

STATE OF IDAHO)
(ss
COUNTY OF ADA)

I, R. W. FARIS, do hereby certify that I am the duly appointed, acting,
and qualified Commissioner of Reclamation of the State of Idaho, and
that as such Commissioner I am the legal custodian of the records of
said Department of Reclamation of the State of Idaho; and

FURTHER CERTIFY, That the foregoing is a full, true, and correct
copy of:

REPORT ON WATER DISTRIBUTION AND HYDROMETRIC
WORK, DISTRICT No. 36, 1929, by G. CLYDE
BALDWIN, DEPUTY

the same appears of record in the Department of Reclamation of the
State of Idaho.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal
of the Department of Reclamation of the State of Idaho at Boise-Idaho,

this 27th day January, 1932.

Commissioner of Reclamation



STATE OF IDAHO
H. C. BALDRIDGE, GOVERNOR
DEPARTMENT OF RECLAMATION
GEO. N. CARTER, COMMISSIONER
BOISE

April 23, 1930

HONORABLE H. C. BALDRIDGE
Governor, State of Idaho
Boise, Idaho

Sir:

This is the Eleventh Annual Report of the Watermaster of Water District No. 36, Snake River. It is transmitted in accordance with the well-defined policy of informing all those interested in the behavior of Snake River in yielding a water supply to the great valley which it traverses. It is conservative to say that Snake River is the one greatest natural resource Idaho possesses. The State's mines will be worked out, and its forests logged off; but its water reappears each season to renew the moisture of the farm lands and to turn the turbines of power plants.

The system of distribution of Snake River water to its rightful users, as evidenced by decrees of court, has largely been developed by G. Clyde Baldwin, Watermaster and Special Deputy Commissioner of Reclamation. After eleven years of most efficient and satisfactory service, he has resigned his position. Obviously, the resignation was received with considerable regret. However, the organization will continue in much the same manner under Lynn Crandall, the Watermaster-elect, who has heretofore for many years been Commissioner of the Federal Court on Lost River.

The plan of operation of Snake River now in effect is admirable, and must surely be continued in order that the residents of Snake River Valley may enjoy stable conditions in the uses of water.

Very respectfully yours,

GEO. N. CARTER
Commissioner of Reclamation.



STATE OF IDAHO
DEPARTMENT OF RECLAMATION

GEORGE N. CARTER, COMMISSIONER
G. CLYDE BALDWIN, DEPUTY

WATER DISTRICT NO. 36

IDAHO FALLS, IDAHO.

March 31, 1930

C. BALDRIDGE, GOVERNOR

Mr. George N. Carter,
Commissioner of Reclamation,
Boise, Idaho.

Dear Sir:

Submitted herewith is the eleventh and probably the last annual technical report for which I will be responsible, covering regular water distribution and hydrometric operations in District No. 36.

While the 1929 water supply was considerably below normal, the available storage sufficed to compensate for practically all deficiencies. Unusually hot weather during July and August with heavy frosts early in September reduced the yield of certain crops but otherwise the season was generally satisfactory from an agricultural view point.

No unusual difficulties were experienced in river administration and harmony prevailed throughout the district.

U. S. Geological Survey methods have been used as a standard for the collection and compilation of the hydrometric data which are presented herein. In this, in the recomputation of records since the close of the irrigation season and in other respects, the report is consistent with those which have been issued for the ten preceding years. In order to make this individual report reasonably complete in itself, some repetition of previous explanations has been unavoidable. References have been substituted, however, wherever practicable.

The so-called Normal Flow Fund was continued as a means of financing that portion of the work eventually paid for under the annual Water Master Bill. This fund was maintained during the past year through the advance of money by the Water Users Protector Association of the North Fork of Snake River and Tributaries, the Upper Snake River Water Users Protective Union, the Twin Falls Canal Company and the North Side Canal Company, Ltd.

Special acknowledgments are due to the North Fork Reservoir Company, the Idaho, Snake River Valley and New Sweden Irrigation Districts and the Aberdeen-Springfield Canal Company for gage readings and to the U. S. Bureau of Reclamation, the Twin Falls Canal Company and the North Side Canal Company, Ltd. for gage readings, results of current meter measurements and other data which were furnished without charge.

Appreciation should again be accorded to you and to the members of the Water Users Committee of Nine of District No. 36 for continued cooperation and for advice and assistance which were freely given whenever required.

The conscientious service of the hydrographers, deputy water masters and other members of the regular organization must also be recognized and full credit be given for their part in the success of the year's operations.

H. S. Kollenborn, D. I. Gardner and Miss Helen George assisted materially in the preparation of this report and their work in this connection is gratefully acknowledged.

Most of the official contacts and associations of my eleven years on this work have been exceedingly pleasant ones and on this score it is with considerable regret that I now propose to venture upon another field of endeavor in a new locality.

Very sincerely yours,

G. Clyde Baldwin
Deputy.

WATER DISTRIBUTION AND HYDROMETRIC WORK

In District No. 36

1929

By G. Clyde Baldwin

CONTENTS

	Page
Introduction-----	1
Personnel-----	8
Descriptive Outline of 1929 Distribution-----	8
Water Supply-----	13
Flood Control-----	14
Storage versus Flood Water Diversions-----	15
Domestic Water-----	15
Transfers and Exchanges-----	16
Litigation-----	17
Canal Deliveries-----	19
River Data-----	21
Segregation of Flow-----	23
Storage Deliveries from Jackson Lake, Twin Lakes, Market Lake Springs and American Falls Reservoirs-----	24
River Losses and Gains-----	29
Normal Flow Comparison-----	34
Ground Water-----	36
Water Distribution and Hydrometric Work in the Henrys Fork- Fall River-Teton Area-----	37
Storage Deliveries from Henrys Lake Reservoir-----	41
Distribution in Swan Valley-----	44
Climatological Data-----	44
Evaporation-----	47
New Construction and Repairs-----	48
Expenditures-----	48
Water Rights-----	53

PLATES

	<u>Following Page</u>
Plate I - Map showing principal streams and gaging stations in District No. 36-----	8
Plate II - Hydrographs for Jackson Lake during the period October 1, 1918 to March 31, 1930-----	11
Plate III - Hydrographs for American Falls Reservoir during the period March 1, 1926 to March 31, 1930 -----	12
Plate IV - Daily discharge of canals diverting from Snake River, June 1929-----	19
Plate V - Daily discharge of canals diverting from Snake River, July 1929-----	19
Plate VI - Daily discharge of canals diverting from Snake River, August 1929-----	19
Plate VII - Daily discharge of canals diverting from Snake River, September 1929-----	19
Plates VIII - Daily summary of data at and between Snake River & IX - gaging stations from Jackson Lake to Milner, Idaho, June to September 1929-----	21
Plate X - Hydrographs of total and normal flow of Snake River at Moran, Wyoming and Heise, Idaho gaging stations-----	23
Plate XI - Tabulation of daily storage deliveries from Jackson Lake, Twin Lakes, Market Lake and American Falls Reservoirs with summary-----	26
Plate XII - Hydrographs illustrating the net losses and gains between the Heise and Clough gaging stations-----	29
Plate XIII - Hydrographs illustrating computed and net gains between the Clough and Neeley gaging stations-----	30
Plate XIV - Hydrographs illustrating net losses and gains between the Neeley and Milner gaging stations-----	31
Plate XV - Monthly summary of normal flow conditions for the irrigation seasons, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928 and 1929-----	34

PLATES

	<u>Following Page</u>
Plate XVI - Daily discharge of canals diverting from Henrys Fork and tributaries, June 1929-----	38
Plate XVII - Daily discharge of canals diverting from Henrys Fork and tributaries, July 1929-----	38
Plate XVIII - Daily discharge of canals diverting from Henrys Fork and tributaries, August 1929-----	38
Plate XIX - Daily discharge of canals diverting from Henrys Fork and tributaries, September 1929-----	38
Plates XX - Daily summary of data at and between gaging stations & XXI - on Henrys Fork and tributaries from Henrys Lake to Rexburg-----	39
Plate XXII - Hydrographs for Henrys Lake and showing total and normal flow at the Lake, Warm River and Ashton gaging stations-----	40
Plate XXIII - Henrys Lake storage deliveries-----	41
Plate XXIV - Hydrographs illustrating net gains and losses between the Squirrel and Chester gaging stations on Fall River-----	43
Plate XXV - Hydrographs illustrating net losses and gains between the Ashton and Rexburg gaging stations on Henrys Fork-----	43
Plates XXVI - Daily precipitation diagrams for stations in the & XXVII - Upper Snake drainage area-----	45
Plate XXVIII - Decrees and priority of water rights, Snake River, Idaho-----	53

INTRODUCTION

The annual meeting of Water District No. 36, held at Idaho Falls, Idaho on March 4, 1929, was again marked by harmony and lack of sectional controversy.

G. Clyde Baldwin was unanimously reelected to the position of Water Master while eight of the former members of the Committee of Nine, viz, F. A. Miller, Ephraim Ricks, John W. Hart, W. O. Cotton, John E. Kelley, E. V. Berg, E. B. Darlington and R. E. Shepherd were continued in office for the ensuing year. N. V. Sharp was selected as the ninth member of this committee to replace T. M. Baird who formerly represented the Twin Falls Canal Company interests.

Forty-four canals, entitled to 122,766 votes, were represented in person or by proxy and by unanimous action adopted the following report of the Resolutions Committee as the program of plan for 1929 river operation:

"Your committee have to recommend for the year 1929, water administration of Snake River, Water District No. 36, be had as follows:

I.

That from Jackson Lake (Moran) to Heise storage water shall be charged a transmission loss of 2 $\frac{1}{2}$ %, and in an attempt to establish conditions at Heise as nearly as practicable to pre-reservoir times, that storage water shall be charged a reasonable amount to cover lag and other causes of loss in return flow. Said amount to be repaid and returned to storage water interests before the close of the irrigation season, or before the storage water interests shall have exhausted their rights. It is understood that when a decreed right shall have been cut under river regulations that right shall not be reinstated until such time as its proportion of this amount shall have been repaid.

II.

That from Heise to Lorenzo Bridge a loss of 4.4% be charged storage water. That the gaging station at Lorenzo having been washed out in 1928, said station shall be re-installed whenever in the judgment of the Committee of Nine the same shall be needed or required.

III.

That from Lorenzo to Woodville a loss of 0.5% be charged storage water.

IV.

That from Woodville to Blackfoot a loss of 6% be charged to storage water.

V.

That there be a committee of three to carry on, during the year 1929, the study and investigation of the American Falls Reservoir and other questions growing out of the delivery of stored water below Blackfoot. The scope and extent of such study and investigation shall be fixed and determined by said committee and the entire expense of said work shall be paid by the American Falls Reservoir interests as apportioned by said committee. The membership of this committee shall consist of one member to be selected by the Minidoka Project, one member by the Twin Falls Canal Company and one member by the North Side Canal Company.

VI.

That the salary of the Water Master for the year 1929 be fixed at the same rate paid him for the year 1928, that such assistants as may be needed shall be selected by him with the consent of the Committee of Nine, and that all expenditures in connection with water distribution be passed and approved by said Committee of Nine.

VII.

We recommend that the Committee of Nine be empowered to give special attention to the work of this district to determine the necessity of continuing certain hydrometric and other work to the end that the 1929 expense may be materially reduced."

The following special resolution was also included and accorded the same unanimous approval:

VIII.

"At the annual District No. 36 Water Master election meeting held at Idaho Falls, Idaho on March 5, 1928, the following resolutions were unanimously adopted:

WHEREAS, it has been reliably reported and appears as a fact that the Snake River between Heise and Lorenzo, in Idaho, threatens to leave its present channel and establish a new course across highly improved property and to wash out a new channel which would carry the waters of the streams east and south of Rigby, Idaho to a juncture with the main stream some eight or ten miles above Idaho Falls, and

WHEREAS, such a change in the course of the stream would leave canals upon the north side of the present river channel without a water supply, would destroy the usefulness of many costly irrigation structures, and otherwise cause great property damage and would even endanger the life and safety of many local residents.

NOW, THEREFORE, the water users of District No. 36 of the State of Idaho in annual meeting here assembled, authorize and direct the chairman of said meeting to appoint a special committee to investigate this condition and to prepare data that the matter may be properly presented and further direct that a resolution and petition be thereupon drafted and endorsed by the chairman of this meeting as its act and deed for the purpose of (1) adequately presenting the facts (2) requesting the Federal Government to make immediate investigation and appropriation of funds to insure the protection from such threatened flood conditions of property (including highways, irrigation systems, farms, etc.) and of the lives of people located within this menaced district.

During the past year certain minor surveys and investigations have been made. Among these was a reconnaissance by Army Engineer Officers stationed at Portland, Oregon. The latter have not as yet, however, made any report of their findings or recommendations available to the public and we are reliably advised that such action cannot be expected before June, 1929.

THEREFORE, since the menace still exists and the danger therefrom is just as imminent as heretofore noted and since great damage is sure to be sustained by portions of Madison, Jefferson and Bonneville Counties unless immediate steps are taken to control this situation, this meeting does hereby readopt the above 1928 resolutions and again emphasizes the importance of this matter to the welfare and safety of the people of this district."

J. H. Heath, N. A. Anderson, Wm. Meppen, J. E. Kelley, E. V. Berg, F. A. Miller, R. E. Shepherd, E. B. Darlington and J. R. Bothwell were thereupon again named as members of the Flood Prevention Committee.

In a short session held immediately after the adjournment of the general meeting the Committee of Nine completed their organization for the year by again reelecting John W. Hart as chairman and John Lee as secretary.

Engineers representing different canal companies within the district met with Water Master Baldwin at Idaho Falls on March 29, 1929 for preliminary discussion of the year's budget and plans for reduction of expenditures.

The following summarizes the action taken at this meeting:

"Moved by W. O. Cotton and seconded by J. T. Fisher that the Water Master be asked to submit to the Committee of Nine the budget read to the Engineers Committee on March 29 with recommendation from said engineers that if any reductions are made they can best be in the number of man-months employment or in the expenses. Motion carried unanimously."

On the following day the Committee of Nine met for consideration of the annual Water Master budget. After reducing the automobile allowance to hydrographers and engineers from ten cents, as submitted, to seven cents per mile, the budget was approved in the amount of \$14,005.92 as the estimated cost of all regular work properly chargeable against normal flow water users.

The following extract from the minutes of this meeting indicates the desire which was expressed for additional reduction of expenditures:

"Moved by John E. Kelley and seconded by N. V. Sharp that the period of employment of Deputy Water Masters and Hydrographers be left to the discretion of Water Master Baldwin with the understanding that the committee desires same limited as much as practicable without seriously impairing work. Motion carried unanimously."

The provision that employees operating automobiles upon a mileage compensation basis be required to carry property damage and public liability insurance on their cars was waived after F. A. Miller and J. R. Bothwell had given informal opinions that District No. 36 could not be held liable in the event of accidents.

Other business of importance transacted at this time is summarized as follows in the minutes of this meeting:

"The matter of redistribution of District No. 36 operation costs was then brought up by F. A. Miller. After some general discussion it was moved by F. A. Miller and seconded by N. V. Sharp that a committee of three be appointed by the chairman to confer with Water Master Baldwin and formulate recommendations for equitable distribution of costs between stored and normal flow water users and also for segregation of the former between the respective reservoir interests and that pending action to the contrary the 1928 method of prorating these items be continued in effect.

Motion carried.

Chairman Hart later appointed W. O. Cotton, F. A. Miller, and R. E. Shepherd as members of this special committee.

With the consent of the interested parties, J. B. Stocking, W. C. Paul, and N. V. Sharp were designated as the special American Falls Reservoir Committee for the coming year.

Moved by W. O. Cotton and seconded by N. V. Sharp that Water Master Baldwin be authorized to charge such reservoir penalties against Jackson Lake and Henrys Lake users as in his judgment would be fair and equitable whenever bank storage return did not appear adequate to compensate for normal flow losses.

Motion carried.

Mr. Baldwin was also authorized to secure advances to the Normal Flow Fund to finance District No. 36 operations in the same manner practiced during preceding years."

At a meeting held in Twin Falls, Idaho on June 12, the committee provided for under Article V of the general river program arbitrarily fixed 2,820 second-feet as the inflow to the river between the Clough and Neeley gaging stations to be used for 1929 river operation. Further

special studies and investigations in the American Falls Reservoir basin were therefore postponed until some future date.

With the exception of this change, the general plan of river administration differed but little from that of 1927 and 1928. Preceding reports* afford detailed descriptions and should be read by those who desire information concerning the gradual evolution of the present system.

Funds for securing hydrometric data of a wide-spread interest character were again provided by the State of Idaho and the U. S. Geological Survey, while operations conducted primarily in connection with water distribution were sustained at the expense of normal flow and stored water users of the district.

Aside from the consolidation of the office of Water Master and Special Deputy, first effected at the beginning of the 1923 season, the organization and division of work has changed but little since the cooperative, central office at Idaho Falls was initiated on a permanent basis in May, 1919.

Actual water deliveries, storage transmission via natural stream channels and other phases of river operation have been conducted each year in accordance with certain regulations and schedules usually adopted by the water users at the annual March election meeting. These regulations cover points on which the statutes and decrees are not sufficiently definite or concerning which available data are too incomplete to afford satisfactory basis for a single fixed method of procedure.

*Water Distribution and Hydrometric Work in District No. 36, 1919; 1920; 1921; 1922; 1923; 1924; 1925; 1926; 1927 and 1928 by G. Clyde Baldwin.

Occasionally also, when unanimous consent has been secured, certain departures from statutory methods prescribed for water distribution have been authorized. The former reports of the Deputy State Commissioner of Reclamation, already referred to, should be consulted for further details or information concerning the changes in these regulations which were in force during former years.

Beginning in April and to an increasing extent in May, the hydrographers were engaged in the reestablishment of gaging stations on both canals and natural streams, the making of necessary minor repairs to station equipment, and in securing measurements for the purpose of defining changes in rating which had occurred since the last previous records were secured. River riders and deputy water masters began work for the season on June 1 but until after the first of July were only employed upon a half time basis.

This change from the usual custom necessarily resulted in securing less accurate canal data than heretofore, because gage readings for more than one month were only obtained on alternate days. Determination of the exact amount of diversions during the nonregulation period, while desirable to complete season records was not considered of vital importance, however, and this appeared to be the least detrimental way in which to effect the reduction of expenditures requested by the Committee of Nine.

Some similar saving also resulted from shortening the period of employment of hydrographers both at the beginning and end of the season.

PERSONNEL

The personnel engaged in the work of distribution during the season of 1929 was as follows:

G. Clyde Baldwin	Deputy State Commissioner of Reclamation, Special Deputy in charge of Jackson Lake, Twin Lakes, Market Lake and American Falls Stored Water Delivery and Water Master of District No. 36.
C. A. McClelland	Hydrographer.
H. S. Kollenborn	Hydrographer, Special Deputy in charge of Henry's Lake Stored Water Delivery and Deputy Water Master in charge of branch office at St. Anthony, Idaho.
David I. Gardner	Hydrographer.
LaRoy W. Beam	Hydrographer.
Helen George	Clerk and office assistant, Idaho Falls Office.
Phyllis Tuckett	" " " " St. Anthony Office.
Bruno Albert	Deputy Water Master, Upper Fall River division.
Geo. H. Powell	Deputy Water Master and hydrographer St. Anthony division.
T. W. Luetjen	Deputy Water Master and hydrographer Teton River division.
Wm. Burton	Deputy Water Master, Swan Valley canals.
W. J. Kremer	" " " Heise division.
Wm. Sauer	" " " Rigby division.
F. W. Tolles	" " " Idaho Falls division.
E. E. Bingham	" " " Blackfoot division.
T. E. Culley	" " " Minidoka Dam.
W. N. McConnel	" " " and hydrographer at Milner Dam.
J. M. McGinn	Gate Tender, Henry's Lake Dam.
Joseph Markham	Superintendent, Jackson Lake Dam.
Frances W. Herre	Forwarding Agent, Ashton, Idaho.

Mrs. John Keppner, Harold Fuqua, Mrs. Irwin Siepert, W. H. Kremer, O. L. Kofoed, J. A. Clough, E. P. Anderson and S. B. McAbee, gage readers.

DESCRIPTIVE OUTLINE OF 1929 DISTRIBUTION

The monthly surveys of the snow accumulated on the area tributary to Jackson Lake, which have been made by Joseph Markham each winter beginning with 1920, indicated that the 1929 water supply would be somewhat below normal in spite of what had appeared to be unusually heavy snows at the lower altitudes in the valley region. The probable deficiency

MAP OF WATER DISTRICT NO. 36 SHOWING PRINCIPAL STREAMS AND GAGING STATIONS

REGULAR STATIONS

- 1 Jackson Lake at Moran Wyo.
- 2 Snake River near Moran Wyo.
- 3 Snake River near Heise Ida.
- 4 Great Feeder Canal near Ririe Ida.
- 5 Snake River at Lorenzo Ida.
- 6 Snake River near Shelley Ida.
- 7 Snake River near Blackfoot Ida (Blackfoot Bridge)
- 8 Snake River at Clough's Ranch (formerly listed as near Blackfoot)
- 9 Snake River at Nealey Ida.
- 10 Lake Wakarusa near Minidoka Ida.
- 11 Snake River near Minidoka Ida.
- 12 North Side Minidoka Canal near Minidoka Ida.
- 13 South Side Minidoka Canal near Minidoka Ida.
- 14 Lake Milner at Milner Ida.
- 15 North Side Twin Falls Canal at Milner Ida.
- 16 South Side Twin Falls Canal at Milner Ida.
- 17 Snake River at Milner Ida.
- 18 Henrys Lake Reservoir near Lake Ida.
- 19 Henrys Fork near Lake Ida.
- 20 Henrys Fork near Ashton Ida.
- 21 Henrys Fork at St. Anthony Ida.
- 22 Henrys Fork near Rexburg Ida.
- 23 Fall River near Squirrel Ida.
- 24 Fall River near Chester Ida.
- 25 Teton River near St. Anthony Ida.
- 26 Blackfoot River near Blackfoot
- 27 American Falls Reservoir at American Falls Ida.
- 28 Snake River at American Falls Ida.

AUXILIARY STATIONS

- A Snake River at South Boundary Yellowstone Park.
- B Henrys Fork of Warm River Ida.
- C Warm River of Warm River Ida.
- D Robinson Creek of Warm River Ida.
- E Portneuf River at Pocatello Ida.
- F Snake River at Robertson Ranch.

Scale 1 inch = 24 Statute Miles.



was not sufficient to cause any serious alarm, however, especially since the prospects for full or practically full storage reservoirs seemed excellent.

Below normal temperatures in April retarded run-off but warm dry weather during the latter half of May brought about a material increase in stream flow which was again checked by several periods of cool weather experienced in June. In consequence of these conditions and the further reduction attributable to the storage of water in Jackson Lake Reservoir no very high peak stages were noted and the normal stream flow sufficed to fill irrigation demands in the upper valley and most of those below American Falls until the early part of July.

Regulation of diversions was first demanded in a letter dated July 1 and actually began on July 6 when diversions under permit and license rights as well as under all decreed rights having a priority date subsequent to December 22, 1915, ceased.

Thereafter rights were regulated in accordance with the following schedule:

July	8	Cut off rights having a priority date subsequent to	June	7, 1905
"	12	" " " " " " " " " " " "	Aug.	1, 1903
"	13	" " " " " " " " " " " "	Mar.	26, 1903
"	17	" " " " " " " " " " " "	Oct.	11, 1900
"	18	" " " " " " " " " " " "	July	9, 1896
"	19	" " " " " " " " " " " "	June	14, 1895
"	20	" " " " " " " " " " " "	Feb.	6, 1895
"	26	" " " " " " " " " " " "	Aug.	18, 1895
"	27	" " " " " " " " " " " "	June	1, 1892
"	28	" " " " " " " " " " " "	Apr.	28, 1892
"	29	" " " " " " " " " " " "	Dec.	14, 1891
Aug.	2	" " " " " " " " " " " "	Jan.	24, 1891
"	3	Reinstated rights having a priority date earlier than	Dec.	14, 1891
"	6	" " " " " " " " " " " "	Apr.	27, 1892
"	7	" " " " " " " " " " " "	Apr.	30, 1893
"	8	" " " " " " " " " " " "	Aug.	19, 1894
"	11	Cut off rights having a priority date subsequent to	Apr.	28, 1892
"	12	" " " " " " " " " " " "	Dec.	14, 1891

Aug.	13	Cut off rights having a priority date subsequent to	Jan. 24, 1891
"	15	" " " " " " " " " "	Oct. 16, 1890
"	16	" " " " " " " " " "	July 12, 1890
"	17	" " " " " " " " " "	June 1, 1890
"	21	Reinstated rights having a priority date earlier than	June 11, 1890
"	23	" " " " " " " " " "	Oct. 17, 1890
"	27	" " " " " " " " " "	Jan. 25, 1891
"	31	" " " " " " " " " "	Dec. 14, 1891
Sept.	6	" " " " " " " " " "	Aug. 19, 1894
"	10	" " " " " " " " " "	June 15, 1895
"	11	" " " " " " " " " "	July 10, 1896
"	13	" " " " " " " " " "	Oct. 11, 1900
"	14	Upper valley regulation ceased.	
"	20	Regulation in upper valley resumed again.	
		Cut off rights having a priority date subsequent to	Feb. 6, 1895
"	24	Reinstated rights having a priority date earlier than	Oct. 11, 1900
"	26	General regulation terminated for the season.	

Attention should be called to the fact that both cuts and reinstatements, as previously listed, apply particularly to upper valley canals. These, as a rule, were regulated slightly later than canals below American Falls, due largely to the attempt which was made to make some allowance for the so-called lag as provided in Paragraph 1 of the 1929 river operation program (See page 1).

More regulation was required during September than was the case during the two preceding years.

Conditions existing on September 13 are summarized in the following letter of that date which was forwarded by the Water Master to each member of the Committee of Nine:

"Irrigation demand on the part of all canals in the district has decreased rapidly since the frosts which occurred during the early part of the present month. In consequence, all rights having a priority date earlier than October 11, 1900 have now been reinstated, while at the same time the use of storage has decreased to almost nothing in the upper valley and very materially in the lower valley.

The release of storage from both Jackson Lake and Henrys Lake reservoirs will be terminated today and the discharge past the dams reduced to normal flow only.

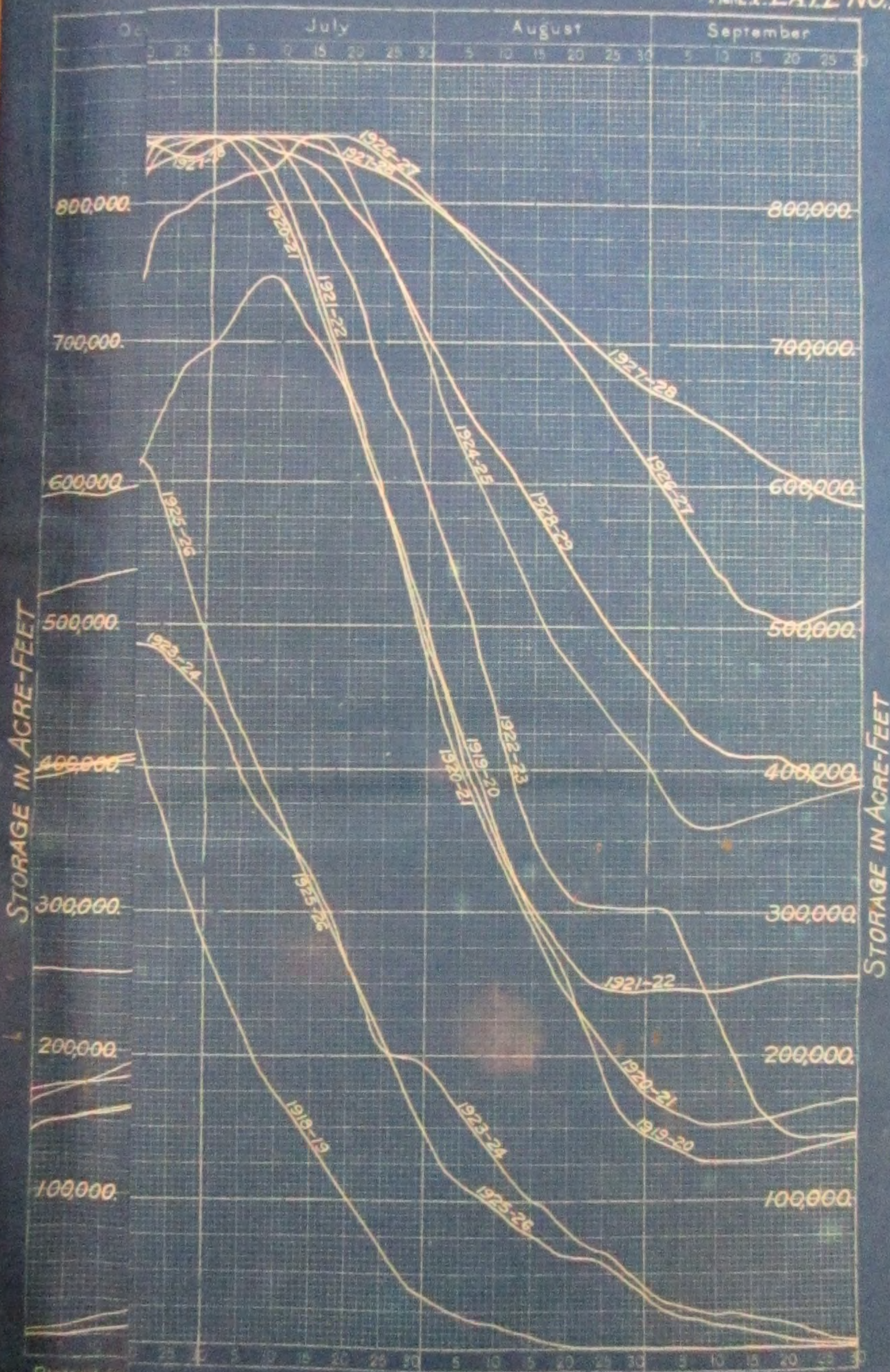
In view of the above outlined conditions, it would seem that regulation of canals in the upper valley for the season may safely be ended after tomorrow, September 14 and that the normal flow supply, even though its use is unrestricted, will suffice to fill the further needs of all canals above Blackfoot. The flow past the latter point at present is in excess of 1,000 second-feet, which should provide sufficient margin to care for all real needs.

I had planned to ask for a meeting of your Committee to be held here tomorrow, but after talking with the Secretary of the Committee and with a few of the members who were readily accessible have concluded that such a meeting is hardly warranted at this time, hence am sending this letter to advise you in detail concerning present river conditions and plans for the termination of the season's work. I hope that you will feel free to communicate with me and bring up any matters which, in your judgment, might make an early meeting desirable.

The services of one hydrographer were terminated on August 31, of another on September 5 and this week Mr. C. A. McClelland, who has been my chief assistant for several years, is leaving for California under a transfer to the Ground Water Division of the U. S. Geological Survey. The services of five Deputy Watermasters or River Riders and one part-time clerk will be discontinued after tomorrow except perhaps for one or two day's work at irregular intervals during the balance of the month, all of which is in line with the indicated desire of the Committee to hold expenditures to the minimum consistent with necessary work.

Throughout the balance of the present month, gage readings will be secured at canal stations as frequently as practicable by the remaining personnel in order that data for the entire month may be included in the season's report. It should be understood, however, that some interpolation will be necessary and that in consequence records for the last half of the month will be less dependable than during the time when regular readings were secured."

Unusually warm dry weather followed and the demand for water was such that the available supply proved insufficient to fill the needs of all upper valley canals. Storage was therefore again released from Jackson Lake on September 18 and regulation resumed as previously noted. Fairly general and copious rains soon relieved this situation and general regulation for the season ceased on September 26.



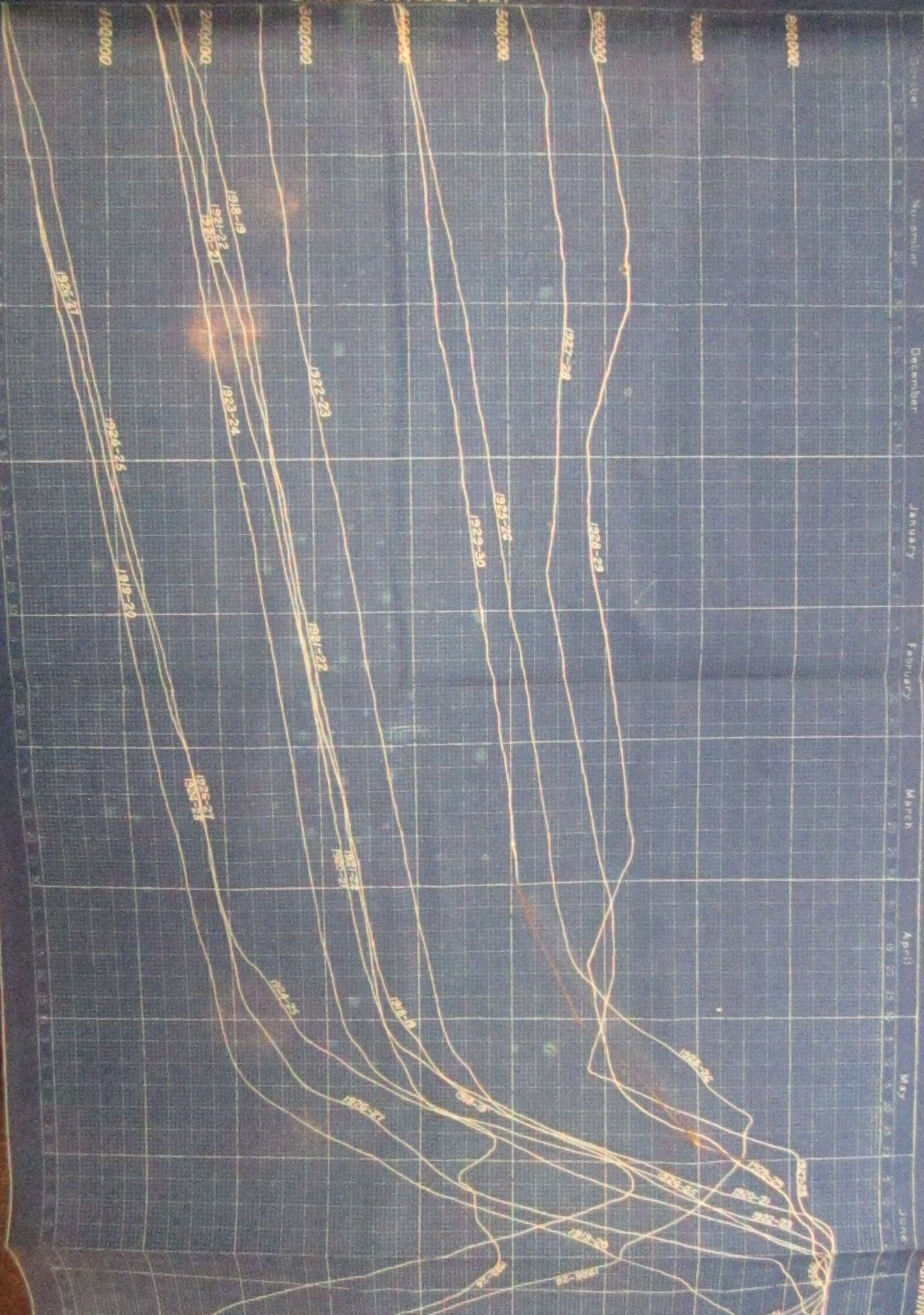
DEPARTMENT OF THE INTERIOR

UNITED STATES GEOLOGICAL SURVEY

(WATER RESOURCES BRANCH)

HYDROGRAPH FOR JACKSON LAKE RESERVOIR, BEGINNING

STORAGE IN ACRE-FEET



HYDROGRAPH FOR JACKSON LAKE RESERVOIR, BEGINNING OCT. 1-1918

FILE NO. 1

PLATE NO. II.



STORAGE IN ACRE-FEET

Plate II illustrates graphically the manner in which Jackson Lake was filled and drawn down during the period from October 1, 1918 to March 31, 1930. All graphs are plotted on the basis of 1919 capacity tables. (See 1925 and earlier reports for similar graphs covering the period from November 15, 1914 to September 30, 1918).

Lower valley canals again asked to have their rights filled primarily from the American Falls Reservoir but as it was apparent by the end of July that their supply at this point would prove insufficient without borrowing from the water owned by the United States (whose representatives refused any wholesale exchange privilege) no particular effort was made after that time to avoid running some storage past canals in the immediate vicinity of Blackfoot. In all, 140,227 acre-feet of stored water were delivered in this way to the lower reservoir and together with the upper valley usage served to reduce the Jackson Lake hold-over at the end of the season to 389,800 acre-feet - the smallest since 1926 but, with the two exceptions of 1927 and 1928, still the largest of record.

Plate III shows graphs for the American Falls Reservoir covering the period from March 1, 1926 to March 31, 1930 which are similar to those for Jackson Lake which have already been explained.

Attention should here be called to what later proved to be the unwarranted wastage of water during the early part of April which resulted in the failure to completely fill the reservoir in advance of the regular summer draft period. This may be attributed to the desire on the part of officials of the U. S. Bureau of Reclamation to retain

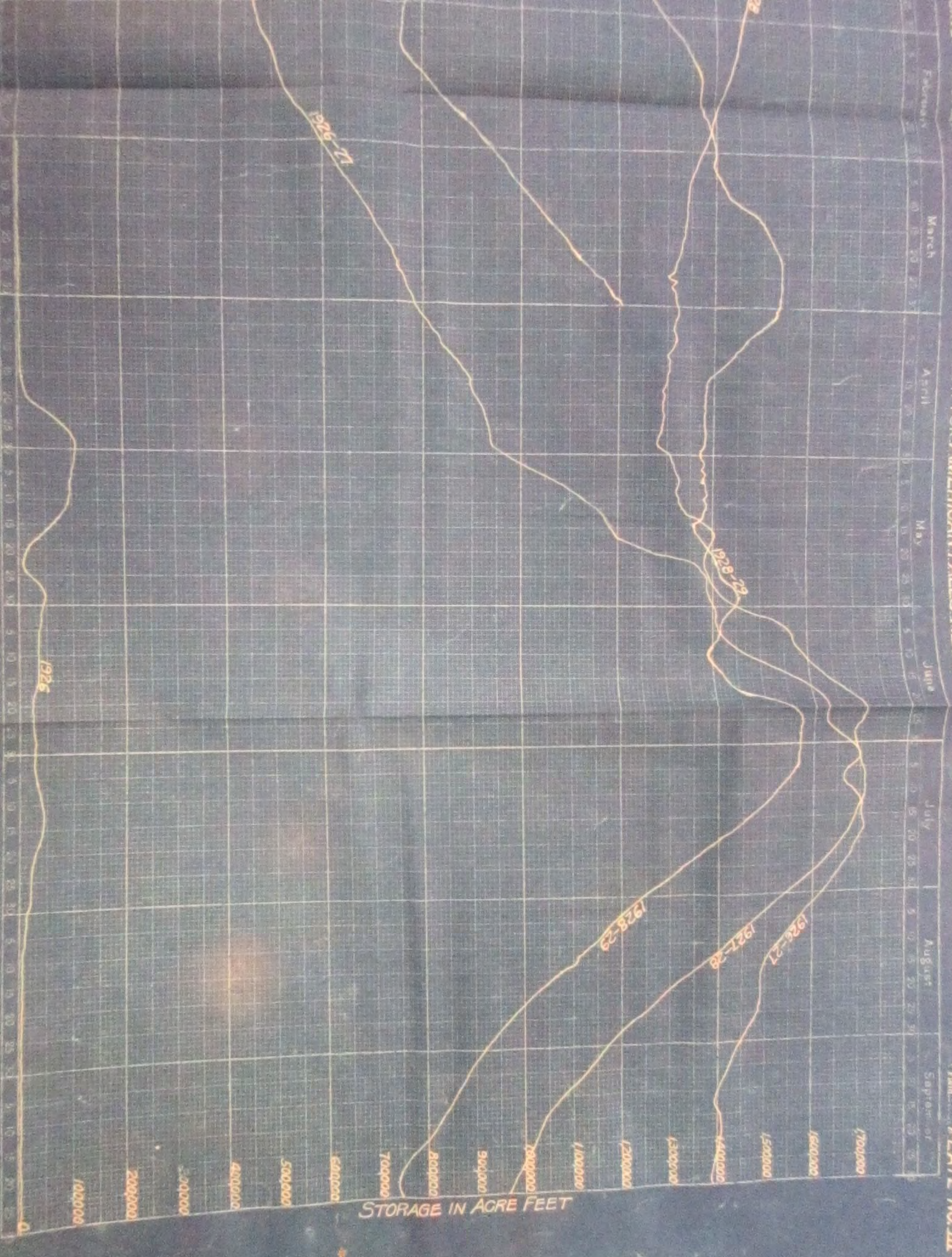
Water Year 1926

DEPARTMENT OF THE INTERIOR UNITED STATES GEOLOGICAL SURVEY (Water Resources Branch)

HYDROGRAPH FOR AMERICAN FALLS RESERVOIR, BEGINNING MAY

STORAGE IN AGR. FEET





ample storage space to protect the Minidoka and Milner Dams from damage which might have resulted from high river discharge during the usual June flood water period. It was generally assumed until after the end of the irrigation season that this resultant storage deficiency would be absorbed by the Federal government hence deliveries to other users were actually not curtailed although, perhaps because of the fear of establishing a bad precedent, final charges upon a prorated basis were insisted upon for the data contained in this report.

WATER SUPPLY

If the comparison of annual run-off at the Moran and Neeley gaging stations which has been included in the nine preceding reports, is extended to include the year ending September 30, 1929, the data may be summarized as follows:

Station	Mean annual run-off for 26 years ending September 30, 1929	Run-off for year ending September 30, 1929	% of Mean
Moran	1,106,000	865,000	78.2
Neeley	6,463,000	4,770,000	73.8

In this tabulation all Moran records beginning with the year 1910 have been corrected to take account of the storage in Jackson Lake which has been held over from one climatic year to another. Neeley records, on the other hand, represent actual totals measured at the gaging station except during the last three years of the period when adjustments have been made to take into account the American Falls Reservoir hold-overs. Variations in the amount diverted for irrigation, as well as in the quantity of inflow entering between the two stations, also affect the Neeley comparisons. If dependable corrections could be computed to cover all these different

factors, their application to the Neeley data would undoubtedly make the records at the latter station more consistent with those at Moran. This has not been attempted because the development of such corrections from the data available would be difficult, if not almost impossible, and for the further reason that total annual run-off is often not a true measure of summer water supply.

Additional information concerning the latter together with comparisons showing the relative normal flow supply and use by months will be found in a subsequent portion of this report and in the tables on Plate XV.

The fact that the Neeley run-off is again relatively less in comparison with the long time average than is that at Moran would appear to give added weight to the suggestion contained in the 1928 report that this may be partially accounted for by the increased evaporation losses of recent years in the American Falls Reservoir basin. This difference is hardly great enough to warrant any very definite statements, however, in view of the many unknown factors previously referred to.

FLOOD CONTROL

U. S. Army Engineers under the general direction of Colonel G. R. Lukesh spent about three weeks during April in making a survey of that portion of Snake River located between Heise Hot Springs and Roberts. Flood prevention and river control in this section were also discussed at a meeting of those especially concerned which was held at Idaho Falls on April 12. From statements made at this meeting by Colonel Lukesh and Captain R. W. Copeland it appeared that Federal aid in the flood prevention

work could only be expected in the event of some extremely urgent and serious emergency or possibly after the lapse of a considerable period of time through financial cooperation from the threatened area.

Fifteen thousand dollars was appropriated by the 1929 session of the State Legislature and a considerable portion of this money was expended during the year under the supervision of State Commissioner of Reclamation George N. Carter and a commission consisting of S. W. Hall, John W. Hart and T. H. Barnes in temporary bank protection work at the most dangerous points along that portion of Snake River located in Bonneville, Madison and Jefferson Counties.

STORAGE VERSUS FLOOD WATER DIVERSIONS

The filing on June 25, 1929 of the final stipulated decree in the case of the Woodville Canal Company vs. the Clark & Edwards Canal & Irrigation Company, et al, practically ended the possibility of further dispute concerning the relative priority of rights to store water in the principal reservoirs of the district and those for direct diversion of flood water by upper valley canals.

In general, this new decree combines the earlier Rexburg and Foster decrees and accords a priority date of January 22, 1916 to upper valley supplemental diversions, thus making them junior to Jackson Lake storage rights but superior to those for storage in both Henrys Lake and American Falls Reservoirs.

DOMESTIC WATER

The practice first inaugurated in 1920 of making no allowance of water for domestic or culinary use to canals whose entire rights had become invalidated, was again continued.

Sufficient stored water was available to compensate for all normal flow deficiencies and considerable quantities were purchased for seasonal use at prices ranging between \$0.25 and \$1.00 per acre-foot.

TRANSFERS AND EXCHANGES

The written protest against the temporary transfer of water or the exchange of normal flow for storage, which was filed on March 7, 1927 by the Fall River Irrigation Company and others, was again orally renewed and in consequence neither of these practices was permitted during 1929. (See page 13 of the 1927 report for ruling by the State Commissioner of Reclamation).

Lower valley canals again drew their storage primarily from the American Falls Reservoir but, as previously explained, were also compelled to utilize a portion of their Jackson Lake water. While low river stages were therefore experienced at Blackfoot and upper points they were not as continuous as during the preceding summer, hence there was little need for diversion through other than the normal headings. Exceptions were noted, however, in the cases of the Island and Long Island canals which were in the process of shifting from the main river channel to the Great Feeder as a source of water supply. Because their new canal construction was not entirely completed, each of these two systems was required to utilize both its old and new heading during 1929.

In accordance with the practice of previous years diversion of normal flow from Fall River in lieu of storage released from Henry's Lake and Jackson Lake Reservoirs was again allowed as provided for in Section 5560 of the Idaho Compiled Statutes. Under present conditions

it is only through substitutions of this character that stored water can be delivered to any canal heading in Fall River and similar procedure must be followed to effect delivery of Jackson Lake water to canals heading in Henry's Fork or Teton River. In neither instance can such substitutions be permitted unless the normal flow balances at critical points are in excess of the desired delivery, for if this were not true, intervening canals would be deprived of water to which they were legally entitled. In 1929 as in 1928, for example, the normal flow right of the Enterprise Irrigation District whose supply canal heads in Fall River, became invalid at a time when Henry's Fork was practically dry below the Consolidated Farmers Canal heading. The Jackson Lake storage owned by this District could not be delivered under these circumstances, hence it was necessary for them to arrange to secure storage for a portion of the season from Henry's Lake.

LITIGATION

The principal court action during the year, in so far as the interests of District No. 36 water users are concerned, undoubtedly was the final settlement by stipulated decree of the Woodville or "High Water Decree" case to which reference has already been made. (See page 15).

The case of the Twin Falls Canal Company versus George N. Carter, et al., initiated in April, 1927 for the purpose of changing the interpretation which has thus far been given in river administration to the so-called Foster decree was transferred to Lincoln County where it is still pending before Judge Supthen while at the same time it is now before the State Supreme Court on an appeal from the order denying the

motion for change of venue to Cassia or other specified counties.

(See two previous reports for further details).

What might be termed a companion or related case has meanwhile been filed in the name of the United States as plaintiff against the Twin Falls Canal Company and North Side Canal Company as defendants, in the Federal Court, for the purpose of having the Foster decree made a decree of that court. In this action, a demurrer filed by the Twin Falls Canal Company was overruled by Judge McNary in an order dated October 23, 1929. The Court also held that the defendants were estopped by their Jackson Lake contract from questioning the right of the United States to file the action in the Federal Court and to have the relief sought. The Twin Falls Canal Company failed to answer and a default order was thereupon entered. Recently this company filed a motion to have the default order set aside and the case is now pending upon this motion.

On February 7, 1930 a complaint was filed in the District Court of the Ninth Judicial District of the State of Idaho by John A. Garner, Royal Garn and others against G. Clyde Baldwin, Water Master, seeking to secure an exact definition of the irrigation water right which they claim should be appurtenant to their lands under the following as quoted from the so-called Rexburg Decree:

"Rexburg Milling Company, 3,000 inches, October 1, 1889;
Teton River (Woodmansee-Johnston Ditch), for power purposes
only, and subject to rights of users for agricultural purposes
of water through same ditch."

This case was referred to the Attorney General of Idaho and presumably will not be contested unless other water users should intervene.

With these exceptions there has been practically no change in the status of such pending litigation as pertains to the administration of Water District No. 36 and no new proceedings of general interest have been initiated during the year.

CANAL DELIVERIES

The amount of water diverted daily through each canal heading in Snake River* during the period from June 1 to September 30, 1929 is shown on Plates IV, V, VI and VII.

Following the practice inaugurated in the 1919 report, except for a few of the smaller canals where estimates were used, all data were recomputed prior to their presentation herein. This practice affords opportunity to more thoroughly analyze the records at each station than is possible in the limited time available during the field season. Wherever changes in rating have been noted, either because of the growth of vegetation, variation of checks or for any other reason, all meter measurements, notes and other information have been carefully reviewed to the end that the final computed data may represent the most reasonable interpretation of these changes, particularly as regards time. On days when more than one stage has been observed main discharges have been recorded. Daily summaries showing the total diversions between river gaging stations have also been included.

*By a decision of the Board of Geographic Names the stream known locally as South Fork of Snake River is considered to be the upper portion of the main stream and given no other designation than Snake River.

1875

[illegible]

WATER OF CANAL

NAME OF CANAL	DAILY DISCHARGE IN SECOND FEET OF CANALS DIVERGING FROM SNAKE RIVER FOR SEP. 1934																														TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
YELLOW CREEK	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	3000	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
TOTAL MINNOKA CANALS	1308	1300	1290	1280	1270	1260	1250	1240	1230	1220	1210	1200	1190	1180	1170	1160	1150	1140	1130	1120	1110	1100	1090	1080	1070	1060	1050	1040	1030	1020	35557	
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TOTAL MINNOKA CANALS	1308	1300	1290	1280	1270	1260	1250	1240	1230	1220	1210	1200	1190	1180																		

As previously explained, canals were only visited every other day during June and for the first few days of July, hence for this period intervening data have of necessity been interpolated. From September 15 to 19 and September 26 to 30 the canal discharges likewise depend upon less frequent readings and have been completed through interpolation or by estimates. Records for the remainder of the season are based upon daily gage heights.

The small Morgan and Rostan diversions were supplied throughout the season from other adjacent canal systems and no water was diverted through the Snake River headings of the Sheppard or Smith-Maxwell canals, hence these have all been eliminated from the 1929 tabular summaries.

Laterals which divert from several of the canals above the main gaging stations are, in these tables, in each case included with the flow in the main canal.

The canals are listed by divisions, each of which represents the territory covered by a deputy water master or river rider. The canals of each division, in general, are shown in down stream order.

Beginning with the latter part of July water was diverted through the enlarged Dilts canal for the benefit of the Island system and beginning August 15 part of the Long Island supply was likewise obtained through the West LaBelle heading in the Great Feeder. The data as presented herein have been corrected, however, to show charges against the respective canals which finally received the water and where a supply was derived from two sources the combined or total amount diverted has been shown.

RIVER DATA

The extensive tables found on Plates VIII and IX summarize data in regard to total flow, normal and stored water segregation, diversions, losses and gains for each section of the river between Jackson Lake and Milner.

These tables are prepared upon the following time interval basis:

Time from Jackson Lake In Hours	Gaging Station	Period used for comparable daily means.
0	Jackson Lake and Moran	Day ending at 4 a. m.
24	Heise	Day ending at 4 a. m.
28	Lorenzo and Rexburg	1st day following Day ending at 8 a. m.
42	Woodville	1st day following Day ending at 10 p. m.
50	Blackfoot Bridge	1st day following Day ending at 6 a. m.
54	Blackfoot (Cloughs)	2nd day following Day ending at 10 a. m.
66 $\frac{1}{2}$	American Falls	2nd day following Day ending at 10:30 p. m.
68	Neeley	2nd day following Day ending at 12 midnight
92	Minidoka	2nd day following Day ending at 12 midnight
116	Milner	3rd day following Day ending at 12 midnight 4th day following.

This schedule is the same as the one adopted for the ten preceding years except that for American Falls 66 hours was used as the time from Jackson Lake during 1926. While not exactly correct for all stages of the river, the intervals listed are believed to be fairly representative of average conditions and in consequence have been used throughout the entire period of record.

1929 DISTRIBUTION WATER DISTRICT NO. 36

[illegible]

DAILY SUMMARY OF DATA AT AND BETWEEN SNAKE RIVER

HEISE-REXBURG		HEISE+RILEY+REXBURG		DIVERSIONS		WOOD		WOODVILLE		LORENZO-WOODVILLE		HEISE-WOODVILLE		DIVERSIONS		BL. BR.		WOODVILLE-EL. BR.		WOODVILLE-EL. BR.	
DATE	DISCH	DATE	DISCH	TOTAL	STOR.	NOR.	THEO.	GAUGE	DISCH.	STOR.	NOR.	LOSS	STOR.	LOSS	STOR.	EL. BR.	THEO.	LOSS	STOR.	EL. BR.	THEO.
1929	GA	1929	GA	408	1530	10957	4464	5972	6464	4493	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155
1929	GA	1929	GA	447	1810	12830	5972	5972	5972	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	521	2450	15263	5651	5651	5651	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	558	2820	15527	5282	5282	5282	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	513	2380	13420	5495	5495	5495	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	452	1850	12509	6440	6440	6440	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	429	1680	13320	7186	7186	7186	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	432	1700	15051	7678	7678	7678	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	480	2080	18567	7857	7857	7857	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	517	2420	21757	7876	7876	7876	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	560	2840	22913	7987	7987	7987	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	596	3200	22799	7924	7924	7924	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	643	3650	22049	7960	7960	7960	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	630	3460	19999	7817	7817	7817	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	645	3550	20330	8477	8477	8477	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	664	3710	21700	7861	7861	7861	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	718	4240	25640	6658	6658	6658	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	814	5320	29090	5351	5351	5351	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	886	6120	29117	4983	4983	4983	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	870	5960	20910	5227	5227	5227	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	788	5020	20960	5518	5518	5518	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	660	3590	17306	6302	6302	6302	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	608	3070	17306	6969	6969	6969	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	608	3110	18363	7814	7814	7814	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	627	3340	18546	8801	8801	8801	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	614	3250	18983	9237	9237	9237	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	610	3240	19213	9562	9562	9562	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	612	3270	19823	9573	9573	9573	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	602	3170	19723	9850	9850	9850	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	578	2940	19153	9919	9919	9919	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	552	3090	19884	10042	10042	10042	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	593	3110	20504	9952	9952	9952	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	542	2610	19064	9473	9473	9473	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	492	2160	16862	8639	8639	8639	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	451	1900	15223	8670	8670	8670	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	436	1710	14813	8516	8516	8516	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	405	1480	14242	8052	8052	8052	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	383	1310	13160	8011	8011	8011	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	364	1190	12561	457	457	457	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	343	1050	11681	320	320	320	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	335	982	10720	358	358	358	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	325	912	10223	7156	7156	7156	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	309	808	9979	7139	7139	7139	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	296	730	9800	7573	7573	7573	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	285	665	9835	8088	8088	8088	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	279	620	10361	8138	8138	8138	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	272	575	10424	8433	8433	8433	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	557	11293	8228	8228	8228	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	585	11708	8456	8456	8456	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	12143	8455	8455	8455	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	11794	7984	7984	7984	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	11069	8106	8106	8106	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	11069	8083	8083	8083	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	11069	7952	7952	7952	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	11069	8001	8001	8001	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	10494	8289	8289	8289	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	10494	8352	8352	8352	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	10494	8060	8060	8060	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	10494	8137	8137	8137	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	10494	8168	8168	8168	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	10494	8201	8201	8201	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	10494	8199	8199	8199	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	10494	8199	8199	8199	652	5000	7030	1507	2692	3308	4155	2875	2875	3308	4155	
1929	GA	1929	GA	266	580	10494	8199	8199	8199	652	5000	7030	1507	2692	3308	4155	2875				

[illegible]

DATE		RESERVOIR	INFLW	THED	NEELEY			LOSS	DATE		LAKE	WALCOTT	N.S. MIN. C.		S.S. MIN. C.		NS&S.S. MIN. CAN.		MIN		MINIDOKA		LOSS	DATE		
1929					GAGE	DISCH	STOR.	NOR	CLOUGH-NEELEY	1929	GAGE	STOR.	DISCH	GAGE	DISCH	GAGE	DISCH	TOTAL	STOR.	NOR	THED	GAGE	DISCH	STOR.	MIN	1929
MAY 30	8740	4406	2820	10566	665	10700	4540	6160	-134	JUNE 3	42473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
31	3600	1815	2820	8995	650	10140	2960	7180	-145	4	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
JUNE 1	1030	519	2820	9779	638	9710	450	9260	69	5	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
2	1030	519	2820	9779	640	9780	320	9460	199	6	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
3	4630	2334	2820	10204	640	9780	1910	7870	424	7	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
4	1180	3620	2820	10400	639	9740	2960	6780	660	8	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
5	7570	3816	2820	10236	639	9740	3320	6420	496	9	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
6	5550	2798	2820	9938	638	9710	2570	7140	228	10	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
7	500	252	2820	9882	638	9710	80	9630	172	11	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
8	7060	3559	2820	8851	638	9710	0	9710	-859	12	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
9	8090	4079	2820	9391	635	9600	0	9600	-209	13	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
10	8230	4149	2820	9581	631	9450	0	9450	131	14	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
11	6680	3368	2820	9692	631	9450	0	9450	242	15	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
12	5140	2591	2820	9049	632	9490	0	9490	-441	16	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
13	6690	3373	2820	8147	623	9170	0	9170	-1023	17	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
14	9160	4920	2820	8230	607	8610	0	8610	-380	18	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
15	18600	9377	2820	9003	604	8510	0	8510	493	19	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
16	28800	14520	2820	8550	599	8340	0	8340	210	20	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
17	29500	14873	2820	8707	600	8370	0	8370	337	21	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
18	21290	10734	2820	9716	596	8240	0	8240	1476	22	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
19	14910	7517	2820	9103	585	7860	0	7860	1243	23	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
20	9110	4593	2820	8407	584	7830	0	7830	577	24	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
21	6580	3317	2820	8553	585	7860	0	7860	693	25	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
22	2110	1064	2820	10146	600	8370	0	8370	1776	26	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
23	1630	822	2820	10322	618	9000	0	9000	1322	27	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
24	1090	550	2820	9350	617	8960	160	8800	390	28	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
25	540	272	2820	8842	609	8680	110	8570	162	29	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
26	0	0	2820	8750	603	8470	0	8470	280	30	4473	92040	990	550	550	2500	874	726	8216	739	7350	316	400	1929		
27	0	0	2820	8730	603	8470	0	8470	260	JULY 1	4420	85870	529	967	578	578	1050	2540	70	2470	6454	686	6410	410	6000	1929
28	1090	549	2820	9019	602	8440	0	8440	579	2	4431	87150	529	969	579	1050	2550	2550	0	2550	6449	686	6410	410	6000	1929
29	0	0	2820	8850	602	8440	0	8440	410	3	4440	88200	529	969	577	1040	2540	2540	0	2540	6455	686	6410	410	6000	1929
30	540	272	2820	9632	617	8960	0	8960	672	4	4437	87850	529	969	577	1030	2570	2570	0	2570	6455	686	6410	410	6000	1929
JULY 1	3260	1644	2820	10634	633	9490	500	8990	1144	5	4437	87850	529	969	573	1010	2550	2550	0	2550	6455	686	6410	410	6000	1929
2	5920	2985	2820	11055	649	10070	2000	8070	985	6	4444	88660	529	969	574	1010	2560	2560	490	2070	6455	686	6410	410	6000	1929
3	9050	4563	2820	11783	662	10550	3330	7220	1233	7	4456	90060	529	969	579	1020	2570	2570	844	1726	6455	686	6410	410	6000	1929
4	9590	4835	2820	11375	660	10480	4000	6480	895	8	4467	91340	529	969	578	1010	2560	2560	834	1726	6455	686	6410	410	6000	1929
5	9580	4830	2820	11210	651	10440	4136	6004	1070	9	4474	92160	529	969	579	1010	2560	2560	834	1726	6455	686	6410	410	6000	1929
6	8520	4295	2820	10255	632	9450	3998	5452	805	10	4474	92160	529	969	577	1000	2534	2534	808	1726	6455	686	6410	410	6000	1929
7	9050	4563	2820	9983	632	9450	4665	4785	533	11	4474	92160	529	969	581	1000	2510	2510	1185	1825	6455	686	6410	410	6000	1929
8	10030	5057	2820	10001	632	9450	5169	4281	551	12	4471	91810	529	969	583	1000	2580	2580	1185	1825	6455	686	6410	410	6000	1929
9	10990	5541	2820	10030	632	9450	5637	3813	580	13	4467	91340	529	969	585	998	2564	2564	1185	1825	6455	686	6410	410	6000	1929
10	12040	6070	2820	10030	632	9450	5637	3813	580	14	4466	91230	529	969	585	998	2564	2564	1185	1825	6455	686	6410	410	6000	1929
11	12570	6337	2820	9957	630	9380	5847	3533	577	15	4466	91230	529	969	585	998	2564	2564	1185	1825	6455	686	6410	410	6000	1929
12	12550	6327	2820	9679	631	9420	6317	3103	259	16	4460	90530	529	969	591	1000	2571	2571	1185	1825	6455	686	6410	410	6000	1929
13	12860	6483	2820	9611	632	9450	6427	3023	161	17	4457	90180	529	969	594	1010	2590	2590	1185	1825	6455	686	6410	410	6000	1929
14	13360	6736	2820	9782	631	9380	6343	3037	402	18	4454	89830	529	969	597	1010	2590	2590	1185	1825	6455	686	6410	410	6000	1929
15	13660	6483	2820	9511	630	9350	6326	3024	161	19	4451	89480	529	969	602	1020	2600	2600	1185	1825	6455	686	6410	410	6000	1929
16	13330	6720	2820	9752	630	9350	6404	2946	402	20	4451	89480	529	969	606	1020	2600	2600	1185	1825	6455	686	6410	410	6000	1929
17	13330	6720	2820	9752	638	9630	6805	2825	286	21	4451	89480	529	969	605	1020	2600	2600	1185	1825	6455	686	6410	410	6000	1929
18	13110	6610	2820	9916	642	9780	6901	2879	380	22	4454	89480	529	969	605	1010	2590	2590	1185	1825	6455	686	6410	410	6000	1929
19	13110	6610	2820	10160	642	9780	6901	2879	380	23	4454	89480	529	969	607	1010	2590	2590	1185	1825	6455	686	6410	410	6000	1929
20	13110	6610	2820	9916	641	9740	6819	2921	354	24	4457	89480	529	969	607	1010	2590	2590	1185	1825	6455	686	6410	410	6000	1929
21	13110	6610	2820	9916	641	9740	6819	2921	354	25	4457	89480	529	969	607	1010	2590	2590	1185	1825	6455	686	6410	410	6000	1929
22	13110	6610	2820	9916	641	9740	6819	2921	354	26	4457	89480	529	969	607	1010	2590	259								

DATE		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						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P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.						N.S.T.F. CAN.						P.A.LATER						LAKE MILNER GAGE		DATE 1929		LOSS MIN		DATE 1929		LAT		LONG		WIND		SEA		TEMP		HUMID		PRESS		VISIB		CLOUDS		TIDE		MOON		WEATHER		MILNER L.L.CAN.						S.S.T.F. CANAL						PALAT & N.S.T.F. CAN.											
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The dates given on these two plates are those which agree most nearly with the midday hour, but the discharges for all river stations have been computed from recording gage records and agree exactly with the schedule. The summaries of diversions or canal totals are for the dates indicated on the tables.

Only stored water quantities have been tabulated for the Lorenzo station where no records were obtained during 1929. Even in former years when discharge data were available the same procedure was followed, for the reason that complete segregation of flow at this point could not be shown satisfactorily without taking into consideration the water bypassed through the Great Feeder.

Storage released from the small Emma Matilda and Two Ocean Lake Reservoirs is shown under the Twin Lakes heading.

Records were not kept of the inflow from Market Lake Springs prior to the time when this water was delivered as storage for the benefit of the Butte and Market Lake Canal.

No attempt was made to maintain the Blackfoot Bridge station except during that portion of the season when river stages were low enough to permit securing wading measurements. Hence, only such discharge data as are believed to be dependable have been tabulated.

The "Clough to Neeley Gain" column which has been included in former reports has been replaced by one showing the net loss between these two stations as determined upon the arbitrary inflow basis of 2,820 second-feet. Subtraction of the daily net loss quantities from this latter amount will give net gains comparable to those contained in earlier reports.

In most other respects the river data presented herein conform and are consistent with those tabulated for preceding seasons.

SEGREGATION OF FLOW

Plate X shows graphically both the total discharge and the computed normal flow past the Moran and Heise gaging stations during the season of 1929. The difference between the total and normal flow graphs on any date, of course, indicates storage.

These graphs are plotted from the special day discharges with the time interval adjusted to make them coincide with the nearest regular day at Heise. For example, the Heise data shown for July 20 really represent mean quantities for the 24 hour period ending at 4 a. m. on July 21 while the indicated Moran data for July 20 are means for the 24 hour period ending at 4 a. m. on July 20.

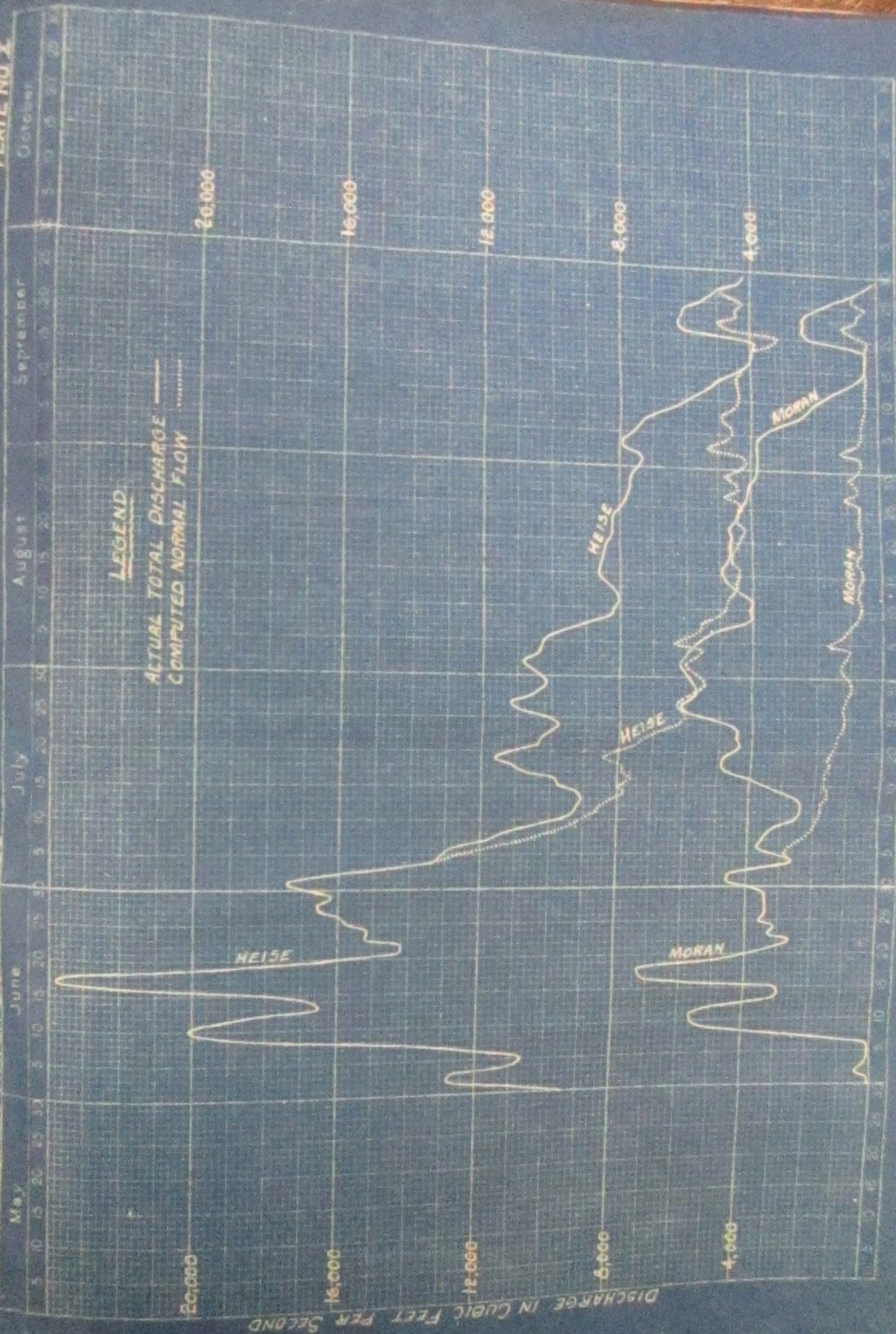
While these diagrams are merely a graphical representation of some of the numerical quantities contained in the tables of Plates VIII and IX, they will be of interest and perhaps of assistance in connection with the explanations and discussions which have preceded as well as those which follow.

Attention is directed to the comparatively low peak mean daily discharge at the Heise station which is about one-third less in amount than that noted for the preceding year.

The pronounced drop in the Heise normal flow shown on September 19 and 20 is probably attributable to inapplicability of the 24 hour time interval at the low river stage of that period. In most other respects the variations noted in the different graphs are readily

HYDROGRAPH SHOWING TOTAL AND NORMAL FLOW AT THE MORAN AND HEISE STATIONS 1922 DISTRIBUTION WATER DISTRICT NO. 36

PLATE NO. 1



accounted for by precipitation or by changes in the amount of storage released from Jackson Lake.

STORAGE DELIVERIES FROM JACKSON LAKE, TWIN LAKES,
MARKET LAKE SPRINGS AND AMERICAN FALLS RESERVOIRS.

The amount of stored water released each day from Jackson Lake was determined from the reservoir capacity tables by noting the quantity corresponding to the daily decrease in stage indicated by the lake gage readings. Occasional irregularities in the latter, attributable to wind effect, were largely eliminated by short period interpolations or adjustments. The difference between this amount and the total discharge at the outlet (as measured at the Moran gaging station) is then considered to be the normal stream flow.

While this method of segregation has now been used for more than ten years, the balancing of certain comparatively unknown factors which it assumes should not be overlooked, viz., that natural lake storage and evaporation loss from the excess area of the present reservoir which are properly creditable to normal flow are exactly offset by the bank or ground storage return which might otherwise be claimed as additional stored water.

An investigation was conducted during 1924 by Thos. R. Newell for the purpose of checking the fairness of the above described plan of operation and also to obtain data from which a more accurate but still workable method might possibly be derived. The data thus secured indicated that although the method in use was not strictly applicable under all conditions of river flow and reservoir operation, it was nevertheless reasonably equitable under certain specific conditions

of rapid and fairly complete drawdown immediately following the beginning of the normal flow deficiency period, provided further allowance or concession was made to younger rights to compensate for the old natural lake storage benefits.

While draft upon the storage impounded in this reservoir was not especially rapid during 1929, it exceeded that of the two preceding seasons both as to rate and total amount and for this reason the methods heretofore used were again continued without attempting the application of any special reservoir loss charges, even though the latter might have been permissible under the Committee of Nine resolution quoted on page 5. (See also pages 23 and 24 of 1928 report for further discussion of this problem).

The storage transmission loss schedule agreed upon for 1929 again provided for flat percentage deductions of 2.5 between Moran and Heise, 4.4 between Heise and Lorenzo, 0.5 between Lorenzo and Woodville and 6.0 between Woodville and Blackfoot Bridge. The basis for these various charges has been fully described in preceding reports.

Transmission deductions for all storage delivered to canals diverting above the Blackfoot Bridge gaging station were computed upon the basis of losses to Woodville, as specified in the purchase contracts. Obviously it would be impracticable to calculate losses to the heading of each individual canal and this group method was doubtless originally adopted to avoid the necessity for such procedure. Since more than half the Jackson Lake storage owned in the upper valley is diverted above the Woodville

station and the balance within a distance of about twenty miles below that point, this plan would seem to be at least reasonably fair to all concerned.

On the basis of the 1929 schedule of losses, these upper valley canals received at their headgates 92.74395 per cent of the stored water turned out for them at Moran.

All lower valley canals were charged an additional 6.0 per cent, making their headgate deliveries amount to 87.179313 per cent of the amounts released for their benefit at the outlet of the upper reservoir.

The same percentage losses were applied to Twin Lakes storage, all of which was later pooled with Jackson Lake water for headgate delivery upon the Woodville basis to the Osgood canal of the Utah-Idaho Sugar Company.

Inflow from Market Lake Springs was similarly credited to the account of the Butte and Market Lake Canal Company but in this instance (because of the close proximity of inflow and diversion points), without the application of any transmission loss charges.

No distinction was made as to the source of stored water delivered to canals diverting from the river below the American Falls Reservoir. Season rights in the latter were subject to prorated reservoir loss deductions but all water delivered in excess of the calculated normal flow passing the Neeley station was classed as storage.

Plate XI shows 1929 daily and total storage deliveries to all canals diverting from Snake River and in addition includes Jackson Lake and American Falls deliveries through substitution to Henrys Fork and Fall River canals.

NAME

★ HENRY'S FORK AND FALL RIVER CANALS. DISCHARGES HERE LISTED ONE DAY LONGER THAN ABOVE.

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192x

[illegible]

PLATE NO. XI																											
19	20	21	22	23	24	25	26	27	28	REGULAR SEC. FT.	SPECIAL SEC. FT.	TOTAL SEC. FT.	TOTAL AC. FT.	JACKSON L. EQUIV. A.F.	JACKSON L. RIGHT A.F.	LAKE EQUIV. A.F.	LAKE RIGHT A.F.	SEASONAL TOTAL	SEASONAL RIGHT	NOTES							
										911	3	914	1813	1955	1200	755	1955			(a) Sold 300 ac. ft. to Mattson Craig and 1000 ac. ft. to Twin Groves Canal & Irrig. Co.							
										5816	265	6081	12061	13005	2000	12453	12453			(b) Sold 2000 ac. ft. to Rudy Irrig. Canal Co.							
										751	108	859	1704	1837	4100	0	2000			(c) Purchased from Harrison Canal & Irrig. Co.							
										6626		6626	13142	14170	60	9977	14077			(d) Purchased from Progressive Irrig. Dist.							
										27		27	54	58	60	0	50			(e) Sold 60 ac. ft. to Nelson (Holt) Canal and 1250 ac. ft. to Rudy Irrig. Canal Co.							
										74		74	147	158		300	300			(f) Sold 20 ac. ft. to Edwards Ditch, 5 ac. ft. to New Sweden Irrig. Dist., and 350 ac. ft. to City of Idaho Falls (Edwards right included herein.)							
										7262	127	7389	14656	15803	3690	11384	15074			(g) Purchased 2000 ac. ft. from Enterprise Canal Co. & 1250 ac. ft. from Harrison Canal & Irrig. Co.							
										2818	181	2999	5948	6413	5250	25259	25259			(h) Sold 2000 ac. ft. to Twin Groves Canal & Irrig. Co.							
										2272		2272	4506	4859	5120	0	5250			(i) Purchased 2000 ac. ft. from Blackfoot Irrig. Co.							
										5793	36	5829	11562	12467	1040	7115	12235			(j) Purchased 2000 ac. ft. from Reid Canal Co. and 1000 ac. ft. from Progressive Irrig. Dist.							
										244		244	484	522	4000	0	1040			(k) Purchased 1500 ac. ft. from Woodville Canal Co.							
										1725	66	1725	3421	3689	3000	4275	7275			(l) Purchased 2000 ac. ft. from No. Side Canal Co. Ltd. Should also be credited with 323 ac. ft. from Market Lake Springs (headgate delivery)							
										3172		3172	6422	6924		0				(m) Ann. Falls rebate not provided for in 1929. Should also be credited with 1658 ac. ft. released from Twin Lakes during 1929.							
										95	38	133	264	285		851	851			(n) Purchased 50 ac. ft. from Idaho Irrig. District.							
										6341		6341	12577	13561	2000	2851	4851			(o) Purchased 350 ac. ft. from Idaho Irrig. District.							
										1302		1302	2583	2785		3000	3000			(p) Sold 1500 ac. ft. to Farmers Own Ditch Co.							
										601		601	1192	1285		1500	1500			(q) Sold 2000 ac. ft. to Enterprise Irrig. Dist. and 1227 ac. ft. to Aberdeen Springfield Canal Co.							
										350		350	694	748		979	979			(r) Purchased 1227 ac. ft. from Blackfoot Irrig. Co., 1380 ac. ft. from Trego Canal Co., & 4052 ac. ft. from U.S. Govt.							
										1421		1421	2818	3038	2000	2851	4851			(s) American Falls rebate requested in cash.							
										4354	32	4386	8700	9381		9567	9567			(t) Sold 1380 ac. ft. to Aberdeen Springfield Canal Co.							
										54		54	107	115		213	213			(u) Sold 2000 ac. ft. to Butte & Market Lake Canal Co.							
										15		15	30	32		76	76										
										0		0	0		355	0	355										
										7982	346	8328	16518	17810	5000	27223	32223										
										1352		1352	2682	2892	1500	2214	3714										
										145		145	288	311		350	350										
										2253	123	2376	4713	5082		7355	7355										
										18021	339	18360	36417	39266	15000	25970	40970										
										81777	1664	83441	165503	178451	53315	167707	221022										
										11093	260	11353	22518	24280	8000	21379	29379										
										42706	1170	43876	87027	93835	42685	56036	98721										
										674		674	1337	1442		3827	3827										
																0	0										
										54473	1430	55903	110882	119557	50685	81242	131927										
															</												

A summary of 1929 season rights is also included. In the case of the American Falls Reservoir these have been prorated on the basis of 1,626,332 acre-feet (June 25 maximum of 1,573,770 plus 52,562 early season draft as measured at Neeley Station) maximum possible season delivery but all lower valley canal rights as tabulated are still subject to reservoir loss deductions. The latter total 71,752 acre-feet for the draft period subsequent to June 25 and should be prorated according to the following table:

Name	Maximum 1929 Total Am. Falls Reservoir Right	Prorated 1929 Net 1929 Total Am. Falls Res. Am. Falls Loss Res. Right (a)	
Minidoka Project	367,315	13,094	354,221
North Side Canal Co., Ltd.	575,866 (b)	12,313	563,553 (b)
Twin Falls Canal Co.	238,875	6,563	232,312
Milner Low Lift Irrig. District	30,131	1,329	28,802
Idaho Power Company	43,050	1,899	41,151
U. S. New Divisions	828,631	36,525	792,106
Am. Falls Res. Dist. (Unassigned)	666	29	637
Total	2,084,534	71,752	2,012,782

(a) Includes Am. Falls equiv. of Jackson Lake Rights.

(b) Includes rights of Hillsdale Irrigation District.

Notes on Plate XI explain reduction or increase of rights by reason of seasonal sale or purchase of storage.

During the early part of the delivery period a few charges were made against upper valley canals on account of water ordered but for various reasons not accepted. These are included with actual deliveries in the daily tabulation but are segregated under the "Special" heading in the season summary.

All stored water diversions have been listed upon a headgate basis except those of the Idaho Power Company which were measured at the river gaging station immediately below Milner Dam. These latter account

for 27,624 second-feet of the 49,266 second-feet total flow which passed this point during the 125 day period ending October 3, 1929. The remaining 21,642 second-feet may be segregated as follows:

Normal flow wasted during June and at the end of the season	9,907	sec.-ft.
General waste prorated against all lower valley canals	2,812	" "
Unavoidable waste charged 5/11 against the North Side Canal Co. and 6/11 against the Twin Falls Canal Co.	7,110	" "
Waste attributable to high stage maintained in Lake Milner and charged against the North Side Canal Co., Ltd.	<u>1,813</u>	" "
Total	21,642	" "

All stored water waste has been included in the daily deliveries as listed on Plate XI and this accounts for the differences noted in comparison with the charges shown on Plates VIII and IX.

The comparatively few overdrafts shown are largely explained by the fact that actual deliveries were made upon the assumption that all American Falls rights except those of the United States would be upon a full reservoir or 100 per cent basis, whereas, as previously explained on pages 12-13, the deficiency was finally prorated against all owners in determining the season rights recorded in this report.

It is interesting to note that nearly 85 per cent of all upper valley storage rights and nearly 81 per cent of those of the lower valley (Government, power and unassigned water excluded) was utilized during 1929. This comparatively heavy group usage together with the rather numerous supplemental purchases made by individual canals clearly indicates that existing rights would be far from adequate to compensate completely for the greater shortage in normal flow to be expected in seasons similar to those of 1919 and 1924.

The rather heavy overdraft noted for the Minidoka Project canals might easily have been avoided by drawing upon Lake Walcott storage in September. The excess delivery to the Idaho Power Company over and above their summer or primary right was charged against the larger secondary right which becomes available to them after the end of the irrigation season.

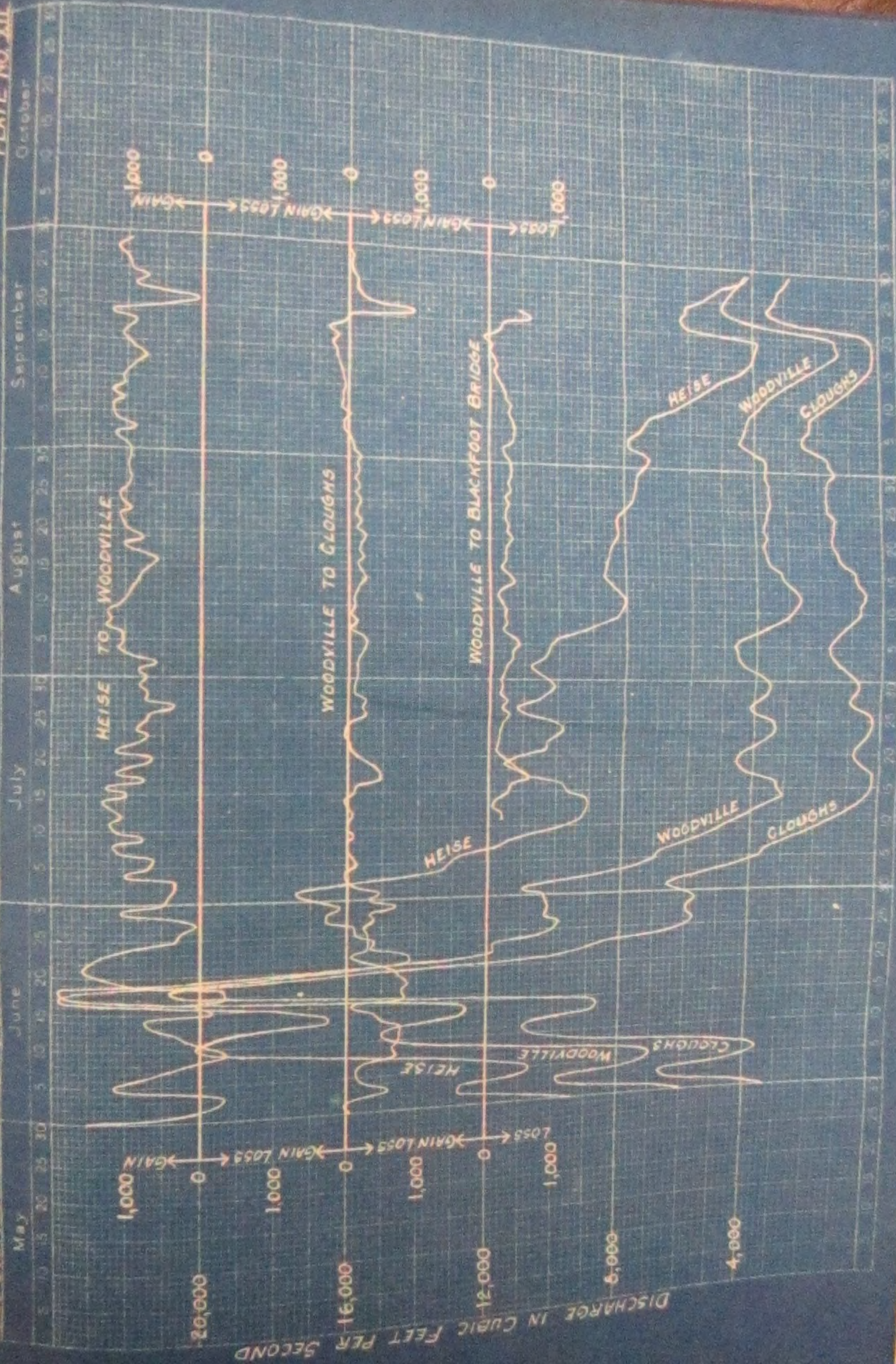
RIVER LOSSES AND GAINS

Losses and gains throughout different sections of Snake River are included in the data contained on Plates VIII and IX but the changes in the quantities and the relation which these changes have to the discharge of the river at different points are much more readily noted when indicated graphically.

Plate XII contains hydrographs of the total flow passing the Heise, Woodville and Clough gaging stations, together with graphs showing the net losses and gains in the two intervening sections and also in the section from Blackfoot Bridge to Clough's. The latter, of course, only covers that portion of the season during which the Blackfoot Bridge records were dependable. It will be noted that the sectional gains and losses are plotted to a different scale from the hydrographs and in consequence their variations appear somewhat exaggerated.

The general characteristics of these curves are not materially different from those heretofore presented. Gains and losses, as might be expected, are rather irregular during periods of rapid fluctuation in river stage but during the major part of the season are reasonably consistent with those of other years. In comparison with 1927 and 1928, gains shown in 1929 are generally smaller, while losses are likewise larger, all of which

HYDROGRAPHS ILLUSTRATING NET LOSSES AND GAINS BETWEEN HEISE AND CLOUGHS GAGING STATIONS 1929 DISTRIBUTION WATER DISTRICT NO. 36 PLATE NO. XII



points toward the more careful use of water and consequent reduction of waste which usually accompanies a reduction in supply.

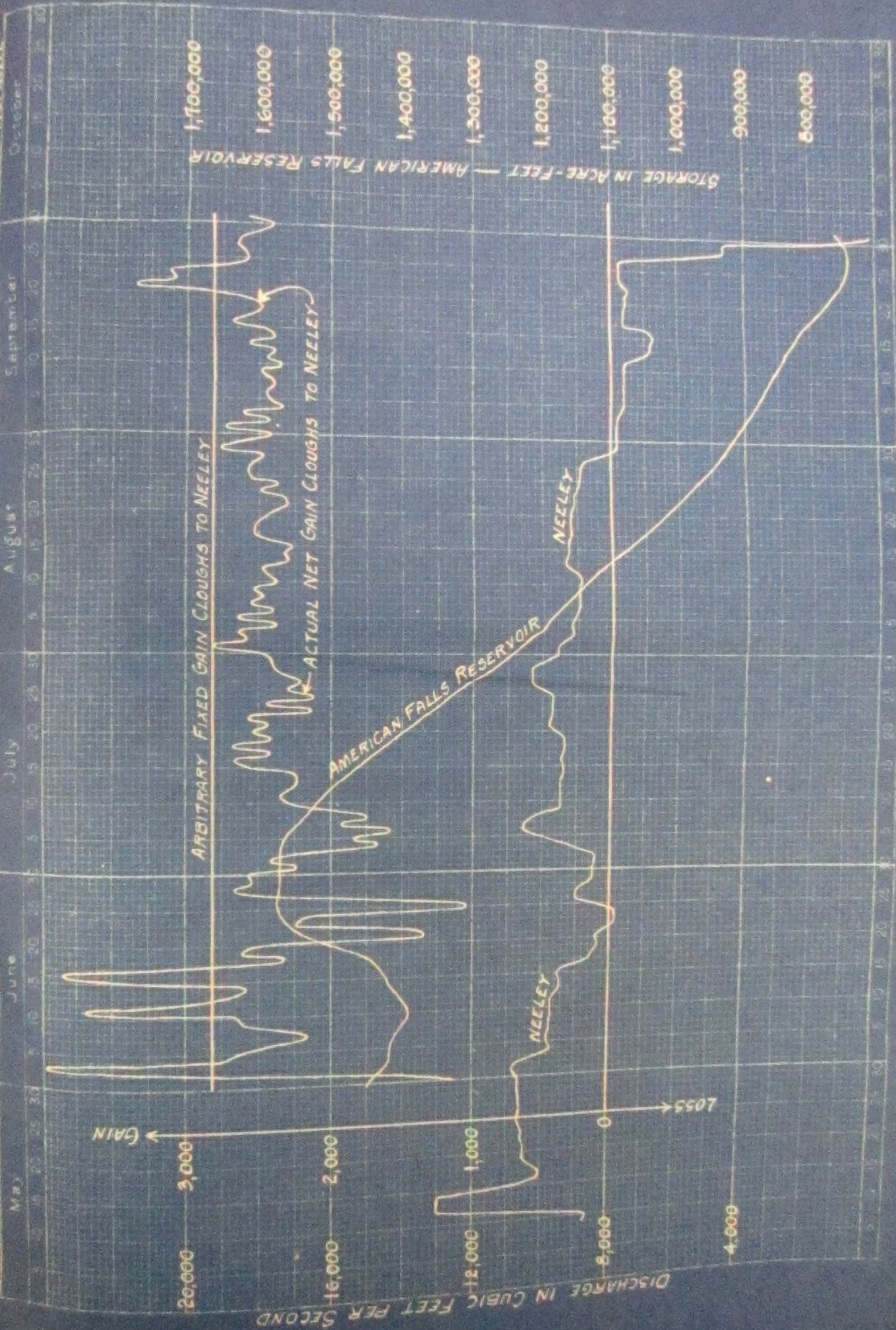
No further surface waste and return flow measurements were obtained hence nothing can be added to the discussions contained in preceding reports relative to the equity of the percentage transmission loss schedules which have been used.

Plate XIII affords a graphical study of the inflow between the Clough and Neeley gaging stations and its relation to changes in the amount of storage impounded in the American Falls Reservoir. The Neeley total discharge hydrograph has been added for the convenience of those who may desire to make comparisons of reservoir inflow and outflow.

The graph showing the net gain between the Clough and Neeley stations introduces the reservoir factors and is therefore decidedly irregular. The difference between it and the arbitrary fixed gain of 2,820 second-feet represents the over-all or net loss through the reservoir as determined upon this hypothesis. Discontinuance of the special investigation carried on during the two preceding seasons by Thomas R. Newell makes anything approaching a direct computation of 1929 reservoir losses impossible, but the following comparison should be of interest because of the check it affords upon the applicability of the assumed average inflow during the three normal storage draft months:

Year	Mean daily over-all loss			Calculated or arbitrary daily aver. inflow between Clough & Neeley stations		
	Clough-Neeley		Sept.	July	Aug.	Sept.
	July	Aug.				
1927	823	388	340	2760	2960	3000
1928	607	282	148	2790	2830	2850
1929	560	338	234	2830	2820	2820

HYDROGRAPHS ILLUSTRATING COMPUTED AND NET GAINS BETWEEN CLOUGH AND NEELEY STATIONS 1929 DISTRIBUTION WATER DISTRICT NO. 36 PLATE NO. XIII



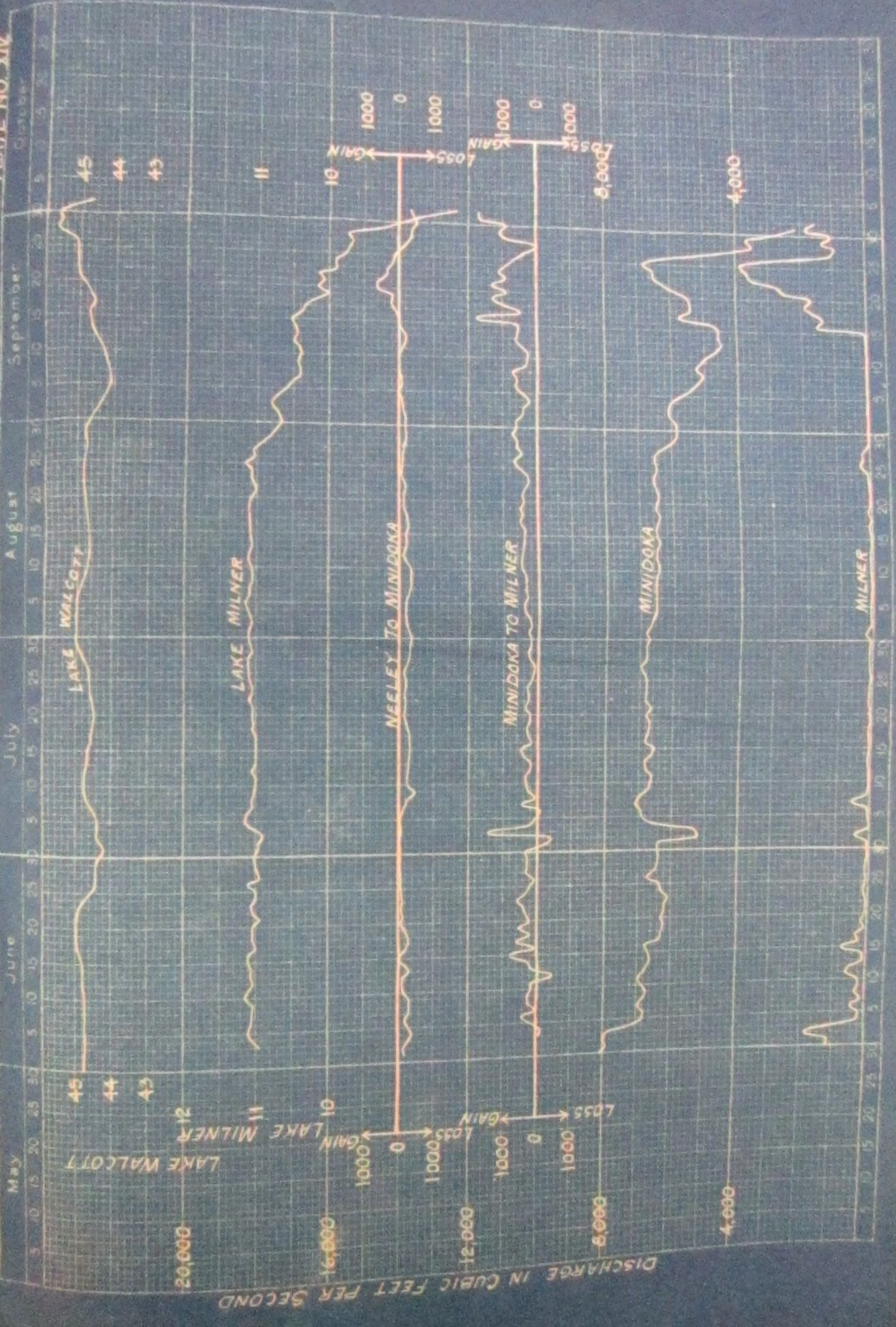
The exposed water surface area was less in 1929 during each of the three months than in the two preceding years and on that score smaller losses would be expected. General climatic and run-off conditions would also point toward a smaller average inflow between the two stations in 1929. Both these factors, when studied in connection with the loss and inflow comparison, indicate that the use of 2,820 second-feet as average daily inflow was reasonably satisfactory but probably favored normal flow to the detriment of stored water rights during the greater part of the regulation period. Further substantiation is afforded by comparison of the average daily inflow for the season after first deducting the discharge of Portneuf River at Pocatello as follows:

1927	2,693
1928	2,662
1929	2,707
Mean 1919-1928	2,515

The pronounced rise in the net gain graph shown on Plate XIII noted during the latter part of September is presumably due chiefly to the rather heavy rains experienced at that time. The general upward trend of this graph after the early part of July is consistent with previous years and is explained by the decreased loss and increased inflow to be expected with heavy reservoir draft.

Plate XIV shows net gain or loss graphs for the two sections between the Neeley and Minidoka and the Minidoka and Milner gaging stations respectively. It also includes curves showing the fluctuations in water surface elevation at both Lake Walcott and Lake Milner, together with hydrographs for the river stations below the Minidoka and Milner dams. All these are plotted to coincide with Lake Walcott or Minidoka dates.

HYDROGRAPH ILLUSTRATING NET LOSSES AND GAINS BETWEEN NEELEY AND MILNER STATIONS 1929 DISTRIBUTION WATER DISTRICT NO. 36 PLATE NO. XIV



It will be noted that these curves are similar to those contained in former reports. Those showing sectional gains and losses are more regular than usual - due, no doubt, to the generally uniform river stages which pertained and the consequent diminution of error attributable to time interval.

The average net loss for the entire 122 day period listed for the section from Neeley to Minidoka amounted to 154 second-feet, while for the corresponding time the average net gain noted between Minidoka and Milner was 426 second-feet. The following table summarizes these records for the last eleven seasons:

Year	Summer Average Daily Loss Neeley-Minidoka	Summer Average Daily Gain Minidoka-Milner	Summer Average Daily Gain Neeley-Milner
1919	145	249	104
1920	301	323	22
1921	254	296	42
1922	248	344	96
1923	210	366	156
1924	46	206	160
1925	188	355	167
1926	197	230	33
1927	347	348	1
1928	111	353	242
1929	154	426	272
Mean for 11 Year period	200	318	118

Attention was directed in the 1928 report to certain fairly well defined relationships indicated by these figures which are of interest and will perhaps bear repetition:

(1) Loss between Neeley and Minidoka depends very largely upon the stages maintained in Lake Walcott during and prior to the particular season under consideration. Rapid draw downs over wide range of stage, such as those noted during the latter part of the 1919 and 1924 seasons,

result in material bank storage return to the river which offsets or nullifies in part, at least, the earlier period losses. Long continued, low, pre-irrigation season lake levels of the character experienced during the winter of 1926-7 so deplete the adjacent ground storage that after the water surface is again raised, increased channel losses must be expected until the ground reservoir is sufficiently replenished to once more establish a condition of equilibrium. The heavy loss of 1927 is probably accounted for in this way.

(2) Gain between Minidoka and Milner may be expected to vary more or less directly with the general water supply for the particular season. In deficient supply years such as 1919, 1924 and 1926 less water was delivered to Minidoka Project lands and the water applied was more carefully conserved than in such years as 1925, 1927, 1928 and 1929. Hence in the former both the ground return and the surface waste were undoubtedly smaller in amount than in other seasons when the available supply was in excess of all requirements.

(3) Gain from Neeley through to Milner is an algebraic combination of the quantities listed for the other two sections and for this reason the seasonal variations are harder to analyze than those for the shorter intervening sections.

Small percentage errors in river data would appear relatively large in the preceding table of losses and for this reason too much weight should not be given to the results secured during any one season. With this fact in mind, the comparatively small loss noted between Neeley and Minidoka for both 1928 and 1929 may be cited as possibly attributable to a rise in the

adjacent ground water table which in turn may be due to the higher water levels in the American Falls Reservoir which have pertained during the past three years.

New drains on the Minidoka South Side tract partially explain the pronounced increase in the gain noted between the Minidoka and Milner River stations during 1929. Independent surface return flow measurements made throughout this section during the last three summers by Messrs. W. G. Steward and H. G. Haight of the Twin Falls Canal Company show the following average totals which are reasonably consistent with the tabular quantities obtained from the river data sheets:

YEAR	AMOUNT
1927	312 second-feet
1928	281 " "
1929	370 " "

NORMAL FLOW COMPARISON

The purpose of Plate XV is to afford a condensed comparison of the normal flow water supply available during the respective irrigation seasons 1919-1929 for the so-called Idaho Falls area. It consists of a table showing by months the principal component parts which make up the normal flow of Snake River and the extent to which water of this character is used in the territory between the Heise and Rexburg gaging stations at the upper end and the Blackfoot or Clough station at the lower end of this section.

The quantities listed are all summarized from the more extensive river data tables contained in District No. 36 Water Distribution Reports. Time intervals have been adjusted to correspond as nearly as practicable to Heise dates.*

*1922 and 1923 reports erroneously state that these records have been adjusted to correspond with actual canal diversion dates.

SUMMARY BY MONTHS OF NORMAL
HEISE, REXBURG, AND BLACKFOOT GAGING STATIONS
IRRIGATION SEASONS 1919-1929

PLATE NO. XV

YEAR	HEISE	REXBURG	BLACKFOOT RIVER	RETURN FLOW HEISE TO BLACKF.T.	NORM. FLOW GAINS FROM STORD LOSS	TOTAL NORM. FLOW SUPPLY	TOTAL DIVERS. HEISE TO BLACKF.T.	STORD DIVERS HEISE-BLKFT	NORM FLOW DIVERSIONS HEISE-BLKFT	BALANCE AT BLACKFOOT STATION	NORM. FLOW PASSING BLKFT STA.
JUNE											
1919	241439	22477	400	-18994	16728	262050	264752	10433	254319	7731	7731
1920	552010	84910	3205	-14579	0	625346	310026	0	310026	315520	315520
1921	683677	153110	5039	-33854	0	807972	277462	0	277462	530510	530510
1922	595489	113110	8190	-2304	0	714485	331345	0	331345	382940	382940
1923	482579	90200	11597	23918	0	608294	262414	0	262414	345880	345880
1924	303207	15476	201	10631	4577	334092	233547	66484	300031	34061	34061
1925	499874	123010	4830	25290	0	653004	314594	0	314594	338410	338410
1926	273736	24483	78	12507	14003	324827	271980	-29310	301290	23537	23537
1927	769629	222720	3547	22579	0	1018475	302135	0	302135	716340	716340
1928	535941	92550	6787	53258	0	688536	275266	0	275266	413270	413270
1929	477105	96520	4184	-1102	0	576707	313097	0	313097	263610	263610
JULY											
1919	121226	21652	14	-4693	12321	150520	180218	35521	144697	5823	5823
1920	353997	31670	4810	8812	6048	405337	317285	7089	310196	95141	95141
1921	308767	30480	3213	5651	7803	355914	323826	11031	312795	43119	43119
1922	297375	31066	6471	25067	10796	370773	321988	4681	317307	53468	53468
1923	365108	28661	5864	22459	10881	432973	328971	4020	324951	108022	108022
1924	171278	17345	655	23098	9853	222229	255842	39689	216153	6076	6076
1925	431518	82730	4470	38754	7175	564647	331306	3577	327729	236918	236918
1926	161280	28155	54	18374	14360	222223	243236	24417	218819	3404	3404
1927	500607	98850	3160	41057	2171	645845	357867	9368	348499	297346	297346
1928	384962	41538	2488	26015	1332	456335	343880	18929	324951	131384	131384
1929	276001	32241	1366	21808	4395	335811	350752	50765	299987	35824	35824
AUGUST											
1919	98839	19894	78	3938	5123	127872	129034	2217	126837	1035	1035
1920	177244	24553	5266	34866	6390	248319	259201	25851	233350	14969	14969
1921	182975	35843	8209	29756	5620	262403	260670	10608	250062	12341	12341
1922	192659	34222	6897	37086	7071	277935	252849	15156	237693	40242	40242
1923	178904	28569	5979	35700	11008	260250	265384	23833	241551	18699	18699
1924	101953	25686	16	13484	6060	147199	210169	67074	143095	4104	4104
1925	213661	45400	5963	32383	15047	312454	281504	3753	277751	34703	34703
1926	127966	28940	134	14822	5264	177126	198605	23454	175151	1975	1975
1927	218894	43590	7688	45871	8748	324791	292973	10018	282955	41836	41836
1928	182608	32339	4405	41405	4002	264759	300983	47578	253405	11354	11354
1929	150508	27565	1113	24298	7693	211177	280059	78364	201695	9482	9482
SEPTEMBER											
1919	87115	22501	345	2234	0	112195	107517	0	107517	4678	4678
1920	66389	21130	2290	10585	521	100915	71638	0	71638	29277	29277
1921	129235	50960	4525	26655	184	211559	149132	0	149132	62427	62427
1922	133751	39758	1996	15950	0	191455	142769	0	142769	48686	48686
1923	120623	30825	3798	23299	5571	184116	194718	22831	171867	12249	12249
1924	87479	24983	503	15364	1890	150219	141596	15613	125283	4236	4236
1925	142414	56000	9268	23884	2280	233846	150283	0	150283	83563	83563
1926	95060	29468	1064	10731	2172	138515	142137	4869	137268	1247	1247
1927	161014	53890	5027	30407	5566	255904	188009	885	187124	68780	68780
1928	125824	40930	3006	29996	3413	202869	213109	13076	200033	2836	2836
1929	127676	37998	4194	26387	3426	199681	183283	10216	173067	26614	26614

NOTES: - ALL DISCHARGE QUANTITIES LISTED IN SECOND FEET.
* THEORETICAL; SEE TEXT FOR EXPLANATION.
* INCLUDES EMMA MATILDA AND TWO OCEAN LAKE STORAGE.
* RECORDS FOR SEPTEMBER 1-15 (INCLUSIVE) ONLY.
* RECORDS FOR SEPTEMBER 1-28 (INCLUSIVE) ONLY.

The following brief explanation which is almost identical with that contained in the 1928 report is included for the convenience of the reader:

- | | | |
|---------|------|---|
| Columns | 1-4 | Sufficiently described by headings. |
| Column | 5 | Net gain in the section. To be complete it should probably have added to it the quantities contained in the same lines in Column 6. |
| Column | 6 | If the storage transmission loss is correctly determined, any indicated normal flow gain from that source is really additional return flow. The quantities shown in this column reflect changes in transmission loss schedules which should be taken into account in comparing the data for different years. |
| Column | 7 | The algebraic sum of the quantities listed in the five preceding columns. |
| Columns | 8-10 | Headings afford sufficient explanation. |
| Column | 11 | "Total Normal Flow Supply" less "Normal Flow Diversions Heise to Blackfoot". |
| Column | 12 | Equivalent to column 11 on which it affords a check, as the results here given for all years except 1924, 1925, 1926, 1927, 1928 and 1929 were taken direct from the river data sheets. Because of the use of the Blackfoot Bridge instead of the older Blackfoot or Clough station as an adjustment point, theoretical rather than actual totals must be used for the latter point in these five years if a check on column 11 is to be secured. |

The 1924 and 1926 segregations of diversions as between stored water and normal flow are complicated by the exchanges which were made. For example, the minus storage shown as being diverted during June of these years represents the excess of the normal flow accepted for exchange over actual storage diversions while the normal flow shown as diverted in the same month very evidently is a theoretical rather than an actual quantity.

The analysis of 1929 conditions to be derived from this summary emphasizes certain more or less pronounced peculiarities, some of which have already been mentioned.

(1) During the months of June, July and August and also for the entire four months, the total normal flow supply was less than for any other year listed with the exception of the three low water seasons of 1919, 1924 and 1926.

(2) Barring two years in June, one year in July, three years in August and three years in September, total diversions exceeded those of corresponding months while the total diversions for the entire four months were larger than during any other years except 1927 and 1928.

(3) More stored water was diverted between Heise and Blackfoot during July and August and also during the entire season than in any preceding year.

(4) Less water passed Blackfoot during each of the months of July and August and during the entire four months period than in any other years tabulated with the three exceptions of 1919, 1924 and 1926.

GROUND WATER

The ground water study described in the preceding report was continued throughout 1929 under the supervision of Harold T. Stearns, Associate Geologist, U. S. Geological Survey and is now almost completed.

Additional funds were provided for this work as follows:

U. S. Geological Survey	\$2,750.00
State of Idaho	3,000.00
Lower Valley Irrigation Interests and Idaho Power Company	1,000.00

The scope of the investigation was broadened to include additional areas tributary or adjacent to the upper Snake River basin - particularly the Lost River region where a number of test wells were drilled.

No independent well data were secured during 1929 by employees of District No. 36, hence no attempt will be made herein to discuss this work or the results accomplished in any further detail, but the reader will be referred to the forthcoming report of Mr. Stearns which should be available on or about July 1, 1930.

WATER DISTRIBUTION AND HYDROMETRIC WORK
IN THE HENRYS FORK - FALL RIVER - TETON AREA

H. S. Kollenborn again filled the position of hydrographer and deputy water master in direct charge of hydrometric work and water distribution in the so-called North Fork section during 1929. All other deputies and assistants working in this area reported to and received their instructions from him, while he, in turn, worked under general orders issued from the office at Idaho Falls.

For the third successive season, summer headquarters were maintained in the jury room at the Court House in St. Anthony.

A brief general summary of the work in this part of District No. 36 is afforded by the following abstract from a report prepared by Mr. Kollenborn:

The month of May was devoted to the reestablishment of river and canal gaging stations, the securing of gage readings and discharge measurements and the completion of minor repairs to equipment.

With the assistance of Bruno Albert and T. W. Luetjen regular gage readings were secured beginning June 1, but stations were only visited on alternate days prior to the arrival of Geo. H. Powell on June 16. Thereafter daily records were obtained except during the period September 15 to 19 and after September 24.

Phyllis Tuckett was employed upon a half time basis to act as office clerk from June 1 to September 16.

In other respects the personnel arrangements were substantially the same as those of former years except that both Messrs. Luetjen and Powell were assigned to specific daily routes and were paid in the same manner as other river riders, although each acted also as hydrographer for the canals in his territory. This change is believed to have effected a slight saving in expense.

Stream flow was fairly well sustained until the early part of July and during this period diversions were unrestricted. Regulation began on July 6 and in general conformed to the orders from the Idaho Falls office. From July 14 to 18 on Henrys Fork and Fall River and from August 15 to 29 on Teton River, however, it was necessary to cut rights in advance of the main river schedule because of insufficient supply in these respective streams.

Storage was first released from Henrys Lake Reservoir on July 13 and draft continued thereafter throughout practically the entire regulation period. Six thousand three hundred seventy acre-feet were sold at a unit price of \$1.00 per acre-foot, to canals having no ownership rights in the reservoir. Stored water was delivered to systems diverting from Fall River through substitution, in the manner described in previous reports.

During the latter part of September an Au long distance stage indicator was installed by the Utah Power and Light Company to facilitate river control at their Ashton dam. This installation was completed too late in the season to be of much assistance during 1929 but it should be of considerable value in 1930.

While some reduction in crop yield may be attributed to shortage of water supply, losses of this character were considerably reduced by the use of stored water. In fact, with the exception of a few areas supplied from Fall and Teton Rivers the supply proved adequate for all requirements.

No serious administration difficulties were encountered and water distribution was effected throughout the season in an orderly manner.

Actual deliveries to the canals diverting from Henry's Fork, Fall and Teton Rivers are shown on Plates XVI, XVII, XVIII and XIX. These are based upon daily gage readings except during the first half of the month of June and portions of September when readings were obtained at less frequent intervals. Discharges for days when no observations were made have been supplied by interpolation or by estimate.

FALL RIVER CANALS

GENITIVE FORK CANALS

STETON RIVER CANALS

TOTAL CONDENSATION RIVER

DAILY DISCHARGE IN SECOND FEET OF CANALS DIVERTING FROM HENRYS FORK AND TRIBUTARIES FOR JULY 1929

FALL RIVER CANALS

NAME OF CANAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL	
YELLOWSTONE	0	0	0	0	0	0	0	0	0	0	0	0	5	7	14	0	0	7	10	4	0	0	0	0	0	0	0	0	0	0	0	0	47
HARRISFIELD	0	0	0	0	2	11	10	11	14	19	19	18	18	19	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	147
MARYSVILLE	169	182	170	182	197	196	205	194	190	182	178	190	196	200	204	200	200	200	200	68	0	0	0	0	0	0	0	0	0	0	103	93	3639
TOTAL DIVERS ABOVE SQUIRREL	169	182	170	182	199	207	215	205	204	201	197	213	221	233	210	200	207	210	72	0	0	0	0	0	0	0	0	0	0	0	103	93	3639
FARMERS OWN	40	48	48	43	41	41	32	41	40	45	44	46	46	46	32	0	0	0	6	6	36	46	45	45	45	47	47	39	20	21	20	19	1075
ALMY	6	5	4	4	3	1	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
ENTERPRISE	145	156	157	158	153	143	155	151	146	152	147	150	147	20	3	101	135	135	140	144	140	140	139	138	141	138	139	139	139	134	137	4166	
BELL	11	8	6	9	6	5	5	3	5	5	5	4	3	5	6	5	3	3	7	7	6	3	4	5	5	5	4	4	4	5	4	161	
FALL RIVER	431	445	437	437	387	361	361	340	340	364	357	353	336	336	357	357	328	342	314	355	353	353	357	357	355	355	361	353	355	347	345	11272	
MBEE	6	7	3	6	2	3	3	2	1	2	2	3	3	3	5	5	5	4	12	9	9	8	7	7	7	6	4	3	4	3	4	152	
CHESTER	89	100	89	83	12	55	54	34	28	22	32	20	16	41	51	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	805
SILKEY	14	15	15	12	4	9	9	4	18	13	13	8	6	15	15	15	10	12	12	15	15	15	14	14	13	22	23	23	21	14	6	415	
CLARR	38	35	31	45	40	33	33	29	26	24	13	12	12	14	13	13	12	17	23	33	29	29	32	32	26	26	29	30	32	30	32	829	
WHITE	5	4	2	1	0	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	4	3	1	31	
TOTAL DIVERS-SQUIRREL TO CHESTER	789	827	792	798	708	651	646	605	606	628	614	597	569	482	482	515	493	513	580	599	598	593	598	598	594	594	593	578	579	557	547	18334	

HENRYS FORK CANALS

NAME OF CANAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL	
DEWEY	22	20	20	20	20	20	23	21	21	21	21	20	20	21	8	5	5	21	23	23	23	23	21	21	21	21	19	18	20	21	23	23	608
LAST CHANCE	79	65	56	62	49	54	60	56	56	52	52	50	53	58	22	0	10	47	48	51	52	51	56	54	54	51	50	50	48	56	55	1557	
ST ANTHONY UNION	316	460	443	433	415	427	463	478	423	313	361	414	409	468	487	496	457	481	487	497	500	439	435	463	396	459	457	502	503	505	499	14121	
FARMERS FRIEND	204	159	149	145	154	138	138	127	123	126	122	118	166	138	0	0	0	0	0	0	0	0	0	0	0	0	0	53	57	54	50	2341	
TWIN GROVES	151	141	139	119	117	112	114	111	110	109	109	107	116	112	118	125	124	141	140	140	140	139	137	136	137	134	133	66	0	43	85	3605	
SALEM UNION	230	219	227	222	211	161	151	144	151	160	158	167	164	154	181	188	188	222	225	234	233	215	211	211	213	223	222	186	65	0	116	5652	
TOTAL DIVERS-ASANTON TO ST ANTH.	1202	1064	1034	1021	966	912	949	937	884	781	823	876	928	951	816	813	784	912	923	945	948	867	860	885	823	886	920	877	694	681	828	27130	
EGIN	268	261	274	268	256	232	229	294	270	254	252	246	242	241	247	251	249	254	256	279	281	281	286	279	0	274	274	302	315	319	304	8038	
ST ANTHONY UNION FEEDER	62	44	48	73	44	62	7	59	56	43	44	43	40	64	77	84	81	75	83	109	109	110	103	103	123	103	91	95	95	97	92	2313	
INDEPENDENT	303	284	280	266	257	206	275	271	240	200	223	220	200	229	275	284	282	271	204	129	129	118	118	118	118	121	110	124	129	147	160	151	6304
CONSOLIDATED FARMERS	271	261	252	240	216	203	204	199	190	209	190	119	79	58	106	218	211	102	185	190	190	216	216	206	183	167	169	171	181	185	185	5778	
TOTAL DIVERS-ST ANTH TO REXBURG	904	850	854	847	773	709	715	783	756	706	709	628	561	592	705	837	823	702	728	707	709	725	723	726	427	654	658	697	738	761	752	22459	

TETON RIVER CANALS

NAME OF CANAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
SLIDINGWAY	21	23	20	21	20	18	17	16	15	11	10	10	9	12	11	11	11	9	9	10	12	11	10	8	7	7	8	6	4	6	6	342
WALFORD	187	179	167	168	162	155	151	147	141	138	136	133	130	127	123	137	140	94	82	85	85	68	66	67	64	65	64	65	62	62	68	3456
TETON IRRIGATION	95	91	80	100	99	83	79	80	79	67	67	63	67	67	71	77	84	60	59	75	75	69	88	80	74	87	74	94	88	98	96	2485
GOOD LUCK	39	37	31	31	31	25	25	21	21	18	18	17	17	16	15	13	13	13	11	10	9	8	8	7	7	8	8	7	7	7	9	502
PIONEER	44	43	33	31	30	24	24	23	23	31	30	30	28	25	24	24	24	22	12	12	11	10	10	10	10	10	9	11	11	11	11	639
STEWART	54	57	51	47	48	34	32	29	28	24	23	26	25	27	26	26	22	16	15	12	10	10	10	10	10	10	10	10	10	10	10	743
PINCOCK BYINGTON	26	24	22	22	22	35	22	22	20	20	19	18	17	17	16	23	24	17	15	11	9	9	8	8	8	8	8	8	8	8	8	428
PINCOCK GARNER	37	43	40	37	42	35	22	22	20	20	19	18	17	17	16	23	24	17	15	11	9	9	8	8	8	8	8	8	8	8	8	598
TETON ISLAND FEEDER	440	396	386	366	347	318	318	322	294	279	273	270	267	267	261	250	279	291	364	353	350	328	300	291	273	294	291	285	267	267	273	9562
NORTH SALEM	15	28	19	18	40	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	143
FOXANA	25	21	18	18	15	15	11	12	10	9	9	8	8	8	14	10	9	10	11	11	15	13	15	13	12	12	12	15	11	9	9	386
ISLAND WARD	54	56	52	52	44	41	40	39	35	32	30	27	30	29	46	41	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	672
WOODMANSEE JOHNSON	47	47	41	39	34	30	28	25	23	23	23	24	24	23	17	16	12	25	20	12	16	14	13	11	10	10	10	10	10	11	14	604
CITY OF REXBURG	62	57	51	54	63	58	48	46	41	39	53	54	55	58	55	51	50	36	45	41	28	28	30	30	26	26	24	27	29	36	26	324
REXBURG IRRIGATION	290	277	219	218	212	211	196	190	186	183	182	184	181	180	175	158	141	140	154	132	130	141	130	129	129	124	124	126	119	134	121	5037
TOTAL DIVERS-TETON RIVER	1369	1329	1230	1227	1209	1085	1011	989	933	889	887	878	872	870	868	851	848	737	507	773	735	737	692	661	662	653	680	659	659	642	654	27102

[illegible][illegible]

TETON RIVER CANALS														
NAME OF CANAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CONWAY	4	2	1	1	5	5	5	5	10	11	11	6	2	0
ORD	67	82	100	96	99	95	93	93	93	77	68	68	68	58
IRRIGATION	87	81	78	85	80	75	78	76	76	69	74	76	75	74
LUCK	10	10	9	9	9	9	9	9	9	8	7	9	9	8
ER	10	9	8	8	11	8	9	9	10	9	10	9	9	10
ERT	14	14	10	11	11	12	11	11	11	13	12	12	13	14
CK BYINGTON	8	8	8	9	8	8	8	8	8	7	8	6	8	7
CK GARNER	9	10	9	9	9	9	9	8	8	8	8	7	7	7
ISLAND FEEDER	295	282	238	273	276	270	267	261	250	253	256	250	244	239
SALEM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WARD	10	24	19	15	15	15	15	18	13	2	2	2	6	6
ANGEER JOHNSON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEXBURG	15	14	12	12	13	12	11	11	11	12	12	13	9	1
IRRIGATION	29	31	25	18	19	22	23	28	28	25	25	28	27	2
	125	141	184	130	133	132	133	129	131	133	132	125	139	12
VERMONT TETON RIVER	674	708	701	677	689	672	674	674	642	619	622	613	616	5

DAILY DISCHARGE IN SECOND FEET OF CANALS DIVERTING FROM HENRY'S FORK AND TRIBUTARIES FOR SEPTEMBER 1923

FALL RIVER CANALS

NAME OF CANAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	TOTAL
YELLOWSTONE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PARKEFIELD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MARYSVILLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL DIVERS-ABOVE SQUIRREL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FARMERS OWN	10	20	21	20	26	26	26	26	26	26	26	26	25	25	25	25	25	25	16	7	10	8	8	7	11	14	16	18	21	21	546
ALMY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENTERPRISE	49	49	51	50	49	50	50	50	50	49	49	49	50	49	78	108	108	108	108	78	35	35	38	38	13	0	90	88	88	88	1795
BELL	3	3	5	4	4	4	4	5	5	5	5	5	5	5	4	3	4	4	4	4	6	6	6	6	6	6	6	5	4	4	141
FALL RIVER	237	235	232	231	230	234	234	232	230	230	230	230	230	230	266	257	253	227	221	215	227	32	35	93	91	93	91	91	90	90	6311
MABEL	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	63
CHESTER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150
SILKEY	5	8	8	8	8	8	8	8	8	7	7	7	7	7	6	6	6	6	6	7	8	8	7	7	7	7	7	7	7	7	162
CURR	26	26	26	25	25	24	25	25	25	17	17	17	17	17	16	16	19	18	18	17	20	19	18	18	18	18	18	18	18	18	591
WHITE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	2	3	2	2	1	1	1	1	1	1	33
TOTAL DIVERS-SQUIRREL TO CHESTER	337	344	406	423	424	403	406	403	393	366	396	400	397	395	410	429	408	405	395	343	311	118	176	173	157	142	232	229	229	228	5838

HENRY'S FORK CANAL

NAME OF CANAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	TOTAL
DEWEY	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	187
LAST CHARGE	29	28	32	46	44	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	803
ST ANTHONY UNION	310	248	268	262	262	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	258	6410
FARMERS FRIEND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	352
TWIN GROVES	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	1978
SALEM UNION	122	158	154	141	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	138	2480
TOTAL DIVERS-KILTON TO ST ANTH.	489	481	482	476	476	451	448	448	437	392	235	232	380	387	423	463	493	484	475	424	409	419	407	404	419	389	319	297	294	290	12270
EGIN	208	208	207	202	199	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	4352
ST ANTHONY UNION FEEDER	93	92	87	84	82	76	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	1754
INDEPENDENT	92	98	96	91	89	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	2702
CONSOLIDATED FARMERS	131	129	129	135	158	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	4056
TOTAL DIVERS-ST ANTH TO REXBURG	524	527	519	512	528	514	515	514	455	446	430	388	398	393	406	413	424	433	431	434	397	392	381	382	377	429	335	333	335	335	12644

TETON RIVER CANALS

NAME OF CANAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	TOTAL
SIDNEY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	144
WILFORD	67	65	68	68	67	66	67	66	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	2153
TETON IRRIGATION	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	1044
GOOD LUCK	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	331
PIONEER	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	301
STEWART	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	444
PINGOCK BYINGTON	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	288
PINGOCK GARNER	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	7356
TETON ISLAND FEEDER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH SALEM	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	217
ROXANA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ISLAND WARD	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	300
WOODMANSEE JOHNSON	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	2304
CITY OF REXBURG	147	131	125	134	136	135	129	128	141	135	121	117	107	133	130	128	125	122	100	102	129	71	71	65	67	68	60	67	67	67	3572
REXBURG IRRIGATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL DIVERS-TETON RIVER	578	566	614	611	603	581	571	564	573	576	554	545	527	513	543	542	563	571	504	482	536	584	535	510	472	459	530	501	500	500	16743

In the matter of recomputation of data, as well as in other respects, the records here presented correspond and are consistent with those contained on Plates IV, V, VI and VII.

Plates XX and XXI summarize data in regard to the flow of the three principal streams, diversions therefrom, losses and gains throughout different sections, insofar as it is practicable to show all these facts in such tables.

The time interval basis used therein for the presentation of river records is as follows:

Time from Henrys Lake in hours	Gaging Station	Period used for comparable daily means
0	Henrys Lake Outlet near Lake	Day ending at 2 p. m.
40	Henrys Fork at Warm River	Day ending at 6 a. m. 2nd day following
50	Henrys Fork near Ashton	Day ending at 4 p. m. 2nd day following
	Fall River near Squirrel	*Day ending at 10 a. m. 2nd day following
	Fall River near Chester	Day ending at 5 p. m. 2nd day following
54	Henrys Fork at St. Anthony	Day ending at 8 p. m. 2nd day following
	Teton River near St. Anthony	Day ending at 6 p. m. 2nd day following
66	Henrys Fork near Rexburg	Day ending at 8 a. m. 3rd day following.

This schedule is arranged to make the river records correspond as regards time with those on Plates VIII and IX. The dates indicated on the tables are for the nearest midnight to midnight or calendar days.

*Approximate means used. No recording gage records available.

[illegible]

FALL RIVER

HENRY'S FORK										TETON RIVER																	
DIVERSECTIONS				THEO BAL		CHESTER		GAIN ABOVE CHEST		ASTON PLUS CHEST		DIVERS. ABOVE ST. ANTH.				THEO BAL		GAIN ABOVE CHEST		DIVERS. BELOW ST. ANTH.				THEO BAL		GAIN ABOVE CHEST	
DATE	TOTAL STOR.	NORM	CHEST	GAGE	DISCH.	CHEST	PLUS CHEST	TOTAL	STOR.	NORM.	ST. ANTHONY	DISCH.	STOR.	NORM.	ST. ANTHONY	DISCH.	STOR.	NORM.	ST. ANTHONY	DISCH.	STOR.	NORM.	ST. ANTHONY	DISCH.	STOR.	NORM.	
1910	1761	628	1133	576	690	557	3530	1354	1354	2176	425	2360	2360	184	1173	1187	1187	1187	1187	1187	1187	1187	1187	1187	1187	1187	
MAY	2174	623	1531	695	640	386	3830	1229	1229	2176	425	2360	2360	209	1160	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	
JUNE	1904	617	1421	690	640	443	3830	1106	1106	2176	425	2360	2360	16	1145	1145	1145	1145	1145	1145	1145	1145	1145	1145	1145	1145	
JULY	1765	623	1280	690	640	443	3830	1106	1106	2176	425	2360	2360	180	1125	1125	1125	1125	1125	1125	1125	1125	1125	1125	1125	1125	
AUG.	1765	623	1147	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1911	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1912	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1913	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1914	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1915	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1916	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1917	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1918	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1919	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1920	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1921	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1922	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1923	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1924	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1925	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1926	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1927	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1928	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1929	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1930	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1931	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1932	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1933	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1934	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1935	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1936	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1937	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1938	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1939	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1940	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1941	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1942	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1943	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1944	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1945	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1946	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1947	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1948	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1949	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1950	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1951	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1952	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1953	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1954	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	
1955	1765	623	1014	690	640	443	3830	1106	1106	2176	425	2360	2360	132	1085	1085	1085	1085	1085	1085	1085	1085	1085				

ATIONS ON HENRYS FORK AND TRIBUTARIES

HENRYS FORK

ST. ANTHONY										TETON RIVER									
ST. ANTHONY		GAIN		DIVERS. BELOW ST. ANTH.		THEO. BAL. BELOW DIVERS.		THEO. BAL. BELOW DIVERS.		THEO. BAL. HENRYS FORK NEAR REIDG. SAINT ANTH.									
GAGE	DISCH.	TOTAL	STOR'D	NORM.	TOTAL	STOR'D	NORM.	GAGE	DISCH.	DIVERS.	THEO. BAL. BELOW DIVERS.	EST. BAL. BELOW DIVERS.	THEO. BAL. HENRYS FORK NEAR REIDG. SAINT ANTH.						
1520	1520	1520	557	3530	1354		1354	425	2360		2360	184	1173	1520	1247	213		1450	350
1540	1540	1540	557	3530	1229		1229	446	2810		2810	209	1160	1540	1223	537		2307	1433
1570	1570	1570	557	3530	106		106	450	2900		2900	76	1145	1570	1137	533		2337	1433
1600	1600	1600	557	3530	1190		1190	435	2570		2570	180	1092	1600	1035	533		1807	1433
1630	1630	1630	557	3530	124		124	411	2130		2130	94	1092	1630	1035	533		1807	1433
1660	1660	1660	557	3530	1302		1302	411	2050		2050	132	1108	1660	1035	533		1807	1433
1690	1690	1690	557	3530	1302		1302	411	2050		2050	132	1108	1690	1035	533		1807	1433
1720	1720	1720	557	3530	1302		1302	411	2050		2050	132	1108	1720	1035	533		1807	1433
1750	1750	1750	557	3530	1302		1302	411	2050		2050	132	1108	1750	1035	533		1807	1433
1780	1780	1780	557	3530	1302		1302	411	2050		2050	132	1108	1780	1035	533		1807	1433
1810	1810	1810	557	3530	1302		1302	411	2050		2050	132	1108	1810	1035	533		1807	1433
1840	1840	1840	557	3530	1302		1302	411	2050		2050	132	1108	1840	1035	533		1807	1433
1870	1870	1870	557	3530	1302		1302	411	2050		2050	132	1108	1870	1035	533		1807	1433
1900	1900	1900	557	3530	1302		1302	411	2050		2050	132	1108	1900	1035	533		1807	1433
1930	1930	1930	557	3530	1302		1302	411	2050		2050	132	1108	1930	1035	533		1807	1433
1960	1960	1960	557	3530	1302		1302	411	2050		2050	132	1108	1960	1035	533		1807	1433
1990	1990	1990	557	3530	1302		1302	411	2050		2050	132	1108	1990	1035	533		1807	1433
2020	2020	2020	557	3530	1302		1302	411	2050		2050	132	1108	2020	1035	533		1807	1433
2050	2050	2050	557	3530	1302		1302	411	2050		2050	132	1108	2050	1035	533		1807	1433
2080	2080	2080	557	3530	1302		1302	411	2050		2050	132	1108	2080	1035	533		1807	1433
2110	2110	2110	557	3530	1302		1302	411	2050		2050	132	1108	2110	1035	533		1807	1433
2140	2140	2140	557	3530	1302		1302	411	2050		2050	132	1108	2140	1035	533		1807	1433
2170	2170	2170	557	3530	1302		1302	411	2050		2050	132	1108	2170	1035	533		1807	1433
2200	2200	2200	557	3530	1302		1302	411	2050		2050	132	1108	2200	1035	533		1807	1433
2230	2230	2230	557	3530	1302		1302	411	2050		2050	132	1108	2230	1035	533		1807	1433
2260	2260	2260	557	3530	1302		1302	411	2050		2050	132	1108	2260	1035	533		1807	1433
2290	2290	2290	557	3530	1302		1302	411	2050		2050	132	1108	2290	1035	533		1807	1433
2320	2320	2320	557	3530	1302		1302	411	2050		2050	132	1108	2320	1035	533		1807	1433
2350	2350	2350	557	3530	1302		1302	411	2050		2050	132	1108	2350	1035	533		1807	1433
2380	2380	2380	557	3530	1302		1302	411	2050		2050	132	1108	2380	1035	533		1807	1433
2410	2410	2410	557	3530	1302		1302	411	2050		2050	132	1108	2410	1035	533		1807	1433
2440	2440	2440	557	3530	1302		1302	411	2050		2050	132	1108	2440	1035	533		1807	1433
2470	2470	2470	557	3530	1302		1302	411	2050		2050	132	1108	2470	1035	533		1807	1433
2500	2500	2500	557	3530	1302		1302	411	2050		2050	132	1108	2500	1035	533		1807	1433
2530	2530	2530	557	3530	1302		1302	411	2050		2050	132	1108	2530	1035	533		1807	1433
2560	2560	2560	557	3530	1302		1302	411	2050		2050	132	1108	2560	1035	533		1807	1433
2590	2590	2590	557	3530	1302		1302	411	2050		2050	132	1108	2590	1035	533		1807	1433
2620	2620	2620	557	3530	1302		1302	411	2050		2050	132	1108	2620	1035	533		1807	1433
2650	2650	2650	557	3530	1302		1302	411	2050		2050	132	1108	2650	1035	533		1807	1433
2680	2680	2680	557	3530	1302		1302	411	2050		2050	132	1108	2680	1035	533		1807	1433
2710	2710	2710	557	3530	1302		1302	411	2050		2050	132	1108	2710	1035	533		1807	1433
2740	2740	2740	557																

HENRYS LAKE RESERVOIR										HENRYS FORK										ASHTON										SQUIREL										FALL														
DATE		GAGE		STORAGE		TOTAL		NET DR		GAGE		DISCH		STOR		NORM		DATE		GAGE		DISCH		STOR		NORM		DATE		GAGE		DISCH		STOR		NORM		DATE		GAGE		DISCH		STOR		NORM								
1929	AUG 1	48340	1508	70	1438	499	751	725	26	AUG 2	499	751	725	26	AUG 3	499	751	725	26	AUG 4	499	751	725	26	AUG 5	499	751	725	26	AUG 6	499	751	725	26	AUG 7	499	751	725	26	AUG 8	499	751	725	26	AUG 9	499	751	725	26					
	AUG 10	48340	1508	70	1438	499	751	725	26	AUG 11	499	751	725	26	AUG 12	499	751	725	26	AUG 13	499	751	725	26	AUG 14	499	751	725	26	AUG 15	499	751	725	26	AUG 16	499	751	725	26	AUG 17	499	751	725	26	AUG 18	499	751	725	26					
	AUG 19	48340	1508	70	1438	499	751	725	26	AUG 20	499	751	725	26	AUG 21	499	751	725	26	AUG 22	499	751	725	26	AUG 23	499	751	725	26	AUG 24	499	751	725	26	AUG 25	499	751	725	26	AUG 26	499	751	725	26	AUG 27	499	751	725	26					
	AUG 28	48340	1508	70	1438	499	751	725	26	AUG 29	499	751	725	26	AUG 30	499	751	725	26	AUG 31	499	751	725	26	AUG 32	499	751	725	26	AUG 33	499	751	725	26	AUG 34	499	751	725	26	AUG 35	499	751	725	26	AUG 36	499	751	725	26					
	AUG 37	48340	1508	70	1438	499	751	725	26	AUG 38	499	751	725	26	AUG 39	499	751	725	26	AUG 40	499	751	725	26	AUG 41	499	751	725	26	AUG 42	499	751	725	26	AUG 43	499	751	725	26	AUG 44	499	751	725	26	AUG 45	499	751	725	26					
	AUG 46	48340	1508	70	1438	499	751	725	26	AUG 47	499	751	725	26	AUG 48	499	751	725	26	AUG 49	499	751	725	26	AUG 50	499	751	725	26	AUG 51	499	751	725	26	AUG 52	499	751	725	26	AUG 53	499	751	725	26	AUG 54	499	751	725	26					
	AUG 55	48340	1508	70	1438	499	751	725	26	AUG 56	499	751	725	26	AUG 57	499	751	725	26	AUG 58	499	751	725	26	AUG 59	499	751	725	26	AUG 60	499	751	725	26	AUG 61	499	751	725	26	AUG 62	499	751	725	26	AUG 63	499	751	725	26					
	AUG 64	48340	1508	70	1438	499	751	725	26	AUG 65	499	751	725	26	AUG 66	499	751	725	26	AUG 67	499	751	725	26	AUG 68	499	751	725	26	AUG 69	499	751	725	26	AUG 70	499	751	725	26	AUG 71	499	751	725	26	AUG 72	499	751	725	26					
	AUG 73	48340	1508	70	1438	499	751	725	26	AUG 74	499	751	725	26	AUG 75	499	751	725	26	AUG 76	499	751	725	26	AUG 77	499	751	725	26	AUG 78	499	751	725	26	AUG 79	499	751	725	26	AUG 80	499	751	725	26	AUG 81	499	751	725	26					
	AUG 82	48340	1508	70	1438	499	751	725	26	AUG 83	499	751	725	26	AUG 84	499	751	725	26	AUG 85	499	751	725	26	AUG 86	499	751	725	26	AUG 87	499	751	725	26	AUG 88	499	751	725	26	AUG 89	499	751	725	26	AUG 90	499	751	725	26					
	AUG 91	48340	1508	70	1438	499	751	725	26	AUG 92	499	751	725	26	AUG 93	499	751	725	26	AUG 94	499	751	725	26	AUG 95	499	751	725	26	AUG 96	499	751	725	26	AUG 97	499	751	725	26	AUG 98	499	751	725	26	AUG 99	499	751	725	26	AUG 100	499	751	725	26
	AUG 101	48340	1508	70	1438	499	751	725	26	AUG 102	499	751	725	26	AUG 103	499	751	725	26	AUG 104	499	751	725	26	AUG 105	499	751	725	26	AUG 106	499	751	725	26	AUG 107	499	751	725	26	AUG 108	499	751	725	26	AUG 109	499	751	725	26					
	AUG 110	48340	1508	70	1438	499	751	725	26	AUG 111	499	751	725	26	AUG 112	499	751	725	26	AUG 113	499	751	725	26	AUG 114	499	751	725	26	AUG 115	499	751	725	26	AUG 116	499	751	725	26	AUG 117	499	751	725	26	AUG 118	499	751	725	26					
	AUG 119	48340	1508	70	1438	499	751	725	26	AUG 120	499	751	725	26	AUG 121	499	751	725	26	AUG 122	499	751	725	26	AUG 123	499	751	725	26	AUG 124	499	751	725	26	AUG 125	499	751	725	26	AUG 126	499	751	725	26	AUG 127	499	751	725	26					
	AUG 128	48340	1508	70	1438	499	751	725	26	AUG 129	499	751	725	26	AUG 130	499	751	725	26	AUG 131	499	751	725	26	AUG 132	499	751	725	26	AUG 133	499	751	725	26	AUG 134	499	751	725	26	AUG 135	499	751	725	26	AUG 136	499	751	725	26					
	AUG 137	48340	1508	70	1438	499	751	725	26	AUG 138	499	751	725	26	AUG 139	499	751	725	26	AUG 140	499	751	725	26	AUG 141	499	751	725	26	AUG 142	499	751	725	26	AUG 143	499	751	725	26	AUG 144	499	751	725	26	AUG 145	499	751	725	26					
	AUG 146	48340	1508	70	1438	499	751	725	26	AUG 147	499	751	725	26	AUG 148	499	751	725	26	AUG 149	499	751	725	26	AUG 150	499	751	725	26	AUG 151	499	751	725	26	AUG 152	499	751	725	26	AUG 153	499	751	725	26	AUG 154	499	751	725	26					
	AUG 155	48340	1508	70	1438	499	751	725	26	AUG 156	499	751	725	26	AUG 157	499	751	725	26	AUG 158	499	751	725	26	AUG 159	499	751	725	26	AUG 160	499	751	725	26	AUG 161	499	751	725	26	AUG 162	499	751	725	26	AUG 163	499	751	725	26					
	AUG 164	48340	1508	70	1438	499	751	725	26	AUG 165	499	751	725	26	AUG 166	499	751	725	26	AUG 167	499	751	725	26	AUG 168	499	751	725	26	AUG 169	499	751	725	26	AUG 170	499	751	725	26	AUG 171	499	751	725	26	AUG 172	499	751	725	26					
	AUG 173	48340	1508	70	1438	499	751	725	26	AUG 174	499	751	725	26	AUG 175	499	751	725	26	AUG 176	499	751	725	26	AUG 177	499	751	725	26	AUG 178	499	751	725	26	AUG 179	499	751	725	26	AUG 180	499	751	725	26	AUG 181	499	751	725	26					
	AUG 182	48340	1508	70	1438	499	751	725	26	AUG 183	499	751	725	26	AUG 184	499	751	725	26	AUG 185	499	751	725	26	AUG 186	499	751	725	26	AUG 187	499	751	725	26	AUG 188	499	751	725	26	AUG 189	499	751	725	26	AUG 190	499	751	725	26					
	AUG 191	48340	1508	70	1438	499	751	725	26	AUG 192	499	751	725	26	AUG 193	499	751	725	26	AUG 194	499	751	725	26	AUG 195	499	751	725	26	AUG 196	499	751	725	26	AUG 197	499	751	725	26	AUG 198	499	751	725	26	AUG 199	499	751	725	26					
	AUG 200	48340	1508	70	1438	499	751	725	26	AUG 201	499	751	725	26	AUG 202	499	751	725	26	AUG 203	499	751	725	26	AUG 204	499	751	725	26	AUG 205	499	751	725	26	AUG 206	499	751	725	26	AUG 207	499	751	725	26	AUG 208	499	751	725	26					
	AUG 209	48340	1508	70	1438	499	751	725	26	AUG 210	499	751	725	26	AUG 211	499	751	725	26	AUG 212	499	751	725	26	AUG 213	499	751	725	26	AUG 214	499	751	725	26	AUG 215	499	751	725	26	AUG 216	499	751	725	26	AUG 217	499	751	725	26					
	AUG 218	48340	1508	70	1438	499	751	725	26	AUG 219	499	751	725	26	AUG 220	499	751	725	26	AUG 221	499	751	725	26	AUG 222	499	751	725	26	AUG 223	499	751	725	26	AUG 224	499	751	725	26	AUG 225	499	751	725	26	AUG 226	499	751	725	26					
	AUG 227	48340	1508	70	1438	499	751	725	26	AUG 228	499	751	725	26	AUG 229	499	751	725	26	AUG 230	499	751	725	26	AUG 231	499	751	725	26	AUG 232	499	751	725	26	AUG 233	499	751	725	26	AUG 234	499	751	725	26	AUG 235	499	751	725	26					
	AUG 236	48340	1508	70	1438	499	751	725	26	AUG 237	499	751	725	26	AUG 238	499	751	725	26	AUG 239	499	751	725	26	AUG 240	499	751	725	26	AUG 241	499	751	725	26	AUG 242	499	751	725	26	AUG 243	499	751	725	26	AUG 244	499	751	725	26					
	AUG 245	48340	1508	70	1438	499	751	725	26	AUG 246	499	751	725	26	AUG 247	499	751	725	26	AUG 248	499	751	725	26	AUG 249	499	751	725	26	AUG 250	499	751	725	26	AUG 251	499	751	725	26	AUG 252	499	751	725	26	AUG 253	499	751	725	26					
	AUG 254	48340	1508	70	1438	499	751	725	26	AUG 255	499	751	725	26	AUG 256	499	751	725	26	AUG 257	499	751	725	26	AUG 258	499	751	725	26	AUG 259	499	751	725	26	AUG 260	499	751	725	26	AUG 261	499	751	725	26	AUG 262	499	751	725	26					
	AUG 263	48340	1508	70	1438	499	751	725	26	AUG 264	499	751	725	26	AUG 265	499	751	725	26	AUG 266	499	75																																

PLATE NO. XXI

[illegible]

Actual continuous measurement of the water wasting past the last diversion dams on Henry's Fork and Teton River is not considered practicable and for that reason the "Est. Bal. below Diversions" columns are blank except for days when either personal inspection was made or other reliable information was secured. Waste and return flow from adjacent irrigated lands enter the lower portions of both streams and comprise the total discharge measured at the Rexburg station at times when all available water is diverted at the upper points.

The "Storage Loss" column at Henry's Lake Reservoir is similar to that contained in the 1928 report and the quantities listed therein represent rather arbitrary deductions made to offset as nearly as practicable the excess of reservoir loss over bank storage return. Without the application of such a charge the normal flow at the outlet of the lake would have been almost entirely absorbed to effect an equalization, whereas, under the method followed, the normal at the Lake gaging station is quite consistent with measurements secured for three seasons prior to the completion of the outlet dam. (See page 40 of the 1928 report for further discussion of reservoir losses).

In order to avoid unnecessary complications, all stored water quantities shown on Plates XX and XXI represent Henry's Lake water or (in the case of Fall River canals) normal flow substituted therefor. Diversions in lieu of storage released from Jackson Lake are here tabulated as normal flow but have been properly charged as stored water in the summary of deliveries from the latter source shown on

TOTAL AND NORMAL FLOW AT THE LAKE, WARM RIVER AND ASHTON STATIONS ON HENRY'S FORK
 1929 DISTRIBUTION WATER DISTRICT NO. 36
 PLATE NO. XXII



Plate XXII contains a curve showing the way in which storage was drawn from Henry's Lake Reservoir together with actual total and computed normal flow hydrographs for Henry's Fork at the Lake, Warm River and Ashton gaging stations. These graphs are all plotted with time interval adjusted to coincide with the nearest calendar day at the Ashton station.

The Ashton record conforms more closely with that for the Warm River station than was the case during most of the preceding seasons but some apparent inconsistencies are still noted which can probably be attributed very largely to faulty regulation at the Ashton Dam of the Utah-Power and Light Company.

The extremely low normal flow indicated at both the Warm River and Ashton stations on July 31 is probably due to the impounding of water in side channels and bottom lands on the rapidly rising river stage of that period. Similar though less pronounced depressions in the normal graphs on August 13 and 27 are explained in like manner, while the peaks accompanying rapid drops in river stage are accounted for by return flow from the same sources.

STORAGE DELIVERIES FROM HENRY'S LAKE RESERVOIR

Plate XXIII contains a tabulation of daily deliveries of Henry's Lake storage together with summaries which afford comparisons between total actual use and stored water available each day and for the entire season.

Because of changes in the status of normal flow rights which cannot be forecast in advance and because of the lack of any equalizing

1929 DISTRIBUTION WATER DISTRICT

PLATE NO. XIII

DATE	MARYS-VILLE CANAL	FARMERS-OWN CANAL	ENTER-PRIZE CANAL	TOTAL FALL RIV. CANALS	DEWEY CANAL	LAST CHANGE CANAL	FARMERS FRIEND CANAL	SALEM UNION CANAL	INDEPENDENT CANAL	CONSOL FARMERS CANAL	TOTAL HEN FORK CANALS	TOTAL HEADGATE DELIVERY	AVAILABLE ASHTON STATION	UNUSED AT HEAD GATE	HEN LAKE EQUIV-TOT. DELIVERY	UNUSED HEN L. EQUIV
JULY 15													40	40		41
16			101	101	5						5	106	100	-6	108	-6
17			135	135	5	10					15	150	160	10	153	10
18			135	135	21	47					68	203	193	-10	207	-10
19			140	140	23	48			4		75	215	224	9	219	9
20		29	84	113	23	51			129		203	316	223	-93	322	-95
21		38		38	23	52			129		204	242	194	-48	247	-49
22		38		38	23	51			118		192	230	221	-9	235	-9
23		37		37	21	56			118		195	232	221	-11	237	-11
24		38		38	21	54			118		193	231	223	-8	236	-8
25		39		39	21	54			121		196	235	224	-11	240	-11
26		40		40	19	51			110		180	220	223	3	224	3
27		33		33	18	50			124		192	225	225	0	230	0
28		18		18	20	50	53		129	31	283	301	286	-15	307	-15
29		21		21	21	48	57		147	101	374	395	432	37	403	38
30													32	32		33
31													11	11		11
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TOTAL SECT.	1009	488	1121	2618	973	2534	649	5036	6765	2813	18770	21388	21822	434	21822	445
TOTAL AC.FT.	2001	968	2224	5193	1930	5026	1287	9989	13418	5579	37229	42422	43283	861	43282	882
H.EQUIV.TIED	2041	988	2269	5298	1969	5128	1313	10192	13690	5692	37984	43282	44164	882	43282	882
SEAS SUR. FT.	2000	1000	2000	5000	8118		1370	12840	14219	10665	47212				52212	
BALANCE	-41	12	-269	-238	1021		57	2648	529	4973	9228				8930	

* ST. ANTHONY UNION AND EGIN RIGHTS OF 3608 AC.FT. EACH, NOT LISTED.

or detention reservoir near the lower diversion points, it is not practicable to deliver the exact amount of storage which is available for use each day. Hence it has been customary to permit small overdrafts and underdrafts so long as a fairly even balance is maintained over any considerable period of time and for the whole season. In 1929, it will be noted that 434 second-feet of stored water in all were made available for use which were not actually diverted. Had individual canals been charged with all water ordered but for various reasons not accepted, much, if not all, of this excess might have been absorbed by specific changes.

Deliveries to the Marysville, Farmers Own and Enterprise Companies were effected under the substitution method previously described while storage rights of these three canals and also of the Farmers Friend system were acquired through seasonal purchase.

The Henry's Lake Reservoir is owned and controlled by the North Fork Reservoir Company whose stock, in turn, is held by seven different canal companies. The latter together with their relative percentage participation are listed as follows: Dewey and Last Chance (combined), 15.3; St. Anthony Union, 6.8; Salem Union, 24.2; Egin, 6.8; Independent, 26.8; and Consolidated Farmers, 20.1. While these percentages define the individual rights, actual diversions upon a disproportionate basis may be sanctioned by mutual agreement.

The amount of stored water released from the reservoir each day was determined from the capacity tables by noting the quantity corresponding to the daily decrease in stage indicated by the Lake gage readings and thereafter applying an arbitrary deduction for losses as already explained on page 40 and tabulated on Plates XX and XXI.

A transmission loss of 1.5 per cent was charged between Henry's Lake and Warm River and an additional 0.5 per cent was deducted between the latter point and the Ashton station. These losses correspond with the recommendations submitted by Consulting Engineer R. I. Meeker on August 14, 1923 and are identical with those which have been used since that time. They have never been checked or substantiated by any scientific investigation.

Plate XXIV contains hydrographs for the two gaging stations on Fall River and a graph showing indicated net gains or losses between the two. These are plotted to coincide with the dates at the upper station.

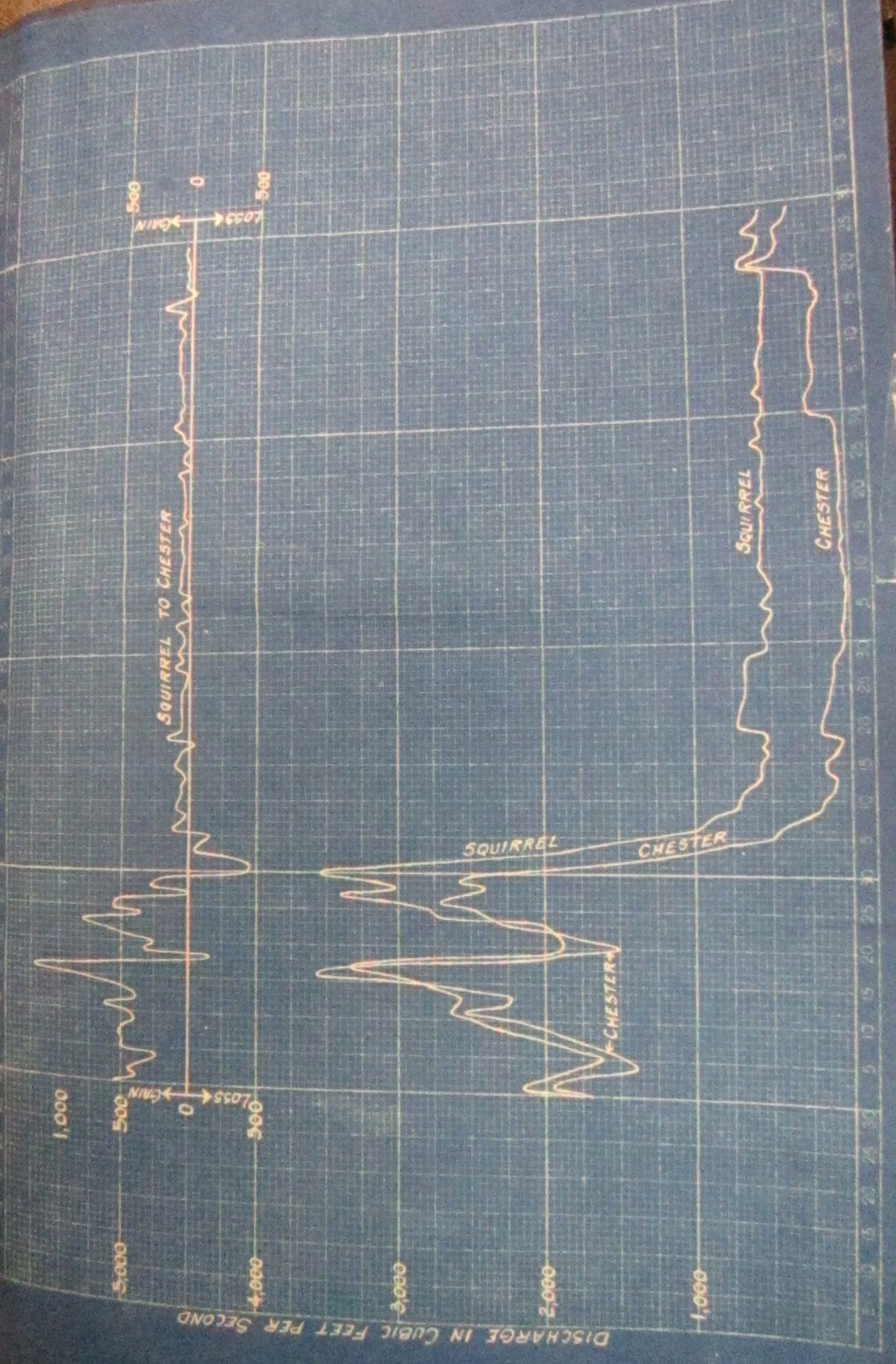
The heavy gains noted during June are probably due to the unmeasured tributary inflow (chiefly from Squirrel Creek) while the irregularities in the gain or loss curve are doubtless largely attributable to the inaccurate daily mean discharges computed for the Squirrel Station at which only staff gage readings were secured.

Hydrographs for the Ashton, St. Anthony and Rexburg gaging stations on Henry's Fork together with curves showing gains or losses in the intermediate sections are included on Plate XXV. All are plotted to agree with the Rexburg dates.

The irregularities noted during June are not unusual and can doubtless be attributed to poor definition of river ratings and to inapplicability of the single time interval during periods of rapid changes in river stage.

The large net gains between St. Anthony and Rexburg are characteristic of this section and are attributable chiefly to return flow from the Egin Bench and Teton River areas.

NET LOSSES AND GAINS BETWEEN THE SQUIRREL AND CHESTER GAGING STATIONS ON FALL RIVER
 1923 DISTRIBUTION WATER DISTRICT NO. 36
 PLATE NO. 241V



NET LOSSES AND GAINS BETWEEN THE ASHTON AND ST. ANTHONY GAGING STATIONS ON HENRY'S FORK
 1929 DISTRIBUTION WATER DISTRICT NO. 36
 PLATE NO. XXV



DISTRIBUTION IN SWAN VALLEY

William Burton was again appointed as deputy water master for the Swan Valley section but his salary and other expenses incident to the work were paid directly by the local water users, in accordance with the custom followed during preceding years. Copies of all instructions regarding cuts and reinstatements were forwarded to him by mail and he was directed to regulate all diversions in accordance with these orders. Aside from the slight delay resulting from the method of communication, regulation in this section was therefore consistent with that in other portions of the district.

Rainey Creek water users were advised that the recently approved permanent transfers from the Long Island canal system would not be honored when this stream under normal regulation was dry below the lowest of the upper group of diversions.

No unusual difficulties or controversies were reported from this territory during the season.

CLIMATOLOGICAL DATA

Study of the U. S. Weather Bureau monthly and annual climatological summaries covering the twelve months ending September 30, 1929 affords much information of interest and serves to explain certain phases of the year's water supply which might otherwise be difficult to understand.

The following notes from the Idaho and Wyoming section reports describe the principal monthly peculiarities:

- | | | |
|----------|------|---|
| October | 1928 | In Idaho, the seventh consecutive month of below normal precipitation. Average conditions in Wyoming. |
| November | 1928 | All weather conditions nearly normal in the upper Snake River drainage area. |
| December | 1928 | A cold month with about the average amount of precipitation mostly in the form of snow. |

January	1929	With only one exception the coldest January of record in Idaho. Snowfall particularly heavy at lower elevations and generally above normal in amount.
February	1929	Except for 1903 the coldest February of record in Idaho. Less than average precipitation mostly in the form of snow.
March	1929	Temperatures nearly normal with a slight deficiency in precipitation.
April	1929	In Idaho the coldest April since 1922. More than the usual amount of precipitation.
May	1929	A very dry month. Temperatures slightly below normal.
June	1929	A cool and comparatively wet month.
July	1929	The driest July of record for Idaho. Hotter than usual. Crops made rapid growth.
August	1929	Mean temperature for Idaho equal to previous high mark established in 1915. Precipitation below normal.
September	1929	Heavy frosts occurred during the early part of the month and temperatures were generally below normal. Total precipitation slightly above the average but confined chiefly to the last third of the month.

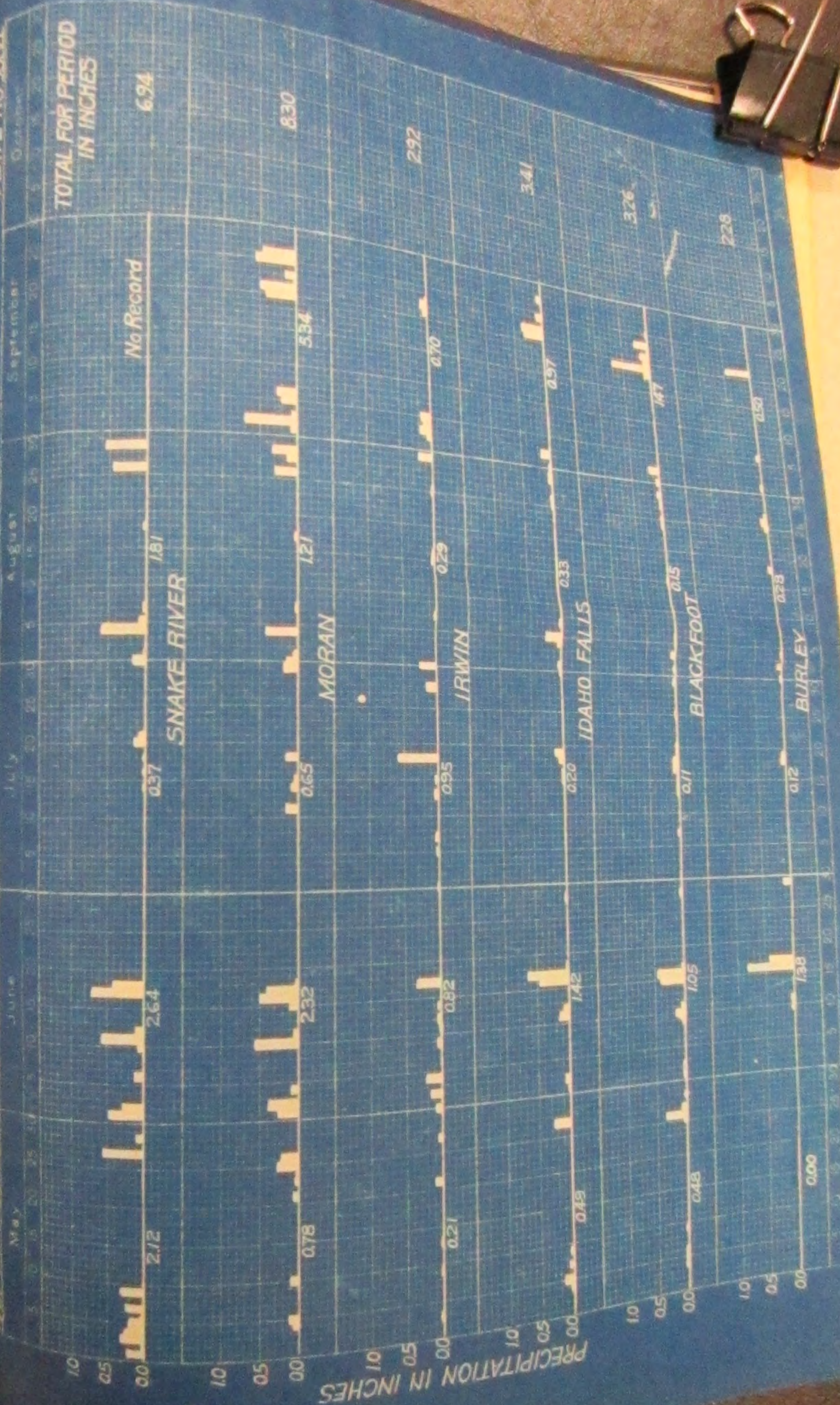
The unusually hot weather experienced during July and August was detrimental to certain crops, while the heavy frosts of early September occasioned very serious damage to alfalfa seed and materially reduced the yield of potatoes in many sections of the valley. With these exceptions, climatic conditions were generally favorable and farm produce in the aggregate was probably nearly normal in amount.

The amount and distribution of precipitation at the principal observation points in District No. 36 territory is shown graphically for the irrigation season on Plates XXVI and XXVII.

DAILY PRECIPITATION CHART-SNAKE RIVER AREA-1929

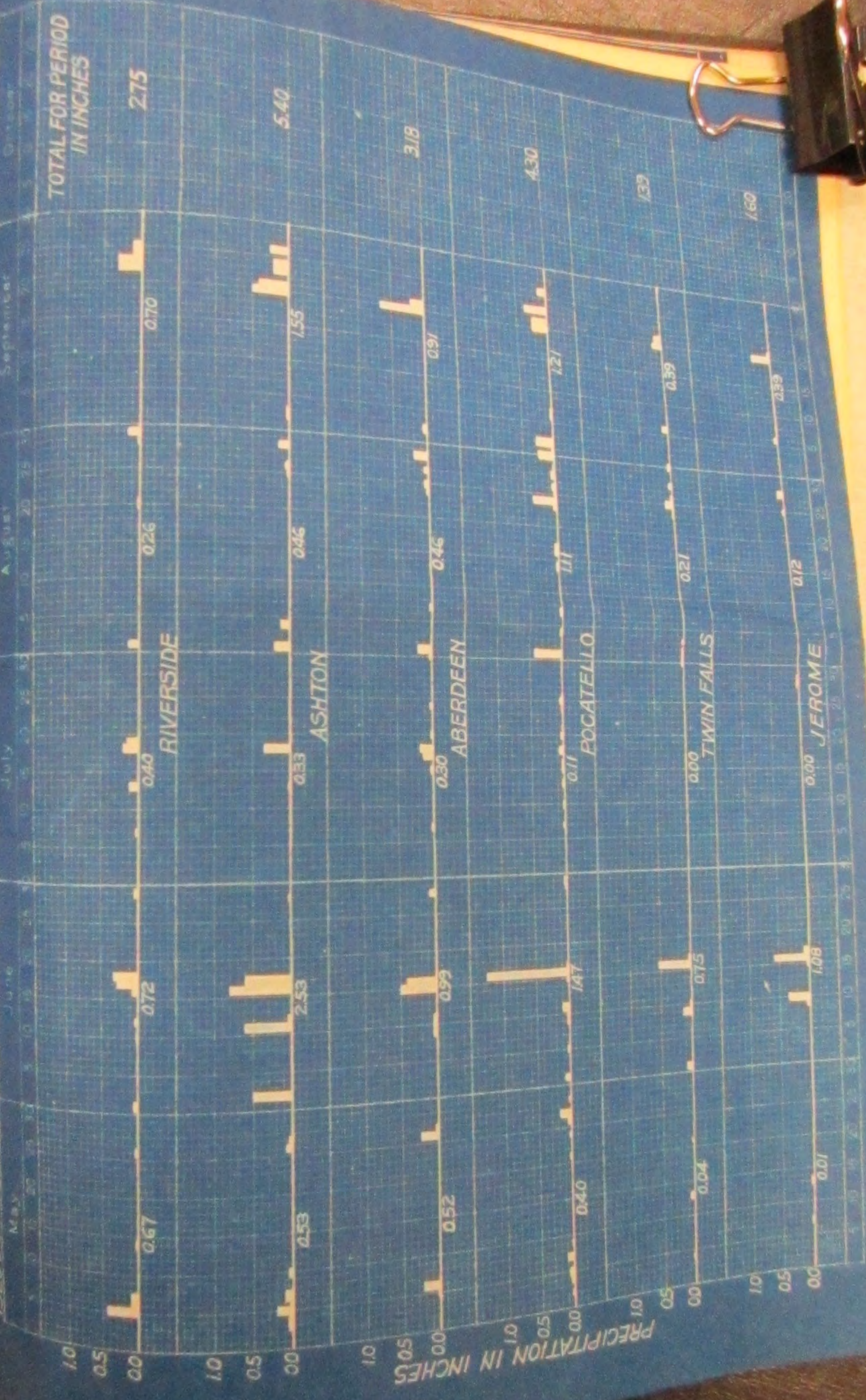
1929 DISTRIBUTION WATER DISTRICT NO 36

PLATE NO 3001



1929 DISTRIBUTION WATER DISTRICT NO. 36
 DAILY PRECIPITATION CHART-SNAKE RIVER AREA-1929

PLATE NO. XXVII



The record at Riverside near the west entrance to Yellowstone National Park is not altogether consistent with those for the other stations but has been included because of its proximity to Henry's Lake. No records were secured at the Snake River station during September.

The following table summarizes data for Snake River, Moran, Irwin, Ashton, Idaho Falls, Blackfoot, Pocatello and Twin Falls by months, for the year ending September 30, 1929:

Month	Total Number of Stations	Number above Normal	Number below Normal	Monthly aver. Precip. in Inches for All years of Record	Average Precip. in Inches for Specific Month	Mean depar- ture from Average Amount in Inches
1928						
October	8	3	5	1.320	1.256	-0.064
November	8	4	4	1.282	1.436	+0.154
December	8	4	4	1.431	1.264	-0.167
1929						
January	8	6	2	1.841	2.411	+0.570
February	8	1	7	1.369	1.164	-0.205
March	8	2	6	1.581	1.294	-0.287
April	8	5	3	1.350	1.610	+0.260
May	8	0	8	1.711	0.631	-1.080
June	8	0	8	1.301	1.625	+0.324
July	8	6	2	0.915	0.340	-0.575
August	8	0	8	0.768	0.690	-0.078
September	8	3	5	1.122	1.406	+0.284
		6	2	<u>15.991</u>	<u>15.127</u>	<u>-0.864</u>
Total						

This summary corresponds with those contained in the reports for 1926, 1927 and 1928 with respect to stations included and source of information (monthly and annual climatological Bulletins of the U. S. Weather Bureau). Totals for December at Irwin and for September at Snake River were estimated but all other records were complete for the year.

Observations have been continued at these eight stations for periods ranging from 19 to 35 years and for this reason as well as because of their general distribution throughout the upper Snake drainage area, the combined data may be expected to be fairly representative in character when applied to District No. 36. The group totals show that precipitation for the entire twelve months amounted to 94.6 per cent of the average while actual run-off for the same time, as determined from records secured at the river gaging station at Moran, Wyoming, represented 78.2 per cent of a 26 year mean.

While this percentage spread between precipitation and run-off is not so great as that noted during some previous years it is also not so readily explained. Grouping of the two Wyoming stations by themselves helps very little in accounting for this apparent discrepancy although the fact that Snake River (the highest altitude station) alone shows a relationship of 87.7 per cent strengthens the theory that the year's precipitation was relatively less at very high elevations than in the valley sections. It is believed, however, that a still more important factor is to be found in the depletion of ground water attributable to drouth during the latter part of the preceding year (October 1928 in Idaho was the seventh consecutive month of below normal precipitation). More than the usual amount of the winter snow and later rainfall was therefore required to remedy this situation and a lower percentage run-off naturally resulted.

EVAPORATION

No special evaporation data were obtained during the year but summer records are available for stations located at the Milner and

Arrowrock Dams and may be found in the publication of the U. S. Weather Bureau.

NEW CONSTRUCTION AND REPAIRS

In the effort to limit expenditures as much as practicable, repairs to gaging station equipment were confined to those which were absolutely essential while construction by the District organization consisted of the installation of a recording gage shelter and cable measuring equipment at a new station on Teton River near the lower end of Teton Basin.

The long distance water stage indicator which was installed on Henry's Fork at the Ashton plant of the Utah Power and Light Company has been previously mentioned. One or two canal companies also added water stage recorder equipment during the year without expense to District No. 36.

EXPENDITURES

A complete summary of expenditures covering the year ending March 31, 1930 follows. This statement includes all general charge items which appeared in the annual water master's bill for the season of 1929, as well as everything pertaining to the work of the Idaho Falls office. No attempt has been made, however, to segregate expense for strictly hydrometric work from that for water distribution, as in many respects these phases are too closely related to warrant more than an arbitrary separation.

Salaries and expenses of Upper Valley members of the Committee of Nine which were not charged against the whole district have been omitted.

Except for the portion of the Water Master's salary which, through pre-season agreement, was paid by the American Falls Reservoir interests all general water users charges were prorated upon the basis of 60 per cent against normal flow and 40 per cent against stored water. The Utah-Idaho Sugar Company and the North Fork Reservoir Company paid respectively \$3.75 and \$42.50 per month as their portion of the latter, while the remainder was assessed against the Jackson Lake and American Falls Reservoirs.

EXPENDITURES FOR WATER DISTRIBUTION AND HYDROMETRIC WORK

April 1, 1929 to March 31, 1930.

Water Master, Special Deputy and Deputy

G. Clyde Baldwin,	Salary April 1-Mar. 31, 12 mos. @ \$450.00	\$5400.00(a)
	Expenses do	46.95
	Auto hire do	158.27
Lynn Crandall,	Salary Mar. 4, 12-21 & 25-31, 17/30 mo. @ \$366.66 1/6	207.78 3.22
	Auto hire	

Hydrographers

C. A. McClelland,	Salary April 1-Sept. 30, 6 mos. @ \$266.66 2/3	1600.00
	Expenses do	73.05
	Auto hire do	407.76
H. S. Kollenborn,	Salary April 1-15, 1/2 mo. @ \$216.66 2/3	108.33
	Apr. 16-Mar. 31, 11 1/2 mos. @ \$233.33 1/3	2683.33
	Expenses do	47.75
	Auto hire do	536.69
B. I. Gardner,	Salary June 1-Mar. 31, 10 mos. @ \$190.00	1900.00
	Expenses do	95.50
	Auto hire do	598.18
L. W. Beam,	Salary May 16 & 25-31 & June 1-Aug. 31, 3 7/30 mos. @ \$160.00	517.33 2.23 316.68
	Expenses	
	Auto hire	

(a) \$600.00 of this item paid direct by American Falls Reservoir interests.

Deputy Water Masters

-50-

Brano Albert,

Salary June 1, 3, 5, 7, 9, 11, 13, 15 & 17-30, June 1-
Sept. 14 & Sept. 20-25, 3 12/30 mos. @ \$50 \$170.00
Auto hire do 3 12/30 mos. @ \$50 170.00

T. W. Luetjen,

Salary June 1-Sept. 30, 122 days @ \$4.00 488.00
Auto hire do 122 days @ \$4.00 488.00

Geo. H. Powell,

Salary June 16-Sept. 5, 82 days @ \$4.00 328.00
Auto hire do 82 days @ \$3.50 287.00

W. J. Kremer,

Salary June 1-7, 15-21 & 29-30, July 1-Sept. 14,
Sept. 19-25 & 28, 100 days @ \$4.00 400.00
Auto hire June 1, 3, 5, 7, 15, 17, 19, 21 & 29, July 1
& 3-31, Aug. 1-Sept. 14, Sept. 19-25 & 28,
92 days @ \$4.00 368.00
do June 2, 4, 6, 16, 18, 20 & 30 & July 2,
8 days @ \$3.75 30.00

Wm. Sauer,

Salary June 8-14 & 22-28, July 3-Sept. 14,
Sept. 20-25 & 28, 95 days @ \$4.00 380.00
Auto hire June 9, 11, 13, 23, 25 & 27, 6 days @ \$4.00 24.00
do June 8, 10, 12, 14, 22, 24, 26 & 28, July 3-
Sept. 14, Sept. 20-25 & 28,
89 days @ \$3.75 333.75

F. W. Tolles,

Salary June 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23,
25, 27 & 29, July 1 & 3-31, Aug. 1-
Sept. 14, Sept. 21-25 & 28, 96 days @ \$4.00 384.00
do 96 days @ \$3.75 360.00
Auto hire

E. E. Bingham,

Salary June 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25,
27 & 29, July 1 & 3-31, Aug. 1-Sept. 14,
Sept. 21-25 & 28, 96 days @ \$4.00 384.00
do 96 days @ \$3.25 312.00
Auto hire 4 mos. @ \$50.00 200.00

W. N. McConnel

Salary June 1-Sept. 30,

Stenographers

Helen George,

Salary April 1-June 30,
July 1-Mar. 31,

3 mos. @ \$135.00 405.00
9 mos. @ \$140.00 1260.00

Phyllis Tuckett,

Salary June 1-Sept. 16,

3 16/30 mos. @ \$40.00 141.33
2 days @ \$4.00 8.00

Effie Carlson

Salary

Readers

-51-

Harold Fuqua

Salary April 1-May 31
June 1-Sept. 30
Oct. 1-Dec. 31
Jan. 1-Mar. 31

2 mos. @ \$5.00 \$10.00
4 mos. @ \$12.00 48.00
3 mos. @ \$6.00 18.00
3 mos. @ \$8.33 1/3 25.00

Mrs. I. Siepert

Salary April 1-May 31,
June 1-Sept. 30,
Oct. 1-Nov. 16

2 mos. @ \$5.00 10.00
122 days @ \$1.00 122.00
12 trips @ \$1.00 12.00

W. H. Kramer,

Salary July 6-Sept. 14, Sept. 19-
25 & 28,

79 days @ \$1.00 79.00

O. L. Kofoed,

Salary May 6-31,
June 1-Sept. 30,

25/30 mo. @ \$5.00 4.17
122 days @ \$1.00 122.00

J. A. Clough,

Salary April 1-May 31 & Oct. 1-
March 31,
June 1-Sept. 30,

8 mos. @ \$10.00 80.00
122 days. @ \$1.00 122.00

Mrs. J. Keppner,

Salary April 1-March 31, 12 mos. @ \$15.00

180.00

Walter Lenz,

Salary April 1-May 31 & Sept. 16-
March 31,

8 1/2 mos. @ \$9.00 76.50

Roy Morgan,

Salary April 1-May 31 & Oct. 5-
November 6,

18 trips @ \$1.00 18.00

Mrs. J. Johnson,

Salary April 16-30,

1/2 mo. @ \$5.00 2.50

James Fugal,

Salary April 6-May 31,

1 25/30 mo. @ \$5.00 9.17

C. Mortensen,

Salary Nov. 14-March 31,

64 trips @ 60¢ 50.40

S. B. McAbee,

Salary June 1-Sept. 30,

4 mos. @ \$10.00 40.00

E. P. Anderson,

Salary Oct. 1-May 31,
June 1-Sept. 30,

8 mos. @ \$8.00 64.00*
4 mos. @ \$50.00 200.00*

Secretary, Water Users Committee of Nine

John Lee,

Salary March 3-4 & 30 & Sept. 24, 4 days @ \$5.00 20.00*
Expenses do 9.78*
Auto hire do 4.22*

Audit of Accounts covering period June, 1919-March, 1930.

C. P. Bryan,

Salary covering audit of accounts, Job 125.00

*Computed for year ending September 30, 1929.

Miscellaneous

Labor on construction & repair of gaging stations	\$121.75
Field & office materials, supplies and equipment	271.64
Telephone and telegraph	392.65
Premiums on official bonds	25.75
Interest on borrowed money	86.43
Employee's Compensation Insurance	38.24
Total	<u>\$24,014.33</u>

EXPENDITURES FROM VARIOUS FUNDS

U. S. Geological Survey,	1,168.16
Normal Flow Water Users	11,753.05
Stored Water Users (Jackson Lake & American Falls)	7,797.01
Sheppard & Company	31.49
North Fork Reservoir Company	510.00
Utah-Idaho Sugar Company	45.00
State of Idaho (Cooperative Stream Measurement Fund)	2,709.62
Total	<u>\$24,014.33</u>

*FUNDS AVAILABLE APRIL 1, 1930

Normal Flow Fund (a)	\$439.64
Jackson Lake Stored Water Users (a)	17.95
North Fork Reservoir Co. (b)	75.00
Utah-Idaho Sugar Co. (a)	0.00
Sheppard & Company (b)	17.60
U. S. Geological Survey (c)	690.42
State of Idaho (Cooperative Stream Measurement Fund) (d)	208.10
Total	<u>\$1,448.71</u>

*Amounts given in this table represent funds in bank or definitely known to be available after all accounts (except a few outstanding claims which had not yet been presented) were settled and adjusted to and including March 31, 1930.

- (a) Additional funds probably available on or before June 1, 1930.
- (b) Represents unexpended portion of money advanced.
- (c) Represents amount available for expenditure prior to July 1, 1930.
- (d) Amount allotted for expenditure prior to July 1, 1930.
(Subject to slight change).

Two important items are not included in these summaries for the reason that their exact value is not definitely known. These are:

- (1) The rent equivalent of the office quarters and furniture in the Federal Building at Idaho Falls. Because of the cooperation

with the U. S. Geological Survey this very desirable office space and equipment is made available without charge.

(2) The cost of securing the necessary prints for and the binding of 55 copies of the 1928 report which was paid direct by the State Commissioner of Reclamation.

After deducting \$1,698.94 covering salary and expenses of the hydrographer assisting Mr. Newell on special work from the total expenditures of the preceding year, the cost of the same or similar work for the two years compares as follows:

Year ending March 31, 1929	\$25,469.28
Year ending March 31, 1930	24,014.33.

The principal sources through which this reduction of \$1,454.95 was effected have already been mentioned. Still larger savings would have resulted had it been possible to discontinue regulation after August 31 as in the previous year.

WATER RIGHTS

Numerous changes in the normal flow water rights of the principal Snake River canals resulted from the confirmation by the court of the so-called Woodville or "High Water" decree.

These, together with minor revisions attributable to permanent transfers and changes in points of diversion, are all shown for canals having their source of supply in channels of the main river, on Plate XXVIII. Storage rights are here also listed for the first time on the basis of final American Falls Reservoir costs.

PARTY OR CANAL		STORAGE JACKSON		STORAGE AMFAISRES		DECREES SEC. FT.		1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894
1	RILEY	12.00	793	24	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197
2	ANDERSON & ERWILLOW CR.	2000	14609	50624	160																	
3	FARMERS FRIEND	6100	10509	250																		
4	ENTERPRISE			475																		
5	MATTSON-CRAIG			3416																		
6	ARNBERGER			900																		
7	HEISE			560																		
8	BUTLER ISLAND			6054																		
9	ROSS & RAND			814																		
10	STEELE			904																		
11	HARRISON	5000	11994	55592	43	65	65	64	64	64	1524	5054	624	64	442	3212	449	240	80			
12	CHENEY			14																		
13	BOOMER & IDAHO	2000	26986	1000																		
14	RUDY			3126																		
15	KITE & NORD			1380																		
16	BURGESS	5120	7496	100141																		
17	CLARK & EDWARDS			100																		
18	LOWDER & JENNINGS	1040		85																		
19	EAST LABELLE			166																		
20	CONSOLIDATED FEEDER			184																		
21	LENROO	4000	4504	220																		
22	REID	3000	3002	190																		
23	TEXAS FEEDER			312																		
24	NELSON-COREY			1680																		
25	HILL-PETTINGER			1596																		
26	LONG ISLAND			40935	3852	5897	5897	5898	5898	5897	5897	5897	5897	5897	5897	5897	5897	5897	5897	5897	5897	5897
27	ISLAND			28644																		
28	RIGBY			258																		
29	DILTS			38																		
30	WEST LABELLE		1034	12932																		
31	PARKS & LEWISVILLE			43512																		
32	NORTH RIGBY			80																		
33	WHITE			1698																		
34	BRAMWELL			1320																		
35	ELLIS			680																		
36	INDEPENDENT			2920																		
37	BUTTE & MARKET LAKE		3002	36870																		
38	OSGOOD		15852	13389																		
39	KENNEDY & BURGRAFF	355	30852	3292	26	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
40	PORTER GR WEST N. MARTIN	6500	304	70105																		
41	BEAR ISLAND & C.D.			350																		
42	TAYLOR & GOSHEN			46																		
43	CITY OF IDAHO FALLS			188																		
44	WOODVILLE		9297	16350																		
45	SNAKE RIVER VALLEY	15000	27643	778																		
46	RESERVATION			61598																		
47	BLACKFOOT		15033	36680																		
48	NEW LAVA SIDE			182																		
49	PEOPLES	8000	22519	62420																		
50	ABERDEEN-SPRINGFIELD	42685	40433	23943																		
51	CORRETT SLOUGH		4000	15																		
52	NIELSEN-HANSEN			14216																		
53	RIVERSIDE			200																		
54	DANESKIN		1462	8741																		
55	THEGO			8336																		
56	WEARYRICK			13340																		
57	WATSON SLOUGH			40																		
58	PARSONS			182																		
59	SMITH-MAXWELL	325810	50000	2726																		
60	U.S. MURDOCK CANALS			2																		
61	SCOTT			3600																		
62	WIN FALLS CANAL CO.	97183	156182	3300																		
63	WIN FALLS N. S. L. & W. CO.	322007	34113	3300																		
64	WIN FALLS LOW LIFT CANAL CO.																					
65	TOTALS TO DATE IN SEC. FT.	847000	(d) 798708	2392515	19921	6000	6000	16000	48300	68141	45420	26083179163	202656	105240	123480	1793						

LAKE RIVER WA

	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
1			120			68		475 1296		24														
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10	9950	44200	170400	40350	000	6800	7600	3750	000	17600	94600	4800	22800	000	000	135000								
11	8739	9181	10885	11288	11288	11356	11432	15190	15190	15366	17312	17360	19646	19646	19646	20996								
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SNAKE RIVER WATER RIGHTS

1913		1914		1915		1916	
1				300			
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3				62			
4				14			
5				3			
6				10			
7				2.80			
8				96			
9				8			
10				120			
11				5			
12				200			
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14				33			
15				26			
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DATE	DECREE	PARTY OR CANAL	TOTAL	OLDER	DATE	DECREE	PARTY OR CA
1916 JAN. 22	300	ANDERSON & E. R. & WILLOW CR.	1100.	800	1895 JUN. 1	12	TEX. FEEDER
" JAN. 22	160	FARMERS FRIEND	506.24	346.24	" JUN. 1	160	BURGESS
" JAN. 22	62	ENTERPRISE	250.	188	" APR. 1	2	SCHODE
" JAN. 22	14	MATTSON-CRAIG	34.16	20.16	" MAR. 22	120	ENTERPRISE
" JAN. 22	3	ARMSTRONG	9.	6.	" FEB. 6	1250	ABERDEEN-SPRING
" JAN. 22	10	BUTLER ISLAND	60.54	50.54	"	160	AMERICAN FALLS CANAL
" JAN. 22	2.80	ROSS & RAND (J.H. STONE)	8.14	5.34	"	160	HARRISON
" JAN. 22	96	HARRISON	555.92	459.92	"	400	PEOPLES
" JAN. 22	8	CHENEY	14.	6.	"	20	DILTS
" JAN. 22	120	RUDY	311.26	191.26	"	14	TEX. FEEDER
" JAN. 22	5	KITE & MORD	13.80	8.80	"	14	TEX. FEEDER
" JAN. 22	200	BURGESS	1001.41	801.41	"	8550	WOODVILLE
" JAN. 22	30	CLARK & EDWARDS	100.	70.	"	5	LENROT (CAMENDED)
" JAN. 22	33	LOWDER & JENNINGS	85.	52	"	14	TEX. FEEDER
" JAN. 22	26	EAST LABELLE	166.	140	"	26	LOWDER & JENNINGS
" JAN. 22	40	REID	190.	150	"	130	CORRETT SLOUGH
" JAN. 22	32	TEXAS FEEDER	312.	280	"	600	RESERVATION/INDIAN
" JAN. 22	98	RIGBY	258.	160	"	480	NELSON-COREY (POCA)
" JAN. 22	10	DILTS	38.	28	"	144	HILL-PETTINGER
" JAN. 22	20	WEST LABELLE	129.32	109.32	"	15	LENROT (CAMENDED)
" JAN. 22	84	PARKS & LEWISVILLE	435.12	351.12	"	193.56	ISLAND
" JAN. 22	30	NORTH RIGBY	80.	50	"	14	TEX. FEEDER
" JAN. 22	10	WHITE	16.98	6.98	"	400	GREEN WESTERN & F
" JAN. 22	2	ELLIS	6.80	4.80	"	72	NEW LAVA SIDE
" JAN. 22	145	PORTER, GR. WESTERN & MARTIN	701.05	556.05	"	17	BUTTE & MARKET L
" JAN. 22	38	WOODVILLE	163.50	125.50	"	349.40	BUTTE & MARKET L
" JAN. 22	68	SNAKE RIVER VALLEY	778.	710.	"	10.60	OSGOWITZ (MAY 30)
" JAN. 22	30	NEW LAVA SIDE	182.	152.	"	240	HARRISON
" JAN. 22	200	PEOPLES	624.20	424.20	"	240	BURGESS
" JAN. 22	30	RIVERSIDE	142.16	112.16	"	880	KITE (NORQUAY)
" JAN. 22	18	DANSKIN	8741	6941	"	80	STEEL (WATFIELD)
" JAN. 22	30	TREGO	83.36	53.36	"	6541	KENNEDY & BURGESS
" JAN. 22	36	WEAVERICK	133.40	97.40	"	420	OSGOWITZ (MAY 30)
" JAN. 22	18	PARSONS	40.	22	"	039	LOWDER & JENNINGS
" JAN. 22	300	TWIN FALLS N.S. LAND & W. CO.	3300.	3000.	"	1.82	SMITH-MAXWELL
" DEC. 23	600	TWIN FALLS CANAL CO.	3600.	3000.	"	15.98	RESERVATION (MAY)
" DEC. 22	1000	U.S.B.R. "FOSTER" (MINIDOKA)	2726.	1726.	"	366.80	BLAC (DOT)
" AUG. 6	350	T.F. NO. SIDE L. & W. CO. "FOSTER"	3300.	400.	"	10.61	OSGOWITZ (MAY 30)
" JUN. 16	2250	T.F. NO. SIDE L. & W. CO. "FOSTER"	3300.	155.26	"	1379	GRIFFIN WESTERN
" JUN. 7	36	RUDY	311.26	140.	"	880	KENNEDY & BURGESS
" OCT. 22	48	CITY OF IDAHO FALLS	188.	600	"	6	CHENEY
" OCT. 22	110	SNAKE RIVER VALLEY	778.	120	"	919	FARMER'S FRIEND
" SEPT. 1	100	LENROOT	220.	596	"	32	HILL-PETTINGER
" JUN. 1	10	HILL-PETTINGER	15.96	0.	"	30	RUDY
" MAR. 26	1726	U.S.B.R. "FOSTER" (MINIDOKA)	2726.	83.41	"	80	REID
" JUN. 1	3	HILL-PETTINGER	15.96	0.	"	44	CONSOLIDATED
" JUN. 1	24	RILEY	24.	44.	"	159	TEX. FEEDER
" JUN. 1	4	TREGO	87.41	0.	"	160	WEAVERICK
" MAY 1	560	HEISE	5.60	85.50	"	1944	ISLAND
" APR. 14	140.	CONSOLIDATED FEEDER	184.	141.26	"	4.49	HARRISON
" OCT. 11	400	T.F. NO. SIDE L. & W. CO. "FOSTER"	3300.	0	"	700	KENNEDY & BURGESS
" OCT. 11	3000	TWIN FALLS CAN. CO. "FOSTER"	3600.	0	"	109.43	CORRETT
" OCT. 11	46	TAYLOR & GOSHEN	46.	0	"	600	OSGOWITZ
" JUN. 16	100	OSGOOD/UTAH-IDAHO SUGAR CO)	133.89	0	"	166	GRIFFIN WESTERN
" JUN. 16	40	WOODVILLE	163.50	0	"	282	KENNEDY & BURGESS
" JUN. 16	14	RUDY	311.26	0	"		
" APR. 30	475	NELSON	4.75	0	"		
" APR. 30	1296	MATTSON-CRAIG	34.16	7.20	"		
" APR. 20	140	CITY OF IDAHO FALLS	188.	0	"		
" APR. 1	76	LENROOT	220.	44	"		
" APR. 1	68	ENTERPRISE	250.	120	"		
" APR. 15	400	SNAKE RIVER VALLEY	778.	200	"		
" JUL. 9	350	BEAR ISLAND (WEIR)	350	0	"		

PROPERTY OR CANAL	TOTAL	OLDER	DATE
AS FEEDER	312.	258.	1889 APR 15
SESS	1001.41	641.41	" APR 6
ODDE	2.	0.	" MAR 1
EMPRISE	250	0.	" JAN. 12
RODEN-SPRINGFIELD	1250.	0.	1888 AUG. 13
TRIGAN FALLS CANAL CO)			" AUG. 13
ISON	555.92	299.92	" AUG. 13
LES	624.20	24.20	" JUL. 15
S (MITS & LABELLE CO.)	38.	0.	" JUL. 15
S FEEDER (TEXAS SLOUGH CO.)	312.	254.	" JUL. 15
S FEEDER	312.	240.	" JUL. 15
SVILLE	163.50	0.	" JUN. 15
OOT (AMENDED 6-1-03)	220.	39.	" JUN. 10
S FEEDER (TEXAS SLOUGH CO.)	312.	226.	" JUN. 1
ER & JENNINGS	85.	26.	" JUN. 1
ETT SLOUGH	239.43	109.43	" JUN. 1
RAVATION (DANDY CANAL & IMP CO.)	615.98	15.98	" JUN. 1
ON-COREY (P.O. CARLSEN)	16.80	12.	" JUN. 1
BERGER	9.00	0.	" JUN. 1
PETTINGER	15.96	1.52	" JUN. 1
OOT (AMENDED 6-1-03 & 99)	220.	24.	" JUN. 1
ID	286.44	92.88	" JUN. 1
S FEEDER (TEXAS SLOUGH CO.)	312.	212.	" JUN. 1
T WESTERN & PORTER	701.05	156.05	" JUN. 1
NEW SWEDEN DISTRICT)			" JUN. 1
LAVA SIDE	182.	80.	" JUN. 1
E & MARKET LAKE	368.70	351.70	" JUN. 1
(WIND CUTSHAW)			" JUN. 1
E & MARKET LAKE	368.70	2.30	" JUN. 1
OD (OTAN IDAHO SUGAR CO.)	133.89	23.29	" JUN. 1
ISON	555.92	59.92	" JUN. 1
ESS	1001.41	401.41	" JUN. 1
& NORD (ATFIELD-NORD-ANDERSONS)	13.80	0.	" JUN. 1
LE (HATFIELD)	904	824	" MAY 13
EDY & BURGRAFF	87.41	0.	" MAY 1
OD (MERRILL-NIBLEY-ET AL.)	32.92	28.72	" JAN. 18
ER & JENNINGS (6-1-00 ERROR)	133.89	22.90	1887 JUN. 15
I-MAXWELL	85.	0.	" JUN. 10
EVATION (SMITH-MAXWELL)	1.82	0.	" JUN. 1
K FOOT	615.98	0.	" JUN. 1
OD (UTAH-IDAHO SUGAR CO. 448)	366.80	0.	" JUN. 1
(MERRILL-NIBLEY 613)	133.89	12.29	" JUN. 1
T WESTERN & PORTER	701.05	142.26	" JUN. 1
EDY & BURGRAFF	32.92	19.92	" JUN. 1
EY	14.	0.	" JUN. 1
T WESTERN & PORTER (LONG ISLAND)	701.05	141.59	" JUN. 1
ERS FRIEND (LONG ISLAND)	506.24	337.05	" JUN. 1
OOT	220	18.	" JUN. 1
PETTINGER	15.96	1.20	" JUN. 1
	311.26	111.26	" JUN. 1
	190.	70.	" JUN. 1
	184.	0.	" JUN. 1
ADJUTED FEEDER			1886 JUL. 23
OD (UTAH-IDAHO SUGAR CO. 448)	142.16	110.57	" JUN. 15
SVILLE	312.	174.	" JUN. 10
S FEEDER (LIBERTY PARK CO.)	83.36	51.76	" JUN. 1
YRICK (LONG ISLAND)	286.44	73.44	" JUN. 1
D (LONG ISLAND)	555.92	53.43	" JUN. 1
SOM (LONG ISLAND)	32.92	19.66	" JUN. 1
EDY & BURGRAFF (LONG ISLAND)	740.	40.	" JUN. 1
(IDAHO IRRIIG. DIST.)			" JUN. 1
ETT SLOUGH	239.43	0.	" JUN. 1
OD (UTAH-IDAHO SUGAR CO. 448)	133.89	6.20	" JUN. 1
T WESTERN & PORTER	701.05	139.93	" JUN. 1
EDY & BURGRAFF (CARETT)	32.92	16.84	" JUN. 1

PARTY OR CANAL		TOTAL	OLDER
300.	ANDERSON & E. R. & WILLOW CR. (FARMERS PROGRESS)	1100.	500.
200	SNAKE RIVER VALLEY (CEDAR POINT)	778.	0.
60.	NEW LAVA SIDE	182.	20.
5	KENNEDY & BURGRAFF (W.S. LYLE AND CO)	3292	1184
100.	RUDY	31126	1126
40.	IDAHO (IDMHO IRRIG. DIST)	740.	0
250.	BOOMER (IDAHO IRRIG. DIST)	260	0.
30,20	WATSON SLOUGH	13340	6720
16,60	PEOPLES (WATSON SLOUGH)	62420	760
320	WEARYRICK (WATSON SLOUGH)	8336	48,56
120.	RIGBY	298	40.
380.	BURGESS	100141	2141
.48	HILL-PETTINGER	1596	.72
80.	BURGESS (LONG ISLAND)	100141	20,80
.61	DANSKIN	200.	100.
92	EAST LA BELLE	166.	48.
38.	TEXAS FEEDER (LIBERTY PARK CO)	312.	136.
21112	PARKS & LEWISVILLE	43512	140.
3212	HARRISON	55592	2331
2	RUDY (C.E. ROSTAN)	31126	926
334	ROSS & RAND (SUPPLEMENTAL)	814	2.
2.	STEELE (SUPPLEMENTAL - PROBERT)	904	624
122	RIVERSIDE (LONG ISLAND)	14216	10935
2316	ISLAND (LONG ISLAND)	28644	4428
.97	GREAT WESTERN & PORTER (LONG ISLAND)	70105	138,96
1.	KENNEDY & BURGRAFF	3292	1007
177	FARMERS FRIEND (LONG ISLAND)	50624	31601
2104	MATTSON - CRAIG (SUPPLEMENTAL - RAND)	3416	480
240	BRAMWELL (SUPPLEMENTAL)	1320	0.
1320	ELLIS (SUPPLEMENTAL)	680	0.
480	WEARYRICK (LONG ISLAND)	83,36	4736
120	WATSON SLOUGH (H.M. PALMER)	133,40	64.
320	GREAT WESTERN & PORTER (J.B. MORGAN - SHATTUCK)	70105	137,96
300.	FARMERS FRIEND	50624	16,01
20.	RIGBY	258.	20.
10.	BURGESS	100141	10,80
93,35	RIVERSIDE	142,16	10.
.48	HILL-PETTINGER	15,96	.24
38.	TEXAS FEEDER (LIBERTY PARK CO)	312.	98.
12	NELSON - COREY	16,80	0.
480	MATTSON - CRAIG (R.A. CRAIG)	34,16	0.
29,52	ISLAND	286,44	1476
16,99	LONG ISLAND	409,35	392,36
.96	GREAT WESTERN & PORTER	701,05	137.
4,42	HARRISON (LONG ISLAND)	555,92	18,89
.97	KENNEDY & BURGRAFF (LONG ISLAND)	32,92	9,10
13,18	FARMERS FRIEND (LONG ISLAND)	506,24	283
.80	BURGESS (LONG ISLAND)	1001,41	10.
9,36	WEARYRICK (LONG ISLAND)	83,36	38.
100.	DANSKIN	200.	0.
10.	RIGBY	258.	10.
160	BURGESS	1001,41	0.
14,76	WATSON SLOUGH (ELIZABETH KRATZER)	133,40	62,40
50.	ISLAND	286,44	0.
560	TEXAS FEEDER (TEXAS SLOUGH LIB. PARK)	312.	48.
2.	KENNEDY & BURGRAFF	32,92	3,50
.40.	RUDY (ROSTAN)	311,26	726
.24	REID	190.	30.
58,97	HILL-PETTINGER	15,96	0.
.64	LONG ISLAND	409,35	333,39
.39	HARRISON (LONG ISLAND)	555,92	18,25
	KENNEDY & BURGRAFF	32,92	3,11

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