

TWENTIETH ANNUAL REPORT

BEAR RIVER  
COMMISSION

1977



For the Report Year October 1, 1976 to

September 30, 1977

LOGAN, UTAH

April 1, 1978

IN MEMORIAM



William G. "Griff" Jenkins

Commissioner from Idaho

Bear River Commission, 1969-78

BEAR RIVER COMMISSION

22 EAST CENTER

LOGAN, UTAH

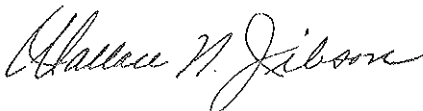
April 1, 1978

Mr. President:

Submitted herewith is the Twentieth Annual Report of the Bear River Commission, as requested 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,

A handwritten signature in cursive script, reading "Wallace N. Jibson".

Wallace N. Jibson

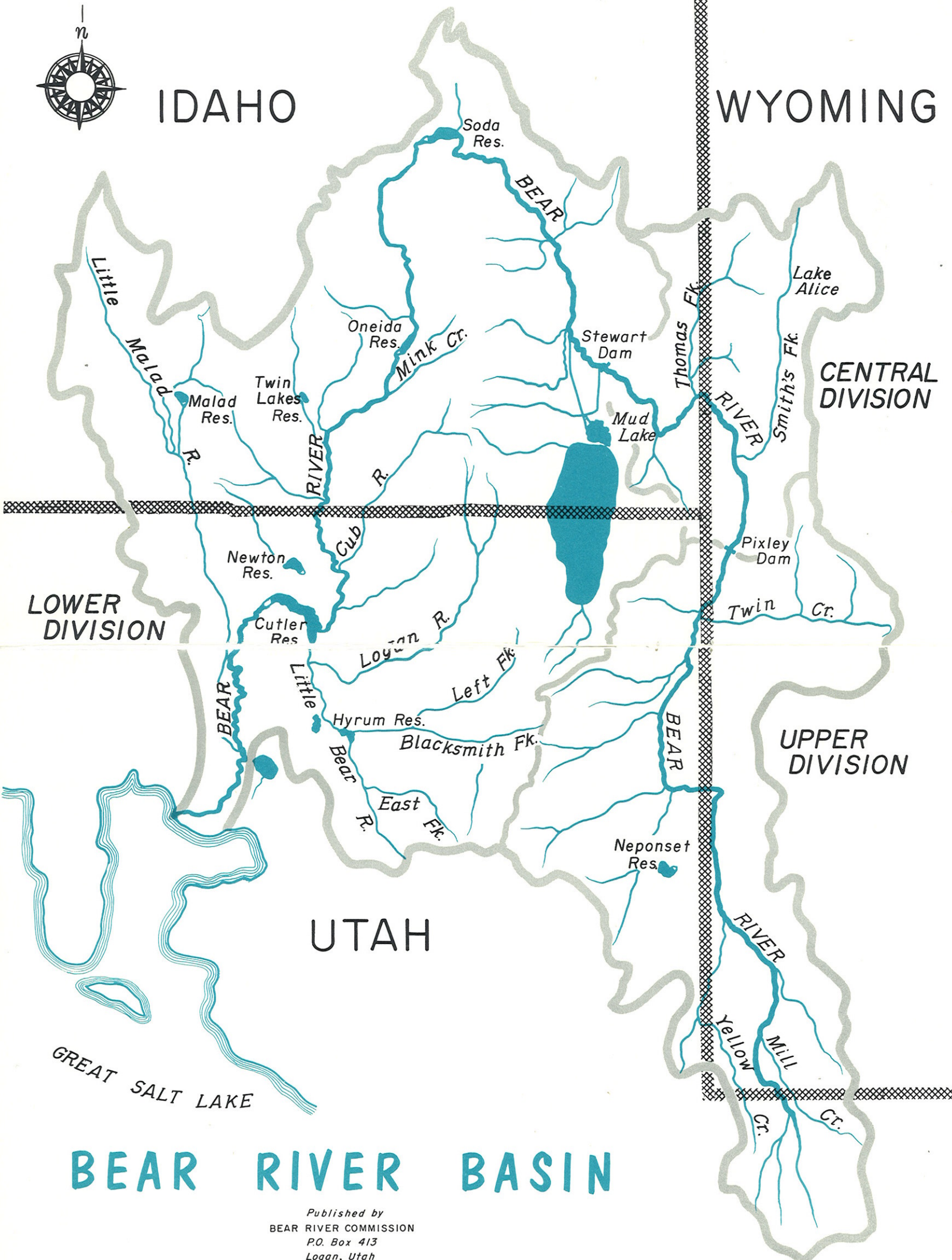
Chairman and  
Federal Representative

The President  
The White House  
Washington, D.C.



IDAHO

WYOMING



LOWER DIVISION

CENTRAL DIVISION

UPPER DIVISION

UTAH

GREAT SALT LAKE

# BEAR RIVER BASIN

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

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# TWENTIETH ANNUAL REPORT

## of the

# BEAR RIVER COMMISSION

April 1, 1978

### 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, 1978 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.

Members of the Commission and others associated with the Bear River Compact were saddened at the passing of William G. "Griff" Jenkins in late April 1978. Griff was serving as Chairman of the Idaho delegation at the time of his passing and had served since 1969 as a commissioner from Idaho. A Resolution of Commendation by the Commission had been approved just prior to his death. His able leadership of the Idaho group and his stabilizing influence with the entire Commission are appreciated by all who have been involved in the administration of the Bear River Compact. Don W. Gilbert, Grace, replaced Griff on the Commission.

C. Stephen Allred, Director, Idaho Department of Water Resources, replaced R. Keith Higginson as an Ex officio member from Idaho. Other officers, commissioners, and committee members remained as in the previous year.

## OFFICERS

Chairman . . . . . Wallace N. Jibson, Logan, Utah  
Vice-Chairman . . . . . S. Paul Holmgren, Bear River City, Utah  
Secretary-Treasurer . . . . . Daniel F. Lawrence, Bountiful, Utah

## MEMBERS

### Idaho

William G. Jenkins . . . . . Malad, Idaho  
J. Daniel Roberts . . . . . Preston, Idaho  
Clifford J. Skinner . . . . . Dingle, 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

George L. Christopulos . . . . . Cheyenne, Wyoming  
S. Reed Dayton . . . . . Cokeville, Wyoming  
J. W. Myers . . . . . Evanston, Wyoming

### United States

Wallace N. Jibson . . . . . Logan, Utah

### Budget Committee

J. W. Myers . . . . . Evanston, Wyoming  
S. Paul Holmgren . . . . . Bear River City, Utah  
William G. Jenkins . . . . . Malad, Idaho

### Operations Committee

S. Reed Dayton . . . . . Cokeville, Wyoming  
J. Daniel Roberts . . . . . Preston, Idaho  
Gordon H. Peart . . . . . Randolph, Utah

## MEETINGS

Four meetings of the Commission were held during the report year in addition to public hearings held in November 1976 in Logan, Preston, and Evanston.

Special Meeting - October 13, 1976 .....	Salt Lake City, Utah
Regular Meeting - November 29, 1976 .....	Salt Lake City, Utah
Special Meeting - February 17, 1977 .....	Salt Lake City, Utah
Annual Meeting - April 20, 1977 .....	Salt Lake City, Utah

## BUDGET AND FISCAL DISBURSEMENTS

	Adopted Budget		
	Fiscal Year Ending 9-30-1977	Fiscal Year Ending 9-30-78	Fiscal Biennium Ending 9-30-1978
<b>Compact Administration</b>			
Personal Services .....	\$ 8,146	\$ 8,788	\$16,934
Travel and Subsistence .....	200	100	300
General Office Expense .....	259	260	519
Fiscal and Administrative .....	445	538	983
Washington Office Tech. Charge .....	890	954	1,844
Printing and Reproduction .....	720	800	1,520
Treasurer (Bond and Audit) .....	300	300	600
Transcribing Minutes .....	140	200	340
Legal Retainer Fee .....	300	1,000	1,300
Sub-Total .....	\$11,400	\$12,940	\$24,340
<b>Stream-Gaging Program</b>			
U.S. Geological Survey .....	\$76,800*	\$82,000	\$158,800*
Total .....	\$88,200*	\$94,940	\$183,140*

\*As revised.

### Allocation of Budget

U.S. Geological Survey .....	38,400	\$41,000	\$79,400
State of Idaho .....	16,600	17,980	34,580
State of Utah .....	16,600	17,980	34,580
State of Wyoming .....	16,600	17,980	34,580
Total .....	\$88,200	\$94,940	\$183,140

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 a statement of budget revenue and disbursements for the fiscal year ended September 30, 1977, is included in this report as Appendix A.



## **STREAM-GAGING PROGRAM**

A cooperative, basin-wide program of stream gaging is administered by the Geological Survey subdistrict chief at Logan, Utah. The Geological Survey and Bear River Commission contribute equally to finance the collection of daily streamflow records at about 45 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.

The existing stream-gaging program remained unchanged during the 1977 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 subdistrict chief at Logan where the subdistrict office is also the principal office of the Commission.

The subdistrict chief has been serving as Assistant Secretary to the Commission with responsibility of providing technical assistance and current streamflow information as required in administration of the Compact. He establishes operational procedures, conducts hydrologic studies, compiles annual reports, and maintains the records of the Commission. A re-evaluation of this position and incumbent duties should be considered by 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

Only Logan River, of the three key gaging stations used in the table below and bar chart on opposite page, was gaged in the previous record - drouth year of 1934. Both seasonal and water-year flow from Logan River was less than in 1934. We estimate from correlation that Smiths Fork produced only 65 to 75 percent of the 1934 runoff. Yield during the irrigation season from the Uinta watershed is estimated to have been somewhat higher than in 1934.

The bar charts on the opposite page (figure 1) illustrate a comparison of monthly and yearly streamflow in 1977 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 1943-77	1976	1977
Upper Bear River .....	114,300	81,800	40,600
Smiths Fork .....	109,000	124,900	22,100
Logan River .....	122,700	124,700	37,200

### *Water Year*

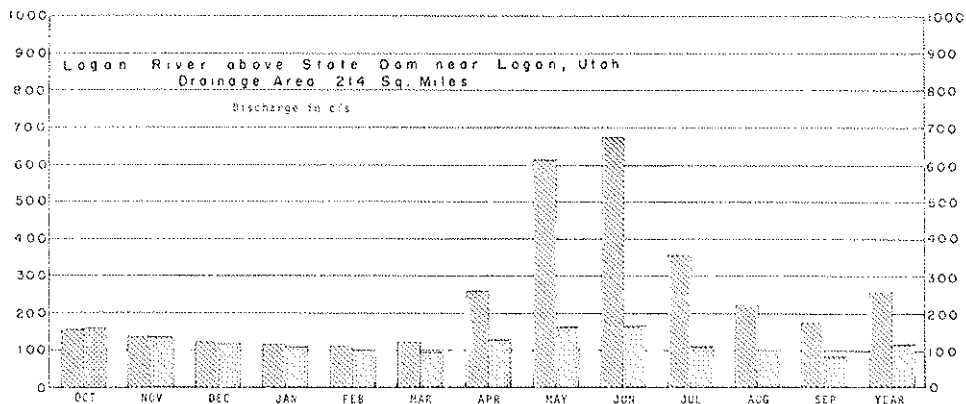
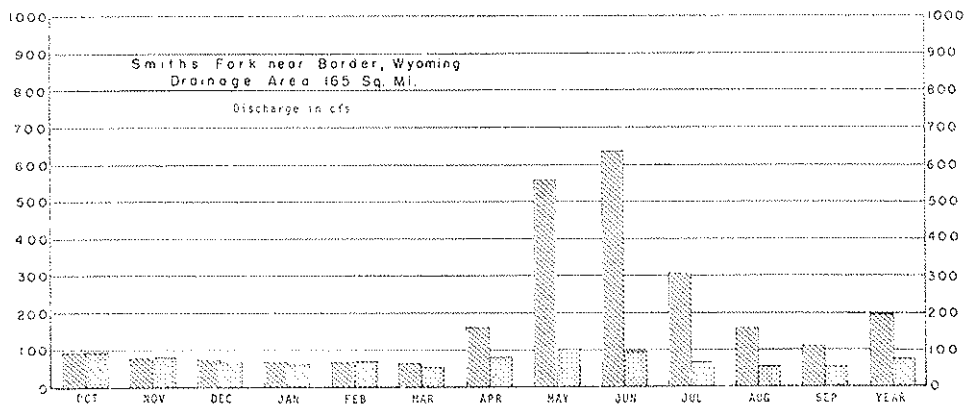
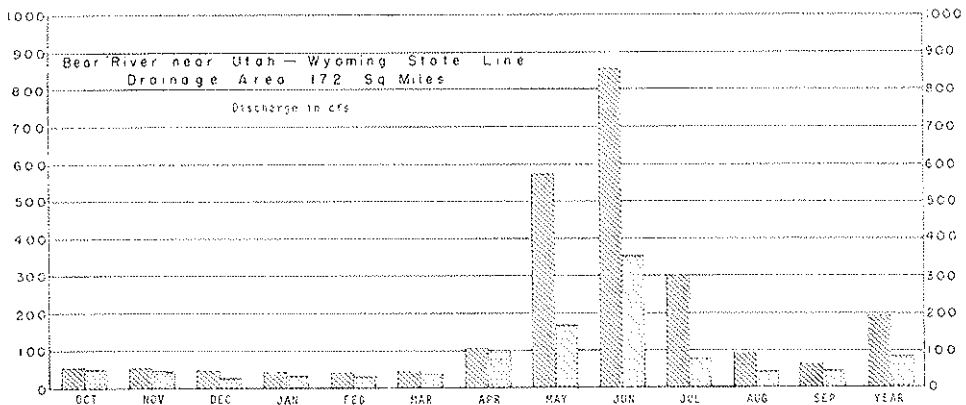
	Average 1943-77	1976	1977
Upper Bear River .....	137,000	104,000	59,000
Smiths Fork .....	141,700	160,300	51,500
Logan River .....	183,500	192,400	87,400

Diversion from Bear River to Bear Lake (for storage or bypass) was 62,800 acre-feet in 1977 or only 25 percent of the 54 year average. Outflow, including bypassed water, was 387,200 acre-feet with a net loss in lake content of 382,900 acre-feet.

The bar charts in figure 4, page 16, illustrate the hydrology of Bear Lake in 1977 compared to the 1924-77 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 1977 would have lost 58,500 acre-feet from evaporation and other losses compared to an average gain of 11,200 acre-feet. Water-year hydrographs of 1976 and 1977 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
1976 .....	5,920.71	5,921.97	5,920.06
1977 .....	5,920.04	5,918.47	5,914.48





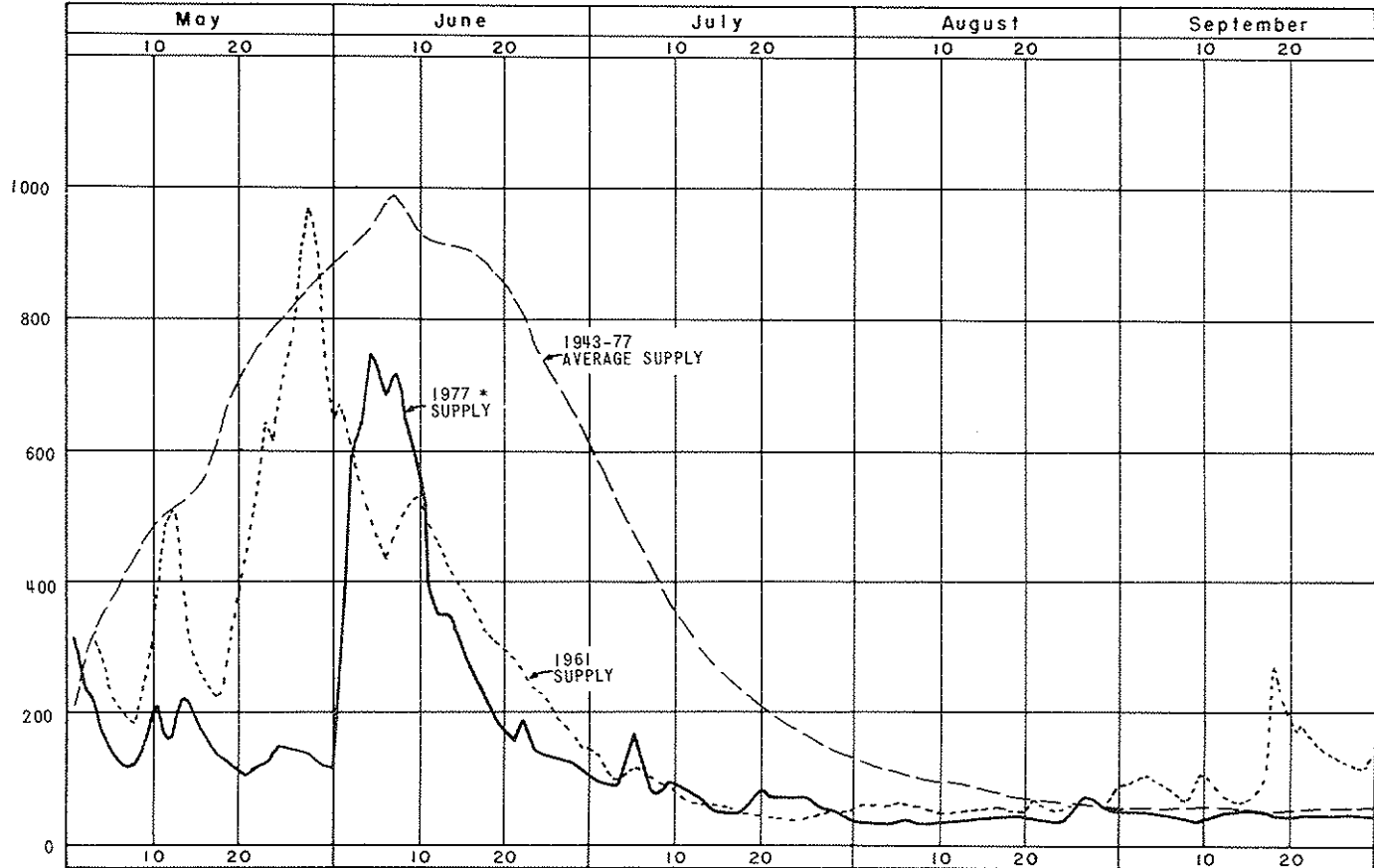
 Monthly and Yearly Mean Discharge for Period 1943-77  
 Monthly and Yearly Mean Discharge for 1977 Water Year

Figure 1. Comparison of discharge of three representative gaging stations in 1977 with average discharge for period 1943-77

# UPPER DIVISION - BEAR RIVER SUPPLY \*

CUBIC FEET PER SECOND

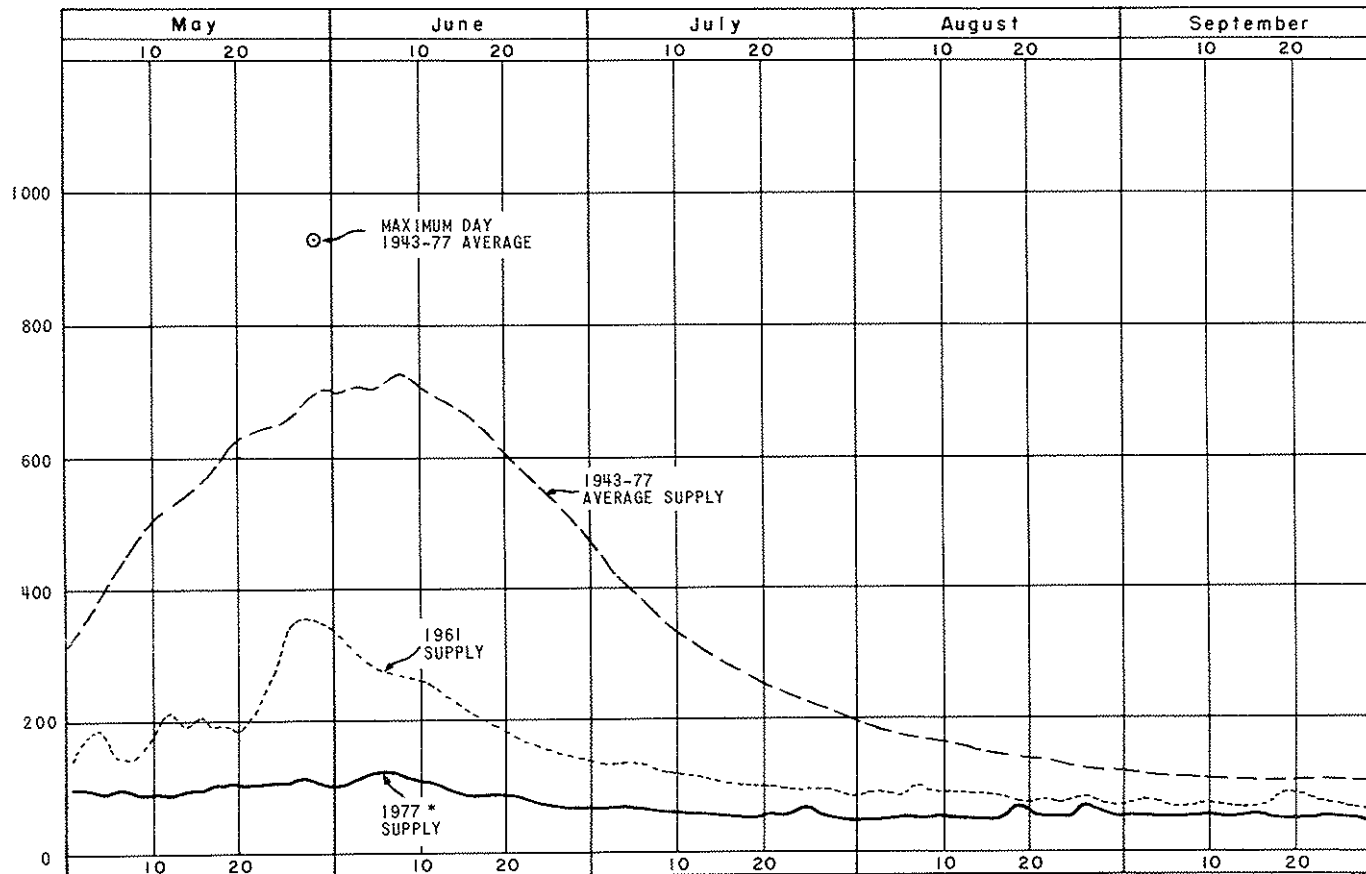


\*Bear River near Utah-Wyoming State line

Figure 2

# CENTRAL DIVISION - SMITHS FORK SUPPLY \*

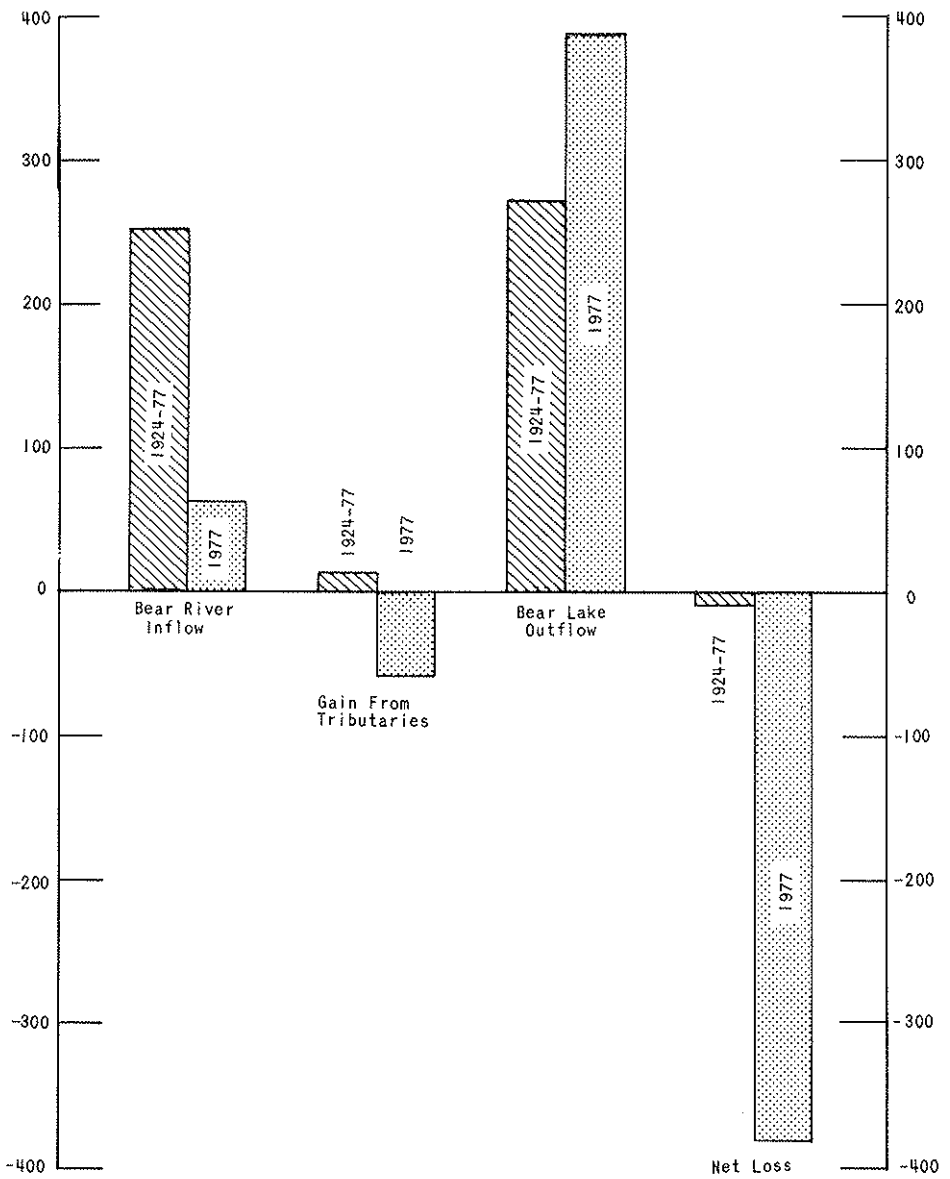
CUBIC FEET PER SECOND



\*Smiths Fork near Border, Wyoming

Figure 3

15



BEAR LAKE  
ANNUAL QUANTITIES, IN THOUSANDS OF ACRE-FEET

Figure 4

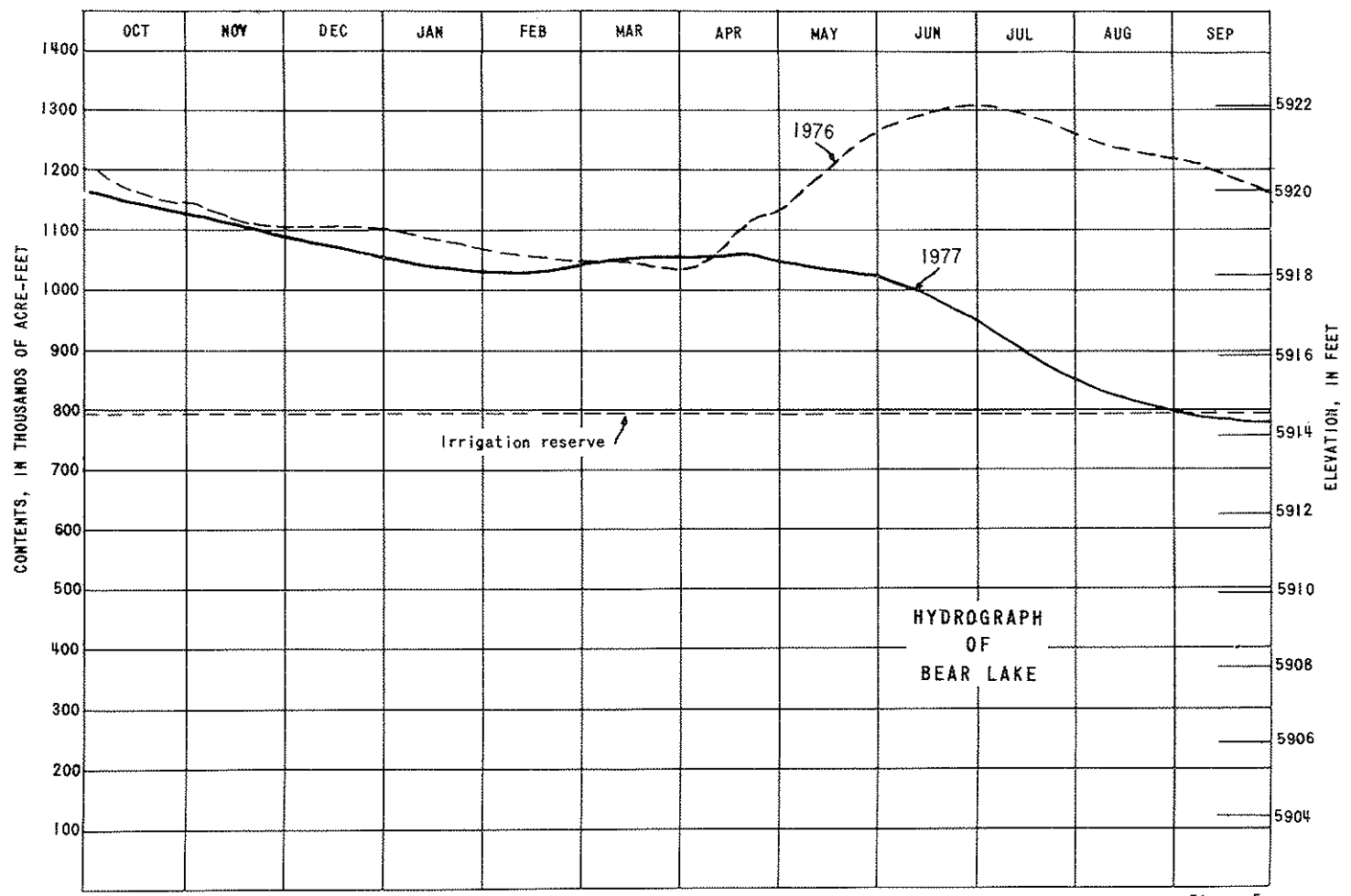


Figure 5

## 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 are 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

The Upper Division, as mentioned earlier in this report, fared somewhat better in this extremely dry year than downstream divisions. Evenso, the divertible flow, as defined above, did not exceed 1,250 cfs at any time during the irrigation season. (See pages 28-32 for daily diversions, divertible flow, and section allocations.) Upper Wyoming Section diverted during the season about 10 percent in excess of the section allocation after adjusting for diversion to and from storage as shown graphically in figure 6. Conversely, the Lower Utah Section had available water for only 89 percent of its allocation (figure 7) with most of the shortage occurring in May when available water from Upper Wyoming was diverted to storage.

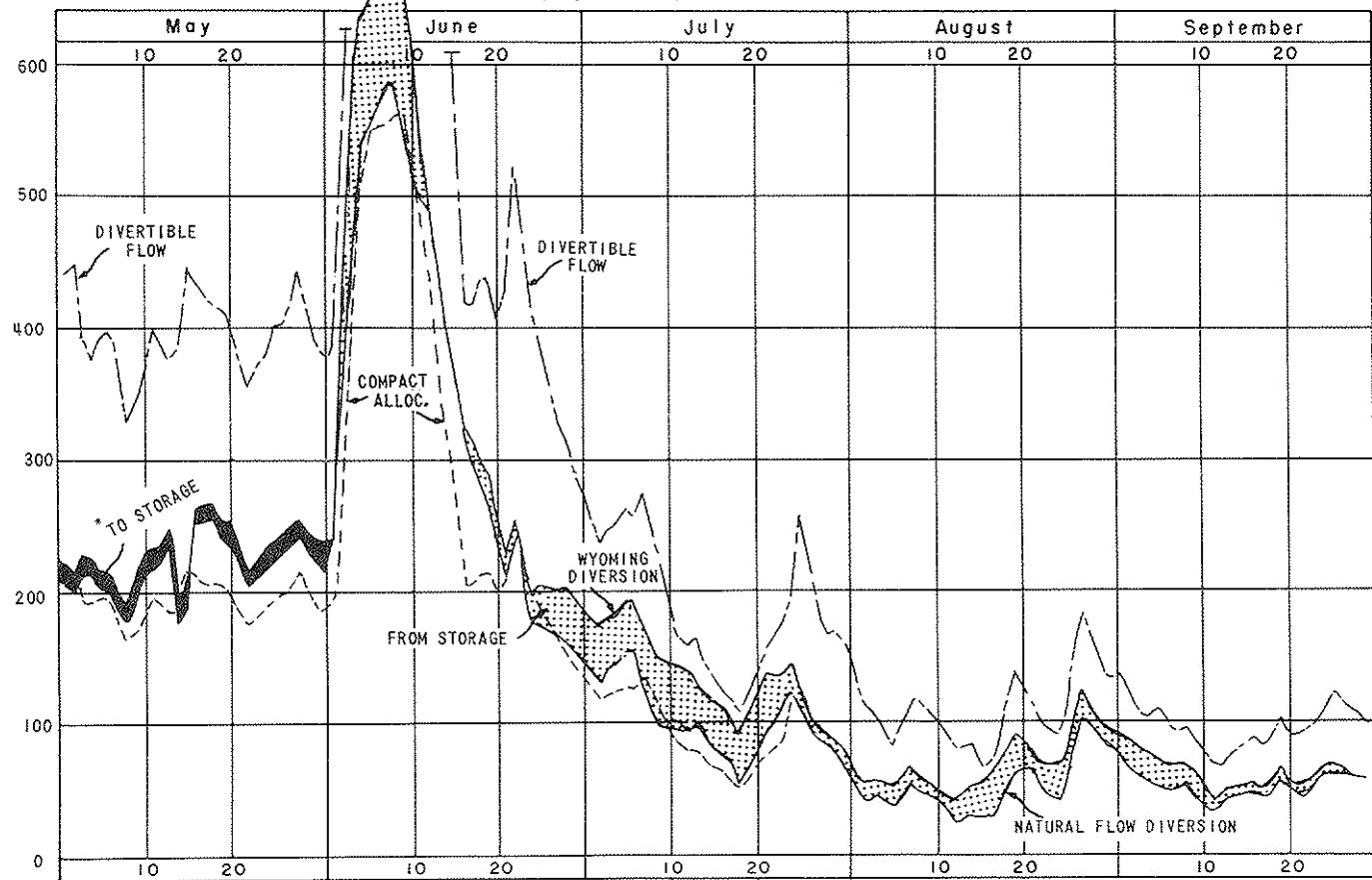
During the short period, June 1-15, of relatively high diversion rates in Upper Wyoming and Lower Utah, anticipated return flow from water applied was negligible, and Lower Wyoming Section (figure 8) received only 46 percent of the section allocation. Total reduction of Utah diversions for about a week thereafter enabled Lower Wyoming to divert during the period of irrigation about 94 percent of the section allocation.

Diversion included about 13,700 acre-feet storage from Woodruff Narrows Reservoir (figure 9), 3,200 acre-feet from Sulphur Creek Reservoir, and 800 acre-feet from Whitney Reservoir.



# UPPER DIVISION - UPPER WYOMING SECTION

CUBIC FEET PER SECOND



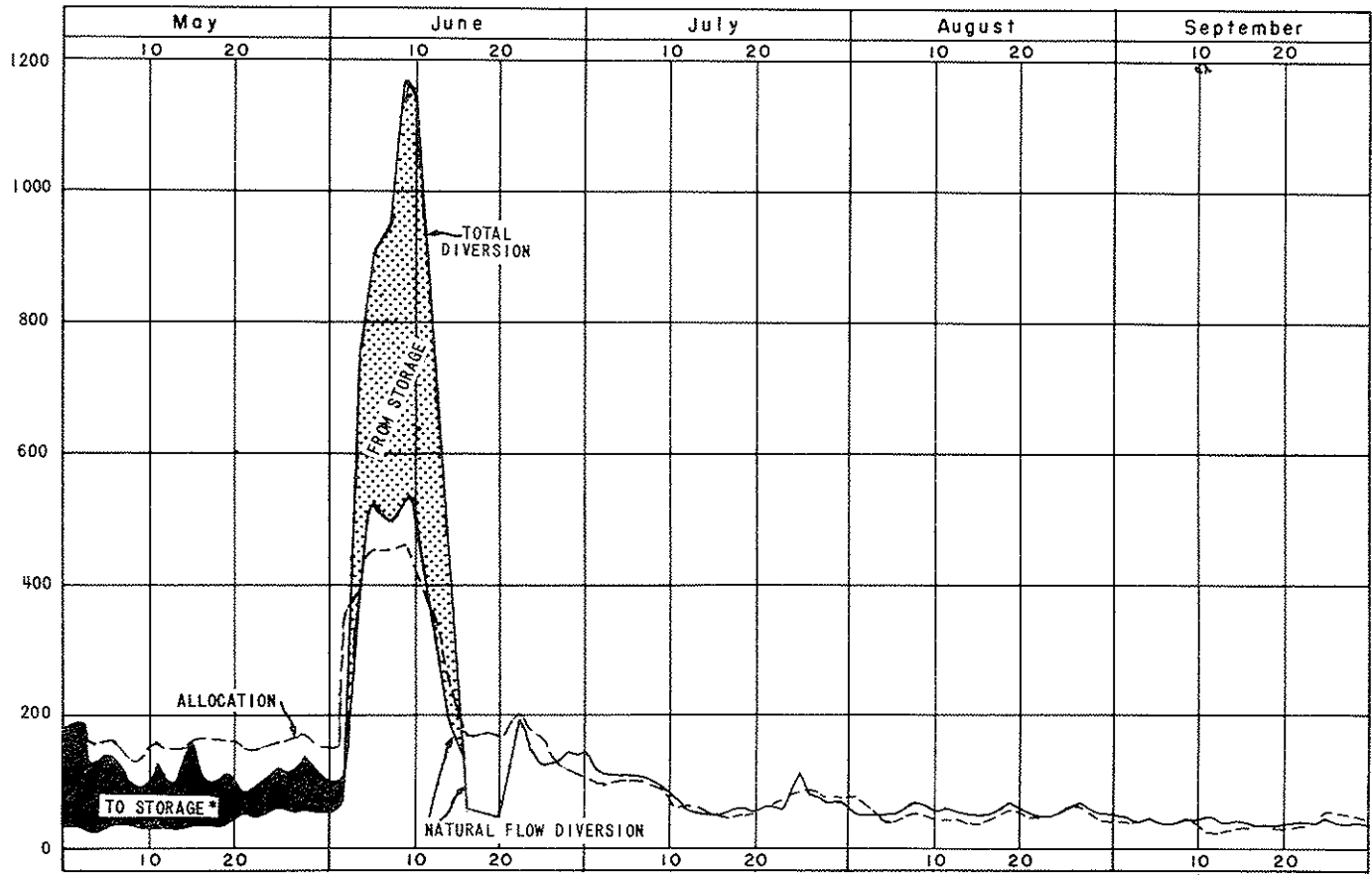
19

\*See footnote, Table 1

Figure 6

# UPPER DIVISION - LOWER UTAH SECTION

CUBIC FEET PER SECOND



\*See footnote, Table 1

Figure 7

20

# UPPER DIVISION - LOWER WYOMING SECTION

CUBIC FEET PER SECOND

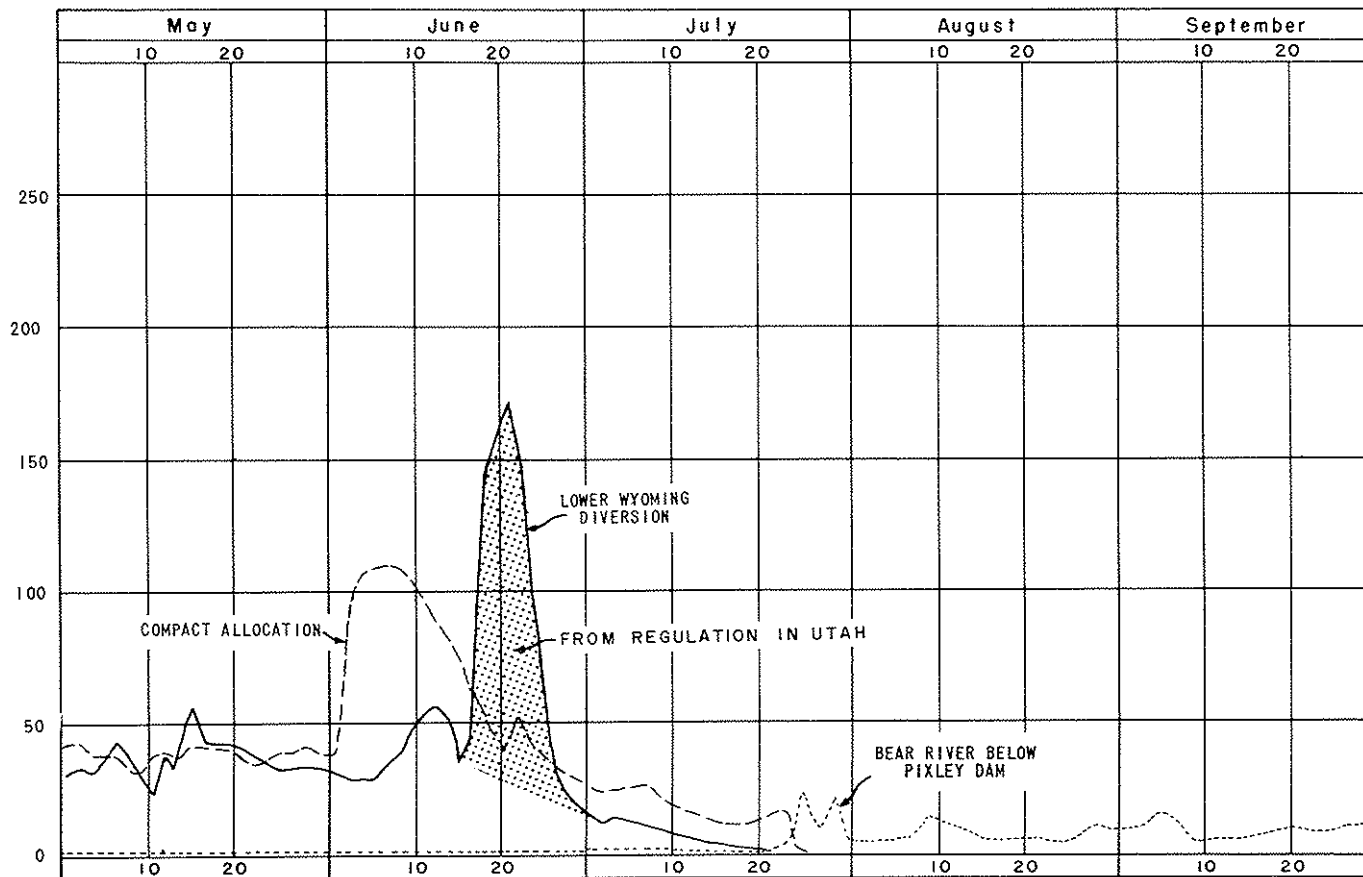


Figure 8

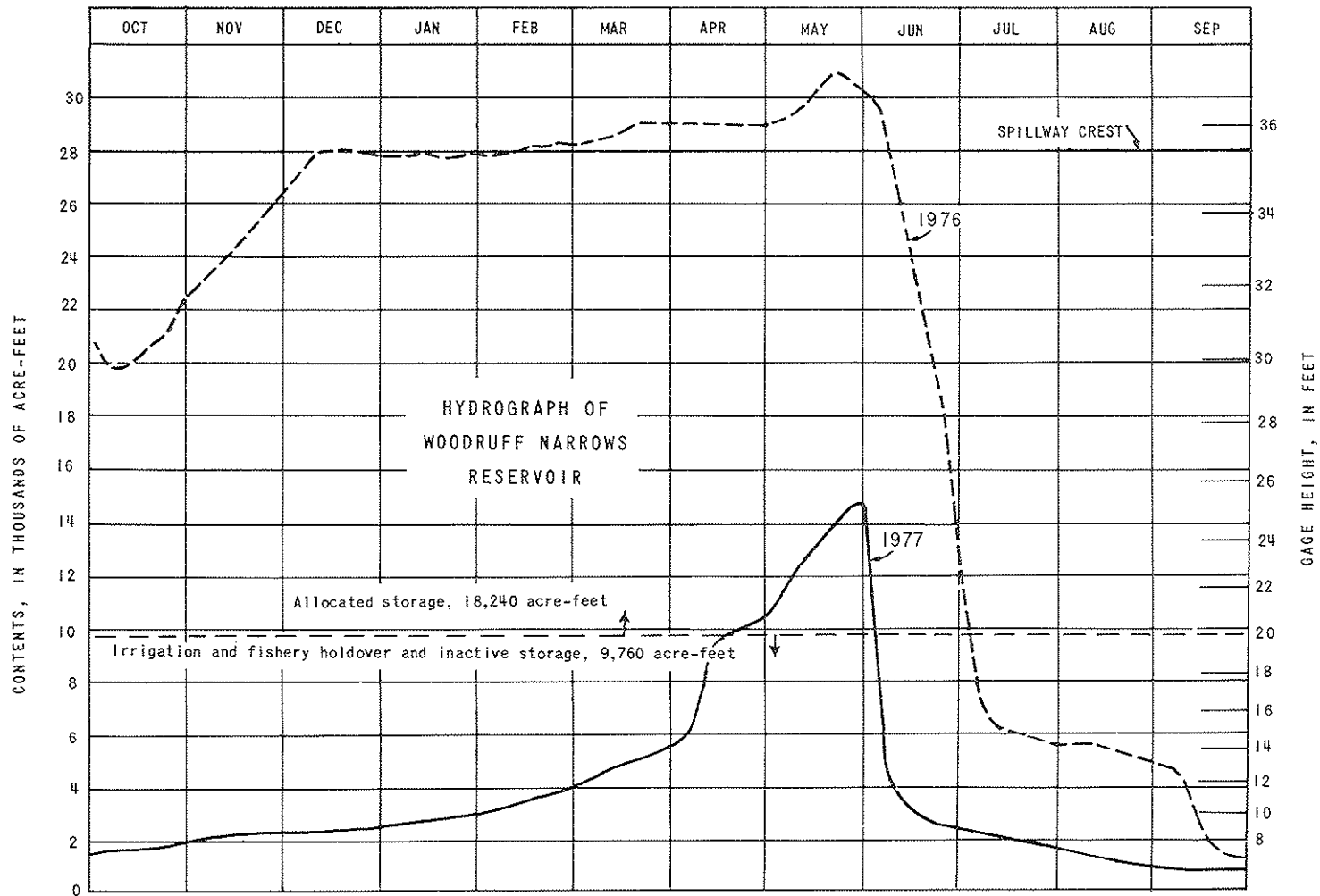


Figure 9

## 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). Total divertible flow was far below 870 cfs and Bear River at Border was less than one-third of 350 cfs for the entire irrigation season as this division experienced the worst drouth in the period of record. Surface-water inflow to the Division was only 50 percent of that received in 1961 and an estimated 75 percent of 1934 inflow. Wyoming diversion for the season exceeded the compact allocation by six percent, even though one of every three canals received no water during the season.

Of interest in this dry year is the fact that 33 percent of the seasonal diversion in Wyoming went to the Cook Canal because of its early priority and from which 84 percent of the land served is in Idaho. The Idaho acreage by terms of the Compact was credited to Wyoming and makes up about 7 percent of its 43 percent allocation. We should note also that the same proportional distribution in Wyoming, based on priority, obviously would have taken place without a compact. The second condition noted especially in 1977 was that 18 percent of the Wyoming diversion was in canals diverting from Pine Creek where by a District Court decree in 1961, regulation by relative priority with Smiths Fork rights is prohibited. The compact definition of and the inclusion of Pine Creek as a tributary of Smiths Fork remains valid regardless of this questionable decision of the court.

Effectiveness of interstate regulation in the dry years of 1961, 1966, and 1977 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	1974	1975	1976	1977
Wy.	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	5.68	4.39	4.12	1.50
Id.	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	3.81	3.43	3.32	1.26

## 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 1977.

## 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 1977.

## 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.

Reservoirs shown below have been constructed under additional storage provisions of the Compact. The four largest, in the aggregate, stored only 54 percent of total spillway capacity in 1977. Allocation to Woodruff Narrows Reservoir includes 15,240 acre-feet from Utah.

<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 1977, 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.

Annual maximum elevation of Bear Lake (figure 5) was 5,920.04 feet on October 1, 1976 (usable content, 1,167,700 acre-feet). Fall and Winter release continued until the first part of February when the Lake reached 1,031,000 acre-feet at elevation 5918.07 feet. Snowmelt runoff added only 27,000 acre-feet before irrigation draft began on April 25. Subsequent demand lowered the Lake 272,000 acre-feet, somewhat less than in several other years because of heavy late-summer precipitation.

### 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."

Presented in the 1975 Annual Report was a cumulative summary of approved and adjudicated water rights having 1958 and later priorities. The Commission agreed in April 1976 to update this summary at two-year intervals starting with a cutoff date of December 31, 1977 to be reported in April 1978. Applications presented during the report year are summarized as follows:

Approved for adjudication	Wyoming	Utah	Idaho
Surface Water . . . . .	3.4 cfs	15.8 cfs	0.6 cfs
Ground Water . . . . .	4.9 cfs	13.3 cfs	39.8 cfs
Pending			
Surface water . . . . .	0 cfs	112.3 cfs	12.6 cfs
Ground Water . . . . .	12.0 cfs	84.4 cfs	41.8 cfs
Storage			
Pending . . . . .	28.9 af (stock)	1,553 af (1)	0
(1) Clarkston Creek			

### REVIEW OF COMPACT PROVISIONS

Public hearings were held in November 1976 in Logan, Utah; Preston, Idaho; and Evanston, Wyoming to receive public input on proposed amendments to the Bear River Compact. Briefly, the proposal would grant additional storage allocation above Bear Lake allowing a maximum annual depletion that would include ground-water development in addition to surface-water storage. Also, a division would be made between Idaho and Utah of excess water below Bear Lake that is now flowing into Great Salt Lake.

Public reaction of users in the lower river basin has delayed for further study Commission approval of the revised compact. It is now proposed that a protective level be designated in Bear Lake that would prohibit water from being diverted to the newly-allocated storage above Bear Lake when the Lake surface is below 5,911 feet elevation. Further public hearings will be held in December 1978.

# CENTRAL DIVISION - WYOMING SECTION

CUBIC FEET PER SECOND

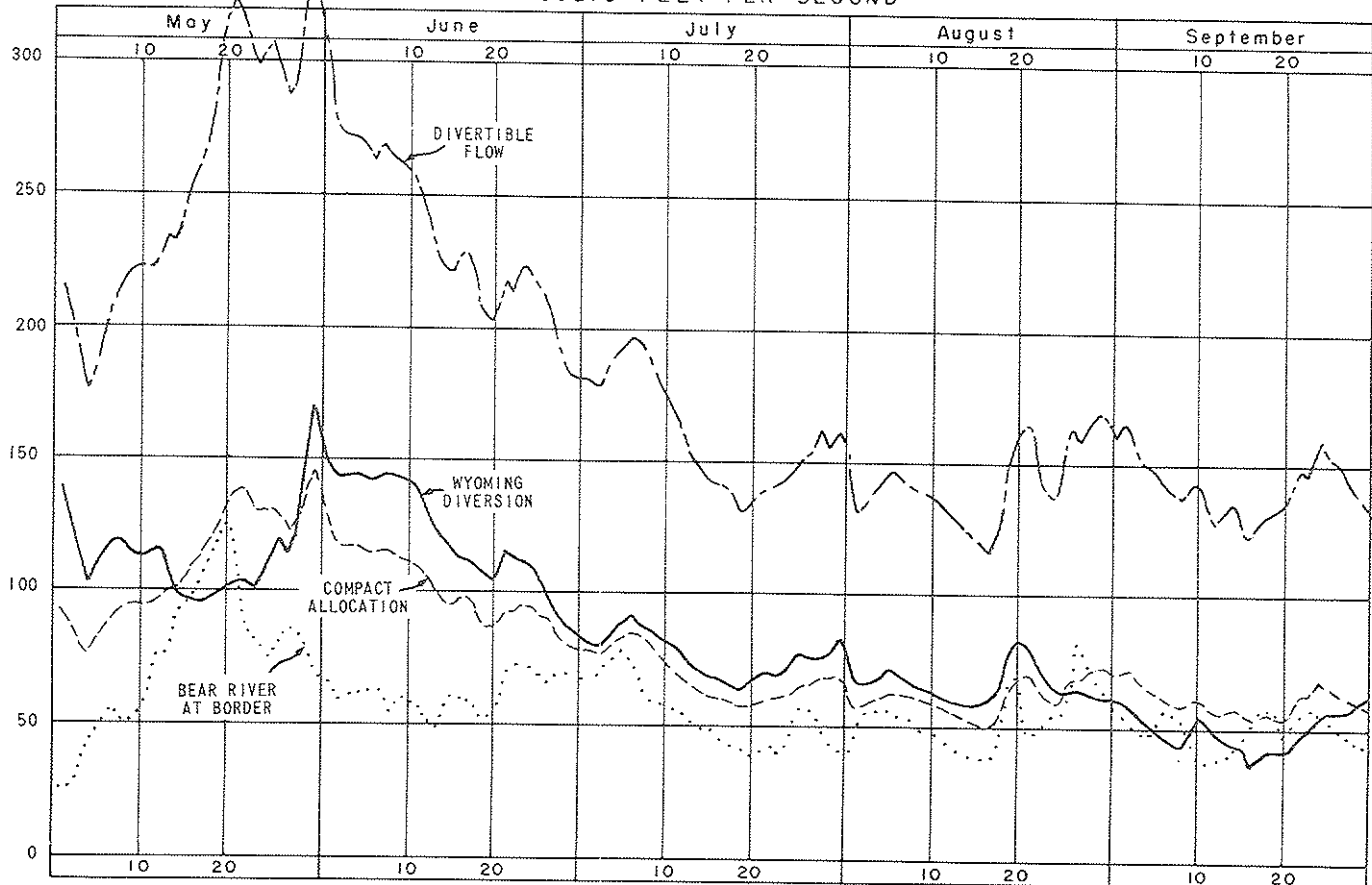


Figure 10



# CENTRAL DIVISION - IDAHO SECTION

CUBIC FEET PER SECOND

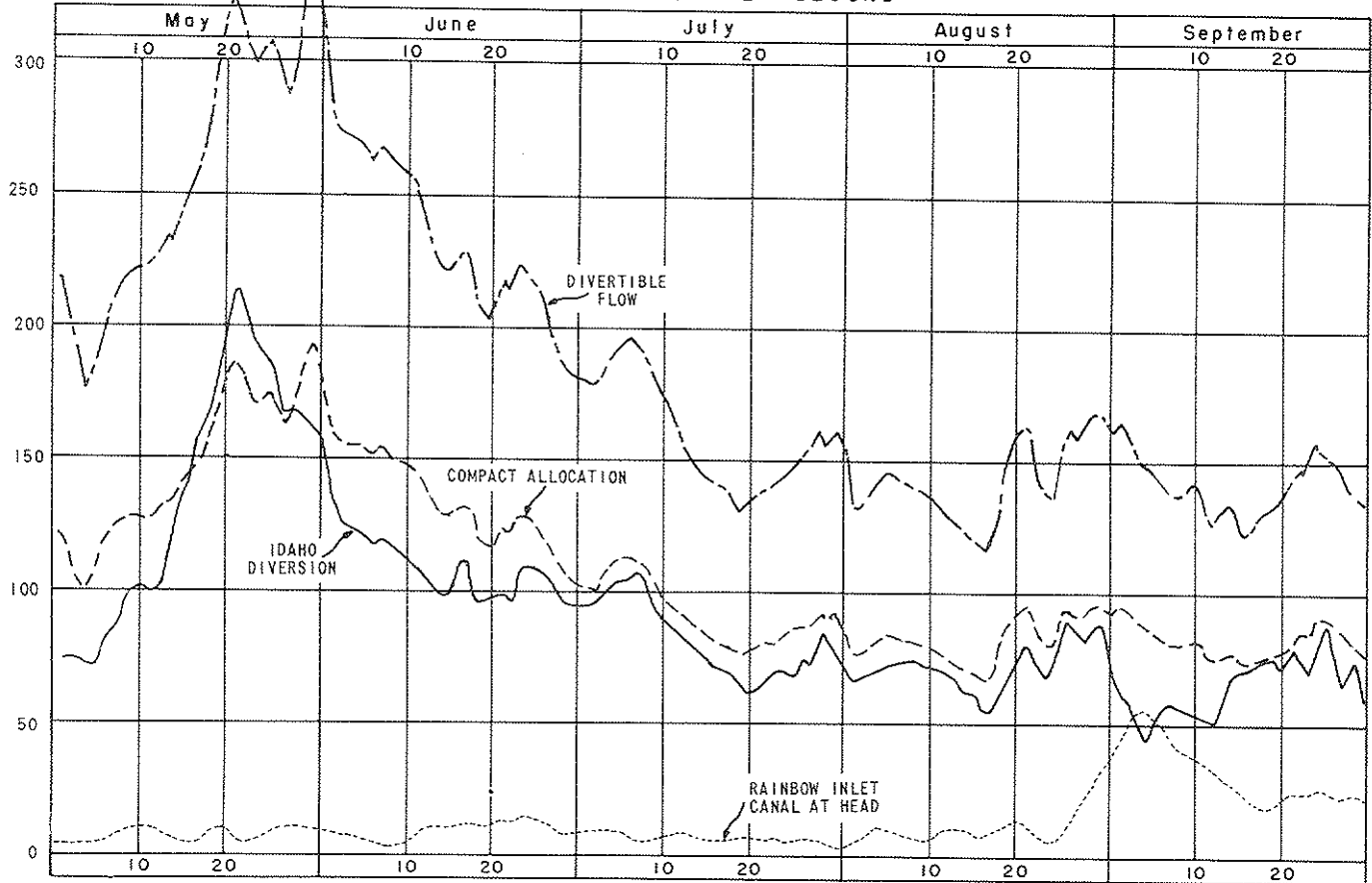


Figure 11























## APPENDIX A

### MORRISON, RINDLISBAKER & GILCHRIST

CERTIFIED PUBLIC ACCOUNTANTS

A PROFESSIONAL CORPORATION

370 EAST 500 SOUTH SALT LAKE CITY, UTAH 84111

801 521-7800

Bear River Commission  
Room 435, Utah State Capitol  
Salt Lake City, Utah 84114

We have examined the statement of revenue and expenditures of the Bear River Commission for the twelve months ended September 30, 1977. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records as we considered necessary in the circumstances. We previously examined and reported upon the Company's financial statements for the preceding fifteen months.

As described in note 1, the Company's policy is to prepare its financial statements on the basis of cash received and disbursed; consequently, certain revenue and the related assets are recognized when received rather than when earned, and certain expenses are recognized when paid rather than when the obligation is incurred. Accordingly, the accompanying financial statements are not intended to present financial position and results of operations in conformity with generally accepted accounting principles.

In our opinion the accompanying statement of revenue and expenditures presents fairly the cash transactions of the Bear River Commission for the twelve months ended September 30, 1977 on the basis of accounting described in note 1, which basis has been applied in a manner consistent with that of the preceding year.

*Morrison Rindlisbaker & Gilchrist CPAs*

November 18, 1977  
Salt Lake City, Utah

BEAR RIVER COMMISSION

STATEMENTS OF REVENUE AND EXPENDITURES AND CASH BALANCE (Note-3)

	Twelve Months Ended September 30, 1977	Fifteen Months Ended September 30, 1976
<b>REVENUE</b>		
Assessments		
State of Idaho	\$ -0-	\$ 34,000
State of Utah	-0-	34,000
State of Wyoming	-0-	<u>34,000</u>
Total	<u>-0-</u>	<u>102,000</u>
Interest income	<u>3,274</u>	<u>3,751</u>
Total revenue	<u>3,274</u>	<u>105,751</u>
<b>EXPENDITURES</b>		
Commission's portion of direct expenses of the stream gaging program (Note-2)		
Personal services	35,418	38,778
Travel and subsistence	2,283	4,067
Fiscal and administration	2,224	2,520
Washington office service	4,448	5,040
Rental	1,750	2,190
Digital recorders	1,169	1,462
Office, supplies, miscellaneous	<u>1,060</u>	<u>1,953</u>
Total	<u>48,352</u>	<u>56,010</u>
Administrative expenses		
Legal fee	2,361	300
Auditing fee	276	275
Transcription of minutes	50	100
Annual report	784	722
Surety bond	50	50
Other	<u>65</u>	<u>26</u>
Total	<u>3,586</u>	<u>1,473</u>
Total expenditures	<u>51,938</u>	<u>57,483</u>
EXCESS (DEFICIT) OF REVENUE OVER EXPENDITURES	48,664	48,268
Funds available at the beginning of the period	<u>57,600</u>	<u>9,332</u>
Funds available at the end of the period	<u>\$ 8,936</u>	<u>\$ 57,600</u>
<b>CASH BALANCE</b>		
In bank	\$ 8,936	\$ 45,600
Time certificates of deposit	<u>-0-</u>	<u>12,000</u>
	<u>\$ 8,936</u>	<u>\$ 57,600</u>

The accompanying notes are an integral part of these financial statements.

BEAR RIVER COMMISSION

COMPARISON OF BUDGETED REVENUE AND EXPENSES TO ACTUAL (Note-3)

FOR THE TWELVE MONTHS ENDED SEPTEMBER 30, 1977

	Expected Revenue and Expenditures As Budgeted (Unaudited)	Actual Revenue and Expenditures	Increase (Decrease)
<b>REVENUE</b>			
Assessments			
State of Idaho	\$ -0-	\$ -0-	\$ -0-
State of Utah	-0-	-0-	-0-
State of Wyoming	-0-	-0-	-0-
Total	-0-	-0-	-0-
Interest income	-0-	3,274	3,274
Total revenue	-0-	3,274	3,274
<b>EXPENDITURES</b>			
Commission's portion of direct expense of the stream gaging program (Note-2)			
Personal service	\$ 35,418	\$ 35,418	\$ -0-
Travel and subsistence	2,283	2,283	-0-
Fiscal and administration	2,224	2,224	-0-
Washington office service	4,448	4,448	-0-
Rental	1,750	1,750	-0-
Digital recorders	1,169	1,169	-0-
Office, supplies, misc.	1,008	1,060	52
Total	48,300	48,352	52
Administrative expenses			
Legal fee	300	2,361	2,061
Auditing fee	250	276	26
Transcription of minutes	140	50	(90)
Annual reports	720	784	64
Surety bond	50	50	-0-
Other	40	65	25
Total	1,500	3,586	2,086
Total expenditures	49,800	51,938	2,138
<b>EXCESS (DEFICIT) OF REVENUE OVER EXPENDITURES</b>	<b>\$ (49,800)</b>	<b>\$ (48,664)</b>	<b>\$ 1,136</b>

The accompanying notes are an integral part of these financial statements.

## APPENDIX B

### GAGING STATION RECORDS

Records of Streamflow for 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 1977 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.

In addition to the records described above, a tabulation of available observations on Whitney, Sulphur Creek, and Woodruff Creek Reservoirs is included herein on page 42. These observations include the date and contents (from reservoir gage readings) from the date the reservoir was first used through the fall of 1977. Hereafter, this information will be published on a water-year basis in each annual report.

WHITNEY RESERVOIR

Date	Contents Ac-ft	Date	Contents Ac-ft	Date	Contents Ac-ft
7-24-66	0	8-24-71	4,766	6-9-76	3,696
11-20-66	500*	9-22-71	1,886	6-11-76	3,849
6-25-67	4,700	6-8-72	4,917	9-10-76	547
11-3-67	1,700	2-6-73	1,798	11-10-76	595
6-11-68	3,516	7-30-73	4,743	5-27-77	1,210
8-29-68	4,743	10-30-73	3,076	6-8-77	1,530
10-28-68	2,502	6-28-74	4,853	6-23-77	1,670
4-8-69	2,810	8-26-74	2,550	7-8-77	1,680
7-23-69	2,950	7-1-75	4,845	7-27-77	1,266
8-7-70	3,540	7-28-75	4,805	8-11-77	1,340
9-4-70	2,165	9-8-75	3,160	11-6-77	803
11-2-70	1,200	1-10-76	746	11-16-77	797
6-22-71	4,845	5-27-76	2,435		

\*Dead storage limit

SULPHUR CREEK RESERVOIR

Date	Contents Ac-ft	Date	Contents Ac-ft	Date	Contents Ac-ft
Jun-Jul 1958	4,614	10-7-69	2,590	10-9-74	2,670
Oct 1958	800	5-28-70	7,090	11-13-74	2,810
5-27-59	4,300	7-7-70	7,090	5-7-75	3,350
Oct 1959	1,500	12-1-70	4,000	6-13-75	6,670
Spring 1960	4,100	2-23-71	3,850	7-15-75	7,090
Oct 1960	300	3-28-71	3,680	8-21-75	7,090
5-18-61	3,800	4-9-71	5,880	10-2-75	3,950
Oct 1961	1,700	4-27-71	6,370	1-28-76	3,350
4-18-62	4,614	6-8-71	5,540	4-23-76	5,250
6-5-62	4,614	7-30-71	7,090	5-20-76	6,670
Oct 1962	1,400	8-31-71	5,540	5-25-76	7,090
Spring 1963	4,614	10-5-71	5,250	6-23-76	7,090
Oct 1963	2,200	3-21-72	3,850	7-28-76	4,110
Spring 1964	4,614	5-30-73	5,880	9-9-76	1,760
Oct 1964	1,500	6-11-73	6,670	9-21-76	1,700
5-14-65	7,090*	7-11-73	7,090	10-14-76	1,600
9-5-65	7,090	8-15-73	7,090	11-17-76	1,700
Oct 1965	5,000	10-2-73	4,900	12-29-76	1,760
5-6-66	7,090	11-8-73	3,700	2-9-77	1,830
10-31-66	1,100	1-24-74	2,630	3-22-77	1,860
5-23-67	7,090	5-7-74	6,840	4-27-77	3,130
Oct 1967	5,400	5-30-74	7,090	5-31-77	4,200
4-8-68	7,090	6-12-74	7,050	6-28-77	3,600
5-14-68	7,090	7-17-74	6,450	8-11-77	1,330
8-31-68	7,090	8-27-74	2,810	9-14-77	950
12-3-68	3,800				

\*Reservoir enlarged

WOODRUFF CREEK RESERVOIR

Date	Contents Ac-ft	Date	Contents Ac-ft	Date	Contents Ac-ft
11-2-70	0	10-1-73	798	3-8-76	2,580
2-22-71	2,670	11-7-73	534	4-30-76	3,968
4-26-71	3,980	1-18-74	1,745	5-19-76	4,050
6-23-71	4,050	3-4-74	2,490	6-21-76	2,230
9-1-71	752	4-5-74	3,610	7-26-76	460
8-24-71	714	5-6-74	4,050	9-7-76	470
11-10-71	1,100	6-10-74	4,050	10-15-76	482
3-20-72	4,050	7-19-74	1,458	11-19-76	482
4-24-72	3,960	8-26-74	462	12-27-76	710
6-20-72	4,050	10-11-74	420	3-23-77	1,578
8-14-72	690	11-15-74	710	4-25-77	2,106
9-27-72	840	3-31-75	2,805	6-2-77	2,580
11-27-72	1,698	5-5-75	3,376	6-6-77	2,738
2-14-73	3,930	6-13-75	4,028	6-27-77	458
4-16-73	4,050	7-14-75	2,818	8-12-77	522
6-13-73	3,690	8-22-75	490	9-15-77	660
7-12-73	1,125	9-30-75	734	10-17-77	440
8-17-73	420	12-15-75	1,284		



# BEAR RIVER BASIN

## 10010400 East Fork Bear River Near Evanston, WY

LOCATION.--Lat 40°52'25", long 110°47'00", in SE1/4SW1/4 sec.26, T.2 N., R.10 E., Summit County, Utah, Hydrologic Unit 16010101, Wasatch National Forest, on right bank 4.1 mi (6.6 km) upstream from mouth, 11.5 mi (18.5 km) upstream from Utah-Wyoming State line, and 28.7 mi (46.2 km) south of Evanston.

DRAINAGE AREA.--34.6 mi<sup>2</sup> (89.6 km<sup>2</sup>).

PERIOD OF RECORD.--October 1973 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 8,760 ft (2,670 m) from topographic map.

REMARKS.--Records good except those for winter months, which are fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 631 ft<sup>3</sup>/s (17.9 m<sup>3</sup>/s) July 4, 1975, gage height, 4.15 ft (1.265 m); minimum observed, 5.1 ft<sup>3</sup>/s (0.14 m<sup>3</sup>/s) Dec. 28, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 420 ft<sup>3</sup>/s (11.9 m<sup>3</sup>/s) June 7, gage height, 3.45 ft (1.052 m); minimum observed, 5.1 ft<sup>3</sup>/s (0.14 m<sup>3</sup>/s) Dec. 28.

### DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	14	6.0	6.0	6.0	7.0	7.0	130	125	44	26	21
2	18	13	6.0	6.0	6.0	7.0	7.0	100	217	46	24	20
3	21	12	6.0	6.0	6.0	7.0	7.0	90	280	47	24	20
4	18	15	6.0	6.0	6.0	7.0	7.0	70	292	57	24	19
5	17	15	6.0	6.0	6.0	7.0	7.0	60	299	70	31	18
6	16	16	6.0	6.0	6.0	7.0	9.0	50	299	49	29	17
7	15	15	6.0	6.0	6.0	7.0	10	40	318	43	24	17
8	15	14	6.0	6.0	6.2	7.0	15	40	278	39	21	16
9	15	15	6.0	6.0	6.0	7.0	20	50	253	36	20	15
10	15	15	6.0	6.0	6.0	7.0	20	100	207	33	19	15
11	14	15	6.0	6.0	6.0	7.0	20	70	174	32	19	16
12	14	15	6.0	6.0	6.0	7.0	20	71	169	30	18	18
13	14	15	6.0	6.0	6.0	7.0	20	66	168	27	17	16
14	14	15	6.0	6.0	6.0	7.0	20	64	155	26	18	16
15	13	10	6.0	6.0	6.0	7.0	25	58	142	25	19	26
16	13	10	6.0	6.0	6.0	7.0	30	50	128	24	19	19
17	13	16	6.0	6.0	6.0	7.0	30	46	118	23	18	17
18	12	15	6.0	6.0	6.0	7.0	25	41	111	24	20	16
19	15	15	6.0	6.0	6.0	7.0	20	36	101	47	18	15
20	18	15	6.0	6.0	6.0	7.0	20	33	93	59	18	14
21	17	15	6.0	6.0	6.0	7.0	20	32	88	48	20	15
22	15	15	6.0	6.0	6.0	7.0	20	37	88	47	18	15
23	15	14	6.0	6.0	6.0	7.0	25	44	76	49	16	19
24	13	13	6.0	6.0	6.0	7.0	30	54	73	50	16	19
25	11	12	6.0	6.0	6.0	7.0	35	50	70	45	31	18
26	13	11	6.0	6.0	6.0	7.0	41	47	67	39	34	16
27	15	9.0	6.0	6.0	6.0	7.0	70	52	63	37	37	14
28	15	8.0	5.1	6.0	6.0	7.0	90	47	57	35	29	14
29	15	7.0	6.0	6.0	---	7.0	110	44	52	32	25	13
30	15	6.0	6.0	6.0	---	6.8	130	44	47	30	24	14
31	15	---	6.0	6.0	---	7.0	---	65	---	28	22	---
TOTAL	464	395.0	185.1	186.0	168.2	216.8	910.0	1781	4608	1221	697	508
MEAN	15.0	13.2	5.97	6.00	6.01	6.99	30.3	57.5	154	39.4	22.5	16.9
MAX	21	16	6.0	6.0	6.2	7.0	130	130	318	70	37	26
MIN	11	6.0	5.1	6.0	6.0	6.8	7.0	32	47	23	16	13
AC-FT	920	783	367	369	334	430	1800	3530	9140	2420	1380	1010

CAL YR 1976 TOTAL 14631.6 MEAN 40.0 MAX 264 MIN 5.1 AC-FT 29020  
WTR YR 1977 TOTAL 11340.1 MEAN 31.1 MAX 318 MIN 5.1 AC-FT 22490

# BEAR RIVER BASIN

## 10011200 West Fork Bear River At Whitney Dam, Near Oakley, UT

LOCATION.--Lat 40°59'30", long 116°59'35", in NE1/4 sec. 9, T.1 N., R.9 E., Summit County, Hydrologic Unit 16010101, Wasatch National Forest, on left bank 1,380 ft (421 m) downstream from Whitney Dam, 7 mi (11 km) upstream from Deer Creek, and 21.9 mi (34.6 km) northeast of Oakley.

DRAINAGE AREA.--6.79 mi<sup>2</sup> (17.59 km<sup>2</sup>).

PERIOD OF RECORD.--October 1963 to current year. Prior to October 1963 published as, "at Whitney Dam Site."

REVISED RECORD.--WDR UT-1973: Drainage area.

GAGE.--Water-stage recorder and concrete control with V-notch sharp-crested weir since Aug. 4, 1966. Altitude of gage is 9,120 ft (2,780 m) from topographic map.

REMARKS.--Records good. Flow regulated by Whitney Reservoir, total capacity, 4,700 acre-ft (5.80 km<sup>3</sup>) since July 1966.

AVERAGE DISCHARGE.--11 years (water years 1968-77), 3.16 ft<sup>3</sup>/s (0.23 m<sup>3</sup>/s), 3,910 acre-ft/yr (7.29 km<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14.5 ft<sup>3</sup>/s (4.11 m<sup>3</sup>/s) June 13, 1965; maximum gage height, 3.08 ft (0.939 m) June 26, 1967; no flow July 24 to Sept. 30, Nov. 16-29, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19 ft<sup>3</sup>/s (0.54 m<sup>3</sup>/s) July 8, gage height, 1.95 ft (0.594 m); minimum, 0.15 ft<sup>3</sup>/s (0.004 m<sup>3</sup>/s) Sept. 26.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.90	1.4	1.0	1.0	1.0	1.0	1.0	1.0	1.6	1.4	1.2	7.4
2	.97	1.3	1.0	1.0	1.0	1.0	1.0	1.1	1.5	1.4	1.2	7.2
3	1.1	1.3	1.0	1.0	1.0	1.0	1.0	1.2	1.5	1.4	1.2	7.2
4	1.1	1.3	1.0	1.0	1.0	1.0	1.0	1.3	1.5	1.4	1.2	7.2
5	1.1	1.3	1.0	1.0	1.0	1.0	1.0	1.4	1.5	1.4	1.2	7.1
6	1.1	1.3	1.0	1.0	1.0	1.0	1.0	1.4	1.5	1.4	1.2	6.9
7	1.2	1.2	1.0	1.0	1.0	1.0	1.0	1.4	1.5	1.4	1.2	6.6
8	1.1	1.2	1.0	1.0	1.0	1.0	1.0	1.4	1.5	1.4	1.3	6.5
9	1.1	1.3	1.0	1.0	1.0	1.0	1.0	1.4	1.5	1.4	1.3	6.3
10	1.1	1.3	1.0	1.0	1.0	1.0	1.0	1.4	1.5	1.4	1.3	6.0
11	1.1	1.2	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	3.3	6.0
12	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	7.9	6.0
13	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.5	8.7	7.7	6.0
14	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.6	7.5	6.0
15	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.5	7.5	5.8
16	.94	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.3	1.5	7.5	5.8
17	.87	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.5	7.5	5.8
18	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.5	7.5	5.8
19	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.5	7.5	5.7
20	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	7.5	5.7
21	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	7.4	5.7
22	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	7.4	5.5
23	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	7.4	5.5
24	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	7.4	5.5
25	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	7.4	5.5
26	1.4	1.2	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	7.5	1.1
27	1.4	1.2	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.4	7.5	.71
28	1.3	1.0	1.0	1.0	1.0	1.0	1.0	1.4	1.4	1.3	7.5	.53
29	1.3	1.0	1.0	1.0	---	1.0	1.0	1.5	1.4	1.3	7.5	.42
30	1.3	1.0	1.0	1.0	---	1.0	1.0	1.6	1.4	1.2	7.4	.42
31	1.4	---	1.0	1.0	---	1.0	---	1.7	---	1.2	7.4	---
TOTAL	35.78	33.5	31.0	31.0	28.0	31.0	30.0	43.0	43.1	125.5	165.5	157.88
MEAN	1.15	1.12	1.00	1.00	1.00	1.00	1.00	1.39	1.44	4.05	5.34	5.26
MAX	1.4	1.4	1.0	1.0	1.0	1.0	1.0	1.7	1.6	1.9	7.9	7.4
MIN	.87	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.3	1.2	1.2	.42
AC-FT	71	66	61	61	56	61	60	85	85	249	328	313
CAL YR 1976	TOTAL	2097.88	MEAN 5.73	MAX 89	MIN .29	AC-FT 4160						
WTR YR 1977	TOTAL	755.26	MEAN 2.07	MAX 19	MIN .42	AC-FT 1500						

# BEAR RIVER BASIN

## 10011400 West Fork Bear River Below Deer Creek, Near Evanston, WY

LOCATION.--Lat 40°56'40", long 110°51'40", in NW1/4SW1/4 sec.6, T.2 N., R.10 E., Summit County, Utah, Hydrologic Unit 16010101, on left bank 0.8 mi (1.3 km) downstream from Deer Creek, 2.1 mi (3.4 km) upstream from mouth, and 22.9 mi (36.8 km) south of Evanston.

DRAINAGE AREA.--52.2 mi<sup>2</sup> (135.2 km<sup>2</sup>).

PERIOD OF RECORD.--October 1973 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 8,190 ft (2,496 m) from topographic map.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Whitney Reservoir, total capacity, 4,700 acre-ft (5.80 hm<sup>3</sup>), since July 1966.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 511 ft<sup>3</sup>/s (14.5 m<sup>3</sup>/s) June 8, 1975, gage height, 4.06 ft (1.219 m); minimum, 2.0 ft<sup>3</sup>/s (0.057 m<sup>3</sup>/s) Aug. 11, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 66 ft<sup>3</sup>/s (1.87 m<sup>3</sup>/s) Apr. 27, gage height, 2.09 ft (0.637 m); minimum, 2.0 ft<sup>3</sup>/s (0.057 m<sup>3</sup>/s) Aug. 11.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	11	13	10	6.8	7.0	10	39	26	8.3	3.3	11
2	7.5	11	12	10	7.0	6.9	9.0	34	30	9.1	3.1	10
3	6.7	11	10	10	7.0	6.9	9.0	34	33	9.4	2.9	10
4	6.8	10	10	10	7.0	6.9	8.9	34	35	11	3.1	11
5	6.4	10	10	10	7.0	6.9	9.3	30	35	12	3.1	10
6	6.4	10	10	10	7.0	7.0	11	30	32	8.6	3.6	9.7
7	6.2	10	10	10	7.0	7.0	12	27	30	7.6	3.3	9.5
8	6.4	10	10	10	7.0	6.9	15	26	32	15	2.9	9.2
9	6.5	13	10	10	7.0	7.0	20	29	32	37	2.6	9.2
10	6.4	12	10	10	7.0	6.8	22	33	28	38	2.4	9.3
11	6.6	11	10	10	7.0	7.0	21	27	25	37	2.4	10
12	6.6	10	10	10	7.0	7.0	19	25	22	36	3.8	10
13	6.6	10	10	10	6.8	7.0	22	26	21	29	7.0	10
14	6.7	10	10	10	7.0	7.0	18	30	19	8.6	8.0	13
15	6.9	10	10	10	7.0	7.0	16	30	17	6.9	8.9	19
16	6.8	9.7	10	10	6.8	7.0	24	29	16	6.1	9.1	13
17	6.8	10	10	10	6.8	6.8	31	29	15	6.0	10	13
18	9.0	10	10	10	6.8	6.8	25	28	14	6.2	11	13
19	10	10	10	10	7.0	7.0	23	26	13	6.5	11	12
20	10	10	10	9.1	7.0	7.0	23	26	12	7.0	10	11
21	10	10	10	8.1	7.0	6.8	24	25	12	7.8	13	12
22	10	10	10	7.2	7.0	7.0	30	26	13	7.8	13	12
23	9.0	10	10	7.1	7.0	6.8	33	25	12	9.3	11	15
24	8.9	10	10	7.0	7.0	6.8	36	25	12	9.6	10	15
25	9.1	10	10	7.0	7.0	6.9	38	25	11	7.9	13	14
26	10	10	10	7.0	7.0	7.0	43	26	10	6.4	20	13
27	10	10	10	7.0	7.0	7.0	56	30	9.8	5.5	20	9.4
28	10	10	9.4	7.0	7.0	8.9	51	31	9.1	5.1	14	7.3
29	10	11	10	7.0	---	9.0	45	27	8.7	3.8	13	6.7
30	10	12	10	7.0	---	10	45	25	8.4	3.4	12	7.5
31	10	---	10	7.0	---	11	---	23	---	3.3	11	---
TOTAL	279.7	311.7	314.4	277.5	195.0	228.1	743.2	880	593.0	375.0	261.5	335.8
MEAN	9.02	10.4	10.1	8.95	6.96	7.36	24.8	28.4	19.8	12.1	8.44	11.2
MAX	10	13	13	10	7.0	11	51	39	35	38	20	19
MIN	7.4	9.7	9.4	7.0	6.8	6.8	8.9	23	8.4	3.3	2.4	6.7
AC-FT	555	618	624	550	387	452	1470	1750	1180	744	519	666
CAL YH 1976 TOTAL	12718.2				263		5.2		25230			
WTR YK 1977 TOTAL	4794.9				51		2.4		9510			

# BEAR RIVER BASIN

## 10011500 Bear River Near Utah-Wyoming State Line

LOCATION.--Lat 40°57'55", long 110°57'10", in SE1/4 sec. 30, T.3 N., R.16 E., Summit County, Utah, Hydrologic Unit 16010101, on left bank just downstream from West Fork and 2.8 mi (4.5 km) upstream from Utah-Wyoming State line.

DRAINAGE AREA.--172 mi<sup>2</sup> (445 km<sup>2</sup>).

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

REVISED RECORDS.--WDR UT-1974: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 7,965 ft (2,427.7 m) from river-profile map.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated slightly by Whitney Reservoir, usable capacity, 4,200 acre-ft (5.18 hm<sup>3</sup>) since 1966. Three diversions above station for irrigation of about 265 acres (1.07 km<sup>2</sup>) above and 2,600 acres (10.5 km<sup>2</sup>) below station.

AVERAGE DISCHARGE.--35 years, 189 ft<sup>3</sup>/s (5.35 m<sup>3</sup>/s), 136,900 acre-ft/yr (169 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,980 ft<sup>3</sup>/s (84.4 m<sup>3</sup>/s) June 6, 1968, gage height, 3.79 ft (1.155 m); maximum gage height, 4.27 ft (1.301 m) June 6, 1957; minimum discharge determined, 16 ft<sup>3</sup>/s (0.45 m<sup>3</sup>/s) Apr. 11, 1951, Nov. 5, 1954, Nov. 1, 1955, Oct. 30, 1956.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 985 ft<sup>3</sup>/s (27.9 m<sup>3</sup>/s) June 3, gage height, 2.55 ft (0.777 m), no peak above base of 1,100 ft<sup>3</sup>/s (31.2 m<sup>3</sup>/s); minimum, 18 ft<sup>3</sup>/s (0.51 m<sup>3</sup>/s) Nov. 19.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	50	42	30	30	30	35	317	326	89	36	45
2	43	50	33	30	30	30	35	239	613	92	36	44
3	55	50	31	30	30	30	35	228	778	89	38	43
4	50	50	32	30	30	30	35	191	752	113	35	45
5	49	50	30	30	30	30	35	153	731	163	36	43
6	47	50	36	30	30	30	40	134	685	111	39	42
7	46	50	32	30	30	30	50	122	721	87	30	40
8	45	50	32	30	27	30	60	122	673	86	32	39
9	45	50	32	30	30	30	80	149	610	92	35	38
10	45	43	30	30	30	30	80	226	510	63	33	38
11	45	35	30	30	30	30	80	166	386	79	33	41
12	45	33	30	30	30	30	80	163	351	75	37	43
13	45	39	30	30	30	30	80	223	359	69	39	43
14	45	37	30	30	30	30	80	225	345	54	41	44
15	45	39	30	30	30	30	70	197	300	50	42	60
16	45	38	30	30	30	30	90	171	263	48	44	49
17	45	37	32	30	30	30	100	146	234	46	41	45
18	45	38	30	30	30	30	91	137	211	46	45	45
19	60	35	30	30	30	30	65	124	184	67	42	41
20	60	34	30	30	30	30	59	120	167	63	40	39
21	60	36	25	30	30	30	64	111	156	71	41	40
22	55	37	25	30	30	30	82	122	194	65	41	41
23	50	34	25	30	30	30	97	126	148	70	38	51
24	50	36	24	30	30	30	100	156	140	73	36	53
25	50	33	20	30	30	30	110	149	134	68	51	52
26	50	30	21	30	30	30	156	146	131	56	65	46
27	50	35	22	30	30	35	217	142	127	52	79	42
28	50	35	23	30	30	35	253	140	120	49	61	59
29	50	35	25	30	---	35	265	126	109	44	52	38
30	50	41	25	30	---	35	320	120	97	40	50	40
31	55	---	25	30	---	33	---	138	---	38	46	---
TOTAL	1516	1210	892	930	837	953	2944	5033	10555	2244	1314	1309
MEAN	49.0	40.3	28.8	30.0	29.9	30.7	98.1	162	352	72.4	42.4	43.6
MAX	60	50	42	30	30	35	320	317	778	163	79	60
MIN	43	30	20	30	27	30	35	111	97	38	30	38
AC-FT	6010	2400	1770	1840	1660	1890	5840	9980	20940	4450	2610	2600
CAL YR 1976	TOTAL	50937	MEAN	139	MAX	930	MIN	20	AC-FT	101000		
WTR YR 1977	TOTAL	29739	MEAN	61.5	MAX	778	MIN	20	AC-FT	58990		

# BEAR RIVER BASIN

## 10015700 Sulphur Creek Above Reservoir, Near Evanston, WY

LOCATION.--Lat 41°08'38", long 110°48'19", in SE1/4SW1/4 sec.35, T.14 N., R.119 W., Uinta County, Hydrologic Unit 16010101, on right bank 1.2 mi (1.9 km) downstream from Willow Creek, 2 mi (3.2 km) upstream from Sulphur Creek Dam, and 11.5 mi (18.5 km) southeast of Evanston.

DRAINAGE AREA.--64.2 mi<sup>2</sup> (166.3 km<sup>2</sup>).

PERIOD OF RECORD.--October 1957 to current year. Monthly discharge only for October and November 1957, published in WSP 1734.

REVISED RECORDS.--WDR UT-1974: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 7,180 ft (2,188 m) from topographic map.

REMARKS.--Records good except those for winter months, which are poor. Several diversions for irrigation above station.

AVERAGE DISCHARGE.--20 years, 16.3 ft<sup>3</sup>/s (0.46 m<sup>3</sup>/s), 11,810 acre-ft/yr (14.6 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,220 ft<sup>3</sup>/s (34.6 m<sup>3</sup>/s) Apr. 21, 1965, gage height, 6.02 ft (1.835 m); maximum gage height, 6.19 ft (1.887 m) Mar. 11, 1972 (backwater from ice); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 37 ft<sup>3</sup>/s (1.05 m<sup>3</sup>/s) May 14, gage height, 2.57 ft (0.783 m); no flow many days.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	.30	.48	.80	.90	1.0	2.0	2.2	1.6	.09	0	0
2	.08	.30	.51	.80	.90	1.0	2.0	2.2	1.2	.14	0	0
3	.10	.30	.68	.80	.90	1.0	2.0	2.5	1.1	.18	0	0
4	.10	.30	.70	.80	.90	1.0	3.0	7.4	1.0	.20	0	0
5	.10	.30	.70	.80	.90	1.0	5.0	13	.92	.26	0	0
6	.10	.30	.70	.80	.90	2.0	7.0	12	1.0	.18	0	0
7	.09	.48	.70	.80	.90	2.0	10	8.6	1.4	.10	0	0
8	.09	.92	.70	.80	.90	2.0	15	5.9	2.4	.06	0	0
9	.09	.92	.70	.80	.92	2.0	15	5.9	3.4	.04	0	0
10	.09	.84	.70	.80	1.0	2.0	14	7.4	2.2	.01	0	0
11	.09	.68	.70	.80	1.0	3.0	13	8.3	1.4	0	0	0
12	.10	.51	.70	.80	1.0	2.0	12	5.1	1.4	0	0	0
13	.10	.51	.70	.80	1.0	2.0	11	4.7	1.2	0	0	0
14	.10	.54	.70	.80	1.0	2.0	10	24	.84	0	0	0
15	.10	.60	.70	.80	1.0	2.0	9.6	16	.57	0	0	0
16	.10	.76	.70	.90	1.0	2.0	10	7.7	.54	0	0	0
17	.09	.76	.70	.90	1.0	2.0	10	12	.45	0	0	0
18	.08	.76	.70	.90	1.0	2.0	8.9	21	.45	0	0	0
19	.09	.84	.70	.90	1.0	2.0	6.4	13	.45	0	0	0
20	.10	.60	.70	.90	1.0	2.0	5.6	9.6	.36	0	0	0
21	.10	.60	.68	.90	1.0	2.0	4.3	5.9	.42	0	0	0
22	.12	.60	.65	.90	1.0	2.0	5.1	3.0	.54	0	0	0
23	.12	.57	.68	.90	1.0	3.0	5.9	2.5	.48	0	0	.13
24	.16	.60	.70	.90	1.0	4.0	5.6	2.5	.36	.39	0	.16
25	.16	.68	.80	.90	1.0	3.0	6.1	2.7	.28	.08	0	.12
26	.24	.60	.80	.90	1.0	3.0	6.9	2.7	.24	0	0	.08
27	.28	.57	.80	.90	1.0	2.0	6.4	5.9	.16	0	.08	.07
28	.28	.42	.80	.90	1.0	2.0	7.2	5.1	.14	0	.02	.06
29	.28	.42	.75	.90	---	2.0	7.4	3.4	.12	0	0	.04
30	.33	.54	.80	.90	---	2.0	3.6	2.2	.10	0	0	.18
31	.33	---	.80	.90	---	2.0	---	2.2	---	0	0	---
TOTAL	4.27	17.12	21.86	26.40	27.12	63.6	230.0	226.6	26.72	1.73	.10	.84
MEAN	.14	.57	.71	.85	.97	2.05	7.67	7.31	.89	.056	.003	.028
MAX	.33	.92	.80	.90	1.0	4.0	15	24	3.4	.39	.08	.18
MIN	.08	.30	.48	.80	.90	1.0	2.0	2.2	.10	0	0	0
AC-FT	8.5	34	43	52	54	126	456	449	53	3.4	.2	1.7
CAL YR 1976	TOTAL	6891.05	MEAN	18.8	MAX	496	MIN	0	AC-FT	13670		
WTR YR 1977	TOTAL	646.36	MEAN	1.77	MAX	24	MIN	0	AC-FT	1280		

# BEAR RIVER BASIN

## 10015900 Sulphur Creek Below Reservoir, Near Evanston, WY

LOCATION.--Lat 41°59'21", long 110°50'05", in SE1/4SE1/4 sec.28, T.14 N., R.119 W., Uinta County, Hydrologic Unit 16010101, on left bank 400 ft (122 m) downstream from Sulphur Creek Dam, 6.3 mi (10.1 km) upstream from mouth, and 10.5 mi (16.9 km) southeast of Evanston.

DRAINAGE AREA.--69.2 mi<sup>2</sup> (179.2 km<sup>2</sup>).

PERIOD OF RECORD.--April 1958 to current year.

REVISED RECORDS.--WDR UT-1974: Drainage area.

GAGE.--Water-stage recorder and concrete V-notch control. Altitude of gage is 7,120 ft (2,170 m) from topographic map.

REMARKS.--Records good. Flow regulated by Sulphur Creek Reservoir, capacity, 7,100 acre-ft (8.75 hm<sup>3</sup>). Records prior to 1965 do not include flow over spillway of the dam.

AVERAGE DISCHARGE.--12 years (water years 1966-77), 25.2 ft<sup>3</sup>/s (0.714 m<sup>3</sup>/s), 13,260 acre-ft/yr (22.5 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD (SINCE 1966).--Maximum discharge, 425 ft<sup>3</sup>/s (12.0 m<sup>3</sup>/s) May 10, 1974, gage height, 3.71 ft (1.131 m); no flow at times each year except 1972.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 47 ft<sup>3</sup>/s (1.33 m<sup>3</sup>/s) June 29, 30, gage height, 1.69 ft (0.515 m); no flow on many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1									0	40	5.9	1.5
2									0	42	11	0
3									0	40	10	0
4									0	40	12	0
5									0	38	12	0
6									0	40	12	0
7									0	45	12	0
8									0	35	11	0
9									0	31	8.4	0
10									0	30	7.0	0
11									0	30	6.6	0
12									0	30	5.3	0
13									0	31	5.3	0
14									1.0	32	5.1	0
15									1.2	32	9.8	0
16									2.2	33	14	0
17									10	29	15	0
18									15	27	16	0
19									16	29	16	0
20									15	24	14	0
21									13	24	7.6	0
22									17	21	7.6	0
23									18	18	7.6	0
24									26	18	7.0	0
25									33	11	3.8	0
26									33	6.2	3.7	0
27									34	6.3	3.2	0
28									38	6.2	2.1	0
29									43	5.3	1.9	0
30									44	4.2	1.9	0
31										4.1	1.8	---
TOTAL	0	0	0	0	0	0	0	0	359.4	802.3	256.6	1.5
MEAN	0	0	0	0	0	0	0	0	12.0	25.9	8.28	.050
MAX	0	0	0	0	0	0	0	0	44	45	16	1.5
MIN	0	0	0	0	0	0	0	0	0	4.1	1.8	0
AC-FT	0	0	0	0	0	0	0	0	713	1590	509	3.0
CAL YR 1976	TOTAL	6943.01	MEAN	19.0	MAX	82	MIN	0	AC-FT	13770		
WTR YR 1977	TOTAL	1419.80	MEAN	3.89	MAX	45	MIN	0	AC-FT	2820		

# BEAR RIVER BASIN

## 10019500 Chapman Canal At State Line, Near Evanston, WY

LOCATION.--Lat 41°24'24", long 111°02'26", in SE1/4 sec.36, T.17 N., R.121 W., Uinta County, Hydrologic Unit 16010101, on left bank at highway bridge, 6.5 mi (10.5 km) downstream from headgates, and 10 mi (16 km) northwest of Evanston.

PERIOD OF RECORD.--April 1942 to current year (prior to October 1944, irrigation seasons only). Monthly discharge only for some periods, published in WSP 1314.

GAGE.--Water-stage recorder and flashboard control. Altitude of gage is 6,570 ft (2,003 m) from river-profile map. Prior to Oct. 11, 1946, nonrecording gage, and Oct. 11, 1946 to Aug. 2, 1961, water-stage recorder at site 20 ft (6 m) downstream at same datum.

REMARKS.--Records fair. Canal diverts water from Bear River in NW1/4 sec.36, T.16 N., R.121 W. Many diversions above station for irrigation in Wyoming. Flow at station is for storage in Neponset Reservoir, Utah, and irrigation in Saleratus basin, Utah.

AVERAGE DISCHARGE.--33 years (water years 1945-77), 19.7 ft<sup>3</sup>/s (0.56 m<sup>3</sup>/s), 14,270 acre-ft/yr (17.6 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 143 ft<sup>3</sup>/s (4.05 m<sup>3</sup>/s) June 29, 1970; no flow at times each year.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.6	26	10			0	20	1.0	15			0
2	5.6	28	10			0	20	1.2	49			0
3	5.6	23	10			0	20	.76	103			0
4	7.1	23	10			0	20	2.2	114			0
5	9.4	22	10			0	25	2.6	116			0
6	9.7	22	10			0	28	2.8	98			0
7	10	23	10			0	33	2.0	80			0
8	10	23	10			0	54	.12	73			0
9	12	23	10			0	50	0	73			0
10	12	23	10			0	56	.53	66			0
11	12	20	10			15	52	6.6	48			0
12	13	20	10			15	51	6.4	37			0
13	14	20	10			15	48	6.4	35			0
14	12	20	10			15	46	6.4	37			0
15	9.4	20	10			15	51	7.9	37			0
16	8.6	20	5.0			15	49	53	35			0
17	8.4	17	0			15	49	58	35			0
18	9.4	18	0			15	46	56	27			0
19	12	20	0			15	53	33	22			0
20	11	21	0			15	41	28	17			0.2
21	12	20	0			14	38	21	17			1.0
22	16	10	0			15	27	8.4	19			1.3
23	15	16	0			15	15	8.5	8.1			3.0
24	15	14	0			20	18	8.0	5.6			3.0
25	16	12	0			20	17	8.4	7.1			2.4
26	18	10	0			20	12	8.6	11			2.4
27	21	10	0			20	10	9.1	14			1.8
28	20	10	0			20	14	11	12			1.2
29	22	10	0			20	4.7	14	10			.85
30	25	10	0			20	4.2	13	3.2			.94
31	28	---	0			20	---	13	---			---
TOTAL	404.8	562	155.0	0	0	354	981.9	397.91	1224.0	0	0	18.41
MEAN	13.1	16.7	5.00	0	0	11.4	32.7	12.8	40.8	0	0	.61
MAX	28	28	10	0	0	20	60	58	116	0	0	3.0
MIN	5.6	10	0	0	0	0	4.2	0	3.2	0	0	0
AC-FI	803	1110	307	0	0	702	1950	789	2430	0	0	37

CAL YR 1976 TOTAL 5812.90 MEAN 15.9 MAX 79 MIN 0 AC-FI 11530  
 WTR YR 1977 TOTAL 4098.02 MEAN 11.2 MAX 116 MIN 0 AC-FI 8130

# BEAR RIVER BASIN

## 10020100 Bear River Above Reservoir Near Woodruff, UT

LOCATION.--Lat 41°26'04", long 111°01'01", in NW 1/4NW 1/4 sec.29, T.17 N., R.120 W., Uinta County, Wyoming, Hydrologic Unit 16010101, on right bank 9.3 mi (15.0 km) upstream from Woodruff Narrows Dam and 10 mi (16 km) southeast of Woodruff.

DRAINAGE AREA.--752 mi<sup>2</sup> (1,948 km<sup>2</sup>).

PERIOD OF RECORD.--October 1961 to current year.

REVISED RECORDS.--WDR UT-1974: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 6,455 ft (1,967.5 m) from river-profile map.

REMARKS.--Records good except those for winter months, which are fair. Diversion for irrigation of about 43,500 acres (176 km<sup>2</sup>) above station.

AVERAGE DISCHARGE.--16 years, 241 ft<sup>3</sup>/s (6.82 m<sup>3</sup>/s), 174,600 acre-ft/yr (213 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,340 ft<sup>3</sup>/s (94.6 m<sup>3</sup>/s) June 13, 1963, gage height, 5.89 ft (1.795 m); minimum, 0.1 ft<sup>3</sup>/s (0.003 m<sup>3</sup>/s) Aug. 26, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 610 ft<sup>3</sup>/s (17.3 m<sup>3</sup>/s) June 5; maximum gage height, 3.64 ft (1.109 m) Apr. 8 (backwater from ice jam); minimum discharge, 2.8 ft<sup>3</sup>/s (0.079 m<sup>3</sup>/s) Sept. 14.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	26	10	15	20	25	40	153	72	40	18	7.7
2	7.4	26	11	15	20	25	40	173	212	39	14	6.4
3	7.0	23	13	15	20	25	40	124	404	42	12	6.0
4	7.7	21	15	15	20	25	40	126	462	39	12	6.0
5	9.0	22	16	15	25	25	50	139	450	44	10	5.5
6	10	20	15	15	25	25	80	124	420	91	11	4.8
7	10	20	18	15	25	25	140	114	432	80	11	6.6
8	11	20	18	15	25	25	200	87	450	70	13	4.1
9	12	20	18	15	25	25	238	81	420	93	11	3.6
10	14	20	18	15	25	25	282	91	360	44	8.3	3.4
11	15	18	18	15	25	25	173	131	258	38	7.0	3.4
12	15	15	17	15	25	25	161	96	170	37	6.0	3.3
13	15	17	17	15	25	25	118	85	136	31	5.7	3.1
14	15	12	18	15	25	25	93	124	142	27	5.2	3.0
15	13	14	18	15	25	25	72	167	153	23	4.3	4.6
16	12	19	18	15	25	25	54	102	142	18	4.1	5.2
17	12	20	17	15	25	25	59	98	104	17	3.4	5.2
18	11	16	16	15	25	25	81	89	87	15	7.7	6.3
19	12	19	15	15	25	25	68	104	67	14	13	7.0
20	12	17	15	15	25	25	38	85	57	15	12	6.0
21	13	17	15	15	25	25	32	68	53	23	10	6.7
22	15	16	15	15	25	25	26	78	68	34	8.3	6.7
23	16	14	15	20	25	26	18	80	121	32	6.4	9.5
24	16	14	15	20	25	25	19	86	107	40	6.0	12
25	16	18	15	20	25	25	21	89	91	59	6.4	14
26	18	17	15	20	25	25	25	89	80	56	9.0	14
27	20	16	15	20	25	30	18	91	87	42	15	14
28	21	12	15	20	25	30	31	116	48	38	26	13
29	22	10	15	20	---	40	56	100	45	36	14	12
30	24	18	15	20	---	40	98	86	37	29	10	12
31	27	---	15	20	---	40	---	70	---	26	8.3	---
TOTAL	435.1	529	486	510	680	831	2331	3234	5715	1196	302.1	215.1
MEAN	14.0	17.0	15.7	16.5	24.3	26.8	77.7	104	191	38.4	9.75	7.17
MAX	27	26	18	20	25	40	238	173	462	91	26	14
MIN	7.0	10	10	15	20	25	18	68	37	14	3.0	3.0
AC-F T	86.3	1050	964	1010	1350	1650	4620	6410	11340	2360	599	427
CAL YR 1976 TOTAL	5920.7		MEAN 162	MAX 1220	MIN 4.5	AC-F T 117500						
WTR YR 1977 TOTAL	16458.3		MEAN 45.1	MAX 46.2	MIN 3.0	AC-F T 32650						



# BEAR RIVER BASIN

## 10020200 Woodruff Narrows Reservoir Near Woodruff, UT

LOCATION.--Lat 41°30'10", long 111°00'55", in sec.32, T.18 N., R.120 W., Uinta County, Wyoming, Hydrologic Unit 16010101, in gate house at Woodruff Narrows Dam on Bear River, 5.6 mi (9.0 km) upstream from Wyoming-Utah State line, and 7.7 mi (12.4 km) east of Woodruff.

DRAINAGE AREA.--784 mi<sup>2</sup> (2,031 km<sup>2</sup>).

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORDS.--WDR UT-1974: Drainage area.

GAGE.--Water-stage recorder and mercury manometer. Datum of gage is 6,405 ft (1,952.2 m) from levels by Bureau of Reclamation.

REMARKS.--Reservoir formed by earth-fill, rock faced dam. Lower portion of spillway cut in natural rock. Storage began Jan. 5, 1962. Total capacity, 28,000 acre-ft (34.5 hm<sup>3</sup>) below spillway crest, which includes 18,240 acre-ft (22.5 hm<sup>3</sup>) of Compact allocation for irrigation, 4,260 acre-ft (5.25 hm<sup>3</sup>) of irrigation holdover, 4,000 acre-ft (4.93 hm<sup>3</sup>) for winter release for fish propagation in Utah, and 1,500 acre-ft (1.85 hm<sup>3</sup>) of storage for fish propagation in Wyoming. Gage height of spillway is 35.3 ft (10.76 m). Figures given herein represent total contents.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 33,050 acre-ft (40.8 hm<sup>3</sup>) May 11, 1974, June 10, 1975, gage height, 38.3 ft (11.67 m); minimum observed, 880 acre-ft (1.09 hm<sup>3</sup>) Sept. 15-25, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 14,750 acre-ft (18.2 hm<sup>3</sup>) June 2, gage height, 25.2 ft (7.681 m); minimum observed, 880 acre-ft (1.09 hm<sup>3</sup>) Sept. 15-25.

Capacity table (gage height, in feet, and total contents, in acre-feet)

4	680	16	6780	28	17770
6	1300	18	8360	30	20180
8	2080	20	10000	32	23040
10	3020	22	11600	34	25800
12	4120	24	13360	36	29000
14	5370	26	15570	38	32520

CONTENTS, IN ACRE-Feet, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1570	1960	2410	2660	3070	4100	5570	10610	14590	2390	2080	1230
2	1570	2000	2410	2670	3080	4140	5640	10840	14030	2350	2080	1200
3	1570	2030	2420	2690	3100	4190	5710	11090	12820	2300	2120	1160
4	1570	2050	2430	2700	3120	4240	5770	11180	11960	2260	2080	1160
5	1570	2080	2440	2720	3140	4280	5910	11440	10900	2210	2080	1130
6	1570	2100	2450	2730	3170	4330	6050	11600	9950	2300	2040	1130
7	1570	2120	2460	2750	3190	4370	6340	11780	6610	2300	2000	1090
8	1580	2140	2470	2760	3220	4420	6860	11870	7320	2350	1950	1060
9	1590	2180	2480	2770	3230	4460	7320	11960	6120	2300	1870	1030
10	1600	2200	2490	2790	3270	4510	7790	12050	5110	2300	1790	1000
11	1610	2220	2500	2800	3310	4550	8110	12250	4540	2300	1710	970
12	1620	2230	2510	2810	3350	4600	8440	12410	3890	2300	1670	970
13	1630	2240	2520	2830	3390	4640	8780	12490	3610	2260	1630	940
14	1640	2250	2530	2840	3430	4670	8950	12660	3550	2210	1590	910
15	1650	2260	2540	2850	3470	4700	9210	12820	3500	2210	1590	880
16	1650	2280	2550	2860	3510	4730	9300	13000	3440	2170	1550	880
17	1670	2290	2550	2880	3560	4750	9470	13090	3330	2120	1510	880
18	1680	2300	2560	2890	3600	4770	9650	13180	3180	2040	1480	880
19	1690	2310	2570	2900	3640	4800	9740	13270	2970	2000	1480	880
20	1700	2320	2570	2920	3690	4830	9830	13360	2870	1950	1440	880
21	1710	2330	2580	2930	3730	4860	9900	13470	2820	1910	1410	880
22	1720	2340	2590	2940	3770	4920	9950	13580	2770	1910	1410	880
23	1730	2350	2590	2950	3820	4980	9950	13690	2870	1870	1370	880
24	1740	2360	2600	2970	3870	5040	10000	13800	2920	1870	1330	880
25	1750	2370	2600	2980	3910	5110	10000	13910	2970	1910	1330	880
26	1770	2380	2610	2990	3960	5170	10080	14030	2970	1950	1300	910
27	1790	2390	2610	3010	4000	5240	10080	14140	2820	1950	1300	910
28	1820	2390	2620	3020	4060	5370	10160	14260	2720	1950	1300	940
29	1850	2400	2620	3030	---	5440	10230	14370	2530	1950	1300	940
30	1880	2400	2630	3040	---	5440	10370	14480	2440	2000	1260	970
31	1910	---	2630	3070	---	5500	---	14590	---	2040	1230	---
MAX	1910	2400	2630	3070	4060	5500	10370	14590	14590	2390	2120	1230
MIN	1570	1960	2410	2660	3070	4100	5570	10610	2440	1870	1230	880

(-) (a)7.6 (a)8.7 (a)9.2 (a)10.1 (a)11.9 14.2 20.5 25.1 (a)8.8 (a)7.9 (a)5.8 (a)5.0  
 (+) +340 +490 +230 +440 +990 +1440 +4870 +4220 -21250 -400 -810 -260

CAL YR 1976.....# -25200  
 WTR YR 1977.....# -600

- Gage height, in feet, at 2400 of last day of month.

# Change in contents, in acre-feet.

a Estimated.

# BEAR RIVER BASIN

## 10020300 Bear River Below Reservoir, Near Woodruff, UT

LOCATION.--Lat 41°30'20", long 111°00'50", in NW1/4NW1/4 sec.32, T.18 N., R.120 W., Uinta County, Wyoming, Hydrologic Unit 16010101, on right bank 1,100 ft (340 m) downstream from Woodruff Narrows Dam, 1.6 mi (2.6 km) upstream from Salt Creek, 5.4 mi (8.7 km) upstream from Wyoming-Utah State line, and 7.7 mi (12.4 km) east of Woodruff.

DRAINAGE AREA.--784 mi<sup>2</sup> (2,031 km<sup>2</sup>).

PERIOD OF RECORD.--October 1961 to current year.

REVISED RECORD.--WDR UT-1974: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 6,398.96 ft (1,950,403 m) above mean sea level (levels by Utah Water Resources Division from Bureau of Reclamation bench mark). Prior to Sept. 26, 1962, at site 175 ft (53.3 m) upstream at same datum.

REMARKS.--Records excellent. Flow regulated by Woodruff Narrows Reservoir (station 10020200) beginning January 1962. Diversions for irrigation of about 43,500 acres (176 km<sup>2</sup>) above station.

AVERAGE DISCHARGE.--16 years, 236 ft<sup>3</sup>/s (6.68 m<sup>3</sup>/s), 171,000 acre-ft/yr (211 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,000 ft<sup>3</sup>/s (85.0 m<sup>3</sup>/s) June 14, 1965, gage height, 7.88 ft (2.402 m); no flow July 4, 5, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,180 ft<sup>3</sup>/s (33.4 m<sup>3</sup>/s) June 6, gage height, 6.13 ft (1.868 m); minimum, 0.20 ft<sup>3</sup>/s (0.006 m<sup>3</sup>/s) Apr. 9.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	4.5	5.9	6.4	7.1	7.3	.30	.39	31	63	3.3	19
2	5.2	4.8	5.9	6.5	7.1	7.4	.32	10	467	62	3.2	19
3	5.2	4.8	5.9	6.5	7.1	7.4	.33	22	1010	62	5.4	18
4	5.7	4.6	5.9	6.5	7.1	7.4	.31	28	988	62	21	18
5	5.4	4.8	5.7	6.5	7.1	7.3	.35	28	967	62	22	18
6	5.2	5.0	5.7	6.5	7.1	7.4	.32	28	1010	61	21	18
7	5.2	5.2	5.7	6.5	7.1	7.2	.30	28	1150	62	21	18
8	5.2	5.2	5.7	6.6	7.1	7.3	.30	28	1110	62	21	18
9	5.9	5.2	5.7	6.6	7.1	7.3	.27	28	1040	62	21	18
10	5.9	5.2	5.7	6.7	7.3	7.3	.25	29	621	51	21	18
11	6.0	5.2	5.7	6.8	7.3	7.4	.29	29	562	42	21	12
12	6.2	5.2	5.7	6.8	7.4	7.4	.30	29	482	42	21	8.6
13	6.3	5.4	5.7	6.8	7.3	7.4	.30	29	376	42	21	8.6
14	6.5	5.4	5.9	6.6	7.4	7.4	.31	29	173	42	21	8.6
15	6.6	5.2	5.9	6.6	7.4	7.6	.34	29	172	42	21	8.4
16	6.5	5.2	5.9	6.7	7.4	7.6	.35	29	171	42	21	8.4
17	5.0	5.2	5.9	6.7	7.4	7.6	.35	30	170	41	21	8.3
18	4.0	5.4	5.9	6.8	7.4	7.6	.35	30	166	41	21	8.3
19	4.1	5.4	5.9	6.8	7.4	7.9	.35	30	163	41	21	8.3
20	4.1	5.4	5.9	6.8	7.5	8.0	.35	30	110	41	21	8.3
21	4.1	5.4	6.2	6.8	7.6	6.1	.35	30	81	40	21	8.2
22	4.0	5.4	6.2	6.8	7.3	.55	.35	30	78	40	21	8.4
23	4.1	5.4	6.2	6.8	7.3	.40	.40	30	77	40	21	8.4
24	4.3	5.4	6.2	6.8	7.4	.38	.39	31	65	40	20	8.2
25	4.2	5.5	6.2	6.8	7.4	.42	.39	31	66	40	20	8.2
26	4.3	5.5	6.2	6.8	7.4	.36	.40	31	65	41	20	8.3
27	4.3	5.7	6.2	6.8	7.4	.35	.38	31	83	41	20	8.3
28	4.3	5.7	6.2	7.0	7.4	.30	.36	31	74	41	20	8.3
29	4.3	5.7	6.4	7.1	---	.32	.37	31	91	27	19	8.3
30	4.3	5.9	6.5	7.1	---	.35	.40	31	72	3.3	19	8.3
31	4.3	---	6.5	7.1	---	.34	---	31	---	2.9	19	---
TOTAL	155.6	157.3	185.2	208.6	204.3	159.07	10.13	861.39	11891	1381.2	589.9	352.6
MEAN	5.02	5.24	5.97	6.73	7.30	5.13	.34	27.8	396	44.6	19.0	11.8
MAX	6.6	5.9	6.5	7.1	7.6	8.0	.40	31	1150	63	22	19
MIN	4.0	4.5	5.7	6.4	7.1	.30	.25	.39	31	2.9	3.2	8.2
AC-FT	309	312	367	414	405	316	20	1710	23590	2740	1170	699
CAL YR 1976	TOTAL	67440.10	MEAN	184	MAX	1140	MIN	3.9	AC-FT	133600		
WTR YH 1977	TOTAL	16156.29	MEAN	44.3	MAX	1150	MIN	.25	AC-FT	32050		

# BEAR RIVER BASIN

## 10026500 Bear River Near Randolph, UT

LOCATION.--Lat 41°48'02", long 111°04'20", in SE1/4NE1/4 sec.7, T.12 N., R.8 E., Rich County, Hydrologic Unit 16010101, 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.--1,616 mi<sup>2</sup> (4,185 km<sup>2</sup>).

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

REVISED RECORDS.--WDR UT-1974: Drainage area.

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

REMARKS.--Records good except those for winter months, which are fair. Diversion for irrigation of about 94,500 acres (382 km<sup>2</sup>) above station. Flow regulated by upstream reservoirs.

AVERAGE DISCHARGE.--34 years, 201 ft<sup>3</sup>/s (5.69 m<sup>3</sup>/s), 145,600 acre-ft/yr (180 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,660 ft<sup>3</sup>/s (75.3 m<sup>3</sup>/s) May 8, 1952; maximum gage height, 8.99 ft (2.740 m) June 17, 1965, site and datum then in use; minimum discharge, 1.6 ft<sup>3</sup>/s (0.05 m<sup>3</sup>/s) Nov. 12, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 158 ft<sup>3</sup>/s (4.47 m<sup>3</sup>/s) June 19, gage height, 2.05 ft (0.625 m); minimum, 3.0 ft<sup>3</sup>/s (0.085 m<sup>3</sup>/s) Aug. 17.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	44	35	32	32	25	20	11	8.3	8.8	4.8	5.3
2	39	43	35	32	32	25	20	10	8.2	10	4.8	5.2
3	44	43	35	32	33	25	19	9.1	8.0	11	4.8	5.3
4	41	43	35	32	33	25	19	8.9	8.2	8.8	4.4	5.7
5	41	49	35	32	33	25	24	9.2	10	8.6	5.4	5.8
6	42	50	35	32	33	25	27	12	13	8.1	8.5	5.4
7	39	50	35	32	33	25	25	11	15	7.7	6.6	6.2
8	39	50	35	32	30	25	25	9.5	18	7.6	5.0	5.8
9	41	50	35	32	30	25	24	9.2	6.6	7.3	5.0	5.4
10	40	50	35	32	30	25	22	8.5	4.8	6.5	6.1	5.7
11	40	50	35	32	30	25	21	8.5	5.1	6.5	4.8	6.0
12	40	50	35	32	30	25	20	8.4	4.2	5.9	3.6	5.6
13	41	45	35	32	30	25	20	8.4	2.8	5.4	3.6	5.5
14	44	57	35	32	30	25	33	13	20	5.0	4.4	5.8
15	51	62	35	32	30	25	30	15	17	4.8	4.4	6.8
16	46	57	35	32	30	25	26	14	7.8	4.8	3.8	6.4
17	44	52	35	32	30	25	24	14	133	5.4	3.8	6.2
18	44	53	35	32	30	25	22	14	150	4.8	7.8	6.2
19	45	52	34	32	30	25	23	15	157	4.4	1.8	6.2
20	48	48	33	32	30	25	23	14	155	4.4	6.5	5.4
21	55	43	32	32	30	24	14	13	151	5.4	5.5	5.8
22	54	41	32	32	30	23	12	12	44	6.2	6.0	6.6
23	53	41	32	32	30	21	12	11	19	5.4	5.5	8.1
24	52	38	32	32	30	21	13	10	15	5.4	5.0	6.7
25	51	38	32	32	25	20	12	9.0	14	15	4.0	6.4
26	50	37	32	32	25	20	11	11	12	5.0	13	7.0
27	51	36	32	32	25	20	9.2	9.4	11	4.8	9.8	6.4
28	52	35	32	32	25	20	9.5	10	13	4.4	6.2	5.5
29	51	35	32	32	---	20	10	9.9	9.0	4.4	6.0	5.4
30	50	35	32	32	---	20	10	9.2	9.0	4.4	5.8	6.0
31	45	---	32	32	---	20	---	8.8	---	4.8	5.2	---
TOTAL	1411	1377	1049	992	839	729	574.7	336.0	1331.3	201.0	180.9	174.8
MEAN	45.2	45.4	33.8	32.0	30.0	23.5	19.3	10.8	44.4	6.6	6.09	5.99
MAX	55	62	35	32	33	25	33	15	157	15	10	8.1
MIN	38	35	32	32	25	20	9.2	8.4	8.0	4.4	3.6	5.2
AC-FT	2800	2730	2080	1970	1660	1450	1150	666	2640	399	375	357
CAL YR 1976	TOTAL	71775.0	MEAN	196	MAX	1200	MIN	14	AC-FT	142400		
WTR YR 1977	TOTAL	9213.7	MEAN	25.2	MAX	157	MIN	3.6	AC-FT	16200		

# BEAR RIVER BASIN

## 10028500 Bear River Below Pixley Dam, Near Cokeville, WY

LOCATION.--Lat 41°56'20", long 110°59'05", in SE1/4SE1/4 sec.25, T.23 N., R.120 W., Lincoln County, Hydrologic Unit 1601012, 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.--2,032 mi<sup>2</sup> (5,263 km<sup>2</sup>).

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 WSP 1314.

REVISED RECORD.--WDR UT-1974: Drainage area.

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.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,300 ft<sup>3</sup>/s (65.1 m<sup>3</sup>/s) Mar. 25, 1956; minimum daily recorded, 0.3 ft<sup>3</sup>/s (0.008 m<sup>3</sup>/s) Aug. 21, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 15 ft<sup>3</sup>/s (0.42 m<sup>3</sup>/s) Aug. 8, Sept. 4, 5; minimum daily, 0.56 ft<sup>3</sup>/s (0.016 m<sup>3</sup>/s) May 12.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								.74	.78	1.6	4.4	7.7
2								.71	.78	1.7	4.4	7.7
3								.71	.91	1.7	4.4	9.1
4								.71	1.2	1.7	4.7	15
5								.91	1.4	1.6	5.4	15
6								1.2	1.6	1.7	6.5	14
7								1.2	1.2	1.8	8.2	8.6
8								1.2	1.3	1.8	15	1.8
9								2.1	1.3	1.8	11	4.1
10								2.8	1.3	1.8	10	4.7
11								1.2	1.4	1.8	7.7	5.1
12								.56	1.7	1.8	7.2	5.4
13								.60	1.3	2.1	6.7	5.1
14								.74	1.4	1.8	6.3	5.9
15								.67	1.4	1.6	5.4	6.3
16								.63	1.6	3.1	2.4	7.2
17								.63	1.6	2.8	1.8	7.2
18								.60	1.7	3.1	4.7	7.2
19								.60	1.8	2.8	4.7	7.7
20								.60	2.0	2.8	4.7	7.7
21								.63	2.0	2.8	5.1	7.7
22								.67	2.1	2.4	3.8	8.6
23								.67	2.1	3.1	3.4	8.2
24								.71	1.4	8.6	4.4	6.8
25								.67	1.2	2.4	4.7	6.8
26								.71	1.0	1.6	5.1	7.7
27								.71	1.0	9.1	6.8	7.7
28								.74	1.2	1.6	9.5	8.2
29								.78	1.8	2.4	9.5	8.6
30								.78	1.4	7.7	8.2	11
31								.78	---	5.4	8.2	---
TOTAL	---	---	---	---	---	---	---	26.96	42.87	158.0	194.1	233.8
MEAN	---	---	---	---	---	---	---	.87	1.43	5.16	6.28	7.79
MAX	---	---	---	---	---	---	---	2.8	2.1	2.4	15	15
MIN	---	---	---	---	---	---	---	.56	.78	1.6	1.8	1.8
AC-FT	---	---	---	---	---	---	---	5.1	8.5	31.3	38.5	46.4

THE SEASON ACRE-FEET 1300

# BEAR RIVER BASIN

## 10032000 Smiths Fork Near Border, WY

LOCATION.--Lat 42°17'16", long 110°52'14", in NW1/4 sec.33, T.27 N., R.118 W., Lincoln County, Hydrologic Unit 16010102, 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.--163 mi<sup>2</sup> (427 km<sup>2</sup>).

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

REVISED RECORDS.--WSP 1734: 1952(M).

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.

REMARKS.--Records good except those for winter periods, which are fair. One diversion for irrigation of about 200 acres (809,000 m<sup>2</sup>) above station.

AVERAGE DISCHARGE.--35 years, 195 ft<sup>3</sup>/s (5.52 m<sup>3</sup>/s), 141,300 acre-ft/yr (174 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,610 ft<sup>3</sup>/s (45.6 m<sup>3</sup>/s) June 18, 1971, gage height, 5.61 ft (1.710 m); minimum, 21 ft<sup>3</sup>/s (0.59 m<sup>3</sup>/s) Mar. 29, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 128 ft<sup>3</sup>/s (3.62 m<sup>3</sup>/s) June 5, gage height, 2.22 ft (0.677 m); minimum, 36 ft<sup>3</sup>/s (1.02 m<sup>3</sup>/s) Apr. 3.

### DISCHARGE IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	87	60	60	70	59	59	98	102	68	52	55
2	101	87	60	60	70	58	54	97	108	69	51	53
3	113	86	60	60	70	57	52	94	116	73	51	52
4	106	86	60	60	70	55	58	96	122	69	52	52
5	103	85	60	60	70	59	58	93	123	72	55	51
6	101	85	60	60	70	56	62	99	123	67	58	50
7	100	84	60	60	70	57	69	97	121	65	54	49
8	98	83	60	60	70	57	78	94	118	64	52	50
9	98	82	60	60	70	55	87	92	116	63	51	50
10	98	81	60	60	69	56	91	96	114	62	50	51
11	98	80	60	60	70	54	90	94	110	61	49	50
12	97	78	60	60	70	54	88	91	104	60	49	50
13	97	79	60	60	70	58	84	92	101	59	48	50
14	96	80	60	60	65	53	82	98	98	59	47	51
15	95	78	60	60	60	56	76	98	93	58	48	55
16	95	80	60	60	60	59	86	99	92	57	49	56
17	93	81	60	60	60	56	92	102	90	57	48	54
18	92	80	60	60	58	56	85	101	88	56	67	53
19	89	78	60	60	57	55	77	103	87	56	68	52
20	90	76	60	60	57	54	76	101	90	58	57	51
21	90	75	60	60	58	58	76	101	88	61	54	51
22	89	70	60	60	58	55	78	101	84	58	54	54
23	90	70	60	60	57	57	81	101	82	59	55	58
24	88	65	60	60	58	60	85	102	80	66	53	55
25	90	65	60	60	58	57	85	105	76	69	57	53
26	91	60	60	60	60	54	87	104	75	60	78	52
27	86	57	60	60	59	57	88	106	73	58	69	51
28	87	60	60	60	60	55	91	109	72	58	62	50
29	88	60	60	60	---	55	90	106	70	55	59	50
30	89	60	56	60	---	57	92	103	69	53	56	53
31	87	---	60	60	---	55	---	100	---	53	55	---
TOTAL	2936	2278	1856	1860	1794	1744	2357	3073	2885	1903	1700	1562
MEAN	94.7	75.9	59.9	60.0	64.1	56.3	78.6	99.1	96.2	61.4	55.1	52.1
MAX	113	87	60	60	70	60	92	109	123	73	76	58
MIN	86	57	56	60	57	53	52	91	69	53	47	49
AC-FT	5820	4520	3680	3690	3560	3460	4660	6100	5720	3770	3390	3100
CAL YR 1976 TOTAL	79963		MEAN 218		MAX 980		MIN 47		AC-FT 158660			
WTR YR 1977 TOTAL	25956		MEAN 71.1		MAX 123		MIN 47		AC-FT 51480			

# BEAR RIVER BASIN

## 10039500 Bear River At Border, WY

LOCATION.--Lat 42°12'40", long 111°03'11", in NE1/4NE1/4 sec.15, T.14 S., R.46 E., Bear Lake County, Idaho, Hydrologic Unit 16010102, 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.--2,486 mi<sup>2</sup> (6,439 km<sup>2</sup>).

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

REVISED RECORDS.--WDR UT-1974: Drainage area.

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

REMARKS.--Records good except those for winter months, which are fair. Natural flow of stream affected by regulation by upstream reservoirs, diversions for irrigation, and return flow from irrigated areas.

AVERAGE DISCHARGE.--40 years, 424 ft<sup>3</sup>/s (12.0 m<sup>3</sup>/s), 307,200 acre-ft/yr (379 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,680 ft<sup>3</sup>/s (104 m<sup>3</sup>/s) May 11, 1952, gage height, 8.89 ft (2.710 m); minimum, 24 ft<sup>3</sup>/s (0.68 m<sup>3</sup>/s) Apr. 29, 30, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 255 ft<sup>3</sup>/s (7.22 m<sup>3</sup>/s) Nov. 15, gage height, 2.14 ft (0.652 m); minimum, 24 ft<sup>3</sup>/s (0.68 m<sup>3</sup>/s) Apr. 29, 30.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	198	192	160	110	120	130	92	26	66	68	41	55
2	196	190	155	110	120	130	91	26	60	68	54	51
3	199	185	155	110	120	130	87	29	61	73	56	50
4	201	185	155	110	120	130	91	42	62	74	56	49
5	199	187	150	110	120	130	101	47	63	78	56	52
6	196	187	150	110	120	135	108	52	63	74	54	57
7	194	187	145	108	120	135	106	56	64	66	54	56
8	192	190	145	110	120	135	108	52	55	60	50	54
9	190	190	145	110	120	135	117	52	60	60	49	51
10	189	190	145	110	120	135	105	52	58	57	48	38
11	187	190	140	110	119	140	101	62	58	56	47	37
12	187	185	140	110	120	140	84	77	52	55	44	38
13	185	181	140	110	120	140	73	77	50	50	41	39
14	183	190	135	110	120	140	72	91	56	49	39	42
15	180	207	135	120	120	140	68	101	61	49	30	44
16	183	198	135	120	120	145	62	99	61	47	38	54
17	189	192	130	120	120	145	60	104	60	43	38	56
18	183	189	130	120	120	150	57	111	55	42	47	56
19	181	187	125	120	120	150	56	119	54	40	66	50
20	178	183	125	120	120	155	55	125	55	39	58	49
21	178	178	120	120	120	155	54	106	63	40	49	52
22	183	174	115	120	120	160	51	87	72	42	48	55
23	192	170	115	120	120	160	56	88	72	39	52	57
24	192	170	115	120	120	163	54	78	72	43	54	55
25	183	170	110	120	120	156	52	75	70	64	55	54
26	183	165	110	120	120	152	50	80	67	58	64	51
27	181	165	110	120	120	136	46	85	67	56	81	48
28	178	165	110	120	125	144	28	85	70	49	73	46
29	185	160	110	120	---	112	25	81	69	43	67	46
30	187	160	110	120	---	108	25	73	69	50	64	43
31	192	---	110	120	---	101	---	67	---	49	58	---
TOTAL	5824	5462	4075	3578	3364	4317	2135	2305	1865	1681	1641	1485
MEAN	188	182	131	115	120	139	71.2	74.4	62.2	54.2	52.9	49.5
MAX	201	207	160	120	125	163	117	125	72	78	81	57
MIN	178	160	110	108	119	101	25	26	50	39	38	37
AC-FT	11550	10830	8080	7100	6670	8560	4230	4570	3700	3330	3250	2950
CAL YR 1976	TOTAL	105540	MEAN 507	MAX 3310	MIN 110	AC-FT 368000						
WTR YR 1977	TOTAL	37732	MEAN 103	MAX 207	MIN 25	AC-FT 74840						

# BEAR RIVER BASIN

## 10046000 Rainbow Inlet Canal Near Dingle, ID

LOCATION.--Lat 42°13'48", long 111°07'43", in SE1/4 sec.3, T.14 S., R.44 E., Bear Lake County, Hydrologic Unit 16010201, 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 WSP 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.

REMARKS.--Records good. Canal diverts from Bear River at Stewart Dam in NE1/4 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 surplus water from irrigation.

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

AVERAGE DISCHARGE.--55 years, 339 ft<sup>3</sup>/s (9.60 m<sup>3</sup>/s), 245,600 acre-ft/yr (303 km<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,180 ft<sup>3</sup>/s (118 m<sup>3</sup>/s) May 7, 1952, gage height, 8.62 ft (2.627 m); no flow Apr. 28, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 330 ft<sup>3</sup>/s (9.35 m<sup>3</sup>/s) Nov. 6, gage height, 1.99 ft (0.607 m); no flow Apr. 28, 1977.

DAY	DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	138	194	149	105	112	109	100	7.0	14	6.6	2.6	46
2	143	195	159	105	105	112	104	11	6.3	6.1	6.8	54
3	146	196	151	109	107	105	107	7.9	7.8	14	8.7	44
4	148	197	147	120	106	109	108	.30	5.7	6.8	12	65
5	166	197	148	131	105	100	109	.20	5.1	6.8	9.1	62
6	173	225	157	142	107	120	112	7.3	8.2	7.0	11	48
7	189	216	152	124	100	117	107	11	2.0	7.3	8.9	41
8	184	196	159	111	103	111	113	8.1	2.5	6.0	3.9	39
9	186	194	132	121	105	115	97	11	.96	2.5	5.9	38
10	193	200	132	103	103	101	88	6.2	8.3	8.3	3.8	37
11	201	203	122	104	109	104	99	13	8.7	11	6.3	35
12	202	195	125	104	116	99	89	14	3.8	11	8.7	34
13	204	177	130	107	169	93	77	9.8	12	4.5	16	33
14	212	157	126	104	103	126	47	4.7	14	5.7	14	28
15	205	183	113	109	113	139	50	.30	11	6.3	10	20
16	198	208	110	107	112	119	44	4.9	11	6.9	5.5	22
17	194	206	124	113	110	119	39	5.7	8.3	6.7	5.3	18
18	204	200	105	112	110	116	33	9.2	13	6.4	8.4	19
19	206	211	118	121	116	114	27	16	15	5.7	16	20
20	203	214	102	142	131	116	21	14	13	5.4	16	13
21	200	212	99	127	131	111	16	12	7.4	8.6	16	22
22	201	203	92	117	134	114	9.7	6.5	14	9.2	12	33
23	210	199	94	117	128	128	7.6	4.7	15	3.1	6.1	31
24	216	170	106	151	130	131	6.2	.60	16	5.1	1.6	21
25	214	169	112	154	168	141	4.8	6.1	15	6.8	.04	11
26	201	201	100	149	104	137	5.9	8.0	13	7.1	12	30
27	207	186	105	120	140	129	6.6	15	12	10	16	31
28	204	137	98	115	119	137	4.6	14	11	7.9	19	23
29	195	164	106	139	---	120	1.5	12	11	3.8	26	13
30	190	137	107	104	---	107	.50	8.4	6.3	2.2	36	17
31	195	---	107	109	---	94	---	8.0	---	2.8	36	---
TOTAL	5932	6742	3767	3066	3178	3593	1634.60	256.92	266.46	209.6	348.67	746
MEAN	191	191	122	118	114	116	54.5	8.29	9.55	6.76	11.2	31.6
MAX	210	225	159	154	140	141	113	16	16	14	36	65
MIN	138	137	92	103	100	93	.50	.20	.96	2.2	.04	11
ACFT	11770	11390	7510	7276	6360	7130	3246	510	568	416	692	1880
CAL YR 1976	TOTAL	174056.00	MEAN	476	MAX	3440	MIN	42	ACFT	342600		
WTH YR 1977	TOTAL	24562.25	MEAN	81.0	MAX	225	MIN	.04	ACFT	50000		

# BEAR RIVER BASIN

## 10046500 Bear River Below Stewart Dam, Near Montpelier, ID

LOCATION.--Lat 42°15'14", Long 111°17'55", in NE1/4 sec.36, T.13 S., R.44 E., Bear Lake County, Hydrologic Unit 16010201, on right bank 300 ft (91 m) downstream from Stewart Dam and 4.5 mi (7.2 km) south of Montpelier.

DRAINAGE AREA.--2,853 mi<sup>2</sup> (7,389 km<sup>2</sup>).

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

REVISED RECORDS.--WDR UT-1974: Drainage area.

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

REMARKS.--Records good. Water diverted at Stewart Dam through Rainbow inlet canal (station 10046000) for storage in Bear Lake.

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

AVERAGE DISCHARGE.--55 years, 46.9 ft<sup>3</sup>/s (1.33 m<sup>3</sup>/s), 34,000 acre-ft/yr (41.9 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 3,050 ft<sup>3</sup>/s (86.4 m<sup>3</sup>/s) June 3, 1923; no flow July 15, 1956, July 13, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 28 ft<sup>3</sup>/s (0.79 m<sup>3</sup>/s) Sept. 1, gage height, 1.41 ft (0.430 m); no flow July 13.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.2	6.7	5.9	5.3	5.4	7.2	6.6	.20	1.5	.17	.05	25
2	7.2	6.6	5.9	5.4	5.5	7.1	6.5	.18	1.3	.16	.07	21
3	7.1	6.5	5.9	5.6	5.3	6.9	6.9	.15	1.3	.14	.02	10
4	7.1	6.4	5.9	5.9	5.4	7.1	7.3	.51	1.3	.10	.04	14
5	7.1	6.3	5.8	5.9	5.5	7.3	7.5	.87	1.0	.06	.07	4.6
6	7.3	6.4	5.9	5.8	5.5	7.3	7.4	1.4	.79	.07	.10	3.9
7	7.4	6.8	5.9	5.6	5.5	7.1	7.7	1.7	1.0	.08	.12	3.5
8	7.5	6.6	5.9	5.5	5.5	6.8	7.1	2.7	1.2	.10	.13	3.9
9	7.5	6.5	5.8	5.4	5.5	6.8	5.6	4.0	1.4	.12	.14	4.1
10	7.6	6.6	5.8	5.2	5.5	6.7	4.9	4.0	1.4	.14	.19	4.0
11	7.7	6.7	5.8	5.0	5.5	6.6	4.4	4.0	1.5	.16	.21	4.4
12	7.6	6.8	5.8	5.1	5.6	6.6	4.0	3.9	2.8	.09	.21	4.7
13	7.5	6.5	5.9	5.1	5.4	6.5	3.4	3.9	3.7	0	.16	4.5
14	7.4	6.2	5.7	5.2	5.4	6.4	3.0	3.8	2.5	.02	.13	4.4
15	7.3	6.2	5.6	5.3	5.4	6.4	2.6	3.7	1.8	.04	.11	4.2
16	7.4	6.3	5.6	5.6	5.6	6.3	2.3	3.8	1.5	.07	.13	4.1
17	7.4	6.4	5.5	5.6	5.7	6.2	2.3	3.7	1.3	.09	.36	4.0
18	7.4	6.4	5.6	5.7	5.9	6.1	2.0	3.9	1.0	.12	.75	3.8
19	7.2	6.4	5.6	5.7	5.9	6.1	1.4	3.8	.84	.16	1.1	3.7
20	7.0	6.3	5.2	5.6	6.2	6.3	1.4	3.8	.66	.13	1.3	3.5
21	6.9	6.3	5.1	5.6	6.4	6.2	1.3	3.8	.29	.10	1.4	2.1
22	6.9	6.2	5.0	5.4	6.4	6.6	1.3	3.8	.10	.04	1.6	1.6
23	7.0	6.1	5.0	5.3	6.7	7.0	1.1	3.6	.10	.07	1.8	1.5
24	7.0	6.1	4.9	5.3	6.9	7.3	.84	3.3	.10	.06	2.0	1.9
25	7.1	6.1	4.8	5.4	6.9	7.3	.63	3.0	.11	.07	2.4	2.8
26	7.1	6.2	4.8	5.5	7.0	7.2	.68	2.7	.17	.08	4.1	2.0
27	7.1	6.2	4.7	5.5	7.0	7.6	.66	2.4	.21	.12	4.9	1.5
28	7.0	6.3	4.8	5.5	7.1	7.4	.72	2.2	.20	.11	8.7	1.8
29	7.0	6.3	5.0	5.5	---	6.8	.72	2.1	.20	.09	14	4.6
30	6.9	6.1	5.3	5.3	---	6.2	.43	2.0	.19	.08	9.9	6.7
31	6.8	---	5.3	5.4	---	6.6	---	1.9	---	.06	12	---
TOTAL	223.7	191.5	169.7	169.4	165.6	209.8	102.88	84.81	31.46	2.95	68.19	167.8
MEAN	7.22	6.38	5.47	5.46	5.91	6.77	3.43	2.74	1.05	.095	2.20	5.59
MAX	7.7	6.8	5.9	5.9	7.1	7.6	7.7	4.0	3.7	.17	14	25
MIN	6.8	6.1	4.7	5.0	5.3	6.1	.43	.15	.10	0	.02	1.5
AC-FT	444	380	337	336	328	416	204	168	62	6.9	135	333
CAL YR 1976 TOTAL	3392.40											
MEAN	9.27											
MAX	99											
MIN	0											
AC-FT	6730											
WTH YR 1977 TOTAL	1587.79											
MEAN	4.35											
MAX	25											
MIN	0											
AC-FT	3150											



# BEAR RIVER BASIN

## 1005500 Bear Lake At Lifton, Near St. Charles, ID

LOCATION.--Lat 42°07'16"N, long 111°18'52"W, in NE1/4 sec.16, T.15 S., R.44 E., Bear Lake County, Hydrologic Unit 16010201, in Lifton pumping plant of Utah Power & Light Company 3.5 mi (5.6 km) east of St. Charles.

DRAINAGE AREA.--435 mi<sup>2</sup> (1,127 km<sup>2</sup>), approximately (does not include Mud Lake drainage).

PERIOD OF RECORD.--October 1903 to June 1906 (elevations only, published as "at Fish Haven"), January 1921 to current year. Monthly contents only January 1921 to September 1945, published in WSP 1314.

GAGE.--Water-stage recorder. Datum of gage is 5,900 ft (1,798.3 m) above mean sea level, unadjusted (Utah Power & Light Company datum).

REMARKS.--Outflow regulated by gates and pumps at the north end of Bear Lake and by gates in dike at north end of Mud Lake, a shallow interconnected lake. Principal inflow to Bear Lake is from Bear River through Rainbow inlet canal (station 10046000) and Dingle inlet canals into Mud Lake, from which the inflow can enter into Bear Lake either through the pumping plant or an opening in the dividing causeway. The inflow can be routed directly into the Outlet canal (station 10059500). Usable capacity of Bear Lake is 1,421,000 acre-ft (1.75 km<sup>3</sup>) between elevation 5,902.60 ft (1,798.930 m), lower limit of pumps, and 5,923.65 ft (1,805.529 m), upper limit of storage with existing facilities. Water is used for irrigation and power development. Figures given herein represent usable contents.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,423,000 acre-ft (1.75 km<sup>3</sup>) June 10, 1923, elevation, 5,923.68 ft (1,805.538 m); no usable contents Nov. 9-19, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,168,000 acre-ft (1.44 km<sup>3</sup>) Oct. 1, elevation 5,920.04 ft (1,804.428 m); minimum, 786,100 acre-ft (0.97 km<sup>3</sup>) Sept. 21, 22.

Capacity table (elevation, in feet, and usable contents, in acre-feet)

5914	754,000	5917	956,900	5920	1,165,000
5915	821,000	5918	1,026,000	5921	1,235,000
5916	888,600	5919	1,095,000	5922	1,305,000

CONTENTS, IN ACHE-FEET, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1168000	1130000	1094000	1059000	1031000	1042000	1058000	1049000	1024000	946000	850700	798900
2	1166000	1129000	1092000	1056000	1031000	1042000	1058000	1047000	1023000	942600	848700	798200
3	1163000	1129000	1091000	1056000	1031000	1043000	1058000	1047000	1022000	939800	846000	797500
4	1159000	1126000	1090000	1057000	1031000	1044000	1058000	1046000	1022000	937800	843900	797500
5	1158000	1127000	1088000	1056000	1031000	1045000	1058000	1045000	1021000	934300	841900	796800
6	1157000	1127000	1087000	1054000	1031000	1045000	1058000	1045000	1020000	931600	839900	796200
7	1157000	1125000	1086000	1052000	1031000	1046000	1058000	1045000	1020000	927500	837900	795500
8	1155000	1125000	1085000	1051000	1032000	1047000	1058000	1044000	1018000	924100	835200	794800
9	1155000	1123000	1084000	1049000	1032000	1047000	1058000	1042000	1014000	920000	832000	794200
10	1155000	1122000	1083000	1049000	1032000	1047000	1058000	1042000	1013000	915200	829100	793500
11	1154000	1120000	1082000	1048000	1032000	1047000	1058000	1041000	1011000	911000	825700	792800
12	1153000	1120000	1082000	1047000	1033000	1047000	1058000	1040000	1009000	907000	821700	792100
13	1152000	1118000	1081000	1045000	1033000	1047000	1058000	1040000	1004000	904300	817700	791500
14	1152000	1117000	1081000	1044000	1033000	1048000	1058000	1038000	998900	901600	814300	790800
15	1152000	1115000	1080000	1042000	1033000	1049000	1058000	1038000	996200	898200	810900	790100
16	1152000	1114000	1079000	1042000	1034000	1049000	1058000	1029000	993400	895000	807600	789500
17	1151000	1113000	1076000	1041000	1034000	1050000	1058000	1027000	990600	890700	804200	788800
18	1151000	1112000	1075000	1040000	1035000	1050000	1058000	1024000	987900	887200	800200	788100
19	1151000	1111000	1070000	1039000	1035000	1051000	1058000	1024000	985100	883200	804200	787400
20	1150000	1109000	1072000	1038000	1036000	1051000	1058000	1024000	983000	879100	803600	786800
21	1150000	1108000	1072000	1038000	1036000	1051000	1058000	1024000	980300	875700	803600	786100
22	1150000	1106000	1071000	1037000	1036000	1052000	1058000	1024000	976200	873000	803600	786100
23	1150000	1105000	1071000	1037000	1037000	1053000	1058000	1024000	970700	869600	802900	786800
24	1150000	1104000	1070000	1036000	1038000	1054000	1058000	1024000	967200	866900	802900	787400
25	1148000	1103000	1067000	1036000	1038000	1054000	1057000	1024000	963800	864900	802200	786100
26	1145000	1102000	1066000	1035000	1039000	1055000	1056000	1024000	960400	862900	802200	788800
27	1144000	1100000	1064000	1034000	1040000	1056000	1055000	1024000	957000	861500	802200	788800
28	1136000	1099000	1063000	1033000	1040000	1056000	1054000	1024000	955600	859500	801500	788100
29	1134000	1097000	1062000	1033000	---	1057000	1052000	1024000	952800	857500	800900	786800
30	1131000	1095000	1061000	1032000	---	1057000	1050000	1024000	949400	855400	800200	786100
31	1131000	---	1060000	1031000	---	1058000	---	1024000	---	853400	799500	---
MAX	1168000	1130000	1094000	1059000	1040000	1058000	1058000	1049000	1024000	946000	850700	798900
MIN	1131000	1095000	1060000	1031000	1031000	1042000	1056000	1024000	949400	853400	799500	786100
(+)	5919.51	5919.00	5918.49	5918.08	5918.21	5918.46	5918.35	5917.97	5916.89	5915.48	5914.68	5914.48
(-)	-38000	-36000	-35000	-29000	+9000	+18000	-8000	-26000	-74600	-96000	-53900	-13400
CAL YR 1976	.....*											
WTR YR 1977	.....*											

\* Elevation, in feet, at end of month.  
\* Change in contents, in acre-feet.

# BEAR RIVER BASIN

## 10059500 Bear Lake Outlet Canal Near Paris, ID

LOCATION.--Lat 42°13'00", long 111°20'35", in SW1/4 sec.8, T.14 S., R.94 E., Bear Lake County, Hydrologic Unit 16010201, on right bank 2,000 ft (610 m) downstream from headgates (at dike) and 3 mi (5 km) southeast of Paris.

### WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1922 to current year. Monthly discharge only January 1922 to September 1995, published in WSP 1314.

GAGE.--Water-stage recorder. Elevation of gage datum is 5,912.6 ft (1,802.16 m) above mean sea level (from topographic survey).

REMARKS.--Records good. Flow regulated by Bear Lake (station 10055500).

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

AVERAGE DISCHARGE.--55 years, 377 ft<sup>3</sup>/s (10.7 m<sup>3</sup>/s), 273,100 acre-ft/yr (337 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 1,870 ft<sup>3</sup>/s (53.0 m<sup>3</sup>/s) Aug. 8, 1924; minimum daily, 1 ft<sup>3</sup>/s (0.28 m<sup>3</sup>/s) for many days in 1937, 1954, 1959, 1961, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,560 ft<sup>3</sup>/s (44.2 m<sup>3</sup>/s) June 18, gage height, 18.95 ft (5.776 m); minimum daily, 4.7 ft<sup>3</sup>/s (0.06 m<sup>3</sup>/s) Apr. 9-24.

#### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	758	693	696	646	41	5.0	4.8	1090	20	1480	890	28
2	750	700	688	632	5.0	5.0	4.8	1060	20	1480	838	27
3	742	697	702	667	5.0	5.0	4.8	1150	20	1460	863	25
4	654	693	693	659	5.0	5.0	4.8	1290	20	1440	943	25
5	433	691	701	670	5.0	5.0	4.8	1370	20	1460	882	25
6	11	688	702	728	5.0	5.0	4.8	1420	83	1460	924	20
7	6.8	690	681	650	5.0	5.0	4.8	1420	390	1440	902	18
8	6.8	692	683	670	5.0	5.0	4.8	1420	785	1500	881	18
9	6.8	697	688	707	5.0	5.0	4.7	1400	1070	1460	932	18
10	6.8	697	688	667	5.0	5.0	4.7	1380	1100	1460	1020	18
11	6.8	695	685	675	5.0	5.0	4.7	1440	1100	1460	1090	18
12	6.8	706	682	672	5.0	5.0	4.7	1380	1260	1470	1200	15
13	6.8	694	677	673	5.0	5.0	4.7	1390	1430	1450	1250	16
14	6.8	688	675	676	5.0	5.0	4.7	1340	1460	1450	1270	16
15	6.8	694	670	681	5.0	5.0	4.7	1160	1460	1460	1280	16
16	6.8	691	666	677	5.0	5.0	4.7	1040	1540	1480	1260	16
17	6.8	685	661	682	5.0	5.0	4.7	735	1530	1470	1260	16
18	6.8	680	649	687	5.0	5.0	4.7	438	1540	1460	962	16
19	6.8	690	677	670	5.0	5.0	4.7	362	1530	1480	270	16
20	6.8	697	685	677	5.0	5.0	4.7	171	1510	1470	256	16
21	6.8	675	668	678	5.0	5.0	4.7	27	1430	1490	274	16
22	6.8	654	685	675	5.0	5.0	4.7	21	1400	1480	292	16
23	199	661	680	641	5.0	5.0	4.7	18	1400	1460	230	16
24	721	694	667	663	5.0	5.0	4.7	18	1390	1480	172	16
25	901	686	718	649	5.0	5.0	107	20	1420	1410	62	16
26	1010	674	703	654	5.0	5.0	401	20	1410	1210	20	16
27	1020	702	669	656	5.0	5.0	513	20	1410	1090	20	8.0
28	1020	716	673	659	5.0	5.0	724	20	1420	1080	20	8.0
29	868	670	675	658	---	5.0	934	20	1380	972	20	8.0
30	685	702	640	646	---	5.0	1050	20	1420	904	30	8.0
31	691	---	646	385	---	5.0	---	20	---	893	28	---
TOTAL	10571.8	20692	21074	20430	176.0	155.0	3842.6	22680	31968	42759	20341	511.0
MEAN	341	690	680	659	6.29	5.00	128	732	1066	1379	656	17.0
MAX	1020	716	718	728	41	5.0	1050	1440	1540	1500	1280	28
MIN	6.8	654	640	385	5.0	5.0	4.7	18	20	893	20	8.0
AC-FT	20970	41040	41800	40520	349	307	7620	44990	63410	84810	40350	1010
CAL YR 1976	TOTAL	193793.0	MEAN 529	MAX 1270	MIN 5.4	AC-FT 3844400						
WTR YR 1977	TOTAL	195200.4	MEAN 535	MAX 1540	MIN 4.7	AC-FT 387200						

# BEAR RIVER BASIN

## 10092700 Bear River At Idaho-Utah State Line

LOCATION.--Lat 42°00'47", long 111°55'14", in NW1/4NE1/4 sec.29, T.16 S., R.39 E., Franklin County, Idaho, Hydrologic Unit 16010202, on left bank 1,050 ft (320 m) downstream from inlet canal to Cub River pumps, 1.1 mi (1.8 km) downstream from Weston Creek, 1.8 mi (2.9 km) upstream from State line, and 3.3 mi (5.6 km) southeast of Weston.

DRAINAGE AREA.--4,881 mi<sup>2</sup> (12,642 km<sup>2</sup>).

PERIOD OF RECORD.--October 1970 to current year.

REVISED RECORDS.--WDR UT-1974: Drainage area.

GAGE.--Water-stage recorder. Altitude of gage is 4,420 ft (1,347 m) from topographic map.

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

AVERAGE DISCHARGE.--7 years, 1,349 ft<sup>3</sup>/s (38.2 m<sup>3</sup>/s), 977,400 acre-ft/yr (1.21 km<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,190 ft<sup>3</sup>/s (119 m<sup>3</sup>/s) June 12, 1971, gage height, 8.25 ft (2.515 m); minimum daily, 73 ft<sup>3</sup>/s (2.07 m<sup>3</sup>/s) Nov. 20, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,680 ft<sup>3</sup>/s (75.9 m<sup>3</sup>/s) Oct. 9, gage height, 5.74 ft (1.750 m); minimum daily, 100 ft<sup>3</sup>/s (2.83 m<sup>3</sup>/s) Mar. 23, 24, 25, Apr. 22, 23, 24, 25, Sept. 10, 11, 12.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1300	474	800	1000	1100	500	700	708	200	878	473	374
2	772	418	1100	1300	1100	800	600	494	200	728	641	326
3	997	803	1000	1400	700	300	600	1090	500	879	568	343
4	1170	1280	1300	900	600	300	300	955	400	753	493	260
5	1040	1100	1400	1300	500	600	824	1090	300	887	666	200
6	1360	1010	1100	1000	600	400	744	1110	400	870	619	150
7	1120	1080	1400	1200	500	600	523	1120	302	920	521	150
8	1220	1170	1300	1200	1000	300	690	893	434	737	752	240
9	2560	1170	1000	1100	400	700	657	1150	663	978	524	250
10	2650	1470	1100	900	700	600	516	1070	796	833	573	100
11	1700	1150	1200	1000	400	600	768	1030	846	726	685	100
12	230	1070	1100	1100	800	300	625	783	1160	910	651	100
13	510	1150	1500	1200	300	600	324	455	604	782	922	256
14	1150	1410	1100	1300	600	600	428	647	955	881	1020	328
15	1170	1420	1000	1500	500	1200	597	843	1020	950	826	476
16	1730	918	1100	1400	500	1100	344	302	474	1250	1110	1040
17	1890	1830	900	1100	700	800	543	503	1090	1180	936	1660
18	1490	1020	1000	1300	900	600	385	1070	854	867	829	1590
19	670	1040	1100	1200	800	700	406	645	954	848	469	1020
20	704	1420	1300	1500	700	1100	332	913	811	809	334	600
21	265	1070	1100	1200	400	600	200	515	848	831	432	370
22	205	1490	1100	1300	600	300	100	788	913	1180	422	251
23	238	1690	900	1300	000	100	100	322	898	811	290	250
24	472	1060	1200	1300	700	100	100	200	911	740	304	250
25	1110	1010	1200	1200	600	100	100	329	862	610	200	250
26	250	1160	1000	1100	700	700	300	521	898	675	250	250
27	200	1060	900	1100	600	500	562	470	742	602	595	250
28	200	1100	1200	1300	700	400	502	363	618	456	402	250
29	300	900	1000	1300	---	800	879	337	1000	854	460	250
30	400	850	1200	1000	---	300	699	349	1230	394	200	200
31	706	---	1300	1100	---	500	---	472	---	739	302	---
TOTAL	29779	33733	34900	37100	18200	17100	14308	21557	22381	25558	17589	12328
MEAN	961	1124	1126	1197	650	552	480	695	746	824	567	411
MAX	2650	1830	1500	1500	1100	1200	879	1150	1230	1250	1110	1660
MIN	200	418	800	900	300	100	100	200	200	394	200	100
AC-FT	59070	66916	69220	73590	36100	33920	28540	42760	44390	50690	34690	24450
CAL YR 1970	TOTAL	453935	MEAN	1240	MAX	3170	MIN	100	AC-FT	900400		
WTR YR 1977	TOTAL	284613	MEAN	780	MAX	2650	MIN	100	AC-FT	564500		

# BEAR RIVER BASIN

## 10093000 Cub River Near Preston, ID

LOCATION.--Lat 42°08'28", long 111°41'19", in SW1/4 sec.5, T.15 S., R.41 E., Franklin County, Hydrologic Unit 16010202, 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.--31.6 mi<sup>2</sup> (81.8 km<sup>2</sup>).

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

REVISED RECORDS.--WDR UT-1974: Drainage area.

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

REMARKS.--Records good except those for winter periods, which are fair.

AVERAGE DISCHARGE.--34 years, 83.5 ft<sup>3</sup>/s (2.36 m<sup>3</sup>/s), 60,500 acre-ft/yr (74.6 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 803 ft<sup>3</sup>/s (22.7 m<sup>3</sup>/s) June 11, 1971; maximum gage height, 3.83 ft (1.167 m) June 2, 1943; no flow for part of Jan. 29, 1965, result of snowslide.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 144 ft<sup>3</sup>/s (4.08 m<sup>3</sup>/s) Apr. 26, gage height, 1.32 ft (0.402 m); minimum, 14 ft<sup>3</sup>/s (0.40 m<sup>3</sup>/s) Feb. 10.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	24	19	19	15	15	16	82	113	37	23	20
2	30	24	19	19	15	15	15	72	126	37	23	20
3	32	24	19	20	15	15	15	68	130	36	23	20
4	29	24	19	20	15	15	15	65	128	35	23	20
5	29	24	19	19	15	15	18	58	124	34	22	19
6	28	24	19	20	15	15	20	53	120	33	22	19
7	28	23	19	20	15	15	21	49	114	32	22	19
8	28	23	19	20	15	15	25	55	105	31	22	18
9	28	23	19	20	15	15	26	70	99	31	22	18
10	28	23	19	20	15	15	26	73	92	30	22	18
11	28	23	19	20	14	15	25	63	83	30	22	18
12	27	23	18	19	14	15	26	57	77	29	22	18
13	28	23	18	19	14	15	27	59	71	29	21	18
14	28	23	18	19	14	15	28	65	67	28	22	18
15	28	22	18	19	14	15	28	65	62	28	22	18
16	27	22	18	19	14	15	26	67	59	27	22	18
17	27	22	18	19	14	15	30	65	56	27	21	19
18	27	23	18	18	14	15	31	62	54	27	24	17
19	27	22	18	18	14	15	31	63	52	26	22	17
20	26	21	18	18	14	15	29	65	51	27	22	17
21	26	21	18	17	14	15	32	69	49	26	21	17
22	26	21	18	16	14	15	44	87	47	26	21	18
23	26	21	19	16	14	15	52	92	45	25	21	17
24	26	21	19	16	15	16	70	104	43	26	21	17
25	26	21	19	16	15	15	96	113	42	25	21	17
26	25	21	19	16	15	15	119	113	41	24	24	17
27	25	20	19	16	15	15	118	113	40	24	22	17
28	25	20	19	16	15	15	108	117	39	24	22	17
29	25	20	19	16	---	15	96	112	39	23	21	17
30	25	19	19	15	---	15	91	104	38	23	21	18
31	24	---	19	15	---	15	---	101	---	23	20	---
TOTAL	841	665	578	560	407	466	1304	2401	2206	883	679	541
MEAN	27.1	22.2	18.6	18.1	14.5	15.0	43.5	77.5	73.5	28.5	21.9	18.0
MAX	32	24	19	20	15	16	119	117	130	37	24	20
MIN	24	19	18	15	14	15	15	49	38	23	20	17
AC-FI	1670	1320	1150	1110	807	924	2590	4760	4380	1750	1350	1070

CAL. YR 1976 TOTAL 31181 MEAN 85.2 MAX 501 MIN 18 AC-FI 61850  
 WTR YR 1977 TOTAL 11531 MEAN 31.6 MAX 130 MIN 14 AC-FI 22870

# BEAR RIVER BASIN

## 10109000 Logan River Above State Dam, Near Logan, UT

LOCATION.--Lat 41°46'40", long 111°47'00", in NE1/4 sec.36, T.12 N., R.1 E., Cache County, Hydrologic Unit 16010203, on right bank 0.5 mi (0.8 km) upstream from State dam, and 2.5 mi (4.0 km) east of Logan.

DRAINAGE AREA.--214 mi<sup>2</sup> (556 km<sup>2</sup>).

PERIOD OF RECORD.--June 1896 to current year. Published as Logan River near Logan prior to 1913. Records since May 1913 equivalent to earlier records if records for Utah Power & Light Co.'s tailrace near Logan (station 10108000) are added. Monthly discharge only for some periods, published in WSP 1314.

REVISED RECORDS.--WDR UT-1974: Drainage area.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 4,680 ft (1,426 m) from topographic map. Prior to May 7, 1913, nonrecording gage at various sites within 0.5 mi (0.8 km) downstream at different datums. May 7, 1913 to Sept. 3, 1938, water-stage recorder at present site at different datums.

REMARKS.--Records good. Flow affected by regulation and diversions above station for power, irrigation, and municipal culinary supply. Utah Power and Light Co. stopped diverting water from river November 1970 at which time the tailrace station (station 10108000) was discontinued. During 1963, site for gaging station for Logan, Hyde Park and Smithfield Canal (station 10108400) was relocated. Records for combined flow since that time are equivalent to previous records. For record of combined flow, see following page.

AVERAGE DISCHARGE.--River only: 64 years (water years 1914-77), 122 ft<sup>3</sup>/s (3.46 m<sup>3</sup>/s), 88,390 acre-ft/yr (109 hm<sup>3</sup>/yr).  
Combined river and canal: 81 years, 273 ft<sup>3</sup>/s (7.73 m<sup>3</sup>/s), 197,800 acre-ft/yr (244 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--River only: Maximum discharge, 2,000 ft<sup>3</sup>/s (56.6 m<sup>3</sup>/s) Mar. 21, 1916, gage height, 5.6 ft (1.71 m), datum then in use, from rating curve extended above 1,000 ft<sup>3</sup>/s (28.3 m<sup>3</sup>/s); minimum daily, 6 ft<sup>3</sup>/s (0.17 m<sup>3</sup>/s) Nov. 7, 1940.  
Combined river and canal: Maximum discharge observed, 2,480 ft<sup>3</sup>/s (70.2 m<sup>3</sup>/s) May 24, 1907; minimum daily, 30 ft<sup>3</sup>/s (1.42 m<sup>3</sup>/s) Jan. 21, 1935.

EXTREMES FOR CURRENT YEAR.--River only: Maximum discharge, 288 ft<sup>3</sup>/s (8.16 m<sup>3</sup>/s) June 8, gage height, 3.13 ft (0.954 m); minimum, 30 ft<sup>3</sup>/s (0.85 m<sup>3</sup>/s) June 19.  
Combined river and canal: Maximum discharge, 344 ft<sup>3</sup>/s (9.74 m<sup>3</sup>/s) June 8; minimum daily, 80 ft<sup>3</sup>/s (2.27 m<sup>3</sup>/s) Mar. 8, 9, Sept. 13, 14, 19, 20, 21, 29.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	141	139	116	107	102	96	94	127	149	101	76	67
2	143	137	114	109	101	96	91	120	158	101	75	66
3	152	139	116	111	101	96	90	114	196	99	75	66
4	158	135	116	111	101	93	93	114	191	97	75	66
5	154	133	118	107	101	93	96	111	174	94	75	66
6	152	131	116	101	99	95	99	123	172	91	73	65
7	152	131	116	105	99	104	104	127	174	90	73	65
8	156	131	118	112	97	78	105	129	156	90	72	64
9	152	133	120	99	97	78	118	121	152	88	72	64
10	152	131	120	105	97	85	118	120	145	88	72	65
11	152	131	118	111	96	88	101	120	135	87	71	65
12	152	127	118	109	96	91	120	120	127	85	70	65
13	152	125	118	109	96	97	120	116	129	85	70	63
14	152	125	118	109	96	96	120	118	131	84	70	63
15	152	127	116	107	96	93	112	120	120	83	70	65
16	147	127	114	107	96	99	102	123	118	81	70	65
17	147	127	114	107	97	94	112	123	120	81	70	65
18	147	125	112	107	96	96	116	123	118	81	102	65
19	145	127	111	107	94	96	104	127	111	80	84	63
20	145	125	105	105	94	96	96	129	120	83	75	63
21	145	121	104	105	94	94	96	129	116	80	71	63
22	145	121	105	105	97	94	101	139	114	81	72	65
23	145	121	107	105	96	97	102	141	109	80	71	67
24	143	121	112	104	97	101	118	143	107	83	71	65
25	143	118	107	97	91	97	118	152	104	83	72	65
26	143	118	107	99	97	96	114	160	102	81	78	64
27	143	118	111	101	90	96	116	160	90	83	71	65
28	141	109	107	101	96	97	129	160	88	81	69	65
29	141	109	105	101	---	93	127	152	96	80	69	64
30	141	116	107	101	---	93	127	149	94	78	69	66
31	141	---	109	101	---	94	---	145	---	78	69	---
TOTAL	4574	3778	3495	3265	2710	2908	3259	4055	3916	2657	2272	1946
MEAN	148	126	113	105	96.8	93.8	109	131	131	85.7	73.3	64.9
MAX	158	139	120	112	102	104	129	160	196	101	102	87
MIN	141	109	104	97	90	78	90	111	88	78	69	63
AC-FT	9070	7490	6930	6480	5380	5770	6460	8040	7770	5270	4510	3860

CAL YR 1976 TOTAL 85218 MEAN 233 MAX 870 MIN 104 AC-FT 169000  
WTR YR 1977 TOTAL 38835 MEAN 106 MAX 146 MIN 63 AC-FT 77030

# BEAR RIVER BASIN

## 10109001 Logan River Above State Dam, Near Logan, UT--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 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	172	148	118	108	103	98	94	165	182	125	98	85
2	174	146	116	110	102	98	91	159	191	125	97	84
3	177	148	118	112	102	98	90	153	211	123	98	84
4	171	143	118	112	102	95	93	153	213	121	97	83
5	167	141	119	108	102	95	96	149	209	118	98	83
6	165	139	117	102	100	97	99	150	203	114	96	82
7	162	139	117	106	100	106	104	145	213	113	96	82
8	164	139	119	114	98	80	105	147	204	112	95	82
9	162	141	121	101	98	80	118	151	202	109	95	82
10	162	139	121	107	98	86	118	154	195	109	95	83
11	162	139	119	114	97	86	101	152	184	108	94	83
12	162	135	119	113	97	92	120	152	176	107	93	83
13	162	132	119	114	97	94	120	147	171	106	93	80
14	162	132	119	114	97	97	120	150	166	105	93	80
15	162	134	117	112	97	94	120	152	153	106	93	82
16	157	134	115	110	97	100	120	155	151	106	93	82
17	157	134	115	109	98	95	130	155	152	106	92	82
18	157	132	113	108	97	97	138	155	150	106	124	82
19	155	133	112	108	95	97	132	159	142	105	105	80
20	155	131	106	106	95	97	124	161	151	108	95	80
21	155	127	105	106	95	95	133	161	147	105	91	80
22	154	127	106	106	98	95	144	171	145	106	91	83
23	154	127	109	106	97	95	149	173	140	105	90	84
24	153	127	113	105	98	102	172	175	136	108	89	82
25	152	124	108	98	93	98	172	184	132	108	91	82
26	152	124	108	100	99	96	168	193	129	105	97	81
27	152	124	112	102	92	96	172	193	116	106	89	82
28	150	115	108	102	98	97	178	193	114	100	87	82
29	150	115	106	102	---	93	167	185	121	100	87	80
30	150	121	108	102	---	93	166	182	118	99	87	83
31	150	---	110	102	---	94	---	178	---	99	87	---
TOTAL	4939	3990	3531	3319	2742	2936	3854	5052	4917	3373	2926	2463
MEAN	159	133	114	107	97.9	94.7	128	163	164	109	94.4	82.1
MAX	177	148	121	114	103	106	178	193	213	125	124	85
MIN	150	115	105	98	92	80	90	145	114	99	87	80
AC-FT	5800	7910	7000	6580	5440	5820	7640	10020	9750	6690	5800	4890
CAL YR 1976	TOTAL	94391	MEAN 258	MAX 927	MIN 105	AC-FT 187200						
WTR YR 1977	TOTAL	44042	MEAN 121	MAX 213	MIN 80	AC-FT 87360						

# BEAR RIVER BASIN

## 10117000 Hammond (East Side) Canal Near Collinston, Ut

LOCATION.--Lat 41°49'51", long 112°03'24", in SE1/4 sec.27, T.13 N., R.2 W., Box Elder County, Hydrologic Unit 16010204, on left 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.

REMARKS.--Records good. Canal diverts from east side of Bear River in NW1/4SW1/4 sec.26, T.13 N., R.2 W. at dam for irrigation of about 38,000 acres (235 km<sup>2</sup>) below station in eastern Box Elder County.

COOPERATION.--Gage-height record and 5 discharge measurements furnished by Utah Power & Light Co.

AVERAGE DISCHARGE.--65 years, 51.2 ft<sup>3</sup>/s (1.45 m<sup>3</sup>/s), 37,090 acre-ft/yr (45.7 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 184 ft<sup>3</sup>/s (5.21 m<sup>3</sup>/s) June 29, 1963, May 2, 1977; no flow at times in each year.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	20					0	176	75	169	151	58
2	69	0					0	184	81	171	151	66
3	59	0					0	176	86	171	155	68
4	54	0					0	161	103	171	151	70
5	55	0					0	165	116	161	152	70
6	55	0					0	168	149	162	155	70
7	50	0					0	171	162	162	157	69
8	47	0					0	171	159	164	157	69
9	46	0					0	174	158	165	158	69
10	48	0					0	176	135	164	158	69
11	48	0					0	173	134	163	158	69
12	36	0					4.32	172	139	160	160	69
13	23	0					2.4	172	140	160	159	69
14	26	0					2.5	174	148	164	160	70
15	46	0					2.5	166	151	162	160	73
16	45	0					2.5	148	150	156	160	70
17	44	0					2.5	122	150	158	159	67
18	42	0					2.6	104	154	155	154	64
19	36	0					2.6	81	163	156	80	65
20	48	0					2.7	71	166	154	80	67
21	56	0					2.8	62	166	154	80	69
22	48	0					2.9	58	166	152	70	64
23	48	0					3.1	56	169	148	70	58
24	40	0					3.3	58	165	135	70	58
25	37	0					3.6	58	166	130	60	57
26	40	0					3.6	58	170	141	60	56
27	35	0					3.6	58	168	154	60	56
28	35	0					53	58	168	150	60	56
29	35	0				---	96	57	168	150	60	54
30	35	0				---	158	56	169	150	60	57
31	35	---				---	---	58	---	150	60	---
TOTAL	1392	20	0	0	0	0	350.52	3742	4398	4862	3685	1946
MEAN	44.9	.67	0	0	0	0	11.7	121	147	157	119	64.9
MAX	71	20	0	0	0	0	158	184	170	171	160	73
MIN	23	0	0	0	0	0	0	56	75	130	60	54
AC-FT	2760	40	0	0	0	0	695	7420	8720	9640	7310	3860
CAL YR 1976	TOTAL	19052.79	MEAN 52.1	MAX 168	MIN 0	AC-FT 37790						
WTR YR 1977	TOTAL	20395.52	MEAN 55.9	MAX 184	MIN 0	AC-FT 40450						

# BEAR RIVER BASIN

## 10117500 West Side Canal Near Collinston, UT

LOCATION.--Lat 41°49'55", long 112°03'36", in SW1/4 sec.27, T.13 N., R.2 W., Box Elder County, Hydrologic Unit 16010204, on right 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.

REMARKS.--Records good. Canal diverts from west side of Bear River in NE1/4SE1/4 sec.27, T.13 N., R.2 W., at dam for irrigation of about 58,000 acres (235 km<sup>2</sup>) below station in eastern Box Elder County.

COOPERATION.--Gage-height record and 8 discharge measurements furnished by Utah Power & Light Co.

AVERAGE DISCHARGE.--65 years, 244 ft<sup>3</sup>/s (6.91 m<sup>3</sup>/s), 176,800 acre-ft/yr (218 hm<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 765 ft<sup>3</sup>/s (21.7 m<sup>3</sup>/s) July 19-24, 26-28, 1975, June 22, July 1, 1977; no flow for periods in every year except 1914.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	362	62	68	48	50		0	710	339	765	652	400
2	324	71	68	48	50		0	715	442	760	650	432
3	288	125	66	48	50		0	690	514	742	670	478
4	272	115	64	48	50		0	640	570	745	710	482
5	270	112	64	50	50		0	660	592	748	715	482
6	251	97	64	50	50		0	670	655	748	702	482
7	215	91	61	52	50		0	682	718	752	695	512
8	214	87	60	50	50		0	705	732	752	695	528
9	209	83	57	50	50		0	730	740	745	692	516
10	215	83	56	48	47		0	735	728	735	695	482
11	210	83	55	50	50		0	738	730	738	718	462
12	194	82	55	50	50		10	740	742	735	722	462
13	149	82	55	50	40		200	738	748	740	715	462
14	153	81	54	50	40		308	735	742	748	720	462
15	191	77	54	50	35		122	732	725	730	722	460
16	188	78	54	50	30		200	588	725	718	720	454
17	185	77	54	50	30		218	492	730	702	720	458
18	184	69	54	50	23		208	404	728	685	475	464
19	101	52	54	50	25		302	304	730	672	277	464
20	212	51	54	50	25		322	284	740	655	199	468
21	204	51	54	50	24		324	281	755	612	199	450
22	173	51	53	50	24		326	280	765	634	244	424
23	166	51	54	50	24		326	280	762	634	350	412
24	150	57	55	50	24		324	335	762	594	396	402
25	139	70	54	50	16		324	360	760	558	402	390
26	137	76	54	50	8.1		346	338	760	566	371	382
27	110	74	52	50	7.6		424	253	762	560	364	368
28	106	69	51	50	4.4		620	212	760	566	380	368
29	103	67	50	50	---		660	200	762	612	378	365
30	103	67	49	50	---		690	197	765	624	376	353
31	90	---	48	50	---		---	270	---	626	380	---
TOTAL	5948	2291	1745	1542	977.1	0	6254	15656	20983	21249	16702	13332
MEAN	192	76.4	56.3	49.7	34.9	0	208	505	699	685	539	444
MAX	362	125	68	52	50	0	690	740	765	765	722	528
MIN	49	51	48	48	4.4	0	0	197	339	556	199	353
AC-FT	11800	4540	3400	3060	1940	0	12400	31060	41620	42150	33130	26440
CAL YR 1976	TOTAL	100405.26	MEAN	274	MAX	743	MIN	0	AC-FT	199200		
WTR YR 1977	TOTAL	106681.10	MEAN	292	MAX	765	MIN	0	AC-FT	211660		



# BEAR RIVER BASIN

## 10118000 Bear River Near Collinston, UT

LOCATION.--Lat 41°50'03", long 112°03'16", in NW1/4SE1/4 sec.27, T.13 N., R.2 W., Box Elder County, Hydrologic Unit 16010204, 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.--6,267 mi<sup>2</sup> (16,232 km<sup>2</sup>).

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

REVISED RECORDS.--WDR UT-1974: Drainage area.

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.

REMARKS.--Records good. 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 11,600 ft<sup>3</sup>/s (329 m<sup>3</sup>/s) June 7-10, 1909, gage height, 7.70 ft (2.34 m), site and datum then in use; minimum daily, 10 ft<sup>3</sup>/s (0.28 m<sup>3</sup>/s) Aug. 4-12, 18-23, 1903; practically no flow at 2400 Aug. 5, 1920.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,850 ft<sup>3</sup>/s (109 m<sup>3</sup>/s) Oct. 7, gage height, 4.68 ft (1.426 m); minimum observed, 6.4 ft<sup>3</sup>/s (0.18 m<sup>3</sup>/s) June 16.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1360	447	1240	1310	1630	705	1410	14	14	16	14	393
2	1500	1010	1770	1600	1380	957	1030	14	15	16	14	425
3	891	1020	1950	1500	1340	668	1360	14	133	16	14	15
4	1650	1180	1510	1340	1390	1050	884	14	17	16	14	160
5	1010	1140	1590	2000	1420	911	1380	14	20	16	14	143
6	1440	1550	1430	1540	909	817	871	14	23	16	14	15
7	3670	1070	2330	1490	873	756	1290	14	25	15	14	15
8	3730	2360	1840	1660	974	766	1190	14	28	15	14	15
9	2220	1210	1430	1120	680	1470	1060	15	30	15	14	15
10	1890	1610	1870	1160	1050	946	1050	14	31	15	14	15
11	1960	1920	1750	1400	782	909	978	14	31	15	14	15
12	2540	1890	1790	1350	987	810	1120	14	31	15	14	15
13	2150	1600	1670	1300	635	1480	1350	14	30	15	14	16
14	1280	1370	1280	1210	1190	624	510	14	28	15	14	16
15	1370	1600	1750	1490	787	1370	901	14	24	15	13	464
16	1540	1480	2060	1520	530	1220	1140	14	11	15	13	1550
17	1640	1910	1100	1560	1080	844	16	831	19	15	13	1790
18	1900	1900	1180	1530	1260	2120	809	1090	19	15	14	1550
19	2050	1770	1340	2000	1150	1560	134	197	19	15	12	535
20	1680	1560	1030	1530	869	583	269	1300	19	15	988	15
21	1270	1450	1300	1800	1530	1850	17	1280	18	15	544	15
22	823	2010	1250	2010	544	746	15	1100	18	15	242	15
23	634	1350	1120	1860	908	1080	13	622	17	15	892	15
24	697	1690	1260	1450	775	1430	13	170	17	16	23	711
25	296	1650	1850	1920	758	1660	14	14	17	15	14	772
26	16	1790	1250	1490	1420	1510	14	665	17	15	392	860
27	81	1700	1930	1240	1100	1690	14	1180	16	14	887	1110
28	448	727	1450	1920	1320	1250	14	1400	16	14	450	1520
29	21	1280	1710	1460	---	1260	14	1320	16	14	359	1130
30	855	1520	1340	1540	---	748	14	243	16	14	471	1040
31	249	---	1700	964	---	1190	---	368	---	14	53	---
TOTAL	42861	44764	48070	47264	29271	34980	18894	11985	735	467	5576	14365
MEAN	1383	1492	1551	1525	1045	1128	630	387	24.5	15.1	180	479
MAX	3730	2360	2330	2010	1630	2120	1410	1400	133	16	988	1790
MIN	16	447	1030	964	530	583	13	14	11	14	12	15
AC-FT	85010	88790	95350	93750	50660	69380	37480	23770	1460	926	11060	28490
CAL YR 1976	TOTAL	643586	MEAN	1758	MAX	4630	MEAN	16	AC-FT	1277000		
WTR YR 1977	TOTAL	299232	MEAN	820	MAX	3730	MIN	11	AC-FT	593500		

# BEAR RIVER BASIN

## 10126000 Bear River Near Corinne, UT

LOCATION.--Lat 41°34'35", long 112°06'00", in SE1/4NE1/4 sec.30, T.10 N., R.2 W., Box Elder County, Hydrologic Unit 16010204, 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.--7,029 mi<sup>2</sup> (18,205 km<sup>2</sup>).

### WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR UT-1974: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,204.6 ft (1,281.56 km) unadjusted. Auxiliary nonrecording gage 7,800 ft (2,380 m) downstream July 27, 1950 to Nov. 21, 1955.

REMARKS.--Records good except those for winter months, which are fair. Natural flow of stream affected by upstream reservoirs, power developments, diversions for irrigation, and return flow from irrigated areas.

AVERAGE DISCHARGE.--22 years, 1,776 ft<sup>3</sup>/s (50.6 m<sup>3</sup>/s), 1,287,000 acre-ft/yr (1.59 km<sup>3</sup>/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,370 ft<sup>3</sup>/s (209 m<sup>3</sup>/s) June 17, 1971, gage height, 15.12 ft (4.609 m); minimum daily, 72 ft<sup>3</sup>/s (2.04 m<sup>3</sup>/s) Aug. 26, 21, 26, Sept. 8, 1964, July 5, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,680 ft<sup>3</sup>/s (104 m<sup>3</sup>/s) Oct. 9, gage height, 10.48 ft (3.194 m); minimum, 78 ft<sup>3</sup>/s (2.21 m<sup>3</sup>/s) Aug. 5.

### DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1110	585	1600	1800	1150	1380	1270	96	689	81	111	444
2	1460	632	1350	1400	1700	1020	1580	92	325	87	91	413
3	1550	1000	1900	1700	1450	1190	1280	92	195	90	88	482
4	1130	1160	2000	1600	1450	833	1380	93	215	103	83	412
5	1660	1290	1600	1500	1500	1280	1100	92	182	115	81	255
6	1280	1320	1700	2100	1500	1080	1370	94	136	109	88	266
7	2060	1620	1800	1700	1000	939	1060	102	113	103	93	222
8	3380	1510	2400	1600	970	973	1250	102	119	100	100	153
9	3490	2140	2000	1800	1050	1170	1320	104	124	100	104	144
10	2370	1460	1600	1200	780	1370	1120	113	140	100	110	147
11	2040	1770	2000	1250	1150	1160	1150	111	133	97	117	152
12	2220	2270	1900	1500	1110	1070	1100	99	125	96	121	157
13	2540	2060	1900	1600	879	1010	1160	87	143	98	126	148
14	2130	1640	1800	1350	1080	1530	1260	87	155	92	116	146
15	1500	1950	1500	1300	1250	1090	783	104	157	93	116	150
16	1480	1590	1900	1550	1130	1350	917	144	126	94	105	380
17	1660	1620	2200	1600	823	1470	1110	179	116	88	108	1350
18	1850	2080	1200	1650	1110	1270	400	698	101	103	215	1700
19	2130	2220	1300	1650	1390	2000	627	1270	93	104	444	1570
20	2260	2070	1500	2100	1300	1690	395	694	94	99	288	892
21	1960	1720	1100	1600	1300	956	252	1300	92	100	774	309
22	1550	1700	1400	1900	1660	1770	197	1470	95	98	762	241
23	1090	2080	1300	2100	1080	1230	125	1350	94	88	337	243
24	836	1640	1200	1950	1020	1210	108	821	90	115	754	261
25	833	1860	1400	1550	919	1370	99	692	90	148	516	587
26	651	1940	2000	2000	1090	1780	92	367	90	147	260	909
27	257	2040	1400	1600	1410	1640	87	691	86	141	428	950
28	179	1800	2000	1350	1280	1780	104	1340	83	136	821	1220
29	432	1000	1600	2000	---	1530	163	1560	83	116	694	1550
30	372	1400	1800	1550	---	1410	118	1440	84	105	543	1290
31	724	---	1500	1650	---	926	---	661	---	106	607	---
TOTAL	48184	49167	51850	51200	33531	40477	22977	16145	4368	3252	9201	17183
MEAN	1554	1639	1673	1652	1198	1306	766	521	146	105	297	573
MAX	3490	2270	2400	2100	1700	2000	1580	1560	689	148	821	1700
MIN	179	585	1100	1200	780	833	87	87	83	81	81	144
AC-FT	95570	97520	102800	101600	66510	80290	45570	32020	8660	6450	18250	34080
CAL YR 1976	TOTAL	734352	MEAN	2066	MAX	5320	MIN	116	AC-FT	1457000		
WTR YR 1977	TOTAL	347535	MEAN	952	MAX	3490	MIN	81	AC-FT	689300		