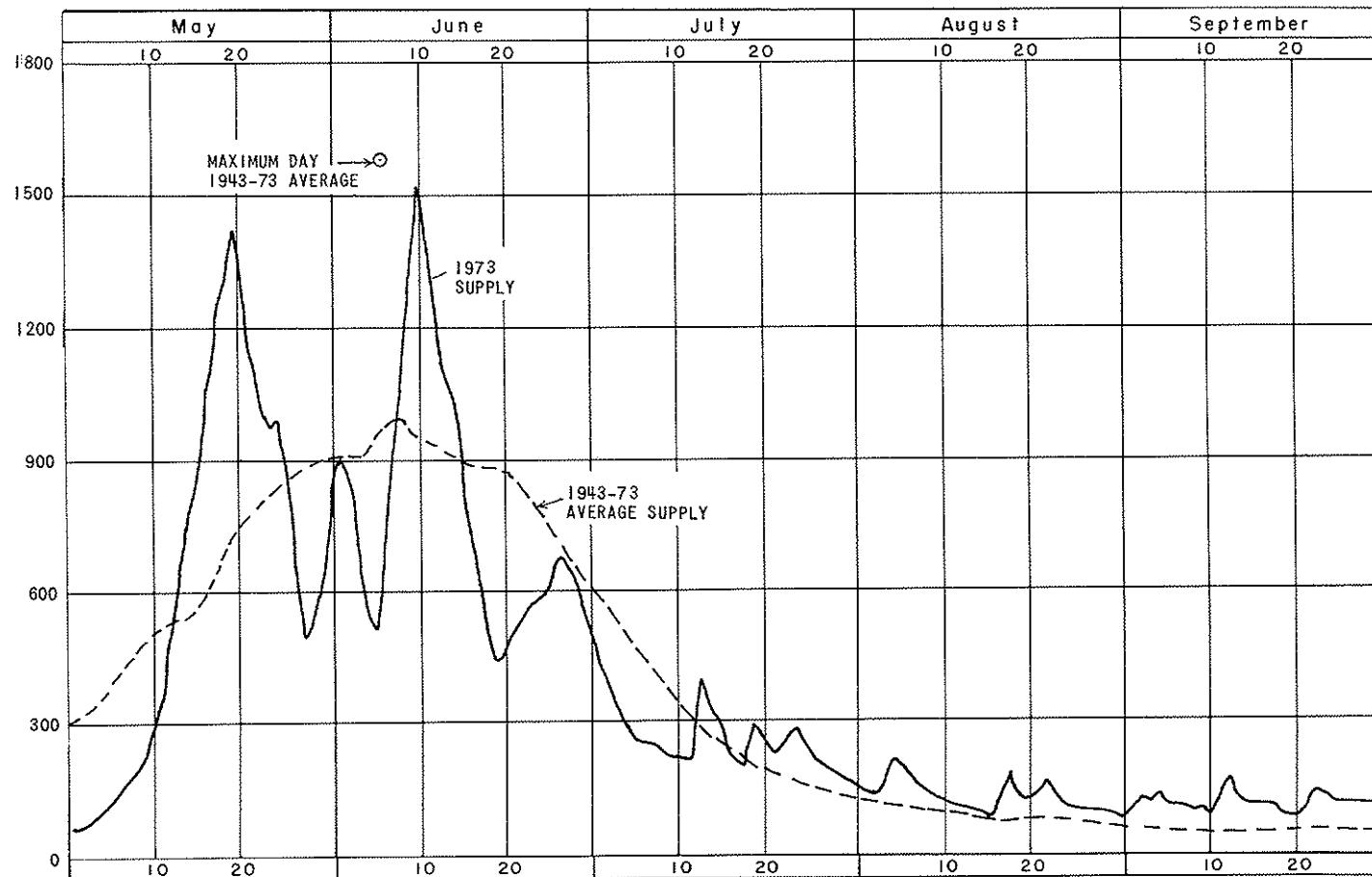


Figure 1. Comparison of discharge of three representative gaging stations in 1973 with average discharge for period 1943-73

# UPPER DIVISION - BEAR RIVER SUPPLY \*

CUBIC FEET PER SECOND

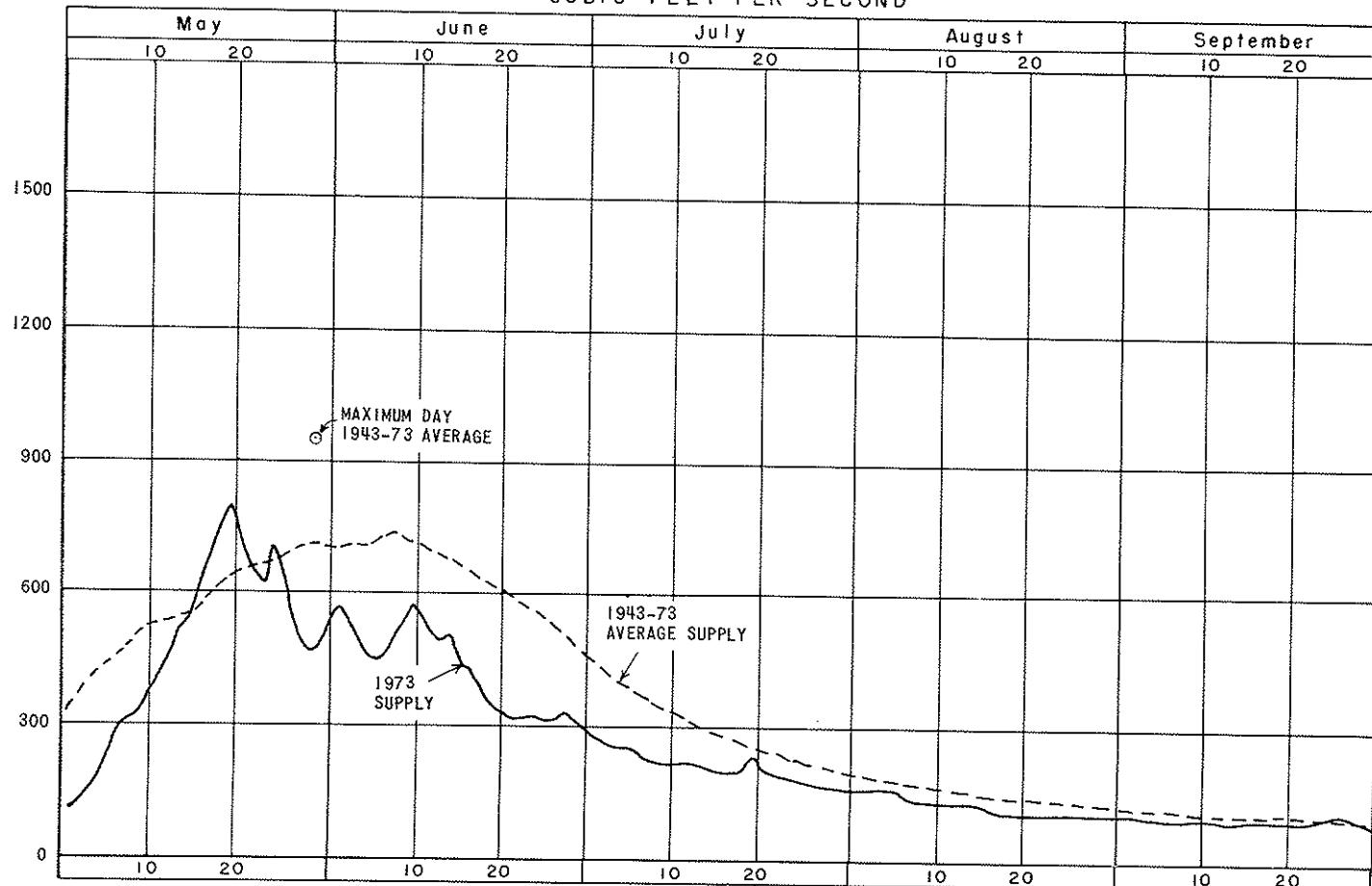


\*Bear River near Utah-Wyoming State line

Figure 2

# CENTRAL DIVISION - SMITHS FORK SUPPLY \*

CUBIC FEET PER SECOND



\*Smiths Fork near Border, Wyoming

Figure 3

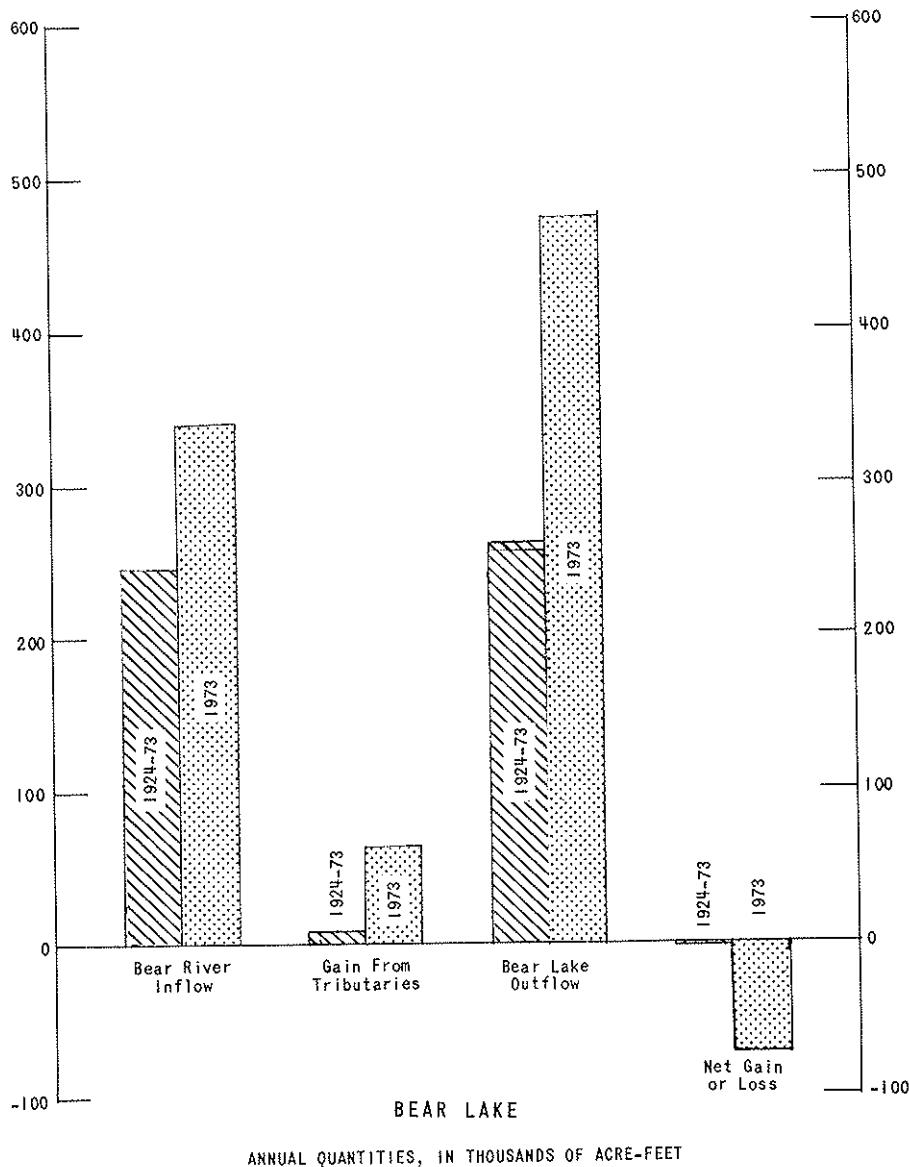


Figure 4

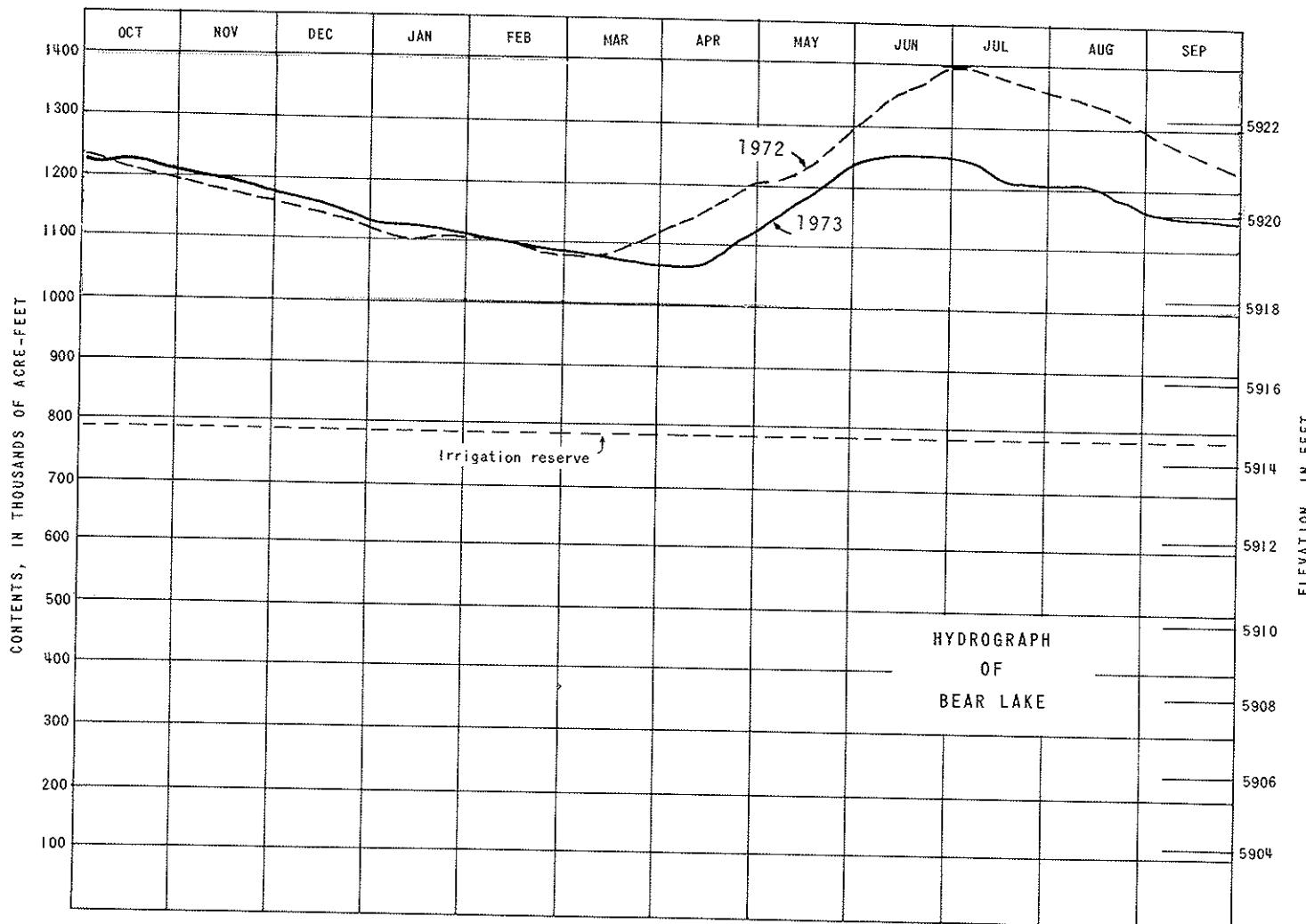


Figure 5

## STREAMFLOW DISTRIBUTION

Records of diversions from Bear River main stem above Bear Lake and from Smiths Fork were collected by district water commissioners and submitted weekly to the Assistant Secretary. He computed section diversions and allocations and informed these district commissioners and members of the Commission of the quantities diverted and of State-section allocations, where applicable, for the regulatory action needed to comply with the Compact.

### Upper Division

The Upper Division comprises that part of the basin above and including Pixley Dam and includes two sections in Wyoming and two in Utah. The Compact provides that when the total diversions in the division plus the flow passing Pixley Dam is less than 1,250 cfs (divertible flow), a water emergency exists and such divertible flow is allocated to sections as follows:

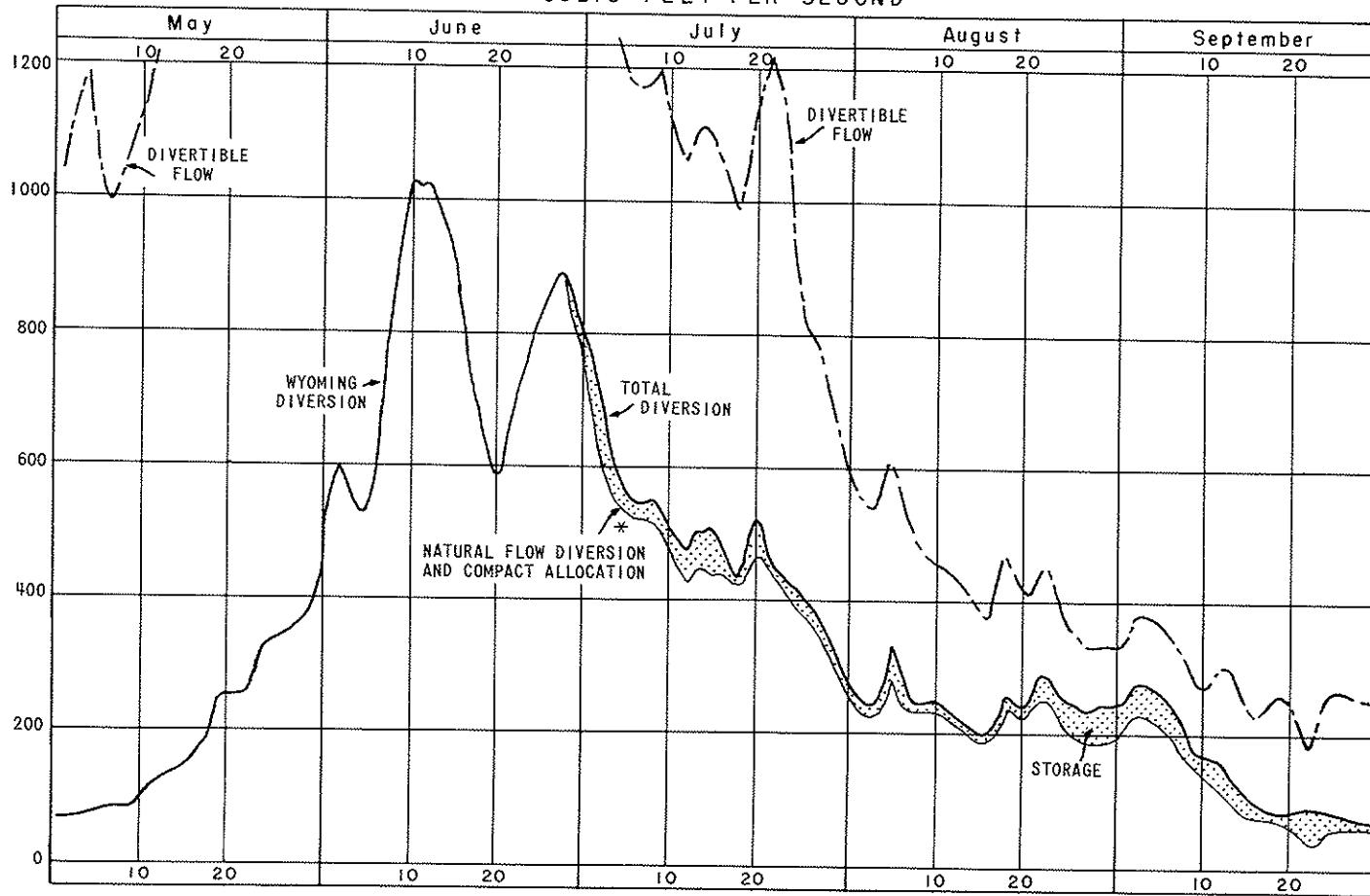
Upper Utah Section Diversions .....	0.6 percent
Upper Wyoming Section Diversions .....	49.3 percent
Lower Utah Section Diversions .....	40.5 percent
Lower Wyoming Section Diversions .....	9.6 percent

Interstate regulation in years of average or better water supply usually is not required in this division where meadow hay predominates. Article IV of the Compact makes available to other sections the unused allocation in any section. Thus, under present practice, after about July 10 Upper Wyoming Section allocation is increased by 9.6 percent as the Lower Wyoming Section ceases diverting and shortly thereafter is increased by most of Lower Utah's allocation as this section shuts down for haying operations. Except for the first few days in May, divertible flow in these years of good supply does not drop to the 1,250 cfs emergency condition until near mid-July when the two lower sections have ceased diverting for harvesting. Thereafter, Upper Wyoming Section could not conceivably divert in excess of allocation.

Diversion tabulations for the Upper Division, shown on pages 28-32, indicate that divertible natural flow was below 1,250 cfs prior to May 12 and subsequent to July 3 through the balance of the season. All diversions were minimal during the first period, and in the second period Upper Wyoming Section diverted less than its basic allocation of 49.3 percent until August 10. Other sections in the division had virtually ceased diverting prior to August 10, so by Article IV, most of the divertible flow would then be allocated to Upper Wyoming Section. Hydrographs in figures 6-8 (pages 19-21) show water diverted from natural flow and storage in the three principal sections in this division.

Diversion included about 15,000 acre-feet storage from Woodruff Narrows Reservoir (figure 9), about 3,000 acre-feet from Sulphur Creek Reservoir, and only 500 acre-feet from Whitney Reservoir which later was drawn down another 1,000 acre-feet.

**UPPER DIVISION - UPPER WYOMING SECTION**  
CUBIC FEET PER SECOND

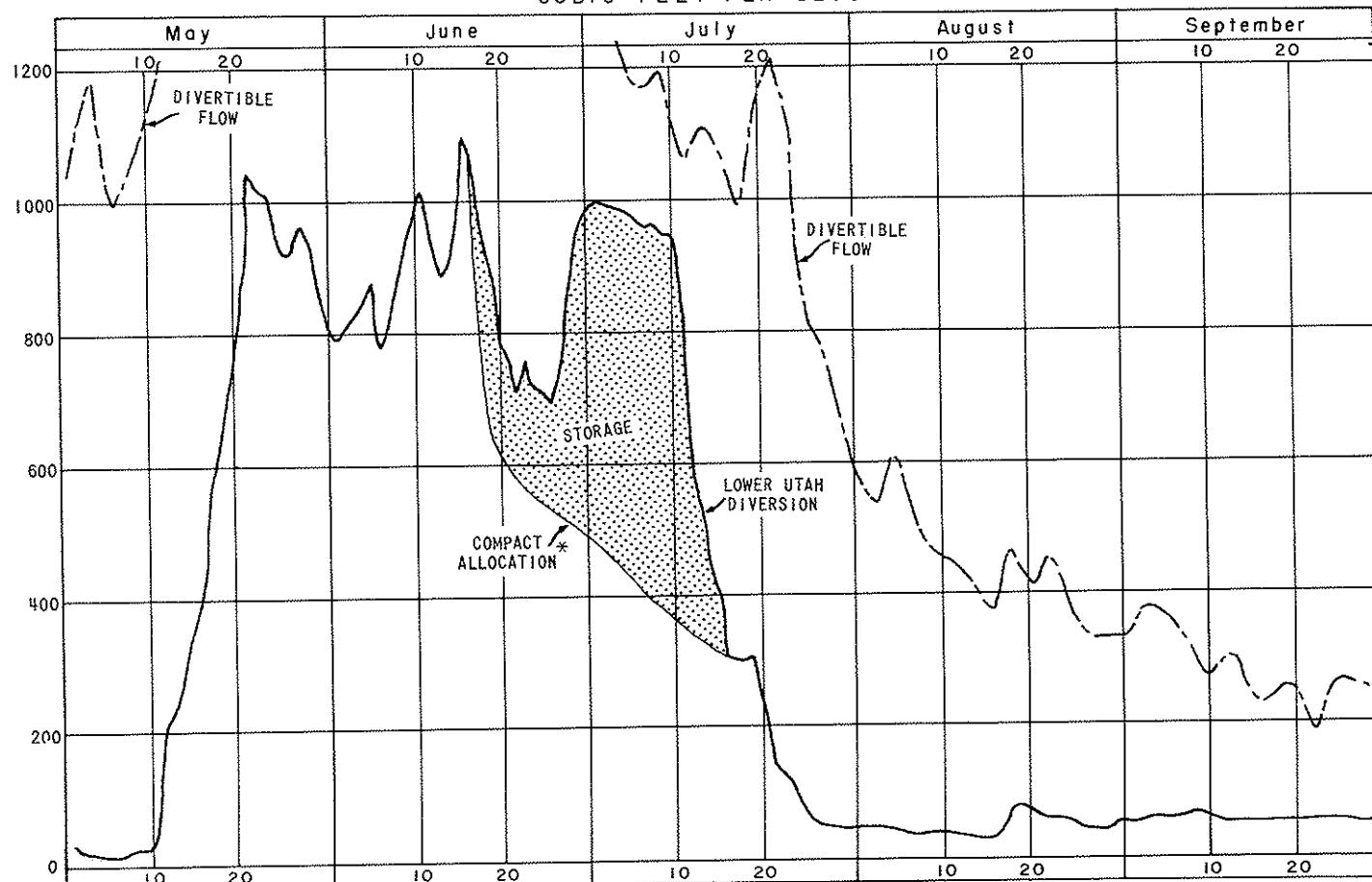


\* See footnote, Tables 3-5

Figure 6

# UPPER DIVISION - LOWER UTAH SECTION

CUBIC FEET PER SECOND



\* See footnote, Tables 3-5

Figure 7

UPPER DIVISION - LOWER WYOMING SECTION  
CUBIC FEET PER SECOND

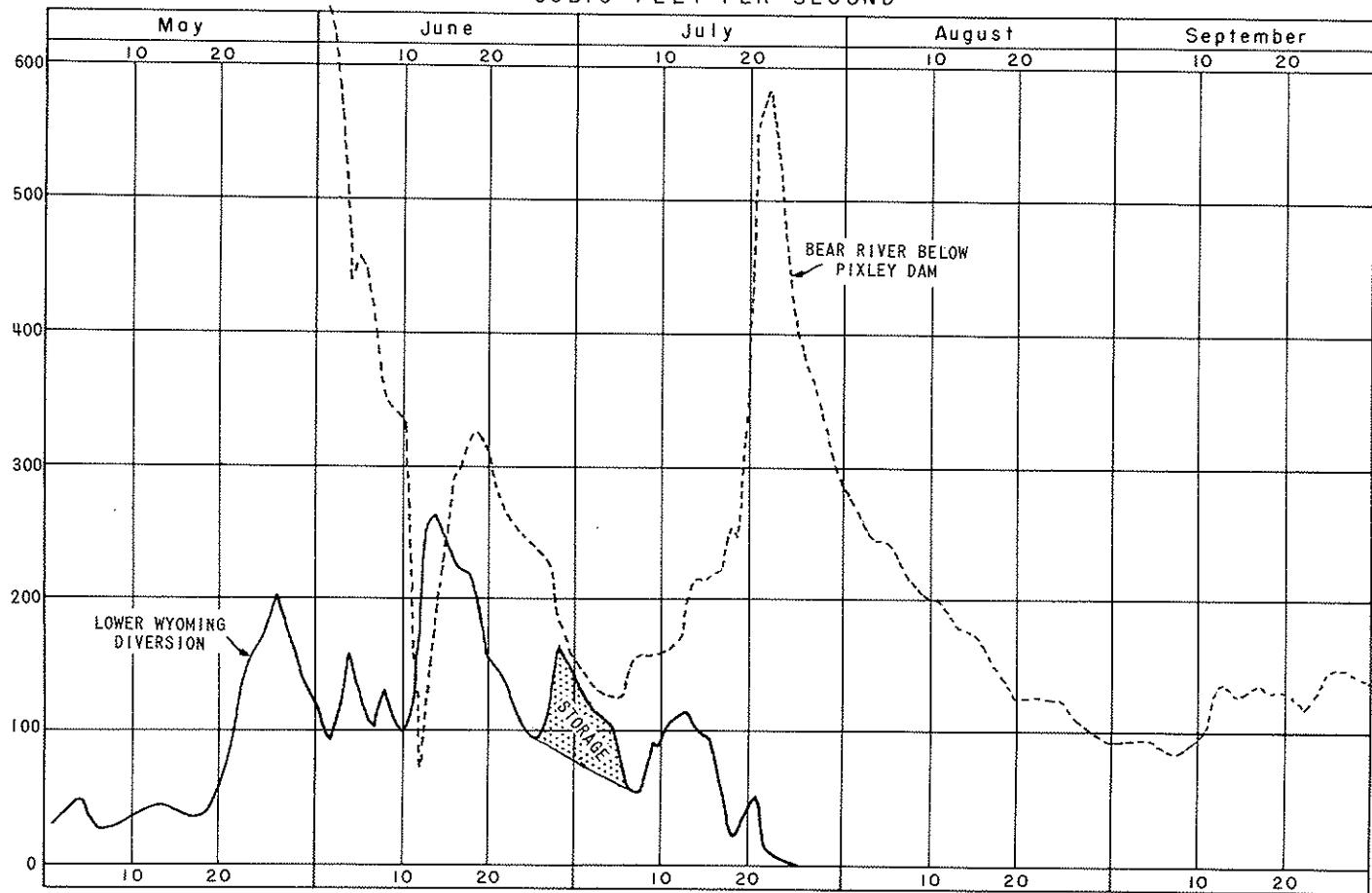


Figure 8



Figure 9

## **Central Division**

The Central Division comprises that part of the basin from Pixley Dam down to and including Stewart Dam (the point of diversion to Bear Lake). It includes a section in Wyoming and one in Idaho.

Divertible flow in the Central Division is the sum of diversions from Smiths Fork and designated tributaries, diversions from Bear River in the division, and flow passing Stewart Dam. A water emergency shall exist when this divertible flow is less than 870 cfs, or when Bear River entering Idaho (gaging station at Border) is discharging less than 350 cfs. Wyoming diversions are limited to 43 percent of the divertible flow during a water emergency.

Diversion and allocation hydrographs are shown for the two sections in the Central Division in figures 10 and 11 (pages 26 and 27), and corresponding data showing individual canals are included in tables 6 to 10 (pages 33-37). A water emergency, as defined above, existed July 3-19 and from August 1 through the balance of the season. Wyoming Section diverted more than its compact allocation by relatively small amounts during eight days of the initial period but thereafter diverted far less than the allocation. (See figure 10.)

The usual diversion pattern is shown in figure 11 for Idaho where the Idaho diversion, as plotted, does not include Rainbow Inlet Canal and accordingly is far less than the compact allocation.

Effectiveness of interstate regulation in the dry years of 1961 and 1966 is indicated in the following table by the small spread in diversion rate per acre in the two sections. In good years with less restriction, the Wyoming rate is much higher and reflects the greater requirement of gravelly soils.

*Diversion in acre-feet per acre — May - September*

1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Wyo. 2.16	5.82	5.06	4.48	4.96	3.32	4.78	4.02	4.24	4.25	4.39	4.74	4.24
Ida. ..1.72	3.26	3.28	2.91	2.87	2.95	3.05	3.39	3.48	3.50	3.33	3.35	3.09

## **Lower Division**

Authority is given the Commission upon its own motion to declare a water emergency in any division, and in the Lower Division such a declaration may be made also upon petition of an aggrieved Utah user against an Idaho user. Upon declaration of an emergency, the Commission is required to enforce water-delivery schedules based on priority of rights without regard to State lines.

No petitions were filed with the Commission or water emergencies declared in the Lower Division in 1973.

## Interstate Tributaries

An aggrieved user on an interstate tributary may petition for declaration of water emergency and distribution of flow under direction of the Commission. Interstate arbitration on tributaries was not requested in 1973.

## STORAGE

### New Storage

The Compact defines storage rights in existing reservoirs above Bear Lake and provides for an additional storage allowance of 36,500 acre-feet annually. Idaho users on Thomas Fork are allotted 1,000 acre-feet of this amount and the remainder is divided equally between Wyoming and Utah.

The reservoirs shown below have been constructed under additional storage provisions of the Compact and all were filled to capacity in 1973. A total allocation to Woodruff Narrows Reservoir for storage of 18,240 acre-feet includes 15,240 acre-feet from Utah and 3,000 acre-feet from Wyoming.

<i>Reservoir</i>	<i>Allocation</i>
Sulphur Creek Reservoir (Wyoming).....	4,614 ac-ft
Sulphur Creek Reservoir Enlargement (Wyoming).....	1,100 ac-ft
J. L. Martin Reservoir, Sulphur Creek (Wyoming) .....	88 ac-ft
A. J. Barker Reservoir, Yellow Creek (Utah) .....	162 ac-ft
Hatch Brothers Reservoir (Utah) .....	350 ac-ft
Woodruff Narrows Reservoir (Utah-Wyoming) .....	18,240 ac-ft
Whitney Reservoir (Wyoming) .....	4,200 ac-ft
Wyman Reservoir (Wyoming).....	22 ac-ft
Massae Reservoir (Wyoming) .....	107 ac-ft
Woodruff Creek Reservoir (Utah) .....	2,000 ac-ft
Total Allocation .....	30,883 ac-ft

### Bear Lake

Article V of the Compact provides an irrigation reserve level in Bear Lake below which water shall not be released solely for generation of power, except in emergency, but after release for irrigation it may be used in generating power as it is conveyed to irrigation diversion works. The reserve is to be increased by designated amounts as additional storage, under terms of the Compact, is developed above Bear Lake. No development of new storage took place in 1973, so the irrigation reserve elevation remained at 5,914.61 feet with active storage content in the reserve of 794,900 acre-feet. (See figure 5.) This reserve corresponds to 30,000 acre-feet of additional storage allocation.

Bear Lake reached a maximum elevation of 5,921.28 feet (usable content, 1,254,000 acre-feet) on June 9 from the annual low point of 5,918.52 feet, April 8-11. The maximum was about two feet below that of the previous year and left adequate capacity for storage of snowmelt runoff from the upper basin. Late-season storms reduced the seasonal irrigation demand that lowered the Lake only 1.44 feet.

## **APPLICATIONS FOR APPROPRIATION**

Article X of the Compact states, "Applications for appropriation, for change of point of diversion, place and nature of use, and for exchange of Bear River water shall be considered and acted upon in accordance with the law of the State in which the point of diversion is located, but no such application shall be approved if the effect thereof will be to deprive any water user in another State of water to which he is entitled. The official of each State in charge of water administration shall, upon the filing of an application affecting Bear River water, transmit a copy thereof to the Commission."

Copies of filings presented to the Commission in the 1973 report year included several large filings by Utah Power & Light Company for geothermal power development in Cache and Box Elder Counties, Utah. Excluding these filings, pending and approved applications totaled 150.5 cfs that included 84.6 cfs for ground water development. Breakdown by States shows 115.9 cfs in Utah, 27.1 cfs in Idaho, and 7.5 cfs in Wyoming.

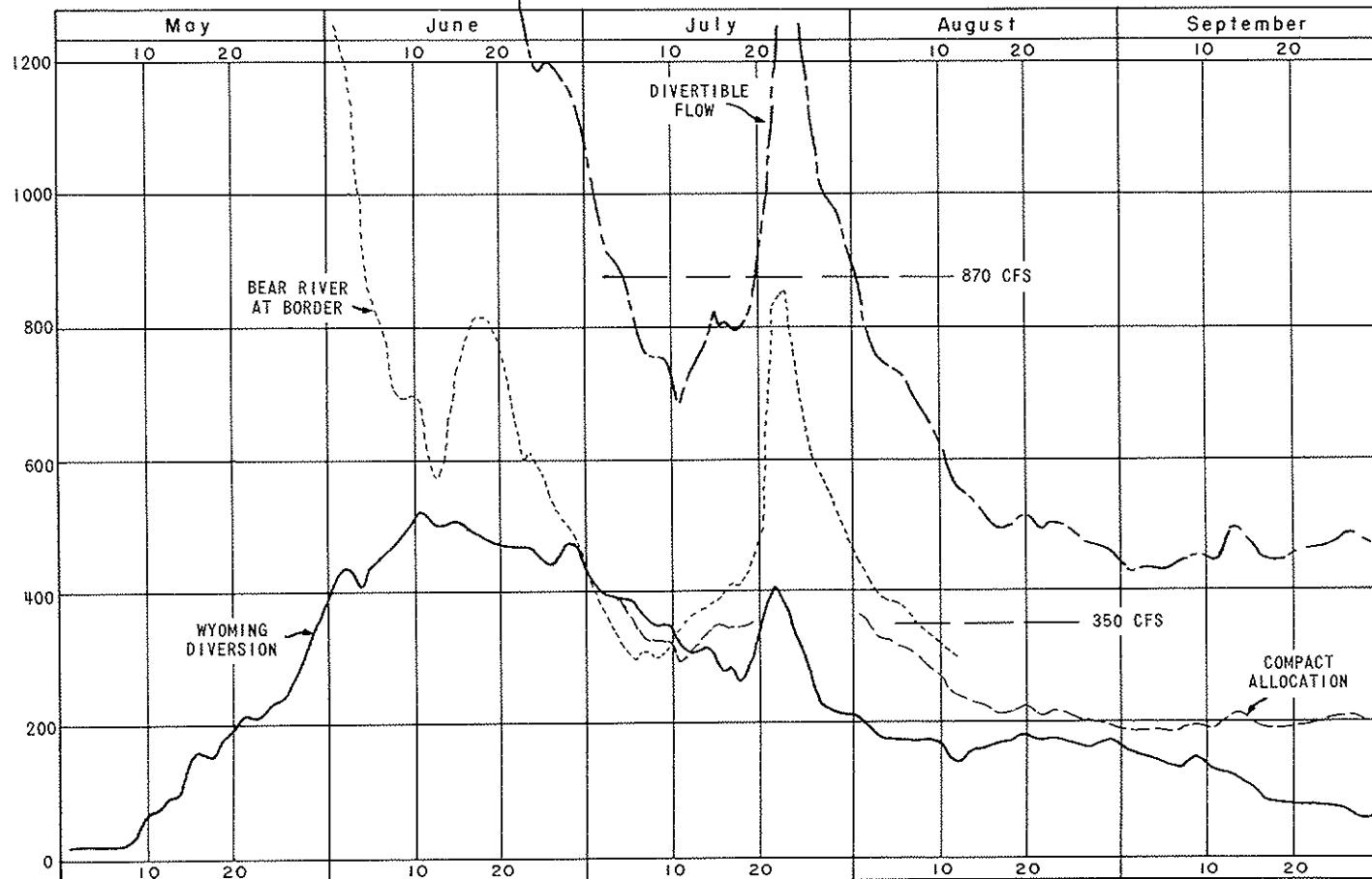
## **REVIEW OF COMPACT PROVISIONS**

Article XIII, Bear River Compact, requires that the Commission review provisions of the Compact at intervals not exceeding twenty years and may propose amendments to any such provision for consideration of the legislatures of the signatory States. Wyoming commissioners have urged such a review with particular emphasis on their recommendations for an increase in storage allocation to the basin above Bear Lake. Discussion on the subject has continued in the 1973 meetings of the Commission.

A proposal to develop additional storage at Woodruff Narrows to be supplied in part by a transfer to storage of direct-flow irrigation rights when not being diverted for irrigation has been suggested by upper basin users. Idaho has objected to such a transfer on the grounds that it is in violation of storage provisions in the Compact.

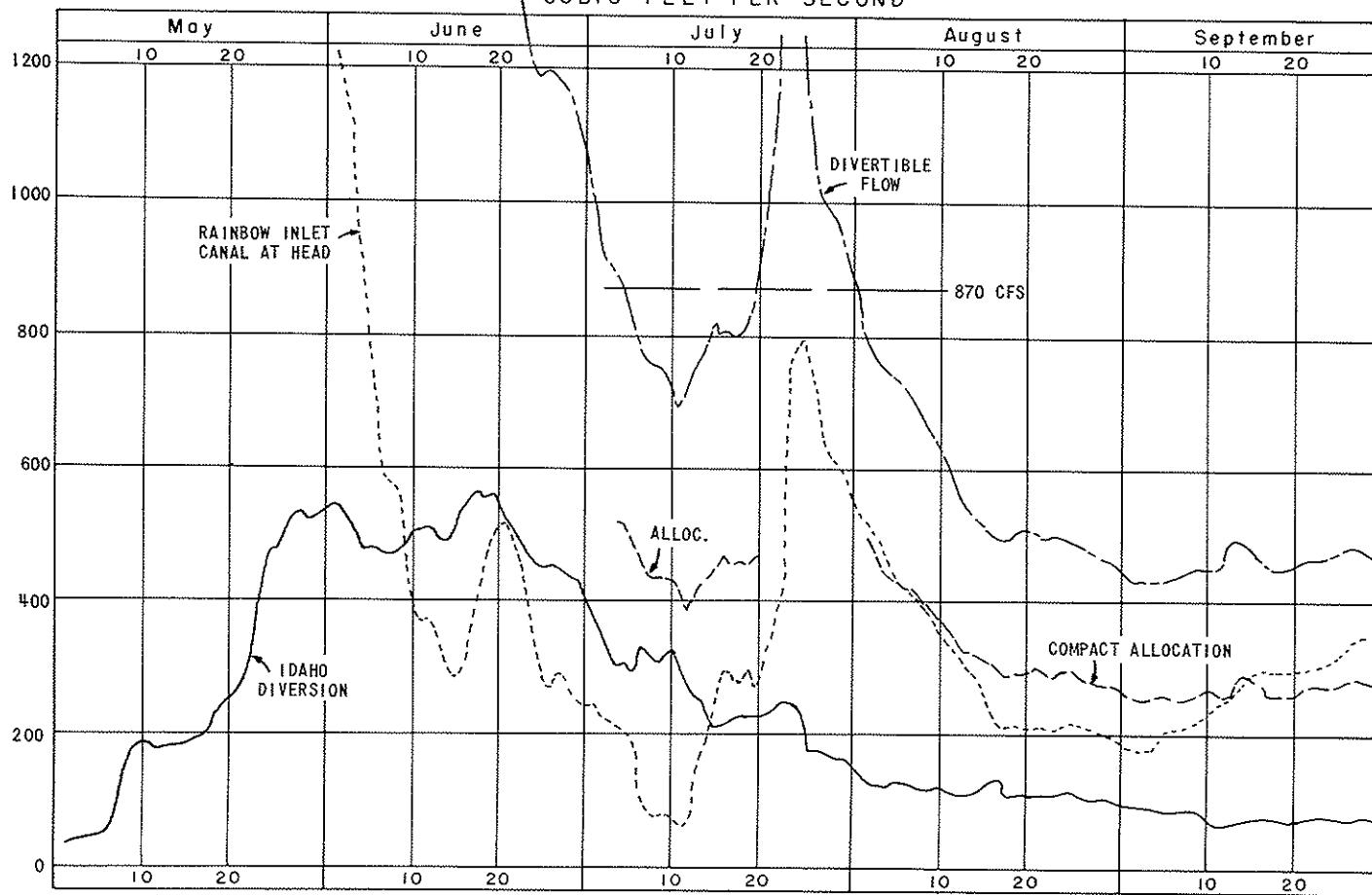
CENTRAL DIVISION - WYOMING SECTION

CUBIC FEET PER SECOND



# CENTRAL DIVISION - IDAHO SECTION

CUBIC FEET PER SECOND























## APPENDIX A

WM. DEAN KIMBER  
CERTIFIED PUBLIC ACCOUNTANT

4715 SOUTH 3730 WEST  
SALT LAKE CITY, UTAH 84120

MEMBER  
AMERICAN INSTITUTE OF  
CERTIFIED PUBLIC ACCOUNTANTS

February 9, 1974

Bear River Commission  
Utah State Capitol  
Salt Lake City, Utah

Gentlemen:

In accordance with your instructions I have examined the accounting records of the Bear River Commission for the fiscal year ended June 30, 1973. I submit my report of the examination.

My examination included a review of the financial transactions and an examination of the statement of revenue and expenditures for the year and budget estimates and related expenses as included in the minutes of the Commission meetings. I confirmed the funds available at June 30, 1973 by direct correspondence with the depository.

My examination was conducted in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances. all cash receipts have been properly accounted for and all disbursements were duly authorized. Extraneous income arose during the year from interest on savings. Interest earnings were higher this year because of the dates on which interest was credited to the Bear River Commission saving accounts. Funds were left in saving accounts until after July 1, 1973 to maximize interest income. This resulted in a bank overdraft when the check was recorded to pay the United States Geological Survey. The transfer of funds from savings to checking was accomplished in time to honor the check to the United States Geological Survey when it was presented for payment. Expenditures for operations were made directly by the United States Geological Survey and are included in detail in this report. Administrative expenses in the amount of \$1,877.49 were disbursed by the Salt Lake City Office. Printing costs for two year's annual reports in the amount of \$600 and \$589 are included in 1973 expenditures. There were no printing costs included in 1972 expenses as they were not invoiced at the close of the fiscal year.

The results of my examination are presented herewith and include comments and explanations as appropriate in the following described statements.

Exhibit "A" Statement of Revenue and Expenditures for the fiscal year ended June 30, 1973.

Exhibit "B" Statement of Available Revenue and Appropriations thereof for the fiscal year showing balances at June 30, 1973.

Schedule "A-1" Statement of Expenditures--Stream-Gauging Program Allocated to the United States Geological Survey and to the Bear River Commission.

GENERAL COMMENTS

The Bear River Compact is a tri-state agreement between Wyoming, Idaho and Utah for the utilization and development of the waters of the Bear River. The Commission was organized April 5, 1958 and the by-laws were adopted April 26, 1958. The Commission is the administrative agency which carries out the provisions of the Bear River Compact. Three Commissioners from each of the three represented states, plus one non-voting Commissioner representing the United States, constitutes the ten member Commission. The United States representative acts as Chairman. All expenses of the Commission are shared by the three states on an equal basis.

The Commission enters into an annual agreement with the United States Geological Survey, Department of the Interior, for the operation and maintenance of gauging stations. Expenses for the gauging station program are shared equally by the Commission and the Geological Survey. Other expenses attributable to the Commission are paid by the Commission whether the expense is incurred by the Geological Survey or the Salt Lake City Office. Detail of the expenses incurred under the agreement are shown in Schedule "A-1."

In my opinion, the accompanying statements of revenue and expenditures and supplemental statement of budget appropriations and related disbursements present fairly the position of the Bear River Commission at June 30, 1973 and the results of the financial transactions for the period then ended in conformity with generally accepted accounting principles applied on a consistant basis.

*Dean Kimber*

BEAR RIVER COMMISSIONStatement of Revenue & Expenses  
For the Fiscal Year Ended June 30, 1973REVENUE:Assessments:

State of Wyoming	\$14,000.00
State of Idaho	14,000.00
State of Utah	<u>14,000.00</u>
	\$42,000.00

Other Income:

Interest	<u>2,585.33</u>
Total Revenue	<u>2,585.33</u>
	<u>44,585.33</u>

EXPENDITURES:

Commission's portion of direct expenses of the  
stream gauge program, Schedule "A-1"

Personal Services	\$30,837.00
Travel and Subsistence	2,275.00
General Office	2,699.00
Fiscal and Administration	1,863.00
Washington Office Charges	<u>3,726.00</u>
Total Schedule "A-1"	41,400.00

Administrative Expenses

Legal Fee	300.00
Auditing Fee	200.00
Transcript of Minutes	100.00
Annual Report	1,189.00
Surety Bond	50.00
Miscellaneous Printing	<u>38.49</u>
	<u>1,877.49</u>
	<u>43,277.49</u>

EXCESS OF REVENUES OVER EXPENDITURES FOR  
THE FISCAL YEAR ENDED JUNE 30, 1973

FUNDS AVAILABLE JULY 1, 1972	<u>12,560.02</u>
FUNDS AVAILABLE JULY 1, 1973	<u>\$13,867.86*</u>

*Savings Balance	\$33,211.51
Bank Overdraft	<u>19,343.65</u>
Balance Available	<u>\$13,867.86</u>

Exhibit "B"

BEAR RIVER COMMISSION

Statement of Available Revenue and Appropriation Thereof  
for the Fiscal Year Ended June 30, 1973

	Expected Revenue & Expenditures as Budgeted*	Actual Revenue & Expenditures	Balance or (Deficit) Budget
<u>CASH REVENUES</u>			
Bank Overdraft	\$ (19,156.29)	\$ (19,156.29)	\$ 0
Savings Subject to Withdrawal	<u>31,716.31</u>	<u>31,716.31</u>	<u>0</u>
Balance of Funds June 30, 1972	<u>12,560.02</u>	<u>12,560.02</u>	<u>0</u>
<u>REVENUE:</u>			
Assessments:			
State of Wyoming	14,000.00	14,000.00	0
State of Idaho	14,000.00	14,000.00	0
State of Utah	14,000.00	14,000.00	0
Other Income:			
Interest	<u>2,585.33</u>	<u>2,585.33</u>	<u>2,585.33</u>
	<u>54,560.02</u>	<u>57,145.35</u>	<u>2,585.33</u>
<u>FUNDS FURNISHED BY UNITED STATES</u>			
GEOLOGICAL SURVEY DIRECT	<u>34,400.00</u>	<u>33,600.00</u>	<u>(800.00)</u>
Total Funds Available	<u>88,960.02</u>	<u>90,745.35</u>	<u>1,785.33</u>
<u>APPROPRIATIONS:</u>			
Stream-gauging--Schedule "A-1"	68,800.00	67,200.00	1,600.00
Personal Services	5,962.00	6,447.00	(485.00)
Travel and Subsistence	450.00	150.00	300.00
Fiscal and Administrative	352.00	351.00	1.00
Washington Office Services	704.00	702.00	2.00
Office and Supplies	432.00	188.49	243.51
Annual Report	500.00	1,189.00	(689.00)
Treasurer's Bond and Audit	300.00	250.00	50.00
Transcript of Minutes	100.00	100.00	0
Legal Retainer Fee	300.00	300.00	0
Total Appropriations	<u>77,900.00</u>	<u>76,877.49</u>	<u>1,022.51</u>
Unappropriated at July 1, 1972	<u>11,060.02</u>	<u>0</u>	<u>11,060.02</u>
Subtotal	<u>88,960.02</u>	<u>76,877.49</u>	<u>12,082.53</u>
Funds Available at June 30, 1973	<u>\$ 0</u>	<u>\$ 13,867.86</u>	<u>\$ 13,867.86</u>

\*Includes printing of two year's annual reports . Printing of the prior year's report was not billed until after the books were closed for that year.

Schedule "A-1"

BEAR RIVER COMMISSION

Statement of Expenditures--Stream-Gauging Program  
Allocated to the United States Geological Survey and to the  
Bear River Commission for the Fiscal Year Ended June 30, 1973

ALLOCABLE EXPENDITURES

	<u>Total</u>	<u>U.S.G.S.</u>	<u>Bear River Commission</u>	<u>Charged Direct to Bear River Commission</u>	<u>Total Expenses to Bear River Commission</u>
Personal Services	\$48,780.00	\$24,390.00	\$24,390.00	\$ 6,447.00	\$30,837.00
Travel and Subsistence	4,250.00	2,125.00	2,125.00	150.00	2,275.00
General Office	5,098.00	2,549.00	2,549.00	150.00	2,699.00
Fiscal and Administra- tion	3,024.00	1,512.00	1,512.00	351.00	1,863.00
Washington Office	6,048.00	3,024.00	3,024.00	702.00	3,726.00
Totals	<u>\$67,200.00</u>	<u>\$33,600.00</u>	<u>\$33,600.00</u>	<u>\$ 7,800.00</u>	<u>\$41,400.00</u>

## APPENDIX B

### GAGING STATION RECORDS

Records of streamflow from State line and other key stations are included herein. The record consists of description of the station and a table showing the daily discharge in cubic feet per second and monthly and yearly runoff in acre-feet for the 1973 water year.

The description of the station gives the location, drainage area, records available, type and history of gage, average discharge, extremes of discharge, general remarks, and a statement of cooperation where applicable. This is essentially the same information published in annual water-supply papers of the Geological Survey.

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily figures; it is the total second-foot-days for the month. The line headed "Mean" gives the average flow in cubic feet per second (second-feet) during the month. Quantities for the month are expressed in acre-feet (line headed "Ac-ft").

Records included herein have been collected by the U. S. Geological Survey through cooperative agreement with the Bear River Commission and by the Utah Power & Light Company.

















**BEAR RIVER BASIN**  
**10-265. Bear River near Randolph, Utah**

LOCATION.--Lat  $41^{\circ}48'02''$ , long  $111^{\circ}04'20''$ , in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 7, T. 12 N., R. 8 E., Rich County, on left bank 3.7 mi (6.0 km) upstream from Twin Creek, 5.0 mi (8.0 km) upstream from Utah-Wyoming State line, and 11 mi (18 km) northeast of Randolph.

DRAINAGE AREA.--1,640 sq mi (4,250 sq km), approximately.

PERIOD OF RECORD.--October 1943 to current year. Monthly discharge only for some periods, published in WSP 1314.

GAGE.--Water-stage recorder. Prior to Aug. 17, 1971, 0.2 mi (0.3 km) upstream at different datum. Altitude of gage is 6,200 ft (1,889.8 m) from river-profile map.

AVERAGE DISCHARGE.--30 years, 201 cfs (5.692 cu m/s) 145,600 acre-ft/yr (180 cu hm/yr).

EXTREMES.--Current year: Maximum discharge, 1,480 cfs (41.9 cu m/s) May 26 (gage height, 6.66 ft or 2,030 m); minimum daily not determined, occurred during period of ice effect.

Period of record: Maximum discharge, 2,660 cfs (75.3 cu m/s) May 8, 1952; maximum gage height, 8.99 ft (2,740 m) June 17, 1965; minimum discharge, 1.6 cfs (0.045 cu m/s) Nov. 12, 1961.

REMARKS.--Records good except those for winter months, which are fair. Diversion for irrigation of about 94,500 acres (382 sq km) above station. Flow regulated by Woodruff Narrows Reservoir beginning January 1962 (see sta 100200200). Records of chemical analyses for the water year 1973 are published in part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	109	110	65	65	75	76	203	940	586	144	229	81
2	109	113	65	65	75	78	243	1,060	545	155	217	81
3	109	114	65	65	75	78	257	1,100	529	152	210	84
4	109	117	65	65	75	78	276	980	522	148	209	81
5	114	120	65	65	75	76	289	830	454	169	204	77
6	114	123	65	65	75	78	353	802	426	186	190	76
7	114	123	65	65	75	78	412	852	349	180	180	76
8	113	124	65	68	75	86	442	913	261	179	175	77
9	106	124	65	65	75	95	472	972	267	193	169	88
10	98	124	65	65	75	110	572	1,040	275	257	171	89
11	90	123	65	65	75	120	650	1,080	334	272	161	100
12	98	123	65	70	75	130	720	1,060	462	258	152	104
13	96	120	65	70	75	145	825	1,030	636	256	151	101
14	90	121	65	70	75	160	884	1,030	655	237	151	107
15	88	124	65	70	75	190	849	1,060	622	236	142	108
16	94	127	65	70	75	210	819	1,040	525	195	130	113
17	91	128	65	70	75	230	753	1,020	565	156	125	113
18	90	128	65	70	75	240	687	968	553	157	119	113
19	90	124	65	70	75	250	632	999	493	202	103	113
20	92	124	65	70	75	250	608	1,070	424	351	108	114
21	92	126	65	70	78	250	572	1,120	376	476	103	116
22	91	121	65	70	78	250	546	1,180	322	431	106	115
23	91	110	65	70	78	250	638	1,140	287	393	106	117
24	95	100	65	70	78	250	526	1,110	261	336	108	123
25	95	85	65	70	78	250	520	1,340	270	313	105	125
26	95	75	65	70	78	250	546	1,460	286	309	94	125
27	95	70	65	70	78	250	598	1,310	293	290	90	123
28	100	68	65	70	78	245	658	1,100	244	269	86	121
29	112	66	65	70	-----	236	729	1,060	204	254	84	120
30	112	66	65	70	-----	248	823	921	179	239	81	118
31	106	-----	65	70	-----	243	-----	723	-----	235	80	-----
TOTAL	3,098	3,321	2,015	2,115	2,124	5,684	17,042	32,310	12,205	7,628	4,341	3,099
MEAN	99.9	111	65.0	68.2	75.9	177	568	1,042	407	246	140	103
MAX	114	128	65	70	78	250	884	1,460	655	476	229	125
MIN	88	66	65	65	75	76	243	723	179	144	80	76
AC-FT	6,140	6,590	4,000	4,200	4,210	10,880	33,800	64,090	24,210	15,130	8,610	6,150
CAL YR 1972	TOTAL 137,345	MEAN 375	HAX 2,260	MIN 55	AC-FT 272,400							
WTR YR 1973	TOTAL 94,782	MEAN 260	HAX 1,460	MIN 65	AC-FT 188,000							

# BEAR RIVER BASIN

## 10-285. Bear River below Pixley Dam, near Cokeville, Wyo.

LOCATION.--Lat  $41^{\circ}56'20''$ , long  $110^{\circ}59'05''$ , in SE<sub>1</sub>SE<sub>4</sub> sec. 25, T. 23 N., R. 120 W., Lincoln County, 800 ft (243 m) downstream from Pixley Dam, 11 mi (18 km) south of Cokeville, and 17.5 mi (28.2 km) downstream from Twin Creek.

DRAINAGE AREA.--2,040 sq mi (5,280 sq km), approximately.

PERIOD OF RECORD.--October 1941 to November 1943 (published as Bear River near Cokeville), October 1952 to September 1956, May 1958 to current year (irrigation seasons only). Monthly discharge only for some periods, published in HSP 1314.

GAGE.--Water-stage recorder. Altitude of gage is 6,185 ft (1,885.2 m) from river-profile map. Oct. 31, 1941 to Nov. 30, 1943, at site 200 ft (61 m) downstream at different datum.

EXTREMES.--Current season: Maximum discharge, 1,060 cfs (30.0 cu m/s) May 4 (gage height, 7.19 ft or 2.192 m); minimum daily, 70 cfs (1.98 cu m/s) June 12.

Period of record: Maximum daily discharge, 2,300 cfs (65.1 cu m/s) Mar. 26, 1956; minimum daily recorded, 0.3 cfs (0.008 cu m/s) Aug. 21, 1961.

REMARKS.--Records good. Natural flow of stream affected by diversions for irrigation and return flow from irrigated areas.

### DISCHARGE IN CUBIC FEET PER SECOND, MAY TO SEPTEMBER 1973

DAY	MAY	JUN	JUL	AUG	SEP
	1	2	3	4	5
1	912	760	144	278	91
2	977	696	135	265	92
3	1,020	588	130	251	92
4	1,050	439	128	245	95
5	977	457	126	245	90
6	860	449	144	237	86
7	867	393	158	221	83
8	904	357	158	212	87
9	947	344	158	204	92
10	975	336	158	200	99
11	998	231	161	200	111
12	1,010	70	167	188	134
13	1,010	146	194	180	134
14	990	194	218	177	128
15	990	249	212	175	129
16	1,000	291	220	161	130
17	996	301	221	153	134
18	929	320	253	147	130
19	910	327	246	136	130
20	872	315	341	122	129
21	915	286	554	124	123
22	918	267	586	126	115
23	853	258	537	124	126
24	858	251	469	123	138
25	632	869	241	411	146
26	625	891	237	384	117
27	653	931	230	370	107
28	708	980	195	342	164
29	770	982	171	318	102
30	-----	837	155	301	138
31	-----	-----	886	286	90
TOTAL	29,252	9,554	8,230	5,227	3,550
MEAN	946	318	265	169	118
MAX	1,050	760	586	278	146
MIN	853	70	126	90	83
AC-FT	59,020	18,950	16,320	10,370	7,040

THE SEASON AC-FT 110,700

**BEAR RIVER BASIN**  
**10-320. Smiths Fork near Border, Wyo.**

LOCATION.--Lat 42°17'16", long 110°52'14", in NW sec. 33, T. 27 N., R. 118 W., Lincoln County, on left bank 4.5 mi (7.2 km) upstream from Howland Creek, 6 mi (10 km) downstream from Hobble Creek, and 12 mi (19 km) northeast of Border.

DRAINAGE AREA.--165 sq mi (427 sq km).

PERIOD OF RECORD.--May 1942 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 6,680 ft (2,036 m) from topographic map. Prior to Oct. 16, 1945, at site 0.8 mi (1.3 km) downstream at different datum.

AVERAGE DISCHARGE.--31 years, 197 cfs (5,579 cu m/s) 142,700 acre ft/yr (176 cu hm/yr).

EXTREMES.--Current year: Maximum discharge, 840 cfs (23.8 cu m/s) May 20 (gage height, 4.32 ft or 1.317 m); minimum, 40 cfs (1.13 cu m/s) Mar. 26.

Period of record: Maximum discharge, 1,610 cfs (45.6 cu m/s) June 18, 1971 (gage height, 5.61 ft or 1.710 m); minimum recorded, 35 cfs (0.99 cu m/s) Mar. 21, 1955, result of freezeup.

REMARKS.--Records good except those for winter periods, which are fair. One diversion for irrigation of about 200 acres (809,000 sq m) above station.

REVISIONS (WATER YEARS).--WSP 1734: 1952 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	115	98	87	75	63	59	54	126	559	282	155	112
2	115	101	87	75	63	59	57	117	561	271	152	119
3	113	98	87	75	63	54	56	127	538	260	151	111
4	115	98	87	75	63	59	56	153	486	253	106	106
5	136	100	74	75	63	61	57	178	451	248	153	103
6	124	98	80	75	63	60	61	239	449	241	152	102
7	117	96	80	75	63	57	61	297	462	236	146	103
8	113	100	80	75	63	57	55	310	507	232	140	118
9	113	96	80	75	63	58	59	315	537	225	136	119
10	119	93	80	75	63	59	62	346	573	221	133	108
11	115	95	80	75	63	60	60	393	564	216	130	108
12	110	92	80	75	63	58	65	417	522	217	128	105
13	112	95	80	75	63	60	71	467	490	219	126	101
14	110	90	80	75	63	58	79	514	504	214	123	100
15	112	92	80	75	60	57	77	532	493	209	122	99
16	112	92	80	75	60	54	80	579	439	205	122	98
17	108	90	80	75	60	59	83	644	431	197	120	97
18	106	92	80	75	60	59	79	708	391	193	120	96
19	106	90	80	75	60	54	75	751	358	209	117	95
20	106	89	80	75	60	58	72	795	340	237	116	95
21	105	89	80	65	60	62	70	733	326	205	116	100
22	105	80	80	65	60	61	73	672	318	195	118	96
23	105	89	80	65	60	59	76	637	322	193	125	100
24	112	88	80	65	60	57	88	625	327	183	117	105
25	106	86	80	65	60	56	97	701	320	178	114	106
26	105	87	75	65	60	60	96	650	319	174	111	100
27	100	87	75	65	60	62	111	561	314	175	110	97
28	100	84	75	65	60	62	147	502	331	173	109	95
29	103	86	75	65	-----	56	163	473	317	166	108	93
30	100	87	75	65	-----	56	137	470	300	164	108	93
31	95	-----	75	65	-----	59	-----	489	-----	159	104	-----
TOTAL	3,413	2,760	2,472	2,215	1,722	1,812	2,378	14,521	12,819	6,550	3,939	3,082
MEAN	110	92.0	79.7	71.5	61.5	58.5	79.3	468	428	211	127	103
MAX	136	101	87	75	63	62	163	795	573	282	160	119
MIN	95	80	74	65	60	54	54	117	300	159	104	93
AC=FT	6,770	5,470	4,900	4,390	3,420	3,590	4,720	28,800	25,490	12,990	7,810	6,110
CAL YR 1972 TOTAL	103,492	MEAN	283	MAX	1,420	MIN	53	AC=FT	205,300			
WTR YR 1973 TOTAL	57,713	MEAN	158	MAX	795	MIN	54	AC=FT	114,500			

**BEAR RIVER BASIN**  
**10-395. Bear River at Border, Wyoming**

LOCATION.--Lat  $42^{\circ}12'40''$ , long  $111^{\circ}03'11''$ , in NE $\frac{1}{4}$  sec. 15, T. 14 S., R. 46 E., Bear Lake County, Idaho, on left bank 0.2 mi (0.3 km) west of Wyoming-Idaho State line, 0.5 mi (0.8 km) west of Border, and 2.1 mi (3.4 km) upstream from Thomas Fork.

DRAINAGE AREA.--2,490 sq mi (6,450 sq km), approximately.

PERIOD OF RECORD.--October 1937 to current year.

GAGE.--Water-stage recorder. Datum of gage is 6,051.63 ft (1,844.537 m) above mean sea level, unadjusted.

AVERAGE DISCHARGE.--36 years, 421 cfs (11.92 cu m/s) 305,000 acre-ft/yr (376 cu hm/yr).

EXTREMES.--Current year: Maximum discharge, 1,800 cfs (51.0 cu m/s) May 21 (gage height, 6.57 ft or 2.003 m); minimum daily, 182 cfs (5.15 cu m/s) Aug. 31, Sept. 7.

Period of record: Maximum discharge, 3,680 cfs (104 cu m/s) May 11, 1952 (gage height, 8.89 ft or 2.710 m); minimum daily, 30 cfs (0.85 cu m/s) Aug. 18-22, 1940.

REMARKS.--Records good except those for winter months, which are fair. Diversions for irrigation of about 122,000 acres (494 sq km) above station. Records of chemical analyses for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	274	283	270	190	190	210	414	1,180	1,330	405	435	184
2	274	274	270	190	190	210	400	1,210	1,240	374	416	193
3	272	268	270	190	190	210	387	1,250	1,150	343	392	193
4	270	292	270	190	190	210	433	1,300	1,020	321	382	190
5	294	299	250	190	190	210	441	1,330	856	303	384	190
6	303	299	240	190	200	220	490	1,300	832	292	377	188
7	294	299	240	190	200	220	577	1,300	794	303	357	182
8	292	305	240	190	200	220	632	1,250	700	299	336	190
9	285	310	240	190	200	220	623	1,400	690	296	322	208
10	283	305	240	190	200	220	632	1,400	697	308	310	208
11	279	303	210	190	200	240	779	1,450	697	331	301	236
12	258	303	210	190	200	250	956	1,500	593	355	294	257
13	261	299	210	190	200	270	1,140	1,530	564	352	283	261
14	268	296	210	190	200	300	1,350	1,580	512	374	263	255
15	265	292	210	190	210	330	1,450	1,630	683	372	251	253
16	261	294	210	190	210	325	1,440	1,660	754	377	246	257
17	253	294	210	190	210	320	1,410	1,720	787	405	240	251
18	263	296	210	190	210	320	1,340	1,740	816	387	238	263
19	257	295	210	190	210	340	1,230	1,720	815	405	232	258
20	257	294	210	190	210	355	1,080	1,760	783	455	222	266
21	261	294	220	190	200	350	992	1,780	722	516	212	272
22	263	288	230	190	200	350	948	1,750	649	832	214	270
23	263	283	230	190	200	350	932	1,660	599	852	222	261
24	277	283	230	190	200	350	952	1,570	639	765	220	290
25	279	280	210	190	200	365	948	1,590	593	669	218	305
26	277	280	200	190	200	400	916	1,660	591	603	216	305
27	274	280	200	190	200	403	924	1,620	511	580	210	296
28	279	280	200	190	200	422	950	1,600	508	561	203	288
29	285	280	200	190	-----	430	1,030	1,610	487	526	201	283
30	292	280	200	190	-----	419	1,130	1,540	444	493	193	277
31	294	-----	200	190	-----	411	-----	1,440	-----	464	182	-----
TOTAL	8,528	8,746	6,950	5,890	5,610	9,450	26,896	47,130	22,087	14,018	8,572	7,350
MEAN	275	292	224	190	200	305	896	1,520	735	452	277	245
MAX	303	310	270	190	210	430	1,450	1,780	1,330	852	435	305
MIN	257	274	200	190	190	210	397	1,100	444	292	182	182
AC-FT	16,920	17,350	13,790	11,680	11,130	18,740	53,330	93,480	43,810	27,800	17,000	14,500
CAL YR 1972	280,644	MEAN	767	MAX	3,270	MIN	203	AC-FT	550,720			
HTR YR 1973	171,217	MEAN	469	MAX	1,780	MIN	182	AC-FT	139,600			

# BEAR RIVER BASIN

## 10-460. Rainbow inlet canal near Dingle, Idaho

**LOCATION.**--Lat 42°13'48", long 111°17'43", in SE<sub>1/4</sub> sec.3, T.14 S., R.44 E., Bear Lake County, on left bank 1.5 mi (2.4 km) west of Dingle and 1.8 mi (2.9 km) downstream from headworks at Stewart Dam.

**PERIOD OF RECORD.**--January 1922 to current year. Monthly discharge only prior to October 1945, published in HSP 1314.

**GAGE.**--Water-stage recorder. Elevation of gage datum is 5,922.0 ft (1,805.03 m) above mean sea level (by topographic survey). Prior to Oct. 1, 1923, at site 300 ft (91 m) downstream at different datum; Oct. 1, 1923 to Oct. 27, 1944, at site 0.5 mi (0.8 km) downstream at different datum.

**AVERAGE DISCHARGE.**--51 years, 333 cfs (9,431 cu m/s) 241,300 acre ft/yr (298 cu hm/yr).

**EXTREMES.**--Current year: Maximum discharge, 1,870 cfs (53.0 cu m/s) May 21 (gage height, 5.65 ft or 1.722 m); minimum, 51 cfs (1.44 cu m/s) July 11.

Period of record: Maximum discharge, 4,180 cfs (118 cu m/s) May 7, 1952 (gage height, 8.62 ft or 2.627 m); minimum daily, 1 cfs (0.028 cu m/s) on several days in 1931, 1934, 1940, 1948.

**REMARKS.**--Records good. Discharge measurements generally made three to five times a week. Canal diverts from Bear River at Stewart Dam in NE<sub>1/4</sub> sec.34, T.13 S., R.44 E., for storage in Bear Lake. At times flow in canal is augmented by surplus water from Black Otter Slough entering at the station and by seepage and wastage from irrigation lands on both sides of canal.

**COOPERATION.**--Records collected by Utah Power & Light Co., under general supervision of Geological Survey, in connection with a Federal Power Commission project.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	290	336	257	225	187	214	414	1,380	1,230	220	509	172
2	301	315	246	220	198	203	414	1,390	1,130	211	488	167
3	310	321	249	189	182	217	427	1,430	1,030	204	447	183
4	328	339	394	231	171	237	406	1,470	881	191	445	199
5	334	347	294	222	171	228	427	1,500	725	159	422	198
6	341	403	200	172	186	226	661	1,520	588	82	416	205
7	348	405	179	183	155	229	519	1,450	582	78	403	214
8	350	371	197	172	163	225	596	1,400	533	81	379	216
9	356	355	261	181	209	235	640	1,630	394	71	356	224
10	343	355	269	183	208	244	632	1,460	364	58	335	244
11	341	348	235	191	180	236	697	1,490	372	70	319	241
12	339	353	200	197	181	240	847	1,560	357	153	300	263
13	340	356	185	179	188	249	1,040	1,620	306	180	325	289
14	335	352	176	159	187	257	1,230	1,660	246	233	267	295
15	333	348	163	109	192	259	1,420	1,710	285	295	224	291
16	328	346	164	209	217	307	1,500	1,750	358	287	202	283
17	322	346	170	211	196	357	1,490	1,770	414	277	211	285
18	318	340	179	215	174	344	1,500	1,820	458	293	212	294
19	318	339	138	220	170	343	1,390	1,840	509	289	207	291
20	321	335	208	210	198	290	1,230	1,850	519	315	213	295
21	312	332	236	206	210	320	1,150	1,870	499	375	207	297
22	302	324	246	193	208	344	1,080	1,840	462	540	201	297
23	314	314	223	190	190	369	1,060	1,750	367	779	210	302
24	316	241	209	181	184	375	1,080	1,660	291	793	207	311
25	321	217	224	183	183	383	1,150	1,510	276	752	208	319
26	321	289	247	170	192	382	1,150	1,480	295	694	203	333
27	324	230	244	183	203	384	1,110	1,480	278	640	197	342
28	333	191	242	198	206	410	1,120	1,430	252	602	194	341
29	341	186	240	195	-----	438	1,230	1,390	242	591	183	331
30	350	216	240	179	-----	463	1,310	1,400	232	557	177	319
31	355	-----	230	175	-----	428	-----	1,340	-----	532	171	-----
TOTAL	10,195	9,548	7,005	6,015	5,291	9,438	28,670	48,650	14,475	10,602	8,838	6,041
MEAN	329	318	226	194	189	304	956	1,569	483	342	285	268
MAX	356	405	394	231	217	463	1,500	1,870	1,230	793	509	342
MIN	290	186	163	169	155	203	406	1,340	232	58	171	167
AC-FY	20,220	18,940	13,630	11,930	10,490	18,720	59,870	96,500	28,710	21,030	17,530	15,950
CAL YR 1972	TOTAL 285,141	MEAN 779	MAX 2,700	MIN 163	AC-FI 565,600							
ATK YR 1973	TOTAL 166,768	MEAN 457	MAX 1,870	MIN 58	AC-FI 330,800							

## BEAR RIVER BASIN

### 10-465. Bear River below Stewart Dam, near Montpelier, Idaho

LOCATION.--Lat 42°15'14", long 111°17'35", in NE<sup>1/4</sup> sec. 34, T.13 S., R.44 E., Bear Lake County, on right bank 300 ft (91 m) downstream from Stewart Dam and 4.5 mi (7.2 km) south of Montpelier.

DRAINAGE AREA.--2,820 sq mi (7,300 sq km), approximately.

PERIOD OF RECORD.--January 1922 to current year. Monthly discharge only January 1922 to September 1945, published in WSP 1314.

GAGE.--Water-stage recorder. Altitude of gage is 5,950 ft (1,814 m) from topographic map.

AVERAGE DISCHARGE.--51 years, 50.1 cfs (1,419 cu m/s) 36,300 acre ft/yr (44.8 cu hm/yr).

EXTREMES.--Current year: Maximum discharge, 21 cfs (0.59 cu m/s) June 5 (gage height, 1.58 ft or 0.482 m); minimum, 2.0 cfs (0.057 cu m/s) Jan. 31.

Period of record: Maximum daily discharge, 3,050 cfs (86.4 cu m/s) June 3, 1923; no flow July 15, 1956

REMARKS.--Records good. Discharge measurements generally made once a week. Water diverted at Stewart Dam through Rainbow inlet canal (see station 10046000) for storage and regulation in Bear Lake. Many diversions above station for irrigation.

COOPERATION.--Records collected by Utah Power & Light Co., under general supervision of Geological Survey, in connection with a Federal Power Commission project.

#### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	7.1	5.6	2.9	2.1	2.4	4.7	5.3	13	12	7.8	7.6
2	11	6.9	5.6	2.7	2.1	2.5	4.1	5.5	13	12	7.3	7.6
3	11	7.2	7.2	2.5	2.2	2.6	4.8	5.5	12	12	7.1	7.6
4	11	7.5	8.4	2.5	2.3	2.6	5.7	5.7	12	11	6.9	7.6
5	11	7.7	9.2	2.6	2.4	2.7	5.7	6.0	15	11	6.7	8.0
6	11	8.3	4.4	2.7	2.4	2.6	5.8	6.2	20	9.9	6.6	8.4
7	11	8.1	4.4	2.7	2.4	2.6	6.0	6.2	19	10	6.4	9.3
8	11	7.7	4.0	2.4	2.4	2.5	6.1	5.8	19	10	6.2	9.4
9	10	7.5	3.4	2.2	2.4	2.4	6.2	6.4	19	10	6.0	11
10	10	7.7	2.9	2.2	2.4	2.4	6.4	8.9	16	9.7	6.0	13
11	10	7.6	2.5	2.2	2.4	2.3	6.2	9.9	15	9.5	6.0	14
12	9.7	7.7	2.4	2.2	2.4	2.3	5.9	11	15	9.3	6.0	12
13	9.2	7.8	2.3	2.2	2.3	2.2	5.9	11	15	9.4	6.1	12
14	8.3	7.8	2.2	2.3	2.3	2.4	5.7	12	14	10	6.1	12
15	7.7	7.8	2.3	2.3	2.3	3.5	5.7	12	15	10	7.5	12
16	7.3	7.9	2.3	2.3	2.2	3.7	6.1	12	15	10	8.8	12
17	7.2	8.0	2.4	2.3	2.2	4.0	5.4	12	15	10	8.6	12
18	7.1	7.9	2.6	2.2	2.2	4.0	4.9	13	15	9.7	8.4	12
19	7.0	7.8	2.0	2.2	2.2	4.3	4.8	13	16	9.6	8.1	11
20	6.9	7.7	3.3	2.2	2.1	4.1	4.5	14	16	9.2	8.0	11
21	6.9	7.8	3.7	2.2	2.2	4.0	4.5	14	15	9.1	8.0	11
22	6.8	7.7	4.1	2.2	2.2	4.1	4.6	14	15	9.1	7.8	10
23	6.8	7.9	4.2	2.2	2.2	4.1	4.5	14	14	9.1	7.7	10
24	7.0	6.9	4.1	2.1	2.2	4.6	4.5	13	14	9.6	7.7	9.8
25	7.2	6.0	4.0	2.1	2.2	4.6	4.5	14	14	9.3	7.7	9.7
26	7.3	6.6	3.8	2.1	2.2	5.2	4.7	14	14	9.1	7.7	9.7
27	7.2	6.3	3.0	2.1	2.3	4.7	5.1	14	13	8.9	7.7	9.7
28	7.3	5.6	3.4	2.1	2.4	5.0	5.1	14	13	8.7	7.7	9.6
29	7.7	5.1	3.3	2.1	-----	5.0	5.1	13	13	8.5	7.7	9.5
30	7.7	5.5	3.1	2.0	-----	5.4	5.2	13	13	8.3	7.6	9.4
31	7.4	-----	3.0	2.0	-----	5.1	-----	14	-----	8.2	7.6	-----
TOTAL	267.7	218.6	116.6	71.0	65.6	109.9	158.4	332.4	447	302.7	225.5	307.9
MEAN	8.64	7.29	5.76	2.29	2.27	3.55	5.28	10.7	14.9	9.76	7.27	10.3
MAX	11	8.3	8.4	2.9	2.4	5.4	6.4	14	20	12	8.8	14
MIN	6.8	5.1	2.2	2.0	2.1	2.2	4.1	5.3	12	8.2	6.0	7.6
AC-FT	931	434	231	141	126	218	314	659	887	600	447	611

CAL YR 1972 TOTAL 3,332.7 MEAN 9.11 MAX 20 MIN 2.2 AC-FT 6,610  
WTR YR 1973 TOTAL 2,621.3 MEAN 7.18 MAX 20 MIN 2.0 AC-FT 5,200







**BEAR RIVER BASIN**  
**10.930. Cub River near Preston, Idaho**

LOCATION.--Lat 42°08'28", long 111°41'19", in SW $\frac{1}{4}$  sec.5, T.75 S., R.41 E., Franklin County, Cache National Forest, on right bank 0.2 mi (0.3 km) upstream from headgates of Cub River-Worm Creek Canal, 0.7 mi (1.1 km) upstream from forest boundary, and 10 mi (16 km) east of Preston.

DRAINAGE AREA.--19.4 sq mi (50.2 sq km).

PERIOD OF RECORD.--March 1940 to September 1952, October 1955 to current year.

GAGE.--Water-stage recorder. Datum of gage is 5,285.1 ft (1,610.90 m) above mean sea level, unadjusted.

AVERAGE DISCHARGE.--30 years, 83.9 cfs (2,376 cu m/s) 60,790 acre-ft/yr (75.0 cu hm/yr).

EXTREMES.--Current year: Maximum discharge, 640 cfs (18.1 cu m/s) May 20 (gage height, 2.56 ft or 0.780 m); minimum, 18 cfs (0.51 cu m/s) Jan. 27-29, Feb. 5-27.

Period of record: Maximum discharge, 803 cfs (22.7 cu m/s) June 11, 1971 (gage height, 3.13 ft or 0.954 m); maximum gage height, 3.83 ft (1.167 m) June 2, 1943; no flow for part of Jan. 29, 1965, result of snowslide.

REMARKS.--Records good. No diversion above station.

**DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	28	24	21	19	19	23	62	393	112	49	37
2	31	28	24	21	19	20	23	55	388	105	49	36
3	31	28	25	21	19	21	23	55	359	100	48	34
4	31	28	25	22	19	20	24	70	313	97	48	33
5	31	28	25	21	18	20	26	83	280	94	47	33
6	31	28	24	21	18	20	31	100	276	91	47	32
7	32	27	24	21	18	20	32	112	295	87	46	32
8	31	28	24	20	18	20	29	119	322	84	45	34
9	31	27	24	20	18	21	28	132	342	81	44	33
10	32	27	24	20	18	21	30	150	355	78	44	32
11	31	27	24	20	18	22	33	181	337	75	43	32
12	31	27	24	20	18	22	38	198	299	73	43	31
13	31	26	24	21	18	22	45	234	272	73	42	31
14	30	26	24	20	18	21	52	283	258	71	42	31
15	30	26	24	20	18	21	46	313	253	69	41	31
16	30	26	23	20	18	21	46	339	231	67	41	31
17	30	26	23	20	18	22	58	340	215	65	40	30
18	30	26	23	20	18	21	51	470	200	64	40	30
19	29	26	23	20	18	21	43	508	183	64	39	29
20	31	26	23	19	18	22	39	604	171	60	38	30
21	30	25	23	19	18	23	37	575	160	62	39	29
22	29	25	23	20	18	24	38	533	157	60	38	29
23	30	25	23	19	18	22	40	490	154	59	38	30
24	29	25	23	19	18	22	42	488	152	58	37	30
25	29	25	22	19	18	23	46	578	148	56	37	30
26	29	26	22	19	18	24	49	557	142	56	37	29
27	29	25	22	18	18	25	59	419	135	54	36	28
28	29	25	22	18	19	25	75	322	130	53	36	28
29	29	25	22	18	-----	25	82	311	124	52	36	28
30	29	24	22	19	-----	24	71	330	118	51	35	27
31	28	-----	21	19	-----	24	-----	356	-----	50	35	-----
TOTAL	935	789	723	615	509	678	1,259	9,417	7,162	2,224	1,280	930
MEAN	30.2	26.3	23.3	19.8	18.2	21.9	42.0	304	239	71.7	41.3	31.0
MAX	32	28	25	22	19	25	62	604	393	112	49	37
MIN	28	24	21	18	18	19	23	55	118	50	35	27
AC-FT	1,650	1,560	1,430	1,220	1,010	1,340	2,500	18,680	14,210	4,410	2,540	1,840
CAL YR 1972	TOTAL 37,785	MEAN 103	MAX 715	MIN 21	AC-FT 74,950							
WTR YR 1973	TOTAL 26,521	MEAN 72.7	MAX 604	MIN 18	AC-FT 52,600							



# BEAR RIVER BASIN

## 10-1090. Logan River above State dam, near Logan, Utah—continued

COMBINED DISCHARGE, IN CUBIC FEET PER SECOND, OF LOGAN RIVER ABOVE STATE DAM  
AND LOGAN, HYDE PARK & SMITHFIELD CANAL AT HEAD, NEAR LOGAN, UTAH,  
WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DISCHARGE, IN CUBIC FEET PER SECOND: WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	220	186	160	146	126	120	118	227	648	363	219	185
2	220	184	160	146	121	122	118	206	653	347	216	180
3	212	184	160	146	124	116	114	211	617	337	216	172
4	215	184	160	136	130	116	114	245	565	328	218	165
5	217	189	149	139	126	116	114	269	526	322	220	165
6	211	184	145	138	126	114	120	285	528	315	216	163
7	211	177	158	138	126	114	123	323	551	306	211	165
8	206	186	149	138	123	114	120	368	582	303	207	169
9	210	185	154	137	119	116	122	385	599	294	205	167
10	212	185	154	139	126	114	120	395	618	285	202	164
11	212	185	154	137	124	118	129	449	614	285	199	166
12	204	185	154	136	128	118	129	441	584	277	199	164
13	204	185	154	142	122	120	143	480	559	279	195	160
14	204	184	154	142	122	118	156	518	564	278	193	157
15	204	184	154	138	118	114	154	535	596	277	193	157
16	204	175	154	138	118	114	151	569	549	272	188	157
17	202	175	154	140	118	114	162	656	523	266	188	153
18	202	175	154	133	122	120	165	742	496	256	190	153
19	202	175	154	135	118	113	156	809	464	262	186	153
20	215	175	153	127	114	114	191	923	436	267	184	151
21	207	174	158	123	116	120	147	864	422	265	183	151
22	199	174	160	125	116	123	145	802	427	259	188	153
23	196	174	158	122	116	120	154	749	424	254	186	153
24	204	174	149	123	118	116	193	749	421	246	182	155
25	196	174	147	126	118	116	196	893	414	235	182	157
26	196	169	141	132	116	120	204	820	403	237	178	155
27	191	169	140	123	118	120	228	683	396	233	176	151
28	189	169	142	119	118	122	263	600	389	233	177	151
29	191	169	142	124	-----	118	282	587	381	230	175	149
30	189	169	138	126	-----	120	250	587	371	227	174	147
31	186	-----	146	128	-----	118	-----	604	-----	224	174	-----
TOTAL	6,331	5,357	4,709	4,144	3,387	3,638	4,741	16,976	15,320	8,562	6,020	4,788
MEAN	204	179	152	134	121	117	158	548	511	276	194	160
MAX	220	189	160	146	130	123	282	923	653	363	220	185
MIN	186	169	138	119	114	113	114	208	371	224	174	147
AC-FT	12,560	10,630	9,340	8,220	6,720	7,220	9,400	33,670	30,390	16,980	11,940	9,500

CAL YR 1972 TOTAL 137,570 MEAN 376 MAX 1,350 MIN 132 AC-FT 272,900  
WTR YR 1973 TOTAL 83,973 MEAN 230 MAX 923 MIN 113 AC-FT 166,600

# BEAR RIVER BASIN

## 10-1170. Hammond (East Side) Canal near Collinston, Utah

LOCATION.--Lat  $41^{\circ}49'51''$ , long  $112^{\circ}03'24''$ , in SE $\frac{1}{4}$  sec. 27, T.13 N., R.2 W., Box Elder County, on right bank 3,600 ft (1,097 m) downstream from Cutler Dam and 4 mi (6 km) north of Collinston.

PERIOD OF RECORD.--June 1912 to current year. Prior to 1915, published as Hammond Ditch near Collinston. Monthly discharge only for some periods, published in WSP 1314.

GAGE.--Water-stage recorder. Prior to May 22, 1914, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--61 years, 51.1 cfs (1,447 cu m/s) 37,020 acre-ft/yr (45.6 cu hm/yr).

EXTREMES.--Maximum daily discharge, 184 cfs (5.21 cu m/s) June 29, 1963; no flow at times in each year.

REMARKS.--Records good. Canal diverts from east side of Bear River in NW $\frac{1}{4}$  SW $\frac{1}{4}$  sec. 26 T.13 N., R.2 W., at dam at which West Side Canal and intake of Cutler powerplant also divert. Water from this canal and West Side Canal used for irrigation of about 58,000 acres (235 sq km) below station in eastern Box Elder County.

COOPERATION.--Gage-height record and 7 discharge measurements furnished by Utah Power & Light Co.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	9.4	.41					0	130	169	148	120
2	54	9.4	.23					0	131	169	153	95
3	54	9.4	.06					0	130	173	155	89
4	54	9.4	0					0	129	173	145	90
5	50	9.2	.23					0	130	173	145	90
6	42	9.2	.83					0	129	174	143	90
7	39	9.2	.56					0	129	173	140	90
8	39	9.4	.35					0	130	173	141	82
9	40	9.2	.17					0	132	173	139	74
10	32	9.2	0					46	137	173	140	74
11	27	9.2	0					67	138	173	139	64
12	29	9.0	0					67	144	173	142	54
13	24	9.0	0					90	150	173	150	54
14	24	9.3	0					90	136	161	155	53
15	23	8.0	0					103	93	163	153	48
16	23	7.1	0					120	80	160	154	48
17	23	5.0	0					139	93	157	152	47
18	23	5.4	0					159	92	156	147	47
19	22	5.3	0					161	87	140	145	48
20	18	5.3	0					160	93	99	145	48
21	12	5.3	0					160	98	100	144	48
22	12	5.3	0					160	114	101	143	47
23	12	5.3	0					159	144	101	140	48
24	12	5.3	0					159	155	103	139	48
25	11	5.3	0					136	167	111	139	48
26	11	5.6	0					130	170	133	139	47
27	11	3.6	0					130	159	139	142	47
28	11	.83	0					130	169	145	142	47
29	11	.70	0					130	169	146	142	42
30	10	.53	0					130	169	145	138	36
31	9.6	-----	0					131	-----	146	130	-----
TOTAL	612.4	203.81	2.86	0	0	0	0	2,753	3,937	4,648	4,469	1,863
MEAN	26.2	6.79	.092	0	0	0	0	88.8	131	150	144	62.1
MAX	54	9.4	.83	0	0	0	0	161	170	174	155	120
MIN	9.4	.58	0	0	0	0	0	0	80	99	130	36
Avg-Pt	1,010	40+	5.7	0	0	0	0	5,400	7,810	9,220	8,860	3,700
Total Yrs 1972 Total	20,979.67	MEAN	57.3	MAX	161	MIN	0	AC-FT	41,610			
Total Yrs 1973 Total	18,689.67	MEAN	51.2	MAX	174	MIN	0	AC-FT	37,070			

**BEAR RIVER BASIN**  
**10-1175. West Side Canal near Collinston, Utah**

LOCATION.--Lat  $41^{\circ}49'55''$ , long  $112^{\circ}03'36''$ , in SW $\frac{1}{4}$  sec. 27, T. 13 N., R. 2 W., Box Elder County, on left bank 4,200 ft (1,280 m) downstream from Cutler Dam and 4 mi (6.4 km) north of Collinston.

PERIOD OF RECORD.--June 1912 to current year. Monthly discharge only for some periods, published in WSP 1314.

GAGE.--Water-stage recorder. Prior to May 22, 1914, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--61 years, 242 cfs (6,853 cu m/s) 175,300 acre-ft/yr (216 cu hm/yr).

EXTREMES.--Period of record: Maximum daily discharge, 763 cfs (21.6 cu m/s) July 11, 1967; no flow for periods in every year except 1914.

REMARKS.--Records excellent. Canal diverts from west side of Bear River in NE $\frac{1}{4}$  sec. 27, T. 13 N., R. 2 W., canal and Hammond (East Side) Canal and intake of Cutler powerplant also divert. Water from this in eastern Box Elder County.

COOPERATION.--Gage-height record and 9 discharge measurements furnished by Utah Power & Light Co.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	287	94	80	65	90	50	27	0	651	727	671	605
2	288	94	80	65	90	50	17	0	549	727	673	662
3	290	94	80	65	90	50	1-2	0	567	731	665	434
4	286	94	80	65	90	50	0	0	679	731	659	434
5	244	94	80	65	85	50	0	0	685	731	657	447
6	213	94	80	65	80	50	0	0	701	731	657	454
7	200	90	80	65	80	50	0	0	599	735	657	454
8	200	85	80	65	80	50	0	10	701	733	659	391
9	198	85	80	65	80	50	0	243	685	733	675	365
10	186	86	80	65	80	49	0	220	683	735	685	342
11	178	85	80	65	80	49	0	271	581	733	685	306
12	172	85	72	65	80	43	0	308	685	733	691	330
13	166	85	65	65	80	34	0	338	689	721	691	300
14	164	85	65	65	90	34	0	370	617	637	699	300
15	165	84	65	65	90	34	0	433	470	649	701	296
16	166	84	65	65	70	34	0	517	439	645	705	298
17	165	84	65	65	60	34	0	516	461	655	701	298
18	163	84	65	40	50	34	0	601	482	667	703	290
19	161	83	65	30	50	34	0	639	513	604	703	281
20	146	83	65	90	50	34	0	647	552	508	701	281
21	135	82	65	90	50	34	0	653	582	468	703	280
22	134	79	65	90	60	34	0	657	663	455	689	278
23	131	79	65	90	50	34	0	691	697	513	681	278
24	131	79	65	90	50	34	0	713	721	517	679	278
25	120	80	65	90	60	34	0	596	733	527	681	278
26	112	80	65	90	51	34	0	578	727	593	683	277
27	112	80	65	90	50	34	0	594	725	541	673	249
28	112	80	65	70	50	34	0	583	729	637	661	220
29	112	80	65	90	-----	34	0	580	731	643	661	177
30	101	80	65	90	-----	34	0	584	731	641	663	177
31	94	-----	65	90	-----	33	-----	632	-----	651	655	-----
TOTAL	5,335	2,552	2,187	2,255	2,016	1,233	45.2	11,971	19,428	20,163	21,067	9,820
MEAN	172	85.1	70.5	72.7	72.0	39.8	1.51	386	649	650	680	327
MAX	290	94	80	90	90	50	27	713	733	735	705	605
MIN	94	79	65	30	50	30	0	0	439	466	655	177
AC-FT	10,580	5,060	4,340	4,470	4,000	2,450	93	23,740	38,940	39,990	41,790	19,480
CAL YR 1972	TOTAL	110,023.80	MEAN	301	MAX	749	MIN 0	AC-FT	219,200			
WTR YR 1973	TOTAL	98,072.20	MEAN	269	MAX	735	MIN 0	AC-FT	194,500			

**BEAR RIVER BASIN**  
**10-1180. Bear River near Collinston, Utah**

LOCATION.--Lat  $41^{\circ}50'03''$ , long  $112^{\circ}03'16''$ , in NW $\frac{1}{4}$  sec. 27, T. 13 N., R. 2 W., Box Elder County, on right bank 800 ft (244 m) downstream from Cutler plant of Utah Power & Light Co., 2,000 ft (610 m) downstream from Cutler Dam, and 5.5 mi (8.8 km) north of Collinston.

DRAINAGE AREA.--6,000 sq mi (15,540 sq km), approximately.

PERIOD OF RECORD.--July 1889 to current year. Published as "at Collinston" prior to 1900. Monthly discharge only for some periods, published in HSP 1314.

GAGE.--Water-stage recorder. Datum of gage is 4,276.13 ft (1,303.364 m) above mean sea level (levels by Bureau of Reclamation). Prior to Nov. 8, 1913, nonrecording gage, and Nov. 8, 1913 to Sept. 10, 1938, water-stage recorder, at site 0.8 mi (1.3 km) downstream at different datums.

EXTRAPOLATION.--Current year: Maximum discharge, 3,980 cfs (113 cu m/s) Mar. 11 (gage height, 4.80 ft or 1.463 m); minimum daily, 20 cfs (0.57 cu m/s) June 10-15, Aug. 22-30.

Period of record: Maximum discharge observed, 31,600 cfs (329 cu m/s) June 7-10, 1909 (gage height, 7.70 ft or 2.34 m, site and datum then in use); minimum daily, 10 cfs (0.28 cu m/s) Aug. 4-12, 18-23, 1905; practically no flow at 2400 Aug. 5, 1920.

REMARKS.--Records excellent. Natural flow of stream affected by storage reservoir, power developments, diversions for irrigation, and return flow from irrigated areas.

COOPERATION.--Nine discharge measurements furnished by Utah Power & Light Co.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,040	2,210	2,010	2,430	2,150	2,620	3,020	3,580	1,540	25	65	22
2	1,420	1,940	1,950	2,470	2,270	2,540	2,910	3,480	1,610	95	21	1,470
3	1,900	2,200	1,950	2,200	1,940	2,730	3,190	3,120	1,350	25	22	1,660
4	2,000	1,820	2,340	1,930	2,210	2,930	3,100	3,040	1,680	26	22	876
5	1,280	2,580	2,500	2,000	2,190	2,700	3,070	3,080	841	26	22	894
6	1,140	2,010	1,520	1,900	2,340	2,650	2,930	3,120	1,150	25	22	985
7	953	2,330	1,700	1,400	2,240	2,860	2,820	3,250	1,240	24	21	1,060
8	1,580	1,990	1,670	1,800	2,260	2,310	3,120	3,380	919	24	21	2,210
9	1,400	2,600	1,450	1,800	2,160	3,020	2,800	3,200	633	23	21	1,470
10	1,300	2,370	1,270	1,610	2,290	2,930	2,850	3,310	20	23	21	1,270
11	1,040	2,240	1,270	1,790	2,260	3,310	2,290	3,320	20	23	25	1,610
12	1,050	2,300	1,460	2,600	2,280	2,690	2,300	3,210	20	23	21	1,340
13	2,010	2,410	1,410	2,520	2,580	3,130	2,750	3,100	20	22	21	1,370
14	1,300	2,120	1,580	2,580	2,670	3,350	2,370	2,950	20	22	21	1,320
15	1,510	2,080	1,520	2,550	2,440	3,240	2,810	2,820	20	22	21	1,440
16	2,350	2,630	1,610	2,800	2,240	3,000	2,880	2,700	1,080	22	21	956
17	1,810	1,800	1,930	2,840	2,550	2,810	2,960	2,620	376	21	21	1,330
18	2,160	1,520	2,280	2,840	2,400	2,860	3,030	2,260	1,120	719	21	987
19	2,070	2,860	2,090	2,750	2,340	2,960	3,210	1,690	1,730	1,260	21	1,120
20	2,450	2,350	1,980	2,880	2,000	2,920	3,310	2,100	1,390	570	21	889
21	2,530	1,840	2,330	2,890	2,370	2,910	3,490	1,790	281	1,380	21	1,680
22	2,080	2,740	2,610	2,560	1,970	3,050	3,240	2,520	426	1,500	20	1,270
23	2,110	2,100	2,790	2,000	2,350	3,120	3,090	2,270	423	1,720	20	1,400
24	2,520	2,290	2,840	1,740	2,360	3,110	2,950	2,180	22	1,700	20	1,040
25	1,840	2,400	2,780	1,820	2,300	3,160	2,860	2,360	184	583	20	2,020
26	2,440	2,110	2,630	1,910	2,490	3,130	3,160	2,050	60	1,480	20	2,060
27	2,090	2,310	2,600	1,960	2,270	3,030	3,130	1,940	243	999	20	1,820
28	2,240	2,440	2,450	1,950	2,210	2,950	3,220	2,810	63	1,150	20	1,830
29	2,040	2,160	2,470	1,640	-----	3,030	3,400	2,680	306	27	20	1,740
30	2,420	2,270	2,190	2,130	-----	3,160	3,720	2,160	25	342	20	1,800
31	2,420	-----	2,470	1,950	-----	3,080	-----	1,830	-----	21	50	-----
TOTAL	57,493	67,020	63,650	68,240	64,210	91,310	89,970	83,920	18,792	13,922	723	40,939
MEAN	1,855	2,234	2,053	2,201	2,293	2,945	2,999	2,707	626	449	23.3	1,365
MAX	2,530	2,860	2,840	2,890	2,670	3,350	3,720	3,580	1,730	1,720	65	2,210
MIN	953	1,520	1,270	1,400	1,940	2,310	2,280	1,690	20	21	20	22
AC-FT	114,000	132,900	126,200	135,400	127,400	181,100	178,500	166,500	37,270	27,610	1,430	81,200
CAL YR 1972	TOTAL 890,405	MEAN 2,433	MAX 4,940	HIN 21	AC-FT 1,766,000							
HTR YR 1973	TOTAL 660,189	MEAN 1,809	MAX 3,720	HIN 20	AC-FT 1,1309,000							

**BEAR RIVER BASIN**  
**10-1260. Bear River near Corinne, Utah**

LOCATION.--Lat  $41^{\circ}34'35''$ , long  $112^{\circ}06'00''$ , in SE $\frac{1}{4}$  NE $\frac{1}{4}$  sec. 30, T. 10 N., R. 2 W., Box Elder County, on right bank 1.2 mi (1.9 km) downstream from Salt Creek, 2.0 mi (3.2 km) northeast of Corinne, and 2.8 mi (4.5 km) downstream from Malad River.

DRAINAGE AREA.--6,800 sq mi (17,610 sq km), approximately.

PERIOD OF RECORD.--October 1949 to September 1957, October 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 4,204.6 ft (1,281.56 m) unadjusted. Auxiliary nonrecording gage 7,600 ft (2,380 m) downstream July 27, 1950 to Nov. 21, 1955.

AVERAGE DISCHARGE.--10 years, 1,754 cfs (49.67 cu m/s) 1,271,000 acre-ft/yr (1.57 cu km/yr).

EXTREMES.--Current year: Maximum discharge, 3,850 cfs (109 cu m/s) Mar. 14 (gage height, 10.74 ft or 3.274 m); minimum daily, 90 cfs (2.55 cu m/s) July 13.

Period of record: Maximum discharge, 7,370 cfs (209 cu m/s) June 17, 1971 (gage height, 15.12 ft or 4.609 m); minimum daily, 72 cfs (2.04 cu m/s) Aug. 20, 12, 26, Sept. 8, 1964, July 5, 1970.

REMARKS.--Records good except those for winter months, which are fair. Natural flow of stream affected by storage reservoirs, power developments, diversions for irrigation, and return flow from irrigated areas. Records are essentially equivalent to flow that reaches the Bear River Bird Refuge area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,300	2,640	2,370	2,700	2,300	2,800	3,600	3,830	2,100	142	315	129
2	2,220	2,360	2,300	2,700	2,300	2,800	3,480	3,750	1,930	106	160	375
3	1,800	2,320	2,210	2,700	2,400	2,830	3,460	3,650	1,870	132	164	1,280
4	2,140	2,350	2,400	2,500	2,400	3,000	3,550	3,380	1,720	146	158	1,570
5	2,220	2,410	2,630	2,300	2,400	2,950	3,500	3,310	1,860	121	164	1,190
6	1,760	2,570	2,710	2,400	2,400	2,830	3,460	3,320	1,280	115	171	1,010
7	1,360	2,470	2,100	2,100	2,400	3,010	3,250	3,360	1,410	106	166	1,250
8	1,260	2,420	2,400	1,800	2,400	2,960	3,210	3,490	1,520	102	139	1,450
9	1,620	2,600	2,300	2,000	2,400	2,700	3,390	3,550	1,220	98	133	1,970
10	1,650	2,720	2,200	2,200	2,400	3,110	3,180	3,540	863	96	122	1,740
11	1,590	2,580	1,600	2,100	2,400	3,250	3,080	3,570	438	93	115	1,530
12	1,360	2,540	1,600	2,400	2,400	3,590	2,700	3,560	194	92	106	1,610
13	1,430	2,600	1,700	3,000	2,500	3,760	2,660	3,460	159	90	117	1,510
14	2,040	2,630	1,700	2,800	2,700	3,830	2,730	3,400	206	130	109	1,450
15	1,610	2,430	1,800	2,800	2,800	3,690	2,710	3,180	289	144	107	1,430
16	1,860	2,520	1,800	2,800	2,800	3,520	2,970	3,030	237	155	114	1,490
17	2,340	2,530	1,900	3,000	2,800	3,320	3,060	2,910	1,070	152	111	1,130
18	2,100	2,150	2,200	3,000	2,800	3,140	3,220	2,820	792	143	114	1,410
19	2,270	2,130	2,500	3,000	2,700	3,170	3,270	2,460	1,200	734	104	1,180
20	2,550	2,790	2,500	3,000	2,300	3,220	3,400	1,930	1,910	1,470	102	1,170
21	2,800	2,430	2,500	3,000	2,500	3,230	3,580	2,280	1,590	1,450	100	1,100
22	2,560	2,490	2,700	3,000	2,500	3,330	3,590	2,250	658	1,560	100	1,590
23	2,470	2,740	2,800	3,000	2,500	3,450	3,450	2,620	517	1,760	120	1,430
24	2,550	2,600	2,000	2,500	2,500	3,540	3,300	2,470	614	2,100	124	1,550
25	2,460	2,600	3,100	2,100	2,500	3,560	3,160	2,550	314	1,930	111	1,470
26	2,450	2,400	3,000	2,100	2,500	3,560	3,120	2,600	202	1,160	106	1,910
27	2,590	2,600	2,900	2,100	2,700	3,520	3,320	2,510	201	1,560	109	1,940
28	2,440	2,590	2,800	2,100	2,700	3,460	3,360	2,590	265	1,320	101	1,910
29	2,380	2,620	2,700	2,100	---	3,450	3,440	3,060	222	1,370	104	1,670
30	2,490	2,490	2,600	2,100	---	3,560	3,650	2,780	363	609	108	1,940
31	2,700	----	2,600	2,300	----	3,630	----	2,050	----	343	108	-----
TOTAL	65,370	75,120	73,660	77,700	70,600	101,470	97,850	93,640	27,234	19,529	3,982	42,584
MEAN	2,109	2,504	2,376	2,906	2,521	3,223	3,262	3,021	908	630	128	1,419
MAX	2,800	2,790	3,100	3,000	2,800	3,830	3,650	3,830	2,100	2,100	315	1,970
MIN	1,260	2,130	1,600	1,800	2,300	2,500	2,660	1,930	159	90	100	129
AC-FT	129,700	149,000	146,100	154,100	140,000	201,300	194,100	185,700	54,020	38,740	7,900	84,476
CAL YR 1972 TOTAL	990,199	HEAN	2,705	MAX	5,180	MIN	102	AC-FT	1,944,000			
WTR YR 1973 TOTAL	748,739	HEAN	2,051	MAX	3,830	MIN	90	AC-FT	1,485,000			