

Surface Water Supply of the United States 1947

Part 14. Pacific Slope Basins in Oregon and Lower Columbia River Basin

Prepared under the direction of C. G. PAULSEN, Chief Hydraulic Engineer

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*Prepared in cooperation with the States
of Oregon and Washington and other
agencies*



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GEOLOGICAL SURVEY

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PREFACE

This report was prepared by the Geological Survey in cooperation with the States of Oregon and Washington and other agencies, by personnel of the Water Resources Division under the direction of:

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SURFACE WATER SUPPLY OF PACIFIC SLOPE BASINS IN OREGON AND LOWER COLUMBIA
RIVER BASIN, 1947

SCOPE OF WORK

This volume is one of a series of 14 reports presenting results of measurements of stage and flow made on streams, lakes, and reservoirs in the United States during the water year ending September 30, 1947. The work was begun in 1888 in connection with special studies relating to irrigation. Measurements of the flow of streams and of the stage and contents of lakes and reservoirs have been made at about 11,100 gaging stations in the 48 States and also at many in the Territories of Alaska and Hawaii. In July 1947, 5,810 gaging stations, including those in Hawaii, were being maintained by the Geological Survey and cooperating organizations. Miscellaneous discharge measurements were made during the water year at many other points.

In the execution of the work many State and private organizations have cooperated, either by furnishing data or by assisting in collecting data. Cooperation of the first kind is acknowledged in connection with the description of each station affected; cooperation of the second kind is acknowledged, under the heading "Cooperation," in the introductory matter that precedes the gaging-station records in each volume. In the present volume, the section on cooperation of the second kind appears on page 12.

DEFINITION OF TERMS

The units in which stream-flow data are presented in this report and other terms used herein are defined as follows:

"Second-foot" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

"Second-foot per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the runoff is distributed uniformly both as regards time and area.

"Runoff in inches" is the depth to which an area would be covered if all the water draining from it in a given period were uniformly distributed on its surface. It is used for comparing runoff with rainfall, which is usually expressed in inches.

An "acre-foot" is the quantity of water required to cover an acre to the depth of 1 foot and is equivalent to 43,560 cubic feet. The term is commonly used in connection with storage for irrigation.

"Second-foot-day" is the volume of water represented by a flow of 1 second-foot for 24 hours. It is equivalent to 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons and represents a runoff of 0.0372 inch from 1 square mile.

"Stage-discharge relation" is an abbreviation for the term "relation between gage height and discharge."

"Control" is a term used to designate a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural section, a reach of the channel, or an artificial structure.

"Contents" is a term applied to the volume of water in a reservoir. It is computed on the basis of a level pool and does not include bank storage unless otherwise indicated.

EXPLANATION OF DATA

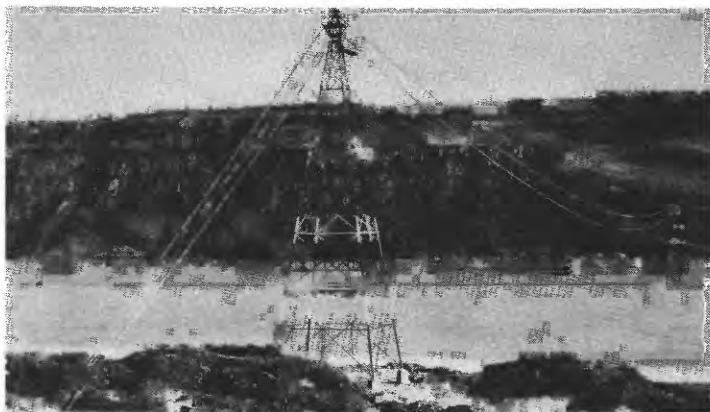
The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to supplement the records of stage and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings on a nonrecording gage or from a water-stage recorder that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge. Typical structures in use at gaging stations are shown in figure 1.

Rating tables giving the discharge for any stage are prepared from the discharge measurements. The application of the daily mean gage height to those rating tables gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the "shifting-control method," in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. At times the stage-discharge relation for a station may be temporarily changed by the presence of aquatic growth or debris on the control. For such times the daily mean discharge is computed by what is essentially the "shifting-control" method, described above.

At some gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources, which necessitates the use of the "slope method," in which the slope or fall in a reach of the stream is a factor in the determination of discharge. Information requisite for determining the slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage, and for them the rate of change of stage is used as a factor in the determination of discharge.

At most gaging stations in the northern part of the United States and at some in the mountainous regions of other parts the stage-discharge relation is affected by ice during the winter, which makes it impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for stations in the same or nearby basins. For those stations at which the stage-discharge relation is affected by ice, the days included in the periods of ice effect either are indicated in the table by symbols referring to a footnote that states this fact or are given in a general note following the table. The days on which discharge measurements were made during or between periods of ice effect, shortly before the first period, or shortly after the last period are similarly indicated by a footnote.

For most of the gaging stations on streams in the area covered by this report the data presented comprise a description of the station, a table showing the daily discharge of



A. COLUMBIA RIVER NEAR THE DALLES, OREG.
Measuring cable.



B. COLUMBIA RIVER NEAR THE DALLES, OREG.
Gage shelter and stilling well.



C. WILLAMETTE RIVER AT ALBANY, OREG.
FIGURE 1.—GAGING-STATION STRUCTURES.

the stream, and a table of monthly and yearly discharge and runoff. Skeleton rating tables are published for all stations except those at which the daily discharge for the greater part of the year was determined by the shifting-control method, the slope method, or other special methods.

The description of the station gives the type of gage, its latitude and longitude as determined from the best available maps, and information in regard to diversions that decrease the flow at the gage, artificial regulation from pondage or storage, and the accuracy of the records. Under "Average discharge" is given the average discharge for the number of years indicated. It is given only for stations for which there are 10 or more complete years of record. Under "Extremes" are given the maximum discharge and gage height; the minimum discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height (unless it is of no importance). Unless otherwise qualified, the maximum discharge corresponds to the crest stage, obtained by use of a water-stage recorder or a nonrecording gage read at the time of the crest. Likewise the minimum discharge represents the lowest stage, unless otherwise qualified. Selected peak discharges with the times of their occurrence are given, below the table of monthly discharge, for some stations. This supplementary information is generally omitted for a station at which the drainage area of the stream is less than 10 or more than 10,000 square miles or at which, on most days, the peak discharge exceeds the mean discharge by less than 10 percent.

For stations equipped with water-stage recorders, except those on streams subject to sudden or rapid fluctuation, the table gives the discharge corresponding to the daily mean gage height. For stations subject to such fluctuation the daily mean gage height may not indicate the true daily mean discharge, which must be obtained by averaging the discharge for parts of the day or by using the discharge integrator, an instrument for obtaining the daily mean discharge from a continuous gage-height graph and containing as an essential element a curve representing the stage-discharge relation at the station. For stations equipped with nonrecording gages, the table of daily discharge gives the discharge corresponding to either once-daily readings of the gage, the mean of twice-daily readings, or the mean gage height determined from gage-height graphs based on gage readings. For periods of rapidly changing stage, the daily mean discharge is determined from gage-height graphs based on gage readings, the frequency of which is stated in the station description.

In the table of monthly discharge the column headed "Second-foot-days" gives the sum for each month of the figures given in the table of daily discharge. The column headed "Maximum" gives the maximum daily discharge, not the momentary discharge when the water surface was at crest stage. Likewise, in the column headed "Minimum" the quantity given is the minimum daily discharge. The column headed "Mean" gives the average flow in cubic feet per second during the month.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents is given. A skeleton table of capacity at given stages is usually given in the first report in which data for a station are published but is omitted from succeeding reports.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily on (1) the permanency of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements and (2) the accuracy of observations of stage, measurements of flow, and interpretation of records.

The station description gives a statement in regard to the general accuracy of the records. "Excellent" indicates that, in general, the error in the daily records is believed to be less than 5 percent; "good," less than 10 percent; "fair," less than 15 percent; and "poor," probably more than 15 percent. The records of monthly and yearly mean discharge and runoff are, in general, more accurate than the daily records.

Yield at some stations as indicated by monthly means may vary widely from natural yield, owing to diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or other factors. For such stations figures of "second-feet per square mile" and "runoff in inches" are not published unless storage or diversion records are included indicating the extent of the regulation or diversion or unless satisfactory adjustments can be made for changes in contents or reservoirs or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless its inclusion is indicated. Even at those stations where adjustments are made, in some instances large errors in computed yields may occur when relatively large negative adjustments are applied or when evaporation is large in comparison with the observed discharge. Figures of second-feet per square mile and runoff in inches are also omitted if the drainage area includes large noncontributing areas or if the average annual rainfall over the drainage area is less than 20 inches.

Many gaging stations on streams in the irrigated areas of the United States are situated above most of the diversions from those streams, and therefore the discharge recorded does not show the water supply available for further development, as prior appropriations below the station must first be satisfied.

The table of monthly discharge presents in summary the distribution of the flow past the station. The table of daily discharge affords opportunity for more detailed studies of the variation in flow. As further observations in each succeeding year may be expected to throw new light on data previously published, it should be borne in mind that such data are subject to revision in succeeding water-supply papers.

PUBLICATIONS

The results of stream-flow measurements are now published annually in 14 parts, each part covering an area whose boundaries coincide with natural drainage features as indicated below:

- Part 1. North Atlantic slope basins (St. John River to York River).
2. South Atlantic slope and eastern Gulf of Mexico basins (James River to Mississippi River).
3. Ohio River Basin.
4. St. Lawrence River Basin.
5. Hudson Bay and upper Mississippi River Basins.
6. Missouri River Basin.
7. Lower Mississippi River Basin.
8. Western Gulf of Mexico basins.
9. Colorado River Basin.
10. The Great Basin.
11. Pacific slope basins in California.
12. Pacific slope basins in Washington and upper Columbia River Basin.
13. Snake River Basin.
14. Pacific slope basins in Oregon and lower Columbia River Basin.

Water-supply papers and other publications of the Geological Survey containing data on the water resources of the United States may be obtained or consulted as explained below.

1. Copies may be purchased at nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D. C., who will, on application, furnish lists giving prices.
2. Sets of the reports may be consulted in the libraries of the principal cities in the United States.
3. Sets are available for consultation in the offices of the water-resources division of the Geological Survey as follows:

East of the Mississippi River:

Albany, N. Y., 526 Federal Building.
 Asheville, N. C., 220 Post Office Building.
 Atlanta, Ga., 411 Grand Theater Building.
 Augusta, Maine, 420 Statehouse.
 Baton Rouge, La., 538 Florida Street.
 Boston, Mass., 939 Post Office Building.
 Champaign, Ill., 605 South Neil Street.
 Charleston, W. Va., 408 Union Building.
 Charlottesville, Va., Cabell Hall, University of Virginia.
 Chattanooga, Tenn., 442 Post Office Building.
 College Park, Md., 105 Engineering Building, University of Maryland.
 Columbia, S. C., 207 Creason Building.
 Columbus, Ohio, 404 Engineering Experiment Station, Ohio State University.
 Harrisburg, Pa., 490 Education Building.
 Hartford, Conn., 203 Federal Building.
 Indianapolis, Ind., 205 Underwriters Building.
 Jackson, Miss., 208 Millsaps Building.
 Knoxville, Tenn., 337 Post Office Building.
 Louisville, Ky., 531 Federal Building.
 Madison, Wis., 666 State Office Building.
 Montgomery, Ala., 507 Post Office Building.
 Morgantown, W. Va., 407 Mineral Industries Building.
 New Philadelphia, Ohio, Muskingum Watershed Conservancy District Building.
 Ocala, Fla., 302 Post Office Building.
 Pittsburgh, Pa., 515 Plaza Building.
 Raleigh, N. C., 244 Educational Building.
 St. Paul, Minn., 1427 New Post Office Building.
 Trenton, N. J., 228 Federal Building.
 Washington, D. C., General Services Building.
 Williamsburg, Ky., State Highway Building.

West of the Mississippi River:

Albuquerque, N. Mex., 723 North Second Street.
 Austin, Tex., 302 West Fifteenth Street.
 Bismarck, N. Dak., 7 Eltinge Building.
 Boise, Idaho, 429 Federal Building.
 Denver, Colo., 126 New Customhouse.
 Fort Smith, Ark., 6 Post Office Building.
 Helena, Mont., 408 Federal Building.
 Honolulu, Hawaii, 225 Federal Building.
 Idaho Falls, Idaho, 204 Federal Building.
 Iowa City, Iowa, 508 Hydraulic Laboratory, University of Iowa.
 Lincoln, Nebr., 510 Rudge-Guenzel Building.
 Los Angeles, Calif., 429-F United States Post Office and Courthouse.
 Oklahoma City, Okla., 203 Council Building.
 Pierre, S. Dak., 301 Federal Building.
 Portland, Oreg., 606 Post Office Building.
 Rolla, Mo., 211 Ramsey Building.
 St. Louis, Mo., 1004 New Federal Building.
 Salt Lake City, Utah, 303 Federal Building.
 San Francisco, Calif., 702 Appraisers Building.
 Santa Fe, N. Mex., 204 United States Courthouse.
 Tacoma, Wash., 207 Federal Building.
 Topeka, Kans., 305 Federal Building.
 Tucson, Ariz., 210 Post Office Building.

A list of Geological Survey publications may be obtained by applying to the Director, Geological Survey, Washington, D. C.

Prior to publication, records of discharge in provisional form for individual stations may usually be obtained from the district offices listed above.

Early records of the flow of streams in the United States are published in the reports listed below. In many of these reports records for years earlier than those indicated have been included for some streams.

Stream-flow data for the years 1884-1901, in reports of the Geological Survey

(A = Annual Report; B = Bulletin; W = Water-Supply Paper)

Report	Character of data	Year
10th A, pt. 2	Descriptive information only.	
11th A, pt. 2	Monthly discharge and descriptive information.....	1884 to September 1890.
12th A, pt. 2	do.....	1884 to June 30, 1891.
13th A, pt. 3	do.....	1884-92.
14th A, pt. 2	Monthly discharge.....	1888-93.
B 131.....	Descriptions, measurements, gage heights, and ratings.....	1893-94.
16th A, pt. 2	Descriptive information only.	
B 140.....	Descriptions, measurements, gage heights, ratings, and monthly discharge.	1895.
W 11.....	Gage heights.....	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge...	1895-96.
W 15.....	Descriptions, measurements, and gage heights of streams east of the Mississippi River, and Missouri River and tributaries above Kansas River.	1897.
W 16.....	Descriptions, measurements, and gage heights of stream west of the Mississippi River, except Missouri River and tributaries above Kansas River.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge.	1897.
W 27.....	Measurements, ratings, and gage heights of streams east of the Mississippi River, and Missouri River and tributaries.	1898.
W 28.....	Measurements, ratings, and gage heights of streams west of the Mississippi River, except Missouri River and tributaries.	1898.
20th A, pt. 4	Monthly discharge.....	1898.
W 35 to 39...	Descriptions, measurements, gage heights, and ratings.....	1899.
21st A, pt. 4	Monthly discharge.....	1899.
W 47 to 52...	Descriptions, measurements, gage heights, and ratings.....	1900.
22d A, pt. 4.	Monthly discharge.....	1900.
W 65, 66.....	Descriptions, measurements, gage heights, and ratings.....	1901.
W 75.....	Monthly discharge.....	1901.

Papers on surface water supply containing records from 1899 to date, grouped by years and drainage basins, are listed by number on page 8. The data for any particular gaging station will, in general, be found in the reports covering the years during which the station was maintained. For example, the data for 1910 to 1920 for any station in the area covered by part 3 are published in Water-Supply Papers 283, 303, 323, 353, 403, 433, 453, 473, and 503, which contain records for the Ohio River Basin for those years.

The records at most of the stations discussed in these reports extend over a series of years. Miscellaneous measurements at many points other than regular gaging stations have been made each year and are published under "Miscellaneous discharge measurements" at the end of each report, the streams and points of measurement listed appearing in the same relative order as the streams and gaging stations in the body of the report. An index of the records obtained prior to 1904 has been published in Water-Supply Paper 119.

Each of the reports on surface water supply for the year 1939, issued as Water-Supply Papers 871 to 884 (see table on p. 8), contains, for the area covered by that report, a summary of yearly discharge at gaging stations at which 10 or more complete years of record have been collected. These summaries are available also as separate reprints.

Numbers of water-supply papers containing results of stream measurements, 1899-1947 (for basins included see p. 5).

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1890 a...	45	b25	35	36	36	36	37	37	37	38	38	39	39	39
1900 g...	47, b48	48, 149	49	49	49	49	50	50	50	51	51	51	51	51
1910 g...	65, 75	b2, 75	65, 75	65, 75	k65, 66, 75	66, 75	k65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1920 g...	65, 82	b82, 83	65, 83	m82, 83	k65, 83	66, 84	k65, 83	66, 84	66, 84	66, 84	66, 84	66, 84	66, 84	66, 84
1930 g...	97	b87, 98	98	m82, 83	k98, 99	99	k98, 99	99	99	99	99	99	99	99
o124, p125, q126, r127	128	128	128	129	k128, 130	130, r131	k128, 131	132	133	133	133	135	135	135
o165, p166, q167, r168	169	169	169	170	170	171	k169, 173	174	175	175	177	177	178	178
o201, p202, q203, r204	205	205	205	206	207	208	k205, 209	210	211	211	213	213	214	214
o201, p202, q203, r204	241	241	241	244	245	246	k205, 209	210	211	211	213	213	214	214
o201, p202, q203, r204	283	283	283	284	285	286	k283, 287	288	289	289	291	291	292	292
o201, p202, q203, r204	283	283	283	284	285	286	k283, 287	288	289	289	291	291	292	292
o201, p202, q203, r204	321	321	321	324	325	326	k321, 325	327	328	328	330	330	331	331
o201, p202, q203, r204	321	321	321	324	325	326	k321, 325	327	328	328	330	330	331	331
o201, p202, q203, r204	351	351	351	354	355	356	k351, 355	357	358	358	360	360	361	361
o201, p202, q203, r204	381	381	381	384	385	386	k381, 385	387	388	388	390	390	391	391
o201, p202, q203, r204	401	401	401	404	405	406	k401, 405	407	408	408	410	410	411	411
o201, p202, q203, r204	431	431	431	434	435	436	k431, 435	437	438	438	440	440	441	441
o201, p202, q203, r204	451	451	451	454	455	456	k451, 455	457	458	458	460	460	461	461
o201, p202, q203, r204	471	471	471	474	475	476	k471, 475	477	478	478	480	480	481	481
o201, p202, q203, r204	501	501	501	504	505	506	k501, 505	507	508	508	510	510	511	511
o201, p202, q203, r204	521	521	521	524	525	526	k521, 525	527	528	528	530	530	531	531
o201, p202, q203, r204	541	541	541	544	545	546	k541, 545	547	548	548	550	550	551	551
o201, p202, q203, r204	561	561	561	564	565	566	k561, 565	567	568	568	570	570	571	571
o201, p202, q203, r204	581	581	581	584	585	586	k581, 585	587	588	588	590	590	591	591
o201, p202, q203, r204	601	601	601	604	605	606	k601, 605	607	608	608	610	610	611	611
o201, p202, q203, r204	621	621	621	624	625	626	k621, 625	627	628	628	630	630	631	631
o201, p202, q203, r204	641	641	641	644	645	646	k641, 645	647	648	648	650	650	651	651
o201, p202, q203, r204	661	661	661	664	665	666	k661, 665	667	668	668	670	670	671	671
o201, p202, q203, r204	681	681	681	684	685	686	k681, 685	687	688	688	690	690	691	691
o201, p202, q203, r204	698	697	698	699	700	701	k698, 699	702	703	703	705	705	706	706
o201, p202, q203, r204	712	712	712	714	715	716	k712, 715	717	718	718	720	720	721	721
o201, p202, q203, r204	721	721	721	724	725	726	k721, 725	727	728	728	730	730	731	731
o201, p202, q203, r204	741	741	741	744	745	746	k741, 745	747	748	748	750	750	751	751
o201, p202, q203, r204	756	756	756	759	760	761	k756, 760	762	763	763	765	765	766	766
o201, p202, q203, r204	781	781	781	784	785	786	k781, 785	787	788	788	790	790	791	791
o201, p202, q203, r204	801	801	801	804	805	806	k801, 805	807	808	808	810	810	811	811
o201, p202, q203, r204	821	821	821	824	825	826	k821, 825	827	828	828	830	830	831	831
o201, p202, q203, r204	841	841	841	844	845	846	k841, 845	847	848	848	850	850	851	851
o201, p202, q203, r204	861	861	861	864	865	866	k861, 865	867	868	868	870	870	871	871
o201, p202, q203, r204	881	881	881	884	885	886	k881, 885	887	888	888	890	890	891	891
o201, p202, q203, r204	898	897	898	899	900	901	k898, 899	902	903	903	905	905	906	906
o201, p202, q203, r204	912	912	912	914	915	916	k912, 915	917	918	918	920	920	921	921
o201, p202, q203, r204	921	921	921	924	925	926	k921, 925	927	928	928	930	930	931	931
o201, p202, q203, r204	941	941	941	944	945	946	k941, 945	947	948	948	950	950	951	951
o201, p202, q203, r204	951	951	951	954	955	956	k951, 955	957	958	958	960	960	961	961
o201, p202, q203, r204	971	971	971	974	975	976	k971, 975	977	978	978	980	980	981	981
o201, p202, q203, r204	981	981	981	984	985	986	k981, 985	987	988	988	990	990	991	991
o201, p202, q203, r204	1001	1001	1001	1004	1005	1006	k1001, 1005	1007	1008	1008	1010	1010	1011	1011
o201, p202, q203, r204	1001	1002	1003	1004	1005	1006	k1001, 1005	1007	1008	1008	1010	1010	1011	1011
o201, p202, q203, r204	1031	1032	1033	1034	1035	1036	k1031, 1035	1037	1038	1038	1040	1040	1041	1041
o201, p202, q203, r204	1051	1052	1053	1054	1055	1056	k1051, 1055	1057	1058	1058	1060	1060	1061	1061
o201, p202, q203, r204	1081	1082	1083	1084	1085	1086	k1081, 1085	1087	1088	1088	1090	1090	1091	1091
o201, p202, q203, r204	1081	1082	1083	1084	1085	1086	k1081, 1085	1087	1088	1088	1090	1090	1091	1091

a Rating tables and Index to Water-Supply Papers 35-39
 contained in Water-Supply Paper 39. Monthly dis-
 charge for 1899 in 21st Annual Report, part 4.
 b James River only.
 c Ganges River only.
 d Gunnison and Gunnison Rivers and Colorado River above
 Gunnison River.
 e Slave River only.
 f Kings and Kern Rivers and south Pacific slope basins.
 g Rating tables and Index to Water-Supply Papers 47-52
 contained in Water-Supply Paper 52. Monthly discharge
 for 1900 in 22d Annual Report, part 4.
 h Missisickon and Schuylkill Rivers to James River.
 i Platte and Kansas Rivers.
 j Colorado Platte, and Elkhorn Rivers and tributaries below
 Platte River.
 k Tributaries of Mississippi River from east.
 m Lake Ontario and tributaries to St. Lawrence River proper.
 n Hudson Bay only.
 o New England rivers only.
 p Hudson River to Delaware River, inclusive.
 q Susquehanna River to Yachin River.
 r Platte and Kansas Rivers.
 s Platte and Kansas Rivers.
 t Trochu and Carson Rivers.
 u Below mouth of Gila River.
 v Rogue, Umqualla and Siletz Rivers only.

Reports have been published that are compilations of records for various areas, usually a single State or drainage basin. These reports contain records previously published (some of which have been revised), as well as some records not contained in the annual series of water-supply papers. The following table gives the numbers and titles of these reports, arranged alphabetically, some by States and some by drainage basins.

Reports containing compilations of records of discharge by States and drainage basins

Report	Period	Water-Supply Paper
STATE		
Alabama, Water powers of, with an appendix on stream measurements in Mississippi	1895-1903	107
California, Water resources of, part 1, Stream measurements in Sacramento River Basin.	1887-1912	298
California, Water resources of, part 2, Stream measurements in San Joaquin River Basin.	1878-1912	299
California, Water resources of, part 3, Stream measurements in the Great Basin and Pacific Coast river basins.	1891-1912	300
California, southern, Surface water supply of Pacific slope of.....	1890-1918	447
California, Surface water supply of Sacramento River Basin.....	1895-1927	597-E
California, Surface water supply of San Joaquin River Basin.....	1895-1927	638-D
California, southern, Surface water supply of Pacific slope basins in.....	1894-1927	636-E
California, Surface water supply of minor San Francisco Bay, northern Pacific, and Great basins in.....	1895-1927	637-A
Colorado, Water resources of.....	1884-1900	74
Georgia, Water resources of.....	1895-1905	197
Massachusetts, Surface waters of.....	1845-1915	415
Nebraska, Surface water supply of.....	1894-1906	230
Oregon, Surface water supply of.....	1895-1910	370
Texas, Summary of records of surface waters of.....	1898-1937	850
Vermont, Surface waters of.....	1875-1916	424
Washington, Summary of hydrometric data in.....	1878-1919	492
Washington, Summary of records of surface waters of.....	1919-35	870
Wisconsin, northern, Water power of.....	1895-1905	156
Wyoming, Surface waters of, and their utilization.....	1894-1921	469
DRAINAGE BASIN		
Colorado River (Ariz., Colo., N. Mex., Utah, Wyo.) and its utilization...	1888-1914	395
Colorado River, upper (Colo., Utah), and its utilization.....	1897-1927	617
Colorado River Basin (Ariz., Calif., Colo., Utah, Wyo.), Surface waters at base stations in.....	1891-1938	918
Colorado River Basin (Ariz., Calif., Nev., N. Mex., Utah), Surface waters at stations on tributaries in lower.....	1888-1938	1049
Columbia River Basin, upper (Mont., Idaho), Surface waters of.....	1898-1938	916
Great Salt Lake Basin, Water powers of.....	1889-1920	517
Green River (Colo., Utah, Wyo.) and its utilization.....	1894-1926	618
Kennebec River Basin (Maine), Water resources of.....	1890-1906	198
Milk River. See St. Mary and Milk Rivers.....		
Missouri and St. Mary River Basins (Mont.), Surface waters of.....	1881-1938	917
New-Kanawha River Basin (N. C., Va., W. Va.), Surface water supply of.....	1895-1920	536
Penobscot River Basin (Maine), Water resources of.....	1904-99	279
Potomac River Basin (D. C., Md., W. Va.).....	1895-1906	192
Rio Grande Basin (Colo., N. Mex., Tex.) Water resources of.....	1888-1913	358
St. Mary and Milk Rivers (Mont., Canada), Water supply of.....	1898-1917	491
St. Mary River. See St. Mary and Milk Rivers; Missouri and St. Mary River Basin.		
Sevier Lake Basin (Utah), Utilization of surface water resources of.....	1889-1937	920
Susquehanna River Basin (Pa., Md.) Hydrography of.....	1890-1904	109

Records of discharge have been published also in State reports. Some of these are not contained in the publications of the Geological Survey or are revisions of records previously published in its water-supply papers. The following table contains a list of these reports.

State reports containing compilations of records of discharge

State	Period	Report	Issued by
Alabama.....	1895-1915	Bull. 17, Water powers of Alabama.....	Geological Survey of Alabama.
Arkansas.....	1887-1928	Stream-gaging Rept. 1.....	Arkansas Geological Survey.
Arkansas.....	1881-1935	Water resources of Colorado, Appendix 2, Data on stream-gaging stations of Colorado. ¹	State Planning Commission.
Do.....	1881-1938	Water resources of Colorado, Appendix 3, vols. 1 and 2, Stream-flow data of Colorado.	Water Conservation Board, State engineer.
Connecticut...	1900-1927	Bull. 44, Water resources of Connecticut...	Do.
Do.....	1912-33	5th biennial report.....	State Geological and Natural History Survey.
Florida.....	1898-1946	Bull. 31, Springs of Florida.....	State Water Commission.
Georgia.....	1895-1906	Bull. 16, Water powers of Georgia.....	Florida Geological Survey.
Do.....	1907-19	Bull. 38, Water powers of Georgia.....	Do.
Illinois.....	1908-11	Water resources of Illinois.....	Rivers and Lakes Commission.
Do.....	1900-1934	Stream-flow data of Illinois.....	Division of Waterways.
Indiana.....	1923-27	Pub. 72, Surface water supply of Indiana..	Department of Conservation.
Do.....	1927-30	Pub. 112, Surface water supply of Indiana..	Do.
Iowa.....	1873-1932	Stream-flow records of Iowa.....	State Planning Board.
Do.....	1873-1940	Water-Supply Bull. 1, Summaries of yearly and flood flow relating to Iowa streams..	Iowa Geological Survey.
Do.....	1941-42	Water-Supply Bull. 2, Surface water resources of Iowa.	Do.

¹ Contains records of yearly discharge only.

State reports containing compilations of records of discharge--Continued

State	Period	Report	Issued by
Kansas.....	1895-1919	Surface waters of Kansas.....	Kansas Water Commission.
Do.....	1919-24	do.....	Do.
Do.....	1924-28	Report of Division of Water Resources.....	State Board of Agriculture.
Do.....	1928-35	Stream-flow data of Kansas.....	Do.
Do.....	1935-39	do.....	Do.
Kentucky.....	1910-20	Surface waters of Kentucky.....	Kentucky Geological Survey.
Louisiana.....	1903-38	Geol. Bull. 16, Surface water supply of Louisiana	Department of Conservation.
Maine.....	1887-1920	1st annual report.....	Maine Water Power Commission.
Maryland.....	1929-37	Flow data and draft storage curves for major streams in Maryland.	State Planning Commission and Water Resources Commission.
Do.....	1892-1943	Bull. 1, Summary of records of surface waters of Maryland and the Potomac River Basin.	Department of Geology, Mines, and Water Resources.
Minnesota.....	1909-12	Water-resources investigation of Minnesota.	State Drainage Commission.
Missouri.....	1857-1926	Vol. 20, 2d series, Water resources of Missouri.	Missouri Bureau of Geology and Mines.
Do.....	1927-39	Vol. 26, 2d series, Surface waters of Missouri.	Missouri Geological Survey and Water Resources.
Montana.....	1889-1911	5th biennial report.....	Office of the State Engineer.
Do.....	1881-1938	Special Rept. 10, vols. 1-4, Water resources of Montana.	Montana Agricultural Experiment Station.
Nebraska.....	1894-1914	1st hydrographic report.....	Bureau of Water Power, Irrigation, and Drainage.
Do.....	1914-28	2d hydrographic report.....	Do.
New Hampshire.....	1889-1922	Annual and statistical report, vol. 12.....	Public Service Commission.
New Jersey.....	1892-1928	Bull. 33, Surface water supply of New Jersey.	Department of Conservation and Development.
Do.....	1928-34	Special Rept. 5, Surface water supply of New Jersey.	State Water Policy Commission.
Do.....	1934-40	Special Rept. 9, Surface water supply of New Jersey.	Do.
New Mexico.....	1888-1925	Surface water supply of New Mexico.....	Office of the State Engineer.
North Carolina.....	1889-1923	Bull. 34, Discharge records of North Carolina streams.	Department of Conservation and Development.
Do.....	1889-1936	Bull. 39, Discharge records of North Carolina streams. ²	Do.
Do.....	1866-1945	Hydrologic Data on the Neuse River Basin.	Do.
Do.....	1820-1945	Hydrologic Data on the Cape Fear River Basin.	Do.
Do.....	1866-1945	Hydrologic Data on the Yadkin-Fee Dee River Basin.	Do.
North Dakota.....	1919-21	Report to Governor of North Dakota on flood control.	State chief engineer.
Do.....	1882-1938	Surface water in North Dakota.....	State Planning Board.
Do.....	1882-1944	Supplement B, 4th biennial report.....	State Water Conservation Commission.
Ohio.....	1898-1921	Bull. 73, Ohio stream flow, Part 1.....	Engineering Experiment Station, Ohio State University.
Do.....	1898-1944	Bull. 127, Ohio stream flow, Part 2.....	Do.
Do.....	1902-39	Bull. 200, Compilation of stream-flow records of Ohio.	Department of Agriculture, Division of Conservation and Natural Resources.
Do.....	1898-1939	Bull. 111, Ohio stream-drainage areas and flow-duration tables.	Engineering Experiment Station, Ohio State University.
Oregon.....	1878-1914	Bull. 4, Water resources of the State of Oregon.	Office of the State Engineer.
Do.....	1914-24	Bull. 7, Water resources of the State of Oregon.	Do.
Do.....	1924-30	Bull. 8, Water resources of the State of Oregon.	Do.
Do.....	1930-36	Bull. 9, Water resources of the State of Oregon.	Do.
Pennsylvania.....	1890-1911	Report of the Water Supply Commission of Pennsylvania.	Water Supply Commission of Pennsylvania.
Do.....	1928-32	Stream-flow records of Pennsylvania.....	Department of Forests and Waters.
Rhode Island.....	1929-41	7th annual report.....	Department of Public Works.
South Carolina.....	1884-1946	Bull. 17, Summary of records of surface water supply of South Carolina.	South Carolina Research, Planning and Development Board.
Tennessee.....	1874-1924	Bull. 34, Water resources of Tennessee ³	Department of Education.
Do.....	1920-30	Bull. 40, Surface waters of Tennessee.....	Do.
Utah.....	1889-1905	5th biennial report.....	Office of the State Engineer.
Do.....	1906-10	7th biennial report.....	Do.
Do.....	1911-16	10th biennial report.....	Do.
Virginia.....	1895-1927	Bull. 31, Water resources of Virginia.....	Virginia Geological Survey.
Do.....	1927-42	Bull. 4, Surface water supply of Virginia (Potomac, Rappahannock, and York River Basins).	Virginia Conservation Commission.
Do.....	1927-42	Bull. 5, Surface water supply of Virginia (James River Basin).	Do.
Do.....	1927-42	Bull. 6, Surface water supply of Virginia (Roanoke and Chowan River Basins).	Do.
Do.....	1927-42	Bull. 7, Surface water supply of Virginia (New, Tennessee, and Big Sandy River Basins).	Do.
Washington.....	1878-1933	Bull. 5, Monthly and yearly summaries of hydrometric data.	Department of Conservation and Development.
Wisconsin.....	1888-1914	1st report of Railroad Commission of Wisconsin to Legislature on water powers.	Railroad Commission of Wisconsin.
Do.....	1914-23	2d report of Railroad Commission of Wisconsin to Legislature on water powers.	Do.

² Contains records of maximum and minimum daily, weekly, and monthly discharge and yearly mean discharge.

³ Includes records of discharge for all stations in North Carolina in the Tennessee River Basin. Note.- In addition to the records contained in the reports listed above, the following States have issued annual or biennial reports in which are contained records of discharge: California, Colorado, Connecticut, Idaho, Indiana, Kansas, Maine, Missouri, Montana, Nebraska, Nevada, New Mexico, New York (also New York City Board of Water Supply and city of Rochester), North Dakota, Oregon, Pennsylvania, Rhode Island, Washington, and Wyoming.

The reports listed in the foregoing tables contain the customary records of discharge collected during the systematic operation of gaging stations. Detailed information on the stage and discharge of many streams during major floods has been included in special reports on these floods published by the Geological Survey. The more recent of these special reports also contain other pertinent hydrologic information and analyses and compilations of data relating to earlier noteworthy floods. The following list gives the numbers and titles of these reports:

Water-Supply Paper	Title
88	The Passaic flood of 1902.
92	The Passaic flood of 1903.
96	Destructive floods in the United States in 1903.
147	Destructive floods in the United States in 1904.
162	Destructive floods in the United States in 1905.
334	The Ohio Valley flood of March-April 1913.
426	Southern California floods of January 1916.
487	The Arkansas River flood of June 3-5, 1921.
488	The floods in central Texas in September 1921.
520-G	Some floods in the Rocky Mountain region.
636-C	The New England flood of November 1927.
771	Floods in the United States, magnitude and frequency.
773-E	The New York State flood of July 1935.
796-B	Flood on Republican and Kansas Rivers, May and June 1935.
796-C	Flood in La Canada Valley, Calif., January 1, 1934.
796-G	Major Texas floods of 1935.
798	The floods of March 1936, part 1, New England rivers.
799	The floods of March 1936, part 2, Hudson River to Susquehanna River region.
800	The floods of March 1936, part 3, Potomac, James, and upper Ohio Rivers.
816	Major Texas floods of 1936.
836-A	Stages and flood discharges of the Connecticut River at Hartford, Conn.
838	Floods of Ohio and Mississippi Rivers, January-February, 1937.
842	Floods in Canadian and Pecos River Basins of New Mexico, May and June 1937.
843	Floods of December 1937 in northern California.
844	Floods of March 1938 in southern California.
847	Maximum discharges at stream-measurement stations through September 1938.
867	Hurricane floods of September 1938.
869	Flood of August 1935 in Muskingum River Basin, Ohio.
914	Texas floods of 1938 and 1939.
966	Minor floods of 1938 in North Atlantic States.
967-A	Floods of September 1939 in Colorado River Basin below Boulder (Hoover) Dam.
967-B	Flood of July 5, 1939, in eastern Kentucky.
967-C	Flood of August 21, 1939, in town of Baldwin, Maine.
994	Cloudburst floods in Utah, 1850 to 1938.
997	Floods in Colorado.
1046	Texas floods of 1940.
1066	Floods of 1940 in southeastern States.
1080	Floods of May-June 1948 in Columbia River Basin.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE GEOLOGICAL SURVEY

The following table contains a list of gaging stations for the area covered by this report at which records of daily discharge were collected during the water year October 1946 to September 1947 by agencies other than the Geological Survey. The records for these stations are not contained in the publications of the Geological Survey. Records on many canals, not here listed, have been collected by the Oregon State engineer and the Bureau of Reclamation in connection with the water supply for irrigation projects.

Records of discharge collected by agencies other than the Geological Survey

Stream	Location	Period	Collected by
Big Butte Creek, North Fork..	SW $\frac{1}{4}$ sec. 2, T. 35 S., R. 2 E., 1 mile north of Butte Falls, Oreg.	1928-47	Oregon State engineer.
Big Butte Springs.....	Sec. 17, T. 35 S., R. 3 E., 4 miles east of Butte Falls, Oreg.	1930-47	Do.
Big Marsh Creek.....	NE $\frac{1}{4}$ sec. 20, T. 24 S., R. 7 E., at Roey Ranch, near Crescent, Oreg.	1924, 1928-47*	Do.
Brown Creek.....	NE $\frac{1}{4}$ sec. 30, T. 21 S., R. 8 E., 15 miles northwest of Lapine, Oreg.	1938-45, 1946-47*	Do.
Butter Creek.....	SE $\frac{1}{4}$ sec. 22, T. 2 N., R. 27 E., at Foley Bridge, 14 miles southwest of Echo, Oreg.	1935-47	Do.
Charlton Creek.....	Sec. 1, T. 21 S., R. 7 E., above Crane Prairie Reservoir near Lapine, Oreg.	1923-24, 1937-47	Do.
Columbia River.....	Bonneville, Oreg.+	1879-1947	Corps of Engineers.

* Records for some earlier years contained in water-supply papers published by the Geological Survey.

+ Prior to September 1937, station was at Cascade Locks, Oreg. (records equivalent).

Records of discharge collected by agencies other than the Geological Survey--Continued

Stream	Location	Period	Collected by
Cultus Creek.....	Sec. 19, T. 20 S., R. 8 E., above Crane Prairie Reservoir, near Lapine, Oreg.	1937-47*	Oregon State engineer.
Deer Creek.....	NW $\frac{1}{4}$ sec. 36, T. 20 S., R. 7 E., above Crane Prairie Reservoir near Lapine, Oreg.	1938-47*	Do.
Deschutes River.....	NW $\frac{1}{4}$ sec. 28, T. 21 S., R. 8 E., below Sheep Springs, near Lapine, Oreg.	1938-47	Do.
Do.....	N $\frac{1}{2}$ sec. 7, T. 20 S., R. 11 E., $\frac{1}{2}$ mile below Little Deschutes River, at Peters Ranch, near Lapine, Oreg.	1944-47	Do.
Do.....	On line between sec. 31, T. 19 S., R. 11 E. and sec. 6, T. 20 S., R. 11 E., $\frac{1}{2}$ mile below Spring River, near Lapine, Oreg.	1944-47	Do.
Do.....	SW $\frac{1}{4}$ sec. 9, T. 19 S., R. 11 E., below Benham Falls, near Bend, Oreg.	1943-47	Do.
Do.....	SW $\frac{1}{4}$ sec. 27, T. 18 S., R. 11 E., above Lava Island, near Bend, Oreg.	1943-47*	Do.
Do.....	SW $\frac{1}{4}$ sec. 4, T. 19 S., R. 11 E., $\frac{1}{2}$ mile above Dillon Falls, at Ryan Ranch, near Bend, Oreg.	1943-47	Do.
Do.....	Near center sec. 7, T. 18 S., R. 12 E., $\frac{1}{2}$ mile above head of mill pond, near Bend, Oreg.	1943-47	Do.
Evans Creek.....	Sec. 20, T. 34 S., R. 2 W., 3 miles above West Fork, $\frac{1}{2}$ miles north of Sams Valley, Oreg.	1942-47	Do.
Do.....	NE $\frac{1}{4}$ sec. 34, T. 34 S., R. 3 W., at Bybee Springs, 7 miles northwest of Sams Valley, Oreg.	1940-47*	Do.
Fish Lake Dam, tunnel at.....	SE $\frac{1}{4}$ sec. 4, T. 37 S., R. 4 E., 16 miles east of Lake Creek, Oreg.	1929-47	Do.
Fivemile Creek.....	SW $\frac{1}{4}$ sec. 27, T. 4 S., R. 29 E., 14 miles west of Ukiah, Oreg.	1928-30, 1932,1933, 1935-44, 1946,1947	Do.
Grave Creek.....	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 7, T. 34 S., R. 5 W., $\frac{1}{2}$ miles west of Placer, Oreg.	1929-30, 1932-47	Do.
Jumpoff Joe Creek.....	SW $\frac{1}{4}$ sec. 32, T. 34 S., R. 5 W., 7 miles northwest of Merlin, Oreg.	1929-47*	Do.
Little Butte Creek.....	SE $\frac{1}{4}$ sec. 19, T. 36 S., R. 2 E., at Lake Creek, Oreg.	1922-24, 1927-47	Do.
Little Butte Creek, North Fork.	Sec. 21, T. 36 S., R. 2 E., above Rogue River Valley Canal intake, near Lake Creek, Oreg.	1932-47*	Do.
Little Butte Creek, South Fork.	NE $\frac{1}{4}$ sec. 21, T. 37 S., R. 4 E., 1 mile south of Big Elk ranger station, near Lake Creek, Oreg.	1932-47*	Do.
Little Deschutes River.....	SE $\frac{1}{4}$ sec. 30, T. 20 S., R. 11 E., 4 miles above mouth, at Johnson Ranch, near Bend, Oreg.	1943-47*	Do.
Little Walla Walla River.....	George St., in Milton, Oreg.	1932-47	Do.
Ochoco Creek.....	NE $\frac{1}{4}$ sec. 6, T. 15 S., R. 17 E., below Ochoco Reservoir, 6 miles east of Prineville, Oreg.	1919-47	Do.
Ochoco Reservoir.....	NW $\frac{1}{4}$ sec. 5, T. 15 S., R. 17 E., 6 miles east of Prineville, Oreg.	1918-47	Do.
Ochoco Springs.....	NW $\frac{1}{4}$ sec. 6, T. 15 S., R. 17 E., 6 miles east of Prineville, Oreg.	1920-47	Do.
Rancheria Creek.....	SE $\frac{1}{4}$ sec. 17, T. 35 S., R. 3 E., 4 miles east of Butte Falls, Oreg.	1935-47	Do.

* Records for some earlier years contained in water-supply papers published by the Geological Survey.

Note.- Records through 1936 collected by the Oregon State engineer (some of them in cooperation with the Bureau of Reclamation of the U. S. Department of Interior) are contained in the bulletins published by that officer. (See p. 9 "State reports containing compilation of records of discharge.") The other records listed in this table have not been published.

COOPERATION

In Oregon the work was done under cooperative agreements with the State of Oregon, Charles E. Stricklin, State engineer; Umatilla County Court; and the cities of Corvallis, Eugene, McMinnville, and Portland. In Washington the work was done under cooperative agreements with the State Department of Conservation and Development, Art Garton, director, and Charles J. Bartholet, consulting engineer for the department; Columbia County; and Walla Walla County.

Financial assistance was furnished by the Corps of Engineers for the operation of 39 gaging stations in Oregon and 15 in Washington.

Financial assistance was also furnished by the Bureau of Reclamation of the United States Department of Interior.

Assistance in collecting records was rendered by the following organizations:

Oregon: Counties of Crook, Deschutes, Jackson, Jefferson, Josephine, Klamath, and Umatilla; city of Grants Pass; The California Oregon Power Co., California Public Utilities, Pacific Power & Light Co., and Portland General Electric Co.

Washington: Northwestern Electric Co. and Pacific Power & Light Co.

DIVISION OF WORK

The stream-gaging work was conducted by the water resources division of the Geological Survey--Carl G. Paulsen, chief hydraulic engineer and Joseph V. B. Wells, chief of the surface water branch. The data for the gaging stations were collected and prepared for publication under supervision of district engineers as follows: In Oregon, G. H. Canfield, the work being done in collaboration with Charles E. Stricklin, State engineer; in Washington, F. M. Veatch.

The records were reviewed and the manuscript prepared for publication under the direction of B. J. Peterson, chief, annual reports section.

GAGING-STATION RECORDS

COLUMBIA RIVER MAIN STEM

Columbia River near The Dalles, Oreg.

Location.- Water-stage recorder, lat. 45°39', long. 120°58', in NE $\frac{1}{4}$ sec. 20, T. 2 N., R. 15 E., just upstream from Cejillo Falls, 3 miles downstream from Deschutes River, and 11 miles east of The Dalles. Datum of gage is at mean sea level, datum of 1929.

Drainage area.- 237,000 square miles.

Records available.- June 1878 to September 1947. Prior to October 1931, records based on staff gage at The Dalles, supplemented for a few short periods by gage-height records at Umatilla and Cascade Locks. Maximum stages for each year in period 1858 to 1877 from readings of gage at Lower Cascades Landing.

Average discharge.- 69 years, 194,000 second-feet.

Extremes.- Maximum discharge during year, 542,000 second-feet May 11 (elevation, 142.91 feet); minimum, 79,700 second-feet Nov. 18 (elevation, 129.15 feet).
1858-1947: Maximum discharge, 1,240,000 second-feet (revised) June 6, 1894 (elevation, 106.5 feet on gage at The Dalles, 160.1 feet at present site); minimum observed, 35,000 second-feet Jan. 12, 1937 (elevation, 126.0 feet).

Remarks.- Records excellent. Storage and diversions for irrigation are only a small part of total runoff. Some regulation by Franklin D. Roosevelt Lake above Grand Coulee Dam during year, the total increase in contents during the year ending Sept. 30, 1947, being 65,600 acre-feet.

Cooperation.- Recorder inspected and gages read by Corps of Engineers.

Revision.- Discharge for water year 1894, including revised figures of daily discharge for period May 22 to June 12, superseding those published in Water-Supply Paper 370, are given herein.

Rating table, water year 1946-47 (elevation in feet, and discharge, in second-feet)

129	76,500	133	181,000	137	320,000
130	99,000	134	213,000	139	394,000
131	124,000	135	247,000	141	469,000
132	151,000	136	283,000	143	545,000

Discharge, in second-feet, 1893-94, 1946-47

1893-94

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	117,000	110,000	165,000	120,000	142,000	115,000	322,000	461,000	1,080,000	718,000	372,000	217,000
2	115,000	108,000	180,000	121,000	138,000	114,000	311,000	451,000	1,110,000	707,000	361,000	215,000
3	114,000	107,000	185,000	123,000	132,000	120,000	299,000	432,000	1,150,000	701,000	347,000	215,000
4	113,000	112,000	199,000	116,000	123,000	118,000	297,000	416,000	1,180,000	685,000	338,000	212,000
5	112,000	112,000	191,000	115,000	123,000	118,000	291,000	409,000	1,200,000	680,000	329,000	206,000
6	114,000	112,000	181,000	112,000	124,000	118,000	275,000	395,000	1,230,000	678,000	319,000	204,000
7	113,000	118,000	177,000	107,000	118,000	113,000	270,000	407,000	1,210,000	667,000	312,000	204,000
8	125,000	140,000	176,000	107,000	124,000	115,000	265,000	422,000	1,210,000	663,000	306,000	199,000
9	126,000	168,000	174,000	104,000	124,000	114,000	279,000	437,000	1,200,000	652,000	300,000	195,000
10	130,000	170,000	181,000	103,000	124,000	114,000	292,000	435,000	1,190,000	630,000	294,000	194,000
11	136,000	168,000	180,000	102,000	124,000	117,000	283,000	441,000	1,140,000	619,000	288,000	188,000
12	149,000	166,000	209,000	102,000	124,000	117,000	302,000	435,000	1,120,000	608,000	284,000	185,000
13	158,000	165,000	218,000	108,000	123,000	115,000	323,000	437,000	1,080,000	596,000	278,000	179,000
14	137,000	161,000	209,000	136,000	117,000	118,000	325,000	439,000	1,050,000	581,000	272,000	176,000
15	132,000	155,000	192,000	157,000	114,000	136,000	328,000	461,000	999,000	568,000	266,000	170,000
16	132,000	157,000	176,000	180,000	114,000	168,000	330,000	491,000	966,000	555,000	260,000	169,000
17	128,000	155,000	164,000	202,000	113,000	216,000	322,000	518,000	939,000	543,000	254,000	165,000
18	125,000	152,000	164,000	219,000	110,000	252,000	307,000	528,000	924,000	526,000	248,000	164,000
19	123,000	147,000	160,000	213,000	110,000	245,000	291,000	522,000	918,000	518,000	245,000	162,000
20	125,000	144,000	155,000	199,000	105,000	242,000	283,000	522,000	908,000	501,000	239,000	162,000
21	124,000	142,000	148,000	185,000	103,000	232,000	279,000	558,000	898,000	489,000	235,000	155,000
22	123,000	141,000	152,000	180,000	102,000	178,000	283,000	617,000	884,000	477,000	233,000	154,000
23	122,000	140,000	147,000	166,000	101,000	178,000	308,000	647,000	858,000	463,000	230,000	150,000
24	118,000	140,000	144,000	161,000	92,000	163,000	340,000	691,000	850,000	453,000	230,000	149,000
25	118,000	140,000	142,000	156,000	90,100	160,000	337,000	734,000	839,000	441,000	228,000	149,000
26	116,000	141,000	140,000	159,000	88,300	155,000	377,000	789,000	829,000	432,000	224,000	149,000
27	114,000	141,000	137,000	155,000	95,000	160,000	409,000	853,000	809,000	422,000	222,000	145,000
28	111,000	141,000	136,000	152,000	107,000	174,000	430,000	936,000	789,000	412,000	222,000	142,000
29	108,000	142,000	132,000	148,000	-	208,000	465,000	986,000	765,000	403,000	221,000	139,000
30	110,000	155,000	128,000	144,000	-	249,000	463,000	1,050,000	741,000	385,000	219,000	137,000
31	110,000	-	118,000	142,000	-	284,000	-	1,060,000	-	376,000	217,000	-

Discharge, in second-feet, of Columbia River near The Dalles, Oreg., 1893-94, 1946-47--Continued

1946-47

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	98,800	95,000	124,000	112,000	110,000	126,000	169,000	284,000	468,000	353,000	212,000	109,000
2	98,100	93,600	122,000	107,000	109,000	123,000	178,000	305,000	467,000	342,000	203,000	107,000
3	95,400	92,000	119,000	102,000	106,000	122,000	176,000	311,000	469,000	325,000	198,000	112,000
4	93,800	90,800	116,000	105,000	110,000	125,000	173,000	324,000	474,000	316,000	199,000	110,000
5	92,200	86,700	116,000	99,000	119,000	124,000	170,000	362,000	472,000	310,000	195,000	104,000
6	92,900	86,700	113,000	89,000	114,000	120,000	167,000	394,000	474,000	307,000	188,000	100,000
7	93,800	87,900	109,000	88,100	105,000	120,000	171,000	421,000	471,000	299,000	180,000	99,500
8	95,200	85,200	102,000	87,400	103,000	118,000	176,000	440,000	471,000	294,000	170,000	100,000
9	96,600	85,900	99,000	92,700	103,000	115,000	176,000	471,000	477,000	293,000	164,000	100,000
10	95,400	86,100	99,000	94,300	102,000	113,000	171,000	513,000	478,000	290,000	159,000	102,000
11	92,000	87,000	97,800	94,100	104,000	118,000	170,000	536,000	507,000	280,000	154,000	103,000
12	90,400	86,300	102,000	91,300	105,000	122,000	164,000	529,000	513,000	277,000	153,000	104,000
13	89,700	86,100	119,000	92,700	105,000	124,000	161,000	509,000	505,000	276,000	151,000	105,000
14	89,500	84,300	180,000	95,000	111,000	126,000	157,000	500,000	495,000	271,000	150,000	105,000
15	90,800	85,200	200,000	94,300	133,000	124,000	156,000	493,000	480,000	268,000	145,000	103,000
16	92,700	83,000	233,000	91,800	152,000	122,000	159,000	503,000	476,000	265,000	143,000	104,000
17	92,000	81,900	263,000	89,200	153,000	123,000	169,000	504,000	477,000	259,000	139,000	104,000
18	86,500	80,800	236,000	89,200	154,000	130,000	181,000	495,000	481,000	254,000	135,000	104,000
19	85,600	83,400	200,000	89,000	149,000	137,000	194,000	493,000	481,000	257,000	137,000	103,000
20	86,300	83,000	176,000	93,200	144,000	140,000	211,000	485,000	478,000	259,000	140,000	105,000
21	85,800	86,300	164,000	100,000	140,000	146,000	217,000	486,000	465,000	254,000	141,000	105,000
22	84,800	95,700	157,000	104,000	137,000	150,000	225,000	482,000	445,000	249,000	140,000	105,000
23	81,700	101,000	154,000	105,000	135,000	152,000	229,000	477,000	430,000	245,000	136,000	105,000
24	85,200	101,000	149,000	102,000	134,000	164,000	230,000	473,000	415,000	240,000	130,000	104,000
25	90,400	98,000	143,000	105,000	137,000	174,000	225,000	466,000	401,000	238,000	126,000	102,000
26	94,500	103,000	138,000	114,000	138,000	172,000	227,000	457,000	391,000	233,000	123,000	97,800
27	93,400	105,000	136,000	131,000	132,000	169,000	227,000	469,000	378,000	232,000	119,000	95,000
28	115,000	109,000	134,000	140,000	130,000	170,000	228,000	480,000	371,000	227,000	115,000	94,500
29	112,000	114,000	134,000	135,000	-	154,000	251,000	484,000	371,000	221,000	114,000	92,500
30	105,000	119,000	132,000	122,000	-	157,000	266,000	484,000	367,000	216,000	114,000	91,800
31	100,000	-	124,000	114,000	-	160,000	-	476,000	-	213,000	114,000	-

Monthly discharge, in second-feet, 1893-94, 1946-47

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October 1893.....	3,789,000	150,000	108,000	122,000	0.515	0.59	7,500,000
November.....	4,250,000	170,000	107,000	142,000	.599	.67	8,450,000
December.....	5,160,000	218,000	118,000	166,000	.700	.81	10,200,000
Calendar year 1893.....	84,421,300	679,000	66,200	231,300	.976	13.25	167,400,000
January 1894.....	4,494,000	219,000	102,000	145,000	.612	.71	8,920,000
February.....	3,204,400	142,000	88,300	114,000	.481	.50	6,330,000
March.....	5,050,000	284,000	113,000	163,000	.688	.79	10,000,000
April.....	9,687,000	465,000	266,000	323,000	1.36	1.52	19,200,000
May.....	17,980,000	1,060,000	395,000	580,000	2.45	2.82	35,660,000
June.....	30,066,000	1,230,000	741,000	1,002,000	4.23	4.72	59,840,000
July.....	17,147,000	736,000	376,000	553,100	2.33	2.69	34,010,000
August.....	8,395,000	372,000	217,000	271,000	1.14	1.31	16,700,000
September.....	5,250,000	217,000	137,000	175,000	.738	.82	10,400,000
Water year 1893-94.....	114,470,400	1,230,000	88,300	313,600	1.32	17.95	227,000,000
October 1946.....	2,893,300	115,000	81,700	93,330	.394	.45	5,739,000
November.....	2,762,900	119,000	80,800	92,100	.389	.43	5,480,000
December.....	4,490,800	263,000	97,800	144,900	.611	.70	8,907,000
Calendar year 1946.....	73,974,500	581,000	79,500	202,700	.855	11.60	146,700,000
January 1947.....	3,166,300	140,000	87,400	102,100	.451	.50	6,280,000
February.....	3,474,000	154,000	102,000	124,100	.524	.55	6,891,000
March.....	4,250,000	174,000	113,000	137,100	.578	.67	8,430,000
April.....	5,772,000	266,000	156,000	192,400	.812	.91	11,450,000
May.....	14,108,000	556,000	284,000	455,100	1.92	2.21	27,880,000
June.....	18,648,000	513,000	367,000	454,900	1.92	2.14	27,070,000
July.....	8,362,000	353,000	213,000	269,700	1.14	1.31	16,590,000
August.....	4,687,000	212,000	114,000	151,200	.638	.74	9,297,000
September.....	3,076,100	112,000	91,800	102,500	.432	.48	6,101,000
Water year 1946-47.....	70,690,400	536,000	80,800	193,700	.817	11.09	140,200,000

WALLA WALLA RIVER BASIN

South Fork Walla Walla River near Milton, Oreg.

Location.- Water-stage recorder, lat. 45°50', long. 118°10', in NE $\frac{1}{4}$ sec. 15, T. 4 N., R. 37 E., 1 mile upstream from Pacific Power & Light Co.'s penstock intake and 13 miles southeast of Milton. Altitude of gage, about 2,050 feet (from river-profile map).

Drainage area.- 63 square miles.

Records available.- February to October 1903 (gage heights only), August 1906 to November 1917 (incomplete), May 1931 to September 1947.

Average discharge.- 23 years (1908-15, 1931-47), 165 second-feet.

Extremes.- Maximum discharge during year, 2,430 second-feet Dec. 12 (gage height, 4.20 feet), from rating curve extended above 240 second-feet; minimum, 102 second-feet Oct. 2-4, 10-17.

1906-17, 1931-47: Maximum discharge recorded, that of Dec. 12, 1946; minimum, 72 second-feet Feb. 14, 1932.

Maximum stage known, about 6 feet Mar. 31, 1931, present site and datum.

Remarks.- Records good except those for period of shifting control and those above 600 second-feet, which are fair, and those for periods of no gage-height record, which are poor. No diversion or regulation above station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Nov. 23 to Dec. 3)

Oct. 1 to Dec. 12

Dec. 12 to Sept. 30

1.2	89	2.4	515	1.3	103	2.1	315
1.4	120	2.7	740	1.5	138	2.4	480
1.6	163	3.1	1,110	1.8	208	2.8	770
1.8	219	3.5	1,550				
2.1	335	3.8	1,910				

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	103	134	182	a145	192	170	237	311	189	127	114	109
2	102	132	166	a140	195	170	234	350	177	127	116	111
3	102	128	158	a135	190	170	227	345	172	125	116	111
4	105	126	161	a130	182	172	221	345	163	127	116	111
5	108	128	158	a140	182	163	218	340	160	127	116	113
6	105	130	154	a165	180	160	214	340	172	125	116	113
7	105	134	149	160	180	165	218	345	165	125	116	123
8	103	132	149	156	177	168	234	350	192	123	116	116
9	103	130	145	150	177	192	250	365	205	123	116	123
10	102	134	145	154	177	261	258	307	185	123	116	121
11	102	130	588	154	180	272	244	279	172	121	114	114
12	102	128	1,870	156	283	240	234	261	165	121	114	114
13	102	128	706	156	330	221	244	247	163	119	113	113
14	102	130	561	154	315	218	268	234	156	121	113	113
15	102	126	730	a140	303	234	279	221	152	121	113	113
16	102	124	528	a130	287	254	275	218	150	119	111	113
17	103	128	387	a125	261	268	315	211	148	117	111	113
18	105	171	320	a125	244	272	474	205	146	117	111	113
19	106	207	279	a130	224	268	450	203	144	117	111	111
20	126	182	254	a140	211	250	432	200	142	117	111	111
21	132	161	237	146	200	240	370	198	140	117	113	111
22	130	187	221	152	195	307	335	195	136	116	111	111
23	128	213	208	290	192	279	303	187	136	117	111	111
24	140	199	198	554	192	247	283	185	134	117	109	111
25	192	187	195	426	190	224	279	192	132	117	109	113
26	176	202	205	420	182	218	283	192	140	117	109	121
27	140	231	218	345	180	205	295	190	144	116	109	114
28	a132	274	203	283	172	203	303	185	136	116	109	113
29	124	243	a180	244	-	211	325	177	132	116	109	113
30	124	202	a160	218	-	230	303	175	130	116	109	113
31	124	-	a150	195	-	237	-	175	-	116	109	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	3,632	192	102	117	1.86	2.14	7,200
November	4,861	274	124	162	2.57	2.87	9,640
December	9,965	1,870	145	321	5.10	5.88	19,770
Calendar year 1946	72,640	1,870	100	199	3.16	42.88	144,100
January	6,158	554	125	199	3.16	3.64	12,210
February	5,973	350	172	213	3.38	3.53	11,950
March	6,889	307	180	222	3.52	4.07	13,850
April	8,605	474	214	287	4.56	5.08	17,070
May	7,728	365	175	249	3.95	4.56	15,330
June	4,669	205	130	156	2.48	2.76	9,260
July	3,723	127	116	120	1.90	2.20	7,380
August	3,487	116	109	112	1.78	2.06	6,920
September	3,410	123	109	114	1.81	2.01	6,760
Water year 1946-47	69,100	1,870	102	189	3.00	40.80	137,000

a No gage-height record; discharge computed on basis of records for North Fork Walla Walla River near Milton and Walla Walla River below Freewater.

Walla Walla River below Freewater, Oreg.

Location.- Water-stage recorder, lat. 45°59', long. 118°23', in NW¼NE¼ sec. 25, T. 6 N., R. 35 E., at McCoy Bridge, 2 miles upstream from Birch Creek and Oregon-Washington State line, and 2.5 miles north of Freewater. Datum of gage is 845.28 feet above mean sea level, datum of 1929. Auxiliary wire-weight gage at bridge 80 feet downstream at datum 11.94 feet lower, used after Jan. 3, 1947.

Records available.- April 1941 to September 1947.

Extremes.- Maximum discharge during year, 2,400 second-feet Dec. 12 (gage height, 7.17 feet), from rating curve extended above 680 second-feet; no flow at times.

1941-46: Maximum discharge, that of Dec. 12, 1946; no flow at times each year.

Remarks.- Records poor. Many diversions above station for irrigation. Little Walla Walla River, a natural distributary, diverts 3 miles above station. No regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	39	149	156	224	95	211	198	3	1		
2	0	39	132	119	230	84	234	208	3	1		
3	0	45	111	84	227	82	241	181	4	0		
4	0	41	106	78	199	106	224	169	3	0		
5	0	39	100	89	199	87	208	184	4	0		
6	0	38	100	122	184	78	220	142	4	0		
7	0	47	92	118	181	91	220	138	4	0		
8	0	45	89	115	169	100	248	142	16	0		
9	0	41	75	108	169	153	303	217	46	0		
10	0	49	60	125	169	351	311	175	43	0		
11	0	41	467	118	145	452	271	140	15	0		
12	0	36	1,720	118	331	347	248	115	10	0		
13	0	36	1,260	116	411	291	230	76	7	0		
14	0	36	820	102	434	252	244	68	6	0		
15	0	36	780	75	384	238	230	44	4	0		
16	0	30	646	91	363	275	230	19	3	0		
17	0	30	556	82	303	311	279	15	3	0		
18	0	49	555	78	283	299	615	9	2	0		
19	0	132	496	84	234	299	645	8	2	0		
20	0	136	446	85	202	255	575	11	2	0		
21	0	95	393	125	181	227	530	9	2	0		
22	0	134	351	148	163	307	323	8	1	0		
23	0	220	309	434	155	351	255	7	1	0		
24	0	211	274	1,240	142	311	227	6	1	0		
25	31	174	252	782	128	252	211	6	1	0		
26	132	216	257	1,000	112	263	187	5	1	0		
27	43	250	324	836	106	217	196	5	1	0		
28	25	316	269	530	104	205	199	4	1	0		
29	22	294	239	388	-	172	208	3	1	0		
30	27	196	196	307	-	196	175	3	1	0		
31	22	-	180	275	-	199	-	3	-	0		

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	302	132	0	9.7	599
November.....	3,093	316	30	103	6,130
December.....	11,804	1,720	60	381	23,410
Calendar year 1946	52,118.5	1,720	0	143	103,300
January.....	8,130	1,240	75	262	16,130
February.....	6,132	434	104	219	12,160
March.....	6,946	452	78	224	13,780
April.....	8,498	645	175	283	16,860
May.....	2,316	217	3	74.7	4,590
June.....	195	46	1	6.5	387
July.....	2	1	0	.1	4
August.....	0	0	0	0	0
September.....	0	0	0	0	0
Water year 1946-47	47,418	1,720	0	130	94,050

North Fork Walla Walla River near Milton, Oreg.

Location.- Water-stage recorder, lat. 45°54', long. 118°18', in NW¼NE¼ sec. 22, T. 5 N., R. 36 E., at bridge half a mile upstream from confluence with South Fork Walla Walla River and 4.5 miles southeast of Milton. Datum of gage is 1,405.69 feet above mean sea level, datum of 1929.

Drainage area.- 47 square miles.

Records available.- October 1940 to September 1947 in reports of Geological Survey; December 1929 to September 1936 in reports of State engineer; October 1936 to September 1940 (unpublished) in files of State engineer.

Average discharge.- 17 years, 44.3 second-feet.

Extremes.- Maximum discharge during year, 1,980 second-feet Dec. 12 (gage height, 6.97 feet); from rating curve extended above 120 second-feet; minimum, 1.3 second-feet Jan.

1929-47: Maximum discharge observed, that of Dec. 12, 1946; minimum, 1 second-foot Aug. 8-19, 1936, Aug. 7-11, 1940.

Remarks.- Records fair Oct. 1 to 25, June 16 to Sept. 30, poor Oct. 25 to June 15. Discharge above station for irrigation of about 220 acres. No regulation.

Rating tables, water year 1946-47, except period of ice effect (gage height, in feet, and discharge, in second-feet)

(Shifting-control method used Oct. 25 to Dec. 20, Dec. 27, Jan. 23-31, Feb. 11, 14-15, 18, Feb. 25 to Mar. 10, Mar. 22 to Apr. 11, Apr. 15-17, June 8-15)

Oct. 1 to Jan. 31						Jan. 31 to Sept. 30					
2.6	1.4	3.2	37	4.3	345	3.1	1.5	3.6	22	4.1	122
2.7	3.9	3.5	51	4.6	475	3.2	2.4	3.7	36	4.3	182
2.8	7.3	3.4	69	5.0	675	3.3	3.7	3.8	52	4.6	280
2.9	12	3.6	115	5.5	965	3.4	6.2	3.9	71	4.8	350
3.0	18	3.8	170	6.0	1,300	3.5	11.5	4.0	94		
3.1	26	4.0	235	6.5	1,680						

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.6	26	78	b9.0	102	42	94	108	15	7.3	2.9	2.9
2	7.0	28	64	b7.0	94	41	102	111	19	6.7	2.9	2.8
3	7.0	26	55	b5.0	78	41	105	111	25	5.2	2.7	3.0
4	7.3	24	53	b4.0	67	52	100	108	25	5.0	2.7	4.7
5	9.2	24	51	b3.0	63	47	100	97	22	4.7	2.4	5.4
6	8.7	24	48	b2.5	60	54	102	92	39	4.2	2.3	6.2
7	8.7	27	44	2.2	56	56	102	94	35	3.7	2.2	8.3
8	9.2	28	45	1.9	52	67	106	101	60	3.7	2.3	10
9	8.7	27	37	1.3	50	87	131	128	62	3.7	2.7	9.0
10	8.7	35	36	4.6	47	116	143	100	46	3.7	2.8	8.8
11	8.2	36	166	8.7	45	105	128	82	36	4.0	2.5	8.3
12	7.8	35	1,250	12	a70	67	a125	73	28	7.3	3.4	7.3
13	7.8	36	784	12	a80	47	a125	65	25	7.3	4.0	6.0
14	7.3	37	*416	8.7	87	41	a140	80	20	6.2	4.4	5.7
15	7.3	36	488	4.9	98	44	137	52	18	6.2	3.4	5.2
16	7.3	35	365	3.6	a80	47	128	47	21	5.2	2.9	5.2
17	7.3	34	249	3.2	a75	50	158	46	21	4.2	2.9	6.7
18	7.3	45	185	2.6	*69	50	238	42	19	3.6	2.5	7.8
19	7.8	82	153	2.9	a67	47	332	41	14	3.2	2.2	7.8
20	9.6	76	123	2.9	a65	42	298	39	15	2.7	2.1	7.3
21	17	60	67	7.3	a63	39	235	33	12	2.3	2.4	6.2
22	17	67	40	28	a61	70	194	28	10	2.5	2.4	4.4
23	20	89	33	*316	a59	85	161	26	9.8	2.7	3.3	3.6
24	24	89	16	697	a57	80	134	21	6.2	2.7	3.0	4.0
25	46	84	13	341	56	65	116	16	5.4	2.5	a2.6	5.0
26	51	113	52	361	50	67	105	15	5.7	2.7	2.2	6.7
27	32	120	150	233	46	58	100	14	9.4	2.9	2.9	7.3
28	24	139	101	210	46	50	106	15	11	2.8	4.2	6.7
29	22	125	62	182	-	56	122	10	9.9	4.2	4.4	7.3
30	22	93	21	162	-	63	116	10	9.4	4.4	3.6	7.3
31	23	-	b15	135	-	73	-	12	-	3.6	2.9	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	456.8	51	6.6	14.7	906
November.....	1,700	139	24	56.7	3,370
December.....	5,258	1,250	13	170	10,430
Calendar year 1946	24,651.4	1,250	1.6	67.5	48,900
January.....	2,604.3	697	1.3	80.5	5,560
February.....	1,830	102	45	65.4	4,630
March.....	1,849	116	39	59.6	3,670
April.....	4,285	332	94	143	8,500
May.....	1,799	128	10	58.0	3,570
June.....	650.8	62	5.4	21.7	1,290
July.....	131.1	7.3	2.3	4.23	260
August.....	90.1	4.4	2.1	2.91	179
September.....	186.9	10	2.8	6.23	371
Water year 1946-47	21,041.0	1,250	1.3	57.6	41,740

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for South Fork Walla Walla River near Milton and Walla Walla River below Freewater.

b Stage-discharge relation affected by ice.

Mill Creek near Walla Walla, Wash.

Location.- Water-state recorder, lat. 46°00', long. 118°07", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 12, T. 6 N., R. 37 E., 4 miles downstream from city of Walla Walla diversion dam, 4 $\frac{1}{2}$ miles upstream from Blue Creek, and 11 $\frac{1}{2}$ miles southeast of Walla Walla. Datum of gage is 2,000 feet above mean sea level; unadjusted.

Drainage area.- 54 square miles.

Records available.- August 1913 to September 1917, April to September 1938, October 1939 to September 1947.

Average discharge.- 12 years (1913-17, 1939-47), 88.9 second-feet.

Extremes.- Maximum discharge during year, 1,310 second-feet Dec. 12 (gage height, 16.90 feet), from rating curve extended above 920 second-feet; minimum, 29 second-feet Oct. 4, Aug. 25-29, Sept. 1-4.

1913-17, 1938, 1939-47: Maximum discharge, 1,880 second-feet Dec. 28, 1945 (gage height, 17.85 feet), from rating curve extended above 920 second-feet; minimum observed, 16 second-feet Oct. 11-15, 1939.

Remarks.- Records good except those for periods of no gage-height record, or shifting-control, which are poor. City of Walla Walla diverts about 22 second-feet 4 miles above station for municipal use.

Rating tables, water year 1946-47, except period of shifting control
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 17				Dec. 18 to Sept. 30			
13.5	35	15.0	404	14.4	22	15.1	143
13.8	89	15.5	590	14.6	41	15.5	335
14.1	150	16.0	815	14.8	72	16.1	710
14.5	247	16.5	1,070				

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	101	148	a90	121	78	160	118	55	42	32	29
2	32	91	125	a73	118	78	171	128	57	41	31	29
3	30	85	109	a53	104	84	168	129	55	41	31	29
4	32	81	105	a43	99	99	160	123	51	39	31	29
5	33	81	103	a44	97	97	154	118	51	39	31	30
6	32	83	99	a45	94	97	157	118	58	39	31	30
7	33	89	95	a40	92	94	157	121	57	39	31	38
8	32	87	99	a37	92	99	164	123	76	38	31	37
9	32	81	89	a40	90	113	204	121	69	38	32	45
10	32	91	89	a52	88	196	227	106	62	38	32	41
11	32	83	362	a64	88	347	196	97	58	39	31	34
12	32	80	952	a72	140	243	164	90	54	38	31	33
13	30	78	*790	*72	171	182	150	86	54	38	31	32
14	30	76	720	69	178	168	150	82	49	39	31	32
15	32	72	*865	b66	174	171	143	76	48	40	31	32
16	32	66	a530	62	171	187	135	72	47	38	31	34
17	32	72	a340	60	157	191	168	72	48	36	30	36
18	32	124	a220	58	143	174	305	70	45	36	30	36
19	35	202	171	60	126	157	335	69	44	34	30	34
20	56	165	146	62	113	146	329	67	44	33	30	32
21	66	133	135	65	106	135	291	65	44	33	30	33
22	70	168	121	93	101	191	213	64	42	33	30	32
23	76	198	108	486	92	196	171	62	42	33	30	32
24	78	184	101	671	90	164	150	60	42	33	30	32
25	120	230	94	*600	*88	146	135	58	42	34	29	34
26												
28	109	311	108	645	84	132	126	62	48	34	29	42
27	78	272	150	437	82	121	126	58	52	33	29	37
28	63	290	135	293	80	113	129	55	47	34	29	36
29	61	*242	a110	200	-	108	137	54	47	33	29	34
30	65	190	a110	160	-	115	129	54	44	32	30	34
31	65	-	a100	132	-	150	-	52	-	32	30	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	1,514	120	30	48.8	3,000
November.....	4,106	311	66	137	8,140
December.....	7,429	952	89	240	14,740
Calendar year 1946.....	45,159	952	29	124	89,570
January.....	4,944	671	37	159	9,810
February.....	3,179	178	80	114	6,310
March.....	4,570	347	76	147	9,050
April.....	5,394	355	126	180	10,700
May.....	2,828	129	52	84.8	5,210
June.....	1,532	76	42	51.1	3,040
July.....	1,129	42	32	36.4	2,240
August.....	944	32	29	30.5	1,870
September.....	1,018	45	29	33.9	2,020
Water year 1946-47.....	38,387	952	29	105	76,140

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of recorded range in stage and records for stations on nearby streams.

b Stage-discharge relation affected by ice.

Note.- Shifting-control method used Oct. 1 to Dec. 11.

Mill Creek at Walla Walla, Wash.

Location.- Water-stage recorder, lat. 46°04'40", long. 118°17'00", in NE $\frac{1}{4}$ sec. 22, T. 7 N., R. 36 E., at bridge 0.9 mile downstream from diversion dam and 1.0 mile east of Walla Walla.

Drainage area.- 90 square miles.

Records available.- April 1941 to September 1947.

Extremes (regulated).- Maximum discharge during year, 1,600 second-feet Dec. 12 (gage height, 3.13 feet); minimum, 0.5 second-foot May 10 (gage height, 1.18 feet).
1941-47: Maximum discharge, 2,760 second-feet Dec. 28, 1945 (gage height, 4.0 feet); minimum, that of May 10, 1947.

Remarks.- Records poor. Some regulation at diversion dam, 0.9 mile above station where water is diverted into Yellowhawk Creek and Garrison Creek for stock and irrigation. City of Walla Walla diverts water for municipal supply. Other small diversions above station for irrigation. Monthly discharge adjusted for Yellowhawk Creek and Garrison Creek diversions.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.7	7.0	202	a31	133	2.0	7.0	21	7.0	2.4	4.0	5.7
2	6.3	6.3	142	a30	129	2.0	7.8	21	6.3	2.2	4.0	4.0
3	5.7	5.1	124	a30	69	2.0	7.8	21	6.3	1.8	3.6	4.5
4	5.7	4.5	124	a29	31	2.0	7.8	24	4.5	1.8	3.6	4.0
5	5.7	4.0	129	a27	13	2.0	7.8	24	4.0	2.2	2.6	4.0
6	5.7	4.0	129	a27	4.0	2.2	8.6	22	5.1	2.2	2.6	4.5
7	5.1	4.0	99	a26	4.0	2.2	7.8	22	5.1	1.8	2.6	6.3
8	5.1	4.0	103	a25	3.6	2.2	7.8	25	10.5	2.0	2.6	5.1
9	5.1	4.0	99	a30	3.6	2.4	7.8	11	6.3	2.0	2.9	7.0
10	5.1	5.1	95	a42	3.2	3.6	8.6	7.0	4.5	2.2	4.0	9.4
11	5.7	4.5	252	a54	3.2	5.7	9.4	17.5	10.5	2.6	5.1	8.6
12	5.1	5.1	984	a56	4.5	3.6	8.6	17.5	16	2.0	3.2	9.4
13	5.1	4.5	349	b58	5.7	3.2	7.8	15	16	2.0	3.2	9.4
14	5.1	16	229	*60	5.1	2.9	6.3	15	16	2.4	2.6	9.4
15	4.5	32	175	b59	5.1	2.6	6.3	14	14	3.6	2.2	8.6
16	4.5	35	133	b58	5.7	2.6	5.7	14	13	2.9	2.4	8.6
17	5.1	43	108	57	4.5	2.6	7.0	17.5	8.6	2.2	4.0	11
18	9.4	69	99	54	4.0	3.6	7.8	26	5.1	2.2	4.5	11
19	4.0	103	60	57	2.9	5.7	8.6	24	4.5	2.2	5.7	11
20	5.1	120	39	43	2.6	3.2	8.6	17.5	5.1	2.6	5.7	10.5
21	7.8	129	35	41	2.4	4.0	7.8	24	4.0	2.4	6.3	10.5
22	10.5	156	34	49	2.4	2.4	7.0	20	3.6	2.2	5.7	9.4
23	13	185	31	294	2.2	2.4	6.3	11	3.2	2.0	5.7	9.4
24	7.8	175	29	480	2.0	2.2	5.7	6.3	2.9	2.4	7.0	8.6
25	10.5	196	26	488	2.0	2.4	5.7	2.6	2.4	2.6	5.1	10.5
26	24	229	31	*536	*2.0	4.0	8.6	3.2	2.4	2.6	5.1	12
27	8.6	*270	45	433	2.0	4.0	24	3.2	2.4	3.2	5.1	11
28	6.3	335	f41	294	2.0	3.6	25	3.2	2.6	4.5	5.1	9.4
29	6.3	*270	a38	224	-	4.0	24	3.6	2.6	4.0	5.7	7.8
30	6.3	254	f35	180	-	5.1	22	3.6	2.6	4.0	8.6	7.8
31	6.3	-	a34	147	-	7.0	-	4.0	-	4.0	8.6	-

Month	Observed				Yellowhawk Creek and Garrison Creek diversions (acre-feet)	Adjusted for diversion		
	Discharge in second-foot			Runoff in acre-feet		Runoff in acre-feet	Mean discharge in second-feet	
	Maxi- mum	Mini- mum	Mean					
October.....	24	4.0	6.97	429	2,890	3,320	54.0	
November.....	335	4.0	88.6	5,270	4,510	9,780	164	
December.....	984	26	131	8,040	5,810	13,850	225	
Calendar year 1946	984	4.0	96.9	70,130	45,510	115,600	160	
January.....	536	25	130	7,970	5,130	13,100	213	
February.....	133	2.0	16.2	900	6,080	6,980	126	
March.....	7.0	2.0	3.21	197	9,450	9,650	157	
April.....	25	5.7	9.70	577	10,580	11,160	188	
May.....	26	2.6	14.9	914	4,640	5,550	90.3	
June.....	16	2.4	6.54	389	2,710	3,100	52.1	
July.....	4.5	1.8	2.55	157	1,430	1,580	25.9	
August.....	8.6	2.2	4.49	276	1,230	1,510	24.6	
September.....	12	4.0	8.28	493	1,520	2,010	33.8	
Water year 1946-47	984	1.8	35.4	25,610	55,990	81,600	113	

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and records for nearby stations.

b Stage-discharge relation affected by ice.

f Computed on basis of partly estimated gage-height record.

Blue Creek near Walla Walla, Wash.

Location.- Water-stage recorder, lat. 46°03'40", long. 118°07'50", in SE¼NW¼ sec. 25, T. 7 N., R. 37 E., 1 mile upstream from mouth and 10 miles east of Walla Walla. Datum of gage is at mean sea level, unadjusted.

Drainage area.- 17.0 square miles.

Records available.- October 1939 to September 1947.

Extremes.- Maximum discharge during year, 378 second-feet Jan. 24 (elevation, 1,742.55 feet); minimum, 0.2 second-foot Aug. 6, 7, 18 (elevation, 1,740.20 feet).
1939-47: Maximum discharge, 725 second-feet Dec. 28, 1945 (elevation, 1,743.35 feet), from rating curve extended above 400 second-feet; minimum observed, 0.1 second-foot Oct. 14, 1939, but may have been less during period of no gage-height record Oct. 1-11, 1939.

Remarks.- Records good except those below 5 second-feet and those for periods of ice effect, which are fair. No known diversion or regulation.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Jan. 29

Jan. 30 to Sept. 30

40.2 0.8 40.8 18
40.4 3.1 41.0 29
40.6 8.9

40.2 0.2 41.0 29
40.4 2.0 41.3 57
40.6 6.2 41.6 105
40.8 16 42.1 235

Note.- Same as following
table above 41.0 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	12	25	19	25	9.2	29	6.9	1.6	1.4	0.5	0.6
2	1.1	11	21	b18	24	9.7	32	6.5	1.8	1.4	.4	.5
3	1.1	9.7	17	b16	21	12	32	5.5	1.7	1.3	.5	.5
4	1.3	8.9	15	b15	19	20	32	4.9	1.5	1.3	.5	.5
5	1.8	8.2	13	b13	17	22	34	4.4	1.5	1.3	.5	.6
6	1.5	7.8	12	b11	16	24	43	4.1	1.9	1.3	.4	.6
7	1.6	8.2	10	8.9	15	24	49	3.7	2.5	1.3	.4	1.1
8	1.5	8.2	11	8.2	14	28	53	4.6	8.6	1.3	.4	1.0
9	1.4	7.5	11	7.8	13	34	59	4.9	6.9	1.2	.6	1.2
10	1.5	11	12	12	12	48	57	3.9	4.1	1.3	.6	1.1
11	1.5	10	25	13	12	70	48	3.5	3.1	1.3	.5	.8
12	1.4	10	162	15	18	57	38	3.3	2.5	1.3	.7	.6
13	1.4	10	116	*15	23	46	34	2.9	2.2	1.2	.6	.5
14	1.4	10	90	b15	25	43	29	2.8	2.2	1.2	.5	.5
15	1.5	9.7	164	b14	26	42	25	2.6	2.0	1.2	.4	.5
16	1.5	8.9	76	b13	27	41	22	2.4	1.9	1.2	.5	.7
17	1.5	8.9	47	12	27	38	24	2.4	1.8	1.1	.4	1.0
18	1.5	14	34	11	24	34	37	2.2	1.8	1.0	.4	1.0
19	1.5	31	27	14	23	29	33	2.1	1.8	.9	.4	.9
20	4.6	27	23	14	20	26	36	2.0	1.7	.8	.5	.7
21	4.0	21	21	19	18	23	34	1.9	1.6	.6	.6	.6
22	4.3	31	19	27	17	28	31	1.8	1.6	.6	.6	.6
23	5.1	39	16	124	14	27	27	1.8	1.5	.6	.6	.6
24	4.6	39	14	224	14	23	24	1.7	1.5	.6	.6	.6
25	5.7	53	13	*204	*13	20	20	1.6	1.4	.6	.5	.7
26	8.9	69	21	213	12	20	17	1.4	1.4	.6	.5	2.1
27	6.6	51	37	132	11	17	14	1.4	1.4	.6	.5	1.2
28	5.1	53	31	70	9.7	17	11	1.4	1.4	.8	.6	1.0
29	5.1	*44	27	47	-	16	11	1.4	1.4	.6	.6	.9
30	5.7	32	27	36	-	17	8.6	1.4	1.4	.6	.7	.9
31	6.0	-	21	27	-	22	-	1.4	-	.6	.6	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	92.7	8.9	1.0	2.99	0.176	0.20	184
November	664.0	69	7.5	22.1	1.50	1.45	1,320
December	1,154.0	164	10	37.4	2.20	2.53	2,300
Calendar year 1946	7,127.0	185	.6	19.5	1.15	15.58	14,140
January	1,367.9	224	7.8	44.8	2.64	3.04	2,750
February	509.7	27	9.7	18.2	1.07	1.12	1,010
March	886.9	70	9.2	28.6	1.68	1.84	1,760
April	936.6	59	8.6	31.2	1.84	2.05	1,860
May	92.8	6.9	1.4	2.99	.176	.20	184
June	67.7	8.6	1.4	2.26	.133	.15	134
July	31.1	1.4	.6	1.00	.059	.07	62
August	16.1	.7	.4	.52	.031	.04	32
September	24.1	2.1	.5	.80	.047	.05	48
Water year 1946-47	5,867.6	224	.4	16.1	.947	12.84	11,640

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

WALLA WALLA RIVER BASIN

Yellowhawk Creek at Walla Walla, Wash.

Location.- Water-stage recorder, lat. 46°04'20", long. 118°16'55", in NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 23, T. 7 N., R. 36 E., 1 mile downstream from point of diversion from Mill Creek and 1 mile east of Walla Walla.

Records available.- April 1941 to September 1947.

Extremes (regulated).- Maximum discharge during year, 318 second-feet Jan. 23 (gage height, 2.73 feet); minimum, 6.4 second-feet Dec. 6 (gage height, 0.70 foot).
1941-47: Maximum discharge not determined, occurred June 7, 1941 (gage height, 4.00 feet); minimum, 2.4 second-feet Sept. 16, 1941 (gage height, 0.50 foot), but may have been less during period of ice effect Jan. 1-24, 1942.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are poor. Regulation at Mill Creek diversion dam, 1 mile above station. Yellowhawk and Garrison Creeks divert water from Mill Creek for stock and irrigation. Many small diversions above station for irrigation.

Revisions.- Revised figures of discharge for the water year 1946, superseding those published in Water-Supply Paper 1064, are given herein.

Rating tables, Oct. 1, 1945, to Sept. 30, 1947, except period of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-20)

Oct. 1, 1945, to Jan. 26, 1947 Jan. 27 to Sept. 30, 1947

1.0	19	1.8	112	0.8	15.5	1.6	102
1.2	34	2.0	149	1.0	27	1.8	138
1.4	53	2.2	190	1.2	45	2.0	179
1.6	79	2.5	259	1.4	70	2.3	248

Discharge, in second-feet, 1945-47

1945-46

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	30	35	23	12	77	87	95	65	57	21	23
2	13	48	28	48	13	62	110	92	65	62	19	24
3	13	48	*27	48	13	49	109	98	69	52	18	20
4	13	40	28	53	13	74	107	110	63	46	18	24
5	17	50	28	66	14	107	105	117	73	44	18	29
6	18	46	29	33	16	126	109	109	92	39	18	30
7	20	44	37	25	14	126	107	104	81	38	20	33
8	19	42	38	27	13	114	112	105	76	39	19	32
9	20	41	36	27	12	112	109	102	70	47	18	28
10	19	44	34	12	12	117	104	100	63	42	16	25
11	20	48	32	13	42	126	109	92	60	53	16	26
12	19	55	b30	21	58	116	138	89	54	50	15	22
13	18	54	b29	20	56	35	147	85	57	37	16	28
14	22	58	b28	24	55	16	145	77	62	38	17	40
15	22	62	b27	30	61	30	132	72	58	38	15	45
16	19	58	b26	19	67	30	104	69	54	34	15	30
17	24	56	b25	9.6	72	35	96	70	49	33	16	28
18	23	39	b24	11	74	33	157	76	44	31	16	26
19	25	6.8	b23	12	74	31	165	77	41	28	15	25
20	29	2.8	b25	12	79	60	145	77	38	25	18	24
21	26	15	b28	12	100	92	123	76	36	24	13	25
22	26	39	b32	32	110	84	104	79	41	24	14	26
23	26	38	b37	*14	112	27	93	77	45	21	14	24
24	24	37	b42	22	149	28	107	74	43	24	16	24
25	24	44	47	*18	187	25	151	79	44	21	21	24
26	24	46	48	10	116	85	167	93	40	22	30	24
27	24	54	48	11	138	125	125	87	38	28	23	24
28	25	51	99	16	109	93	110	73	44	24	14	24
29	24	46	66	14	-	81	116	82	60	22	16	24
30	25	42	44	12	-	58	105	74	56	21	24	24
31	29	-	31	11	-	52	-	81	-	22	24	-

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Discharge, in second-feet, of Yellowhawk Creek at Walla Walla, Wash., 1945-47--Continued

1945-47

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	82	35	73	64	53	140	98	48	27	19	19
2	28	79	48	a60	60	57	156	105	54	26	18	18
3	28	73	58	a45	82	65	158	107	52	26	18	18
4	29	69	51	a30	105	94	154	98	45	25	18	17
5	35	69	37	a28	98	95	144	90	41	25	18	18
6	30	69	30	a28	87	92	162	90	53	24	18	20
7	26	72	49	a25	75	90	166	92	53	23	17	24
8	26	72	52	a22	68	100	177	100	109	23	17	24
9	25	69	51	a22	68	117	203	109	78	21	19	26
10	28	69	55	a22	64	186	212	94	62	23	21	29
11	30	77	91	22	68	243	186	75	48	23	21	20
12	30	74	128	26	114	192	156	70	39	23	18	19
13	31	72	157	29	154	175	134	66	42	22	19	19
14	30	55	73	28	164	158	125	61	39	22	17	19
15	31	45	143	a27	162	156	117	56	36	25	17	18
16	31	42	133	a27	160	166	102	53	35	22	17	19
17	33	42	43	a27	152	173	123	53	39	21	18	21
18	29	60	22	a27	138	166	212	57	39	19	18	21
19	26	87	95	28	125	160	222	61	38	18	17	20
20	50	76	125	37	a110	146	188	57	37	18	18	20
21	66	69	114	52	a90	134	194	50	35	20	20	19
22	55	87	98	66	a90	164	175	48	33	19	20	18
23	66	104	82	223	76	168	166	52	31	19	20	19
24	55	72	76	252	75	146	142	47	29	19	19	18
25	67	72	70	210	70	125	117	48	28	20	18	19
26	84	87	90	233	66	114	89	53	32	20	18	23
27	72	61	145	217	61	100	76	48	36	21	17	21
28	61	63	125	148	60	94	92	48	32	24	18	20
29	55	45	f107	105	-	89	116	46	29	22	18	20
30	61	32	f84	84	-	94	110	43	27	20	20	19
31	55	-	79	68	-	123	-	45	-	19	20	-

a No gage-height record; discharge computed on basis of weather records and records for nearby stations.

f Computed on basis of partly estimated gage-height record.

Monthly discharge, in second-feet, 1945-47

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October 1945	663	29	13	21.4	1,320
November	1,282.6	62	2.8	42.8	2,540
December	1,111	99	23	35.8	2,200
Calendar year 1945	11,758.6	99	2.8	32.2	23,320
January 1946	705.6	66	9.6	22.8	1,400
February	1,791	187	12	64.0	3,550
March	2,226	126	16	71.8	4,420
April	3,598	167	87	120	7,140
May	2,691	117	69	86.8	5,340
June	1,681	92	36	56.0	3,330
July	1,086	62	21	35.0	2,150
August	553	30	13	17.8	1,100
September	805	45	20	26.8	1,600
Water year 1945-46	18,193.2	187	2.8	49.8	36,090
October 1946	1,300	84	25	41.9	2,580
November	2,065	104	32	68.8	4,100
December	2,546	157	22	82.1	5,050
Calendar year 1946	21,047.6	187	9.6	57.7	41,760
January 1947	2,291	252	22	73.9	4,540
February	2,694	164	60	96.2	5,340
March	4,035	243	53	130	8,000
April	4,514	222	76	150	8,950
May	2,120	109	43	68.4	4,200
June	1,299	109	27	43.3	2,580
July	679	27	18	21.9	1,350
August	571	21	17	18.4	1,130
September	607	29	17	20.2	1,200
Water year 1946-47	24,721	252	17	67.7	49,020

Garrison Creek at Walla Walla, Wash.

Location.- Water-stage recorder, lat. 46°04'25", long. 118°17'10", in NE¼ sec. 22, T. 7 N., R. 36 E., 30 feet downstream from county bridge, 1 mile downstream from point of diversion from Mill Creek, and 0.9 mile east of Walla Walla.

Records available.- April 1941 to September 1947.

Extremes (regulated).- Maximum discharge during year, 52 second-feet Dec. 11 (gage height, 3.18 feet); minimum, 0.4 second-foot Nov. 21, Feb. 7, 11.
1941-47: Maximum discharge, that of Dec. 11, 1946; no flow May 10, 1941.

Remarks.- Records fair except those for period of ice effect, which are poor. Regulation at Mill Creek diversion dam, 1 mile above station. Yellowhawk and Garrison Creeks divert water from Mill Creek for stock and irrigation.

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 22)

2.1	0.4	2.4	6.4	2.7	20
2.2	1.2	2.5	10	2.9	32
2.3	3.2	2.6	15	3.1	46

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.8	9.0	2.9	6.4	9.9	7.5	28	16	2.0	0.8	2.2	1.6
2	2.8	9.0	4.7	5.4	9.5	7.9	30	17	2.2	.5	2.2	1.6
3	2.8	8.6	5.7	b4	11	9.1	31	16	2.2	.5	2.0	1.5
4	3.0	8.0	6.8	b4	14	12	30	12	2.0	.7	1.8	1.5
5	3.6	7.3	5.7	b3	13	12	32	9.9	2.7	1.0	1.6	1.6
6	4.4	6.6	4.1	b3	12	12	35	9.9	3.5	1.0	1.8	1.6
7	7.0	7.3	7.1	b3	12	12	36	11	4.4	1.0	1.8	1.8
8	8.0	7.3	7.1	b3	16	13	36	12	5.4	1.0	1.8	2.7
9	8.0	7.3	7.1	b3	16	14	40	14	4.1	1.0	1.6	3.8
10	4.4	9.8	6.8	b3	16	23	39	12	3.8	1.0	1.6	6.0
11	2.8	9.4	15	b3	11	43	34	9.1	2.9	1.0	1.6	7.1
12	2.8	8.6	23	b3	13	41	29	8.6	2.4	1.0	1.6	6.4
13	2.8	8.3	27	b3	18	37	26	7.9	2.2	1.0	1.8	6.0
14	2.8	6.3	*29	*b3	20	34	24	7.1	2.2	.8	1.6	5.7
15	2.8	4.9	31	b3	20	34	22	6.8	2.0	.8	1.5	5.7
16	3.0	4.6	29	b3	20	34	23	6.4	2.0	1.2	1.5	6.0
17	3.0	4.6	18	b3	18	28	27	5.0	2.0	1.1	1.5	7.9
18	2.8	6.6	8.6	5.8	17	27	39	2.9	2.0	1.0	1.6	8.6
19	2.6	12	16	4.1	15	27	45	3.2	2.0	1.5	1.5	7.5
20	4.6	8.3	18	5.7	13	25	45	4.1	1.8	2.2	1.5	7.1
21	7.3	5.4	16	7.5	12	26	45	3.8	1.6	2.4	1.5	7.1
22	6.0	f8.0	13	9.9	11	30	35	3.8	1.6	2.0	1.5	5.7
23	7.6	4.7	7.9	29	10	32	3.2	3.5	1.5	2.2	1.6	5.4
24	6.3	4.1	6.8	29	9.5	29	2.4	4.1	1.5	1.8	1.5	5.4
25	7.6	4.7	6.0	26	*9.5	26	6.2	2.9	1.5	1.6	1.5	5.4
26	10	6.4	7.9	*37	9.1	25	16	2.9	1.5	1.8	1.3	8.6
27	8.0	5.7	16	30	8.6	22	14	2.7	1.3	1.8	1.3	8.6
28	6.6	6.8	14	22	8.2	21	16	2.4	1.2	2.0	1.5	7.9
29	6.3	4.7	11	14	-	20	17	2.2	1.2	2.0	1.5	7.5
30	6.3	2.7	7.9	12	-	21	16	2.0	1.1	1.6	1.6	7.5
31	6.3	-	7.1	9.1	-	26	-	2.0	-	1.8	1.6	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	155.1	10	2.6	5.00	308
November.....	207.0	12	2.7	6.90	411
December.....	384.2	31	2.9	12.4	762
Calendar year 1946.....	1,890.5	31	.7	5.18	3,750
January.....	297.9	37	3	9.61	591
February.....	372.3	20	8.2	13.3	738
March.....	730.5	43	7.5	23.6	1,450
April.....	819.8	45	2.4	27.3	1,650
May.....	223.2	17	2.0	7.20	445
June.....	67.8	5.4	1.1	2.26	134
July.....	41.1	2.4	.5	1.33	82
August.....	50.5	2.2	1.3	1.63	100
September.....	160.8	8.6	1.5	5.36	319
Water year 1946-47.....	3,510.2	45	.5	9.62	6,970

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

f Computed on basis of partly estimated gage-height record.

East Fork Touchet River near Dayton, Wash.

Location.- Water-stage recorder, lat. 46°16'45", long. 117°54'05", in NW¼ sec. 11, T. 9 N., R. 39 E., 250 feet upstream from city of Dayton's water-supply headworks, 1,000 feet upstream from Hatley Creek, three-quarters of a mile downstream from Wolf Creek, 3 miles upstream from confluence with South Fork, and 4 miles southeast of Dayton. Datum of gage is 1,768.3 feet above mean sea level (river-profile survey).

Drainage area.- 102 square miles.

Records available.- April 1941 to September 1947.

Extremes.- Maximum discharge during year, 1,280 second-feet Dec. 15 (gage height, 5.08 feet); minimum, 31 second-feet Sept. 2, 3 (gage height, 1.86 feet).
1941-47: Maximum discharge, that of Dec. 15, 1946; minimum, 29 second-feet Sept. 9, 12, 13, 14, 1944.

Remarks.- Records good except those for periods of shifting control, which are fair, and those for periods of ice effect, which are poor. No regulation. Small diversions above station for irrigation during summer months.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	69	*172	105	152	111	167	172	72	47	43	34
2	41	64	155	b100	136	116	167	180	76	47	42	34
3	41	60	139	b96	118	126	167	180	72	47	42	32
4	42	60	134	b92	111	122	167	180	69	46	42	32
5	45	61	125	b90	111	114	167	175	70	46	42	34
6	42	63	119	b88	111	109	172	172	79	46	40	35
7	43	108	113	b86	105	107	178	172	74	46	40	44
8	43	69	115	84	103	114	194	172	99	44	40	43
9	41	66	113	82	103	120	203	164	82	44	42	52
10	41	70	113	88	101	154	203	147	74	44	42	54
11	42	69	305	92	111	186	192	133	69	46	38	43
12	42	69	688	90	172	180	183	129	66	46	38	40
13	41	66	*642	92	210	164	178	122	67	43	38	38
14	42	64	642	b90	224	160	180	116	62	43	38	38
15	42	64	1,060	b88	221	160	183	107	61	43	37	37
16	43	63	692	b86	215	175	180	101	61	42	37	49
17	43	66	358	*86	206	186	197	97	61	40	38	48
18	43	108	264	86	192	186	218	94	56	39	38	47
19	43	150	212	88	175	283	230	90	56	39	38	46
20	61	123	175	86	160	172	233	88	55	39	38	42
21	75	106	157	92	150	167	221	86	55	39	38	42
22	75	113	140	115	140	194	209	84	52	42	38	42
23	77	132	133	245	133	189	197	79	52	46	38	40
24	67	141	122	393	129	178	186	77	51	46	37	40
25	78	153	120	425	126	162	175	74	49	47	37	44
26	92	245	133	516	122	154	172	72	54	47	37	62
27	69	248	140	348	*118	145	175	69	55	47	36	51
28	63	251	126	178	118	138	178	69	52	49	36	47
29	60	221	124	157	-	136	186	67	51	46	36	46
30	60	185	124	133	-	145	180	70	48	46	37	44
31	57	-	111	122	-	170	-	70	-	44	36	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	1,633	92	39	52.7	0.517	0.60	3,240
November	3,327	251	60	111	1.09	1.21	6,600
December	7,766	1,060	111	251	2.46	2.83	15,400
Calendar year 1946	50,521	1,060	38	138	1.35	18.42	100,200
January	4,519	516	82	146	1.43	1.65	8,960
February	4,073	224	101	145	1.42	1.49	8,080
March	4,723	194	107	152	1.49	1.72	9,370
April	5,658	233	167	188	1.84	2.06	11,180
May	5,608	180	67	116	1.14	1.32	7,160
June	1,900	99	48	63.3	.621	.69	3,770
July	1,376	49	39	44.4	.435	.50	2,730
August	1,199	43	36	38.7	.379	.44	2,380
September	1,280	62	32	42.7	.419	.47	2,540
Water year 1946-47	41,042	1,060	32	112	1.10	14.98	81,410

Peak discharge.- Dec. 12 (6:30 p.m.) 885 sec.-ft.; Dec. 15 (8:30 a.m.) 1,280 sec.-ft.; Jan. 26 (1 a.m.) 620 sec.-ft.

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.- Shifting-control method used Oct. 1 to Dec. 10, Dec. 16 to Feb. 21, Mar. 19 to May 26, Aug. 11 to Sept. 30.

WALLA WALLA RIVER BASIN

Touchet River near Touchet, Wash.

Location.- Water-stage recorder, lat. 46°05'25", long. 118°39'40", in NE $\frac{1}{4}$ sec. 15, T. 7 N., R. 33 E., 100 feet downstream from county road bridge, $3\frac{1}{2}$ miles north of Touchet, and $4\frac{1}{2}$ miles upstream from mouth.

Drainage area.- 726 square miles.

Records available.- April 1941 to September 1947.

Extremes.- Maximum discharge during year, 2,000 second-feet Jan. 26 (gage height, 6.70 feet); minimum, 14 second-feet Sept. 5 (gage height, 1.46 feet).
1941-47: Maximum discharge observed, 3,070 second-feet Dec. 29, 1945 (gage height, 8.44 feet, but probably was higher sometime during period of faulty or no gage-height record); minimum discharge, 6.4 second-feet Sept. 13, 14, 1944 (gage height, 1.45 feet).

Remarks.- Records fair except those for periods of ice effect, no gage-height record, or shifting control, which are poor. Many large diversions above station for irrigation. No regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	78	422	190	738	232	420	306	68	36	26	16
2	35	104	382	b180	760	205	450	300	81	33	24	16
3	38	92	300	b170	715	212	420	297	90	31	24	16
4	39	86	220	b170	580	232	380	306	92	31	22	15
5	41	85	203	b160	383	240	370	310	88	33	21	15
6	47	85	187	b160	319	240	380	310	89	31	21	15
7	49	88	174	b180	313	238	370	300	127	31	21	18
8	47	89	162	150	303	271	380	291	194	30	21	21
9	48	98	168	150	288	350	420	291	215	31	20	30
10	46	101	172	160	274	600	600	288	145	30	21	52
11	44	122	179	160	265	900	550	276	115	29	21	50
12	44	109	675	160	422	650	450	259	101	28	21	39
13	42	101	h1,610	170	760	450	410	243	89	27	21	36
14	41	96	1,350	b160	602	350	400	228	90	26	21	32
15	40	95	1,250	b160	560	400	h376	215	83	26	21	32
16	41	90	1,500	b150	540	450	360	198	78	25	20	45
17	43	86	780	b150	500	500	380	185	76	24	20	115
18	44	93	540	b150	484	450	h439	181	69	23	20	60
19	45	252	390	b160	453	400	680	181	62	23	18	52
20	48	300	320	b160	411	360	660	155	58	21	18	48
21	65	220	290	b170	372	330	620	151	60	20	18	44
22	107	201	280	260	332	500	138	57	19	17	17	40
23	99	316	240	710	300	550	500	145	54	19	17	39
24	114	338	250	h1,610	*271	520	440	120	51	19	16	38
25	93	294	h220	*1,160	268	460	380	115	49	23	16	36
26	125	*629	240	1,550	262	400	348	107	45	24	16	38
27	134	648	250	1,340	218	h329	338	101	43	28	16	67
28	101	738	250	1,180	220	280	329	96	48	31	16	60
29	86	625	220	1,040	-	270	319	90	44	32	16	50
30	80	500	220	910	-	340	319	81	39	33	17	46
31	81	-	200	810	-	400	-	68	-	29	16	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	1,941	134	34	62.6	3,850
November.....	6,769	738	78	226	13,430
December.....	13,564	1,610	162	438	26,900
Calendar year 1946.....	97,747	2,000	11	268	193,900
January.....	13,960	1,610	150	450	27,690
February.....	12,918	760	218	425	23,630
March.....	12,109	900	205	391	24,020
April.....	13,028	680	319	434	25,840
May.....	6,332	310	68	204	12,560
June.....	2,500	215	39	83.3	4,960
July.....	846	36	19	27.3	1,680
August.....	603	26	16	19.5	1,200
September.....	1,161	115	15	38.7	2,300
Water year 1946-47.....	84,726	1,610	15	232	168,100

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

h Computed from staff-gage readings.

Note.- No gage-height record Dec. 14-24, Dec. 26 to Jan. 1, Jan. 8-13, 22, 23, Mar. 9-26, Mar. 28 to Apr. 14, Apr. 16, 17, 19-25; discharge computed on basis of weather records and records for East Fork Touchet River near Dayton and Mill Creek near Walla Walla. Shifting-control method used Jan. 26 to Mar. 8, Mar. 27, Apr. 15, 18, Apr. 26 to Sept. 30.

Umatilla River above Meacham Creek, near Gibbon, Oreg.

Location.- Water-stage recorder, lat. 45°43', long. 118°20', in SW $\frac{1}{4}$ sec. 21, T. 3 N., R. 36 E., 0.8 mile downstream from Ryan Creek, $\frac{1}{2}$ miles upstream from Meacham Creek, and $\frac{1}{2}$ miles northeast of Gibbon. Datum of gage is 1,855.25 feet above mean sea level, datum of 1929.

Drainage area.- 125 square miles.

Records available.- June 1939 to September 1947. April 1933 to June 1939 at site 1 mile downstream.

Average discharge.- 14 years, 204 second-feet.

Extremes.- Maximum discharge during year, 6,660 second-feet Dec. 12 (gage height, 8.84 feet), from rating curve extended above 2,000 second-feet by logarithmic plotting; minimum, 41 second-feet July 23, Aug. 17, Sept. 13.

1933-47: Maximum discharge, that of Dec. 12, 1946; minimum, 28 second-feet Sept. 27, 1935, Jan. 9, 1937.

Remarks.- Records good except those above 2,000 second-feet and those for periods of ice effect or no gage-height record, which are fair. No diversion or regulation above station.

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Nov. 25 to Dec. 12)

Oct. 1 to Dec. 12				Dec. 12 to Sept. 30			
2.3	42	3.2	206	1.9	36	2.9	190
2.5	63	3.5	315	2.1	51	3.2	280
2.7	91	3.8	460	2.3	71	3.5	390
2.9	127	4.2	685	2.5	98	3.9	560
				2.7	136	4.3	810
						8.0	3,550
							5,130

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	209	258	247	250	193	350	350	82	63	47	44
2	46	163	208	a230	271	187	354	370	88	62	49	43
3	46	134	176	a220	277	181	350	362	89	61	48	43
4	49	123	166	b210	271	190	343	350	81	59	49	43
5	52	121	160	b200	277	173	346	340	81	58	49	43
6	50	118	153	a190	*268	164	378	332	95	57	50	44
7	49	119	141	a185	262	170	366	332	90	56	50	50
8	49	116	148	a180	259	181	366	350	151	56	50	48
9	49	110	148	a170	247	214	430	462	202	55	50	53
10	48	121	176	b160	241	354	430	378	164	54	51	54
11	47	119	1,520	a155	226	515	394	326	146	55	50	50
12	47	116	5,130	151	308	410	358	287	126	55	49	49
13	47	116	2,070	156	410	343	350	262	121	52	48	44
14	46	118	1,790	141	442	318	386	238	110	53	47	42
15	47	112	1,960	141	450	322	418	217	101	53	45	45
16	48	103	1,230	136	446	350	398	202	95	50	45	46
17	48	101	845	113	418	398	462	193	95	49	42	48
18	48	114	620	112	378	418	626	181	86	49	42	48
19	48	176	*498	112	336	422	638	176	82	46	44	47
20	67	168	438	108	301	398	686	167	79	46	45	47
21	93	148	394	115	271	382	584	158	78	46	45	46
22	82	186	354	151	256	515	510	149	72	47	45	46
23	85	223	322	578	253	525	454	134	68	44	45	46
24	106	279	290	1,290	253	454	414	130	68	44	45	46
25	258	345	274	1,110	250	394	390	121	67	44	45	49
26	299	649	298	1,230	238	366	378	117	76	44	45	61
27	163	739	362	768	223	332	374	110	86	45	44	50
28	121	679	336	510	208	315	374	101	78	46	44	49
29	106	488	315	398	-	312	382	92	70	45	45	48
30	106	342	274	352	-	340	366	88	67	45	45	47
31	114	-	268	271	-	343	-	84	-	45	45	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	2,510	299	46	81.0	0.648	0.75	4,980
November	6,635	739	101	221	1.77	1.97	13,160
December	21,320	5,130	141	688	5.50	6.34	42,280
Calendar year 1946	113,113	5,130	43	310	2.48	33.64	224,400
January	10,070	1,290	108	325	2.60	3.00	19,970
February	8,290	450	208	296	2.37	2.47	16,440
March	10,179	525	164	328	2.62	3.03	20,190
April	12,675	686	343	422	3.38	3.77	25,140
May	7,158	462	84	231	1.85	2.13	14,200
June	2,894	202	67	96.5	.772	.86	5,740
July	1,584	63	44	51.1	.409	.47	3,140
August	1,442	51	42	46.5	.372	.43	2,860
September	1,419	61	42	47.3	.378	.42	2,810
Water year 1946-47	86,176	5,130	42	236	1.89	25.64	170,900

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for Umatilla River at Pendleton.

b Stage-discharge relation affected by ice.

Umatilla River at Pendleton, Oreg.

Location.- Water-stage recorder, lat. 45°40', long. 118°48', in NE $\frac{1}{4}$ sec. 10, T. 2 N., R. 32 E., at Pendleton, $\frac{3}{4}$ miles upstream from McKay Creek. Datum of gage is 1,062.54 feet above mean sea level, datum of 1929. Temporary water-stage recorder 600 feet upstream at different datum used in low-water periods.

Drainage area.- 637 square miles.

Records available.- February 1891 to July 1892, May 1903 to June 1905, October 1934 to September 1947. May 1921 to September 1934 at site about $2\frac{1}{4}$ miles downstream.

Average discharge.- 24 years (1923-47), 452 second-feet.

Extremes.- Maximum discharge during year, 13,700 second-feet Dec. 12 (gage height, 8.45 feet), from rating curve extended above 7,500 second-feet; minimum, 23 second-feet Aug. 26-29.

1891-92, 1903-5, 1921-47: Maximum discharge, that of Dec. 12, 1946; minimum, 7 second-feet Aug. 14, 1924.

Maximum flood known, 17,000 second-feet Dec. 14, 1882 (date and discharge from data furnished by Corps of Engineers). Flood of May 30-31, 1906, reached a stage of 11.0 feet, present site and datum (discharge, 15,500 second-feet, estimated by Corps of Engineers).

Remarks.- Records good except those above 6,000 second-feet and those for period of no gage-height record, which are fair. Records based on auxiliary water-stage recorder 600 feet upstream for periods Oct. 1 to Nov. 25, May 21 to Sept. 30. Small diversions above station for irrigation. No regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a45	344	798	546	697	538	860	616	156	81	40	31
2	48	352	640	471	697	512	850	625	166	72	38	30
3	48	295	539	400	697	479	860	616	166	68	36	28
4	50	264	476	b390	679	487	860	598	149	68	33	26
5	58	263	441	b370	688	455	841	563	152	68	53	26
6	58	242	427	b350	*697	423	930	529	166	66	30	30
7	56	242	392	340	688	415	910	512	200	63	30	34
8	56	242	378	319	670	431	930	520	367	57	30	42
9	56	238	372	298	652	495	1,110	661	358	53	31	42
10	56	a230	399	b290	634	930	1,110	643	324	53	31	46
11	56	a235	939	b285	607	1,270	1,070	546	286	59	31	47
12	54	a235	10,000	b280	715	1,240	970	479	233	59	31	44
13	54	223	6,890	b275	990	1,050	890	431	200	55	31	40
14	52	223	4,720	b270	1,110	930	900	392	181	53	30	36
15	52	216	5,520	b265	1,170	910	960	355	170	53	30	36
16	52	205	3,370	b260	1,130	980	930	312	162	51	28	36
17	54	a200	2,080	b255	1,200	1,100	960	291	162	51	28	44
18	54	a195	1,630	250	1,130	1,130	1,270	264	152	49	28	47
19	54	249	1,310	250	1,010	1,120	1,320	250	140	47	26	47
20	a75	318	*1,060	*250	890	1,070	1,410	231	133	46	26	44
21	a110	306	940	b333	805	1,010	1,280	216	127	44	26	38
22	a100	322	850	408	778	1,100	1,130	204	118	42	26	38
23	112	397	724	826	760	1,510	1,000	196	107	42	26	42
24	118	492	654	2,090	760	1,200	870	181	98	40	26	42
25	146	540	529	2,350	769	1,050	796	170	91	40	26	42
26	446	1,280	495	2,570	742	980	742	162	86	40	25	47
27	310	1,620	960	2,110	679	900	715	159	104	40	25	53
28	242	1,860	814	1,400	625	641	697	149	104	42	23	49
29	201	1,420	706	1,070	-	614	688	140	96	42	23	46
30	212	1,040	589	870	-	832	679	136	86	40	26	46
31	216	-	563	733	-	850	-	143	-	40	31	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	3,301	446	45	106	6,550
November.....	14,278	1,860	195	476	28,320
December.....	50,183	10,000	372	1,613	99,540
Calendar year 1946.....	249,482	10,000	27	684	494,800
January.....	21,174	2,570	250	683	42,000
February.....	22,669	1,200	607	810	44,960
March.....	26,852	1,510	415	866	53,260
April.....	19,338	1,410	679	951	56,800
May.....	11,290	661	136	364	22,390
June.....	5,040	367	86	168	10,000
July.....	1,624	81	40	52.4	3,220
August.....	910	40	23	29.4	1,800
September.....	1,201	53	26	40.0	2,380
Water year 1946-47.....	187,062	10,000	23	512	371,000

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for stations above Meacham Creek, near Gibbon, and at Yakum.

b Stage-discharge relation affected by ice.

Umatilla River at Yoakum, Oreg.

Location.- Water-stage recorder, lat. 45°41', long. 119°02', in SW $\frac{1}{4}$ sec. 2, T. 2 N., R. 30 E., at highway bridge half a mile northeast of Yoakum station and $\frac{2}{3}$ miles downstream from abandoned Furnish Reservoir. Datum of gage is 770.41 feet above mean sea level, datum of 1929.

Drainage area.- 1,280 square miles.

Records available.- May 1903 to August 1916 (flow slightly regulated by Furnish Reservoir, 1910-16), October 1934 to September 1947. June 1915 to September 1934 at site 5 miles upstream, above Furnish Reservoir.

Average discharge.- 44 years, 658 second-feet.

Extremes.- Maximum discharge during year, 12,700 second-feet Dec. 13 (gage height, 10.15 feet), from rating curve extended above 5,200 second-feet by logarithmic plotting; minimum, 42 second-feet Sept. 25.

1903-47: Maximum discharge, 20,000 second-feet May 30, 1906 (gage height, about 15.0 feet, datum then in use, from floodmarks), from rating curve extended above 6,600 second-feet on basis of records for station near Umatilla; minimum, 12 second-feet Aug. 10-12, 1908.

Remarks.- Records excellent except those above 6,000 second-feet and those for periods of ice effect or no gage-height record, which are fair. Diversions above station for irrigation. Flow regulated to some extent by mills at Pendleton, and since 1927 by McKay Reservoir.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 12					Dec. 13 to Sept. 30						
0.4	48	1.5	334	5.0	3,310	-0.2	38	0.9	262	5.4	3,920
.5	64	1.9	505	6.0	4,740	-.1	45	1.2	376	6.5	5,570
.6	82	2.3	720	7.0	6,490	0	55	1.6	565	8.0	8,220
.8	126	2.6	1,045	8.0	8,530	.1	69	2.1	840	9.5	11,300
1.0	175	3.4	1,520			.2	87	2.7	1,230	10.2	12,900
1.2	231	4.1	2,220			.4	129	3.4	1,760		
						.6	177	4.3	2,610		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	305	936	632	628	632	1,010	864	520	429	307	334
2	59	394	756	a535	804	595	1,030	810	585	424	311	323
3	59	330	627	a505	822	565	1,040	780	525	411	307	311
4	61	298	555	a485	792	545	1,020	708	460	420	300	286
5	69	277	520	a465	792	525	978	659	442	411	293	279
6	77	270	492	447	786	480	1,040	620	475	407	293	279
7	75	270	464	434	774	456	1,030	595	420	402	315	286
6	78	270	442	424	764	480	1,030	580	426	398	315	279
9	77	263	433	363	742	505	1,240	714	632	394	319	265
10	77	257	446	368	720	882	1,240	747	452	385	319	180
11	78	263	630	b360	692	1,370	1,190	620	407	402	319	172
12	78	263	8,010	b355	730	1,400	1,100	550	342	402	311	160
13	75	257	8,720	b340	1,000	1,170	1,020	500	286	394	311	138
14	73	253	5,380	b335	1,260	1,040	1,020	447	269	380	307	131
15	73	250	5,470	326	1,360	1,040	1,060	398	240	368	304	113
16	75	244	4,660	b320	1,400	1,080	1,040	363	220	359	304	54
17	78	231	2,680	b320	1,400	1,200	1,070	347	250	376	307	52
18	80	225	1,900	b310	1,310	1,320	1,430	326	363	372	326	61
19	80	257	*1,490	311	1,190	1,360	1,770	300	416	372	231	58
20	86	350	1,250	*315	1,080	1,310	2,040	307	416	368	214	56
21	108	354	1,110	475	972	1,240	1,950	363	411	363	211	50
22	133	361	1,000	620	888	1,290	1,660	452	407	363	211	45
23	133	446	882	984	834	1,580	1,340	475	402	355	307	45
24	140	590	792	2,400	834	1,430	1,210	470	389	355	323	44
25	158	672	714	2,880	846	1,260	1,090	460	338	359	323	42
26	400	1,240	670	3,350	804	1,170	991	452	376	363	319	44
27	365	1,690	984	2,680	736	1,080	952	442	398	363	319	52
28	288	2,010	933	1,880	708	1,000	926	434	407	368	323	52
29	241	1,580	a845	1,410	-	958	900	465	402	342	330	49
30	234	1,210	a740	1,150	-	991	915	490	394	311	334	47
31	231	-	a690	939	-	1,020	-	495	-	307	334	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	3,895	400	56	126	7,730
November.....	15,680	2,010	225	523	31,100
December.....	55,227	8,720	433	1,782	109,500
Calendar year 1946.....	298,563	8,720	54	818	592,100
January.....	28,698	3,350	310	861	52,950
February.....	25,868	1,400	692	924	51,310
March.....	30,974	1,580	456	999	61,440
April.....	35,330	2,040	900	1,178	70,080
May.....	16,233	864	300	524	32,200
June.....	12,270	632	220	409	24,340
July.....	11,723	429	307	378	23,250
August.....	9,347	334	211	302	18,540
September.....	4,287	334	42	143	8,500
Water year 1946-47.....	247,532	8,720	42	678	490,900

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for Umatilla River at Pendleton, McKay Creek near Pendleton, and Birch Creek near Rieth.

b Stage-discharge relation affected by ice.

UMATILLA RIVER BASIN

Umatilla River near Umatilla, Oreg.

Location.- Water-stage recorder, lat. 45°54', long. 119°20', in NW¹ sec. 21, T. 5 N., R. 28 E., 1½ miles downstream from West Division main canal of Umatilla project and 2 miles upstream from Umatilla and mouth of river. Datum of gage is 330.57 feet above mean sea level, datum of 1929.

Drainage area.- 2,290 square miles.

Records available.- October 1903 to September 1947.

Average discharge.- 44 years, 491 second-feet.

Extremes.- Maximum discharge during year, 11,200 second-feet Dec. 13 (gage height, 8.17 feet), from rating curve extended above 6,000 second-feet; practically no flow June 17 to June 20.

1903-47: Maximum discharge observed, 19,600 second-feet May 31, 1906 (gage height, 11.0 feet); no flow at times.

Remarks.- Records good except those above 1,000 second-feet, which are poor. Many diversions above station for irrigation; Brownell Canal diverts below station. Flow regulated by McKay and Cold Springs Reservoir.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet
(Shifting-control method used June 17 to Sept. 30)

1.5	0	2.7	113	4.6	2,230
1.7	1	2.9	193	5.1	3,160
1.9	4	3.2	375	5.7	4,390
2.1	12	3.5	645	6.4	6,040
2.3	30	3.8	1,000	7.3	8,490
2.5	60	4.2	1,700		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	180	1,090	575	767	518	615	74	10	19	30	30
2	52	245	791	491	711	455	625	26	76	16	25	31
3	53	287	635	431	700	423	656	18	131	16	22	21
4	57	245	527	431	667	383	722	12	107	32	21	22
5	65	219	455	399	645	391	667	11	83	46	21	22
6	76	203	423	473	645	354	615	10	89	38	19	18
7	107	198	399	482	645	319	615	8	104	33	18	26
8	104	193	361	439	625	305	585	8	215	35	20	25
9	86	169	347	415	605	326	722	10	491	35	25	23
10	76	184	333	391	565	488	791	18	224	35	24	24
11	69	180	361	375	545	1,060	900	31	138	123	31	28
12	65	180	2,440	391	536	1,510	700	10	83	131	42	23
13	48	180	8,450	375	791	1,200	439	28	26	113	33	18
14	38	171	6,190	375	1,170	1,010	333	39	11	62	26	18
15	33	171	5,250	361	1,320	950	312	20	11	33	24	67
16	34	162	5,180	333	1,460	962	287	11	10	18	19	235
17	36	162	3,520	399	1,510	1,000	193	10	3	18	23	245
18	39	158	2,320	361	1,330	1,140	407	10	0	14	24	156
19	83	158	1,730	361	1,210	1,320	950	10	0	12	18	24
20	224	180	1,390	340	1,080	1,190	1,420	10	8	12	17	25
21	229	245	1,120	319	912	1,140	1,510	9	11	12	18	26
22	245	251	962	509	791	1,060	1,210	9	11	12	26	24
23	251	275	779	733	711	1,390	733	10	20	11	26	26
24	257	383	678	1,710	678	1,460	518	10	26	15	31	27
25	269	545	605	3,120	711	1,160	361	10	28	18	33	26
26	305	802	536	3,100	689	1,090	257	8	14	24	25	17
27	527	1,680	667	3,160	625	988	182	8	18	30	23	13
28	439	2,080	839	2,280	555	791	131	8	14	38	21	11
29	293	1,890	689	1,650	-	625	107	9	16	28	23	10
30	235	1,510	625	1,230	-	575	107	10	26	28	23	10
31	203	-	565	975	-	615	-	10	-	31	25	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	4,653	527	33	150	9,230
November.....	13,506	2,080	158	450	26,790
December.....	50,257	8,450	333	1,621	99,680
Calendar year 1946.....	221,792	8,450	14	608	439,900
January.....	26,984	3,160	319	870	53,520
February.....	23,199	1,510	536	829	46,010
March.....	26,198	1,510	305	845	51,960
April.....	17,650	1,510	107	588	35,010
May.....	475	74	8	15.3	942
June.....	2,004	491	0	66.8	3,970
July.....	1,088	151	11	35.1	2,160
August.....	756	42	17	24.4	1,500
September.....	1,271	245	10	42.4	2,520
Water year 1946-47.....	168,041	8,450	0	460	333,300

McKay Creek near Pilot Rock, Oreg.

Location.- Water-stage recorder, lat. 45°33', long. 118°46', in NE $\frac{1}{4}$ sec. 23, T. 1 N., R. 32 E., 400 feet downstream from county road bridge, three-quarters of a mile upstream from maximum flow line (altitude, 1,322 feet) of McKay Reservoir, and 6 miles north-east of Pilot Rock. Datum of gage is 1,335.85 feet above mean sea level, datum of 1929 (Pacific Power & Light Co. bench mark).

Drainage area.- 178 square miles.

Records available.- May to August 1921, October 1926 to September 1947 (1927-29 incomplete).

Average discharge.- 19 years (1926-27, 1929-47), 88.2 second-feet.

Extremes.- Maximum discharge during year, 2,100 second-feet Dec. 12 (gage height, 5.20 feet), from rating curve extended above 1,200 second-feet; minimum, 0.1 second-foot Aug. 10 to Sept. 17.
1921, 1926-47: Maximum discharge, 6,000 second-feet Apr. 1, 1931 (gage height, 10.4 feet, site and datum then in use); no flow at times.

Remarks.- Records good except those for period of shifting control and those below 2 second-feet, which are fair, and those for periods of ice effect or no gage-height record, which are poor. Many small diversions above station for irrigation; none between station and McKay Reservoir.

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 26 to Dec. 12)

Oct. 1 to Dec. 12

Dec. 13 to Sept. 30

1.2	0.8	1.7	25	2.7	245	1.0	0.1	1.5	15	2.4	159
1.3	2.9	1.8	37	3.1	425	1.1	0.6	1.6	22	2.7	243
1.4	6.3	2.0	68	3.5	650	1.2	2.2	1.8	43	3.0	355
1.5	11	2.2	106	4.2	1,170	1.3	5.7	2.0	74	3.4	540
1.6	17	2.4	153			1.4	9.8	2.2	112	3.9	810

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.6	55	117	a77	149	92	169	64	7.8	6.9	1.1	0.1
2	2.1	60	98	a75	149	90	167	60	9.8	6.5	.6	.1
3	2.9	49	84	a73	142	87	169	53	11	5.4	.5	.1
4	3.9	43	73	b72	132	86	172	49	14	5.0	.5	.1
5	5.3	38	68	b71	130	83	177	46	21	4.3	.5	.1
6	4.3	35	62	b70	127	79	224	44	26	3.6	.5	.1
7	2.5	35	55	b69	125	79	234	41	36	3.2	.4	.1
8	2.5	32	54	b69	116	67	260	43	51	2.9	.4	.1
9	2.5	31	52	69	108	94	334	60	116	2.2	.2	.1
10	2.5	31	57	78	104	127	313	54	108	2.0	.1	.1
11	2.5	31	77	92	100	177	276	46	92	2.2	.1	.1
12	2.7	31	1,170	108	110	180	243	41	78	2.2	.1	.1
13	2.7	31	739	106	152	172	212	38	69	2.0	.1	.1
14	2.5	30	*481	90	175	169	190	35	60	1.9	.1	.1
15	2.9	29	414	76	195	169	167	30	49	1.7	.1	.1
16	4.3	25	342	b75	218	177	146	25	42	1.7	.1	.1
17	4.3	24	260	b73	215	188	180	22	41	1.7	.1	.2
18	4.3	25	207	72	201	198	291	21	35	1.6	.1	.2
19	4.3	36	175	72	185	198	283	20	27	1.2	.1	.3
20	5.3	42	154	72	167	188	298	17	23	1.2	.1	.4
21	8.6	38	142	*83	149	175	276	16	21	1.2	.1	.4
22	9.6	43	130	123	142	204	246	14	19	.9	.1	.4
23	11	84	116	358	139	228	209	11	17	.9	.1	.4
24	11	104	106	798	136	209	180	8.6	14	1.1	.1	.4
25	13	102	98	656	134	196	152	7.3	12	.9	.1	.4
26	26	215	b95	673	123	198	132	6.5	12	.9	.1	.4
27	26	245	b90	495	110	201	110	6.5	14	1.1	.1	.5
28	23	238	b86	385	100	195	94	6.5	12	1.1	.1	.5
29	20	187	a83	260	-	182	87	5.7	11	1.2	.1	.5
30	23	143	a80	209	-	175	79	5.7	8.2	1.2	.1	.5
31	29	-	a79	169	-	167	-	6.5	-	1.2	.1	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	266.1	29	1.6	6.58	528
November.....	2,116	245	24	70.5	4,200
December.....	5,844	1,170	52	189	11,590
Calendar year 1946.....	36,374.9	1,170	.4	99.7	72,150
January.....	5,738	798	69	185	11,380
February.....	4,029	218	100	144	7,990
March.....	4,850	228	79	156	9,620
April.....	6,070	334	79	202	12,040
May.....	903.3	64	5.7	29.1	1,790
June.....	1,056.8	116	7.8	35.2	2,100
July.....	71.1	6.9	.9	2.29	141
August.....	6.9	1.1	.1	.22	14
September.....	7.1	.5	.1	.24	14
Water year 1946-47.....	30,958.3	1,170	.1	84.8	61,410

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and records for Butter Creek near Pine City and Birch Creek near Rieth.

b Stage-discharge relation affected by ice.

McKay Reservoir near Pendleton, Oreg.

Location.- Staff gage, lat. 45°36', long. 118°48', at dam on McKay Creek in SE $\frac{1}{4}$ sec. 34, T. 2 N., R. 32 E., 4 miles south of Pendleton. Datum of gage is at mean sea level (surveys by Bureau of Reclamation).

Drainage area.- 236 square miles.

Records available.- October 1930 to September 1947.

Extremes.- Maximum contents observed during year, 71,300 acre-feet Apr. 30 (elevation, 1,320.0 feet); minimum observed, 10,640 acre-feet Sept. 30 (elevation, 1,239.0 feet). 1930-47: Maximum contents observed, 71,890 acre-feet July 1, 1942 (elevation, 1,320.5 feet); minimum observed, 3,051 acre-feet Oct. 1, Nov. 1, Dec. 1, 1935 (elevation, 1,217.6 feet).

Remarks.- Reservoir is formed by gravel-fill dam with concrete facing completed in 1926; storage began in 1927. Capacity, 73,660 acre-feet between elevations 1,182 feet (floor of trash-rack structure) and 1,322 feet (top of spillway gates). Dead storage not known. Water is used for irrigation of lands along Umatilla River near Echo, Stanfield, and Hermiston. Gage read to nearest foot or half-foot on last day of each month, occasionally at other times.

Cooperation.- Gage readings and capacity table furnished by Bureau of Reclamation.

Monthly elevation and contents, water year October 1946 to September 1947

Date	Elevation (feet)	Contents (acre-feet)	Change in contents during month (acre-feet)
Sept. 30.....	1,257.0	19,220	-
Oct. 31.....	1,257.5	19,470	+250
Nov. 30.....	1,265.5	24,070	+4,600
Dec. 31.....	1,283.0	35,700	+11,630
Calendar year 1946....	-	-	+8,210
Jan. 31.....	1,299.0	48,920	+13,220
Feb. 28.....	1,307.0	56,700	+7,780
Mar. 31.....	1,315.8	66,310	+9,610
Apr. 30.....	1,320.0	71,300	+4,990
May 31.....	1,314.5	64,830	-6,470
June 30.....	1,305.0	54,660	-10,170
July 31.....	1,279.5	33,190	-21,470
Aug. 31.....	1,252.0	16,660	-16,590
Sept. 30.....	1,239.0	10,640	-5,960
Water year 1946-47....	-	-	-8,580

McKay Creek near Pendleton, Oreg.

Location.- Water-stage recorder, lat. 45°37', long. 118°48', in sec. 34, T. 2 N., R. 32 E., just upstream from irrigation diversion dam, a quarter of a mile downstream from McKay Dam, and 4 miles south of Pendleton.

Drainage area.- 236 square miles.

Records available.- November 1918 to September 1923, October 1924 to September 1947 (diversions by irrigation canal at gage not included since 1932).

Extremes.- Maximum discharge during year, 416 second-feet (regulated) Apr. 19 (gage height, 1.46 Feet); maximum daily discharge, 386 second-feet Apr. 20; probably no flow during most of period Oct. 1 to Apr. 15.

1918-47: Maximum discharge observed, 3,250 second-feet Feb. 10, 1921 (gage height, 4.4 feet, site and datum then in use), from rating curve extended above 1,200 second-feet; no flow at times.

Remarks.- Records fair. Diversions above station for irrigation. Flow completely regulated since 1927 by McKay Reservoir.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)

(Shifting-control method used July 17 to Sept. 17)

0.1	3	0.6	73
.2	10	.8	127
.3	22	1.0	194
.4	36	1.2	277
.5	53	1.4	380

Discharge, in second-feet, water year October 1948 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							-	112	330	342	282	296
2							-	112	325	342	277	291
3							-	66	273	342	277	287
4							-	36	255	342	277	284
5							-	55	255	342	277	259
6							-	35	233	336	277	255
7							-	35	214	336	a291	255
8							-	35	170	336	a291	237
9							-	33	54	336	a291	195
10							-	33	8	330	a291	121
11							-	32	7	330	a291	118
12							-	29	7	330	a291	101
13							-	30	7	330	291	90
14							-	30	7	325	291	90
15							-	30	7	306	287	32
16							7	30	7	320	287	2
17							29	30	150	325	282	2
18							119	30	233	325	268	
19							355	30	277	325	198	
20							586	112	273	325	194	
21							380	176	273	325	190	
22							255	277	273	350	224	
23							140	282	273	350	301	
24							137	277	273	350	301	a2
25							127	277	229	330	301	
26							124	277	296	325	301	
27							124	273	291	325	306	
28							121	277	291	325	306	
29							121	277	296	298	301	
30							118	277	306	282	301	
31							-	306	-	282	296	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....					
November.....					
December.....					
Calendar year					
January.....	-	-	-	-	-
February.....	-	-	-	-	-
March.....	-	-	-	-	-
April 16-30	2,543	386	7	170	5,040
May.....	3,691	306	29	126	7,720
June.....	5,835	330	7	198	11,690
July.....	10,105	342	282	326	20,040
August.....	8,639	306	190	279	17,140
September.....	2,921	296	2	97.4	5,790
The period.....	-	-	-	-	67,420

a No gage-height record; discharge computed on basis of recorded range in stage and field estimate of discharge by watermaster.

UMATILLA RIVER BASIN

Birch Creek at Rieth, Oreg.

Location.- Water-stage recorder, lat. 45°39', long. 118°53', in SE¹ sec. 13, T. 2 N., R. 31 E., a quarter of a mile upstream from mouth and half a mile southwest of Rieth.

Drainage area.- 291 square miles.

Records available.- May 1921 to September 1923 and April 1927 to September 1947.

Average discharge.- 18 years (1929-47), 37.3 second-feet.

Extremes.- Maximum discharge during year, 309 second-feet Dec. 12 (gage height, 2.98 feet); minimum, 0.4 second-foot May 31, June 1, July 18-20, Sept. 1, 11, 12.

1921-23, 1927-47: Maximum discharge, 1,640 second-feet Jan. 29, 1928 (gage height, 6.00 feet, site and datum then in use), from rating curve extended above 300 second-feet; no flow at times.

Remarks.- Records good except those below 5 second-feet, which are fair, and those for periods of ice effect or no gage-height record, which are poor. Several small diversions above station for irrigation.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 23, Apr. 23 to June 1)

0.4	0.2	0.9	8.7	1.9	102
.5	.7	1.0	13	2.2	145
.6	1.7	1.2	27	2.6	218
.7	3.3	1.4	44		
.8	5.5	1.6	65		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.0	17	79	b57	88	78	112	38	4.4	1.1	a0.6	0.5
2	3.7	18	72	55	85	72	117	31	a5.0	.9	a.6	.5
3	3.7	18	65	b35	81	67	123	28	a8.5	.9	a.6	.5
4	4.6	19	61	b35	76	64	112	19	14	.9	a.6	.5
5	5.8	19	56	b35	72	58	105	14	17	.9	a.6	.5
6	5.8	19	53	b35	71	54	98	5.3	19	.9	.6	.5
7	6.1	19	50	b35	70	54	94	5.0	16	.9	.6	.5
8	9.1	19	47	b35	69	53	99	7.1	33	a.9	.6	.5
9	7.7	19	44	35	65	51	109	6.1	56	.9	.7	.5
10	8.4	19	42	45	63	52	108	5.5	62	1.9	a.7	.5
11	10	20	40	42	62	58	109	a4.0	64	4.2	a.6	.5
12	10	20	130	45	72	55	106	a3.0	46	4.4	a.6	.5
13	10	20	214	43	113	53	103	a2.0	34	1.9	.8	.6
14	10	20	*182	a43	136	58	105	1.4	30	1.0	.5	.6
15	10	21	170	b43	144	69	108	1.4	25	.9	.6	.6
16	11	21	155	b43	153	80	96	1.2	19	.6	a.6	.6
17	12	20	129	b43	156	69	103	1.2	16	.6	a.6	.6
18	12	19	110	43	147	106	142	1.2	6.8	.4	a.6	.6
19	11	21	99	42	140	126	144	1.2	2.0	.4	a.6	.6
20	11	28	a90	41	129	134	150	1.0	1.0	1.0	.5	.6
21	11	29	a82	*47	119	133	144	1.1	.9	a1.4	.6	.6
22	11	31	a74	50	109	138	126	1.1	.9	a1.0	.9	.6
23	11	41	a69	84	103	151	97	.9	.9	.5	1.4	.6
24	11	60	63	116	102	144	83	.8	.8	.5	1.4	.6
25	11	65	a80	148	101	129	73	.7	.6	.5	1.2	.6
26	12	67	56	184	96	126	58	.6	.6	.5	1.1	.7
27	14	75	b52	166	85	117	53	.8	.8	.5	1.1	.7
28	15	81	b48	139	89	113	48	.6	1.0	a.5	1.0	.7
29	16	89	b45	120	-	112	45	.6	1.4	a.6	1.0	.7
30	17	85	b42	106	-	119	45	.8	1.4	.8	1.1	.7
31	17	-	b40	83	-	117	-	.5	-	.6	.7	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	511.9	17	3.7	10.1	619
November.....	1,019	89	17	34.0	2,020
December.....	2,518	214	40	81.2	4,990
Calendar year 1946.....	14,550.0	266	.2	39.9	28,840
January.....	2,013	184	35	64.9	3,990
February.....	2,792	156	62	99.7	5,540
March.....	2,798	151	51	89.9	5,530
April.....	3,015	150	45	100	5,980
May.....	182.7	38	.5	5.89	562
June.....	489.0	64	.6	16.3	970
July.....	32.8	4.4	.4	1.06	65
August.....	23.7	1.4	.6	.76	47
September.....	17.3	.7	.5	.58	34
Water year 1946-47.....	15,202.4	214	.4	41.7	30,150

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and records for Butter Creek near Pine City.

b Stage-discharge relation affected by ice.

Butter Creek near Pine City, Oreg.

Location. - Water-stage recorder, lat. 45°33', long. 119°18', in S½ sec. 22, T. 1 N., R. 28 E., half a mile below Mattlock Canyon, 6 miles southeast of settlement of Pine City, and 20 miles south of Hermiston.

Records available. - October 1945 to September 1947 in reports of Geological Survey.

March 1921 to April 1928 at site half a mile south of Pine City, and May 1928 to September 1936 at present site (incomplete) in reports of State engineer; October 1936 to September 1945 (unpublished) in files of State engineer.

Average discharge. - 15 years (1929-30, 1931-32, 1933-41, 1942-47), 17.7 second-feet.

Extremes. - Maximum discharge during year, 222 second-feet Feb. 12 (gage height, 2.46 feet); from rating curve extended above 130 second-feet; minimum observed, 0.3 second-foot Aug. 27, Sept. 3.

1921-47: Maximum discharge, 1,600 second-feet Jan. 28, 1942 (gage height, 7.91 feet), from rating curve extended above 300 second-feet; no flow at times.

Remarks. - Records good except those below 5 second-feet, which are fair, and those for periods of ice effect or no gage-height record, which are poor. No regulation. Small diversions above station for irrigation; for about 20 days each year not over 30 second-feet may be diverted into headwaters of Butter Creek from Fivemile Creek, a tributary of Camas Creek in John Day River Basin.

Rating tables, water year 1946-47, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

(Shifting-control method used Nov. 23 to Dec. 27, Jan. 17-24)

Oct. 1 to Jan. 24

Jan. 25 to Sept. 30

0.1	1.1	0.7	22	0.0	0.1	0.4	7.5	1.0	48
.2	2.5	.9	35	.1	.6	.5	12	1.2	69
.3	4.6	1.1	51	.2	2.5	.6	17	1.5	105
.4	7.6	1.4	80	.5	4.3	.8	31	1.9	151
.5	12	1.7	114						

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.4	7.0	34	b7.5	37	41	40	28	6.4	3.3		a0.3
2	1.5	6.7	37	b7.0	44	40	41	25	a8.0	2.9		a.3
3	1.7	7.0	27	b6.5	55	37	49	24	a7.0	2.3		h.3
4	1.9	6.7	24	b6.5	51	35	51	22	12	2.1		
5	2.2	7.0	24	b6.8	50	33	48	11	a15	2.0		
6	2.5	7.6	23	b7.0	49	30	48	15	a10	1.8		
7	3.3	7.3	21	b7.2	45	30	46	11	a12	1.8		
8	3.8	7.3	20	b7.5	41	30	45	16	a14	1.6		
9	4.2	7.3	19	b7.6	36	29	50	17	a17	1.5		
10	4.0	7.3	17	b6.0	37	30	48	20	a19	1.5		
11	3.8	7.3	17	b8.5	35	37	46	15	17	1.6		
12	3.8	7.3	20	b9.0	124	37	44	8.6	15	1.8		
13	3.6	7.3	42	b9.5	149	35	44	8.1	13	1.8		
14	3.6	7.6	*42	b10	128	37	45	7.7	11	1.8		
15	5.6	7.3	48	11	119	41	48	8.1	10	1.6		
16	3.6	7.3	52	11	129	44	47	7.7	9.0	1.5		
17	3.8	7.3	29	14	123	48	51	7.0	8.4	1.5		
18	4.0	7.3	26	14	105	52	68	6.7	9.4	1.3		
19	4.0	7.6	38	14	92	54	66	7.0	8.1	1.1		
20	4.2	12	30	14	81	53	67	7.3	7.3			
21	4.4	14	28	14	71	51	60	9.0	7.0			
22	4.9	13	28	*18	69	52	53	8.1	6.1			
23	5.2	16	24	31	66	61	46	7.5	6.1			
24	5.2	17	21	102	69	57	43	6.7	5.8			
25	5.2	37	20	102	61	54	58	6.1	4.9			
26	4.9	52	20	145	50	50	34	5.5	3.5			
27	6.7	70	20	97	38	46	30	5.5	3.5			
28	6.7	63	b15	66	48	44	28	5.5	3.9			
29	6.1	52	b10	49	-	42	28	5.8	4.1	1.6		
30	7.0	41	b9.0	41	-	41	28	5.8	3.7	1.5		
31	7.0	-	b8.0	32	-	42	-	5.2	-	1.3		

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	127.8	7.0	1.4	4.12	253
November.....	594.5	70	6.7	19.8	1,180
December.....	784.0	52	8.0	25.3	1,560
Calendar year 1946.....	9,319.2	127	-	25.5	18,480
January.....	883.4	145	6.5	28.5	1,750
February.....	2,000	149	35	71.4	3,970
March.....	1,315	61	29	42.4	2,600
April.....	1,380	68	28	46.0	2,740
May.....	340.7	28	5.2	11.0	675
June.....	278.2	19	3.5	9.27	552
July.....	55.0	3.3	-	1.71	105
August.....	14.5	-	-	.47	29
September.....	22.6	-	-	.75	45
Water year 1946-47.....	7,791.7	149	-	21.3	15,460

* Winter discharge measurement made on this day.

a No gage-height record; discharge interpolated, or computed on basis of weather records and records for Birch Creek near Rieth.

b Stage-discharge relation affected by ice.

h Computed from staff-gage readings.

Principal diversions from Umatilla River between Pendleton and Umatilla, Oreg.

The following canals divert water from Umatilla River between Pendleton and Umatilla: Furnish Canal, from right bank of Umatilla River in sec. 36, T. 3 N., R. 29 E., Umatilla project feed canal, from right bank of Umatilla River in SW $\frac{1}{4}$ sec. 22, T. 3 N., R. 29 E., to feed Cold Springs Reservoir of Bureau of Reclamation. Western Land Canal, from left bank of Umatilla River in NE $\frac{1}{4}$ sec. 21, T. 3 N., R. 29 E.; gage is 1 mile downstream from intake. Allen Canal, from right bank of Western Land Canal, half a mile downstream from head gate of that canal. Maxwell Canal, from right bank of Umatilla River in SW $\frac{1}{4}$ sec. 28, T. 4 N., R. 28 E.; at times it receives water from Cold Springs Reservoir. West Division main canal, from left bank of Umatilla River in SW $\frac{1}{4}$ sec. 28, T. 5 N., R. 28 E. Brownell Canal, from right bank of Umatilla River, 2 miles below West Division main canal diversion and $1\frac{1}{2}$ miles above mouth of Umatilla River.

Water diverted by all these canals is used for irrigation of lands on both sides of Umatilla River near and below Echo, except that diverted by West Division main canal, which is applied to lands along Columbia River in vicinity of Irrigon.

Several smaller canals also divert water between Pendleton and Umatilla, but no records for them were obtained.

Records of monthly discharge of the canals, published as a group, are available from March 1926 to September 1947; records for some of the canals published separated prior to 1926.

Diversions, in acre-feet, water year October 1946 to September 1947

Month	Furnish Canal	Umatilla project feed canal	Western Land Canal	Allen Canal	Maxwell Canal	West Division main canal	Brownell Canal
October.....	0	1,130	a274	1,210	b506	5,880	0
November.....	0	12,130	-	c148	-	0	0
December.....	0	11,930	-	-	-	0	0
January.....	0	4,690	-	-	-	0	0
February.....	0	11,340	-	-	-	0	0
March.....	54	10,400	d926	-	e1,330	3,740	0
April.....	6,520	9,830	12,710	f720	4,450	10,820	770
May.....	9,390	5,690	12,940	1,340	4,110	10,300	920
June.....	5,390	1,970	12,460	1,050	3,330	11,350	805
July.....	8,510	0	12,320	919	2,720	11,310	994
August.....	7,190	0	10,040	640	2,390	11,250	879
September.....	3,670	0	3,080	1,110	2,270	9,180	614
Water year 1946-47.....	40,720	69,110	-	-	-	73,830	4,980

a Oct. 1-8.

b Oct. 1-7.

c Nov. 1-13.

d Mar. 29-31.

e Mar. 21-31.

f Apr. 9-30.

Note.- No gage-height record for months of little or no flow and for a few days and short periods at other times. Discharge for some periods interpolated, or computed on basis of information furnished by watermaster.

John Day River at Prairie City, Oreg.

Location.- Water-stage recorder, lat. 44°27', long. 118°43', in NE¹ sec. 10, T. 13 S., R. 33 E., 600 feet upstream from power plant and outlet of Prairie power canal, a third of a mile below Dixie Creek, and three-quarters of a mile southwest of Prairie City. Datum of gage is 3,496.99 feet above mean sea level, datum of 1929.

Drainage area.- 231 square miles.

Records available.- October 1926 to September 1947. October 1916 to September 1917 (gage heights only) and March 1925 to September 1926 at site below outlet of Prairie power canal.

Average discharge.- 22 years (1925-47), 108 second-feet, including flow of Prairie power canal.

Extremes.- Maximum discharge during year, 500 second-feet Feb. 12 (gage height, 3.45 feet); minimum, 4.0 second-feet July 18-21, Sept. 2 (gage height, 1.37 feet).

1926-47: Maximum discharge observed, 1,550 second-feet Mar. 19, 1932 (gage height, 4.7 feet), from rating curve extended above 500 second-feet; minimum, 2 second-feet Dec. 8, 21, 22, 1932, Aug. 10, 1934.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation and for power. (See p. 41 for records for Prairie power canal at Prairie City.)

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Feb. 12				Feb. 13 to Sept. 30			
1.5	9.5	1.8	35	2.4	160	1.4	4.5
1.6	16	2.0	67	2.7	240	1.5	8.0
1.7	24	2.2	111	3.0	335	1.6	15
						1.7	20
							2.3
							117

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.5	27	54	28	38	50		131	108	18	a8	6
2	7.5	23	46	a19	108	54		155	14	a8		6.5
3	8	21	43	a34	104	51		190	135	12	a9	7.5
4	8.5	22	53	a18	80	50		208	113	a20	a10	6
5	15	23	48	a41	82	46		202	97	a17	a8	6.5
6	13	24	42	a40	73	37		198	117	a19	a7	7.5
7	15	26	41	a27	62	42		212	79	a20	a7	12
8	26	18	59	a25	48	42		239	126	a20	a7	15
9	a38	17	40	b21	48	41		257	148	a18	a10	16
10	a19	18	32	b21	43	66		218	148	a16	a10	16
11	a19	18	32	b16	49	71		178	128	a12	7.5	15
12	a14	16	71	b17	321	61		158	89	a12	a7	14
13	a17	17	80	b11	210	54		126	71	a12	a7	12
14	a12	17	111	b5	150	52		104	54	a15	a8	12
15	a12	15	102	*b47	135	54	a125	85	52	a17	a10	12
16	10	15	71	b24	133	a70		62	66	16	a11	12
17	10	16	28	b12	128	a90		61	99	12	a11	12
18	10	21	39	b25	106	a110		59	61	a10	a12	12
19	10	39	65	31	95	a115		56	50	a8	a11	12
20	13	34	45	24	89	119		51	46	a7	a11	12
21	35	28	43	19	85	117		42	44	a8	a13	12
22	30	31	58	17	81	124		42	35	9	a15	12
23	31	53	33	28	79	131		46	30	a9	a12	a11
24	23	43	31	80	73	122		46	25	a6	a13	a11
25	21	42	31	88	66	a107		44	22	a6	a10	a11
26	23	80	35	180	62	a92		45	22	a8	a8	a10
27	21	118	42	69	52	a87		54	25	a6	6.5	a10
28	19	104	24	41	56	a82		64	27	a7	7	a10
29	18	85	21	42	-	a82		61	25	7.5	7	a11
30	22	65	14	35	-	a91		85	22	a7	7.5	a11
31	22	-	20	28	-	a101		175	-	a7	7	-

Month	River only			River and Prairie power canal			
	Maximum	Minimum	Mean	Runoff in acre-feet	Maximum	Minimum	Mean
October.....	38	7.5	17.7	1,090	94	54	74.9
November.....	118	15	36.2	2,150	186	80	102
December.....	111	14	45.6	2,800	180	78	113
Calendar year 1946..	452	7.5	91.4	66,130	520	22	149
January.....	180	5	35.8	2,200	251	70	101
February.....	321	38	94.9	5,270	392	108	164
March.....	131	37	77.8	4,780	199	106	148
April.....	257	42	125	7,440	326	112	192
May.....	165	22	74.3	7,250	256	90	146
June.....	20	6	12.0	741	83	31	43.3
July.....	13	6.5	9.15	562	40	18	27.1
August.....	16	6.0	11.1	660	49	22	41.8
September.....							
Water year 1946-47..	321	5	54.4	39,360	392	18	111
							80,560

Peak discharge.- Jan. 26 (6 a.m.) 297 sec.-ft.; Feb. 12 (7:30 p.m.) 500 sec.-ft.; May 31 (4 p.m.) 266 sec.-ft.

a No gage-height record; discharge computed on basis of recorded range in stage, weather records, and records for station at Picture Gorge.

b Stage-discharge relation affected by ice; discharge computed on basis of recorded range in stage, weather records, and records for station at Picture Gorge.

c Computed from staff-gage readings.

John Day River at Picture Gorge, near Dayville, Oreg.

Location.- Water-stage recorder and concrete control, lat. 44°31'20", long. 119°37'30", in sec. 20, T. 12 S., R. 26 E., on John Day Highway, 0.7 mile upstream from Rock Creek bridge and 7 miles northwest of Dayville. Datum of gage is 2,232.10 feet above mean sea level, datum of 1929.

Drainage area.- 1,640 square miles.

Records available.- April 1926 to September 1947.

Average discharge.- 21 years, 391 second-feet.

Extremes.- Maximum discharge during year, 1,390 second-feet Apr. 18 (gage height, 7.03 feet); minimum, 22 second-feet July 23 (gage height, 1.52 feet).

1926-47: Maximum discharge, 6,000 second-feet Mar. 19, 1932 (gage height, 14.0 feet), from rating curve extended above 2,300 second-feet; minimum, 1 second-foot several days in August and September 1930, Aug. 8, 9, 1936.

Remarks.- Records good except those for periods of ice effect, which are poor. Many diversions above station for irrigation.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Feb. 12

Feb. 13 to Sept. 30

2.1	94	3.2	250	4.5	538	1.6	28	2.6	137	5.0	650
2.4	130	3.6	331	5.0	675	1.8	45	3.0	193	6.0	980
2.8	184	4.0	418	6.0	1,000	2.0	66	3.5	276	7.0	1,380
						2.3	100	4.0	385		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	93	246	564	318	385	515	892	761	552	180	37	40
2	88	252	508	258	486	522	868	745	647	141	39	39
3	98	237	471	245	614	520	847	692	656	117	39	39
4	95	229	455	250	500	498	830	956	581	108	40	39
5	108	232	469	b260	490	478	812	952	538	100	41	39
6	123	236	450	b280	488	440	805	900	590	90	38	38
7	134	237	432	b330	474	445	764	892	552	86	37	42
8	153	237	418	b310	450	452	761	920	569	79	38	46
9	167	230	400	b300	427	460	847	966	626	74	37	47
10	167	229	389	312	420	767	858	900	777	68	36	52
11	164	229	378	316	436	875	840	788	764	60	33	72
12	164	229	367	306	696	755	826	707	674	55	30	68
13	160	218	464	295	1,270	668	816	626	566	57	31	64
14	159	215	634	273	1,020	662	850	532	518	45	30	80
15	157	213	753	236	892	683	920	472	465	49	27	62
16	157	212	696	236	917	749	1,000	435	430	49	29	66
17	160	210	536	b250	931	864	1,100	398	515	48	30	66
18	167	218	436	b260	847	962	1,340	385	490	48	30	66
19	169	239	513	*b270	770	1,010	1,380	367	420	44	29	74
20	174	275	513	b300	716	1,050	1,350	344	380	40	27	77
21	193	281	478	287	680	1,040	1,260	330	360	38	28	79
22	220	285	455	291	653	1,050	1,160	323	327	30	34	62
23	237	420	281	696	1,130	1,130	1,040	304	298	26	34	80
24	245	378	396	363	641	1,050	952	294	268	26	34	73
25	237	361	394	614	620	978	878	282	221	27	35	67
26	234	416	398	951	587	910	822	278	186	32	37	68
27	239	824	436	741	535	850	764	286	181	33	36	65
28	236	892	407	488	528	808	764	336	188	35	35	62
29	227	780	344	441	-	791	764	340	184	38	40	66
30	230	660	265	425	-	816	780	355	177	38	40	74
31	237	-	258	374	-	868	-	495	-	37	40	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	5,392	245	88	174	10,690
November.....	9,831	892	210	328	19,500
December.....	14,117	753	256	455	28,000
Calendar year 1946.....	204,208	2,640	15	559	405,000
January.....	10,857	951	236	350	21,530
February.....	18,161	1,270	385	649	36,020
March.....	25,664	1,130	440	765	46,940
April.....	27,690	1,390	761	930	55,320
May.....	17,559	966	278	566	34,830
June.....	13,900	826	177	463	27,570
July.....	1,878	160	26	60.6	3,720
August.....	1,069	41	27	34.5	2,120
September.....	1,812	82	38	60.4	3,590
Water year 1946-47.....	146,130	1,380	26	400	289,800

Peak discharge.- Nov. 27 (8:30 p.m.) 1,070 sec.-ft.; Jan. 26 (7 to 8 p.m.) 1,140 sec.-ft.; Feb. 13 (2 and 7 to 10 a.m.) 1,550 sec.-ft.; Mar. 11 (2 a.m.) 1,050 sec.-ft.; Mar. 23 (4 to 5 a.m.) 1,170 sec.-ft.; Apr. 18 (10 p.m.) 1,390 sec.-ft.

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

John Day River at Service Creek, Oreg.

Location.- Water-stage recorder, lat. 44°48', long. 120°00', in NE $\frac{1}{4}$ sec. 18, T. 9 S., R. 23 E., a quarter of a mile downstream from Service Creek and three-quarters of a mile southwest of Service Creek post office. Datum of gage is 1,635.83 feet above mean sea level, datum of 1929.

Drainage area.- 5,090 square miles.

Records available.- October 1929 to September 1947 in reports of Geological Survey. March 1925 to September 1926 and October 1929 to September 1936 in reports of State engineer.

Average discharge.- 19 years (1925-26, 1929-47), 1,510 second-feet.

Extremes.- Maximum discharge during year, 7,380 second-feet Apr. 20 (gage height, 9.07 feet); minimum, 144 second-feet Aug. 16-20, Sept. 7, 8 (gage height, 1.02 feet). 1929-47: Maximum discharge, 28,900 second-feet Mar. 19, 1932 (gage height, 16.75 feet), from rating curve extended above 11,000 second-feet; minimum, 20 second-feet Sept. 6, 1931.

Remarks.- Records good except those for periods of no gage-height record, which are fair, and those for Sept. 26-30, which are poor. Many diversions above station for irrigation.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 12

Dec. 13 to Sept. 30

1.3	194	3.3	1,025	1.0	141	2.9	750	6.0	3,100
1.5	238	4.0	1,490	1.4	217	3.5	1,080	7.5	4,590
1.8	320	4.8	2,100	1.8	325	4.2	1,530	9.0	7,250
2.2	465	5.8	3,040	2.3	490	5.1	2,250		
2.7	700	7.0	4,460						

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	207	655	2,520	850	1,140	2,120	3,920	4,590	2,200	805	195	166
2	211	700	2,170	1,000	1,450	1,840	3,870	4,510	2,060	720	189	157
3	220	675	1,900	610	2,600	1,950	3,810	5,330	2,430	342	185	152
4	229	573	1,720	402	1,910	1,850	3,670	5,870	2,280	590	177	149
5	243	524	1,690	413	1,680	1,750	3,520	5,870	2,130	554	175	147
6	285	610	1,670	546	1,660	1,610	3,430	5,600	1,980	514	173	146
7	327	655	1,540	883	1,600	1,450	3,290	5,500	2,020	476	166	144
8	352	670	1,460	810	1,500	1,590	3,220	5,440	2,020	444	159	146
9	386	645	1,390	790	1,370	1,550	3,560	5,360	3,020	413	166	151
10	404	591	1,300	872	1,350	2,070	3,630	4,890	3,430	426	164	179
11	390	586	1,250	978	1,360	3,590	3,480	4,130	3,210	388	166	a190
12	383	600	1,510	960	2,040	3,280	3,330	3,630	2,870	370	161	a185
13	369	560	4,670	861	5,570	2,800	3,290	3,330	2,480	355	157	a190
14	355	483	4,500	755	4,860	2,690	3,500	3,070	2,180	334	152	h185
15	348	483	5,090	534	4,210	2,880	3,980	2,680	1,950	304	149	a170
16	344	501	4,770	452	4,590	3,240	4,580	2,450	1,780	295	144	a165
17	341	496	3,560	502	4,540	3,850	4,960	2,310	1,840	287	144	a164
18	344	506	2,400	610	4,100	4,450	6,480	2,200	2,000	275	144	a161
19	348	650	2,430	637	3,610	4,810	7,230	2,100	1,710	262	144	a168
20	366	1,040	2,620	760	3,250	4,980	7,200	2,020	1,470	249	144	a189
21	400	1,100	2,210	850	3,000	4,880	6,620	2,010	1,390	239	146	195
22	586	2,030	840	2,940	4,820	5,840	5,840	1,960	1,320	224	146	199
23	768	1,780	845	3,020	5,580	5,170	5,900	1,900	1,180	213	147	199
24	858	2,080	1,480	1,000	3,130	5,090	4,660	1,780	1,060	202	147	a197
25	740	1,720	1,390	a2,000	3,100	4,540	4,290	1,730	978	204	146	a195
26	710	2,060	1,400	2,870	2,790	4,190	4,130	1,720	872	208	146	e250
27	854	3,760	1,610	3,070	2,370	3,920	4,090	1,760	820	217	147	e210
28	794	4,460	1,660	1,920	2,070	3,710	4,230	1,880	910	231	149	e200
29	665	3,790	1,240	1,500	-	3,630	4,430	1,840	984	219	149	e185
30	645	3,180	916	1,420	-	3,740	4,690	1,680	916	210	149	a190
31	640	-	730	1,300	-	3,930	-	1,890	-	204	152	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	14,090	854	207	455	27,950
November.....	36,382	4,460	483	1,213	72,160
December.....	66,606	5,090	730	2,149	132,100
Calendar year 1946.....	815,762	10,600	148	2,235	1,618,000
January.....	31,820	3,070	402	1,026	63,110
February.....	76,790	5,570	1,140	2,743	152,300
March.....	102,280	5,380	1,450	3,289	202,800
April.....	132,100	7,230	3,220	4,403	262,000
May.....	100,830	5,870	1,680	3,253	200,000
June.....	55,490	3,430	820	1,850	110,100
July.....	11,074	805	202	357	21,960
August.....	4,878	195	144	157	9,680
September.....	5,334	250	144	178	10,580
Water year 1946-47.....	637,674	7,230	144	1,747	1,265,000

a No gage-height record; discharge computed on basis of records for John Day River at Picture Gorge, at McDonald Ferry and North Fork John Day River at Monument.

e Stage-discharge relation indefinite; discharge computed on basis of records for John Day River at Picture Gorge and at McDonald Ferry, and North Fork John Day River at Monument.

h Computed from staff-gage reading.

John Day River at McDonald Ferry, Oreg.

Location.- Water-stage recorder, lat. 45°35', long. 120°25', in NW $\frac{1}{4}$ sec. 11, T. 1 N., R. 19 E., at McDonald Ferry, half a mile downstream from Rock Creek and 10 miles east of Klondike. Datum of gage is 392.27 feet above mean sea level, datum of 1929.

Drainage area.- 7,580 square miles.

Records available.- December 1904 to September 1947.

Average discharge.- 42 years, 1,901 second-feet.

Extremes.- Maximum discharge during year, 6,860 second-feet Apr. 19 (gage height, 5.59

feet); minimum, 103 second-feet Aug. 29, Sept. 3 (gage height, 1.21 feet).

1904-47: Maximum discharge, 27,800 second-feet (revised) Feb. 6, 1907 (gage height, 10.8 feet, revised), from rating curve extended above 22,000 second-feet; minimum, 4 second-feet Aug. 31, 1931 (gage height, 0.68 foot).

Maximum stage known, 12.8 feet, probably occurred in 1894 (discharge, 39,100 second-feet, revised, from rating curve extended above 22,000 second-feet).

Revisions.- Maximum discharge and gage height for the water year 1907 has been revised to 27,800 second-feet Feb. 6, 1907 (gage height, 10.8 feet), superseding figure published in Water Supply Paper 414, and maximum discharge for the water year 1932 has been revised to 26,800 second-feet Mar. 20, 1932 (gage height, 10.6 feet), superseding figure published in Water-Supply Paper 739.

Remarks.- Records good except those for periods of ice effect, which are fair. Diversions above station for irrigation.

Revisions.- Revised figures of discharge, in second-feet, for the high-water period in the water year 1907, superseding those published in Water-Supply Paper 370, are given herewith:

Feb. 6	25,700	Mar. 20	17,100
7	16,300	21	18,400
		22	15,900

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
February.....	224,690	25,700	3,440	8,025	445,700
March.....	201,650	18,400	3,440	6,505	400,000
Water year 1906-7.....	1,068,233	25,700	210	2,927	2,119,000

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	224	625	2,870	940	1,490	2,130	3,820	4,430	1,540	940	210	116
2	224	617	2,320	910	1,280	2,210	3,820	4,290	1,950	860	197	116
3	219	625	1,960	900	1,330	2,060	3,850	4,160	1,980	777	192	107
4	219	657	*1,770	786	2,260	2,060	3,720	4,960	2,200	699	184	116
5	233	657	1,610	665	2,130	1,960	3,640	5,450	2,180	641	188	126
6	238	593	1,530	b500	1,770	1,880	3,480	5,380	2,070	585	184	120
7	257	540	1,580	b460	1,730	1,780	3,400	5,130	2,080	548	171	133
8	278	593	1,460	b600	1,700	1,630	3,300	5,040	2,070	518	163	120
9	311	633	1,360	b900	1,620	1,630	3,220	4,990	1,960	489	160	123
10	346	649	1,320	1,050	1,500	1,660	3,460	4,960	2,500	454	160	126
11	369	633	1,260	1,050	1,410	1,770	3,580	4,540	3,320	440	160	120
12	408	593	1,200	1,040	1,480	3,520	3,420	3,800	3,130	461	163	123
13	408	578	1,160	1,130	1,960	3,360	3,300	3,280	2,850	440	163	130
14	401	801	3,550	1,050	5,460	2,810	3,220	3,040	2,450	368	152	156
15	388	570	4,140	786	4,940	2,660	3,220	2,600	2,130	408	152	167
16	369	518	4,750	b650	4,360	2,760	3,760	2,490	1,960	357	144	184
17	363	496	4,500	b560	4,640	3,070	4,430	2,510	1,760	316	137	184
18	357	518	3,440	b520	4,690	3,720	4,770	2,180	1,690	289	137	175
19	363	503	2,340	625	4,140	4,340	6,180	2,070	1,850	278	137	167
20	369	518	2,120	*735	3,680	4,680	6,720	1,960	1,670	262	130	160
21	369	617	2,440	822	3,300	4,820	6,670	1,860	1,480	252	120	160
22	388	995	2,150	890	3,040	4,730	6,120	1,830	1,380	243	120	156
23	401	984	1,960	1,010	2,940	4,680	5,500	1,790	1,320	233	116	167
24	469	880	1,790	951	3,020	5,230	4,890	1,760	1,220	219	113	180
25	699	1,280	1,560	1,030	3,130	4,940	4,430	1,660	1,090	210	110	188
26	750	1,650	1,400	1,610	3,090	4,430	4,080	1,600	1,010	201	110	188
27	690	1,490	1,350	2,740	2,800	4,040	3,830	1,570	940	208	113	208
28	665	2,900	1,430	3,280	2,450	3,820	3,870	1,560	840	233	107	238
29	768	3,890	1,630	2,180	-	3,560	3,970	1,650	813	243	107	214
30	742	3,340	1,580	1,660	-	3,460	4,180	1,760	910	243	113	214
31	657	-	1,160	1,560	-	3,560	-	1,610	-	224	120	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	12,962	768	219	418	25,710
November.....	29,743	3,890	496	991	58,990
December.....	64,670	4,750	1,160	2,086	128,500
Calendar year 1946	816,654	10,500	110	2,237	1,620,000
January.....	33,788	3,280	460	1,090	67,020
February.....	77,240	5,460	1,280	2,759	153,200
March.....	98,940	5,230	1,630	3,192	196,200
April.....	126,050	6,720	3,220	4,202	250,000
May.....	95,910	5,450	1,560	3,094	190,200
June.....	54,303	3,320	813	1,810	107,700
July.....	12,656	940	201	408	25,100
August.....	4,533	210	107	146	8,990
September.....	4,658	238	107	155	9,240
Water year 1946-47	615,453	6,720	107	1,686	1,221,000

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Prairie power canal at Prairie City, Oreg.

Location.- Staff gage, lat. 44°27', long. 118°42', in sec. 11, T. 13 S., R. 33 E., upstream from county road bridge over canal and 1 mile south of Prairie City.

Records available.- May 1925 to September 1947.

Average discharge.- 22 years, 48.2 second-feet.

Extremes.- Maximum daily discharge observed during year, 76 second-feet May 31; minimum daily, 12 second-feet Aug. 14-16.

1925-47: Maximum daily discharge, 86 second-feet May 5, 1939; no flow at times.

Remarks.- Records good except those for August and September, which are fair. Staff gage read twice daily. Canal diverts from John Day River in SE $\frac{1}{4}$ sec. 7, T. 13 S., R. 34 E. Water is used by power plant at Prairie City and is returned to river below station on John Day River at Prairie City.

Cooperation.- Gage read by employee of West Coast Power Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	59	68	56	70	69	69	68	70	65	32	16
2	49	59	68	51	71	68	69	69	71	62	32	16
3	49	59	68	36	71	68	68	69	71	57	31	19
4	53	58	68	62	71	69	68	66	73	38	30	19
5	56	59	68	64	71	69	69	68	73	33	32	19
6	56	62	68	70	71	69	68	68	73	21	28	19
7	58	60	68	68	71	69	68	69	73	17	28	20
8	59	68	68	67	71	69	68	69	73	17	28	34
9	47	68	62	69	66	69	68	69	74	19	15	32
10	61	68	68	69	71	69	68	69	73	21	13	32
11	61	68	68	69	71	69	68	70	73	28	13	32
12	61	68	71	68	71	69	68	70	73	28	13	32
13	58	68	68	69	69	68	69	70	73	28	13	32
14	58	68	69	70	68	69	68	70	73	22	12	32
15	58	67	69	23	68	69	68	70	74	23	12	32
16	58	68	69	51	68	69	68	70	73	24	12	33
17	58	68	61	68	68	69	70	71	73	24	13	36
18	58	68	64	65	68	68	68	71	73	25	13	36
19	59	69	63	70	68	68	69	71	73	32	13	36
20	59	69	71	70	69	66	68	71	73	28	14	36
21	59	69	71	70	69	68	68	70	73	27	14	35
22	59	69	71	70	69	68	68	70	73	26	16	35
23	59	69	71	68	69	68	68	70	73	24	18	36
24	59	69	70	73	69	68	68	70	73	25	12	36
25	59	69	70	71	69	68	68	69	71	29	12	36
26	60	69	70	71	69	68	68	70	70	32	12	37
27	59	68	70	67	69	68	67	70	69	44	12	36
28	59	68	67	70	69	68	68	70	69	40	16	36
29	59	68	65	70	-	68	68	71	68	36	16	36
30	59	68	64	70	-	69	67	75	68	36	16	36
31	59	-	68	70	-	69	-	76	-	36	16	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	1,772	61	46	57.2	3,510
November.....	1,987	69	58	66.2	3,940
December.....	2,104	71	61	67.9	4,170
Calendar year 1946	21,204	75	13	58.1	42,040
January.....	2,005	73	23	64.7	3,980
February.....	1,944	71	66	69.4	3,860
March.....	2,122	69	66	68.5	4,210
April.....	2,042	70	67	68.1	4,050
May.....	2,169	76	66	70.0	4,300
June.....	2,162	74	68	72.1	4,290
July.....	867	65	17	31.2	1,920
August.....	857	32	12	18.0	1,100
September.....	922	37	16	30.7	1,830
Water year 1946-47	20,753	76	12	56.9	41,160

Strawberry Creek above Slide Creek, near Prairie City, Oreg.

Location.- Water-stage recorder, lat. 44°20', long. 118°39', in SW $\frac{1}{4}$ sec. 20, T. 14 S., R. 34 E., 100 feet upstream from Slide Creek and 8 $\frac{1}{2}$ miles south of Prairie City.

Records available.- October 1930 to September 1947.

Average discharge.- 17 years, 11.6 second-feet.

Extremes.- Maximum discharge during year, 78 second-feet May 8 (gage height, 2.04 feet); minimum, 2.6 second-feet Feb. 6-11.
1930-47: Maximum discharge, 150 second-feet June 9, 1933 (gage height, 2.44 feet), from rating curve extended above 85 second-feet; minimum, 1.4 second-feet several days in 1931, 1934, 1935, 1937, and on Nov. 19, 1939.

Remarks.- Records fair. No diversion above station; some natural regulation by Strawberry Lake

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.9	3.9	5.1	3.9	2.8	3.0	6.7	24	57	20	9.8	4.5
2	3.9	3.9	4.8	3.9	2.8	3.0	6.7	32	56	19	9.3	4.5
3	3.9	3.9	4.8	a3.9	2.8	3.0	6.7	41	53	18	8.9	4.5
4	3.9	3.9	4.8	a3.9	2.8	2.8	6.3	45	50	18	8.9	4.2
5	3.9	3.9	4.8	a3.8	2.8	2.6	5.9	54	49	17	8.4	4.2
6	3.9	3.9	4.8	a3.8	2.6	b2.6	5.9	63	46	16	7.9	3.9
7	3.6	3.9	4.8	a3.7	2.6	2.6	5.9	71	46	16	7.9	4.5
8	3.6	3.9	4.8	a3.7	2.6	2.6	5.9	78	46	15	7.5	3.9
9	3.6	3.9	4.8	a3.6	2.6	2.6	5.9	73	49	14	7.5	3.9
10	3.6	3.9	4.8	a3.6	2.6	2.6	5.5	66	50	14	7.5	3.9
11	3.6	3.9	4.5	a3.5	2.6	2.6	5.5	59	49	14	7.5	3.6
12	3.6	3.9	4.5	a3.5	3.6	2.4	5.9	53	47	14	7.1	3.6
13	3.6	3.9	4.5	a3.4	3.6	2.4	6.7	50	45	13	7.1	3.6
14	3.3	3.9	4.5	a3.4	3.6	2.4	6.9	48	43	13	7.1	3.6
15	3.3	3.9	4.8	a3.3	3.6	2.6	11	46	41	13	6.7	3.8
16	3.3	3.9	5.1	a3.3	3.6	3.0	14	46	41	13	6.7	3.6
17	3.3	3.6	5.1	a3.3	3.6	3.9	18	46	42	13	6.3	3.6
18	3.3	3.6	5.1	3.3	3.6	4.8	19	46	43	13	6.3	3.6
19	3.0	3.9	5.1	3.3	3.6	5.9	18	47	44	12	5.9	3.6
20	3.0	4.2	5.1	3.3	3.3	6.3	18	49	42	12	5.9	3.6
21	3.6	3.9	4.8	3.0	3.3	6.3	18	52	39	12	5.9	3.6
22	4.2	3.9	4.5	3.0	3.3	7.5	16	53	38	12	5.5	3.6
23	4.8	3.9	4.5	3.3	3.3	7.5	16	53	36	12	5.5	3.6
24	4.2	4.2	4.5	3.3	3.3	7.1	18	53	35	11	5.1	3.6
25	4.2	4.2	4.2	3.0	3.3	6.7	16	53	33	11	5.1	3.6
26	4.5	4.2	4.2	3.0	3.0	6.3	16	56	30	11	4.8	3.6
27	4.2	4.2	4.2	b3.0	b3.0	6.3	18	59	30	10	4.8	3.3
28	3.9	4.8	4.2	b2.8	3.0	5.9	20	59	28	10	4.8	3.6
29	3.9	5.1	4.2	2.8	-	6.3	22	57	25	10	4.8	3.6
30	3.9	5.1	3.9	b2.8	-	6.7	23	56	22	10	4.8	3.6
31	3.9	-	b3.9	b2.8	-	6.7	-	57	-	10	4.5	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	116.4	4.8	3.0	3.75	231
November.....	121.2	5.1	3.6	4.04	240
December.....	143.7	5.1	3.9	4.64	285
Calendar year 1946	5,700.5	83	3.0	15.6	11,310
January.....	104.2	3.9	2.8	3.36	207
February.....	87.2	3.6	2.6	3.11	173
March.....	137.0	7.5	2.4	4.42	272
April.....	364.4	23	5.5	12.1	723
May.....	1,643	76	24	55.0	3,260
June.....	1,254	57	22	41.8	2,490
July.....	416	20	10	13.4	825
August.....	205.8	9.8	4.5	6.64	408
September.....	113.7	4.5	3.3	3.79	226
Water year 1946-47	4,706.6	76	2.4	12.9	9,340

* Winter discharge measurement made on this day.

a No gage-height record; discharge interpolated.

b Stage-discharge relation affected by ice.

North Fork John Day River near Dale, Oreg.

Location.- Water-stage recorder, lat. 45°00', long. 118°57', in SE $\frac{1}{4}$ sec. 35, T. 6 S., R. 31 E., three-eighths of a mile downstream from Desolation Creek and $1\frac{1}{2}$ miles northeast of Dale. Datum of gage is 2,775.85 feet above mean sea level, datum of 1929.

Drainage area.- 525 square miles.

Records available.- October 1929 to September 1947.

Average discharge.- 18 years, 345 second-feet.

Extremes.- Maximum discharge during year, 3,250 second-feet May 4 (gage height, 7.20 feet); minimum, 50 second-feet Sept. 6, 16, 24, 26, 28 (gage height, 2.10 feet).
1929-47: Maximum discharge, 4,990 second-feet May 14, 1932 (gage height, 8.4 feet); minimum, 6 second-feet Nov. 3, 1936 (gage height, 1.40 feet).

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are poor. Several small diversions above station for irrigation and mining cause diurnal fluctuation at low flow.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

2.1	50	3.1	260	5.0	1,200
2.3	77	3.5	410	5.8	1,800
2.5	112	3.9	590	6.7	2,670
2.8	176	4.4	850	7.0	3,010

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	127	236		394	224	762	1,670	822	295	86	61
2	61	114	224		358	236	735	2,480	932	270	69	54
3	65	84	208		536	216	710	2,930	900	254	86	55
4	68	127	202		302	202	665	2,970	834	239	82	55
5	87	157	199		288	189	630	2,780	730	222	79	54
6	84	148	166		288	162	585	2,680	715	208	77	52
7	89	139	181		278	189	550	2,720	665	202	74	58
8	99	123	174		274	181	555	2,590	844	194	71	77
9	94	98	164		281	176	555	2,310	1,090	184	72	72
10	92	122	159	a150	251	222	531	1,810	1,100	176	76	77
11	84	110	189		222	230	518	1,450	966	181	74	72
12	76	91	582		267	202	531	1,340	839	171	72	65
13	76	b92	806		346	202	595	1,250	735	159	70	58
14	72	b95	984		338	224	812	1,120	675	152	66	56
15	71	b92	984		320	260	1,190	1,030	610	150	65	54
16	71	b90	751		326	326	1,400	1,000	600	142	64	54
17	66	b110	464		320	468	1,710	960	675	135	62	58
18	74	154	418	*b100	298	575	2,270	905	560	129	58	62
19	74	216	508		292	685	2,230	894	516	125	60	62
20	131	208	422		281	730	2,140	927	482	120	58	61
21	254	159	378		278	740	1,780	922	466	116	60	60
22	260	162	326		267	817	1,510	905	414	110	62	56
23	254	210	257	b240	267	822	1,390	850	382	110	64	56
24	194	213	281		270	751	1,270	828	374	108	64	55
25	210	192	374		264	700	1,260	850	358	105	60	54
26	267	242	346		242	675	1,380	968	326	105	58	54
27	197	232	264	536	208	625	1,560	972	406	101	57	57
28	146	330	192	459	264	630	1,780	916	430	99	56	54
29	135	326	159	464	-	675	1,960	812	382	96	60	54
30	137	264	112	459	-	778	1,960	762	323	92	65	70
31	116	-	a150	398	-	778	-	949	-	89	68	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	3,762	287	58	121	7,460
November.....	4,887	330	90	163	9,690
December.....	10,860	984	112	351	21,580
Calendar year 1946.....	170,863	3,470	58	468	358,900
January.....	6,546	536	-	211	12,980
February.....	8,320	394	208	297	16,500
March.....	13,890	822	182	448	27,550
April.....	35,544	2,270	518	1,185	70,500
May.....	45,670	2,970	762	1,473	90,590
June.....	19,175	1,100	323	639	38,030
July.....	4,839	295	89	156	9,600
August.....	2,115	89	56	68.2	4,200
September.....	1,787	77	52	59.6	3,540
Water year 1946-47.....	157,415	2,970	52	431	312,200

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of record^b for North Fork John Day River at Monument.

b Stage-discharge relation affected by ice.

North Fork John Day River at Monument, Oreg.

Location.- Water-stage recorder, lat. 44°49', long. 119°26', in E $\frac{1}{4}$ sec. 1, T. 9 S., R. 27 E., just downstream from entrance to canyon, three-quarters of a mile west of Monument.

Drainage area.- 2,520 square miles.

Records available.- March 1925 to September 1947.

Average discharge.- 21 years (1925-27, 1928-47), 1,023 second-feet.

Extremes.- Maximum discharge during year, 5,360 second-feet Apr. 18 (gage height, 7.11 feet); minimum, 81 second-feet Aug. 21-24 (gage height, 1.48 feet).
1925-47: Maximum discharge, 22,000 second-feet Mar. 18, 1932 (gage height, 14.8 feet), from rating curve extended above 9,000 second-feet; minimum, 6 second-feet sometime during Nov. 2-13, 1936, when recorder was not operating.

Remarks.- Records good except those for periods of no gage-height record, which are fair. Many small diversions above station for irrigation.

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

1.4	67	2.5	410	5.2	2,790
1.5	85	2.8	580	6.3	4,210
1.7	125	3.2	850	7.0	5,200
1.9	177	3.7	1,260		
2.2	275	4.3	1,820		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	121	356	1,350		858	1,180	2,640	3,240	1,580		130	119
2	121	385			1,330	1,190	2,570	3,590			127	114
3	130	299		a420	1,580	1,140	2,540				123	110
4	137	250			1,030	1,080	2,380				123	106
5	171	311			1,020	1,010	2,270		a1,500		119	100
6	166	360	a1,000		962	890	2,200				112	96
7	192	390			832	908	2,090			a370	110	94
8	210	360			794	938	2,150				108	106
9	224	320			731	938	2,440	a1,950			106	110
10	204	291			752	1,730	2,330		a1,950		112	130
11	198	333		a500	759	2,370	2,190				112	147
12	185	299			2,330	1,800	2,100				112	137
13	174	240			3,320	1,610	2,130			268	112	135
14	169	244			2,870	1,660	2,410			247	108	125
15	166	254	a2,250		2,540	1,860	2,910			233	106	112
16	160	244			3,090	2,220	3,250		a1,180	230	102	108
17	160	240			2,680	2,750	3,680			214	98	106
18	157	338			2,380	3,090	5,040			204	93	104
19	163	550			2,090	3,330	5,100			192	89	106
20	186	780			1,870	3,290	5,080			183	85	121
21	295	610		a840	1,750	3,180	4,430	a1,450		174	83	121
22	466	568			1,800	3,340	3,810			163	83	121
23	520	1,110			1,900	3,660	3,440			155	83	121
24	460	1,330			2,050	3,240	3,080			152	83	119
25	405	1,480			1,840	2,870	2,900			157	85	112
26	502	1,910	a890		1,590	2,680	2,860		a660	155	85	112
27	520	2,730			1,280	2,480	2,960	1,530		152	87	114
28	395	2,590		1,340	1,320	2,400	3,160	1,430		152	87	123
29	333	2,130		1,130	-	2,410	3,370	1,300		149	87	114
30	333	1,680		1,070	-	2,590	3,500	1,190		144	87	114
31	342	-		759	-	2,650	-	1,350	-	139	108	-

Month	Second-feet-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	7,983	520	121	258	15,830
November.....	22,972	2,730	240	766	45,560
December.....	42,640	-	-	1,375	84,580
Calendar year 1946.....	511,541	7,280	109	1,401	1,015,000
January.....	21,479	-	-	693	42,600
February.....	47,398	3,320	731	1,693	94,010
March.....	66,482	3,660	890	2,145	131,900
April.....	91,010	5,100	2,090	3,034	180,500
May.....	67,280	-	1,190	2,170	133,400
June.....	36,830	-	-	1,228	73,050
July.....	7,903	-	139	255	18,680
August.....	3,145	130	83	101	6,240
September.....	3,457	147	94	115	6,860
Water year 1946-47.....	418,579	5,100	83	1,147	830,200

a No gage-height record; discharge computed on basis of records for John Day River at Service Creek.

Camas Creek near Ukiah, Oreg.

Location.- Water-stage recorder, lat. 45°09', long. 118°49', in SE $\frac{1}{4}$ sec. 3, T. 5 S., R. 32 E., 1.2 miles upstream from Cable Creek and 6 miles east of Ukiah.

Drainage area.- 121 square miles.

Records available.- May 1914 to September 1917, November 1919 to June 1924, and October 1945 to September 1947 in reports of Geological Survey, May 1914 to September 1917, November 1919 to June 1924, and March 1932 to July 1936 (incomplete) in reports of State engineer; March 1937 to September 1945 (incomplete) in files of State engineer.

Extremes.- Maximum discharge during year, 2,350 second-feet Dec. 12 (gage height, 4.58 feet), from rating curve extended above 340 second-feet; minimum, 2.9 second-feet Aug. 26 (gage height, 0.83 foot).
1914-17, 1919-24, 1932-47: Maximum discharge, that of Dec. 12, 1946; minimum observed, 1 second-foot Aug. 1-9, 1932, June 24 to July 2, 1940.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation; no regulation.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Nov. 11 to Dec. 11)

Oct. 1 to Dec. 11

Dec. 12 to Sept. 30

0.9	3.0	1.5	35	0.8	2.5	1.4	33	2.8	440
1.0	5.0	1.7	62	.9	3.8	1.6	54	3.1	640
1.1	7.8	1.9	101	1.0	6.2	1.8	82	3.5	980
1.2	12	2.1	154	1.1	11	2.0	120	3.9	1,420
1.3	18	2.4	260	1.2	17	2.2	175		
1.4	26			1.3	24	2.5	290		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.0	18	108			95	234	169	22	24	5.0	3.8
2	5.0	15	84			87	230	178	31	23	4.8	3.8
3	5.0	16	78			82	218	203	37	20	4.5	3.4
4	5.8	23	76			80	203	189	43	18	4.5	3.2
5	7.8	20	69		a40	74	192	163	33	16	4.0	3.0
6	7.2	17	62			62	175	145	41	15	3.8	3.0
7	7.8	16	59			67	166	138	36	14	3.5	3.8
8	9.5	16	53			64	189	135	83	13	3.5	6.0
9	8.6	18	47		*b31	64	203	128	226	12	3.5	5.7
10	7.8	16	45		a30	102	206	104	222	11	3.8	6.0
11	7.2	15	127		a25	113	196	86	166	11	4.0	5.7
12	7.0	15	1,350		a40	104	186	73	142	11	4.0	5.0
13	6.7	16	640		a280	106	189	66	116	9.1	3.8	4.8
14	6.4	15	619		a260	130	210	60	96	6.1	3.8	4.3
15	6.4	12	*482		a250	175	234	55	79	6.6	3.8	4.3
16	5.8	11	345		a30	250	246	51	73	6.1	3.7	4.0
17	6.4	15	189		h262	322	317	46	72	6.7	3.7	4.0
18	6.7	19	186			345	452	45	59	6.7	3.5	4.5
19	7.0	59	154			350	446	41	52	6.2	3.5	4.5
20	8.2	54	108			326	418	37	48	5.7	3.4	4.3
21	16	43	95			304	350	35	45	5.7	3.4	4.3
22	16	47	79		a160	340	304	33	38	5.5	3.4	4.0
23	18	143	74			345	254	31	34	5.2	3.4	3.8
24	20	118	91			304	218	28	32	5.2	3.4	3.8
25	24	99	114			274	196	25	29	5.2	3.3	4.0
26	30	179	67			254	178	23	28	5.2	3.3	5.5
27	24	228	53		*100	222	186	23	35	5.5	3.3	5.5
28	20	216	b45		120	218	192	21	40	5.5	3.3	4.8
29	18	188	a55		-	218	203	19	33	5.5	3.2	4.5
30	18	137	a20		-	230	189	19	28	5.5	3.4	4.3
31	16	-	a25		-	226	-	23	-	5.2	3.8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	357.3	30	5.0	11.5	709
November.....	1,804	228	11	60.1	3,580
December.....	5,579	1,350	20	180	11,070
Calendar year 1946	35,730.5	1,350	2.7	97.9	70,880
January.....	930	-	-	30	1,840
February.....	3,318	280	-	119	6,580
March.....	5,938	350	62	192	11,780
April.....	7,180	452	166	239	14,240
May.....	2,392	203	19	77.2	4,740
June.....	2,039	226	22	68.0	4,040
July.....	306.4	24	5.2	9.88	608
August.....	115.3	5.0	3.2	3.72	229
September.....	131.6	6.0	3.0	4.39	261
Water year 1946-47	30,090.6	1,350	3.0	82.4	59,680

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and records for North Fork John Day River near Dale and Middle Fork John Day River at Ritter.

b Stage-discharge relation affected by ice.

c Computed from staff-gage reading.

Middle Fork John Day River at Ritter, Oreg.

Location.- Water-stage recorder, lat. 44°53', long. 119°08', in NW¹ sec. 8, T. 8 S., R. 30 E., at bridge half a mile south of Ritter.

Drainage area.- 526 square miles.

Records available.- October 1929 to September 1947.

Average discharge.- 18 years, 208 second-feet.

Extremes.- Maximum discharge during year, 1,100 second-feet Apr. 18 (gage height, 4.85 feet); maximum gage height, 7.4 feet Jan. 26 (ice jam); minimum discharge, 13 second-feet Aug. 21 (gage height, 1.63 feet).

1929-47: Maximum discharge, 4,000 second-feet Mar. 19, 1932 (gage height, 7.78 feet), from rating curve extended above 1,600 second-feet; minimum, 1.0 second-foot Dec. 10, 1932.

Remarks.- Records fair except those for periods of ice effect or no gage-height record, which are poor. Several small diversions above station for irrigation.

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Jan. 25

Jan. 26 to Sept. 30

1.8	20	2.4	97	3.8	510	1.6	12	2.5	70	4.0	545
1.9	28	2.7	160	4.2	720	1.7	16	2.5	101	4.5	825
2.0	37	3.0	235	4.5	920	1.8	21	2.8	155	4.9	1,130
2.2	63	3.4	355			1.9	28	3.1	219		
						2.1	46	3.5	335		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	111	259	165	161	247	560	662	296	113	34	21
2	27	90	222	115	245	247	555	754	347	104	31	20
3	28	66	202	b90	242	234	545	902	322	93	30	18
4	38	77	202	b95	208	232	518	962	309	85	30	18
5	49	97	232	b120	210	214	500	978	269	82	27	18
6												
7	45	89	218	b160	205	188	498	962	278	78	26	18
8	49	90	198	b150	201	205	455	994	264	73	25	20
9	65	84	190	b140	186	203	473	978	332	69	24	39
10	59	71	172	b160	177	205	527	867	473	66	25	42
11	52	83	170	b180	177	293	500	694	431	61	27	35
12												
13	49	84	178	b170	183	455	478	595	387	61	27	33
14	45	71	568	b150	346	351	451	555	328	61	26	29
15	44	60	815	b130	718	322	460	522	290	56	25	28
16	43	76	920	a110	635	347	514	468	266	53	24	24
17	42	69	323	a90	540	411	610	439	236	50	23	22
18												
19	41	52	635	a100	580	514	656	423	229	49	19	23
20	38	83	386	a110	527	625	760	411	281	47	18	26
21	41	83	331	a120	486	694	1,070	391	236	45	18	29
22	41	131	372	b130	435	742	1,060	383	208	44	18	28
23	50	168	334	b140	383	730	1,030	383	194	42	16	28
24												
25	88	131	301	b150	355	700	910	375	188	40	14	27
26	121	127	265	b180	347	712	799	367	169	38	15	27
27	121	230	225	b200	383	754	724	339	159	38	18	27
28	103	220	208	b250	439	694	662	328	147	40	18	25
29	99	200	210	b450	399	615	625	322	138	39	18	25
30												
31	133	474	225	b395	343	570	615	318	132	39	17	26
27	105	525	301	255	278	522	635	343	153	40	16	27
28	83	466	202	196	287	500	662	347	157	41	15	27
29	74	402	165	183	-	500	694	293	142	41	16	30
30	31	313	123	177	-	527	700	275	127	42	20	33
31	79	-	133	159	-	560	-	322	-	37	22	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	1,959	133	26	65.2	3,890
November.....	4,822	525	52	161	9,560
December.....	9,789	920	123	316	19,420
Calendar year 1946.....	112,994	1,740	17	310	224,100
January.....	5,220	450	90	168	10,350
February.....	9,676	718	161	346	19,190
March.....	14,113	754	188	455	27,990
April.....	19,244	1,070	451	641	38,170
May.....	16,952	994	275	547	33,620
June.....	7,488	473	127	250	14,850
July.....	1,767	111	37	57.0	3,500
August.....	682	34	14	22.0	1,350
September.....	791	42	18	26.4	1,570
Water year 1946-47.....	92,503	1,070	14	253	183,500

a No gage-height record; discharge computed on basis of weather records and records for North Fork John Day River at Monument.

b Stage-discharge relation affected by ice.

Fox Creek at gorge, near Fox, Oreg.
(The lower part of this stream is named Cottonwood Creek)

Location.- Water-stage recorder, lat. 44°37', long. 119°16', in NW¼ sec. 17, T. 11 S., R. 29 E., at head of gorge, 6 miles southwest of Fox.

Records available.- October 1930 to September 1947:

Average discharge.- 17 years, 20.1 second-feet.

Extremes.- Maximum discharge during year, 611 second-feet Feb. 12 (gage height, 3.95 feet), from rating curve extended above 240 second-feet; no flow at times.
1930-47: Maximum discharge, 800 second-feet Mar. 18, 1932 (gage height, 4.55 feet), from rating curve extended above 180 second-feet; maximum gage height observed, 5.37 feet Feb. 21, 1943 (backwater from ice); no flow at times.

Remarks.- Records fair except those for periods of ice effect, which are poor. Several diversions above station for irrigation.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Feb. 12

Feb. 13 to Sept. 30

0.4	0	0.9	5.4	1.8	72	0.4	0	0.9	4.0	1.8	69
.5	.2	1.0	8.5	2.1	115	.5	.1	1.0	6.3	2.0	97
.6	.5	1.2	18	2.4	172	.6	.5	1.2	14	2.3	150
.7	1.7	1.4	35	2.8	269	.7	1.2	1.4	29	2.6	218
.8	3.2	1.6	51	3.2	391	.8	2.3	1.6	48	3.0	324

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	2.6	16	b10	b10	25	54	46	8.5	4.0	0.1	
2	0	2.3	12	b5.0	b30	31	56	42	13	3.3	.1	
3	0	1.8	11	b5.0	b35	26	57	41	13	2.8	.1	
4	0	2.5	10	b6.0	b20	25	56	38	12	2.5	0	
5	.1	3.6	10	b10	b20	21	57	36	12	2.2	0	
6	.1	3.4	11	13	b18	18	58	32	17	2.0	0	
7	.4	3.2	10	b9.0	b15	24	56	26	17	2.0	0	
8	1.0	2.8	9.7	b8.0	b11	27	67	23	39	2.0	0	
9	.6	3.0	8.2	b8.0	b10	29	102	26	60	1.5	0	
10	.4	3.0	8.5	b8.0	b10	74	84	23	62	1.1	0	
11	.4	2.6	9.3	b6.0	b20	86	59	19	42	1.2	0	
12	.4	2.8	12	b6.0	b350	44	51	16	32	1.1	0	
13	.4	3.0	16	b5.0	291	35	49	13	25	1.0	0	
14	.4	2.9	32	b4.0	154	31	53	11	19	.7	0	
15	.4	2.8	32	b3.0	127	31	60	9.2	16	.6	0	
16	.4	2.2	24	b3.5	137	34	66	8.2	15	.5	0	
17	.4	2.9	b15	b3.5	102	38	84	6.6	20	.4	0	
18	.5	3.0	b20	*b4.0	75	42	118	5.6	16	.4	0	
19	.4	5.5	b35	b5.0	59	46	115	5.8	12	.3	0	
20	.6	4.3	29	b4.5	52	49	108	5.6	11	.2	0	
21	1.2	4.7	24	b4.0	50	50	94	5.2	11	.1	0	
22	2.0	8.2	b21	b4.0	52	59	79	4.7	8.9	.1	0	
23	2.2	9.7	b18	b5.0	51	72	70	4.0	7.6	.1	0	
24	2.4	8.5	b16	11	47	61	64	3.8	6.9	.1	0	
25	2.2	8.5	b16	b15	38	52	58	3.5	6.1	.1	0	
26	2.6	20	18	b70	30	46	55	3.2	5.6	.2	0	
27	2.3	44	22	b20	24	40	53	3.2	6.3	.3	0	
28	2.0	45	b15	b10	29	36	52	3.8	6.3	.2	0	
29	2.2	26	b13	b10	-	35	51	4.2	5.6	.1	0	
30	2.2	16	b10	b9.0	-	41	50	5.8	4.7	.1	0	
31	2.3	-	b12	b8.0	-	51	-	9.2	-	.2	0	

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	30.5	2.6	0	0.98	60
November.....	250.1	45	1.8	8.34	496
December.....	515.7	35	8.2	16.6	1,020
Calendar year 1946.....	7,134.7	201	0	19.5	14,140
January.....	292.5	70	3.0	9.44	580
February.....	1,865	350	10	66.6	3,700
March.....	1,279	86	18	41.3	2,540
April.....	2,036	118	49	67.9	4,040
May.....	483.6	46	3.2	15.6	959
June.....	530.5	62	4.7	17.7	1,050
July.....	51.4	4.0	.1	1.0	62
August.....	.3	.1	0	.01	.6
September.....	0	0	0	0	0
Water year 1946-47.....	7,314.6	350	0	20.0	14,510

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

DESCHUTES RIVER BASIN

Deschutes River below Snow Creek, near Lapine, Oreg.

Location.- Water-stage recorder, lat. 43°49', long. 121°46', in NW¹ sec. 28, T. 20 S., R. 8 E., 50 feet downstream from Snow Creek, upstream from flowline of Crane Prairie Reservoir, and 17 miles northwest of Lapine. Altitude of gage, about 4,445 feet.

Records available.- November 1937 to September 1947.

Extremes.- Maximum discharge during year, 250 second-feet Oct. 1-4, July 27 (maximum gage height, 2.26 feet Oct. 1-4); minimum, 103 second-feet Mar. 22, 24-28, Apr. 12.

1937-47: Maximum discharge, 362 second-feet Aug. 31, Sept. 1, 1943 (gage height, 2.42 feet); minimum, 43 second-feet Dec. 27, 1941 (gage height, 1.12 feet).

Remarks.- Records good except those for February and March, which are fair, and those for periods of no gage-height record, which are poor. No diversion or regulation above station.

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Feb. 5 Feb. 6 to Sept. 30

1.5	133	1.3	87
1.6	158	1.4	113
1.8	210	1.6	167
2.0	263	1.9	250

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	250	197	a174	a147	a134	108	110	148	162	170	a234	216
2	247	192	a172	a147	a133	108	110	148	162	170	a235	216
3	247	189	a170	*146	a133	110	110	151	159	170	a236	216
4	247	187	a168	140	a133	108	110	154	162	172	236	214
5	241	187	a167	140	a132	108	110	154	162	172	239	214
6	239	184	a165	140	132	108	108	156	162	175	239	211
7	239	181	a163	138	129	108	105	156	164	175	239	216
8	236	179	a161	138	126	108	105	159	167	178	239	211
9	233	179	a160	138	126	108	105	162	167	178	236	214
10	228	179	a158	138	126	110	105	159	164	180	236	208
11	228	176	156	138	126	110	105	159	162	180	236	208
12	228	174	163	138	126	108	105	159	162	183	236	205
13	226	174	176	140	126	108	105	159	162	186	236	202
14	223	174	179	140	124	105	108	159	159	189	236	202
15	220	171	176	a140	124	105	108	159	159	191	233	200
16	215	171	168	a139	126	105	110	159	162	191	233	200
17	215	174	163	a139	121	105	118	156	162	194	233	197
18	210	187	161	a139	121	105	121	156	162	197	230	194
19	210	181	161	a138	121	105	124	156	162	200	230	194
20	215	179	158	a138	118	105	126	156	159	202	228	191
21	215	179	161	a138	118	105	126	156	159	205	228	189
22	223	179	156	a137	116	108	129	156	162	205	228	189
23	210	176	153	a137	116	105	132	156	162	208	228	186
24	207	174	153	a137	113	105	135	156	162	211	225	186
25	205	179	a152	a136	113	103	135	156	162	214	225	183
26	205	184	a152	a136	113	103	137	156	164	225	222	180
27	202	184	a151	a136	110	103	137	156	164	236	222	180
28	200	a179	a150	a135	108	105	140	156	164	236	225	180
29	197	a177	a150	a135	-	105	145	159	164	233	222	178
30	197	a175	a149	a134	-	105	145	159	167	234	222	178
31	194	-	a148	a134	-	110	-	156	-	234	219	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	6,852	250	194	221	13,590
November.....	5,401	197	171	180	10,710
December.....	4,994	179	148	161	9,910
Calendar year 1946	64,240	329	-	176	127,400
January.....	4,296	147	134	139	8,520
February.....	3,444	134	108	123	6,830
March.....	3,302	110	103	107	6,550
April.....	3,569	145	105	119	7,080
May.....	4,847	162	148	156	9,610
June.....	4,872	167	159	162	9,660
July.....	6,094	236	170	197	12,090
August.....	7,166	239	219	231	14,210
September.....	5,956	216	178	199	11,820
Water year 1946-47	60,795	250	103	167	120,600

* Winter discharge measurement made on this day.

a No gage-height record; discharge interpolated.

b Stage-discharge relation affected by ice.

Deschutes River at Crane Prairie, near Lapine, Oreg.

Location.- Water-stage recorder, lat. 43°45', long. 121°47', in NW¹ sec. 16, T. 21 S., R. 8 E., 200 yards downstream from Crane Prairie Dam and 15 miles northwest of Lapine.

Drainage area.- 244 square miles.

Records available.- January 1914 to June 1917, February 1922 to September 1947.

Average discharge.- 26 years (1914-15, 1922-47), 185 second-feet.

Extremes (regulated).- Maximum discharge during year, 1,170 second-feet July 28 (gage height, 3.34 feet); minimum, 15 second-feet Nov. 6, 7.
1914-17, 1922-47: Maximum discharge, that of July 28, 1947; minimum, 2 second-feet Dec. 21, 1940, Nov. 1, 1942.

Remarks.- Records good except those below 50 second-feet, which are fair. No diversion above station; flow partly regulated since Nov. 4, 1922, by Crane Prairie Reservoir (see p. 57).

Rating table, water year 1946-47
(gage height, in feet, and discharge, in second-feet)

1.0	110	1.6	280	2.7	760
1.2	157	1.9	395	3.1	1,010
1.4	215	2.3	565	3.4	1,215

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	256	212	212	227	215	171	137	212	239	331	706	355
2	256	215	212	227	215	171	137	212	239	347	355	351
3	256	215	212	227	215	171	137	215	239	315	355	343
4	256	215	212	227	215	171	137	233	239	315	355	343
5	256	215	212	224	215	171	137	239	239	315	355	339
6	256	133	212	218	215	171	137	239	239	315	355	339
7	252	122	212	215	215	171	137	239	239	315	355	339
8	256	209	212	215	215	171	137	239	239	315	355	339
9	252	209	212	215	215	171	137	239	239	327	351	339
10	245	212	212	215	215	171	137	239	239	355	351	335
11	236	212	212	215	212	171	134	239	239	355	569	319
12	236	212	212	215	209	171	137	239	239	355	655	308
13	236	212	212	215	209	171	137	239	239	355	601	304
14	236	212	212	215	209	171	137	239	239	355	588	298
15	236	212	212	215	209	171	137	239	239	359	517	298
16	236	212	212	215	209	171	137	239	239	367	347	294
17	236	212	212	215	212	171	137	239	239	371	347	308
18	236	212	212	212	212	171	137	239	239	371	347	319
19	236	212	212	212	212	154	180	239	239	371	347	319
20	236	212	212	212	209	137	171	239	239	371	343	319
21	236	212	212	212	209	137	182	239	239	371	339	319
22	218	212	212	212	209	137	188	239	239	367	331	319
23	209	212	212	212	203	137	197	239	245	367	335	323
24	209	212	221	212	203	137	206	239	270	371	335	312
25	209	212	230	212	203	137	209	239	270	387	335	290
26	209	212	230	215	203	137	212	239	266	391	347	290
27	209	212	227	215	185	137	212	239	266	387	540	298
28	209	212	227	215	171	137	212	239	266	630	912	298
29	212	212	227	215	-	137	212	239	266	1,160	900	298
30	212	212	227	215	-	137	212	239	266	1,140	767	298
31	212	-	227	215	-	137	-	239	-	1,090	355	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	7,245	256	209	234	14,370
November.....	6,197	215	122	207	12,290
December.....	6,692	230	212	216	13,270
Calendar year 1946	72,085	403	11	197	145,000
January.....	8,701	227	212	216	13,290
February.....	5,858	215	171	208	11,580
March.....	4,876	171	137	157	9,670
April.....	4,836	212	134	161	9,590
May.....	7,325	239	212	236	14,530
June.....	7,373	270	239	246	14,620
July.....	13,541	1,160	315	437	26,860
August.....	14,050	912	331	453	27,670
September.....	9,553	355	290	318	18,950
Water year 1946-47	94,227	1,160	122	258	186,900

DESCHUTES RIVER BASIN

Deschutes River below Wickiup Reservoir, near Lapine, Oreg.

Location.- Water-stage recorder, lat. 43°41', long. 121°41', in NE $\frac{1}{4}$ sec. 7, T. 22 S., R. 9 E., about 2,000 feet downstream from Wickiup Dam (under construction, 1938-47), and 9 miles west of Lapine.

Records available.- June 1938 to September 1947.

Extremes (regulated).- Maximum discharge during year, 1,500 second-feet Oct. 4, May 27 (maximum gage height, 6.45 feet Oct. 4); minimum, 26 second-feet Nov. 13 (gage height, 0.78 foot); minimum daily, 250 second-feet Mar. 26.
1938-47: Maximum discharge, 1,600 second-feet Nov. 11, 1943; (maximum gage height, 6.53 feet Sept. 27, 1946; minimum, that of Nov. 13, 1946; minimum daily, 189 second-feet Feb. 14, 1945.

Remarks.- Records good. Flow regulated by Crane Prairie Reservoir and since Dec. 24, 1942, by Wickiup Reservoir (see p. 57).

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,430	922	454	340	364	493	446	738	1,040	1,350	1,080	1,090
2	1,430	970	457	343	367	488	358	722	990	1,350	1,080	1,070
3	1,400	958	460	343	367	488	394	722	910	1,280	1,080	1,070
4	1,370	970	464	343	367	488	439	734	886	1,270	1,060	1,070
5	1,350	974	467	343	370	488	457	762	838	1,270	1,050	1,040
6	1,300	830	467	346	373	492	457	766	702	1,270	1,050	1,030
7	1,270	454	470	346	373	498	457	762	738	1,260	1,050	1,030
8	1,260	415	474	349	370	484	470	802	742	1,260	1,080	1,030
9	1,240	439	478	349	370	484	520	810	722	1,310	1,090	1,030
10	1,220	457	355	349	370	484	576	802	674	1,340	1,090	1,010
11	1,200	478	403	349	373	481	590	798	682	1,340	1,090	994
12	1,190	356	509	352	373	481	593	798	682	1,320	1,100	978
13	1,170	289	409	355	376	481	590	858	726	1,310	1,100	962
14	1,160	338	375	355	376	481	593	a900	774	1,310	1,110	962
15	1,150	367	376	355	376	481	610	a920	778	1,310	1,120	962
16	1,130	376	367	355	376	484	726	a920	838	1,300	1,150	942
17	1,120	385	385	355	376	481	706	a930	870	1,280	1,160	918
18	1,100	394	406	355	376	484	690	a950	934	1,300	1,160	902
19	1,210	400	409	355	376	484	678	a1,020	978	1,340	1,170	902
20	1,270	406	409	355	373	481	678	a1,000	998	1,340	1,180	902
21	1,250	412	412	358	373	481	678	998	1,030	1,330	1,170	902
22	1,220	418	415	358	376	481	678	998	1,030	1,260	1,170	902
23	1,190	421	418	358	376	481	666	1,020	1,040	1,270	1,170	902
24	1,160	424	421	361	376	481	663	1,060	1,170	1,260	1,160	898
25	1,140	430	424	361	457	333	663	1,060	1,200	1,250	1,150	898
26	1,110	436	379	384	502	250	663	1,150	1,270	1,250	1,140	898
27	1,080	439	332	364	484	258	663	1,260	1,260	1,250	1,140	898
28	1,050	442	332	364	484	289	710	1,140	1,250	1,200	1,130	898
29	1,030	445	332	364	-	278	810	1,130	1,240	1,130	1,100	898
30	1,010	451	335	364	-	298	822	1,080	1,250	1,130	1,090	898
31	990	-	338	364	-	423	-	1,040	-	1,120	1,090	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	37,200	1,430	990	1,200	73,790
November.....	15,556	982	289	519	30,850
December.....	12,730	509	332	411	25,250
Calendar year 1946	271,552	1,490	234	744	536,600
January.....	10,972	364	340	354	21,760
February.....	10,870	502	364	388	21,560
March.....	13,734	498	250	443	27,240
April.....	18,044	822	358	601	35,790
May.....	28,650	1,260	722	924	56,830
June.....	28,242	1,270	674	941	56,020
July.....	39,560	1,350	1,120	1,276	78,470
August.....	34,560	1,180	1,050	1,115	68,550
September.....	28,866	1,090	898	863	57,290
Water year 1946-47	279,004	1,430	250	764	553,400

a No gage-height record; discharge computed on basis of records for station at Pringle Falls, near Lapine.

Deschutes River at Pringle Falls, near Lapine, Oreg.

Location.- Water-stage recorder, lat 43°44', long. 121°37', in SW $\frac{1}{4}$ sec. 23, T. 21 S., R. 9 E., half a mile upstream from bridge at Pringle Falls and 7 miles northwest of Lapine.

Records available.- December 1915 to June 1917, June 1922 to September 1947.

Average discharge.- 24 years (1923-47), 702 second-feet.

Extremes (regulated).- Maximum discharge during year, 1,440 second-feet May 27 (gage height, 2.82 feet); minimum not determined, occurred Nov. 12, 13 (stage below inlet pipe); minimum daily, 251 second-feet Mar. 26-28.
1915-17, 1922-47: Maximum discharge, 1,450 second-feet Sept. 10, 11, 1943, Sept. 27, 28, 1946 (maximum gage height, 2.91 feet Sept. 10, 11, 1943); minimum not determined; minimum daily, 196 second-feet Feb. 15-23, 1945.

Remarks.- Records excellent except those for periods of no gage-height record; which are good. No diversion above station. Flow regulated since 1922 by Crane Prairie Reservoir, and since Dec. 24, 1942, by Wickiup Reservoir (see p. 57).

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 12

Nov. 13 to Sept. 30

0.5	227	1.6	640
.7	283	2.0	865
1.0	372	2.4	1,120
1.3	490	2.8	1,390

0.8	320	1.9	805
1.1	416	2.3	1,080
1.4	540	2.8	1,420

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,370	979	471	355	366	500	475	772	1,070	al,300	al,060	1,100
2	1,360	975	471	355	369	500	582	766	1,020	al,300	al,060	1,080
3	1,340	949	475	355	369	495	413	761	958	al,250	al,040	1,070
4	1,310	967	479	358	369	495	463	772	913	al,240	al,030	1,070
5	1,300	967	483	358	372	495	483	794	877	al,240	al,030	1,050
6	1,270	895	483	341	372	495	483	805	750	al,240	al,030	1,030
7	1,220	580	483	341	372	495	483	800	785	al,230	al,020	1,030
8	1,210	450	487	341	372	495	495	829	778	al,230	al,040	1,030
9	1,190	481	491	341	372	495	550	841	772	al,250	al,050	1,020
10	1,190	500	408	341	372	495	600	829	722	1,280	al,050	1,020
11	1,170	520	374	344	379	495	615	829	722	1,280	al,060	1,000
12	1,160	418	508	344	a379	495	615	829	722	1,270	al,060	984
13	1,150	347	443	347	a379	495	615	877	756	1,270	al,060	970
14	1,130	372	392	347	a379	500	615	925	794	1,260	al,070	970
15	1,130	382	392	347	a379	500	615	925	794	1,260	1,090	964
16	1,120	392	385	350	a379	500	744	932	853	1,250	1,120	a950
17	al,110	399	406	350	a379	500	728	944	883	1,240	1,140	a940
18	al,100	409	420	350	379	500	717	964	938	1,240	1,140	a920
19	al,150	416	420	353	379	500	708	1,040	984	1,280	1,140	a920
20	al,220	420	424	353	379	500	706	1,020	997	1,270	1,160	a920
21	1,190	428	428	356	379	500	706	1,020	1,030	1,280	1,160	a920
22	1,170	432	428	360	379	504	700	1,020	1,040	1,220	1,160	a920
23	1,150	436	432	360	379	504	695	1,040	1,050	1,220	1,160	a920
24	1,130	439	432	360	379	504	684	1,090	1,150	1,220	1,160	913
25	1,100	443	432	363	439	376	690	1,090	1,190	1,200	1,140	913
26	1,080	451	376	360	504	251	690	1,130	1,250	1,200	1,130	913
27	1,080	455	329	360	491	251	890	1,280	1,240	1,210	1,150	913
28	1,040	455	329	363	495	251	722	1,150	1,220	1,160	1,130	913
29	1,020	459	329	363	-	254	800	1,140	al,210	1,120	1,110	913
30	1,000	467	332	363	-	257	829	1,110	al,220	1,100	1,110	913
31	985	-	335	366	-	380	-	1,070	-	al,090	1,110	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	36,125	1,370	985	1,165	71,650
November.....	16,251	979	347	541	32,190
December.....	13,077	508	329	422	25,940
Calendar year 1946	266,716	1,440	250	731	529,000
January.....	10,845	366	335	350	21,510
February.....	10,940	504	368	391	21,700
March.....	13,977	504	251	451	27,720
April.....	18,709	829	382	624	37,110
May.....	29,394	1,280	761	948	58,500
June.....	26,666	1,250	722	956	56,860
July.....	38,190	1,500	1,090	1,232	75,750
August.....	35,900	1,180	1,020	1,094	67,240
September.....	29,189	1,100	913	975	57,900
Water year 1946-47	279,243	1,370	251	765	553,900

a No gage-height record; discharge computed on basis of records for station below Wickiup, near Lapine.

Deschutes River at Benham Falls, near Bend, Oreg.

Location.- Water-stage recorder, lat. 43°56', long. 121°25', in SE $\frac{1}{4}$ sec. 9, T. 19 S., R. 11 E., 50 yards upstream from head of Benham Falls, $1\frac{1}{2}$ miles downstream from dam site for proposed Benham Falls Reservoir, and 10 miles southwest of Bend. Altitude of gage, 4,144 feet (from river-profile map).

Records available.- March 1909 to September 1913, August 1920 to September 1921, February 1924 to September 1947. July 1906 to February 1909 and April to September 1914 at West Ranch, 7 miles upstream.

Average discharge.- 30 years (1906-13, 1924-47), 1,305 second-feet.

Extremes.- Maximum discharge during year, 2,000 second-feet July 3 (gage height, 2.48 feet); minimum daily, 721 second-feet Jan. 16.

1906-13, 1920-21, 1924-47: Maximum discharge, 5,000 second-feet (estimated) Nov. 27, 1909 (gage height not determined); minimum daily, 510 second-feet Dec. 15, 1945.

Remarks.- Records excellent except those for periods of shifting control or no gage-height record, which are good. Small diversions above station for irrigation. Flow regulated since 1922 by Crane Prairie and Crescent Lake Reservoirs, and since December 1942 by Wickiup Reservoir (see p. 57).

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Discharge, in second-foot, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,840	1,460	1,110	845	900	1,050	1,010	1,500	1,790	1,900	1,780	1,720
2	1,830	1,450	1,080	h761	890	1,050	1,150	1,470	1,800	1,950	1,730	1,710
3	1,830	1,440	1,050	730	900	1,060	1,080	1,450	1,740	1,980	1,720	1,700
4	1,810	1,430	1,040	761	914	1,060	1,090	1,450	1,670	1,950	1,710	1,680
5	1,790	1,420	1,030	841	918	1,050	1,130	1,450	1,640	1,930	1,690	1,670
6	1,760	1,440	1,020	893	932	1,050	1,130	1,480	1,580	1,920	1,670	1,660
7	1,730	1,350	1,020	877	936	1,050	1,120	1,500	1,470	1,910	1,660	1,650
8	1,690	1,100	1,010	853	932	1,050	1,120	1,500	1,500	1,910	1,650	1,640
9	1,660	990	1,010	841	928	1,050	1,130	1,540	1,490	1,900	1,660	1,640
10	1,640	1,000	1,000	837	918	1,070	1,170	1,550	1,470	1,900	1,690	1,640
11	1,630	1,010	936	841	923	1,080	1,210	1,560	1,430	1,940	1,690	1,630
12	1,620	1,020	885	845	941	1,080	1,220	1,580	1,430	1,940	1,690	1,620
13	1,610	940	1,030	849	950	1,090	1,220	1,580	1,420	1,930	1,680	1,570
14	1,590	820	1,020	845	950	1,090	1,220	1,620	1,430	1,920	1,680	1,540
15	1,590	830	964	757	972	1,080	1,220	1,650	1,460	1,910	1,700	1,540
16	1,570	840	1,000	721	1,000	1,080	1,250	1,640	1,450	1,900	1,710	1,530
17	1,560	840	1,010	757	995	1,090	1,340	1,630	1,500	1,880	1,720	1,510
18	1,550	860	982	801	986	1,100	1,340	1,630	1,530	1,870	1,750	1,490
19	1,540	930	964	829	977	1,110	1,340	1,640	1,560	1,860	1,750	1,470
20	1,550	970	990	873	972	1,120	1,360	1,690	1,620	1,890	1,740	1,460
21	1,650	1,000	1,020	849	964	1,130	1,360	1,690	1,620	1,900	1,750	1,440
22	1,660	1,020	1,040	841	959	1,130	1,380	1,680	1,640	1,890	1,760	1,430
23	1,650	990	1,010	853	954	1,150	1,390	1,680	1,640	1,860	1,760	1,420
24	1,640	980	995	869	946	1,160	1,380	1,680	1,640	1,840	1,760	1,420
25	1,640	1,000	982	873	946	1,160	1,370	1,710	1,710	1,850	1,760	1,420
26	1,620	1,030	1,020	910	986	1,040	1,370	1,710	1,810	1,840	1,750	1,420
27	1,590	1,060	986	901	1,030	893	1,360	1,730	1,850	1,860	1,730	1,410
28	1,560	1,060	861	910	1,050	881	1,380	1,660	1,680	1,880	1,730	1,410
29	1,520	1,100	833	923	-	869	1,410	1,800	1,890	1,860	1,730	1,390
30	1,490	1,110	813	930	-	869	1,500	1,820	1,890	1,810	1,720	1,390
31	1,470	-	833	910	-	889	-	1,810	-	1,790	1,720	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	50,880	1,840	1,470	1,641	100,900
November.....	32,490	1,460	820	1,083	64,440
December.....	30,544	1,110	813	985	60,580
Calendar year 1946	484,372	2,000	626	1,327	960,800
January.....	26,126	930	721	843	51,820
February.....	26,669	1,050	890	952	52,900
March.....	32,651	1,180	869	1,053	64,760
April.....	37,770	1,500	1,010	1,259	74,920
May.....	50,280	1,860	1,450	1,622	99,730
June.....	48,550	1,890	1,420	1,618	96,300
July.....	58,650	1,980	1,790	1,892	116,300
August.....	53,260	1,760	1,650	1,718	105,600
September.....	46,220	1,720	1,590	1,541	91,680
Water year 1946-47	494,090	1,980	721	1,354	979,900

h Computed from staff-gage readings.

Note.- No gage-height record Oct. 1-9, 12-30, Nov. 2-28, Jan. 3, Jan. 30 to Feb. 3; discharge computed on basis of recorded range in stage and unpublished records for stations at Ryan Ranch, at Camp Abbot Bridge, and below Benham Falls, near Bend.

Deschutes River below Lava Island, near Bend, Oreg.

Location.- Water-stage recorder, lat. 44°00', long. 121°22', in SW $\frac{1}{4}$ sec. 23, T. 18 S., R. 11 E., three-quarters of a mile downstream from Lava Island, 1 mile downstream from intake of Arnold Canal, and 6 miles southwest of Bend.

Records available.- March 1926 to September 1947.

Average discharge.- 21 years, 1,059 second-feet.

Extremes.- Maximum discharge during year, 1,800 second-feet July 3 (gage height, 1.65 feet); minimum, 640 second-feet Jan. 3 (gage height, 0.25 foot).

1926-47: Maximum discharge, 1,890 second-feet Sept. 2, 3, 1946 (gage height, 1.83 feet); minimum, 482 second-feet Dec. 14, 1945.

Remarks.- Records good. Arnold Canal diverts water above station for irrigation (see p. 64). Flow regulated by Crescent Lake, Crane Prairie, and Wickiup Reservoirs (see p. 57).

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Dec. 10)

0.2	610	1.0	1,190
.4	735	1.3	1,460
.7	940	1.7	1,850

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,660	1,380	1,040	780	828	948	912	1,320	1,510	1,640	1,590	1,510
2	1,650	1,360	1,010	b755	807	948	1,050	1,260	1,510	1,660	1,540	1,500
3	1,640	1,330	996	b700	821	940	964	1,250	1,500	1,730	1,530	1,500
4	1,630	1,320	980	b720	828	940	988	1,270	1,420	1,760	1,520	1,480
5	1,610	1,310	964	768	814	940	1,030	1,320	1,380	1,680	1,500	1,460
6	1,600	1,320	956	814	807	940	1,030	1,280	1,330	1,670	1,490	1,460
7	1,580	1,290	948	807	807	940	1,020	1,290	1,230	1,670	1,470	1,440
8	1,540	1,020	948	768	821	940	1,020	1,300	1,220	1,660	1,460	1,430
9	1,510	884	940	742	842	948	1,020	1,320	1,210	1,660	1,480	1,420
10	1,500	884	940	742	835	964	1,060	1,340	1,190	1,660	1,560	1,420
11	1,480	891	898	761	835	964	1,100	1,340	1,230	1,690	1,500	1,420
12	1,470	898	828	774	849	964	1,120	1,360	1,300	1,700	1,500	1,400
13	1,460	*858	853	780	856	972	1,120	1,400	1,230	1,700	1,500	1,360
14	1,440	754	b900	b770	856	972	1,120	1,460	1,240	1,710	1,500	1,320
15	1,420	754	856	b710	877	964	1,100	1,430	1,260	1,750	1,500	1,310
16	1,420	761	891	b750	898	964	1,100	1,420	1,260	1,680	1,500	1,290
17	1,410	774	926	780	891	964	1,200	1,410	1,290	1,670	1,520	1,290
18	1,400	768	926	787	884	972	1,200	1,410	1,320	1,660	1,550	1,270
19	1,390	787	898	787	877	988	1,200	1,410	1,350	1,640	1,560	1,240
20	1,420	814	919	800	870	996	1,210	1,440	1,390	1,660	1,540	1,230
21	1,480	891	948	768	863	1,000	1,210	1,440	1,390	1,670	1,550	1,210
22	1,500	926	972	768	856	988	1,220	1,470	1,440	1,670	1,560	1,200
23	1,500	891	948	774	849	996	1,230	1,510	1,470	1,650	1,570	1,190
24	1,480	898	926	780	821	996	1,220	1,460	1,420	1,630	1,560	1,190
25	1,500	926	912	794	814	1,020	1,210	1,480	1,476	1,830	1,560	1,190
26	1,510	964	*935	821	863	926	1,200	1,470	1,540	1,630	1,580	1,180
27	1,490	1,000	912	807	940	800	1,190	1,470	1,580	1,640	1,610	1,180
28	1,450	1,000	794	821	948	787	1,190	1,570	1,620	1,650	1,530	1,180
29	1,420	1,020	761	835	-	780	1,210	1,540	1,630	1,670	1,530	1,170
30	1,410	1,040	754	849	-	787	1,270	1,540	1,630	1,680	1,530	1,180
31	1,390	-	768	835	-	814	-	1,530	-	1,590	1,510	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	46,350	1,660	1,390	1,495	91,930
November.....	29,711	1,380	754	990	58,930
December.....	28,325	1,040	754	914	56,180
Calendar year 1946	440,760	1,860	622	1,208	874,200
January.....	24,147	849	700	779	47,890
February.....	23,857	948	607	852	47,320
March.....	29,062	1,020	780	937	57,640
April.....	33,714	1,270	912	1,124	66,870
May.....	43,510	1,570	1,250	1,404	86,300
June.....	41,560	1,630	1,190	1,385	82,430
July.....	51,760	1,760	1,590	1,670	102,700
August.....	47,400	1,610	1,460	1,529	94,020
September.....	39,640	1,510	1,170	1,321	78,820
Water year 1946-47	439,036	1,760	700	1,203	870,800

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Deschutes River below Bend, Oreg.

Location.- Water-stage recorder, lat. 44°05', long. 121°18', in S₁ sec. 20, T. 17 S., R. 12 E., half a mile downstream from North Canal Dam and 2 miles north of Bend.

Records available.- October 1914 to September 1947.

Average discharge.- 33 years, 617 second-feet.

Extremes.- Maximum discharge during year, 1,130 second-feet Dec. 30 (gage height, 3.17 feet); minimum, 6 second-feet May 13, Aug. 20 (gage height, 0.85 foot).
1914-47: Maximum discharge, 2,500 second-feet Dec. 7, 1921 (gage height, 3.9 feet); minimum, 1 second-foot Aug. 25, 1930.
Maximum discharge known near this site since 1905, 4,820 second-feet Nov. 27, 1909.

Remarks.- Records good. Six large canals divert water above station for irrigation (see p. 84). Flow regulated by hydroelectric plant at Bend, and by Crane Prairie, Wicklup, and Crescent Lake Reservoirs (see p. 57).

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	502	998	872	768	836	926	828	111	97	43	132	55
2	509	1,010	800	760	805	a930	985	65	156	51	119	67
3	488	998	752	689	775	a930	908	38	225	103	all0	69
4	488	980	752	689	790	a930	844	32	192	150	92	67
5	482	962	760	731	798	a930	710	90	192	69	85	57
6	476	980	845	798	798	a930	560	53	225	48	61	55
7	502	980	664	805	798	a930	572	43	122	44	43	48
8	516	744	618	768	805	934	534	36	150	27	32	43
9	530	572	632	731	836	942	463	43	180	18	31	53
10	523	688	580	738	828	960	355	48	220	31	111	69
11	544	704	696	752	828	960	265	41	192	41	48	105
12	580	720	800	768	844	960	200	39	235	55	43	105
13	632	672	935	775	852	960	180	39	139	57	36	90
14	610	544	944	752	860	836	128	103	97	57	25	73
15	580	551	854	763	775	663	69	57	92	119	20	73
16	776	572	881	675	592	540	55	28	36	69	30	83
17	899	595	917	738	540	560	80	23	44	69	26	73
18	890	588	917	745	527	560	59	30	38	53	33	63
19	890	618	890	760	553	791	55	31	31	46	28	50
20	917	602	917	661	798	976	55	50	55	51	9	48
21	962	656	685	469	852	976	61	51	46	41	14	43
22	1,030	768	530	397	836	985	73	57	73	36	26	83
23	1,040	736	509	415	805	968	78	97	90	33	44	80
24	1,030	712	551	427	768	985	61	43	67	27	67	92
25	1,030	744	845	591	768	1,010	55	46	57	32	67	95
26	1,050	784	872	812	836	942	39	33	59	55	85	97
27	1,040	800	917	805	917	790	43	43	53	89	153	97
28	1,010	818	768	812	934	768	39	76	44	160	63	108
29	1,020	836	736	828	-	760	53	57	48	184	78	92
30	1,010	872	752	844	-	760	78	63	48	225	65	83
31	998	-	760	836	-	775	-	63	-	139	53	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	23,554	1,050	476	760	46,720
November.....	22,804	1,010	544	760	45,230
December.....	23,951	944	509	773	47,510
Calendar year 1946	162,108	1,050	10	444	321,500
January.....	22,102	844	397	713	43,840
February.....	21,954	934	527	784	43,550
March.....	26,867	1,010	540	867	53,290
April.....	8,485	985	39	283	16,830
May.....	1,631	111	23	52.6	3,240
June.....	3,283	235	31	109	6,510
July.....	2,602	225	18	71.0	4,370
August.....	1,827	153	9	58.9	3,620
September.....	2,216	108	43	73.9	4,400
Water year 1946-47	160,876	1,050	9	441	319,100

a No gage-height record; discharge computed on basis of records for station below Lava Island and intervening diversions.

Deschutes River near Madras, Oreg.

Location.- Water-stage recorder, lat. 44°43', long. 121°14', in NE $\frac{1}{4}$ sec. 13, T. 10 S., R. 12 E., 1 mile downstream from Pelton dam site, 4 miles upstream from Shitike Creek, and 9 miles northwest of Madras. Altitude of gage, 1,404 feet (from river-profile map).

Records available.- October 1923 to September 1947.

Average discharge.- 24 years, 4,162 second-feet.

Extremes.- Maximum discharge during year, 6,700 second-feet Dec. 15 (gage height, 3.77 feet); minimum, 3,360 second-feet Aug. 18, 22 (gage height, 1.72 feet).
1923-47: Maximum discharge, 13,300 second-feet Jan. 1, 1943 (gage height, 6.89 feet); minimum, 2,940 second-feet Sept. 20, 1942 (gage height, 1.41 feet)

Remarks.- Records excellent. Large diversions in upper river basin for irrigation. Some winter and spring runoff stored in Crane Prairie, Wickiup, Crescent Lake, and Ochoco Reservoirs. Slight fluctuations caused by power plants on Deschutes River and Redmond and Crooked River near Culver.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)

1.7	3,330	3.0	5,350
2.1	3,910	3.5	6,210
2.5	4,530	4.0	7,120

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,900	4,450	5,100	4,560	4,740	4,910	5,080	3,840	3,820	3,530	3,610	3,430
2	3,910	4,430	4,930	4,510	4,850	4,930	5,250	3,940	3,920	3,530	3,580	3,430
3	3,910	4,430	4,720	4,420	4,830	4,960	5,260	3,970	3,970	3,530	3,570	3,410
4	3,910	4,420	4,670	4,320	4,800	4,930	5,110	3,970	4,000	3,540	3,540	3,430
5	3,920	4,420	4,610	4,310	4,910	4,900	4,990	3,910	3,960	3,620	3,510	3,410
6	3,920	4,430	4,590	4,430	4,870	4,880	4,740	3,910	3,960	3,580	3,500	3,410
7	3,960	4,430	4,660	4,470	4,800	4,870	4,640	3,880	4,020	3,550	3,470	3,460
8	4,000	4,370	4,420	4,450	4,800	4,830	4,610	3,850	4,120	3,530	3,430	3,460
9	3,980	4,140	4,430	4,430	4,770	4,820	4,510	3,820	4,340	3,530	3,410	3,440
10	3,970	4,090	4,390	4,430	4,750	4,960	4,450	3,740	4,260	3,530	3,400	3,440
11	3,970	4,160	4,510	4,430	4,720	5,060	4,350	3,700	4,240	3,510	3,430	3,470
12	4,030	4,160	4,960	4,430	4,750	5,450	4,310	3,670	4,100	3,530	3,440	3,470
13	4,040	4,200	5,080	4,420	4,830	5,520	4,200	3,660	4,060	3,540	3,400	3,480
14	4,030	4,140	5,860	4,390	5,540	5,320	4,180	3,640	3,920	3,540	3,400	3,460
15	3,980	4,040	6,520	4,230	5,380	5,130	4,180	3,720	3,640	3,530	3,400	3,430
16	4,000	4,040	6,320	4,160	5,230	4,900	4,160	3,670	3,820	3,570	3,390	3,430
17	4,230	4,100	5,980	4,310	5,180	4,950	4,160	3,600	3,850	3,540	3,390	3,440
18	4,240	4,640	5,620	4,310	5,320	5,060	4,290	3,550	3,800	3,510	3,390	3,460
19	4,240	4,670	5,420	4,400	5,060	5,150	4,340	3,550	3,780	3,510	3,390	3,430
20	4,430	4,420	5,210	4,400	4,910	5,500	4,510	3,550	3,700	3,500	3,390	3,430
21	4,610	4,350	5,200	4,180	5,060	5,540	4,240	3,570	3,660	3,480	3,390	3,410
22	4,660	4,480	4,960	4,040	4,980	5,590	4,180	3,600	3,640	3,500	3,370	3,410
23	4,590	4,550	4,770	4,140	4,980	5,570	4,100	3,600	3,620	3,470	3,390	3,440
24	4,560	4,420	4,670	4,290	4,960	5,550	4,040	3,610	3,660	3,470	3,390	3,440
25	4,790	4,470	4,680	4,350	4,960	5,380	3,960	3,600	3,610	3,460	3,400	3,410
26	4,750	4,710	4,800	4,930	4,960	5,260	3,910	3,620	3,570	3,460	3,410	3,410
27	4,580	4,900	4,830	4,850	4,950	5,060	3,880	3,660	3,660	3,500	3,410	3,440
28	4,500	5,420	4,800	4,880	4,960	4,900	3,850	3,660	3,610	3,610	3,480	3,420
29	4,470	5,670	4,670	4,830	-	4,930	3,840	3,720	3,570	3,660	3,440	3,440
30	4,430	5,400	4,560	4,800	-	5,010	3,850	3,780	3,540	3,640	3,410	3,410
31	4,430	-	4,530	4,690	-	5,040	-	3,780	-	3,730	3,430	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October	130,940	4,790	3,900	4,224	259,700
November	134,550	5,670	4,040	4,465	266,900
December	154,450	6,520	4,390	4,982	306,300
Calendar year 1946	1,699,070	8,580	3,460	4,655	3,370,000
January	137,790	4,930	4,040	4,445	273,300
February	138,850	5,540	4,720	4,959	275,400
March	158,860	5,590	4,820	5,125	315,100
April	130,990	5,260	3,840	4,366	259,800
May	115,340	3,970	3,550	3,721	228,800
June	115,620	4,340	3,540	3,854	229,300
July	109,730	3,730	3,460	3,540	217,600
August	106,580	3,610	3,370	3,437	211,400
September	103,090	3,480	3,410	3,436	204,500
Water year 1946-47	1,536,770	6,520	3,370	4,210	3,048,000

Deschutes River at Moody, near Biggs, Oreg.

Location.- Water-stage recorder, lat. 45°37', long. 120°54', in SE $\frac{1}{4}$ sec. 26, T. 2 N., R. 15 E., at Moody, $\frac{1}{2}$ miles upstream from mouth and 5 miles southwest of Biggs. Datum of gage is 167.43 feet above mean sea level datum of 1929.

Drainage area.- 10,500 square miles.

Records available.- July 1906 to September 1947. October 1897 to December 1899 at site near Moro, 10 miles above mouth.

Average discharge.- 42 years (1898-99, 1906-47), 5,697 second-feet.

Extremes.- Maximum discharge during year, 16,200 second-feet Dec. 15 (gage height, 5.41 feet); minimum, 3,850 second-feet Aug. 19-21, 23 (gage height, 2.26 feet).
1897-99, 1906-47: Maximum discharge, 43,600 second-feet Jan. 7, 1923 (gage height, 10.2 feet), from rating curve extended above 15,000 second-feet; minimum, 3,380 second-feet Sept. 16-19, 1931 (gage height, 2.06 feet).

Remarks.- Records excellent except those for periods of no gage-height record, which are good. Many diversions in upper river basin for irrigation. Some winter and spring runoff stored in Crane Prairie, Wickiup, Crescent Lake, and Ochoco Reservoirs.

Cooperation.- Water-stage recorder inspected by agent of Eastern Oregon Land Co.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

2.2	3,710	4.0	9,800
2.6	4,780	4.5	12,000
3.0	6,030	5.0	14,200
3.5	7,830	5.5	16,700

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,410	5,080	6,480	5,570	6,030	6,230	6,440	5,000	4,640	4,200	4,290	3,930
2	4,410	5,080	6,060	5,440	6,720	6,200	6,480	5,050	4,780	4,200	4,160	3,900
3	4,430	5,050	5,830	5,140	7,410	6,230	6,830	5,100	4,870	4,200	4,130	3,880
4	4,430	5,020	5,600	5,050	6,680	6,170	6,540	5,150	4,840	4,200	4,080	3,880
5	4,460	4,990	5,570	4,960	6,580	6,100	6,370	5,100	4,810	4,500	4,050	3,880
6												
7	4,460	4,990	5,510	5,350	6,510	6,030	6,170	5,050	4,780	4,250	4,000	3,900
8	4,460	4,990	5,440	5,320	6,340	6,000	5,830	5,000	4,870	4,200	4,000	3,930
9	4,460	4,990	5,410	5,260	6,230	5,930	5,800	4,950	4,930	4,150	3,980	3,950
10	4,490	4,900	5,230	5,230	6,130	5,930	5,730	4,900	5,100	4,100	3,950	3,950
11	4,460	4,660	5,280	5,230	6,100	6,130	5,600	4,850	5,250	4,100	3,930	3,950
12												
13	4,460	4,720	5,640	5,230	6,000	6,900	5,510	4,750	5,150	4,080	3,930	3,950
14	4,460	4,720	8,290	5,200	6,030	6,940	5,380	4,700	5,050	4,080	3,950	3,930
15	4,490	4,720	10,800	5,200	6,230	7,190	5,320	4,700	4,900	4,080	3,930	3,930
16	4,520	4,720	12,200	5,170	6,580	6,970	5,320	4,700	4,800	4,130	3,900	3,930
17	4,490	4,610	15,100	4,990	7,230	6,680	5,350	4,750	4,700	4,080	3,900	3,900
18												
19	4,490	4,550	13,800	4,840	7,640	6,510	5,410	4,750	4,650	4,080	3,900	3,900
20	4,550	4,580	10,800	4,900	7,980	6,300	5,410	4,650	4,600	4,110	3,880	3,900
21	4,750	4,870	9,240	5,020	7,410	6,480	5,670	4,600	4,600	4,050	3,880	3,950
22	4,720	6,300	8,370	5,050	7,150	6,580	5,900	4,550	4,550	4,030	3,880	3,950
23	4,810	5,960	7,720	5,170	6,790	6,790	5,900	4,500	4,500	4,030	3,880	3,950
24												
25	5,260	5,510	7,300	5,170	6,680	7,080	5,770	4,500	4,450	4,000	3,880	3,950
26	5,290	5,350	6,940	4,900	6,680	7,120	5,600	4,500	4,450	4,000	3,880	3,950
27	5,350	5,350	6,400	4,870	6,540	7,300	5,440	4,500	4,450	4,000	3,880	3,900
28	5,200	5,410	6,170	5,410	6,510	7,190	5,320	4,500	4,400	4,000	3,880	3,950
29	5,440	5,600	5,960	5,860	6,440	7,040	5,230	4,500	4,350	4,000	3,880	3,930
30												
31	5,770	5,640	6,100	7,190	6,370	6,830	5,150	4,500	4,300	4,000	3,900	3,930
32	5,510	6,000	6,100	7,750	6,300	6,650	5,100	4,520	4,350	4,050	3,900	3,950
33	5,230	6,620	6,030	7,940	6,270	6,340	5,050	4,490	4,300	4,100	3,900	4,430
34	5,110	7,120	5,770	6,760	-	6,230	5,000	4,490	4,300	4,180	3,980	4,030
35	5,080	6,940	5,510	6,480	-	6,370	5,000	4,550	4,250	4,240	3,950	4,000
36	5,050	-	5,350	6,270	-	6,400	-	4,580	-	4,180	3,930	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	148,500	5,770	4,410	4,790	294,500
November.....	158,700	7,120	4,550	5,290	314,800
December.....	225,980	15,100	5,230	7,290	448,200
Calendar year 1946.....	2,181,200	15,100	3,980	5,976	4,326,000
January.....	170,920	7,750	4,840	5,514	339,000
February.....	185,560	7,980	6,000	6,627	368,100
March.....	202,840	7,190	5,930	6,543	402,300
April.....	169,620	6,830	5,000	5,654	336,400
May.....	146,430	5,150	4,490	4,724	290,400
June.....	139,970	5,250	4,250	4,668	277,600
July.....	127,400	4,300	4,000	4,110	252,700
August.....	122,560	4,290	3,880	3,954	243,100
September.....	118,460	4,430	3,880	3,949	235,000
Water year 1946-47.....	1,916,940	15,100	3,880	5,252	3,802,000

Note.- No gage-height record Apr. 26 to May 26, June 9 to July 10, July 26-28, Sept. 19-23; discharge computed on basis of recorded range in stage and records for station near Madras.

Reservoirs in Deschutes River Basin above Bend, Oreg.

Crane Prairie Reservoir.- Staff gage, lat. 43°45', long. 121°47', at dam on Deschutes River in NW $\frac{1}{4}$ sec. 16, T. 21 S., R. 8 E., 15 miles northwest of Lapine. Datum of gage is 4,400.0 feet above mean sea level (Bureau of Reclamation bench mark). Drainage area, 244 square miles. Records available, November 1922 to September 1947. Maximum contents observed during year, 44,220 acre-feet June 10, 11 (elevation, 4,442.66 feet); minimum, 17,790 acre-feet Sept. 30 (elevation, 4,436.09 feet). Maximum contents observed during period 1922-47, 60,500 acre-feet June 5-7, 1943 (elevation, 4,446.0 feet); no usable contents at times.

Reservoir is formed by earth dam completed by North Canal Co. in 1922; gates were first closed Nov. 22, 1922; reconstructed as rock-faced earth dam with concrete control works by Bureau of Reclamation in 1939-40. Capacity, 55,340 acre-feet between elevations 4,424 feet (lip of fish screen structure) and 4,445 feet (crest of spillway). Natural flow passing through reservoir when outlet gates are open prevents withdrawal of storage to elevation of sill of gates. Water used for irrigation near Bend and Redmond. Gage read once daily.

Wickiup Reservoir.- Staff gage, lat. 43°41', long. 121°41', at dam on Deschutes River in NE $\frac{1}{4}$ sec. 7, T. 22 S., R. 9 E., 9 miles west of Lapine. Temporary gage established for use during construction of dam reads elevation above mean sea level (levels by Bureau of Reclamation). Records available, December 1942, when storage began, to September 1947. Maximum contents observed during year, 99,320 acre-feet Apr. 10 (elevation, 4,325.06 feet); minimum interpolated by Bureau of Reclamation engineers, 800 acre-feet Nov. 7 (elevation, 4,271.73 feet). Maximum contents observed during period 1942-47, that of Apr. 10, 1947; no storage in most of period November 1942 to March 1943.

Reservoir is formed by rock-faced earth-fill dam completed by Bureau of Reclamation prior to 1943 except for outlet works, reservoir dike, spillway, and timber removal, on which work is continuing. Ultimate capacity, about 180,000 acre-feet (final capacity table not yet available). Water stored is used for irrigation near Madras. Gage read twice daily.

Crescent Lake Reservoir.- Staff gage, lat. 43°30', long. 121°58', at head of spillway on dam at lake outlet in sec. 11, T. 24 S., R. 6 E., and auxiliary staff gage at boat dock 100 yards south, 14 miles west of Crescent. Datum of gage is 4,826.0 feet above mean sea level (levels of Deschutes County Municipal Improvement District). Drainage area, 58 square miles. Records available, August 1922 to September 1947. Maximum contents observed during year, 55,850 acre-feet June 12 (elevation, 4,841.26 feet); minimum observed, 30,560 acre-feet Sept. 20 (elevation, 4,834.55 feet). Maximum contents observed during period 1922-47, 72,460 acre-feet July 15, 1923 (elevation, 4,845.55 feet); minimum observed, 9,640 acre-feet Oct. 21, 1931 (elevation, 4,828.75 feet).

Reservoir is formed by dam of earth and logs, completed and storage begun in 1922. Capacity, 86,050 acre-feet between elevations 4,826 feet (sill of outlet gate) and 4,849 feet (crest of spillway). Dead storage not known; records given herein represent usable contents. Water is diverted from Deschutes River at Bend and used by Deschutes County Municipal Improvement District for irrigation near Tumalo. Gage read about once a week.

Elevation and contents, water year October 1946 to September 1947

Date	Crane Prairie Reservoir			Wickiup Reservoir		
	Elevation (feet)*	Contents (acre-feet)	Change in contents during month (acre-feet)	Elevation (feet)*	Contents (acre-feet)	Change in contents during month (acre-feet)
Sept. 30.....	4,441.62	39,560	-	4,294.03	19,420	-
Oct. 31.....	4,441.94	40,960	+1,420	4,276.23	2,490	-16,930
Nov. 30.....	-	42,610	+1,650	4,294.73	20,400	+17,910
Dec. 31.....	-	43,280	+670	4,207.48	43,560	+23,160
Calendar year 1946....	-	-	+13,420	-	-	+15,480
Jan. 31.....	-	44,130	-1,890	4,317.40	68,810	+25,250
Feb. 28.....	-	44,610	-780	4,322.47	86,620	+17,810
Mar. 31.....	-	44,420	-190	4,324.78	97,850	+11,210
Apr. 30.....	4,442.44	45,220	+1,800	4,324.36	95,630	-2,200
May 31.....	4,442.58	43,850	-1,370	4,321.56	82,730	-12,900
June 30.....	4,442.36	42,860	-990	4,319.20	74,390	-8,340
July 31.....	4,439.58	30,940	-11,920	4,314.88	61,700	-12,690
Aug. 31.....	4,436.86	20,510	-10,430	4,313.56	58,200	-3,500
Sept. 30.....	4,436.09	17,790	-2,720	4,311.55	53,080	-5,120
Water year 1946-47....	-	-	-21,770	-	-	+33,660

Date	Crescent Lake Reservoir		
	Elevation (feet)*	Contents (acre-feet)	Change in contents during month (acre-feet)
Sept. 30.....	-	435,920	-
Oct. 31.....	-	438,410	+2,490
Nov. 30.....	4,837.72	42,380	+3,970
Dec. 31.....	-	445,880	+3,500
Calendar year 1946....	-	-	+18,580
Jan. 31.....	-	448,990	+3,110
Feb. 28.....	-	450,110	+1,120
Mar. 31.....	-	452,060	+1,950
Apr. 30.....	4,840.72	53,770	+1,710
May 31.....	4,841.00	54,860	+1,090
June 30.....	4,840.63	53,420	-1,440
July 31.....	-	443,210	-10,210
Aug. 31.....	-	433,550	-9,660
Sept. 30.....	-	431,030	-2,520
Water year 1946-47....	-	-	-4,890

* Gage read at 9 a.m.

† Time of gage reading variable.

a No gage-height record; contents interpolated or extrapolated.

Cultus River above Cultus Creek, near Lapine, Oreg.

Location.- Water-stage recorder, lat. 43°49', long. 121°48', at road crossing in sec. 20 or 29, T. 20 S., R. 8 E., upstream from flow line of Crane Prairie Reservoir, 2 miles upstream from Cultus Creek, and 18 miles northwest of Lapine. Altitude of gage, 4,450 feet (from reservoir surveys by Bureau of Reclamation).

Records available.- June 1923 to September 1925, November 1937 to September 1947.

Average discharge.- 11 years (1923-25, 1938-47), 54.8 second-feet.

Extremes.- Maximum discharge during year, 87 second-feet May 3-5, June 7, 16, 20-22; maximum gage height, 0.99 foot Oct. 1; minimum discharge, 53 second-feet Dec. 8-10. 1923-25, 1937-47: Maximum discharge, 118 second-feet May 16, 1938, June 1, 1943; minimum, 28 second-feet Mar. 22, Apr. 5-10, 1941.

Remarks.- Records fair. No diversion or regulation above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	70	56	a67	66	62	66	85	83	85	74	a66
2		70	58	a68	66	64	66	85	83	83	74	66
3		68	56	68	64	62	66	85	83	83	74	66
4		66	55	68	64	64	66	87	83	83	74	66
5		66	55		64	62	66	87	85	83	74	66
6		68	55		64	62	66	85	85	80	74	66
7		68	55		64	62	66	85	87	80	76	66
8		66	55		64	62	66	83	85	83	76	66
9		64	53		64	62	66	83	85	83	76	66
10		64	55	a67	64	64	66	83	85	80	76	68
11	a76	66	55		64	62	64	83	85	80	76	68
12		64	55		64	62	64	80	85	80	76	68
13		62	56		64	62	64	87	85	80	76	68
14		62	60		64	62	64	80	85	80	78	
15		62	58		64	62	64	80	85	80	78	
16		62	58	66	64	62	64	80	87	78	78	
17		62	60	66	64	62	66	80	85	78	78	
18		62	58	66	64	64	66	80	85	78	78	
19		62	58	64	64	64	68	80	85	78	78	
20		64	60	66	64	62	72	80	87	78	76	
21		62	60	66	62	64	74	78	87	78	74	a68
22	74	64	62	64	64	62	76	78	87	76	74	
23	74	62	62	64	62	64	78	78	85	76	74	
24	74	60	62	64	64	64	78	78	85	76	74	
25	74	62	64	64	62	64	78	78	85	76		
26	74	60	64	66	64	64	80	80	85	78		
27	74	60	64	66	62	64	83	80	85	78		
28	74	60	66	66	64	64	85	80	83	78	a70	
29	74	58	66	66	-	64	85	80	85	76		
30	74	56	66	66	-	66	85	80	85	74		
31	72		a66	66	-	66	-	80	-	74		-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	2,336	78	72	75.4	4,630
November.....	1,902	70	56	63.4	3,770
December.....	1,833	66	53	59.1	3,640
Calendar year 1946.....	25,750	114	-	70.5	51,060
January.....	2,054	68	64	66.3	4,070
February.....	1,788	66	62	63.9	3,550
March.....	1,956	66	62	63.1	3,880
April.....	2,120	85	64	70.7	4,200
May.....	2,521	87	78	81.3	5,000
June.....	2,550	87	83	85.0	5,060
July.....	2,453	85	74	79.1	4,870
August.....	2,306	78	-	74.4	4,570
September.....	2,022	-	66	67.4	4,010
Water year 1946-47.....	25,841	87	53	70.8	51,250

a No gage-height record; discharge interpolated.

Quinn River near Lapine, Oreg.

Location.- Water-stage recorder and wooden control, lat. 43°47', long. 121°50', in NW¹ sec. 1, T. 21 S., R. 7 E., just upstream from flow line of Crane Prairie Reservoir, 150 feet downstream from springs at head of river, and 19 miles northwest of Lapine. Zero of gage is 4,142.1 feet above mean sea level, based on elevation of Crane Prairie Reservoir (Bureau of Reclamation bench mark) in period May to September 1943, when slack water reached station.

Records available.- June 1922 to September 1925, November 1937 to September 1947.

Average discharge.- 12 years (1922-25, 1938-47), 18.0 second-feet.

Extremes.- Maximum discharge during year, 40 second-feet June 23 (gage height, 1.90 feet); minimum discharge, 19 second-feet Sept. 28-30.

1922-25, 1937-47: Maximum discharge, 55 second-feet July 22-25, 1946 (gage height, 1.99 feet); practically no flow Nov. 14, 1941.

Remarks.- Records good except those for periods of no gage-height record, which are poor. No diversion or regulation above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		32	27	25	a24			30	36	37	35	28
2		32	27	24	a24			30	37	37	35	28
3		31	27	24	24			31	37	37	34	28
4		31	27	24	24			31	37	37	34	28
5		31	27					31	37	37	34	30
6		31	27				a25	31	37	37	34	30
7		31	27					31	37	36	34	30
8		30	27					31	37	36	34	31
9		30	27					31	37	36	34	31
10		30	27					31	37	36	34	31
11		30	26				25	31	39	36	34	31
12		30	26				25	31	39	36	34	31
13		30	26				25	31	39	36	34	31
14		30	26				25	31	39	36	34	31
15		30	26				25	30	39	36	32	30
16		30	26		a25	a25	25	30	39	36	32	28
17		30	26				25	30	39	36	32	27
18		30	25	a24	a24		25	30	39	36	32	27
19		30	25				25	30	39	36	32	26
20		30	25				25	31	39	36	31	25
21		30	25				26	31	39	36	31	24
22		30	25				26	31	39	36	30	24
23		30	25				26	32	39	36	30	23
24		30	26				26	32	39	36	28	22
25		30	26				27	34	39	36	28	22
26		30	26				27	34	39	36	28	22
27		30	26				27	34	39	35	28	20
28		28	26				27	35	37	35	28	20
29		28	27				28	35	37	35	28	19
30		28	27				30	36	37	35	28	19
31		28	-				-	36	-	35	28	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	931	32	28	30.0	1,850
November.....	786	27	25	28.2	1,560
December.....	745	-	-	24.0	1,480
Calendar year 1946	10,471	55	-	28.7	20,780
January.....	744	-	-	24.0	1,480
February.....	700	-	-	25.0	1,390
March.....	775	-	-	25.0	1,540
April.....	770	30	-	25.7	1,530
May.....	983	36	30	31.7	1,950
June.....	1,143	39	36	38.1	2,270
July.....	1,117	37	35	36.0	2,220
August.....	984	35	28	31.7	1,950
September.....	797	31	19	26.6	1,580
Water year 1946-47	10,475	39	19	28.7	20,800

a No gage-height record; discharge interpolated.

Odell Creek near Crescent, Oreg.

Location.- Water-stage recorder, lat. 43°33', long. 121°58', in SW $\frac{1}{4}$ sec. 25, T. 23 S., R. 6 E., at outlet of Odell Lake, 3 $\frac{1}{2}$ miles north of Crescent Lake and 14 miles northwest of Crescent. Datum of gage is 4,778.83 feet above mean sea level, datum of 1929.

Drainage area.- 39 square miles.

Records available.- August 1911 to August 1914 (incomplete), December 1923 to June 1924, May 1933 to September 1947.

Average discharge.- 14 years (1933-47), 68.5 second-feet.

Extremes.- Maximum discharge during year, 185 second-feet Jan. 14; maximum gage height, 2.03 feet Jan. 5 (ice jam); minimum discharge, 17 second-feet Jan. 24 (result of ice jam above station).

1911-14, 1923-24, 1933-47: Maximum discharge, 405 second-feet Dec. 30, 1945, from rating curve extended above 190 second-feet; maximum gage height, that of Jan. 5, 1947; minimum discharge, 12 second-feet sometime during period Sept. 7-30, 1934.

Remarks.- Records good. Flow regulated occasionally in winter by ice jams and at other times by debris which collects on fish racks or by boards used at outlet of Odell Lake to change lake levels; slightly affected at times by seiches on Odell Lake. No diversion above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	47	99	138	76	124	66	96	105	115	84	68	39
2	47	84	131	73	128	71	96	108	121	84	66	40
3	47	78	124	71	115	76	96	111	121	81	66	40
4	51	76	118	71	108	71	111	115	118	78	64	40
5	49	73	111	b76	102	73	105	121	118	76	61	39
6	47	71	105	76	99	76	102	128	115	76	59	40
7	51	71	102	73	93	76	99	128	115	76	56	44
8	54	68	99	71	90	78	96	134	124	73	56	42
9	52	68	93	71	87	81	96	145	131	71	51	44
10	52	71	90	73	84	80	96	141	134	71	51	42
11	51	66	118	73	87	90	90	138	131	68	49	40
12	51	64	108	81	93	96	87	134	128	68	47	40
13	51	61	111	96	93	90	84	131	121	66	47	40
14	51	61	134	118	90	87	84	128	115	66	47	37
15	47	61	155	90	90	84	84	121	108	64	47	39
16	47	59	152	84	93	81	84	118	108	64	46	40
17	49	61	141	81	90	81	87	115	111	61	44	37
18	49	81	134	78	90	78	93	111	111	61	42	37
19	49	108	124	78	87	78	96	111	108	61	44	36
20	61	115	118	76	81	76	102	108	105	59	42	36
21	68	118	111	76	78	76	102	111	102	56	39	36
22	81	124	108	73	76	81	102	111	96	56	36	37
23	84	131	102	76	76	90	102	108	93	52	36	37
24	84	128	96	47	76	90	99	108	93	51	35	39
25	87	128	93	72	73	87	99	108	90	49	36	39
26	84	148	93	115	71	84	99	108	90	52	36	37
27	81	166	99	108	68	84	99	115	93	61	37	37
28	78	173	90	105	68	81	99	115	90	68	37	37
29	76	166	87	105	-	81	102	115	90	68	37	37
30	78	152	81	124	-	87	105	115	87	68	37	39
31	78	-	78	124	-	96	-	115	-	71	39	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	1,882	87	47	60.7	1.56	1.79	3,730
November	2,930	173	59	97.7	2.51	2.79	5,810
December	3,444	155	78	111	2.85	3.28	6,830
Calendar year 1946	34,511	322	37	94.0	2.41	32.71	68,050
January	2,611	124	47	84.2	2.16	2.49	5,180
February	2,510	128	68	89.6	2.30	2.39	4,980
March	2,526	96	66	81.5	2.09	2.41	5,010
April	2,892	111	84	95.4	2.47	2.76	5,740
May	3,680	145	105	119	3.05	3.51	7,300
June	3,282	134	87	109	2.79	3.13	6,510
July	2,060	84	49	66.5	1.71	1.96	4,090
August	1,458	68	35	47.0	1.21	1.39	2,890
September	1,167	44	36	38.9	.997	1.11	2,310
Water year 1946-47	30,442	173	35	83.4	2.14	29.01	60,380

b Stage-discharge relation affected by ice.

Fall River near Lapine, Oreg.

Location.- Water-stage recorder, lat. 43°48', long. 121°34', in SE $\frac{1}{4}$ sec. 31, T. 20 S., R. 10 E., downstream from spillway from ponds at State fish hatchery 10 miles northwest of Lapine.

Records available.- May to September 1912 (fragmentary) and June 1938 to September 1947 in reports of Geological Survey. October 1923 to September 1924 (at site 3 miles downstream) in report of State engineer.

Extremes.- Maximum discharge during year, 181 second-feet sometime during period Mar. 2-15 (gage height, 1.66 feet); minimum, 116 second-feet (regulated) Sept. 29; minimum daily, 137 second-feet Sept. 28-30.

1938-47: Maximum discharge, 194 second-feet sometime during period Jan. 8 to Apr. 21, 1943, and on Sept. 15, 1943, probably caused by release of water from fish hatchery; minimum, 68 second-feet (regulated) Apr. 6, 1942.

Remarks.- Records good except those for periods of no gage-height record, which are fair. Water diverted above station only to ponds at fish hatcheries, from which water returns to river above station.

Cooperation.- Recorder inspected by employees of Oregon State Game Commission.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154	156	160	156	158	153	146	147	153	151	142	146
2	154	154	160	156	158	153	146	149	153	151	142	146
3	154	154	160	156	156		146	149	153		144	146
4	154	154	160	154	156		146	149			144	146
5	154	154	160	154	156		146	149			146	146
6	154	154	158	154	156		a146	149		a149	146	146
7	156	153		154	154		a146	149			144	146
8	154	153		154	154		146	149			144	146
9	154	153		154	154	a151	144	149	a152		144	146
10	156	153		154	154		144	149			144	146
11	156	153		154	156		144	149		147	142	146
12	156	153		156	156		144	149		147	142	146
13	156	153		158	154		144	149		147	142	144
14	156	153		158	154		144	151		147	142	144
15	156	156		156	154	149	144	151	151	147	142	144
16	156	156		156	154	149	144	151	151	147	142	142
17	158	156		158	154	149	146	151	151	147	142	142
18	158	160		156	154	149	146	151	151	147	142	140
19	156	158	a157	156	154	149	146	151	151	147	144	140
20	158	158		156	153	149	146	151	151	147	144	140
21	156	158		156	154	149	146	151	151	147	144	140
22	156	158		158	154	149	146	151	151	147	147	140
23	156	160		158	154	147	146	151	151	146	147	139
24	156	160		158	153	147	146	151	151	146	147	139
25	156	160		160	153	147	146	151	151	146	147	139
26	a156	162		158	153	147	147	151	151	146	147	139
27	a156	160		158	153	147	147	151	151	147	147	139
28	a156	162		158	153	147	147	151	151	144	147	137
29	156	160		158	-	147	147	153	151	144	146	137
30	156	160		158	-	149	147	153	151	144	146	137
31	156	-		158	-	146	-	153	-	144	144	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	4,826	159	154	156	9,570
November.....	4,694	162	153	156	9,310
December.....	4,683	160		158	9,690
Calendar year 1946	51,420	162	-	141	102,000
January.....	4,846	160	154	156	9,610
February.....	4,326	158	153	154	8,580
March.....	4,634	153	146	149	9,130
April.....	4,369	147	144	148	8,670
May.....	4,659	153	147	150	9,240
June.....	4,547	153	151	152	9,020
July.....	4,565	151	144	147	9,050
August.....	4,473	147	142	144	8,870
September.....	4,274	146	137	142	8,480
Water year 1946-47	55,096	162	137	151	109,300

a No gage-height record; discharge interpolated.

Little Deschutes River near Lapine, Oreg.

Location.- Water-stage recorder, lat. 43°41', long. 121°30', in SW $\frac{1}{4}$ sec. 2, T. 22 S., R. 10 E., at bridge at former town of Rosland, 1 $\frac{1}{4}$ miles north of Lapine. Datum of gage is 4,192.81 feet above mean sea level, datum of 1929.

Records available.- September 1910 to October 1913 (incomplete), June to November 1918, August to October 1920, May 1924 to September 1947.

Average discharge.- 23 years (1924-47), 152 second-feet.

Extremes.- Maximum discharge during year, 380 second-feet May 11 (gage height, 4.39 feet); minimum, 53 second-feet Nov. 16, 17 (gage height, 1.62 feet).
1910-13, 1918, 1920, 1924-47: Maximum discharge, 985 second-feet Apr. 22, 1943 (gage height, 7.00 feet); minimum, 8 second-feet Sept. 2, 3, 1931 (gage height, 0.71 foot).

Remarks.- Records good except those for periods of no gage-height record, which are fair, and those for periods of ice effect, which are poor. Small diversions above station for irrigation. Flow regulated since August 1922 by Crescent Lake Reservoir (see p. 57).

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	58	88	245	65		121	260	306	317	272	235	200
2	59	84	210			125	270	302	320	267	231	195
3	61	80	170			123	265	302	324	275	229	191
4	56	72	*156			124	250	299	313	273	229	188
5	65	80	147	*61		124	235	303	300	273	224	189
6	64	87	143	110		122	225	314	296	271	217	187
7	63	94	135			120	220	324	296	270	212	188
8	62	87	131			118	210	335	297	267	224	189
9	61	86	126			118	210	345	305	265	234	193
10	63	80	124			133	200	367	314	265	235	193
11	62	78	122			154	198	378	306	263	234	168
12	61	75	125			153	195	368	295	255	230	150
13	60	74	141			144	195	356	282	241	225	143
14	59	71	173			141	200	342	266	239	223	140
15	58	66	237			141	205	326	249	235	224	158
16	57	60	85	110		148	215	313	240	230	222	135
17	58	71				160	225	305	248	227	231	134
18	58	92				175	246	294	254	222	199	158
19	58	154			146	184	269	293	240	219	193	116
20	65	230			142	188	290	289	227	218	200	96
21	75	210			*140	190	306	283	216	216	205	92
22	85	170			131	200	303	279	209	210	204	91
23	99	160			133	225	299	252	201	213	207	86
24	113	175			139	245	295	254	236	227	212	84
25	101	185			140	227	300	233	237	219	186	82
26	90	200	110	110	142	213	297	233	247	218	187	73
27	85	220			132	210	302	236	270	236	191	64
28	82	260			123	210	296	254	273	260	191	60
29	82	280			-	215	295	283	277	269	194	57
30	84	270			-	220	301	300	276	261	198	56
31	86	-			-	240	-	318	-	245	199	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October	2,192	113	57	70.7	4,350
November	3,939	280	60	131	7,810
December	4,145	245	-	134	8,220
Calendar year 1946	82,495	712	57	226	163,600
January	2,531	-	-	81.6	5,020
February	3,348	-	-	120	6,640
March	5,211	245	118	168	10,340
April	7,577	306	195	255	15,030
May	9,366	378	233	302	18,580
June	8,132	324	201	271	16,130
July	7,621	275	210	246	15,120
August	6,625	235	186	214	13,140
September	4,016	200	56	134	7,970
Water year 1946-47	64,703	378	56	177	128,400

* Winter discharge measurement made on this day.

Note.- No gage-height record Oct. 17-22, Oct. 27 to Nov. 3, Nov. 21 to Dec. 3, Jan. 2-4, Jan. 24 to Feb. 13, Mar. 21-24, Mar. 27 to Apr. 15, Apr. 20; discharge computed on basis of records for Odell Creek near Crescent and unpublished records for Little Deschutes River at Johnson Ranch, near Bend. Stage-discharge relation affected by ice Dec. 16 to Feb. 18.

Crescent Creek at Crescent Lake, near Crescent, Oreg.

Location.- Water-stage recorder and Parshall measuring flume, lat. 43°30', long. 121°58'; in sec. 11, T. 24 S., R. 6 E., 100 yards downstream from dam at outlet of Crescent Lake and 14 miles west of Crescent.

Drainage area.- 58 square miles.

Records available.- January 1911 to July 1915, July 1927 to September 1928 (incomplete), October 1928 to September 1947.

Average discharge.- 22 years (1911-14, 1928-47), 36.4 second-feet.

Extremes (regulated).- Maximum discharge during year, 203 second-feet July 1 (gage height, 2.50 feet); minimum observed, 1.5 second-feet, October to December (field estimates by watermaster Oct. 7, Dec. 5).
1911-15, 1927-47: Maximum discharge, 313 second-feet July 9, 1928, Aug. 9, 1936; no flow at times.

Remarks.- Records good except those for Oct. 1 to Apr. 15, May 15-20, Sept. 25-30, which are poor. Flow regulated since 1922 by Crescent Lake Reservoir (p. 57), storage being released Apr. 16 to Sept. 24 for diversion below station through Deschutes County Municipal Improvement District canal at Bend. No diversion above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								62	80	203	178	155
2								62	80	202	175	153
3								62	80	200	175	152
4				4.0				62	80	200	173	150
5								62	80	199	173	150
6						7.5		63	80	199	184	148
7								74	80	198	200	146
8								104	80	196	199	144
9				h5.5			8.2	108	80	195	198	127
10								107	81	189	194	96
11					7.0			107	81	180	193	95
12						h7.4		107	81	177	190	95
13								107	81	176	187	95
14								107	81	173	188	95
15								108	81	173	185	95
16	1.5											
17		1.5						17	109	81	172	184
18			1.5					28	110	82	171	181
19								28	111	82	171	180
20								28	112	82	171	177
21				6.0		7.5		28	113	82	170	175
22					h7.8			28	97	82	173	173
23								28	78	118	182	171
24								43	78	150	182	170
25						7.5		62	78	161	181	169
26								62	78	166	181	167
27								62	78	185	180	165
28						h7.8		62	78	185	180	163
29								62	79	184	180	160
30								62	79	182	178	159
31						7.8		62	80	182	178	158
								-	80	-	177	157
												-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	46.5	-	-	1.50	92
November.....	45.0	-	-	1.50	89
December.....	46.5	-	-	1.50	92
Calendar year 1946.....	10,054.9	213	0	27.5	19,940
January.....	171.5	-	-	5.53	340
February.....	200.3	-	-	7.15	397
March.....	233.9	-	-	7.55	464
April.....	785.0	62	-	26.2	1,560
May.....	2,740	113	62	88.4	5,439
June.....	3,230	186	80	108	6,410
July.....	5,687	203	170	183	11,280
August.....	5,495	200	157	177	10,800
September.....	2,334.2	155	-	77.8	4,630
Water year 1946-47.....	21,014.9	203	-	57.6	41,680

h Computed from staff-gage reading.

Note.- No gage-height record Oct. 1 to Jan. 7, Jan. 9 to Feb. 20, Feb. 22 to Mar. 11, Mar. 13-26, Mar. 28 to Apr. 15, May 15-20, Sept. 25-30; discharge interpolated, or computed on basis of field estimates of discharge by watermaster.

DESCHUTES RIVER BASIN

Diversions from Deschutes River near Bend, Oreg.

The following six canals, which are equipped with water-stage recorders, are the only diversions from Deschutes River between gaging stations at Benham Falls and below Bend.

Arnold Canal diverts from right bank at head of Lava Island, in SW $\frac{1}{4}$ sec. 27, T. 18 S., R. 11 E.; water used for irrigation southeast of Bend.

Central Oregon Canal diverts from right bank in NE $\frac{1}{4}$ sec. 13, T. 18 S., R. 11 E.; water used for irrigation east of Bend. (Beginning Oct. 1, 1932, record obtained upstream from intake of Pilot Butte canal.)

Deschutes County Municipal Improvement District Canal diverts from left bank in NE $\frac{1}{4}$ sec. 32, T. 17 S., R. 12 E., at Bend; water used for supplement flow of Tumalo project feed canal for irrigation near Tumalo; water stored at Crescent Lake Reservoir is diverted by this canal.

North Unit Main Canal diverts water from right bank in NE $\frac{1}{4}$ sec. 29, T. 17 S., R. 12 E.; water used for irrigation near Madras.

North and Swalley Canals divert from right bank in NE $\frac{1}{4}$ sec. 29, T. 17 S., R. 12 E.; water used for irrigation north of Bend, mostly near Redmond.

Records of monthly discharge of these canals, published as a group, are available from October 1926 to September 1947; records for each canal published separately prior to 1926.

Diversions, in acre-feet, water year October 1946 to September 1947

Month	Arnold Canal	Central Oregon Canal	Deschutes County Municipal Improvement District Canal	North Unit Main Canal	North Canal	Swalley Canal	Total
October.....	3,350	17,200	815	9,250	15,690	4,420	50,725
November.....	426	4,110	0	190	10,640	1,000	16,366
December.....	307	3,280	0	2,750	1,370	532	8,239
January.....	147	1,680	0	0	1,690	252	3,749
February.....	450	1,340	0	6	1,710	506	4,012
March.....	315	1,820	0	0	1,480	258	3,873
April.....	1,690	17,810	0	10,610	16,570	3,940	50,620
May.....	4,560	29,740	0	19,080	27,310	6,180	86,870
June.....	4,690	27,820	572	15,010	25,450	6,790	80,352
July.....	4,790	32,590	7,330	18,910	29,000	7,480	100,100
August.....	5,020	31,380	8,860	13,340	27,550	7,310	93,460
September.....	4,790	26,180	6,410	11,870	23,990	5,970	79,210
Water year 1946-47....	30,535	194,930	23,987	101,016	182,450	44,638	577,556

Tumalo Creek near Bend, Oreg.

Location.- Water-stage recorder, lat. 44°05', long. 121°22', in SE¹ sec. 23, T. 17 S., R. 11 E.; a quarter of a mile upstream from diversion dam of feed canal of Tumalo project, 4 miles upstream from mouth, and 4 miles northwest of Bend.

Drainage area.- 57 square miles.

Records available.- October 1906 to April 1908 and October 1910 to April 1913 (winters only), November 1913 to September 1947.

Average discharge.- 32 years (1913-21, 1923-47), 78.3 second-feet, excluding Columbia Southern Canal.

Extremes.- Maximum discharge during year, 333 second-feet May 2; maximum gage height, 3.60 feet Jan. 2 (ice jam); minimum discharge, 18 second-feet (regulated) Sept. 21; minimum daily, 22 second-feet Sept. 13-16.

1906-8, 1911-47: Maximum discharge, 1,420 second-feet about Jan. 6, 1923, from rating curve extended above 200 second-feet; maximum gage height, 5.3 feet Jan. 16, 1930 (back-water from ice); minimum discharge, 1 second-foot June 28 to July 3, 1940.

Remarks.- Records good except those for periods of shifting control, which are fair, and those for periods of ice effect or no gage-height record, which are poor. Crater Creek Canal diverts flow of tributaries of Soda Creek into head of Tumalo Creek. Columbia Southern Canal diverts from creek above station; canal records good. Records of daily discharge do not include diversion by Columbia Southern canal.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	*69	86		76	68	81	178	167	82	50	30
2	72	b71	*82		76	69	79	252	151	91	45	29
3	75	b72	79		74	68	78	274	123	81	46	30
4	71	68	79		72	68	78	229	115	76	42	25
5	71	68	78		70	68	78	217	121	79	37	25
6	72	68	78		*68	68	76	208	128	84	34	26
7	73	68	78		66	68	76	208	150	78	36	38
8	73	65	79		66	68	78	208	238	61	34	29
9	73	65	78		68	69	78	178	185	60	33	27
10	73	65	78		66	71	76	154	140	64	30	25
11	73	65	91		68	68	75	147	115	50	29	24
12	75	65	102		72	66	75	154	111	52	29	23
13	76	65	115		71	68	82	154	130	56	29	22
14	79	b68	138		69	68	93	147	126	50	29	22
15	82	65	154		71	69	102	145	119	52	30	22
16	82	65	132	b65	73	71	109	147	156	55	30	22
17	88	71	b120		72	71	128	149	178	51	29	25
18	84	147	b110		71	72	128	151	156	53	29	25
19	88	104	b105		71	73	134	162	138	51	29	24
20	167	84	100		71	73	138	169	100	46	28	23
21	140	79	98		69	75	130	180	88	52	27	23
22	169	82	94		69	84	121	185	93	52	27	34
23	109	91	91		69	82	119	188	100	51	27	79
24	106	81	89		68	79	121	192	109	47	26	78
25	151	82	88		68	78	128	214	113	42	28	82
26	119	93	86		*66	78	136	235	134	42	28	84
27	89	109	*82		b68	76	147	220	115	62	28	82
28	79	104	b82		b68	78	145	200	76	86	29	84
29	75	94	b82		-	81	165	192	69	53	33	81
30	73	89	b82		-	84	162	190	76	47	31	82
31	72	-	b80		-	82	-	167	-	48	31	-

Month	Tumalo Creek					Columbia Southern Canal (runoff in acre-feet)	Combined runoff in acre-feet
	Second- foot- days	Discharge in second-feet			Runoff in acre-feet		
		Maximum	Minimum	Mean			
October.....	2,800	167	71	90.3	5,550	0	5,550
November.....	2,378	147	65	79.3	4,720	0	4,720
December.....	2,914	154	78	94.0	5,780	0	5,780
Calendar year 1946.....	38,176	380	41	105	75,710	13,420	89,130
January.....	2,015	-	-	65.0	4,000	0	4,000
February.....	1,956	76	66	69.9	3,880	0	3,880
March.....	2,261	84	66	72.9	4,480	0	4,480
April.....	3,216	165	75	107	6,380	0	6,380
May.....	5,794	274	145	187	11,490	3,680	15,170
June.....	3,828	238	69	128	7,590	3,650	11,240
July.....	1,854	91	42	59.8	3,680	3,390	7,070
August.....	995	50	26	32.0	1,970	2,930	4,900
September.....	1,225	84	22	40.8	2,430	1,900	4,330
Water year 1946-47.....	31,234	274	22	85.6	61,950	15,550	77,500

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.- No gage-height record Jan. 3 to Feb. 5, Sept. 14, 15; discharge computed on basis of records for Squaw Creek near Sisters.

Squaw Creek near Sisters, Oreg.

Location.- Water-stage recorder, lat. 44°14', long. 121°34', in NW¼ sec. 32, T. 15 S., R. 10 E., just upstream from intake of McCallister ditch and 4 miles south of Sisters.

Drainage area.- 63 square miles.

Records available.- 1913-25 (irrigation seasons only), October 1925 to September 1947.
July 1906 to May 1913 at site 700 feet downstream, below intake of McCallister ditch.

Average discharge.- 35 years (1906-18, 1919-20, 1925-47), 101 second-feet.

Extremes.- Maximum discharge during year, 336 second-feet May 26 (gage height, 2.40 feet); minimum, 45 second-feet Oct. 16.

1906-47: Maximum gage height, about 8.75 feet (over top of gage) Nov. 22, 1909, site and datum then in use (discharge not determined); maximum discharge recorded since that time, 1,130 second-feet Dec. 2, 1941 (gage height, 3.33 feet); minimum, 19 second-feet Dec. 6, 1922.

Remarks.- Records fair except those for periods of ice effect, which are poor. A canal near mouth of Pole Creek, a tributary above station, diverts entire flow of that creek for irrigation of lands near Sisters.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	62	92	b60	68	54	59	142	234	124	122	72
2	64	64	87		68	54	59	228	202	142	115	74
3	62	70	85		64	53	58	243	145	137	119	75
4	62	70	83		61	53	58	240	137	127	115	74
5	61	61	81		61	51	58	240	145	142	107	74
6	59	59	79	b53	58	51	58	237	142	152	110	74
7	59	59	77		56	50	56	243	204	152	110	96
8	58	58	74		54	50	56	234	255	150	110	72
9	56	58	74		53	53	54	190	213	152	103	74
10	54	58	72		66	51	54	152	163	150	94	68
11	54	58	81	b53	53	51	54	145	139	134	92	66
12	54	56	98		61	50	56	150	137	142	92	64
13	54	54	155		58	51	64	150	155	171	90	66
14	53	59	261		56	53	72	145	150	190	90	66
15	53	56	240		56	53	77	147	152	179	90	66
16	51	56	150	b53	58	54	87	150	231	166	90	70
17	53	66	134		56	56	103	152	237	163	85	70
18	51	204	129		54	58	103	160	225	171	83	68
19	59	110	112		54	58	105	166	190	163	83	61
20	147	85	103		54	59	107	177	137	152	77	58
21	92	77	98	b53	54	61	103	193	124	152	70	58
22	147	83	94		54	72	101	196	132	152	68	56
23	79	92	90		54	66	98	202	142	137	66	58
24	83	77	87		72	54	62	101	216	160	127	64
25	103	83	85		81	54	61	103	249	171	119	66
26	92	119	83	b53	72	54	59	110	285	204	119	68
27	77	185	81		70	58	59	112	267	174	158	70
28	75	139	b60		68	59	59	117	225	117	179	70
29	74	112	b78		61	-	61	127	225	103	124	75
30	68	98	b78		59	-	62	124	231	107	119	74
31	66	-	b75	59	-	59	-	213	-	129	72	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	2,186	147	51	70.5	4,340
November.....	2,488	204	54	82.9	4,930
December.....	3,196	261	72	103	6,540
Calendar year 1946.....	45,803	414	38	125	90,850
January.....	1,863	81	-	60.1	3,700
February.....	1,595	68	51	57.0	3,160
March.....	1,747	72	50	56.4	3,470
April.....	2,494	127	54	83.1	4,950
May.....	6,193	285	142	200	12,280
June.....	5,027	255	103	168	9,870
July.....	4,574	190	119	148	9,070
August.....	2,740	122	64	88.4	5,430
September.....	2,003	96	56	66.8	3,970
Water year 1946-47.....	36,106	285	50	98.9	71,610

b Stage-discharge relation affected by ice.

Crooked River near Post, Oreg.

Location.- Water-stage recorder, lat. 44°07', long. 120°16', in NE $\frac{1}{4}$ sec. 12, T. 17 S., R. 20 E., 1 mile downstream from North Fork and 1 $\frac{1}{2}$ miles southeast of Post. Datum of gage is 3,461.72 feet above mean sea level, datum of 1929.

Drainage area.- 2,160 square miles, of which 500 square miles is probably noncontributing.

Records available.- November 1908 to August 1911, December 1939 to September 1947.

Extremes.- Maximum discharge during year, 1,440 second-feet Nov. 27; maximum gage height, 4.52 feet Feb. 12 (ice jam); minimum discharge, 9 second-feet Aug. 20, 21; minimum gage height, 0.99 foot Aug. 20.
1908-11, 1939-47: Maximum discharge, 6,190 second-feet Dec. 28, 1945 (gage height, 6.66 feet), from rating curve extended above 2,600 second-feet; minimum, 4.4 second-feet July 12, 1940.

Remarks.- Records fair except those for periods of ice effect, which are poor. Several small diversions above station; one small canal diverts on right bank 800 feet above station for irrigation downstream; no regulation.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.0	9	1.6	74	2.7	440
1.1	15	1.8	117	3.0	605
1.2	22	2.1	202	3.3	845
1.4	43	2.4	310	3.6	1,160

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	76	283	95	130	268	640	209	82	58	16	18
2	44	72	229	75	230	291	569	192	90	36	16	18
3	59	62	212	70	250	306	540	176	106	32	19	18
4	50	66	209	65	359	310	475	159	115	31	18	20
5	49	71	199	70	299	283	450	148	115	29	14	18
6	46	78	186	75	287	229	422	130	122	28	14	17
7	49	76	173	80	250	226	395	115	142	25	13	19
8	47	74	164	85	226	233	422	106	202	23	13	19
9	47	69	159	90	202	258	445	106	368	22	14	21
10	46	80	150	*93	183	532	408	106	302	22	14	20
11	44	76	153	90	192	956	382	96	222	25	15	18
12	43	66	229	90	460	707	377	76	164	24	15	18
13	45	72	372	90	972	575	418	69	132	23	14	18
14	46	74	809	80	626	575	490	60	103	23	14	18
15	46	69	715	60	506	647	512	54	88	24	16	16
16	47	62	450	60	764	747	506	50	90	22	20	18
17	54	69	299	70	755	845	575	44	101	20	18	18
18	57	69	219	65	584	905	666	43	124	20	14	18
19	53	96	250	80	460	915	557	41	101	19	12	21
20	57	*117	236	100	404	915	534	38	68	19	9	23
21	69	88	216	105	400	865	465	36	82	17	9	25
22	86	80	205	105	426	895	404	33	74	16	14	26
23	80	173	170	110	455	836	364	32	67	14	16	24
24	74	240	150	140	490	654	330	30	57	13	16	24
25	69	173	164	190	450	612	302	29	46	13	15	23
26	67	508	167	300	372	528	280	27	38	13	16	21
27	66	1,110	173	300	299	501	258	27	39	14	18	21
28	64	1,050	156	230	265	528	243	35	42	17	19	22
29	64	647	130	160	-	593	236	31	43	18	19	23
30	69	426	80	130	-	633	222	38	42	19	21	30
31	67	-	90	100	-	647	-	66	-	18	20	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	1,737	86	35	56.0	3,450
November.....	5,989	1,110	62	200	11,880
December.....	7,397	809	80	239	14,670
Calendar year 1946	147,540	2,790	11	404	292,660
January.....	3,455	300	80	111	6,850
February.....	11,296	972	130	403	22,410
March.....	18,015	956	226	581	35,730
April.....	12,889	668	222	430	25,560
May.....	2,400	209	27	77.4	4,760
June.....	3,387	366	38	113	6,720
July.....	677	38	13	21.8	1,340
August.....	481	21	9	15.5	954
September.....	613	30	16	20.4	1,220
Water year 1946-47	68,334	1,110	9	187	135,500

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 30 to Feb. 3, Feb. 12, 13.

Crooked River above Hoffman Dam, near Prineville, Oreg.

Location.- Water-stage recorder, lat. 44°09', long. 120°50', in NE $\frac{1}{4}$ sec. 32, T. 16 S., R. 16 E., 0.9 mile upstream from Hoffman diversion dam and 11 miles south of Prineville. Datum of gage is 2,981.23 feet above mean sea level, datum of 1929.

Drainage area.- 2,810 square miles, of which 500 square miles is probably noncontributing.

Records available.- January 1940 to February 1941 (discharge measurements only), March 1941 to September 1947. October 1908 to December 1912 at Stearns Ranch, $5\frac{1}{2}$ miles south of Prineville, below Hoffman and Stearns diversions. January 1913 to September 1914 at Hoffman Ranch, 10 miles south of Prineville, below Hoffman diversion. Records practically equivalent to those at present site except for diversions.

Extremes.- Maximum discharge during year, 1,550 second-feet Feb. 13 (gage height, 4.04 feet); minimum, 4 second-feet Aug. 16 (gage height, 1.10 feet).
1908-12, 1913-14, 1940-47: Maximum discharge observed, 9,080 second-feet Mar. 1, 2, 1910 (gage height, 9.4 feet, former site and datum), from rating curve extended above 1,000 second-feet; no flow at times in 1940. Maximum discharge in recent years, 6,300 second-feet Mar. 28, 1943 (gage height, 7.07 feet).

Remarks.- Records good except those for periods of ice effect and those below 10 second-feet, which are poor. Diversions above station for irrigation. No regulation.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.1	4	1.8	65	3.1	640
1.2	7	2.0	100	3.4	880
1.3	12	2.3	181	3.7	1,170
1.4	19	2.6	313		
1.6	39	2.8	433		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	75	347	b105	141	262	678	214	35	27	8	13
2	29	76	272	b81	178	282	640	203	70	22	9	13
3	37	75	227	73	308	308	598	185	75	20	10	13
4	43	65	214	73	453	313	556	165	81	18	10	12
5	57	65	211	73	414	308	493	149	94	16	9	13
6	51	70	203	98	347	267	473	139	94	15	12	13
7	47	73	188	102	383	236	433	121	102	13	11	16
8	49	76	181	109	313	236	414	109	131	13	10	17
9	49	71	171	112	249	244	466	100	224	13	10	16
10	47	70	168	*116	b211	364	446	92	359	14	8	16
11	47	73	159	112	196	804	414	92	288	16	8	16
12	46	71	159	107	240	863	370	81	207	14	8	18
13	44	69	236	98	1,060	648	389	73	159	10	7	16
14	44	67	510	92	795	584	466	65	128	12	6	16
15	43	67	795	67	570	626	514	58	100	18	5	16
16	45	68	648	64	626	731	521	49	90	16	5	16
17	49	64	b408	79	907	838	535	41	89	15	7	15
18	51	68	b253	71	700	943	678	37	90	13	7	16
19	55	71	267	90	521	970	626	32	102	12	7	16
20	54	85	b253	105	453	981	577	30	90	10	8	17
21	57	107	244	107	414	925	528	24	79	8	9	18
22	68	90	b214	109	427	898	466	20	73	8	9	18
23	76	81	b196	109	460	952	395	18	68	7	8	19
24	81	155	b188	118	507	795	359	16	61	8	7	21
25	75	200	181	144	500	670	324	15	51	10	7	22
26	73	176	196	207	433	598	298	13	41	10	6	30
27	70	605	203	376	342	542	267	12	37	10	5	22
28	67	1,120	227	308	288	535	249	13	35	12	6	19
29	65	872	192	196	-	577	236	19	34	10	8	18
30	65	549	b98	162	-	626	227	22	32	8	10	19
31	70	-	b102	116	-	662	-	24	-	7	11	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	1,680	81	26	54.2	3,330
November.....	5,375	1,120	64	179	10,660
December.....	7,911	795	98	255	15,690
Calendar year 1946.....	175,360	3,520	5	480	347,800
January.....	3,777	376	64	122	7,490
February.....	12,436	1,060	141	444	24,670
March.....	18,568	970	236	599	36,830
April.....	13,636	678	227	455	27,050
May.....	2,231	214	12	72.0	4,430
June.....	3,119	359	32	104	6,190
July.....	405	27	7	13.1	805
August.....	251	12	5	8.1	498
September.....	510	30	12	17.0	1,010
Water year 1946-47.....	69,899	1,120	5	192	138,700

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Crooked River near Culver, Oreg.

Location.- Water-stage recorder, lat. 44°33'36", long. 121°16'12", in sec. 3 (50 feet west of E-corner on line between secs. 2 and 3), T. 12 S., R. 12 E., 1 mile upstream from mouth, 1 mile downstream from Cove power plant, and 4 miles northwest of Culver.

Drainage area.- 4,330 square miles, of which 500 square miles is probably noncontributing.

Records available.- October 1917 to September 1947.

Average discharge.- 30 years, 1,454 second-feet.

Extremes.- Maximum discharge during year, 2,540 second-feet Nov. 29 (gage height, 4.05 feet); minimum, 1,000 second-feet (regulated) July 10 (gage height, 1.90 feet); minimum daily, 1,240 second-feet May 26-28.

1917-47: Maximum discharge observed, 8,260 second-feet Mar. 30, 31, 1943 (gage height, 6.70 feet, site and datum then in use); minimum, 920 second-feet (regulated) Oct. 14, 1945 (gage height, 1.67 feet); minimum daily, 970 second-feet July 12 to Sept. 5, 1921.

Remarks.- Records good. Flow slightly regulated by Ochoco Reservoir; occasional diurnal fluctuation caused by power plant 1 mile above station. Summer flow above Prineville diverted for irrigation. Springs increase flow about 1,000 second-feet within an area extending 17 miles above station.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

2.5	1,200	3.5	1,880
2.5	1,320	3.6	2,130
2.7	1,440	4.0	2,490
3.0	1,650		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,410	1,430	1,860	1,590	1,440	1,590	1,910	1,440	1,330	1,290	1,330	al, 340
2	1,410	1,430	1,690	1,570	1,440	1,580	1,940	1,460	1,390	1,280	1,340	1,330
3	1,410	1,430	1,610	1,390	1,450	1,590	1,880	1,440	1,400	1,290	1,330	1,330
4	1,430	1,430	1,580	1,360	1,540	1,610	1,820	1,410	1,420	1,280	1,310	1,330
5	1,430	1,420	1,560	1,370	1,670	1,610	1,770	1,590	1,410	1,280	1,320	1,320
6	1,440	1,410	1,540	1,590	1,620	1,600	1,720	1,370	1,400	1,290	1,330	1,320
7	1,480	1,420	1,540	1,590	1,590	1,570	1,740	1,350	1,420	1,300	1,310	1,330
8	1,490	1,420	1,540	1,590	1,610	1,540	1,690	1,330	1,460	1,290	1,300	1,340
9	1,490	1,430	1,570	1,400	1,580	1,540	1,660	1,320	1,500	1,290	1,300	1,360
10	1,480	1,440	1,520	1,410	1,540	1,550	1,700	1,330	1,570	1,290	1,310	1,360
11	1,480	1,440	1,710	1,410	1,520	1,670	1,690	1,330	1,630	1,280	1,330	al, 360
12	1,500	1,430	1,630	1,410	1,470	1,760	1,330	1,590	1,500	1,320	1,360	al, 360
13	1,500	1,430	1,480	1,590	1,560	2,120	1,860	1,320	1,520	1,300	1,310	al, 360
14	1,440	1,430	1,540	1,590	2,360	1,930	1,710	1,330	1,480	1,270	1,310	al, 350
15	1,440	1,430	1,880	1,540	2,040	1,900	1,780	1,370	1,440	1,280	1,310	al, 350
16	1,470	1,430	2,060	1,360	1,900	1,940	1,820	1,330	1,410	1,300	1,300	1,340
17	1,430	1,430	1,900	1,350	2,040	2,050	1,820	1,310	1,420	1,280	1,310	1,340
18	1,410	1,440	1,650	1,360	2,180	2,170	1,840	1,290	1,400	1,260	1,310	1,340
19	1,410	1,440	1,570	1,580	2,020	2,250	1,940	1,280	1,390	1,280	1,310	1,340
20	1,410	1,450	1,530	1,370	1,860	2,260	1,900	1,280	1,390	1,280	1,310	1,360
21	1,420	1,440	1,540	1,590	1,780	2,260	1,870	1,270	1,400	1,300	1,310	1,360
22	1,410	1,490	1,550	1,410	1,720	2,200	1,820	1,250	1,380	1,310	1,310	1,360
23	1,410	1,460	1,520	1,450	1,720	2,180	1,700	1,250	1,360	1,320	1,330	1,370
24	1,420	1,440	1,530	1,480	1,760	2,200	1,690	1,250	1,350	1,310	1,340	1,340
25	1,440	1,470	1,520	1,490	2,800	2,060	1,660	1,250	1,320	1,310	1,340	1,330
26	1,430	1,540	1,500	1,500	1,790	1,950	1,590	1,240	1,280	1,310	al, 350	1,330
27	1,430	1,540	1,500	1,480	1,720	1,860	1,540	1,240	1,290	1,330	al, 360	1,330
28	1,430	2,040	1,460	1,580	1,640	1,820	1,520	1,240	1,300	1,360	al, 350	1,320
29	1,430	2,420	1,450	1,540	-	1,810	1,500	1,280	1,310	1,370	al, 350	1,320
30	1,420	2,170	1,410	1,500	-	1,840	1,500	1,300	1,300	1,360	al, 340	1,320
31	1,420	-	1,410	1,430	-	1,880	-	1,330	-	1,340	al, 340	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October	44,620	1,500	1,410	1,439	88,500
November	45,620	2,420	1,410	1,521	90,490
December	49,360	2,060	1,410	1,592	97,900
Calendar year 1946	683,680	5,330	1,310	1,673	1,356,000
January	43,870	1,580	1,340	1,415	87,010
February	48,360	2,360	1,440	1,727	95,920
March	58,290	2,260	1,540	1,880	115,600
April	52,230	1,940	1,500	1,741	103,600
May	40,910	1,460	1,240	1,320	81,140
June	42,260	1,630	1,280	1,409	83,820
July	40,360	1,370	1,270	1,302	80,050
August	41,020	1,360	1,300	1,323	81,360
September	40,240	1,370	1,320	1,341	79,810
Water year 1946-47	547,140	2,420	1,240	1,499	1,085,000

a No gage-height record; discharge computed on basis of records for Deschutes River near Madras.

South Fork Beaver Creek near Paulina, Oreg.

Location.- Staff gage, lat. 44°08', long. 119°45', in N $\frac{1}{2}$ sec. 5, T. 17 S., R. 25 E., at Palmer Ranch, 11 miles east of Paulina.

Drainage area.- 90 square miles.

Records available.- October 1945 to September 1947 in reports of Geological Survey. June 1944 to September 1945 in files of Bureau of Reclamation.

Extremes.- Maximum discharge during year, 400 second-feet Feb. 13 (gage height, 4.50 feet, from floodmark), computed on basis of records for Beaver Creek near Paulina, North Fork Beaver Creek near Paulina, and Crooked River near Post; no flow Aug. 14 to Sept. 30.
1944-47: Maximum discharge, about 900 second-feet Dec. 28 or 29, 1945, computed on basis of records for Beaver Creek near Paulina; maximum gage height observed, 6.00 feet Dec. 29, 1945; no flow at times.

Remarks.- Records poor. Staff gage read once daily. Most of summer flow diverted above station for irrigation and stock water. No regulation. Stage-discharge relation not defined by measurements above 30 second-feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.2	a5.0	25	14	31	15	46	26	a14	6.3	1.3	
2	1.2	5.6	24	b10	117	25	44	25	a16	3.8	1.3	
3	1.4	5.0	22	b7.0	140	20	44	24	a18	3.5	1.3	
4	1.8	4.0	22	b6.0	66	15	44	23	a20	2.9	1.3	
5	2.2	6.7	21	7.0	d25	14	44	22	a20	2.6	1.3	
6	2.0	4.8	20	a7.2	d30	18	44	20	a23	2.6	1.2	
7	2.0	5.3	19	7.4	d20	20	44	18	a28	2.3	1.1	
8	a2.0	4.8	19	8.2	d14	25	44	18	35	2.3	.8	
9	a2.0	4.3	19	*8.2	d12	25	54	20	36	2.3	.8	
10	2.0	4.8	19	8.9	11	30	47	18	24	2.1	.7	
11	1.8	5.6	19	9.6	12	47	44	17	17	2.3	.7	
12	1.8	6.7	19	9.6	176	38	15	15	15	2.1	.3	
13	1.8	6.0	22	9.6	152	32	38	14	12	2.1	.1	
14	1.8	3.6	31	9.6	70	30	38	12	11	2.1	0	
15	1.8	1.6	24	6.7	41	31	38	11	8.5	2.1	0	
16	1.8	4.8	22	6.7	140	31	32	10	7.8	2.1	c	
17	2.2	a4.0	a20	6.7	49	31	35	9.6	13	2.0	0	
18	2.8	3.5	b20	6.7	40	32	44	9.6	12	2.0	0	
19	3.0	3.8	18	6.7	34	32	43	9.3	10	1.9	0	
20	3.4	*6.3	18	7.4	29	32	41	8.5	9.3	1.9	0	
21	8.2	5.3	17	8.9	26	32	38	8.5	8.5	1.8	0	
22	8.2	4.8	17	12	26	32	35	8.5	8.5	1.7	0	
23	9.6	10	17	a31	26	66	32	7.0	9.3	1.7	0	
24	7.4	6.3	17	69	26	43	31	6.3	10	1.3	0	
25	5.0	8.5	16	71	26	40	29	5.8	10	1.3	0	
26	5.6	31	14	188	20	36	29	5.3	10	1.3	0	
27	5.0	128	8.9	27	13	35	29	4.8	9.3	1.3	0	
28	4.6	55	7.0	14	32	a28	8.5	9.3	1.3	0	0	
29	4.6	31	6.0	7.4	-	32	a27	8.5	8.5	1.5	0	
30	5.0	28	b5.0	6.7	-	35	a26	7.8	8.5	1.5	0	
31	3.6	-	11	6.0	-	46	-	12	-	1.5	0	

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	106.8	9.6	1.2	3.45	212
November.....	404.1	128	1.6	13.5	802
December.....	558.9	31	5.0	18.0	1,110
Calendar year 1946.....	6,029.8	200	0	16.5	11,970
January.....	580.2	168	6.0	18.7	1,150
February.....	1,386	176	11	49.5	2,750
March.....	972	66	14	31.4	1,930
April.....	1,150	54	26	38.3	2,280
May.....	413.0	26	4.8	13.3	819
June.....	441.5	36	7.8	14.7	876
July.....	67.5	6.3	1.3	2.18	134
August.....	12.2	1.3	0	.59	24
September.....	0	-	-	-	-
Water year 1946-47.....	6,092.2	176	0	16.7	12,090

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for Crooked River near Post, Beaver Creek near Paulina, and North Fork Beaver Creek near Paulina.

b Stage-discharge relation affected by ice.

d Doubtful gage-height record; discharge computed as explained in footnote a.

Beaver Creek near Paulina, Oreg.

Location.- Water-stage recorder, lat. 44°10', long. 119°56', in NE $\frac{1}{4}$ sec. 26, T. 16 S., R. 23 E., three-quarters of a mile downstream from Paulina Creek, $1\frac{1}{2}$ miles downstream from Wolf Creek, and 3 miles northeast of Paulina.

Drainage area.- 425 square miles.

Records available.- October 1945 to September 1947 in reports of Geological Survey. October 1941 to September 1945 in files of Bureau of Reclamation.

Extremes.- Maximum discharge during year, 605 second-feet Nov. 27 (gage height, 2.75 feet), from rating curve extended above 450 second-feet on basis of discharge of Crooked River near Post; minimum, 0.3 second-foot Sept. 13, 14.
1941-47: Maximum discharge, 4,310 second-feet Dec. 28, 1945 (gage height, 10.2 feet), from rating curve extended above 450 second-feet on basis of discharge of Crooked River near Post; no flow Oct. 13-29, 1945.

Remarks.- Records fair except those below 1 second-foot, which are poor. No regulation. Diversions for irrigation above station, and one on each bank diverting past station.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used May 2 to June 5, June 20 to Sept. 30)

0.1	0	0.6	16	1.6	170
.2	1.4	.8	30	1.9	267
.3	3.6	1.0	49	2.3	425
.4	7.0	1.3	95		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.4	7.4	89	32	37	86	120	22	1.6	4.6	3.9	0.6
2	3.4	7.4	70	24	108	97	120	18	12	3.9	3.9	.7
3	3.6	7.4	64	21	162	99	115	14	15	3.4	3.9	.7
4	4.6	7.4	60	19	113	102	108	14	19	3.2	3.9	.6
5	5.0	7.4	55	20	99	93	104	12	19	2.7	3.9	.4
6	5.0	7.4	51	21	110	74	104	9.4	31	1.1	3.9	.4
7	4.6	7.4	50	21	97	78	99	8.6	34	1.3	3.9	.6
8	4.6	7.4	49	21	89	86	102	10	39	1.4	3.9	.4
9	4.3	7.4	47	22	72	93	99	11	74	1.4	3.9	.4
10	4.3	7.4	45	26	67	308	97	9.4	82	1.6	3.2	.4
11	3.9	7.4	46	29	82	397	80	9.0	51	1.6	3.6	.4
12	3.6	7.4	50	31	232	280	80	6.3	38	2.9	4.6	.4
13	3.6	7.8	59	28	305	197	84	5.3	28	2.7	4.6	.4
14	3.6	7.8	164	26	213	182	72	5.3	22	1.6	4.6	.4
15	3.6	7.4	191	19	176	179	66	4.6	18	1.8	4.6	.6
16	3.6	7.4	145	21	278	191	62	3.9	18	1.6	4.6	.4
17	3.6	7.4	76	20	256	216	68	3.6	24	2.1	4.3	.4
18	3.9	8.0	64	20	188	210	60	3.4	24	2.1	3.2	.4
19	4.3	10	66	21	148	194	91	2.9	22	1.6	3.2	.6
20	6.0	11	59	24	127	188	106	1.6	20	1.8	3.2	.6
21	7.6	11	60	24	120	173	99	1.4	17	1.8	3.4	.6
22	8.2	12	55	25	120	173	86	1.3	12	a2.0	3.4	.6
23	8.6	40	45	28	122	188	78	1.3	10	a2.0	3.4	.6
24	8.6	41	42	46	124	173	60	1.0	7.8	a2.0	3.4	.7
25	8.2	38	46	93	120	132	53	.8	7.4	a2.0	3.4	.8
26	8.2	92	48	167	108	108	45	.4	10	a2.5	3.4	.6
27	7.8	421	55	91	99	102	38	.4	9.8	a2.5	3.4	.7
28	7.4	337	43	54	80	99	34	.4	7.0	a2.5	2.9	.8
29	7.0	200	33	43	-	99	28	.4	5.3	2.9	.7	.7
30	7.0	124	27	40	-	108	25	.7	5.0	3.4	.8	.6
31	7.0	-	30	34	-	122	-	1.0	-	3.9	.7	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	168.3	8.6	3.4	5.43	334
November.....	1,472.6	421	7.4	49.1	2,920
December.....	1,984.0	191	27	64.0	5,940
Calendar year 1946.....	40,732.0	2,040	.8	112	80,790
January.....	1,111	167	19	35.8	2,200
February.....	3,852	305	37	138	7,640
March.....	4,807	397	74	155	9,530
April.....	2,403	120	25	60.1	4,770
May.....	183.4	22	.4	5.92	384
June.....	682.9	82	1.6	22.8	1,550
July.....	72.5	4.6	1.1	2.34	144
August.....	107.7	4.6	.7	3.47	214
September.....	16.5	.8	.4	.55	33
Water year 1946-47.....	16,860.9	421	.4	46.2	33,440

a No gage-height record; discharge computed on basis of recorded range in stage and records for Crooked River near Post and South Fork Beaver Creek near Paulina.

North Fork Beaver Creek near Paulina, Oreg.

Location.- Water-stage recorder, lat. 44°10', long. 119°43', in NW $\frac{1}{4}$ sec. 22, T. 16 S., R. 25 E., 12 miles east of Paulina.

Drainage area.- 70 square miles.

Records available.- October 1945 to September 1947 in reports of Geological Survey. January 1942 to September 1945 in files of Bureau of Reclamation.

Extremes.- Maximum discharge during year, 404 second-feet Nov. 27 (gage height, 3.54 feet), from rating curve extended above 110 second-feet; minimum, 0.1 second-foot July 6 to Aug. 20, Aug. 23-28.
1942-47: Maximum discharge, 899 second-feet Dec. 28, 1945 (gage height, 5.90 feet), from rating curve extended above 110 second-feet; minimum, 0.1 second-foot at times during 1944-47.

Remarks.- Records fair except those above 160 second-feet, which are poor. Several small dams above station store water for irrigation and stock watering. Most of summer flow diverted above station for irrigation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.7	0.8	14	3.5	15	16	44	8.7	1.9	0.2	0.1	0.2
2	.8	.5	10	2.7	73	25	40	7.5	3.3	.2	.1	.2
3	1.0	.4	9.1	2.0	56	22	38	7.0	2.3	.2	.1	.2
4	1.1	.4	7.9	1.2	33	24	34	6.2	2.7	.2	.1	.2
5	1.0	.4	7.0	1.1	36	19	33	5.6	2.7	.2	.1	.2
6	.9	.5	6.2	1.1	41	14	30	4.6	6.2	.1	.1	.2
7	1.0	.6	7.0	1.1	30	19	27	3.8	5.1	.1	.1	.3
8	1.0	.5	7.0	1.1	18	23	31	3.5	8.8	.1	.1	.3
9	.9	.3	6.2	*1.2	15	28	38	3.5	50	.1	.1	.3
10	.8	.5	5.6	1.7	14	138	29	3.8	14	.1	.1	.3
11	.6	.3	7.0	2.6	18	141	25	3.1	7.5	.1	.1	.3
12	.6	.3	9.1	2.4	84	74	23	2.4	4.6	.1	.1	.3
13	.7	.3	14	b2.0	103	54	23	2.1	3.3	.1	.1	.3
14	.7	.3	92	b1.6	45	57	25	2.0	2.1	.1	.1	.2
15	.7	.3	68	b1.1	44	65	29	1.3	1.6	.1	.1	.3
16	.5	.3	38	b1.3	85	79	33	1.0	2.0	.1	.1	.3
17	.7	.5	18	b1.2	74	92	45	.9	11	.1	.1	.3
18	.7	.7	13	b1.4	40	93	45	.7	9.1	.1	.1	.3
19	.7	1.0	14	b1.6	32	89	36	.5	4.8	.1	.1	.3
20	1.2	1.0	10	2.0	27	81	33	.4	3.3	.1	.1	.3
21	.9	.8	10	2.0	25	74	28	.3	2.4	.1	.2	.3
22	.8	1.6	7.9	2.3	27	82	22	.3	1.6	.1	.2	.4
23	.6	13	6.2	6.7	29	86	19	.2	1.1	.1	.1	.3
24	.5	5.1	5.6	37	30	63	17	.2	.7	.1	.1	.3
25	.5	3.1	6.7	40	28	50	16	.2	.4	.1	.1	.3
26	.5	48	7.9	96	23	43	15	.2	.3	.1	.1	.3
27	.4	240	10	24	16	37	14	.2	.5	.1	.1	.2
28	.3	104	5.9	13	15	35	12	.5	.5	.1	.1	.4
29	.3	50	4.4	9.1	-	37	11	.3	.4	.1	.2	.5
30	.6	20	3.5	7.2	-	40	11	1.6	.3	.1	.2	.4
31	.6	-	2.9	7.2	-	47	-	2.1	-	.1	.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	22.3	1.2	0.3	0.72	44
November.....	495.5	240	.3	16.5	983
December.....	434.1	92	2.9	14.0	861
Calendar year 1946	10,058.9	322	.1	27.6	19,940
January.....	278.2	96	1.1	8.97	552
February.....	1,078	103	14	38.4	2,130
March.....	1,745	141	14	56.3	3,460
April.....	826	45	11	27.5	1,640
May.....	74.7	8.7	.2	2.41	148
June.....	154.5	50	.3	5.15	306
July.....	3.6	.2	.1	.12	7.1
August.....	3.6	.2	.1	.12	7.1
September.....	8.7	.5	.2	.29	17
Water year 1946-47	5,122.2	240	.1	14.0	10,160

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

North Fork Crooked River above Deep Creek, Oreg.

Location.- Water-stage recorder, lat. 44°20', long. 120°05', in SW $\frac{1}{4}$ sec. 21, T. 14 S., R. 22 E., three-quarters of a mile upstream from Deep Creek, 20 miles north of Paulina, and 36 miles east of Prineville. Prior to Oct. 1, 1946, at datum 0.33 foot lower.

Drainage area.- 159 square miles (revised).

Records available.- October 1945 to September 1947 in reports of Geological Survey. November 1941 to September 1945 (incomplete) in files of Bureau of Reclamation.

Extremes.- Maximum discharge during year not determined; minimum, 2.0 second-feet in July, August, and September.

1941-47: Maximum discharge, 2,060 second-feet Apr. 7, 1943 (gage height, 4.17 feet), from rating curve extended above 1,000 second-feet; minimum, 0.5 second-foot Aug. 14, 15, 1942.

Remarks.- Records poor. Diversions above station for irrigation; no regulation.

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Nov. 2-25, Nov. 30 to Jan. 23)

0.4	1.8	0.8	11	1.4	88
.5	2.5	.9	18	1.6	132
.6	4.0	1.0	27	1.8	187
.7	6.8	1.2	52		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.5	6.0	45	9.5					17	4.5	2.5	2.5
2	5.0	5.0	48	10					30	4.0	2.5	2.0
3	3.5	5.0	44	6.0					39	5.0	d2.5	2.0
4	4.0	4.5	36	3.5					38	3.0	d2.5	2.0
5	d4.5	5.5	31	4.5					30	3.0	d2.5	2.0
6	d4.0	7.0	30	4.0					45	2.5	d2.5	2.0
7	3.5	6.0	28	3.5		a70			49	2.5	2.0	2.0
8	3.5	5.0		*3.5					116	2.5	2.0	2.0
9	4.0	5.0		3.5					158	2.5	d2.0	2.0
10	3.5	6.0		4.0				a40	98	d2.5	2.0	a2.0
11	3.5	5.0		5.0					67	2.0	2.0	a2.0
12	3.5	3.5		6.0					55	2.0	2.0	a2.0
13	3.5	4.0		7.0					38	2.5	d2.0	a2.0
14	3.5	4.0		6.0					19	2.0	2.0	a2.0
15	3.5	3.5		5.5		158		a160	14	2.0	d2.0	a2.0
16	3.0	4.0		3.5	a85	220			14	2.0	2.0	a2.0
17	3.0	6.5		3.0					39	2.0	2.0	a2.0
18	3.5	11	d60	3.0					11	39	2.0	a2.0
19	4.0	*39		3.0				9.0	21	2.0	2.0	a2.0
20	5.5	22		3.0				7.0	13	2.0	2.0	a2.0
21	12	9.0		3.0				6.5	12	2.0	2.0	a2.0
22	12	9.5		3.5				5.5	11	2.0	2.0	a2.0
23	14	54		3.0				5.0	9.0	2.0	2.0	a2.0
24	9.5	45		b20		a250		4.5	7.0	2.0	2.0	a2.0
25	7.5	27		b40				4.0	7.0	2.0	2.0	a2.0
26	8.0	88		b75				3.5	6.0	2.0	2.0	a2.0
27	7.0	190		b45				4.0	5.5	2.5	2.0	a2.0
28	5.5	181	d26	a25				5.5	5.5	2.5	2.0	a2.0
29	4.5	116	21	a20	-			7.0	7.0	2.5	2.0	2.0
30	5.5	49	12	a17	-			9.0	5.5	2.5	2.0	2.0
31	6.5	-	7.5	a13	-		-	10	-	2.5	2.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	164.5	14	2.5	5.31	326
November.....	326.0	190	3.5	30.9	1,840
December.....	1,528.5	-	7.5	49.3	3,030
Calendar year 1946.....	61,179.0	1,250	1	1.68	121,300
January.....	362.0	75	3.0	11.7	718
February.....	2,380	-	-	85.0	4,720
March.....	5,108	-	-	185	10,130
April.....	4,800	-	-	160	9,520
May.....	771.5	-	-	24.9	1,530
June.....	1,014.5	158	5.5	33.8	2,010
July.....	77.0	5.0	2.0	2.48	153
August.....	65.0	2.5	2.0	2.10	129
September.....	60.5	2.5	2.0	2.02	120
Water year 1946-47.....	17,257.5	-	2.0	47.3	34,230

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for station below Deep Creek.

b Stage-discharge relation affected by ice.

d Doubtful gage-height record; discharge computed as explained in footnote a.

North Fork Crooked River below Deep Creek, Oreg.

Location.- Water-stage recorder, lat. 44°19', long. 120°05', in SW $\frac{1}{4}$ sec. 27, T. 14 S., R. 22 E., a quarter of a mile downstream from Deep Creek, 14 miles northwest of Paulina, and 38 miles east of Prineville.

Drainage area.- 264 square miles.

Records available.- September 1946 to September 1947.

Extremes.- Maximum discharge during period September 1946 to September 1947, 780 second-feet Feb. 12; maximum gage height, 7.63 feet Feb. 12 (ice jam); minimum discharge, 7 second-feet at times July, August, September, 1947.

Remarks.- Records good except those for periods of ice effect, which are poor. No diversion above station. No regulation.

Discharge, in second-feet, 1946-47

1946

Day	Discharge	Day	Discharge	Day	Discharge	Day	Discharge
Sept. 9	10	Sept. 15	10	Sept. 21	10	Sept. 27	10
10	10	16	11	22	10	28	10
11	10	17	12	23	10	29	10
12	10	18	12	24	10	30	10
13	10	19	12	25	10		
14	9	20	11	26	10		

1946-47

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	20	76	b35	b35	84	380	138	34	14	8	7
2	11	20	62	b26	b60	95	325	128	44	13	8	7
3	15	26	61	b19	87	92	295	120	45	12	8	8
4	16	20	67	b15	148	92	252	109	42	12	8	7
5	17	22	64	b16	171	73	244	96	41	11	7	7
6	15	22	60	b17	150	59	212	80	52	10	7	8
7	16	20	55	b18	123	66	186	71	54	10	7	10
8	17	20	52	*b19	76	64	238	66	137	10	7	9
9	16	25	49	b20	66	70	224	68	176	10	9	9
10	14	20	48	b25	49	180	202	61	105	10	9	9
11	13	20	69	b25	54	245	194	54	77	12	8	8
12	13	22	126	b21	b500	181	226	50	61	10	8	8
13	13	20	231	b18	307	174	292	45	47	10	8	8
14	13	19	440	b16	171	222	355	41	39	10	7	8
15	13	20	313	b14	176	287	384	37	34	9	7	8
16	13	22	153	b18	230	355	377	34	37	9	7	8
17	13	25	84	b17	166	433	503	33	54	8	7	8
18	14	32	b70	b17	146	491	483	29	47	8	7	8
19	15	62	b80	b19	132	527	408	26	35	8	7	8
20	20	45	b75	b22	124	527	361	24	31	8	7	8
21	29	31	b70	b27	136	511	298	22	31	8	8	8
22	30	35	b65	b31	166	551	244	20	26	7	8	8
23	29	90	b60	b35	198	454	216	18	24	7	8	8
24	24	83	b55	b50	202	325	196	16	22	7	8	8
25	22	65	b65	b90	160	310	180	15	18	8	8	8
26	22	189	b70	b150	119	290	170	15	17	8	7	8
27	21	300	b75	b80	97	290	164	16	18	9	7	8
28	19	334	b60	b50	90	340	159	18	18	10	7	8
29	18	194	b40	b40	-	394	156	18	18	10	8	8
30	19	92	b30	b35	-	416	148	25	16	9	8	8
31	22	-	b33	b30	-	416	-	30	-	8	8	-

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Monthly discharge, in second-feet, 1946-47

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
September 9-30, 1946	227	12	9	10.3	450
October	542	30	10	17.5	1,080
November	1,913	334	19	63.8	3,790
December	2,858	440	30	92.2	5,670
Calendar year	-	-	-	-	-
January 1947	995	130	14	32.1	1,970
February	4,139	500	35	148	8,210
March	8,614	551	59	278	17,090
April	8,072	503	148	269	16,010
May	1,523	138	15	49.1	3,020
June	1,400	176	16	46.7	2,780
July	295	14	7	9.5	585
August	236	9	7	7.6	468
September	241	10	7	8.0	478
Water year 1946-47	30,828	551	7	84.5	61,150

Metolius River near Grandview, Oreg.

Location.- Staff gage, lat. 44°37', long. 121°27', in NE $\frac{1}{4}$ sec. 19, T. 11 S., R. 11 E., at Montgomery Ranch, 8 miles northeast of Grandview.

Drainage area.- 324 square miles.

Records available.- October 1921 to September 1947.

Average discharge.- 26 years, 1,397 second-feet.

Extremes.- Maximum discharge observed during year, 3,080 second-feet Dec. 15 (gage height, 1.70 feet); minimum observed, 1,180 second-feet Oct. 2-19, Nov. 2-17 (gage height, 0.28 foot).

1921-47: Maximum discharge, 5,780 second-feet Jan. 7, 1923 (gage height, 3.32 feet), from rating curve extended above 2,200 second-feet; minimum, 1,080 second-feet Feb. 17, 1932, Oct. 2-31, Nov. 6, 7, 10-14, 1942.

Remarks.- Records good. Gage read once daily. No diversion or regulation above station.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)

0.2	1,100	1.2	2,340
.4	1,310	1.5	2,780
.8	1,540	1.8	3,240
.9	1,920		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,200	1,200	1,380	1,330	1,490	1,380	1,380	1,420	1,490	1,380	1,310	1,220
2	1,180	1,180	1,380	1,330	1,610	1,380	1,380	1,490	1,480	1,350	1,310	1,220
3	1,180	1,180	1,350	1,310	1,540	1,400	1,380	1,490	1,490	1,350	1,310	1,240
4	1,180	1,180	1,350	1,310	1,490	1,380	1,380	1,520	1,490	1,350	1,310	1,240
5	1,180	1,180	1,350	1,310	1,490	1,350	1,350	1,520	1,490	1,350	1,310	1,240
6	1,180	1,180	1,310	1,310	1,470	1,350	1,350	1,520	1,490	1,350	1,310	1,240
7	1,180	1,180	1,310	1,310	1,420	1,350	1,350	1,520	1,520	1,380	1,310	1,240
8	1,180	1,180	1,310	1,310	1,420	1,350	1,350	1,520	1,520	1,380	1,290	1,240
9	1,180	1,180	1,310	1,310	1,400	1,350	1,350	1,520	1,560	1,350	1,270	1,220
10	1,180	1,180	1,310	1,310	1,400	1,490	1,330	1,490	1,520	1,350	1,290	1,220
11	1,180	1,180	1,350	1,310	1,400	1,440	1,310	1,470	1,440	1,350	1,290	1,220
12	1,180	1,180	1,690	1,310	1,400	1,420	1,310	1,470	1,440	1,350	1,290	1,200
13	1,180	1,180	1,740	1,310	1,420	1,420	1,310	1,440	1,440	1,350	1,290	1,200
14	1,180	1,180	2,540	1,290	1,420	1,400	1,310	1,420	1,420	1,350	1,270	1,200
15	1,180	1,180	3,080	1,240	1,470	1,400	1,310	1,420	1,420	1,350	1,270	1,200
16	1,180	1,180	2,420	1,240	1,590	1,400	1,310	1,420	1,420	1,350	1,270	1,200
17	1,180	1,180	2,170	1,240	1,590	1,400	1,380	1,400	1,440	1,350	1,270	1,200
18	1,180	1,790	1,950	1,240	1,540	1,400	1,380	1,400	1,440	1,350	1,270	1,200
19	1,180	1,540	1,840	1,240	1,520	1,400	1,400	1,400	1,420	1,350	1,270	1,200
20	1,310	1,350	1,740	1,240	1,490	1,400	1,420	1,400	1,420	1,350	1,270	1,200
21	1,310	1,310	1,710	1,240	1,470	1,400	1,420	1,400	1,400	1,350	1,270	1,200
22	1,310	1,350	1,660	1,240	1,470	1,400	1,420	1,400	1,400	1,350	1,240	1,200
23	1,290	1,330	1,590	1,380	1,440	1,440	1,400	1,420	1,400	1,310	1,240	1,200
24	1,290	1,290	1,540	1,660	1,420	1,400	1,400	1,420	1,380	1,310	1,240	1,200
25	1,290	1,290	1,520	1,690	1,420	1,400	1,400	1,420	1,380	1,310	1,240	1,200
26	1,270	1,420	1,490	1,760	1,400	1,380	1,400	1,420	1,380	1,310	1,240	1,200
27	1,270	1,560	1,470	1,560	1,400	1,380	1,400	1,420	1,380	1,310	1,220	1,200
28	1,270	1,540	1,420	1,520	1,380	1,380	1,400	1,420	1,380	1,310	1,220	1,200
29	1,240	1,440	1,400	1,490	-	1,380	1,400	1,440	1,380	1,310	1,220	1,200
30	1,240	1,400	1,350	1,490	-	1,380	1,420	1,440	1,380	1,310	1,220	1,200
31	1,220	-	1,350	1,490	-	1,380	-	1,440	-	1,310	1,220	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	37,750	1,310	1,180	1,218	74,880
November.....	38,650	1,790	1,180	1,288	76,660
December.....	50,540	3,080	1,310	1,624	99,850
Calendar year 1946.....	507,860	3,080	1,180	1,391	1,007,000
January.....	42,320	1,760	1,240	1,365	83,940
February.....	40,970	1,610	1,380	1,463	81,260
March.....	43,180	1,490	1,350	1,393	85,650
April.....	41,040	1,420	1,310	1,368	81,400
May.....	44,890	1,520	1,400	1,448	89,040
June.....	43,220	1,560	1,380	1,441	85,730
July.....	41,460	1,380	1,310	1,337	82,230
August.....	39,350	1,310	1,220	1,269	78,050
September.....	36,540	1,240	1,200	1,211	72,080
Water year 1946-47.....	499,510	3,080	1,180	1,369	990,800

Lake Creek near Sisters, Oreg.

Location.- Water-stage recorder, lat. 44°26', long. 121°44', in SW $\frac{1}{4}$ sec. 24, T. 13 S., R. 8 E., a quarter of a mile downstream from Suttle Lake, 6 miles upstream from mouth, and 13 miles northwest of Sisters. Altitude of gage, about 3,430 feet (from topographic map).

Drainage area.- 20.5 square miles.

Records available.- 1911-13 (occasional readings during summers), April 1915 to September 1947.

Average discharge.- 31 years (1915-18, 1919-47), 48.1 second-feet.

Extremes.- Maximum discharge during year, 287 second-feet Dec. 16 (gage height, 3.50 feet); minimum, 16 second-feet (regulated) Aug. 28.

1911-13, 1915-47: Maximum discharge, 302 second-feet Jan. 10, 1923 (gage height, 2.58 feet), from rating curve extended above 150 second-feet; minimum, 1.0 second-foot (regulated) Nov. 4, 5, 1940; minimum daily, 8 second-feet Nov. 5, 1940, Oct. 6, 1942.

Remarks.- Records good. No diversion above station; occasional regulation by storage in Suttle Lake.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	25	82	67	85	59	61	68	47	38	34	28
2	26	26	83	64	89	58	61	69	47	37	34	28
3	26	26	81	61	76	58	61	70	47	38	34	27
4	26	27	78	59	70	56	61	71	47	37	33	28
5	26	26	74	50	87	54	61	70	47	37	32	26
6	26	26	70	40	65	54	61	72	47	37	32	28
7	26	28	67	42	62	53	60	75	48	36	32	28
8	26	28	64	44	56	53	59	78	49	36	32	28
9	26	28	62	48	49	54	58	76	49	36	30	28
10	26	28	50	47	51	58	58	74	49	35	31	27
11	26	27	40	46	52	58	55	72	49	35	30	28
12	26	25	42	49	54	56	56	72	50	35	30	27
13	26	27	84	52	55	56	54	68	52	34	30	24
14	26	28	147	53	54	56	48	66	47	34	30	28
15	26	26	235	52	56	56	48	62	47	34	30	28
16	26	25	280	50	58	55	49	58	47	34	28	28
17	26	26	269	49	58	54	52	57	47	34	26	28
18	26	32	225	47	58	54	54	56	44	35	27	28
19	26	46	180	47	58	54	56	55	44	35	28	28
20	29	57	157	46	57	53	61	54	43	35	28	28
21	32	51	142	45	57	53	64	52	40	35	28	28
22	32	57	126	45	55	55	68	48	39	34	26	28
23	32	64	122	54	52	56	68	46	39	34	26	28
24	31	67	100	59	52	58	68	46	39	34	24	28
25	31	66	92	47	53	58	68	47	38	34	22	28
26	30	76	86	55	53	58	68	47	37	31	26	28
27	30	82	84	57	52	58	68	46	37	28	26	28
28	a28	78	80	53	55	58	67	45	37	33	22	28
29	a26	78	75	63	-	58	65	46	37	35	26	28
30	24	80	72	68	-	60	66	47	38	35	26	28
31	23	-	68	67	-	61	-	47	-	35	26	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	842	32	23	27.2	1,670
November.....	1,286	82	25	42.9	2,550
December.....	3,409	280	40	110	6,760
Calendar year 1946	20,773	280	22	56.9	41,200
January.....	1,626	68	40	52.5	3,230
February.....	1,659	89	49	59.2	3,290
March.....	1,742	61	53	56.2	3,460
April.....	1,804	68	48	60.1	3,580
May.....	1,860	78	45	60.0	3,690
June.....	1,328	52	37	44.3	2,630
July.....	1,080	38	28	34.6	2,140
August.....	889	34	22	28.7	1,760
September.....	833	28	24	27.8	1,650
Water year 1946-47	18,358	280	22	50.3	36,410

a No gage-height record; discharge interpolated.

White River near Wapinitia, Oreg.

Location.- Water-stage recorder, lat. 45°09', long. 121°30', in NE $\frac{1}{4}$ sec. 11, T. 5 S., R. 10 E., 500 feet downstream from Crane Creek, 1 mile downstream from Clear Creek, and 12 $\frac{1}{2}$ miles northwest of Wapinitia.

Drainage area.- 115 square miles.

Records available.- October 1945 to September 1947 in reports of Geological Survey. September 1941 to October 1943 and May 1944 to September 1945 in files of Bureau of Reclamation.

Extremes.- Maximum discharge during year, 3,620 second-feet Dec. 15 (gage height, 6.43 feet); minimum, 78 second-feet Sept. 14, 15, 21 (gage height, 1.29 feet).
1941-47: Maximum discharge, that of Dec. 15, 1946; minimum, 54 second-feet Oct. 9, 1942.

Remarks.- Records good except those for October to December, which are fair. No regulation. Wapinitia Irrigation Co. canal diverts from Frog Creek and Clear Creek, capacity about 25 second-feet.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 14

Dec. 15 to Sept. 30

1.8	181	3.7	1,100	1.3	79	2.4	340
2.1	264	4.2	1,470	1.5	105	2.8	530
2.4	380	4.8	1,970	1.8	156	3.2	765
2.8	560	5.4	2,520	2.1	228	3.7	1,100
3.2	780	6.1	3,240				

Note.- Same as preceding table above 3.7 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	93	166	286	261	-398	276	426	380	214	135	108	86
2	96	148	268	254	541	283	416	412	231	132	102	86
3	96	144	252	254	455	280	408	421	198	130	106	85
4	102	137	268	258	408	288	385	421	188	128	104	85
5	103	126	252	272	376	261	367	408	184	127	102	83
6	95	128	233	261	349	254	349	403	177	127	101	81
7	102	126	225	254	332	254	327	398	182	123	98	91
8	100	117	239	254	311	254	332	372	208	123	98	90
9	94	117	233	248	291	258	332	362	225	122	99	98
10	92	120	344	228	280	327	336	311	222	128	97	91
11	91	117	1,310	222	272	385	319	291	191	123	94	84
12	91	112	2,710	217	298	354	323	276	177	120	94	81
13	95	107	2,810	214	344	336	358	261	171	120	92	81
14	95	107	3,200	195	332	327	412	261	164	120	92	80
15	95	107	3,040	188	354	340	460	248	160	120	92	79
16	94	104	1,750	208	412	362	470	244	169	117	92	84
17	99	158	1,300	195	412	398	558	241	166	116	91	86
18	91	398	967	191	398	435	705	241	180	114	89	86
19	91	376	830	200	367	440	645	241	156	111	87	81
20	163	282	705	195	349	455	563	238	152	111	86	80
21	159	236	621	208	336	475	500	238	145	110	86	86
22	148	222	546	217	340	541	445	231	143	108	86	89
23	166	239	480	376	340	505	416	228	141	106	86	89
24	304	217	430	530	340	460	403	225	137	106	85	89
25	402	258	394	574	323	430	398	222	137	105	83	91
26	278	376	376	862	311	408	394	222	156	108	84	92
27	206	448	354	645	298	390	408	225	184	120	84	94
28	177	438	311	536	287	380	408	220	179	125	86	105
29	163	356	280	435	-	403	435	214	150	110	90	95
30	161	308	272	408	-	445	385	206	141	105	90	94
31	155	-	272	372	-	435	-	198	-	116	87	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	4,297	402	91	139	8,520
November.....	6,275	448	104	209	12,450
December.....	25,558	3,200	225	824	50,690
Calendar year 1946	122,791	3,200	87	336	243,600
January.....	9,752	862	188	315	19,340
February.....	9,854	541	272	352	19,550
March.....	11,419	541	254	368	22,650
April.....	12,683	705	319	423	25,160
May.....	8,859	421	198	288	17,570
June.....	5,208	231	137	174	10,330
July.....	3,666	135	105	118	7,270
August.....	2,871	108	83	92.6	5,690
September.....	2,619	105	79	87.3	5,190
Water year 1946-47	103,061	3,200	79	282	204,400

Peak discharge.- Dec. 12 (7:30 p.m.) 2,920 sec.-ft.; Dec. 13 (11 p.m.) 3,240 sec.-ft.; Dec. 15 (1:30 a.m.) 3,620 sec.-ft.; Jan. 26 (3:30 a.m.) 1,020 sec.-ft.; Apr. 18 (4 a.m.) 729 sec.-ft.

White River below Tygh Valley, Oreg.

Location.- Water-stage recorder, lat. 45°14', long. 121°06', in NW¼ sec. 8, T. 4 S., R. 14 E., just below Pacific Power & Light Co.'s plant at White River Falls and 4½ miles east of Tygh Valley.

Drainage area.- 393 square miles.

Records available.- October 1917 to September 1947.

Average discharge.- 30 years, 403 second-feet.

Extremes.- Maximum discharge during year, 6,120 second-feet Dec. 15 (gage height, 8.6 feet, from floodmark); minimum, 58 second-feet (regulated) Sept. 12 (gage height, 0.35 foot); minimum daily, 105 second-feet Sept. 6.

1917-47: Maximum discharge, 13,300 second-feet Jan. 6, 1923 (gage height, about 13.3 feet), from rating curve extended above 5,000 second-feet; minimum, 10 second-feet (regulated) Dec. 11-14, 1919, Aug. 9, 1931; minimum daily, 71 second-feet Aug. 31, 1941.

Remarks.- Records good except those for periods of no gage-height record, which are fair. Diversions above station for irrigation. Low-water flow partly regulated by power plant.

Cooperation.- Water-stage recorder inspected by employees of Pacific Power & Light Co.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.9	102	2.7	605	5.6	2,750
1.2	139	3.2	840	6.5	3,660
1.6	218	3.7	1,120	8.0	5,370
1.9	305	4.3	1,550		
2.3	445	4.9	2,070		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	125	a230	a490	469	708	533	654	565	305	179	150	113
2	125	h218	a460	433	1,200	537	636	601	356	173	141	113
3	131	a210	a430	a410	994	533	659	614	320	171	141	112
4	129	a205	a455	a400	825	497	614	614	299	175	139	111
5	149	a195	a440	413	760	485	577	610	293	173	136	108
6	133	a200	a405	445	708	453	561	605	284	171	135	105
7	133	a200	h391	394	672	449	537	597	275	164	132	118
8	142	a195	a410	377	628	449	533	593	305	155	132	125
9	133	h194	a395	366	601	477	533	565	323	152	132	123
10	131	a200	a600	366	585	573	533	521	329	155	129	129
11	128	a190	a2,300	363	557	672	505	485	296	155	125	117
12	128	a180	a4,500	349	593	636	501	461	272	153	126	113
13	129	173	a4,700	342	664	610	525	441	257	152	124	111
14	133	169	4,870	323	641	610	577	425	245	152	120	111
15	132	169	5,370	a310	686	614	628	413	240	152	123	109
16	131	164	3,150	a340	1,040	636	646	391	275	149	125	112
17	136	168	a2,200	a325	1,050	668	668	377	245	142	125	123
18	a130	505	a1,600	314	922	704	880	370	218	139	120	126
19	h131	704	a1,500	323	865	722	835	366	218	139	118	118
20	a250	a550	a1,250	299	785	731	795	356	213	139	117	115
21	a250	a400	h1,100	323	731	745	736	349	201	138	117	120
22	a210	a350	a970	320	695	810	682	338	194	135	117	125
23	a280	h363	a870	517	664	795	641	332	192	135	117	124
24	a400	a350	a810	815	650	750	605	326	184	135	115	120
25	a470	a350	a750	936	628	708	597	320	179	129	115	124
26	h391	a500	a680	1,920	601	677	565	323	190	131	113	153
27	308	a850	628	1,330	561	650	593	326	218	145	110	135
28	251	a820	561	1,070	553	623	605	323	240	160	111	173
29	232	a700	521	855	-	623	618	314	211	147	119	152
30	a230	h557	485	760	-	668	601	308	188	141	121	145
31	a220	-	493	664	-	659	-	299	-	155	118	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October	5,981	470	125	193	11,860
November	10,259	850	164	342	20,350
December	43,984	5,370	391	1,419	87,240
Calendar year 1946	198,039	5,370	114	543	392,800
January	16,871	1,920	299	544	33,460
February	20,807	1,200	553	736	40,870
March	19,297	810	449	622	36,280
April	18,650	880	501	622	37,010
May	13,528	614	299	436	26,830
June	7,565	356	179	252	15,000
July	4,689	179	129	151	9,300
August	3,863	150	110	125	7,660
September	3,663	173	105	122	7,270
Water year 1946-47	168,967	5,370	105	463	335,100

a No gage-height record; discharge computed on basis of recorded range in stage and records for station near Wapinitia.

h Computed from staff-gage reading.

Clear Creek near Government Camp, Oreg.

Location.- Water-stage recorder, lat. 45°10', long. 121°41', in NW¼ sec. 4, T. 5 S., R. 9 E., 0.7 mile downstream from Clear Lake Outlet and 9 miles southeast of Government Camp. Datum of gage is 3,450.94 feet above mean sea level, datum of 1929, supplemental adjustment of 1947.

Drainage area.- 8.9 square miles.

Records available.- October 1946 to September 1947 in reports of Geological Survey; December 1940 to September 1941 in files of Oregon State engineer. November 1941 to September 1946 at site 0.7 mile upstream at Clear Lake Outlet in files of Bureau of Reclamation (records not equivalent).

Extremes.- Maximum discharge during year, 150 second-foot Dec. 15 (gage height, 3.00 feet); minimum, 2.6 second-foot Sept. 30 (gage height, 1.34 feet).
1940-41, 1946-47: Maximum discharge, that of Dec. 15, 1946; minimum discharge observed, 1.6 second-foot Nov. 1, 1940 (gage height, 0.12 foot, datum then in use).

Remarks.- Records fair. No diversion or regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a4.0	8.1	12	29	18	18	32	26	9.4	7.5	5.8	a4.0
2	a4.0	8.1	11	26	22	19	32	26	10	7.5	5.3	a4.0
3	a4.5	7.5	11	25	25	19	32	25	10	6.8	5.3	a4.0
4	5.3	6.8	12	24	26	19	35	24	10	6.8	5.3	a4.0
5	4.8	6.2	11	23	26	18	33	23	10	6.8	5.3	a4.0
6	4.4	6.2	11	23	26	18	32	22	10	6.8	4.8	a4.5
7	4.8	5.8	11	22	26	18	30	22	10	6.8	4.8	a5.0
8	4.8	5.3	11	21	24	18	31	22	11	6.8	4.8	a4.5
9	4.8	5.3	11	20	22	18	31	22	11	7.5	4.8	a5.0
10	4.8	5.8	13	20	22	21	31	21	12	14	4.8	a5.0
11	4.8	5.3	23	20	21	22	27	20	11	14	4.8	a4.5
12	4.8	4.8	52	21	22	22	26	19	11	13	4.8	a4.5
13	4.8	4.8	87	b21	24	22	26	19	11	12	4.8	a4.5
14	4.8	4.8	108	b20	23	22	26	18	11	12	4.8	a4.0
15	4.8	4.8	143	18	23	22	26	18	11	11	4.8	a4.0
16	4.4	4.8	113	18	23	22	26	17	11	all	4.8	a4.0
17	4.8	8.2	104	18	25	22	30	18	11	a10	a4.8	a4.5
18	4.8	12	95	18	22	22	34	16	11	a9.0	a4.5	a4.5
19	4.8	12	85	18	22	22	36	16	11	a9.0	a4.3	a4.0
20	6.2	12	76	17	22	22	35	15	11	a8.0	a4.3	a4.0
21	5.3	b11	68	17	22	23	34	15	11	a8.0	a4.3	a3.5
22	5.3	b12	60	18	21	25	34	14	10	a7.0	a4.3	a3.5
23	5.3	12	55	18	21	26	33	13	9.4	a6.5	a4.3	3.5
24	6.8	12	49	22	20	26	32	12	8.1	a6.0	a4.0	3.0
25	7.5	12	44	26	20	27	31	12	7.5	a6.0	a4.0	3.0
26	7.5	13	43	30	19	26	29	11	8.1	a6.0	a4.0	3.0
27	6.8	15	42	28	18	26	27	11	8.1	a7.0	a4.0	3.5
28	6.2	15	37	26	18	27	27	11	8.1	a7.0	h4.4	3.5
29	6.2	13	34	26	-	28	27	11	7.5	a6.0	a4.4	3.0
30	6.8	12	32	b22	-	30	26	11	7.5	5.8	a4.4	2.6
31	6.8	-	30	b18	-	32	-	9.4	-	5.8	a4.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	165.7	7.5	4.0	5.35	0.601	0.69	329
November	263.6	15	4.8	8.79	.988	1.10	523
December	1,484	143	11	48.2	5.42	6.24	2,960
Calendar year	-	-	-	-	-	-	-
January	673	30	17	21.7	2.44	2.81	1,330
February	621	26	18	22.2	2.49	2.59	1,230
March	702	32	18	22.6	2.54	2.93	1,380
April	909	35	26	30.3	3.40	3.80	1,800
May	537.4	26	9.4	17.3	1.94	2.25	1,070
June	298.7	12	7.5	9.96	1.12	1.25	592
July	257.4	14	5.8	8.30	.933	1.08	511
August	143.8	5.8	4.0	4.64	.521	.60	285
September	119.6	6.0	2.6	3.99	.448	.50	237
Water year 1946-47	6,185.2	143	2.6	16.9	1.90	25.84	12,260

a No gage-height record; discharge computed on basis of records for Salmon River near Government Camp.

b Stage-discharge relation affected by ice.

h Computed from staff-gage reading.

FIFTEENMILE CREEK BASIN

Fifteenmile Creek near Wrentham, Oreg.

Location.- Water-stage recorder, lat. 45°30', long. 121°02', in sec. 3, T. 1 S., R. 14 E.,
0.1 mile below Dry Creek, 3 miles southwest of Wrentham, and $9\frac{1}{2}$ miles southeast of The Dalles.

Drainage area.- 171 square miles.

Records available.- October 1946 to September 1947. December 1926 to May 1927 at site 2 $\frac{1}{2}$
miles downstream, in files of State engineer.

Extremes.- Maximum discharge during year, 668 second-feet June 7 (gage height, 5.58 feet);
minimum, 0.8 second-foot Aug. 22 (gage height, 1.99 feet).

Remarks.- Records good except those for periods of ice effect or no gage-height record,
and those below 10 second-feet, which are fair. The town of Dufur diverts water from
creek about 5 miles above station. Several small diversions for irrigation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a4.0	10	25	46	78	53	41	36	46	7.4	6.1	3.6
2	a4.0	9.5	22	b40	155	53	42	40	40	6.4	5.6	3.2
3	a5.0	8.4	20	b35	129	52	49	44	38	5.6	5.1	2.9
4	a5.0	9.0	*21	b35	110	46	43	49	34	5.6	4.8	3.1
5	a6.0	9.0	21	b30	95	44	41	50	32	5.1	4.4	3.1
6	a5.0	9.5	21	b30	84	43	39	50	29	4.8	3.6	3.2
7	a6.0	9.5	20	b30	78	44	38	52	66	4.8	3.6	3.6
8	h5.8	9.5	20	b30	70	42	38	53	48	4.4	3.6	3.9
9	h6.4	9.0	18	b30	64	43	38	52	34	3.6	3.9	4.1
10	h6.1	9.0	18	b25	60	57	34	50	30	2.3	4.6	4.1
11	a6.0	9.0	20	b25	58	60	32	47	26	2.3	4.4	3.6
12	a5.0	9.0	80	25	67	57	31	42	25	2.6	4.4	3.2
13	a5.0	9.0	*149	25	78	57	31	38	21	2.4	4.1	3.1
14	h5.1	9.0	215	b25	84	54	32	33	20	2.6	3.4	3.1
15	a6.0	9.0	325	b25	92	53	31	29	10	3.1	2.6	3.1
16	h6.1	8.4	251	b25	149	52	32	25	20	2.8	1.6	3.1
17	h6.1	10	166	b25	157	52	35	25	19	2.9	1.6	3.4
18	h6.8	22	*133	b25	135	52	38	24	18	3.6	1.5	4.8
19	a7.0	28	111	b30	119	52	36	45	17	3.2	1.2	4.8
20	a8.0	19	95	b35	104	52	40	25	16	2.9	1.2	4.4
21	a9.0	15	84	b35	94	52	39	23	14	2.8	1.4	3.9
22	h11	12	74	39	84	54	38	25	13	3.9	1.6	3.9
23	h10	16	66	41	77	53	36	25	11	4.8	2.3	3.6
24	h6.4	19	59	47	74	49	36	26	7.4	4.8	3.1	3.4
25	h9.5	15	54	64	70	48	36	26	6.4	4.8	3.1	3.4
26	h9.0	25	52	186	64	46	38	28	7.1	5.6	2.9	3.6
27	h10	35	49	129	58	43	38	29	7.4	6.8	2.8	4.1
28	h10	46	44	102	57	42	39	33	7.4	10	2.9	29
29	9.5	35	44	*86	-	42	41	33	7.4	7.7	3.2	10
30	10	29	b45	77	-	43	40	32	7.4	6.1	3.9	7.1
31	9.0	-	b45	64	-	42	-	32	-	5.6	3.9	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	220.8	11	4.0	7.12	438
November.....	471.8	46	8.4	15.7	936
December.....	2,367	325	18	76.4	4,690
Calendar year.....	-	-	-	-	-
January.....	1,466	186	25	47.3	2,910
February.....	2,544	157	57	90.9	5,050
March.....	1,534	60	42	49.5	3,040
April.....	1,124	49	31	37.5	2,230
May.....	1,101	53	23	35.5	2,180
June.....	686.5	66	6.4	22.9	1,360
July.....	141.3	10	2.3	4.56	280
August.....	102.6	6.1	1.2	3.31	204
September.....	143.4	29	2.9	4.78	284
Water year 1946-47.....	11,902.4	325	1.2	32.6	23,600

Peak discharge.- Dec. 15 (1:30 p.m.) 388 sec.-ft.; June 7 (7 p.m.) 668 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records and records for stations on
nearby streams.

b Stage-discharge relation affected by ice.

h Computed from staff-gage reading.

Eightmile Creek near Boyd, Oreg.

Location.- Water-stage recorder, lat. 45°31'10", long. 121°06'35", in SE $\frac{1}{4}$ sec. 31, T. 1 N., R. 14 E., at county bridge crossing 2 $\frac{1}{2}$ miles northwest of Boyd and 7 miles south-east of The Dalles.

Drainage area.- 56 square miles.

Records available.- October 1946 to September 1947.

Extremes.- Maximum discharge during year, 380 second-feet June 7 (gage height, 6.55 feet); minimum, 0.8 second-foot Sept. 24 (gage height, 1.94 feet).

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. No regulation; several small diversions for irrigation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a3.0	6.3	9.3	10	31	39	24	15	16	4.3	4.1	2.2
2	h2.8	6.3	8.8	9.0	52	38	24	15	16	3.7	3.7	1.9
3	h3.2	5.7	8.6	8.4	64	35	26	17	16	3.5	3.7	1.8
4	h3.7	6.1	*8.6	8.0	55	32	24	18	13	3.9	3.5	1.8
5	a4.0	5.7	9.1	8.0	50	*30	23	18	13	3.4	3.4	1.9
6	a4.0	6.1	8.8	8.0	46	28	22	18	12	3.0	3.0	2.0
7	a4.0	5.9	7.3	8.0	43	27	21	18	70	2.8	2.9	2.4
8	h3.7	6.1	7.1	7.0	40	26	21	18	29	2.8	2.9	2.8
9	h2.8	6.1	7.3	7.0	36	27	21	18	15	2.6	2.9	2.8
10	h5.2	6.1	7.3	7.0	34	*32	20	17	13	2.6	2.9	2.6
11	h3.2	6.1	7.9	7.0	32	38	18	17	12	2.6	2.9	2.3
12	a3.0	5.7	13	7.0	36	38	17	16	11	2.5	2.9	1.8
13	a3.0	5.7	*19	7.0	44	39	17	15	10	2.4	2.8	1.8
14	h3.1	5.4	26	6.0	48	38	17	14	10	2.4	2.6	1.7
15	3.1	5.4	54	5.5	56	38	16	14	9.5	2.3	2.6	1.8
16	3.7	5.0	50	5.0	95	38	14	14	9.8	2.2	2.6	a2.0
17	3.8	5.2	36	5.0	110	38	14	12	9.8	2.0	2.6	a2.1
18	4.0	7.3	*31	5.0	96	38	15	12	9.2	2.4	2.6	a2.3
19	4.3	13	30	6.0	84	38	16	14	8.9	2.6	2.4	2.3
20	5.0	9.3	27	a6.0	72	37	16	12	8.6	2.6	2.4	1.9
21	6.7	6.5	25	a7.0	66	37	16	11	8.3	3.0	2.4	1.7
22	6.5	4.5	23	a7.0	57	37	15	11	8.0	3.0	2.4	1.4
23	6.1	5.5	21	a7.0	58	35	15	11	7.5	3.0	2.6	1.4
24	5.5	10	20	a8.0	55	33	14	11	7.2	3.9	2.3	1.0
25	4.8	10	18	a16	52	31	14	11	6.0	3.9	2.2	1.2
26	4.8	12	18	a45	48	29	14	10	6.0	3.9	2.2	1.4
27	5.5	14	17	a42	44	28	14	10	5.8	4.5	1.9	1.7
28	5.4	15	14	a38	42	26	15	9.7	4.7	5.5	1.9	1.9
29	5.2	12	13	*34	-	25	15	9.7	5.5	4.7	2.2	1.8
30	5.4	10	12	33	-	26	15	10	5.1	4.3	2.4	1.7
31	5.4	-	11	29	-	25	-	10	-	4.1	2.4	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	133.9	6.7	2.8	4.32	0.077	0.09	266
November	228	15	4.5	7.60	.136	.15	452
December	568.1	54	7.1	18.3	.327	.38	1,130
Calendar year	-	-	-	-	-	-	-
January	405.9	45	5	13.1	.234	.27	805
February	1,551	110	31	55.4	.989	1.03	3,080
March	1,026	39	25	33.1	.591	.68	2,040
April	533	28	14	17.8	.318	.35	1,060
May	426.4	18	9.7	13.8	.246	.28	846
June	375.9	70	4.7	12.5	.223	.25	746
July	100.5	5.5	2.0	3.24	.058	.07	199
August	84.3	4.1	1.9	2.72	.049	.06	167
September	57.4	2.8	1.0	1.91	.034	.04	114
Water year 1946-47	5,490.4	110	1.0	15.0	.268	3.65	10,900

Peak discharge.- Feb. 16 (8 to 9 a.m.) 117 sec.-ft.; June 7 (7:30 p.m.) 380 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of weather records, recorded range in stage, and records for Fifteenmile Creek near Wrentham.

h Computed from staff-gage readings.

Note.- Stage-discharge relation affected by ice Dec. 18, Dec. 29 to Jan. 2, Jan. 4-14, 16-19, and probably during at least part of period of no gage-height record in January.

KLIKITAT RIVER BASIN

Klickitat River above West Fork, near Glenwood, Wash.

Location.- Water-stage recorder, lat. 46°15'40", long. 121°14'30", in S $\frac{1}{2}$ sec. 18, T. 9 N., R. 13 E., $\frac{1}{2}$ miles upstream from West Fork and 17 miles north of Glenwood.

Drainage area.- 151 square miles.

Records available.- November 1944 to September 1947.

Extremes.- Maximum discharge during year, 1,600 second-feet Dec. 15 (gage height, 3.21 feet); minimum, 78 second-feet Oct. 13, 14, 16, 18, Sept. 23-25 (gage height, 1.13 feet).
1944-47: Maximum discharge, 1,710 second-feet May 17, 1946 (gage height, 3.28 feet); minimum, 48 second-feet Nov. 14, 15, 1945 (gage height, 0.98 foot), but may have been less sometime during period of ice effect.

Remarks.- Records good except those for periods of ice effect, which are poor. No diversion or regulation.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.1	71	1.6	232	2.3	656
1.2	95	1.8	329	2.6	900
1.4	155	2.0	446	3.1	1,450

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	81	129	269	210	237	283	452	918	672	273	142	88
2	81	115	269	205	319	283	440	1,110	634	278	136	85
3	81	115	260	200	283	278	440	1,180	567	273	133	85
4	85	115	319	195	260	269	422	1,140	525	260	136	85
5	88	115	309	190	246	260	403	1,130	498	255	129	85
6	83	*112	288	185	237	250	379	1,160	478	250	123	85
7	85	109	269	185	228	246	368	1,300	553	246	120	112
8	90	106	255	*185	224	241	368	1,360	760	232	117	115
9	85	112	246	180	224	241	357	1,190	648	220	117	112
10	83	109	269	180	199	246	346	1,040	567	220	115	112
11	81	106	1,000	170	212	220	329	963	492	220	115	101
12	81	112	1,040	160	264	212	340	927	466	228	112	93
13	78	120	1,410	160	*329	216	416	900	459	220	109	88
14	78	123	1,370	155	363	228	511	824	434	212	108	88
15	81	117	1,310	155	374	250	641	784	403	203	103	85
16	78	117	900	150	385	283	696	776	459	195	103	88
17	81	136	696	145	368	329	768	744	485	184	103	88
18	78	724	596	145	357	379	816	720	446	180	101	90
19	81	696	525	145	346	422	866	760	403	180	101	88
20	133	403	459	149	329	452	875	816	374	173	101	83
21	149	319	422	152	324	498	808	866	340	169	101	83
22	142	280	385	155	324	546	776	858	335	162	101	81
23	142	293	346	220	329	518	768	808	340	159	98	81
24	166	260	324	374	329	472	760	816	340	155	98	78
25	315	241	304	329	319	440	792	841	346	152	95	81
26	304	288	293	335	314	422	850	883	351	155	93	83
27	199	374	273	309	304	397	945	945	391	162	93	81
28	155	397	232	260	298	385	1,040	918	329	169	90	282
29	149	329	230	250	-	403	1,010	816	293	155-	88	117
30	139	283	225	240	-	452	918	776	278	149	90	101
31	129	-	220	224	-	452	-	736	-	145	90	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	3,681	315	78	119	0.788	0.91	7,300
November	6,835	724	106	228	1.51	1.68	13,560
December	15,313	1,410	220	494	3.27	3.77	30,370
Calendar year 1946	133,791	1,600	78	367	2.43	32.95	265,400
January	6,297	374	145	203	1.34	1.55	12,480
February	8,325	385	199	297	1.97	2.05	16,510
March	10,592	546	212	342	2.26	2.61	21,010
April	18,900	1,040	329	630	4.17	4.65	37,490
May	29,005	1,360	720	936	6.20	7.14	57,530
June	13,668	760	278	456	3.02	3.37	27,110
July	6,234	278	145	201	1.33	1.54	12,360
August	3,359	142	88	108	.715	.83	6,660
September	2,924	282	78	97.5	.646	.72	5,800
Water year 1946-47	125,131	1,410	78	343	2.27	30.82	246,200

* Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 29 to Jan. 19, Jan. 29, 30.

Klickitat River near Glenwood, Wash.

Location.- Water-stage-recorder, lat. 46°05'30", long. 121°15'30", in SE $\frac{1}{4}$ sec. 14, T. 7 N., R. 12 E., half a mile downstream from Dairy Creek, 5 miles north of Glenwood, and 7 miles upstream from Trout Creek. Datum of gage is about 1,703 feet above mean sea level, datum of 1929.

Drainage area.- 360 square miles.

Records available.- December 1910 to September 1947 (1920-28 incomplete). October 1909 to December 1910 at site 1 mile upstream.

Average discharge.- 30 years (1909-20, 1928-47), 802 second-feet.

Extremes.- Maximum discharge during year, 3,970 second-feet Dec. 14 (gage height, 6.33 feet); minimum, 339 second-feet Oct. 16, 17, 18.
1909-47: Maximum discharge, 9,870 second-feet Dec. 22, 1933 (gage height, 7.9 feet, present datum), from rating curve extended above 2,000 second-feet; minimum, 204 second-feet Nov. 28, 1931.

Remarks.- Records good except those for periods of no gage-height record, which are poor. All low-water flow of Hellroaring Creek, a tributary of Big Muddy Creek, is diverted for irrigation. No regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	366	450	758	620	722	802	1,060	1,620	1,370	744	491	420
2	361	413	720	600	895	795	1,040	1,940	1,320	751	491	420
3	366	413	720	600	788	788	1,050	2,000	1,240	744	510	415
4	366	413	860	600	765	758	999	2,000	1,140	729	536	415
5	377	413	844	620	773	744	975	2,000	1,120	736	516	410
6	366	401	788	640	773	722	927	2,000	1,070	736	510	410
7	366	413	742	620	773	714	911	2,180	1,150	722	491	440
8	372	383	712	620	758	714	911	2,360	1,570	693	472	470
9	361	395	698	620	758	714	903	2,180	1,470	686	453	460
10	355	407	728	610	722	751	895	1,940	1,240	693	423	440
11	355	389	2,240	*595	693	729	855	1,780	1,140	693	429	435
12	350	395	2,610	562	848	707	855	1,720	1,070	707	423	430
13	355	377	3,410	555	1,020	693	927	1,670	1,030	714	441	420
14	355	383	3,480	b540	1,130	714	1,070	1,670	975	686	460	415
15	350	363	3,000	b520	*1,120	736	1,240	1,470	951	664	466	420
16	345	372	2,240	b500	1,140	773	1,280	1,470	1,110	636	460	430
17	339	481	1,720	b490	1,090	832	1,420	1,420	1,140	609	453	420
18	345	1,580	1,470	b480	1,050	903	1,470	1,420	1,090	616	453	420
19	345	1,520	1,320	b470	999	967	1,520	1,470	1,020	622	423	410
20	481	1,060	1,190	b470	967	999	1,570	1,520	935	609	412	400
21	487	868	1,100	b470	919	1,060	1,470	1,620	887	595	410	400
22	481	735	1,030	478	911	1,140	1,420	1,620	879	582	410	420
23	475	772	959	575	903	1,110	1,370	1,570	887	555	410	440
24	546	705	903	832	895	1,040	1,370	1,570	895	542	410	450
25	772	698	840	832	887	983	1,370	1,620	879	536	415	440
26	804	804	832	848	848	959	1,470	1,670	895	529	420	450
27	619	1,070	795	751	818	935	1,570	1,780	919	536	430	480
28	526	1,020	700	729	832	927	1,720	1,780	825	555	430	640
29	487	900	693	700	-	959	1,720	1,620	765	536	430	491
30	475	796	680	707	-	1,070	1,620	1,520	744	516	430	429
31	456	-	650	707	-	1,050	-	1,470	-	503	425	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	13,404	804	339	432	1.20	1.38	26,590
November	19,409	1,580	372	647	1.80	2.01	38,500
December	39,432	3,480	650	1,272	3.53	4.07	78,210
Calendar year 1946	348,005	3,480	339	953	2.65	35.96	690,200
January	28,961	848	470	612	1.70	1.96	37,610
February	24,797	1,140	693	886	2.46	2.56	49,180
March	26,788	1,140	693	864	2.40	2.77	53,130
April	36,978	1,720	855	1,233	3.42	3.82	73,340
May	53,670	2,360	1,420	1,731	4.81	5.54	106,500
June	31,726	1,570	744	1,058	2.94	3.28	62,930
July	19,775	751	503	658	1.77	2.04	39,220
August	13,935	536	410	449	1.25	1.44	27,640
September	13,140	640	400	438	1.22	1.36	26,060
Water year 1946-47	312,013	3,480	339	855	2.38	32.23	618,900

Peak discharge.- Nov. 18 (5:30 p.m.) 1,890 sec.-ft.; Dec. 11 (3 p.m.) 2,800 sec.-ft.; Dec. 14 (9 p.m.) 3,970 sec.-ft.

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.- No gage-height record Dec. 30 to Jan. 10, Aug. 21 to Sept. 28; discharge computed on basis of records for stations on nearby streams.

Klickitat River near Pitt, Wash.

Location.- Water-stage recorder, lat. 45°45', long. 120°12', in SW $\frac{1}{4}$ sec. 8, T. 3 N., R. 13 E., $3\frac{1}{2}$ miles south of Pitt, 5 miles upstream from Silvias Creek, and 7 miles upstream from mouth at Lyle. Altitude of gage is 285 feet (from river-profile map).

Drainage area.- 1,170 square miles.

Records available.- October 1935 to September 1947. July 1909 to January 1912 at site 7 miles upstream, published as Klickitat River at Klickitat. October 1928 to September 1935, $3\frac{1}{2}$ miles upstream, published as Klickitat River at Pitt.

Average discharge.- 21 years (1909-11, 1928-47), 1,425 second-feet.

Extremes.- Maximum discharge during year, 7,660 second-feet probably Dec. 14 (gage height, 8.04 feet, from recorded range in stage), from rating curve extended above 5,300 second-feet; minimum, 594 second-feet Oct. 11, 12, 16 (gage height, 3.59 feet).

1909-12, 1928-47: Maximum discharge observed, 21,000 second-feet Dec. 22, 1933 (gage height, 12.5 feet, site and datum then in use), from rating curve extended above 3,000 second-feet; minimum discharge, 466 second-feet Feb. 4, 1937.

Remarks.- Records excellent except those for periods of shifting control or no gage-height record, and those above 6,000 second-feet, which are fair. Small diversions above station for irrigation. No regulation.

Rating table, water year 1946-47 except periods of shifting control
(gage height, in feet, and discharge, in second-feet)

3.6	600	4.6	1,610	6.5	4,500
3.8	760	5.0	2,100	7.0	5,480
4.0	960	5.5	2,790	8.0	7,660
4.3	1,280	6.0	3,600		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	645	718	1,400	1,280	1,580	1,790	1,970	2,450	1,970	1,170	780	700
2	622	715	1,310	1,080	1,190	1,790	1,970	2,720	1,910	1,180	780	692
3	615	712	1,300	970	2,610	1,850	2,250	2,940	1,790	1,170	810	668
4	608	709	1,420	950	2,230	1,790	2,040	2,940	1,730	1,160	840	692
5	622	705	1,450	990	2,100	1,730	1,970	2,860	1,610	1,160	830	692
6	608	701	1,400	1,100	1,970	1,670	1,910	2,860	1,610	1,170	810	684
7	608	698	1,300	1,100	1,850	1,670	1,850	3,020	1,800	1,150	800	752
8	622	695	1,280	1,080	1,730	1,730	1,850	3,180	2,360	1,130	770	780
9	608	692	1,210	1,070	1,670	1,850	1,850	3,020	2,100	1,120	770	734
10	600	692	1,270	1,060	1,610	2,300	1,790	2,720	1,850	1,090	752	718
11	594	684	2,500	1,020	1,560	2,570	1,730	2,500	1,670	1,090	760	700
12	594	660	4,000	1,000	2,040	2,360	1,730	2,360	1,610	1,090	760	684
13	600	645	6,700	950	2,720	2,300	1,790	2,360	1,560	1,120	760	684
14	600	630	7,000	950	3,020	2,230	1,850	2,230	1,500	1,070	780	675
15	600	638	5,200	950	3,520	2,230	2,040	2,160	1,440	1,050	780	675
16	600	638	4,200	950	3,770	2,230	2,100	2,100	1,500	1,010	760	726
17	608	700	3,600	950	3,340	2,300	2,230	2,100	1,670	970	752	709
18	608	1,690	3,100	930	3,020	2,360	2,300	2,040	1,610	970	743	709
19	622	2,360	2,700	910	2,790	2,430	2,300	2,100	1,560	970	734	684
20	743	1,670	2,400	900	2,570	2,360	2,430	2,180	1,440	960	718	668
21	890	1,360	2,200	910	2,430	2,430	2,300	2,230	1,340	950	709	680
22	780	1,150	2,050	1,000	2,300	2,430	2,150	2,300	1,310	910	700	684
23	780	1,170	1,950	1,200	2,230	2,360	2,100	2,230	1,340	870	692	709
24	780	1,120	1,850	1,900	2,160	2,300	2,100	2,230	1,370	860	692	743
25	1,040	1,140	1,750	2,000	2,100	2,160	2,100	2,230	1,370	860	700	718
26	1,190	1,500	1,700	2,150	2,040	2,040	2,230	2,230	1,340	850	709	718
27	970	2,040	1,600	1,950	1,850	1,970	2,300	2,360	1,410	860	709	730
28	850	2,100	1,500	1,800	1,910	1,910	2,570	2,560	1,340	890	726	1,020
29	770	1,730	1,450	1,790	1,790	2,640	2,640	2,250	1,220	880	718	870
30	752	1,500	1,420	1,790	-	2,100	2,500	2,100	1,180	840	726	760
31	718	-	1,390	1,560	-	2,040	-	2,040	-	810	692	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-foot
October	21,827	1,190	594	704	0.602	0.69	43,290
November	32,162	2,360	630	1,072	.916	1.02	63,790
December	73,580	7,000	1,210	2,374	2.03	2.34	145,900
Calendar year 1946	644,755	7,000	594	1,766	1.51	20.49	1,279,000
January	38,240	2,150	900	1,234	1.05	1.22	75,850
February	65,910	3,770	1,560	2,354	2.01	2.10	130,700
March	65,190	2,570	1,670	2,103	1.80	2.07	129,300
April	62,930	2,640	1,730	2,098	1.79	2.00	124,800
May	75,340	3,180	2,040	2,430	2.08	2.39	149,400
June	47,510	2,360	1,180	1,584	1.35	1.51	94,230
July	31,360	1,180	810	1,012	.865	1.00	62,200
August	25,262	840	692	750	.641	.74	46,140
September	21,638	1,020	660	721	.616	.69	42,920
Water year 1946-47	558,949	7,000	594	1,531	1.31	17.77	1,109,000

Peak discharge.- Nov. 19 (5 a.m.) 2,720 sec.-ft.; Feb. 2 (4:30 p.m.) 3,860 sec.-ft.; Feb. 15 (9:30 p.m.) 4,130 sec.-ft.

f Computed on basis of partly estimated gage-height record.

Note.- No gage-height record Nov. 2-8, Dec. 11-30, Jan. 6-9, 11-21, Jan. 23-28; discharge computed on basis of recorded range in stage and records for nearby stations. Shifting-control method used Feb. 1 to Apr. 26, June 15, 16.

West Fork Klickitat River near Glenwood, Wash.

Location.- Water-stage recorder, lat. 46°15'30", long. 121°16'30", in SW¹/₄ sec. 14, T. 9 N., R. 12 E., at road bridge 2 miles upstream from mouth and 17 miles north of Glenwood.

Drainage area.- 87 square miles.

Records available.- November 1944 to September 1947. June to November 1910 at site just below confluence of Little Muddy Creek with Fish Lake stream; August to November 1916 at site 1 mile above mouth.

Extremes.- Maximum discharge during year, 1,210 second-feet Dec. 14 (gage height, 3.54 feet); minimum, 179 second-feet Oct. 18, 19. 1910, 1916, 1944-47: Maximum discharge, that of Dec. 14, 1946; minimum not determined, occurred sometime during period Dec. 11-25, 1944, when stage-discharge relation was affected by ice.

Remarks.- Records fair except those for periods of no gage-height record, which are poor. No diversion or regulation.

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Dec. 11-14)

Oct. 1 to Dec. 14

Dec. 11 to Sept. 30

1.4	160	2.3	474	1.4	175	2.3	570
1.6	216	2.6	609	1.6	249	2.6	719
1.8	278	3.0	800	1.8	355	3.0	922
2.0	351	3.5	1,060	2.0	426	3.5	1,180

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	199	228	306	235	262	274	331	580	468	313	262	222
2	196	222	299	230	340	274	331	644	459	313	266	222
3	196	219	302	230	291	270	326	669	440	309	270	222
4	199	216	336	225	266	266	317	669	421	295	270	222
5	199	213	328	225	262	257	300	669	403	295	270	222
6	196	*213	310	222	253	253	287	669	389	295	266	218
7	199	210	296	218	249	249	278	719	450	291	266	230
8	196	210	278	210	249	249	283	719	541	287	262	222
9	193	210	275	210	249	249	278	694	507	278	257	222
10	190	210	320	210	245	249	274	619	473	287	249	218
11	180	210	824	210	262	245	257	590	435	278	249	210
12	187	207	900	214	*295	245	266	590	408	278	249	210
13	184	204	1,000	210	326	245	280	570	385	274	249	206
14	182	204	1,020	206	340	245	310	550	371	274	249	203
15	182	202	1,000	b200	353	249	350	536	362	270	253	206
16	182	199	794	200	353	257	360	516	403	266	249	214
17	182	243	644	200	340	266	400	502	398	262	245	214
18	182	590	570	203	351	283	425	507	389	266	241	203
19	184	680	516	203	317	304	450	541	371	266	237	200
20	237	500	454	203	309	317	475	575	358	270	233	196
21	222	383	408	206	304	340	470	580	344	266	230	200
22	237	336	380	210	304	353	450	575	340	266	226	203
23	237	313	358	237	304	340	430	575	335	266	222	203
24	285	285	335	322	295	322	430	570	340	262	222	203
25	367	-282	317	331	291	309	440	570	331	262	218	203
26	351	321	313	335	287	300	460	570	353	266	222	206
27	288	387	287	300	285	287	500	580	371	270	226	206
28	252	391	270	274	278	287	600	580	362	274	226	257
29	243	371	257	257	-	295	614	555	344	266	226	218
30	234	336	250	257	-	326	580	521	326	262	222	206
31	228	-	240	245	-	326	-	492	-	262	218	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-foot
October	6,799	367	182	219	2.52	2.91	13,490
November	8,795	680	199	293	3.37	3.76	17,440
December	14,187	1,020	240	458	5.26	6.06	28,140
Calendar year 1946	126,806	1,020	168	347	3.99	54.20	251,500
January	7,238	335	200	233	2.68	3.09	14,360
February	8,238	353	245	294	3.38	3.52	16,340
March	8,731	353	245	282	3.24	3.73	17,320
April	11,552	614	257	385	4.43	4.94	22,910
May	18,286	719	492	590	6.78	7.82	36,270
June	11,877	541	326	396	4.55	5.08	23,560
July	8,569	313	262	277	3.18	3.67	17,040
August	7,550	270	218	244	2.80	3.25	14,980
September	6,387	257	196	213	2.45	2.75	12,670
Water year 1946-47	118,229	1,020	182	324	3.72	50.54	234,500

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Notes.- No gage-height record Dec. 30 to Jan. 5, Apr. 13-28; discharge computed on basis of recorded range in stage, weather records, and records for Klickitat River near Glenwood.

Big Muddy Creek near Glenwood, Wash.

Location.- Water-stage recorder, lat. 46°09'00", long. 121°17'30", in W $\frac{1}{2}$ sec. 27, T. 8 N., R. 12 E., 200 feet downstream from road bridge, 1 1/3 miles upstream from Cougar Creek, 1 $\frac{1}{2}$ miles upstream from mouth, and 9 $\frac{1}{2}$ miles north of Glenwood.

Drainage area.- 22.5 square miles.

Records available.- November 1944 to September 1947 (fragmentary). August to November 1916 at site 3 miles above mouth; November 1916 to September 1918 at site just above mouth of Cougar Creek.

Extremes.- Maximum discharge during year, 853 second-feet Nov. 18 (gage height, 4.38 feet); minimum, 33 second-feet Oct. 3.
1916-18, 1944-47: Maximum discharge not determined, probably occurred sometime during flood of 1917; minimum recorded, 26 second-feet Nov. 24, 1944.

Remarks.- Records good except those for periods of shifting control, which are fair, and those for periods of no gage-height record, which are poor. Possibly as much as 120 second-feet diverted during period April to September for irrigation and stock water. No regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	52	66	80	68	66	80	174	294	150	60	53
2	35	53	64	80	75	66	80	229	235	166	75	50
3	33	55	69	75	62	64	75	226	203	156	92	58
4	36	53	72	75	62	62	75	232	200	163	83	66
5	37	54	62	75	62	62	70	214	197	186	75	50
6	37	54	62	70	60	62	70	223	191	183	74	44
7	37	50	62	70	60	62	65	256	235	174	69	52
8	36	52	62	70	59	62	70	262	336	158	55	50
9	36	52	62	69	59	63	65	194	284	163	47	48
10	36	54	62	74	58	63	65	177	188	172	46	50
11	38	52	116	69	60	60	62	183	172	169	45	49
12	38	50	123	68	81	60	65	203	180	197	47	50
13	41	49	126	66	88	60	70	183	189	156	54	44
14	40	49	206	63	86	62	75	177	158	143	50	40
15	38	49	275	64	90	62	85	200	161	118	56	55
16												
18	39	49	208	63	86	64	85	194	300	128	55	53
17	39	69	194	62	84	66	90	194	294	133	52	52
18	39	441	169	63	83	70	90	211	297	116	54	48
19	41	359	150	60	81	72	90	247	259	105	47	49
20	70	247	138	60	79	74	96	259	229	98	52	47
21	40	161	135	59	77	83	94	256	226	105	48	60
22	42	156	123	63	74	81	98	275	241	107	50	66
23	35	148	116	70	72	77	101	313	238	103	49	75
24	67	133	109	92	72	74	101	342	223	98	49	81
25	58	169	105	77	70	74	107	366	211	94	50	72
26	64	226	101	70	69	72	114	379	226	84	50	59
27	59	147	96	63	68	72	126	346	169	77	58	69
28	54	92	94	62	66	72	133	319	145	83	53	108
29	53	83	84	62	-	77	126	349	140	68	53	56
30	55	74	84	63	-	79	116	352	140	69	49	55
31	55	-	84	62	-	80	-	329	-	62	54	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	1,364	70	33	44.0	2,710
November.....	3,332	441	49	111	6,610
December.....	3,479	275	62	112	6,900
Calendar year 1946.....	-	-	-	-	-
January.....	2,119	92	59	68.4	4,200
February.....	2,013	90	58	71.9	3,990
March.....	2,123	83	60	68.5	4,210
April.....	2,639	133	62	88.0	5,230
May.....	7,864	379	174	254	15,600
June.....	6,539	336	140	218	12,970
July.....	3,984	197	62	129	7,900
August.....	1,751	92	45	56.5	3,470
September.....	1,709	108	40	57.0	3,390
Water year 1946-47.....	38,916	441	33	107	77,180

Note.- No gage-height record Jan. 1-7, Mar. 31 to Apr. 19; discharge computed on basis of recorded range in stage and records for West Fork Klickitat River near Glenwood. Shifting-control method used Oct. 1-25, Nov. 18 to Sept. 30.

Indian Ford Springs No. 1 near Glenwood, Wash.

Location.- Water-stage recorder, lat. 46°02'30", long. 121°10'45", sec. 4, T. 6 N., R. 13 E., 200 feet above mouth and 5½ miles northeast of Glenwood.

Records available.- October 1946 to September 1947.

Extremes.- Maximum discharge during year, 17.8 second-feet Oct. 20 and on many days during February through May, but may have been higher sometime during period of no gage-height record; minimum, 13.7 second-feet June 29.

Remarks.- Records poor. No diversion or regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16.5	16.5					17.8	17.3	15.3	14.2	15.3	15.9
2	16.5	16.5					17.8	17.2	15.9	14.2	15.3	15.3
3	16.5	16.5					17.8	17.2	15.9	14.2	15.3	15.3
4	16.5	16.5					17.8	17.2	15.9	14.2	14.7	15.3
5	16.5	16.5					17.8	17.2	15.9	14.2	14.7	14.7
6	16.5	16.5		16.0			17.8	17.2	15.9	14.2	14.7	14.7
7	16.5	16.5					17.8	17.2	15.9	14.2	14.7	15.3
8	16.5	16.5			17.4		17.8	17.8	15.3	14.2	14.7	15.3
9	16.5	16.5					17.8	17.8	15.3	14.2	14.7	15.9
10	16.5	16.5					17.8	17.8	15.3	14.2	14.2	15.9
11	16.5	16.5		f15.9			17.8	17.8	14.7	14.2	14.2	15.9
12	16.5	16.5		f15.9			17.8	17.8	14.7	14.2	14.2	15.9
13	16.5					17.8	17.8	17.8	14.7	14.2	14.2	15.9
14	16.5					17.8	17.8	17.8	14.7	14.2	14.7	15.9
15	16.5					17.8	17.8	17.8	14.7	14.7	14.7	15.9
16	17.2		16.2		f17.8		17.8	17.2	14.2	14.7	14.7	15.9
17	17.2				f17.8		17.8	17.2	14.7	14.7	14.7	15.9
18	17.2						17.8	17.2	14.7	14.2	14.7	15.9
19	17.2						17.8	17.2	14.7	14.2	14.7	15.9
20	17.8						f17.8	16.5	14.7	14.2	14.7	15.9
21	17.2	16.4		16.4			17.8	16.5	14.7	14.2	15.3	15.9
22	16.5						17.7	16.5	14.7	14.2	15.9	15.9
23	16.5						17.7	16.5	14.2	14.2	15.9	15.3
24	16.5				17.8		17.6	16.5	14.2	14.2	15.9	15.3
25	16.5						17.6	15.9	14.2	14.2	15.9	15.9
26	16.5					f17.8	17.5	15.9	14.2	14.2	15.9	15.9
27	16.5					17.8	17.5	15.9	14.2	14.2	16.5	15.9
28	16.5					17.8	17.4	15.9	14.2	14.2	16.5	16.5
29	16.5				-	17.8	17.4	15.3	13.7	15.3	17.2	16.5
30	16.5				-	17.8	17.3	15.3	14.2	15.3	16.5	16.5
31	16.5	-			-	17.8	-	15.3	-	15.3	16.5	-
Month						Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet		
October.....						516.3	17.8	16.5	16.7	1,020		
November.....						493.2	-	-	16.4	978		
December.....						502.2	-	-	16.2	996		
Calendar year.....						-	-	-	-	-		
January.....						503.4	-	-	16.2	998		
February.....						492.4	-	-	17.6	977		
March.....						551.8	-	-	17.8	1,090		
April.....						531.5	17.8	17.3	17.7	1,050		
May.....						523.7	17.8	15.3	16.9	1,040		
June.....						445.6	15.9	13.7	14.9	884		
July.....						445.0	15.3	14.2	14.4	883		
August.....						471.8	17.2	14.2	15.2	936		
September.....						472.2	16.5	14.7	15.7	937		
Water year 1946-47.....						5,949.1	17.8	13.7	16.3	11,790		

f Computed on basis of partly estimated gage-height record.

Note.- No gage-height record Nov. 13 to Jan. 10, Jan. 13 to Feb. 15, Feb. 18 to Mar. 25, Mar. 27 to Apr. 3, Apr. 15-19, Apr. 21 to May 2, Aug. 17-19; discharge interpolated.

Little Klickitat River near Goldendale, Wash.

Location.- Water-stage recorder, lat. 45°51', long. 120°48', in NW¼ sec. 10, T. 4 N., R. 16 E., 2½ miles northeast of Goldendale and 13 miles upstream from mouth.

Records available.- October 1910 to June 1912, October 1946 to September 1947.

Extremes.- Maximum discharge during year, 1,330 second-feet Dec. 15 (gage height, 5.15 feet), from rating curve extended above 665 second-feet; minimum, 0.6 second-foot Aug. 28 (gage height, 1.13 feet).

1910-12, 1946-47: Maximum discharge, that of Dec. 15, 1946; minimum, that of Aug. 28, 1947.

Remarks.- Records excellent except those below 5 second-feet, which are fair, and those for periods of ice effect or no gage-height record, which are poor. Probably small diversions for domestic use and irrigation. No regulation.

Rating table, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

1.1	0.4	2.1	40	3.3	267
1.3	2.1	2.3	62	3.6	372
1.5	6.0	2.5	89	4.0	550
1.7	13	2.7	121	4.4	775
1.9	24	3.0	184		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.0	7.6	89	30	140	81	58	50	18	5.5	1.9	0.9
2	4.0	6.3	82	30	223	82	56	51	22	4.8	1.7	.8
3	4.2	5.8	76	25	155	82	66	52	19	4.8	1.4	.8
4	4.2	5.8	79	30	136	76	67	52	17	4.8	1.3	.8
5	4.4	5.8	74	35	127	70	68	51	15	4.4	1.3	.9
6	4.5	6.6	68	25	119	65	66	50	15	3.7	1.1	.9
7	4.5	7.6	65	20	114	65	62	52	19	3.7	.9	2.3
8	4.5	*6.6	63	20	102	62	63	51	37	3.4	.9	4.6
9	4.5	6.3	62	20	94	75	62	47	23	3.2	1.0	3.5
10	4.5	6.6	140	40	89	94	58	44	19	3.1	1.0	3.2
11	4.8	6.0	192	50	89	95	55	40	17	3.1	1.0	2.7
12	4.8	6.0	269	35	166	92	51	38	15	3.2	1.0	2.1
13	4.8	b5.7	487	25	220	94	50	36	14	2.9	1.0	1.9
14	5.2	b5.5	562	20	226	94	54	34	13	2.7	.9	1.7
15	5.2	b5.3	*775	15	300	94	54	31	12	2.9	1.0	1.4
16	5.6	5.3	412	15	297	95	54	31	13	2.7	.9	1.4
17	5.6	7.6	280	15	246	98	53	30	13	2.4	.9	1.7
18	6.4	138	209	15	209	98	57	28	11	2.0	1.0	2.1
19	7.6	96	170	20	179	95	58	28	11	2.0	1.1	2.3
20	10	56	144	25	159	94	57	27	10	1.9	1.2	2.0
21	12	42	127	35	142	90	54	27	9.6	1.8	1.3	1.8
22	14	37	111	50	130	89	49	25	8.6	1.7	1.6	1.4
23	11	38	96	100	123	83	46	24	7.9	1.7	1.4	1.3
24	8.2	32	86	190	114	79	45	23	7.3	1.7	1.3	1.2
25	10	44	79	310	107	74	44	22	6.6	1.6	1.1	1.2
26	8.6	140	74	270	100	68	43	19	7.0	1.8	.9	1.3
27	7.3	314	68	170	92	63	43	21	8.2	2.4	.8	1.3
28	6.6	209	60	140	86	60	45	19	7.6	3.5	.7	6.0
29	6.3	140	56	106	-	58	49	19	7.0	2.9	.7	4.2
30	6.6	104	50	*98	-	68	48	18	6.0	2.1	.8	2.6
31	6.3	-	40	80	-	62	-	17	-	1.9	.8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	200.2	14	4.0	6.46	337
November.....	1,496.4	314	5.3	49.9	2,970
December.....	5,145	775	40	166	10,200
Calendar year	-	-	-	-	-
January.....	2,059	310	15	66.4	4,080
February.....	4,284	300	86	153	8,500
March.....	2,495	98	58	80.5	4,950
April.....	1,640	68	43	54.7	3,250
May.....	1,057	52	17	34.1	2,100
June.....	408.8	37	6.0	13.6	811
July.....	90.3	5.5	1.6	2.91	179
August.....	33.9	1.9	.7	1.09	67
September.....	60.3	6.0	.8	2.01	120
Water year 1946-47	18,969.9	775	.7	52.0	37,620

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.- No gage-height record Oct. 1-20, Dec. 30 to Jan. 28, Jan. 31, Feb. 1, May 1; discharge computed on basis of weather records and records for nearby stations.

Little Klickitat River near Wahkiacus, Wash.

Location.- Staff gage, lat. 45°50'30", long. 121°03'30", in SE $\frac{1}{4}$ sec. 9, T. 4 N., R. 14 E., half a mile downstream from Bowman Creek, three-quarters of a mile upstream from mouth, and 2 miles northeast of Wahkiacus.

Records available.- November 1944 to September 1947.

Extremes.- Maximum discharge observed during year, 1,380 second-feet Dec. 15 (gage height, 5.60 feet), from rating curve extended above 650 second-feet by velocity-area studies; minimum observed, 17 second-feet Aug. 30.

1944-47: Maximum discharge observed, 3,640 second-feet Dec. 28, 1945 (gage height, 9.00 feet), from rating curve extended above 650 second-feet by velocity-area studies; minimum observed, 17 second-feet Aug. 3-6, 11, 16-27, Aug. 29 to Sept. 3, 1945, Aug. 30, 1947.

Remarks.- Records good except those for periods of shifting control, which are fair, and those for periods of ice effect or no gage-height record, which are poor. Gage read once daily, twice daily during periods of rapidly changing stage. Some small diversions above station for irrigation. No regulation.

Rating tables, water year 1946-47, except periods of shifting control or ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to June 7					June 8 to Sept. 30				
1.9	22	2.6	103	4.0	545	1.9	12	2.6	80
2.1	38	3.0	189	5.0	1,040	2.1	25	3.0	150
2.3	60	3.5	343	5.5	1,320	2.3	43	3.5	295

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	34	164	65	203	203	176	129	68	30	21	19
2	27	34	141	60	740	203	164	129	73	28	21	19
3	28	34	155	60	435	217	262	a129	73	25	21	21
4	28	32	137	55	310	203	217	129	70	24	21	21
5	29	32	133	70	262	203	189	129	68	24	21	22
6	30	32	129	65	247	164	176	127	70	25	21	22
7	30	a32	176	60	232	176	125	108	27	21	23	
8	30	*33	121	60	217	176	125	188	25	21	24	
9	30	33	129	60	189	262	176	121	74	25	21	24
10	30	33	176	*93	203	343	164	119	67	25	a21	23
11	31	33	232	107	203	343	152	110	58	25	a20	22
12	31	33	360	87	360	278	141	107	54	24	20	22
13	31	33	615	84	665	262	152	103	50	24	a20	22
14	32	32	740	70	500	247	164	100	47	24	a19	22
15	32	31	1,160	60	545	247	164	100	47	24	19	22
16	33	31	690	60	640	247	176	97	45	24	21	22
17	33	61	478	55	568	247	217	93	44	24	21	22
18	37	232	378	60	500	247	326	90	43	24	21	22
19	39	278	310	70	415	247	210	87	d41	24	21	22
20	43	203	278	81	360	247	176	80	d39	24	21	22
21	49	121	247	84	310	232	141	79	d36	24	21	22
22	52	119	217	110	294	217	139	76	34	24	20	24
23	52	103	189	217	278	217	137	76	34	22	19	24
24	49	116	176	310	262	217	133	73	33	22	19	25
25	45	217	164	665	247	203	129	73	32	21	19	24
26	40	247	152	590	a230	189	129	73	31	20	18	22
27	37	478	152	310	a220	189	127	70	32	24	18	22
28	36	360	129	247	a210	189	129	68	33	24	18	37
29	35	247	103	*189	-	189	133	68	35	25	18	31
30	34	189	81	203	-	189	129	65	35	24	17	30
31	34	-	75	152	-	189	-	65	-	23	18	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	1,094	52	27	35.3	2,170
November.....	3,493	478	31	116	6,930
December.....	8,314	1,160	75	268	16,490
Calendar year 1946	73,857	1,210	27	202	146,500
January.....	4,459	665	55	144	8,840
February.....	9,845	740	189	352	19,530
March.....	6,982	343	164	225	13,850
April.....	5,180	326	127	173	10,270
May.....	3,015	129	65	97.3	5,980
June.....	1,662	188	31	55.4	3,300
July.....	752	30	20	24.3	1,490
August.....	618	21	17	19.9	1,230
September.....	699	37	19	23.5	1,390
Water year 1946-47	46,113	1,160	17	126	91,470

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for station near Goldendale, or interpolated.
d Doubtful gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 31 to Jan. 9, Jan. 15-19 (no gage-height record Dec. 31, Jan. 3, 4, 7-9). Shifting-control method used Oct. 1 to Nov. 18, Sept. 7-21.

Hood River near Hood River, Oreg.

Location.- Water-stage recorder, lat. 45°42', long. 121°31', in SE $\frac{1}{4}$ sec. 36, T. 3 N., R. 10 E., at Powerdale, a quarter of a mile upstream from Pacific Power & Light Co.'s plant and three-quarters of a mile south of town of Hood River. Datum of gage is 106.23 feet above mean sea level, datum of 1929.

Drainage area.- 329 square miles.

Records available.- March 1913 to September 1947.

Average discharge.- 34 years, 1,035 second-feet (including flow of Pacific Power & Light Co.'s conduit).

Extremes.- Maximum discharge during year (river only), 12,400 second-feet Dec. 15 (gage height, 7.71 feet); minimum daily, 34 second-feet (regulated) Oct. 12; minimum daily (including discharge of Pacific Power & Light Co.'s conduit), 297 second-feet Aug. 25, 1913-47; Maximum discharge, 34,000 second-feet Jan. 6, 1923 (gage height, 11.1 feet, present datum, site then in use), no diversion by power conduit; minimum, 3 second-feet Aug. 9, 1926; minimum daily (including discharge of Pacific Power & Light Co.'s conduit), 165 second-feet Aug. 5, 1941.

Remarks.- Records good except those for periods of partly estimated gage-height record or those computed from staff-gage readings, which are fair, and those for periods of no gage-height record, which are poor. Daily discharge regulated by pondage at sawmill at Dee and by Pacific Power & Light Co.'s conduit, which diverts water around gage.

Cooperation.- Water-stage recorder inspected by employees of Pacific Power & Light Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	44	580	1,150	536	1,750	578	634	530	210	168	a65	66
2	45	396	935	480	3,180	578	794	590	247	158	a65	66
3	42	334	830	440	2,200	660	688	590	182	108	f66	65
4	45	267	888	417	1,700	695	688	542	153	79	f66	65
5	56	224	766	444	1,450	572	667	505	135	f69	a55	64
6	40	239	675	455	1,260	530	646	490	101	f83	h54	61
7	42	243	628	390	1,150	530	590	480	158	f68	h56	72
8	41	200	355	362	999	618	660	443	566	f62	h56	73
9	38	168	868	546	944	730	723	480	667	f55	f56	63
10	57	200	1,530	455	850	1,390	890	412	674	f77	f54	f75
11	f35	162	5,700	435	854	1,870	794	322	471	f68	f54	a70
12	f34	132	8,710	417	953	1,380	874	300	350	f55	h53	a85
13	f36	116	9,100	390	1,360	1,140	674	261	306	f59	h55	a60
14	40	98	8,410	338	1,320	998	730	219	268	f72	f56	a60
15	57	86	7,960	326	1,400	917	746	198	216	f72	a55	h61
16	58	69	4,270	322	1,570	890	698	195	247	f61	f54	a60
17	56	590	2,860	300	1,400	926	810	172	354	a70	f56	a65
18	39	3,950	2,530	310	1,250	908	1,200	158	275	a70	f54	a65
19	40	2,390	1,930	578	1,100	874	1,020	165	269	a85	f54	a60
20	613	1,290	1,640	390	998	818	989	155	162	h43	f56	a60
21	785	870	1,420	505	917	810	758	185	106	h45	f55	a60
22	675	703	1,250	604	932	980	646	139	73	h43	f56	h60
23	951	703	1,120	2,240	842	888	554	169	f77	h44	59	a60
24	1,070	774	1,020	3,570	810	754	520	148	f62	h43	56	a55
25	1,730	1,570	944	3,920	746	660	485	162	f69	h42	59	h52
26	1,080	3,200	890	4,630	702	590	476	180	148	a45	64	a60
27	628	4,200	842	2,630	646	542	520	219	548	53	65	a70
28	444	3,040	709	1,950	604	515	515	210	611	76	68	153
29	372	2,020	653	1,490	-	505	660	195	362	a70	70	a120
30	400	1,450	584	1,360	-	646	604	180	210	a65	69	a100
31	358	-	584	1,120	-	794	-	172	-	a70	66	-

Month	Observed				Pacific Power & Light Co.'s conduit near Hood River (acre-feet)	River and conduit combined			
	Discharge in second-feet			Runoff in acre-feet		Runoff in acre-feet	Discharge in second-feet		Runoff in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October.....	1,730	34	318	19,580	26,450	46,030	749		
November.....	4,200	69	1,009	60,020	28,420	88,440	1,486		
December.....	9,100	584	2,327	143,100	28,250	171,350	2,787		
Calendar year 1946	9,100	34	895	649,130	306,140	954,270	1,318		
January.....	4,680	300	1,037	83,780	29,270	93,050	1,513		
February.....	3,180	604	1,207	67,030	26,810	93,840	1,690		
March.....	1,870	505	815	50,080	29,940	80,030	1,302		
April.....	1,200	476	707	42,100	28,930	71,030	1,194		
May.....	590	139	295	16,120	29,260	47,580	771		
June.....	674	62	276	16,420	28,100	44,520	748		
July.....	168	42	69.5	4,280	27,380	31,660	515		
August.....	70	53	58.6	3,600	18,530	22,130	360		
September.....	153	52	70.2	4,180	21,590	25,770	433		
Water year 1946-47	9,100	34	680	492,300	322,930	815,230	1,126		

Peak discharge.- Nov. 18 (3 p.m.) 4,460 sec.-ft.; Nov. 27 (6 p.m.) 5,180 sec.-ft.; Dec. 12 (12:30 to 2 p.m.) 10,500 sec.-ft.; Dec. 15 (1 a.m.) 12,400 sec.-ft.; Jan. 26 (2:30 a.m.) 6,450 sec.-ft.; Feb. 2 (3:30 a.m.) 4,440 sec.-ft.

a No gage-height record; discharge computed on basis of records for West Fork Hood River near Dee.

b Computed on basis of partly estimated gage-height record.

c Computed from staff-gage readings.

West Fork Hood River near Dee, Oreg.

Location.- Water-stage recorder, lat. 45°36', long. 121°38', in SE $\frac{1}{4}$ sec. 1, T. 1 N., R. 9 E., a quarter of a mile upstream from Dead Point Creek, half a mile upstream from mouth, and 1 mile northwest of Dee. Datum of gage is 802.1 feet above mean sea level, datum of 1929.

Drainage area.- 96 square miles.

Records available.- September 1913 to February 1916 (incomplete), June 1932 to September 1947.

Average discharge.- 15 years (1932-47), 506 second-feet.

Extremes.- Maximum discharge during year, 10,100 second-feet Dec. 12 (gage height, 10.91 feet), from rating curve extended above 5,000 second-feet; minimum, 137 second-feet Aug. 24, 25 (gage height, 1.41 feet).
1913-14, 1932-47: Maximum discharge, 12,900 second-feet Dec. 22, 1933 (gage height, 12.4 feet), from rating curve extended above 5,000 second-feet; minimum, 93 second-feet Aug. 22, 1941 (gage height, 1.37 feet).

Remarks.- Records good. Diversions above station for irrigation.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 11					Dec. 12 to Sept. 30						
1.7	126	3.1	605	6.0	2,720	1.4	135	3.0	665	7.0	3,900
2.0	189	3.6	865	7.0	3,820	1.7	204	4.0	1,220	8.0	5,190
2.3	275	4.2	1,230	8.7	6,250	2.1	319	5.0	1,940	9.8	8,060
2.7	425	5.0	1,820			2.5	460	6.0	2,830		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	145	587	816	415	1,180	433	715	480	282	349	186	143
2	149	438	715	393	2,090	449	652	476	282	326	184	146
3	149	377	665	372	1,030	516	612	452	258	304	186	143
4	166	358	680	359	1,030	532	592	437	252	285	186	146
5	160	317	620	376	875	476	592	422	244	270	179	146
6	149	358	569	376	760	456	576	415	236	264	172	141
7	162	334	574	352	680	468	560	411	267	255	172	196
8	162	303	738	339	620	516	604	397	408	247	170	220
9	153	292	843	329	580	572	656	445	500	244	177	236
10	151	310	1,370	411	544	1,120	809	390	544	238	172	196
11	149	282	6,110	393	528	1,410	705	362	430	233	165	165
12	147	266	8,010	383	620	1,010	634	345	362	241	163	158
13	145	250	7,620	369	946	831	638	326	356	238	161	152
14	145	238	6,570	349	936	735	670	313	310	236	161	148
15	143	232	5,010	356	965	690	665	300	285	230	163	146
16	141	224	2,380	326	1,040	675	612	294	319	220	165	163
17	147	894	1,560	313	919	695	725	282	352	212	161	168
18	145	3,210	1,180	349	798	700	958	273	310	212	156	184
19	156	1,750	985	445	700	670	831	273	291	209	150	156
20	551	1,030	864	415	629	634	715	273	276	199	148	150
21	582	745	760	508	596	629	620	273	255	194	143	150
22	680	625	680	738	580	720	564	264	252	189	141	154
23	887	635	612	2,340	564	634	524	258	258	184	143	152
24	992	700	568	3,030	548	580	500	258	252	184	139	148
25	1,370	1,300	532	3,600	524	532	472	255	247	182	139	150
26	909	2,570	540	3,310	496	500	460	267	322	186	141	150
27	615	3,700	524	1,730	476	472	460	270	532	202	141	154
28	479	2,230	488	1,190	452	449	456	258	620	225	141	186
29	413	1,420	460	941	-	456	560	255	456	196	146	163
30	452	1,030	437	820	-	548	512	267	390	186	150	163
31	448	-	430	690	-	670	-	270	-	189	148	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	11,222	1,370	141	362	22,260
November.....	26,965	3,700	224	899	53,480
December.....	53,960	8,010	430	1,741	107,000
Calendar year 1946.....	247,406	8,010	141	678	490,700
January.....	26,297	3,600	313	848	52,160
February.....	22,046	2,090	452	787	43,720
March.....	19,778	1,410	433	638	39,230
April.....	18,649	958	456	622	36,990
May.....	10,261	480	255	331	20,350
June.....	10,128	620	236	338	20,090
July.....	7,129	349	182	230	14,140
August.....	4,949	186	139	160	9,820
September.....	4,873	236	141	162	9,670
Water year 1946-47.....	216,257	8,010	139	592	428,900

Peak discharge.- Nov. 18 (6 p.m.) 3,950 sec.-ft.; Nov. 27 (1 p.m.) 4,520 sec.-ft.; Dec. 12 (10 p.m.) 10,100 sec.-ft.; Dec. 14 (11:30 p.m.) 9,350 sec.-ft.; Jan. 25 (11 p.m.) 5,900 sec.-ft.; Feb. 2 (7 a.m.) 2,830 sec.-ft.

Pacific Power & Light Co.'s conduit near Hood River, Oreg.

Location.- Venturi meter and electrical output meter, lat. 45°42', long. 121°30', in NE $\frac{1}{4}$ sec. 36, T. 3 N., R. 10 E., at Pacific Power & Light Co.'s plant on Hood River, half a mile southeast of town of Hood River.

Records available.- October 1922 to September 1947. October 1913 to September 1914 and January 1916 to July 1922 at site in tailrace of former plant.

Average discharge.- 25 years (1922-47), 366 second-feet.

Extremes.- Maximum daily discharge during year, 499 second-feet Nov. 10; no flow at times when power plant was shut down.

1913-14, 1916-47: Maximum discharge observed, 510 second-feet Dec. 30, 1932; no flow at times.

Remarks.- Records good. Discharge computed from relation between flow in conduit and output of power plant, based on discharge measurements. Pacific Power & Light Co.'s conduit diverts from Hood River in SE $\frac{1}{4}$ sec. 11, T. 2 N., R. 10 E., just below Neal Creek. Water is diverted around station on Hood River near town of Hood River and returned to river in NE $\frac{1}{4}$ sec. 36, T. 3 N., R. 10 E.

Cooperation.- Hourly readings of venturi meter and record of daily electrical output furnished by Pacific Power & Light Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	376	483	454	480	478	485	486	495	471	492	397	280
2	387	485	480	478	465	488	476	494	470	480	381	278
3	399	456	492	477	479	488	488	495	469	492	400	280
4	412	485	491	471	485	478	486	497	469	493	406	283
5	429	498	493	475	484	490	496	496	469	489	379	293
6	401	498	495	475	486	489	487	496	470	490	345	280
7	427	497	495	486	485	490	486	494	471	477	332	395
8	424	497	495	492	484	491	486	488	473	456	327	449
9	403	497	494	493	475	491	485	481	467	482	326	438
10	397	499	483	493	484	486	485	439	470	472	318	410
11	393	498	401	493	484	481	485	473	467	479	293	379
12	390	497	349	495	483	484	486	472	466	477	292	366
13	390	496	351	492	478	485	484	474	467	482	291	356
14	386	497	391	492	479	497	482	475	469	485	290	343
15	390	495	364	454	485	488	483	473	471	486	293	330
16	381	494	369	479	484	489	483	467	469	462	312	375
17	395	464	474	482	483	487	483	469	468	445	306	383
18	392	425	439	483	482	487	482	471	466	450	292	404
19	402	463	480	388	483	487	488	468	451	451	277	348
20	464	462	480	488	484	485	495	468	472	429	267	340
21	480	464	480	492	485	486	492	468	473	419	259	338
22	489	461	480	491	485	486	493	470	472	399	249	362
23	482	478	477	479	488	488	494	472	475	375	252	364
24	480	485	474	437	486	486	493	470	478	355	247	353
25	456	474	475	458	486	487	493	471	480	346	236	366
26	463	449	494	445	486	488	492	471	483	349	241	370
27	493	440	494	476	485	488	456	469	484	420	244	377
28	489	464	493	475	485	488	482	469	480	472	248	369
29	490	464	486	479	-	488	493	468	487	423	269	358
30	488	464	479	479	-	489	494	468	491	397	292	417
31	485	-	479	480	-	487	-	469	-	400	278	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	13,333	493	376	430	26,450
November.....	14,329	499	425	478	28,420
December.....	14,241	495	351	459	28,250
Calendar year 1946	154,349	500	0	423	306,100
January.....	14,757	495	388	476	29,270
February.....	13,516	488	465	483	26,810
March.....	15,097	491	478	487	29,940
April.....	14,584	495	456	486	28,930
May.....	14,750	497	439	476	29,260
June.....	14,167	491	451	472	28,130
July.....	13,904	488	346	445	27,380
August.....	9,341	406	239	301	18,530
September.....	10,684	469	278	363	21,590
Water year 1946-47	162,803	499	238	446	322,900

White Salmon River near Underwood, Wash.

Location.- Water-stage recorder, lat. 45°45'00", long. 121°31'30", in NW¼ sec. 14, T. 3 N., R. 10 E., 1,000 feet downstream from Northwestern Electric Co.'s Condit power plant and 2 miles north of Underwood and mouth.

Drainage area.- 384 square miles.

Records available.- March 1915 to September 1930, September 1935 to September 1947. October 1912 to February 1913 at site at Condit Dam, 1 mile upstream.

Average discharge.- 27 years (1915-30, 1935-47), 1,018 second-feet.

Extremes.- Maximum discharge during year, 6,910 second-feet (regulated) Dec. 13 (gage height, 8.68 feet); minimum, 107 second-feet (regulated) Sept. 12 (gage height, 2.04 feet); minimum daily, 484 second-feet (regulated) Oct. 13.
1915-30, 1935-47: Maximum discharge, 9,700 second-feet Dec. 29, 1917 (gage height, 9.5 feet, datum then in use, relation to present datum unknown); practically no flow at times when power plant is shut down.

Remarks.- Records excellent except those for periods of no gage-height record, which are good. Many diversions near Trout Lake for irrigation. Flow regulated by power plant.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

3.3	477	4.5	1,280	6.0	2,900
3.5	572	5.0	1,770	7.0	4,230
4.0	875	5.5	2,310	8.5	6,600

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	660	670	1,350	1,190	1,590	1,340	1,390	1,300	862	717	615	600
2	808	572	1,210	1,190	2,580	1,340	1,400	1,290	918	674	595	587
3	822	502	1,170	1,100	2,290	1,390	1,440	1,280	978	625	610	522
4	824	786	1,180	1,090	2,070	1,360	1,380	1,280	930	680	627	566
5	662	594	1,330	1,130	1,860	1,300	1,370	1,280	937	686	632	551
6	551	611	1,350	1,160	1,740	1,280	1,320	1,280	950	678	632	548
7	776	579	1,260	1,140	1,640	1,280	1,300	1,190	876	672	648	544
8	642	644	1,320	1,110	1,580	1,280	1,320	1,230	1,100	684	562	774
9	659	601	1,200	1,120	1,450	1,340	1,300	1,250	1,150	650	598	595
10	674	550	1,210	1,140	1,450	1,640	1,300	1,250	1,190	643	615	743
11	633	518	3,030	1,140	1,460	1,810	1,310	960	1,040	680	624	629
12	636	655	5,780	1,130	1,590	1,730	1,300	1,200	963	606	618	670
13	484	558	6,550	1,110	1,980	1,640	1,290	1,060	1,020	719	590	554
14	777	506	5,570	1,110	2,220	1,580	1,170	1,030	948	648	608	578
15	612	533	5,740	1,040	2,270	1,540	1,330	1,030	884	729	601	746
16	607	544	3,870	1,095	2,280	1,510	1,380	1,020	911	672	606	500
17	634	750	2,920	1,070	2,130	1,510	1,430	956	944	628	578	690
18	545	1,170	2,440	1,100	2,000	1,490	1,530	910	916	660	574	586
19	678	2,150	2,230	1,090	1,880	1,500	1,630	946	886	596	501	653
20	720	1,490	1,900	1,100	1,770	1,500	1,650	865	829	688	592	638
21	844	1,280	1,780	1,090	1,680	1,530	1,550	912	850	584	576	538
22	773	908	1,670	1,090	1,610	1,560	1,460	888	695	632	596	584
23	791	1,020	1,590	1,280	1,566	1,550	1,410	891	908	610	580	610
24	760	952	1,410	1,690	1,510	1,500	1,370	868	797	607	550	626
25	826	1,020	1,350	2,310	1,490	1,460	1,360	886	767	607	567	510
26	882	1,330	1,370	2,700	1,430	1,400	1,350	872	794	642	540	496
27	762	1,920	1,330	2,220	1,390	1,360	1,350	870	829	668	566	658
28	702	2,110	1,280	1,960	1,370	1,350	1,290	913	810	592	530	596
29	680	1,710	1,260	1,740	-	1,340	1,310	972	646	618	554	565
30	656	1,410	1,190	1,630	-	1,410	1,330	938	734	638	505	675
31	647	-	1,180	1,460	-	1,410	-	928	-	625	552	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October	21,127	882	484	682	41,900
November	28,623	2,150	502	954	56,770
December	58,020	6,550	1,170	2,194	134,900
Calendar year 1946	473,747	6,550	484	1,298	939,600
January	41,395	2,700	985	1,335	82,110
February	49,670	2,380	1,370	1,774	98,520
March	45,230	1,810	1,280	1,459	89,710
April	41,320	1,650	1,170	1,377	81,960
May	32,525	1,500	865	1,049	64,510
June	26,962	1,190	646	899	53,480
July	20,159	729	584	650	39,980
August	18,122	648	501	585	35,940
September	18,132	774	496	604	35,960
Water year 1946-47	411,285	6,550	484	1,127	815,700

a No gage-height record; discharge computed on basis of record of power output.

LITTLE WHITE SALMON RIVER BASIN

Little White Salmon River near Willard, Wash.

Location.- Staff gage, lat. 45°48'00", long. 121°38'30", in SW $\frac{1}{4}$ sec. 26, T. 4 N., R. 9 E., 300 Feet upstream from Moss Creek and $\frac{1}{2}$ miles north of Willard.

Drainage area.- 40.6 square miles.

Records available.- November 1944 to September 1947.

Extremes.- Maximum discharge during year, 2,330 second-feet Dec. 15 (gage height, 7.14 feet, from observer's notes and graph based on gage readings); minimum observed, 11 second-feet Sept. 1-6.

1944-47: Maximum discharge, that of Dec. 15, 1946; minimum observed, that of Sept. 1-6, 1947

Remarks.- Records good except those above 1,000 second-feet, which are fair. Gage read once daily. No diversion or regulation.

Rating tables, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Oct. 23 to Nov. 18)

Oct. 1 to Dec. 12

Dec. 13 to Sept. 30

1.3	11	2.5	164	5.0	1,140	0.8	10	2.0	160	5.0	1,200
1.5	21	3.0	300	6.0	1,680	1.0	17	2.5	280	6.0	1,700
1.7	37	3.5	470	6.7	2,060	1.2	30	3.0	425	7.0	2,270
2.0	71	4.0	670			1.4	50	3.5	556		
						1.7	97	4.0	770		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	50	256	160	456	134	117	66	36	24	15	11
2	14	46	228	151	930	134	113	65	37	23	15	11
3	16	42	202	142	638	134	109	63	37	23	15	11
4	17	37	228	138	520	160	113	60	37	23	15	11
5	18	34	215	134	382	142	117	59	37	22	15	11
6	15	32	202	134	335	134	121	59	37	22	14	11
7	19	31	189	125	285	142	115	58	50	21	13	30
8	16	29	215	121	264	151	117	55	53	21	13	38
9	15	28	215	117	249	178	117	55	43	21	13	24
10	14	26	270	134	229	335	125	54	40	21	13	20
11	13	26	1,290	125	224	456	125	53	37	19	13	18
12	13	25	2,060	121	249	352	117	50	35	19	13	15
13	13	23	2,270	117	410	302	113	50	34	19	12	14
14	13	23	1,970	109	456	254	109	49	32	19	12	14
15	13	22	1,910	101	425	229	103	47	30	19	12	13
16	13	21	1,100	101	425	215	101	46	30	19	12	13
17	14	56	810	99	375	196	97	46	30	18	12	15
18	14	545	620	97	335	182	99	46	31	18	12	18
19	17	452	488	117	280	173	99	46	30	17	12	15
20	71	242	425	109	254	160	93	43	29	16	12	14
21	58	176	364	117	229	151	90	43	29	16	12	13
22	61	111	313	158	205	145	86	41	29	16	12	12
23	63	131	280	299	191	147	83	39	27	16	12	13
24	59	154	254	583	182	139	79	38	26	15	12	12
25	55	315	234	1,100	169	125	76	37	26	15	12	13
26	50	760	229	1,040	160	117	73	37	28	18	12	13
27	46	1,140	210	638	151	113	73	37	30	19	12	14
28	41	760	196	440	138	109	71	37	28	21	12	22
29	37	470	187	352	-	105	71	36	26	17	13	18
30	40	330	178	280	-	109	69	36	25	16	12	15
31	36	-	169	254	-	111	-	36	-	16	12	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	896	71	12	28.9	0.712	0.82	1,780
November	6,137	1,140	21	205	5.05	5.62	12,170
December	17,777	2,270	169	573	14.1	16.28	35,260
Calendar year 1946	71,599	2,270	12	196	4.83	65.58	142,000
January	7,663	1,100	97	247	6.08	7.02	15,200
February	9,147	930	138	327	8.05	8.38	18,140
March	5,535	456	105	178	4.58	5.07	10,870
April	2,991	125	69	99.7	2.46	2.74	5,930
May	1,487	66	36	48.0	1.18	1.36	2,950
June	999	53	25	33.3	.820	.92	1,980
July	589	24	15	19.0	.468	.54	1,170
August	396	15	12	12.8	.315	.36	785
September	472	38	11	15.7	.587	.43	936
Water year 1946-47	54,087	2,270	11	148	3.65	49.54	107,300

Little White Salmon River at Willard, Wash.

Location.- Water-stage recorder, lat. 45°47'00", long. 121°37'30", in NW¼ sec. 1, T. 3 N., R. 9 E., a quarter of a mile downstream from Lava Creek, at Willard.

Drainage area.- 117 square miles.

Records available.- December 1944 to September 1947. November 1903 to August 1906 (fragmentary).

Extremes.- Maximum discharge during year, 4,140 second-feet Dec. 15 (gage height, 9.50 feet), from rating curve extended above 2,500 second-feet; minimum, 11 second-feet Sept. 25, 26, 27.
1903-6, 1944-47: Maximum discharge, that of Dec. 15, 1946; minimum, 8.3 second-feet Oct. 26, 1946.

Remarks.- Records fair. Small diversion for water supply. Other diversions for irrigation and for industrial and hatchery purposes. No regulation.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1-19

Oct. 20 to Sept. 30

1.7	31	1.2	11	2.0	57	3.3	223	6.0	860
1.9	45	1.4	19	2.3	84	3.6	280	7.0	1,340
2.2	67	1.6	29	2.6	120	4.0	363	8.0	2,240
		1.8	42	3.0	175	5.0	594	9.2	3,720

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	105	717	920	920	522	440	332	241	187	85	31
2	62	107	666	880	1,720	522	429	321	250	187	83	30
3	61	105	642	880	1,410	534	429	321	241	187	80	28
4	61	102	666	830	1,100	522	429	310	241	186	77	24
5	61	100	666	800	960	498	429	310	237	181	74	22
6	67	99	642	800	890	498	440	300	236	171	71	22
7	56	96	642	744	830	510	440	300	237	162	70	36
8	52	94	691	717	771	510	440	300	260	180	67	45
9	49	92	691	691	717	558	440	290	250	157	66	36
10	46	90	691	691	691	800	452	290	241	154	63	34
11	44	86	1,840	666	666	860	452	290	234	153	62	26
12	43	82	3,070	642	691	771	440	280	228	150	59	23
13	42	79	3,720	618	830	691	429	280	225	146	58	20
14	41	76	3,330	582	920	666	429	280	220	143	55	19
15	39	72	3,460	558	890	642	418	280	218	140	54	17
16	39	70	2,460	546	860	606	418	270	220	136	52	16
17	37	126	1,930	534	830	582	418	270	214	133	51	17
18	36	750	1,740	534	771	570	418	270	209	129	49	20
19	38	657	1,560	534	717	546	407	270	209	126	48	17
20	100	429	1,480	510	691	534	396	260	206	121	47	16
21	99	332	1,410	498	642	498	385	260	200	119	45	15
22	108	310	1,410	534	618	498	385	260	198	115	43	13
23	114	321	1,340	691	606	498	374	260	195	112	42	13
24	115	385	1,340	953	582	498	363	250	193	108	41	12
25	108	582	1,270	1,370	570	464	363	250	193	105	38	11
26	105	1,130	1,270	1,830	558	452	352	250	195	103	37	11
27	99	1,640	1,210	1,270	546	452	352	250	195	102	36	12
28	92	1,340	1,150	1,000	534	440	342	250	192	101	35	20
29	92	960	1,100	860	-	440	342	250	187	95	34	16
30	93	800	1,000	800	-	440	332	241	184	92	34	14
31	92	-	1,000	744	-	440	-	241	-	88	33	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	2,152	115	36	69.4	4,270
November.....	11,217	1,640	70	374	22,250
December.....	44,804	3,720	642	1,445	88,870
Calendar year 1946	194,002	3,720	36	532	384,800
January.....	24,217	1,830	498	781	48,030
February.....	22,531	1,720	534	805	44,690
March.....	17,062	860	440	550	33,840
April.....	12,183	452	332	406	24,160
May.....	8,586	332	241	277	17,030
June.....	6,549	260	184	218	12,990
July.....	4,249	187	88	137	8,430
August.....	1,689	85	33	54.5	3,350
September.....	636	45	11	21.2	1,260
Water year 1946-47	155,875	3,720	11	427	309,200

Wind River above Trout Creek, near Carson, Wash.

Location.- Staff gage, lat. 45°48'30", long. 121°54'30", in NE $\frac{1}{4}$ sec. 26, T. 4 N., R. 7 E., three-quarters of a mile upstream from mouth of Trout Creek and 7 miles northwest of Carson.

Drainage area.- 108 square miles.

Records available.- October 1944 to September 1947.

Extremes.- Maximum discharge during year, 6,870 second-feet Dec. 13 (gage height, 13.7 feet, from graph based on gage readings), from rating curve extended above 5,000 second-feet; minimum observed, 68 second-feet Sept. 3-6, 24-27.
1944-47: Maximum discharge, 8,880 second-feet Feb. 8, 1945 (gage height, 15.5 feet, from high-water mark), from rating curve extended above 5,000 second-feet; minimum observed, 52 second-feet Oct. 27-30, 1945.

Remarks.- Records good. Gage read twice daily. Very small regulation by fish hatchery dam above station. No diversion above station which is not returned to stream.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

1.4	65	3.0	243	6.0	1,020	10.0	3,580
1.7	88	3.5	334	7.0	1,460	11.0	4,200
2.0	116	4.0	444	8.0	2,000	12.0	5,100
2.5	172	5.0	707	9.0	2,650	13.1	6,210

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	314	1,060	420	885	469	679	420	185	142	92	72
2	84	260	990	397	2,060	469	707	397	198	137	92	72
3	88	227	990	375	1,460	597	651	397	198	137	88	72
4	92	212	1,180	354	1,100	624	624	375	198	132	88	72
5	97	198	1,260	354	955	545	624	375	185	126	88	68
6	88	185	1,140	334	855	519	624	354	185	126	88	68
7	88	185	1,060	334	765	494	597	354	185	126	88	111
8	92	185	1,260	314	707	545	624	354	295	121	88	111
9	92	172	1,180	314	651	679	651	334	295	116	84	121
10	88	172	1,410	334	624	1,100	735	314	227	116	84	106
11	80	160	3,940	334	624	1,260	707	277	212	116	84	92
12	80	160	5,900	314	765	1,060	651	277	198	121	84	88
13	84	160	6,210	314	1,180	920	651	277	185	116	80	80
14	84	148	4,650	295	1,560	855	624	260	172	116	80	80
15	80	148	4,650	277	1,460	825	624	260	160	111	80	76
16	84	137	2,720	277	1,310	795	597	243	185	111	80	76
17	80	212	1,880	260	1,100	795	624	243	185	106	80	80
18	80	2,720	1,460	277	990	765	735	243	172	106	76	84
19	92	2,000	1,220	277	825	735	707	227	160	102	76	76
20	260	1,060	1,020	277	765	707	651	227	160	102	76	76
21	227	795	920	295	707	679	597	227	148	97	76	72
22	277	679	825	354	679	651	545	277	142	97	76	72
23	314	707	765	825	624	597	494	212	142	97	76	72
24	314	795	707	1,710	597	597	469	212	137	97	76	72
25	469	1,140	651	1,940	571	545	469	212	137	97	76	68
26	444	2,180	624	2,370	545	519	444	198	137	106	72	68
27	314	3,460	571	1,510	519	469	444	198	185	106	72	68
28	243	2,240	519	1,100	494	444	444	185	185	106	72	80
29	227	1,650	494	920	-	444	494	185	160	102	72	80
30	212	1,260	469	825	-	545	444	185	148	97	76	72
31	212	-	444	707	-	624	-	185	-	97	72	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	5,150	469	80	166	1.54	1.77	10,210
November	23,931	3,460	137	798	7.39	8.24	47,470
December	52,169	6,210	444	1,683	15.6	17.96	103,500
Calendar year 1946	244,668	6,210	80	670	6.20	84.25	485,300
January	18,988	2,370	260	615	5.68	6.54	37,660
February	25,377	2,060	494	906	8.39	8.74	50,330
March	20,872	1,260	444	673	6.23	7.19	41,400
April	17,931	735	444	598	5.54	6.17	35,570
May	8,484	420	185	274	2.54	2.92	16,830
June	5,461	295	137	182	1.69	1.88	10,830
July	3,485	142	97	112	1.04	1.20	6,910
August	2,492	92	72	80.4	.744	.86	4,940
September	2,405	121	68	80.2	.743	.85	4,770
Water year 1946-47	186,745	6,210	68	512	4.74	64.30	370,400

Wind River near Carson, Wash.

Location.- Water-stage recorder, lat. 45°44'10", long. 121°48'10", in SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 21, T. 3 N., R. 8 E., three-quarters of a mile upstream from Little Wind River, 1 mile northeast of Carson, and 2 $\frac{1}{2}$ miles upstream from mouth. Discharge measurements made just downstream from mouth of Little Wind River.

Drainage area.- 225 square miles, including that of Little Wind River.

Records available.- December 1934 to September 1947 (includes flow of Little Wind River).

Average discharge.- 12 years, 1,009 second-feet.

Extremes.- Maximum discharge during year, 15,000 second-feet Dec. 13 (gage height, 15.92 feet), from rating curve extended above 5,000 second-feet on basis of velocity-area studies; minimum, 176 second-feet Sept. 5, 6.

1934-47: Maximum discharge, 16,700 second-feet Dec. 29, 1937 (gage height, 17.30 feet), from rating curve extended above 5,000 second-feet on basis of velocity-area studies; minimum, 136 second-feet Nov. 29, Dec. 1, 1936 (gage height, 2.21 feet).

Remarks.- Records good except those for periods of no gage-height record, which are fair. Flow occasionally affected by pondage at Forest Service power plant on Trout Creek. No diversion above station.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 12

Dec. 13 to Sept. 30

2.9	178	5.0	725	10.0	4,650	3.0	171	5.0	680	9.0	3,290
3.1	209	5.5	910	11.0	6,000	3.3	222	5.5	870	10.0	4,370
3.3	244	6.0	1,110	13.0	9,000	3.6	282	6.0	1,100	11.0	5,620
3.6	304	7.0	1,670	15.0	12,400	4.0	376	7.0	1,670	13.0	8,720
4.0	402	8.0	2,440			4.5	510	8.0	2,400	15.1	13,000
4.5	550	9.0	3,460								

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	193	850	2,530	940	2,260	930	1,490	810	402	376	224	182
2	199	725	2,270	900	5,840	950	1,550	790	428	364	223	181
3	206	620	2,190	860	3,700	1,250	1,400	770	415	351	222	177
4	209	550	2,530	820	2,730	1,400	1,340	750	428	339	221	177
5	226	490	2,620	780	2,240	1,220	1,370	732	415	339	220	177
6	207	475	2,440	740	1,880	1,120	1,430	715	402	327	219	179
7	209	475	2,270	740	1,740	1,120	1,340	715	442	316	218	272
8	218	445	2,820	690	1,550	1,310	1,400	680	628	304	217	364
9	206	416	2,720	690	1,430	1,670	1,460	662	698	304	217	351
10	199	430	3,460	740	1,310	3,130	1,670	628	592	316	215	304
11	193	402	9,270	740	1,310	3,390	1,740	592	525	304	209	259
12	190	389	12,400	690	1,610	2,640	1,550	575	482	293	209	237
13	192	364	13,000	690	2,680	2,160	1,400	558	442	293	208	220
14	190	351	9,650	640	3,390	1,880	1,340	540	428	293	202	215
15	187	339	10,300	610	3,190	1,740	1,280	525	415	280	204	208
16	186	327	5,490	600	2,910	1,670	1,220	510	455	272	202	202
17	188	810	3,810	570	2,400	1,610	1,200	496	442	243	201	211
18	186	7,420	3,000	600	2,090	1,550	1,430	496	415	241	199	217
19	199	5,160	2,500	600	1,810	1,430	1,400	482	402	255	199	206
20	688	2,680	2,050	600	1,550	1,310	1,340	482	389	253	201	197
21	708	1,810	1,850	800	1,430	1,250	1,200	482	376	253	196	196
22	742	1,490	1,650	1,120	1,340	1,220	1,120	468	364	253	194	190
23	850	1,520	1,500	2,840	1,250	1,180	1,050	455	351	272	192	189
24	910	2,110	1,400	4,730	1,200	1,150	975	442	351	272	192	185
25	1,140	3,540	1,300	5,230	1,150	1,050	910	442	339	274	190	187
26	1,140	5,860	1,250	5,890	1,080	975	890	442	364	251	189	184
27	850	8,200	1,200	5,590	1,020	930	870	428	442	243	185	185
28	708	5,580	1,150	2,640	975	890	850	415	468	239	185	215
29	602	4,040	1,080	2,090	-	870	930	402	428	237	187	204
30	602	3,240	1,040	1,810	-	1,080	870	402	402	233	189	189
31	602	-	1,000	1,490	-	1,280	-	389	-	226	185	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Runoff Acre-feet
October	13,325	1,140	186	430	1.91	2.20	26,430
November	61,108	8,200	327	2,037	9.05	10.10	121,200
December	111,740	13,000	1,000	3,605	16.0	18.47	221,600
Calendar year 1946	533,166	13,000	186	1,461	6.49	88.12	1,058,000
January	46,470	5,890	570	1,499	6.66	7.68	92,170
February	57,045	5,840	975	2,037	9.05	9.43	113,100
March	45,355	3,390	870	1,463	6.50	7.50	89,960
April	38,015	1,740	850	1,267	5.63	6.28	75,400
May	17,275	810	389	557	2.48	2.86	34,260
June	13,130	698	339	438	1.95	2.17	26,040
July	8,816	376	226	284	1.26	1.46	17,490
August	6,314	224	185	204	.907	1.04	12,520
September	6,480	364	177	215	.956	1.07	12,810
Water year 1946-47	425,053	13,000	177	1,165	5.18	70.26	843,000

Peak discharge.- Nov. 18 (6 p.m.) 9,320 sec.-ft.; Nov. 27 (12 m.) 9,970 sec.-ft.; Dec. 13 (2:30 a.m.) 15,000 sec.-ft.; Dec. 15 (2:30 a.m.) 13,800 sec.-ft.; Jan. 26 (1 a.m.) 7,370 sec.-ft.; Feb. 2 (8 a.m.) 7,210 sec.-ft.

Note.- No gage-height record Dec. 18 to Jan. 21, Aug. 2-6; discharge computed on basis of recorded range in stage and records for station above Trout Creek, near Carson, or interpolated.

WIND RIVER BASIN

Falls Creek near Carson, Wash.

Location.- Water-stage recorder, lat. 45°54'30", long. 121°56'30", in SW $\frac{1}{4}$ sec. 21, T. 5 N., R. 7 E., a third of a mile upstream from mouth and 14 miles northwest of Carson.

Drainage area.- 24.3 square miles.

Records available.- December 1944 to September 1947.

Extremes.- Maximum discharge during year, 710 second-feet Dec. 15 (gage height, 4.38 feet), from Rating curve extended above 350 second-feet; minimum, 13 second-feet Sept. 22, 24-27 (gage height, 1.73 feet).
1944-47: Maximum discharge, that of Dec. 15, 1946. Discharge of 8.7 second-feet (corrected) was measured Oct. 29, 1944.

Remarks.- Records good except those above 300 second-feet and those for periods of ice effect, which are fair. No diversion or regulation above station.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.75	14	2.7	122
1.9	24	3.0	202
2.1	37	3.3	298
2.3	56	3.7	437
2.5	83	4.1	590

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	44	149	98	a100	87	136	92	49	34	23	16
2	20	36	160	90	a230	94	129	92	50	33	22	15
3	21	33	157	83	a170	120	122	90	49	32	22	14.5
4	22	31	188	77	a150	118	118	88	49	32	22	14.5
5	22	30	188	b74	*129	103	122	87	48	31	22	14
6	20	31	170	b70	120	97	118	90	46	31	22	15
7	22	30	173	b68	112	97	112	90	50	29	21	27
8	21	29	202	b64	105	103	118	85	72	29	20	26
9	18.5	28	185	64	97	124	116	78	61	29	19.5	27
10	19	29	211	76	92	190	136	74	54	28	19.5	22
11	18.5	27	444	68	97	199	124	72	50	29	19.5	19.5
12	17.5	27	550	66	122	168	116	71	46	29	19.5	17
13	17	26	590	62	185	154	112	66	44	28	19.5	16
14	17	25	550	62	208	141	109	64	43	27	19	15
15	17	25	570	b56	205	144	109	63	42	27	19	14.5
16	16.5	24	423	b50	193	144	109	61	48	27	18.5	16.5
17	17	57	*349	b46	176	144	124	60	44	25	18.5	16.5
18	17	363	312	b49	160	139	144	57	41	25	17.5	17
19	20	262	282	52	144	134	134	57	40	25	17	16
20	54	154	255	49	134	129	127	55	39	25	17	15
21	40	116	236	49	129	127	116	55	37	24	16.5	14
22	46	101	214	61	120	127	109	54	36	24	16.5	13.5
23	45	109	193	92	114	122	103	53	36	24	16.5	14
24	49	112	173	173	107	120	97	52	35	24	14.5	13.5
25	50	168	160	236	105	114	96	53	34	24	16.5	13.5
26	44	252	149	249	99	105	94	51	38	26	16.5	13
27	38	335	136	179	96	97	94	49	41	25	16	13
28	34	259	124	144	92	96	92	48	39	27	16	26
29	33	221	116	124	97	107	107	46	36	25	16.5	16.5
30	33	176	107	116	-	118	99	44	35	24	16.5	15
31	36	-	101	105	-	122	-	45	-	23	16.5	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	865	54	16.5	27.9	1.15	1.32	1,720
November	3,160	363	24	105	4.32	4.84	6,270
December	7,817	590	101	252	10.4	11.96	15,500
Calendar year 1946	43,215	590	16.5	118	4.86	66.13	85,710
January	2,850	249	46	91.9	3.78	4.36	5,650
February	3,791	230	92	135	5.56	5.80	7,520
March	3,874	199	87	125	5.14	5.93	7,680
April	3,442	144	92	115	4.73	5.27	6,830
May	2,042	92	44	65.9	2.71	3.13	4,050
June	1,332	72	34	44.4	1.83	2.04	2,640
July	845	34	23	27.3	1.12	1.29	1,680
August	576.5	23	14.5	18.6	.765	.88	1,140
September	506	27	13	16.9	.695	.77	1,000
Water year 1946-47	31,100.5	590	13	85.2	3.51	47.59	61,680

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of recorded range in stage, weather records, and records for Wind River above Trout Creek, near Carson.

b Stage-discharge relation affected by ice.

Trout Creek near Carson, Wash.

Location.- Water-stage recorder, lat. 45°48'00", long. 121°55'00", in SW $\frac{1}{4}$ sec. 26, T. 4 N., R. 7 E., a quarter of a mile upstream from Martha Creek, half a mile upstream from mouth, and 7 miles northwest of Carson.

Drainage area.- 30.3 square miles.

Records available.- December 1944 to September 1947.

Extremes.- Maximum discharge during year, 2,620 second-feet Dec. 13 (gage height, 8.49 feet), from rating curve extended above 950 second-feet; minimum, 4.0 second-feet (regulated) July 1 (gage height, 1.27 feet).
1944-47: Maximum discharge, 3,040 second-feet Feb. 7, 1945 (gage height, 9.10 feet), from rating curve extended above 800 second-feet; minimum, 3.0 second-feet (regulated) Oct. 1, 1945 (gage height, 1.25 feet).

Remarks.- Records good except those for periods of ice effect or no gage-height record, and those above 1,000 second-feet and below 10 second-feet, which are fair. Some regulation at Forest Service power plant. No diversion above station.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.4	6.0	2.3	49	3.6	250	5.5	870
1.6	10	2.6	78	4.0	343	6.0	1,120
1.8	16.5	3.0	133	4.5	484	7.0	1,670
2.0	27	3.3	187	5.0	655	8.0	2,270

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.2	305	395	94	496	122	331	120	38	83	18	8.5
2	9.3	237	382	88	1,510	140	351	114	43	52	17.5	8.2
3	10.5	195	368	80	636	284	277	110	41	59	17	7.6
4	12	161	438	77	*438	307	261	104	53	55	16	7.4
5	16.5	135	468	b73	356	250	274	99	43	51	15.5	7.4
6	12	135	409	b71	297	213	263	93	38	47	15	6.2
7	12.5	127	409	b71	259	205	241	88	40	44	14.5	40
8	14.5	114	532	71	228	241	268	85	89	43	14	94
9	12	107	532	69	203	297	302	84	123	40	13.5	84
10	10.5	110	778	94	183	576	368	79	119	38	13.5	55
11	10	98	2,100	89	195	583	343	75	100	40	13	40
12	9.8	89	2,210	84	272	438	293	71	84	43	13	32
13	9.6	83	2,270	77	484	356	259	68	74	37	11	27
14	9.3	77	1,730	70	600	305	243	65	68	35	8.7	24
15	9.3	*72	1,550	67	600	277	222	61	62	35	9.8	21
16	9.1	67	823	b65	516	261	212	50	78	32	11	20
17	9.3	278	549	b65	409	250	180	45	76	30	11	21
18	9.3	1,980	409	b68	343	239	250	54	87	28	10.5	21
19	13	1,110	351	70	293	220	248	53	63	26	10	19
20	298	583	279	94	254	201	232	50	60	25	9.8	17.5
21	254	409	243	143	228	193	213	47	56	24	9.6	16.5
22	306	331	218	274	207	191	193	46	53	23	9.6	16
23	356	383	193	846	191	183	174	43	51	21	9.6	15
24	409	532	180	1,190	179	181	155	42	47	20	9.3	14.5
25	516	912	150	1,270	166	157	142	40	46	20	10	14.5
26	409	1,290	142	1,120	154	142	130	39	58	25	11	14
27	300	1,650	131	618	142	120	120	37	90	25	9.6	14.5
28	242	925	119	423	133	119	119	36	102	28	8.9	23
29	199	655	110	331	-	114	157	35	86	24	8.5	17.5
30	198	500	103	281	-	182	128	34	77	21	8.5	15.5
31	216	-	100	237	-	254	-	32	-	19	8.5	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	3,910.7	516	8.2	126	4.16	4.80	7,760
November	13,648	1,980	67	455	15.0	18.75	27,070
December	18,621	2,270	100	601	19.8	22.66	36,930
Calendar year 1946	93,151.8	2,270	6.9	255	8.42	114.35	184,800
January	8,284	1,270	66	267	8.81	10.14	16,390
February	9,772	1,310	133	349	11.5	11.99	19,380
March	7,601	583	114	245	8.09	9.33	15,080
April	6,939	368	119	231	7.62	8.52	13,760
May	1,999	120	32	64.5	2.15	2.45	3,960
June	2,025	123	38	67.5	2.23	2.49	4,020
July	1,093	83	19	35.3	1.17	1.34	2,170
August	565.4	18	8.5	11.8	.389	.45	725
September	721.8	94	6.2	24.1	.795	.89	1,430
Water year 1946-47	74,959.9	2,270	6.2	205	6.77	92.01	148,700

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

WIND RIVER BASIN

Panther Creek near Carson, Wash.

Location.- Water-stage recorder, lat. 45°48'00", long. 121°52'00" in SW $\frac{1}{4}$ sec. 25, T. 4 N., R. 7 $\frac{1}{2}$ E., a third of a mile upstream from Cedar Creek and 6 miles north of Carson.

Drainage area.- 30.1 square miles.

Records available.- December 1944 to September 1947.

Extremes.- Maximum discharge during year, 1,830 second-feet Dec. 15 (gage height, 4.58 feet); minimum, 49 second-feet Sept. 27 (gage height, 0.93 foot).
1944-47: Maximum discharge recorded, 2,150 second-feet Feb. 7, 1945 (gage height, 5.0 feet); minimum, 47 second-feet Aug. 31 to Sept. 2, 1945 (gage height, 0.90 foot).
Discharge of 40 second-feet was measured Oct. 30, 1944.

Remarks.- Records good. No diversion or regulation.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Feb. 2 to Mar. 9,
June 7-30, Aug. 7 to Sept. 30)

0.9	50	1.8	239	3.5	1,050
1.0	65	2.0	300	4.0	1,400
1.2	100	2.3	398	4.5	1,750
1.4	139	2.6	518		
1.6	185	3.0	750		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	108	297	139	266	131	190	110	87	69	62	53
2	62	100	266	135	726	133	206	62	87	69	60	53
3	62	91	263	129	459	157	190	106	87	69	60	52
4	64	86	297	127	519	173	183	104	87	68	59	52
5	62	80	297	125	263	163	190	104	86	68	59	52
6	60	79	263	123	231	154	206	102	86	68	59	53
7	62	77	236	121	219	157	201	100	101	68	59	68
8	62	75	275	119	203	178	198	100	117	66	59	65
9	60	74	281	117	185	231	201	98	108	66	59	64
10	60	74	342	121	168	486	228	96	102	66	59	58
11	60	72	1,110	117	171	484	236	96	95	66	59	56
12	59	70	1,580	117	203	371	211	96	89	68	59	54
13	59	70	1,470	115	335	303	193	96	87	66	58	53
14	59	68	1,260	110	409	257	180	95	84	66	58	53
15	59	67	1,340	108	381	239	168	95	82	66	58	52
16	59	65	660	108	348	225	154	95	86	64	58	52
17	60	120	439	106	303	214	152	93	82	64	58	54
18	60	810	354	110	257	198	148	93	80	64	58	54
19	62	526	306	127	222	180	146	93	79	64	58	53
20	110	288	269	129	198	171	143	91	79	63	56	52
21	96	203	242	139	185	161	135	91	79	63	56	52
22	102	168	219	202	171	154	131	89	79	63	56	52
23	108	163	201	435	166	150	127	89	77	63	56	52
24	115	239	188	654	159	146	123	87	72	63	54	50
25	115	444	180	700	154	137	121	87	72	62	54	50
26	111	742	173	820	146	133	117	87	74	62	53	50
27	96	1,080	166	463	141	129	115	87	75	64	53	52
28	89	673	159	345	135	125	113	87	74	66	53	54
29	84	431	150	275	-	125	115	86	72	64	53	52
30	86	564	146	235	-	137	111	86	70	62	53	50
31	89	-	143	201	-	168	-	86	-	62	53	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	2,354	115	59	75.9	2.52	2.91	4,670
November	7,507	1,080	65	250	8.31	9.28	14,890
December	13,572	1,580	143	438	14.6	16.77	26,920
Calendar year 1946	72,225	1,580	59	198	6.58	89.26	143,300
January	6,870	820	106	222	7.38	8.49	13,630
February	7,101	726	135	254	8.44	8.77	14,080
March	6,170	486	125	199	6.61	7.62	12,240
April	4,932	236	111	164	5.45	6.09	9,780
May	2,931	110	86	94.5	3.14	3.62	5,810
June	2,535	117	70	84.5	2.81	3.13	5,030
July	2,022	69	62	65.2	2.17	2.50	4,010
August	1,769	62	53	57.1	1.90	2.19	3,510
September	1,617	68	50	53.9	1.79	2.00	3,210
Water year 1946-47	59,380	1,580	50	163	5.42	73.37	117,800

Note.- No gage-height record July 1 to Aug. 6; discharge computed on basis of records for Wind River above Trout Creek, near Carson, and Falls Creek near Carson.

Sandy River near Marmot, Oreg.

Location.- Water-stage recorder, lat. 45°23', long. 122°08', in NE¼ sec. 24, T. 2 S., R. 5 E., 1 mile southwest of Marmot, 1½ miles upstream from Sandy River Dam of Portland General Electric Co., and 5 miles downstream from Salmon River.

Drainage area.- 262 square miles.

Records available.- August 1911 to December 1915, July 1919 to September 1947. Equivalent records for period January 1916 to June 1919 obtained by combining records for Sandy River below dam near Marmot with records for Sandy River Canal near Marmot.

Average discharge.- 36 years, 1,300 second-feet.

Extremes.- Maximum discharge during year, 21,200 second-feet Dec. 15 (gage height, 14.79 feet), from rating curve extended above 6,000 second-feet; minimum, 299 second-feet Oct. 16 (gage height, 2.84 feet).

1911-47: Maximum discharge, 29,200 second-feet Jan. 6, 1923 (gage height, 17.5 feet, site and datum then in use), by computation of flow over dam; minimum, 205 second-feet Sept. 21-24, 1940.

Remarks.- Records good. No diversion or regulation above station.

Cooperation.- Water-stage recorder inspected by employee of Portland General Electric Co.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 14					Dec. 15 to Sept. 30				
2.6	265	5.1	1,720	9.5	8,530	3.1	290	5.0	1,470
3.3	485	6.0	2,580	11.0	11,600	3.4	425	6.0	2,450
3.6	760	7.0	3,880	12.5	15,200	3.8	635	7.0	3,700
4.4	1,180	8.0	5,580	13.3	17,200	4.4	1,010	8.0	5,300

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	316	1,800	1,870	1,010	2,350	926	1,520	1,130	647	1,090	470	a340
2	324	1,380	1,820	852	4,100	958	1,450	1,140	707	984	465	a340
3	324	1,150	1,490	893	2,970	971	1,470	1,080	635	912	475	334
4	364	1,040	1,450	874	2,500	997	1,460	1,030	635	841	470	344
5	412	939	1,340	860	2,000	926	1,450	990	608	791	455	344
6	340	1,020	1,240	912	1,910	874	1,500	978	580	787	420	330
7	360	1,070	1,220	848	1,920	906	1,480	964	635	725	415	430
8	400	960	1,560	822	1,710	1,020	1,670	945	1,120	689	410	445
9	352	904	1,660	803	1,530	1,330	1,690	1,070	1,580	677	435	530
10	324	1,040	2,180	976	1,380	2,360	2,110	945	2,060	665	415	465
11	313	939	9,930	1,010	1,580	3,030	1,930	874	1,620	630	385	375
12	313	864	17,200	971	1,680	2,180	1,740	828	1,230	635	380	348
13	306	799	16,200	945	2,100	1,750	1,750	797	1,040	635	380	339
14	306	754	14,300	867	2,030	1,610	1,780	761	926	635	380	326
15	302	712	13,800	809	2,010	1,610	1,750	743	828	618	380	316
16	299	682	6,330	809	1,920	1,680	1,660	725	919	580	385	375
17	310	1,390	4,160	785	1,760	1,670	1,890	701	997	569	375	375
18	316	5,380	3,070	815	1,580	1,610	2,680	689	893	574	370	425
19	332	3,940	2,540	1,190	1,430	1,520	2,250	689	828	558	362	a410
20	1,120	2,430	2,180	1,190	1,300	1,430	2,000	683	803	530	352	a380
21	1,340	1,860	1,940	1,700	1,230	1,410	1,700	677	755	520	339	a360
22	1,250	1,740	1,740	2,190	1,200	1,810	1,520	685	695	515	334	a340
23	1,840	1,830	1,560	5,350	1,150	1,650	1,390	641	683	490	a334	a325
24	3,170	1,780	1,430	6,920	1,130	1,470	1,310	641	677	480	a334	310
25	4,260	2,920	1,330	7,520	1,080	1,330	1,240	641	659	470	a338	326
26	3,080	5,650	1,390	8,150	1,040	1,240	1,210	677	906	505	a340	330
27	1,810	6,090	1,390	4,160	978	1,150	1,200	677	1,970	547	h348	326
28	1,320	4,530	1,230	2,930	938	1,120	1,160	665	2,220	613	a348	410
29	1,140	2,990	1,150	2,270	-	1,150	1,360	635	1,640	510	a345	344
30	1,240	2,280	1,070	1,960	-	1,320	1,210	613	1,290	475	a345	326
31	1,320	-	1,040	1,670	-	1,470	-	624	-	475	a345	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	29,199	4,260	299	942	3.60	4.14	57,920
November	60,843	6,090	682	2,028	7.74	8.64	120,700
December	120,620	17,200	1,040	3,691	14.9	17.12	239,200
Calendar year 1946	582,010	17,200	299	1,595	6.09	82.62	1,154,000
January	63,223	8,150	785	2,039	7.78	8.97	125,400
February	48,108	4,100	938	1,718	6.56	6.83	95,420
March	44,458	3,030	874	1,434	5.47	6.31	88,180
April	48,730	2,680	1,160	1,624	6.20	6.92	96,650
May	24,918	1,140	613	804	3.07	3.54	49,420
June	30,766	2,220	580	1,026	3.92	4.37	61,020
July	19,705	1,090	470	636	2.43	2.80	39,080
August	11,929	475	334	385	1.47	1.69	25,680
September	10,970	530	310	366	1.40	1.56	21,760
Water year 1946-47	513,467	17,200	299	1,407	5.37	72.89	1,018,000

Peak discharge.- Nov. 13 (7:30 p.m.) 6,740 sec.-ft.; Nov. 26 (6 a.m.) 6,700 sec.-ft.; Nov. 27 (3 p.m.) 6,700 sec.-ft.; Dec. 12 (9 a.m.) 18,700 sec.-ft.; Dec. 15 (2:30 p.m.) 21,200 sec.-ft.; Jan. 26 (10 a.m.) 12,000 sec.-ft.

a No gage-height record; discharge computed on basis of recorded range in stage and records for station below Bull Run River, near Bull Run.

h Computed from staff-gage reading.

Sandy River below Bull Run River, near Bull Run, Oreg.

Location.- Water-stage recorder, lat. 45°27', long. 122°15', in NW¹ sec. 30, T. 1 S., R. 5 E., 1 mile downstream from Bull Run River and 2 miles northwest of Bull Run. Altitude of gage, 202 feet (from river-profile map).

Drainage area.- 440 square miles.

Records available.- October 1929 to September 1947. April 1910 to September 1914 at site three-quarters of a mile upstream.

Average discharge.- 21 years (1910-11, 1912-14, 1929-47), 2,179 second-feet.

Extremes.- Maximum discharge during year, 38,600 second-feet Dec. 12 (gage height, 16.15 feet); from rating curve extended above 18,000 second-feet; minimum, 89 second-feet (regulated) Sept. 24 (gage height, 0.87 foot); minimum daily, 111 second-feet July 20, 1910-14, 1929-47. Maximum discharge, 58,000 second-feet Mar. 31, 1931 (gage height, 20.6 feet), from rating curve extended above 18,000 second-feet; minimum, 53 second-feet (regulated) Oct. 4, 1931 (gage height, 0.53 foot); minimum daily, 93 second-feet Oct. 7 1945.

Remarks.- Records good. No diversion above station for irrigation; about 60,000 acre-feet annually diverted from Bull Run River by Portland Water Bureau. Flow slightly regulated by Bull Run Lake and Lake Ben Morrow Reservoir of Portland Water Bureau; considerable diurnal fluctuation by Bull Run power plant of Portland General Electric Co.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.9	95	3.4	1,300	8.0	8,350
1.1	140	4.2	2,000	9.5	12,700
1.5	275	5.2	3,080	12.5	23,800
2.0	485	6.0	4,200	15.2	34,600
2.7	840	7.0	6,050		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	378	3,660	3,420	1,580	3,990	1,200	3,020	1,660	679	2,110	737	158
2	344	2,710	2,890	1,420	8,000	1,280	2,870	1,600	1,190	1,730	284	469
3	419	2,080	2,590	1,270	6,010	1,550	2,630	1,550	920	1,280	126	624
4	489	1,890	2,450	1,190	4,220	1,730	2,430	1,350	867	932	736	594
5	606	1,690	2,240	1,020	3,410	1,510	2,340	1,360	925	1,020	748	495
6	209	1,970	2,010	1,300	3,110	1,450	2,650	1,330	920	1,020	476	228
7	516	1,900	1,920	1,190	3,030	1,490	2,600	1,280	584	1,170	540	298
8	558	1,600	2,900	1,220	2,750	1,620	2,890	1,240	1,560	1,040	652	674
9	431	1,420	3,170	1,070	2,400	2,410	3,550	1,570	3,320	1,020	218	717
10	432	1,630	4,740	1,330	2,240	4,720	4,000	1,430	4,640	1,080	204	764
11	401	1,760	21,200	1,540	2,210	6,670	3,630	1,240	3,450	870	754	598
12	512	1,440	34,600	1,480	2,600	4,460	3,150	1,200	2,240	576	768	596
13	115	1,310	29,900	1,580	3,680	3,290	2,950	1,170	1,650	402	560	346
14	575	1,270	24,300	1,370	3,590	2,790	2,910	1,160	1,450	681	428	130
15	391	1,170	26,200	1,270	3,420	2,440	2,710	1,030	1,180	1,000	438	650
16	496	1,030	11,600	1,260	3,230	2,590	2,660	1,040	1,610	974	194	596
17	323	1,410	7,210	1,160	2,910	2,620	2,730	728	1,850	768	128	555
18	350	11,800	5,100	1,170	2,510	2,470	4,460	720	1,620	760	495	563
19	306	8,820	4,090	1,790	2,230	2,310	3,720	994	1,390	488	594	336
20	1,230	4,880	3,470	2,180	2,030	2,130	3,020	914	1,350	111	576	208
21	2,450	3,480	3,060	2,180	1,890	2,040	2,670	785	940	594	572	195
22	1,680	3,240	2,680	4,110	1,740	2,460	2,300	776	932	573	362	529
23	4,210	3,510	2,410	12,100	1,670	2,470	2,090	736	1,140	716	155	514
24	7,800	3,610	2,180	15,500	1,670	2,280	1,910	580	953	647	194	356
25	10,400	7,530	2,000	14,100	1,620	1,980	1,680	704	1,010	714	541	537
26	7,000	13,100	2,010	16,200	1,580	1,780	1,390	925	1,260	496	615	511
27	3,640	14,400	2,250	7,980	1,840	1,730	1,520	894	1,520	217	562	314
28	2,580	8,690	1,950	5,190	1,580	1,630	1,670	885	4,260	734	614	213
29	2,040	6,030	1,680	3,870	-	1,620	1,850	814	3,130	801	492	540
30	2,370	4,330	1,670	3,290	-	2,000	1,900	379	2,310	756	720	545
31	2,290	-	1,620	2,760	-	2,760	-	611	-	760	155	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	55,541	10,400	115	1,792	4.07	4.69	110,200
November	124,360	14,400	1,030	4,145	9.42	10.51	246,700
December	219,510	34,600	1,620	7,081	16.1	18.55	435,400
Calendar year 1946	1,006,059	34,600	107	2,756	6.26	85.03	1,998,000
January	114,670	16,200	1,020	3,699	8.41	9.69	227,400
February	80,540	8,000	1,380	2,876	6.54	6.81	159,700
March	73,460	6,670	1,200	2,370	5.39	6.21	145,700
April	79,880	4,460	1,390	2,663	6.05	6.75	158,400
May	32,635	1,660	379	1,053	2.39	2.76	64,730
June	52,400	4,640	584	1,747	3.97	4.43	103,900
July	26,240	2,110	111	846	1.92	2.22	52,050
August	14,638	768	472	472	1.07	1.24	29,030
September	13,833	764	130	461	1.05	1.17	27,440
Water year 1946-47	887,707	34,600	111	2,432	5.53	75.03	1,761,000

Peak discharge.- Nov. 18 (9:30 p.m.) 15,100 sec.-ft.; Nov. 26 (8:30 a.m.) 15,600 sec.-ft.; Nov. 27 (2:30 p.m.) 17,000 sec.-ft.; Dec. 12 (9:30 a.m.) 38,600 sec.-ft.; Dec. 15 (4:30 a.m.) 38,000 sec.-ft.; Jan. 23 (9 p.m.) 16,300 sec.-ft.

Salmon River near Government Camp, Oreg.

Location.- Water-stage recorder, lat. 45°16', long. 121°43', in sec. 31, T. 3 S., R. 9 E., near lower end of Red Top Meadows, 4 miles southeast of Government Camp. Datum of gage is 3,446.45 feet above mean sea level, datum of 1929.

Drainage area.- 8.7 square miles.

Records available.- May 1910 to May 1912, April 1926 to September 1947.

Average discharge.- 22 years (1910-11, 1926-47), 40.6 second-feet.

Extremes.- Maximum discharge during year, 525 second-feet Dec. 15 (gage height, 3.45 feet); minimum, 18 second-feet Sept. 20-27, 29, 30.
1910-12, 1926-47: Maximum discharge, 650 second-feet Dec. 22, 1933 (gage height, 3.61 feet); minimum, 12 second-feet Nov. 21, 1929, Oct. 19, 1930, Nov. 2, 10-12, Nov. 28 to Dec. 4, 1936.

Remarks.- Records good. No diversion or regulation above station.

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 14					Dec. 15 to Sept. 30				
0.4	20	1.1	69	2.2	220	0.4	20	1.4	98
.6	30	1.4	99	2.6	304	.6	32	1.8	150
.8	43	1.8	150	3.0	399	.8	45	2.4	261
						1.1	69		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	35	49	46	51	39	56	65	50	39	28	21
2	24	32	46	43	74	40	54	70	51	38	28	21
3	24	31	45	42	56	41	51	68	46	37	28	21
4	30	30	50	42	51	39	48	69	46	37	28	21
5	26	30	45	43	49	37	46	67	44	36	27	21
6	24	33	42	42	48	37	45	69	43	36	25	22
7	28	35	42	40	47	36	46	67	50	35	25	28
8	28	30	45	39	45	37	50	65	58	34	25	25
9	23	30	45	39	44	37	48	74	68	34	28	33
10	22	32	79	44	43	43	50	62	66	34	25	24
11	22	29	274	42	45	43	46	58	52	34	24	21
12	22	28	384	41	51	41	48	57	48	33	24	21
13	22	28	345	38	54	41	55	54	46	32	24	21
14	22	28	364	b38	50	43	62	53	45	32	24	20
15	22	27	258	b37	52	46	64	52	44	32	24	20
16	21	26	132	36	55	50	65	51	47	31	24	23
17	23	58	100	36	51	53	90	49	45	31	24	25
18	22	114	87	36	48	54	109	48	43	31	23	25
19	26	64	79	39	46	54	87	50	42	31	22	21
20	50	48	72	42	44	54	75	49	44	30	22	20
21	35	42	68	44	45	57	67	48	41	30	22	18
22	36	44	64	50	45	69	64	48	39	29	22	19
23	42	45	59	89	46	56	61	47	38	28	22	18
24	104	40	57	90	45	51	62	47	37	28	21	18
25	110	68	55	92	44	49	62	46	37	28	21	18
26	56	86	57	93	42	48	64	47	48	30	21	19
27	40	96	55	66	41	48	65	46	66	33	21	20
28	35	73	51	58	39	48	64	46	58	34	22	12
29	34	60	48	54	-	54	76	45	45	28	23	19
30	34	53	48	48	-	60	65	44	41	28	23	18
31	35	-	46	47	-	59	-	46	-	29	21	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	1,061	110	21	34.2	3.93	4.54	2,100
November	1,373	114	26	45.8	5.26	5.87	2,720
December	3,191	384	42	103	11.8	13.64	6,330
Calendar year 1946	19,916	384	21	54.6	6.28	85.13	39,490
January	1,356	93	36	49.5	5.69	6.56	3,050
February	1,351	74	39	48.2	5.54	5.78	2,680
March	1,484	69	36	47.2	5.43	6.26	2,900
April	1,845	109	45	61.5	7.07	7.89	3,660
May	1,707	74	44	55.1	6.33	7.30	3,390
June	1,428	68	37	47.6	5.47	6.10	2,830
July	1,002	39	28	32.3	3.71	4.28	1,990
August	741	28	21	25.9	2.75	3.17	1,470
September	643	33	18	21.4	2.46	2.75	1,280
Water year 1946-47	17,342	384	18	47.5	5.46	74.14	34,400

b Stage-discharge relation affected by ice.

Salmon River below Linney Creek, Oreg.

Location.- Water-stage recorder lat. 45°13', long. 121°52', 200 feet downstream from Linney Creek, 9 miles southeast of Welches, and 11 miles downstream from station near Government Camp.

Drainage area.- 54 square miles.

Records available.- October 1927 to September 1947.

Average discharge.- 20 years, 197 second-feet.

Extremes.- Maximum discharge during year, 2,870 second-feet Dec. 15 (gage height, 5.74 feet), from rating curve extended above 1,500 second-feet; minimum, 54 second-feet Sept. 23-25, 30.
1925-47: Maximum discharge, 4,070 second-feet Mar. 31, 1931 (gage height, 5.81 feet), from rating curve extended above 1,500 second-feet; minimum, 37 second-feet Nov. 2, 1936 (gage height, 0.22 foot).

Remarks.- Records good. No diversion or regulation above station.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.4	52	1.5	283	3.5	1,260
.6	78	2.0	466	4.0	1,590
.9	127	2.6	735	4.6	2,000
1.2	193	3.0	960	5.3	2,520

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	179	311	206	297	206	332	280	143	118	80	59
2	65	145	283	188	297	206	332	260	160	114	77	58
3	68	129	266	179	354	223	329	250	139	113	80	58
4	77	120	280	171	311	217	297	241	137	109	78	57
5	82	116	253	188	290	201	294	232	133	106	77	57
6	67	118	229	186	270	193	290	229	127	104	72	57
7	78	123	220	189	257	193	290	220	143	101	72	74
8	78	113	244	165	244	201	311	215	185	98	71	72
9	68	111	250	180	232	215	314	241	201	96	74	81
10	64	125	358	171	220	283	322	212	253	98	72	77
11	63	109	1,170	169	232	332	297	196	198	96	70	63
12	63	106	2,270	162	280	283	294	191	162	95	70	60
13	63	103	2,500	158	322	263	314	183	149	92	68	58
14	62	99	2,370	141	304	270	332	176	139	90	67	57
15	63	99	2,050	133	318	286	340	171	133	90	67	56
16	62	96	1,210	151	332	308	340	167	141	88	68	60
17	70	160	856	143	325	322	424	165	139	87	65	67
18	68	703	655	143	304	332	513	160	131	86	64	78
19	74	537	558	162	286	333	443	158	125	84	63	62
20	160	358	486	156	270	336	398	154	129	82	63	58
21	139	286	436	171	263	340	361	149	123	82	63	57
22	139	260	391	181	280	410	340	145	118	82	65	56
23	183	283	350	384	253	358	322	141	114	81	64	54
24	322	232	322	537	250	332	311	139	111	80	63	54
25	372	338	300	652	244	314	300	137	111	80	62	54
26	266	537	297	774	244	304	294	135	127	82	60	56
27	193	586	283	521	220	290	286	133	181	93	60	57
28	149	525	253	432	212	286	280	133	188	101	62	56
29	135	424	235	365	-	308	308	131	141	84	62	56
30	135	358	215	325	-	347	273	129	125	80	64	54
31	145	-	217	294	-	347	-	129	-	82	60	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	3,625	372	62	117	2.17	2.50	7,190
November	7,458	703	96	249	4.61	5.14	14,790
December	20,118	2,500	215	649	12.0	13.86	39,900
Calendar year 1946	99,403	2,500	58	272	5.04	68.47	197,200
January	7,937	774	133	256	4.74	5.47	15,740
February	7,837	443	212	280	5.19	5.40	15,540
March	8,653	410	193	286	5.30	6.10	17,580
April	9,871	513	273	329	6.08	6.80	19,580
May	5,582	260	129	180	3.33	3.84	11,070
June	4,404	253	111	147	2.72	3.03	8,740
July	2,874	118	80	92.7	1.72	1.98	5,700
August	2,103	80	60	67.8	1.26	1.45	4,170
September	1,831	81	54	61.0	1.13	1.26	3,630
Water year 1946-47	82,493	2,500	54	226	4.19	56.83	163,600

Peak discharge.- Nov. 18 (8 p.m.) 900 sec.-ft.; Dec. 12 (11 p.m.) 2,790 sec.-ft.; Dec. 15 (12:30 a.m.) 2,870 sec.-ft.; Jan. 26 (1 a.m.) 1,040 sec.-ft.

a No gage-height record; discharge computed on basis of recorded range in stage and records for other stations on Salmon River.

Salmon River above Boulder Creek, near Brightwood, Oreg.

Location.- Water-stage recorder, lat. 45°22', long. 122°01', in SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 25, T. 2 S., R. 6 E., 1 mile upstream from Boulder Creek, $\frac{1}{4}$ miles south of Brightwood, and $2\frac{1}{4}$ miles upstream from mouth. Datum of gage is 1,089.2 feet above mean sea level, datum of 1929 (levels by Corps of Engineers).

Drainage area.- 106 square miles.

Records available.- August 1936 to September 1947. October 1912 to March 1913 (gage heights only) at site at fish hatchery below Boulder Creek. August 1913 to September 1914, July 1920 to September 1921, April 1925 to September 1936 at sites at or near Welches, about 5 miles above present site.

Average discharge.- 11 years (1936-47), 410 second-feet.

Extremes.- Maximum discharge during year, 8,970 second-feet Dec. 14 (gage height, 7.08 feet), from rating curve extended above 4,100 second-feet; minimum, 85 second-feet Sept. 24, 25 (gage height, 0.47 foot).

1913-14, 1920-21, 1925-47: Maximum discharge, 13,000 second-feet Mar. 31, 1931 (gage height, 9.80 feet at Welches), from rating curve extended above 4,800 second-feet; minimum, 59 second-feet Nov. 30, Dec. 1, 1936, Sept. 25, 26, 1940.

Remarks.- Records good except those for periods of no gage-height record, which are fair. No diversion or regulation above station.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)

0.5	91	1.5	434	3.4	2,220
.7	139	1.9	665	4.1	3,350
.9	197	2.3	975	5.0	4,920
1.2	300	2.8	1,460	6.2	7,200

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	91	613	600	350	890	337	558	391	200	285	132	91
2	98	424	524	320	1,580	346	540	386	236	260	126	89
3	102	346	485	304	1,060	368	552	368	210	259	126	817
4	114	300	485	293	788	368	540	359	210	226	129	87
5	136	282	444	312	700	337	546	346	203	213	124	89
6	107	293	405	312	679	320	558	337	197	203	122	91
7	116	312	405	289	686	325	552	329	200	194	119	124
8	129	282	540	285	600	386	626	316	325	188	114	129
9	112	263	600	274	529	496	707	364	444	182	122	150
10	100	a300	795	346	485	950	728	325	686	176	119	145
11	98	a260	4,410	346	480	1,110	652	300	518	173	112	109
12	93	a250	7,160	337	582	758	582	289	372	170	107	98
13	93	a245	6,520	312	714	606	594	274	308	164	105	95
14	93	a235	6,360	282	665	558	600	267	274	161	102	91
15	91	a235	5,100	a260	672	558	582	256	249	159	100	89
16	89	a230	2,300	a290	685	576	558	253	263	156	102	96
17	96	a900	1,500	a280	620	588	679	246	270	147	100	109
18	98	2,340	1,130	a280	552	570	1,000	239	246	145	100	129
19	105	1,470	932	a310	507	558	826	239	229	142	98	105
20	372	850	788	a300	470	540	714	229	229	139	96	96
21	372	620	693	a330	444	540	620	226	219	136	96	91
22	372	540	620	a370	434	672	552	219	207	134	98	89
23	613	594	552	a900	420	613	507	213	197	132	100	89
24	1,020	600	502	a1,400	415	546	475	210	188	132	96	87
25	1,310	1,130	470	a1,800	400	507	449	207	182	132	93	91
26	916	1,970	465	a2,400	377	475	429	200	239	145	91	91
27	518	1,840	470	a1,500	359	439	424	197	588	159	91	91
28	377	1,370	420	984	350	424	410	197	606	179	91	119
29	329	941	391	785	-	444	465	197	429	147	96	100
30	377	721	368	658	-	512	424	194	337	134	100	93
31	415	-	368	558	-	552	-	197	-	132	96	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-feet
October	8,952	1,310	89	289	2.73	3.14	17,760
November	20,756	2,340	230	692	6.53	7.28	41,170
December	46,842	7,160	368	1,511	14.3	16.43	92,910
Calendar year 1946	207,791	7,160	89	569	5.37	72.69	412,200
January	17,747	2,400	260	572	5.40	6.23	35,200
February	17,123	1,580	350	612	5.77	6.01	33,960
March	16,379	1,110	320	528	4.98	5.75	32,490
April	17,449	1,000	410	582	5.49	6.12	34,610
May	8,370	391	194	270	2.55	2.94	16,600
June	9,061	686	182	302	2.85	3.18	17,970
July	5,284	285	132	170	1.80	1.85	10,480
August	3,303	132	91	107	1.01	1.16	6,550
September	3,038	150	87	101	.953	1.07	6,030
Water year 1946-47	174,304	7,160	87	478	4.51	61.16	345,700

Peak discharge.- Nov. 18 (8:30 p.m.) 2,690 sec.-ft.; Nov. 26 (5:30 a.m.) 2,450 sec.-ft.; Dec. 12 (5:30 a.m.) 8,100 sec.-ft.; Dec. 14 (11 p.m.) 8,970 sec.-ft.; Feb. 2, (9:30 a.m.) 2,040 sec.-ft.

a No gage-height record; discharge computed on basis of recorded range in stage and records for stations near Government Camp and below Linney Creek.

SANDY RIVER BASIN

Lake Ben Morrow Reservoir near Bull Run, Oreg.

Location.- Water-stage recorder, lat. 45°29', long. 122°05', in SW $\frac{1}{4}$ sec. 16, T. 1 S., R. 6 E., at Bear Creek Dam of city of Portland, 8 $\frac{1}{2}$ miles northeast of Bull Run. Datum of gage is at mean sea level (levels by Portland Water Bureau).

Records available.- October 1928 to September 1947.

Extremes.- Maximum contents during year, 30,530 acre-feet Dec. 11 (elevation, 1,044.91 feet); minimum, 20,020 acre-feet Oct. 19 (elevation, 1,016.51 feet).
1928-47: Maximum contents, 31,600 acre-feet Mar. 31, 1931 (elevation, 1,047.40 feet); minimum after first filling in May 1929, 17,270 acre-feet Sept. 26, 1940 (elevation, 1,037.78 feet).

Remarks.- Records good. Lake Ben Morrow Reservoir is formed by concrete dam known as Bear Creek Dam on Bull Run River, completed in March 1929 for water supply of city of Portland. Capacity of reservoir, 26,930 acre-feet at crest of spillway (elevation, 1,036 feet); dead storage, 213 acre-feet at elevation 890 feet (center of outlet valves).

Cooperation.- Water-stage recorder inspected and capacity table furnished by Portland Water Bureau.

Monthly elevation and contents, water year October 1946 to September 1947

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents during month (acre-feet)
Sept. 30.....	1,020.44	21,330	-
Oct. 31.....	1,038.08	27,740	+6,410
Nov. 30.....	1,037.75	27,610	-130
Dec. 31.....	1,036.87	27,270	-340
Calendar year 1946.....	-	-	-600
Jan. 31.....	1,037.26	27,420	+150
Feb. 28.....	1,036.91	27,280	-140
Mar. 31.....	1,037.93	27,680	+400
Apr. 30.....	1,037.09	27,360	-320
May 31.....	1,036.61	27,170	-190
June 30.....	1,037.27	27,430	+260
July 31.....	1,034.80	26,470	-960
Aug. 31.....	1,023.64	22,420	-4,050
Sept. 30.....	1,021.30	21,620	-800
Water year 1946-47.....	-	-	+290

† Elevation at 12 p.m.

Bull Run River below Lake Ben Morrow Reservoir, Oreg.

Location.- Water-stage recorder above crest of spillway, and scales indicating number of turns outlet needle valves are open, lat. 45°29', long. 122°05', in SW $\frac{1}{4}$ sec. 18, T. 1 S., R. 6 E., at Bear Creek Dam on Bull Run River, 500 feet downstream from Bear Creek, 1,000 feet upstream from Fivemile Creek, and 8 $\frac{1}{2}$ miles northeast of Bull Run. Datum of gage is at mean sea level (levels by Portland Water Bureau).

Drainage area.- 74 square miles.

Records available.- October 1934 to September 1947. October 1929 to September 1934 at site half a mile downstream.

Average discharge.- 18 years, 551 second-feet (adjusted).

Extremes.- Maximum discharge during year, 10,700 second-feet Dec. 11 (elevation, 1,044.91 feet); minimum daily, 106 second-feet May 27.

1929-47: Maximum discharge at dam, 16,100 second-feet Mar. 31, 1931 (elevation, 1,047.40 feet with one valve open 30 turns); no flow part of Oct. 27, 1939.

Remarks.- Records fair. Daily discharge determined by combining discharge through valves near base of dam and that over crest of spillway (elevation, 1,036 feet). No diversion above station. Flow regulated by Bull Run Lake and Lake Ben Morrow Reservoir; adjustment applied for storage in Lake Ben Morrow only; flow from Bull Run Lake is not artificially regulated but reaches river through surface and underground channels.

Cooperation.- Water-stage recorder inspected and record of valve openings furnished by Portland Water Bureau.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	124	1,130	760	288	1,100	294	1,130	389	174	484	132	153
2	127	800	655	258	2,380	294	954	360	187	398	141	151
3	124	614	581	230	1,570	401	753	328	187	343	145	154
4	124	522	578	220	1,040	536	669	310	199	319	145	151
5	124	438	522	220	787	441	683	288	200	277	145	151
6	124	460	490	240	704	401	732	260	169	205	148	151
7	124	496	477	215	655	389	690	258	178	240	145	151
8	124	451	882	218	614	548	768	255	510	215	145	138
9	127	395	1,120	210	542	725	1,030	464	1,230	208	145	125
10	124	464	1,890	299	490	1,550	1,240	389	1,420	187	145	130
11	124	425	7,440	383	503	2,080	1,050	321	954	182	145	127
12	124	360	9,150	348	641	1,340	816	288	641	178	145	127
13	124	346	7,520	316	1,150	934	753	266	510	169	155	127
14	124	294	5,740	299	1,150	760	711	243	425	156	157	127
15	124	266	5,470	274	1,040	704	641	220	343	152	157	127
16	126	240	2,180	245	942	669	571	215	425	178	156	127
17	123	648	1,350	245	792	834	548	205	542	170	156	130
18	123	4,200	954	258	711	600	1,270	196	441	152	156	127
19	123	2,440	760	548	545	545	1,080	187	371	146	156	127
20	124	1,310	641	594	484	490	857	178	358	136	159	127
21	128	848	562	1,210	438	458	690	176	310	132	154	127
22	166	760	503	1,420	419	536	627	169	272	166	154	127
23	1,720	908	458	4,280	395	503	550	156	250	174	154	127
24	2,940	1,120	407	4,220	389	484	432	152	230	159	154	136
25	3,460	1,990	365	3,660	377	432	395	152	208	159	154	139
26	2,130	3,990	386	3,650	346	386	365	128	371	142	153	139
27	1,160	4,410	438	1,720	326	321	343	106	908	132	163	139
28	739	2,450	377	1,080	316	332	321	135	1,430	132	166	139
29	614	1,520	348	787	-	343	458	140	916	132	166	139
30	749	1,060	316	690	-	510	480	140	614	135	158	139
31	697	-	299	641	-	959	-	160	-	132	153	-

Month	Observed				Change in contents of Lake Ben Morrow Reservoir (acre-feet)	Adjusted for change in reservoir contents			
	Discharge in second-feet			Runoff in acre-feet		Runoff in acre-feet	Discharge in second-feet		Runoff in inches
	Maxi- mum	Mini- mum	Mean				Mean	Per square mile	
October.....	3,460	123	548	33,700	+6,410	40,110	652	8.81	10.16
November.....	4,410	240	1,178	70,130	-130	70,000	1,176	15.9	17.74
December.....	9,150	299	1,730	106,400	-340	106,060	1,725	23.3	26.87
Calendar year 1946	9,150	90	727	526,420	-800	525,820	726	9.81	133.17
January.....	4,280	210	943	58,000	+150	58,150	946	12.8	14.73
February.....	2,380	316	744	41,350	-140	41,210	742	10.0	10.44
March.....	2,080	294	632	38,870	+400	39,270	639	8.64	9.95
April.....	1,270	321	722	42,960	-320	42,640	717	9.69	10.80
May.....	464	106	233	14,340	-190	14,150	230	3.11	3.59
June.....	1,430	169	498	29,660	+260	29,920	503	6.80	7.58
July.....	484	132	196	12,080	-960	11,120	181	2.45	2.82
August.....	166	132	152	9,340	-4,050	5,290	86.0	1.16	1.34
September.....	154	125	136	8,090	-800	7,290	123	1.66	1.85
Water year 1946-47	9,150	106	642	464,920	+290	465,210	643	8.69	117.87

Bull Run River near Bull Run, Oreg.

Location.- Water-stage recorder, lat. 45°27', long. 122°07', in SE $\frac{1}{4}$ sec. 25, T. 1 S., R. 5 E., $\frac{1}{2}$ miles upstream from intake of pipe line for water supply of city of Portland and 5 miles east of Bull Run.

Drainage area.- 102 square miles.

Records available.- January 1895 to September 1947.

Average discharge.- 40 years (1907-47), 730 second-feet (adjusted, 1929-47).

Extremes.- Maximum discharge during year, 13,000 second-feet Dec. 11 (gage height, 10.40 feet); minimum, 138 second-feet (regulated) Oct. 3-4.

1895-1947: Maximum discharge, 20,600 second-feet Mar. 31, 1931 (gage height, 13.8 feet), by computation of flow over dam; minimum, 63 second-feet Aug. 13-16, 1926.

Remarks.- Records excellent except those for period of no gage-height record, which are good. No diversion above station. Flow regulated by Bull Run Lake and Lake Ben Morrow Reservoir; adjustment applied only for storage in Lake Ben Morrow Reservoir; flow from Bull Run Lake is not artificially regulated but reaches river through surface and underground channels.

Cooperation.- Water-stage recorder inspected by Portland Water Bureau.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 11					Dec. 12 to Sept. 30		
0.9	132	2.7	780	6.5	5,220	0.8	130
1.1	167	3.5	1,190	8.0	7,990	1.1	196
1.4	244	4.0	1,820	10.0	12,100	1.4	275
1.8	378	4.8	2,700			1.8	410
2.2	540	5.5	3,620			2.2	570
							815
							3,5
							1,190
							4.0
							1,800
							4.8
							2,670
							5.5
							3,620

Note.- Same as preceding table above 5.5 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	142	1,560	1,100	384	1,300	348	1,250	466	206	628	a175	161
2	143	1,100	905	356	2,930	366	1,070	422	229	534	a175	161
3	140	855	798	322	1,920	490	859	395	216	482	a170	165
4	152	700	769	302	1,270	638	788	362	242	406	a160	163
5	152	594	680	315	996	538	842	358	229	362	a165	163
6	143	644	612	325	870	486	900	315	208	335	a165	163
7	150	585	621	299	832	490	842	305	221	312	168	191
8	152	603	1,130	290	771	690	978	299	584	281	168	198
9	150	544	1,400	275	685	912	1,230	502	1,390	267	177	206
10	148	648	2,270	384	615	1,910	1,460	446	1,670	244	172	184
11	148	567	9,090	502	628	2,650	1,260	380	1,140	237	168	168
12	148	495	11,300	454	771	1,650	978	338	804	237	165	161
13	148	447	8,950	434	1,290	1,130	888	315	642	218	170	157
14	146	396	7,000	380	1,250	936	832	299	534	204	174	154
15	145	349	6,850	356	1,160	859	750	281	450	201	174	152
16	145	322	2,840	331	1,080	804	685	261	538	216	174	157
17	143	966	1,680	328	912	766	725	250	551	208	174	161
18	142	4,960	1,210	356	771	725	1,310	239	554	198	172	150
19	150	3,140	960	740	675	646	1,110	231	482	179	172	150
20	362	1,660	815	768	568	579	972	221	446	168	170	148
21	487	1,130	720	1,560	542	554	788	216	403	165	168	148
22	479	1,080	651	1,700	510	695	680	201	362	184	168	146
23	2,280	1,250	584	5,300	486	848	594	194	331	196	168	146
24	3,890	1,480	538	5,590	470	633	514	184	299	184	170	150
25	4,580	2,780	490	4,800	454	562	470	179	284	184	172	154
26	2,860	4,960	522	4,730	430	510	430	191	458	179	172	154
27	1,550	5,790	579	2,160	384	462	403	157	1,080	168	172	152
28	991	3,510	502	1,370	366	430	384	157	1,730	172	174	152
29	810	2,090	450	1,010	-	426	542	159	1,090	a170	174	150
30	998	1,490	414	859	-	620	550	157	798	a170	172	148
31	977	-	399	720	-	1,040	-	182	-	a170	163	-

Month	Observed				Change in contents of Lake Ben Morrow Reservoir (acre-feet)	Adjusted for change in reservoir contents			
	Discharge in second-feet			Runoff in acre-feet		Runoff in acre-feet	Discharge in second-feet		Runoff in inches
	Maxi- mum	Mini- mum	Mean				Mean	Per square mile	
October.....	4,580	140	744	45,720	+6,410	52,130	848	8.31	9.58
November.....	5,790	322	1,559	92,770	-130	92,640	1,557	15.33	17.07
December.....	11,300	399	2,156	132,600	-340	132,260	2,151	21.1	24.33
Calendar year 1946	11,300	127	920	686,330	+600	686,930	921	9.03	122.39
January.....	5,590	275	1,217	74,820	+160	74,980	1,219	12.0	13.63
February.....	2,930	366	891	49,460	-140	49,320	888	8.71	9.07
March.....	2,650	348	780	47,380	+400	48,380	787	7.72	8.90
April.....	1,460	384	834	49,650	-320	49,330	829	8.15	9.07
May.....	502	157	279	17,140	-190	16,950	276	2.71	3.12
June.....	1,730	206	609	36,240	+260	36,500	613	6.01	6.70
July.....	628	168	253	15,550	-960	14,590	237	2.32	2.68
August.....	177	180	170	10,470	-4,050	6,420	104	1.02	1.18
September.....	206	146	160	9,550	-800	8,750	147	1.44	1.61
Water year 1946-47	11,300	140	804	581,950	+290	582,240	804	7.88	107.14

Peak discharge.- Nov. 26 (5 a.m.) 6,070 sec.-ft.; Nov. 27 (11 a.m.) 6,740 sec.-ft.; Dec. 11 (7 p.m.) 15,000 sec.-ft.; Dec. 15 (1:30 a.m.) 10,600 sec.-ft.; Jan. 23 (6 p.m.) 6,580 sec.-ft.; Jan. 26 (1:30 a.m.) 6,790 sec.-ft.

No gage-height record; discharge computed on basis of recorded range in stage and records of Portland Water Bureau at diversion dam downstream.

Little Sandy River near Bull Run, Oreg.

Location.- Water-stage recorder, lat. 45°25', long. 122°10', in NE¹ sec. 10, T. 2 S., R. 6 E., three-eighths of a mile upstream from Portland General Electric Co.'s dam and tunnel from Sandy River and 3 miles east of Bull Run. Datum of gage is 710.51 feet above mean sea level, adjustment of 1924 (levels by Portland General Electric Co.).

Drainage area.- 23 square miles.

Records available.- May 1911 to April 1913 (fragmentary), July 1919 to September 1947.

Average discharge.- 28 years (1919-47), 136 second-feet.

Extremes.- Maximum discharge during year, 3,040 second-feet Dec. 11 (gage height, 7.3 feet from graph based on fragmentary gage-height record), from rating curve extended above 2,000 second-feet; minimum, 14 second-feet Oct. 1, 2.

1911-13, 1919-47: Maximum discharge, 3,950 second-feet Nov. 20, 1921 (gage height, 9.18 feet), from rating curve extended above 2,000 second-feet; minimum, 8 second-feet Aug. 20, Sept. 16, 17, 1940.

Remarks.- Records fair below and poor above 800 second-feet. No diversion or regulation above station.

Cooperation.- Water-stage recorder graph furnished by Portland General Electric Co.

Rating tables, water year 1946-47, except period of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-19)

Oct. 1-23

Oct. 24 to Sept. 30

1.9	16	3.2	153	1.9	13	3.0	135	5.1	1,040
2.1	26	3.5	215	2.1	24	3.3	200	5.8	1,540
2.3	39	3.9	335	2.3	39	3.7	113	6.7	2,350
2.6	63	4.2	445	2.6	60	4.1	465		
2.9	99			2.7	85	4.5	675		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	287	210	91	248	77	250	90	51	137	28	19
2	15	212	179	82	429	88	195	81	59	110	28	17
3	16	173	168	78	329	102	164	76	57	96	27	16
4	30	139	159	77	256	114	149	71	66	85	27	16
5	34	116	137	73	215	91	164	67	54	75	26	16
6	24	155	118	80	193	85	177	64	51	70	25	16
7	30	151	131	73	138	91	179	60	62	65	24	34
8	37	122	240	72	170	131	242	60	177	59	23	50
9	28	113	287	70	159	205	274	113	393	54	37	75
10	24	166	429	110	145	378	346	86	417	51	37	53
11	21	131	1,780	111	151	478	259	72	245	49	31	36
12	20	114	2,350	97	193	304	212	66	170	51	29	29
13	18	106	1,100	91	277	225	205	62	135	46	28	26
14	18	96	957	*85	240	191	195	57	108	42	28	24
15	18	88	1,060	b82	230	186	179	56	88	42	26	23
16	18	78	545	81	208	179	153	52	127	40	26	27
17	18	233	357	77	173	173	208	50	159	37	25	30
18	18	789	265	90	145	155	326	47	116	37	24	30
19	22	496	212	170	126	139	238	47	102	35	23	26
20	260	308	198	182	114	126	184	45	97	33	23	23
21	324	238	179	364	106	122	145	42	85	33	22	22
22	264	268	155	374	105	210	124	41	75	33	22	21
23	421	274	135	963	103	166	110	40	62	31	23	19
24	988	268	122	1,140	98	143	100	37	52	30	19	19
25	1,080	574	111	897	97	126	92	37	56	30	19	19
26	571	994	135	831	91	111	88	36	106	37	18	21
27	287	1,060	151	409	84	103	82	34	378	40	18	22
28	191	571	116	284	80	98	78	35	470	49	17	24
29	162	374	106	220	-	106	129	34	259	37	18	21
30	188	268	97	191	-	157	105	33	182	31	26	19
31	220	-	94	157	-	220	-	40	-	30	22	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-feet
October	5,390	1,090	15	174	7.57	8.72	10,690
November	8,957	1,060	78	299	13.0	14.50	17,790
December	12,283	2,350	94	396	17.2	19.86	24,360
Calendar year 1946	62,830	2,350	14	172	7.48	101.69	124,600
January	7,702	1,140	70	248	10.8	12.45	15,280
February	4,953	429	80	177	7.70	8.01	9,820
March	5,080	478	77	164	7.13	8.21	10,080
April	5,352	346	78	179	7.78	3.65	10,320
May	1,731	113	33	55.8	2.43	2.80	3,430
June	4,475	470	51	149	6.48	7.24	8,980
July	1,595	137	30	51.5	2.24	2.58	3,160
August	769	37	17	24.8	1.08	1.24	1,530
September	793	75	16	26.4	1.15	1.28	1,570
Water year 1946-47	59,090	2,350	15	162	7.04	95.54	117,200

Peak discharge.- Oct. 25 (1:30 p.m.) 1,700 sec.-ft.; Nov. 18 (7 p.m.) 1,070 sec.-ft.; Nov. 27 (7 a.m.) 1,240 sec.-ft.; Dec. 11 (11 p.m.) 3,040 sec.-ft.; Jan. 24 (6 a.m.) 1,310 sec.-ft.; Jan. 26 (1 a.m.) 1,310 sec.-ft.

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Washougal River near Washougal, Wash.

Location.- Staff gage, lat. 45°37'20", long. 122°18'00", in SE $\frac{1}{4}$ sec. 27, T. 2 N., R. 4 E., half a mile above Cougar Creek and $5\frac{1}{2}$ miles northeast of Washougal.

Drainage area.- 108 square miles.

Records available.- September 1944 to September 1947.

Extremes.- Maximum discharge observed during year, 21,500 second-feet Dec. 11 (gage height, 14.20 feet), from rating curve extended above 4,400 second-feet; minimum observed, 69 second-feet Oct. 15, 16, 18, 19 (gage height, 1.56 feet).

1944-47: Maximum discharge observed, 22,100 second-feet Feb. 7, 1945 (gage height, 14.40 feet), from rating curve extended above 4,400 second-feet; minimum observed, 57 second-feet Aug. 22, 1945 (gage height, 1.51 feet).

Remarks.- Records good except those above 7,500 second-feet or those for periods of shifting control or rapidly changing discharge, which are fair. Gage read twice daily. No diversion or regulation above station.

Rating table, water year 1946-47, except periods of shifting-control
(gage height, in feet, and discharge, in second-feet)

1.6	67	3.5	840	8.0	6,040
1.8	106	4.0	1,170	9.0	8,000
2.0	156	4.5	1,520	10.0	10,200
2.3	249	5.0	1,920	11.0	12,600
2.6	369	6.0	2,950	12.3	16,000
3.0	561	7.0	4,350		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	74	2,100	1,380	414	3,970	286	1,840	438	187	438	130	79
2	76	1,380	1,170	369	8,640	326	1,450	414	215	392	125	77
3	81	1,030	1,030	326	2,490	326	1,170	392	206	348	125	77
4	143	781	1,170	326	1,520	1,100	1,100	348	286	306	125	77
5	116	668	1,100	326	1,170	696	1,170	326	268	286	120	77
6	83	724	964	326	1,030	588	1,380	306	232	268	113	79
7	95	614	1,170	326	964	614	1,170	306	212	249	111	414
8	102	588	2,290	306	840	1,100	1,520	286	901	232	108	1,030
9	86	536	2,190	286	724	1,380	2,100	306	1,680	232	111	901
10	76	536	3,200	438	641	2,710	2,390	268	1,100	212	111	536
11	74	486	16,200	614	641	2,390	1,760	268	781	249	106	348
12	72	461	13,300	641	724	1,520	1,310	249	614	249	102	268
13	72	438	15,800	588	1,240	1,100	1,100	249	510	209	102	215
14	72	414	8,420	438	1,520	964	964	232	414	209	102	190
15	69	369	7,620	392	1,600	840	840	215	369	209	102	167
16	69	369	3,070	369	1,310	724	696	215	536	190	102	159
17	72	4,350	2,100	348	901	641	724	215	561	173	102	151
18	71	13,600	1,600	461	781	588	1,600	209	486	178	102	151
19	95	3,460	1,240	1,030	668	536	1,380	203	438	170	97	138
20	1,760	1,840	1,100	1,030	561	461	1,100	193	392	162	93	128
21	1,600	1,310	901	1,920	510	461	901	190	326	156	93	118
22	1,170	1,030	781	2,350	461	461	781	181	326	151	89	111
23	1,600	1,240	781	7,790	438	486	696	173	306	151	93	111
24	3,200	2,710	668	6,040	414	486	614	164	286	148	93	111
25	3,460	4,860	641	5,680	369	438	536	162	249	151	84	106
26	2,190	6,230	614	4,650	348	438	486	156	369	167	84	106
27	1,380	6,420	561	2,190	326	392	414	156	668	162	84	106
28	901	3,530	510	1,520	306	369	369	156	781	178	84	123
29	840	1,190	461	1,240	-	369	536	156	614	159	84	113
30	1,520	1,760	414	1,030	-	964	486	162	510	143	84	106
31	1,240	-	414	840	-	1,520	-	178	-	135	83	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	22,459	3,460	69	724	6.70	7.73	44,550
November	65,824	13,600	369	2,194	20.3	22.67	130,600
December	92,860	16,200	414	2,995	27.7	31.98	184,200
Calendar year 1946	396,270	16,200	67	1,086	10.1	156.47	786,100
January	45,204	7,790	286	1,458	13.5	15.57	89,650
February	35,107	8,640	306	1,254	11.6	12.09	69,630
March	25,274	2,710	286	815	7.55	8.70	50,130
April	32,583	2,390	369	1,086	10.1	11.22	64,630
May	7,472	438	156	241	2.23	2.57	14,820
June	14,823	1,680	187	494	4.57	5.10	29,400
July	6,667	438	135	215	1.99	2.30	13,220
August	3,144	130	83	101	1.955	1.08	6,240
September	6,373	1,030	77	212	1.96	2.19	12,640
Water year 1946-47	356,790	16,200	69	980	9.07	123.20	709,700

Note.- Shifting-control method used Oct. 1 to Nov. 17, Feb. 3 to Apr. 6.

Middle Fork Willamette River above Salt Creek, near Oakridge, Oreg.

Location.- Water-stage recorder, lat. 43°44', long. 122°26', in SW $\frac{1}{4}$ sec. 22, T. 21 S., R. 3 E., 400 feet upstream from Salt Creek and 2 miles southwest of Oakridge. Datum of gage is 1,202.8 feet above mean sea level (from river-profile survey).

Drainage area.- 392 square miles.

Records available.- October 1913 to September 1914, September 1935 to September 1947.

Average discharge.- 13 years, 1,018 second-feet.

Extremes.- Maximum discharge during year, 10,600 second-feet Dec. 14 (gage height, 7.48 feet); minimum, 283 second-feet Sept. 28-30 (gage height, 2.24 feet).
1913-14, 1935-47: Maximum discharge, 34,000 second-feet Dec. 28, 1945 (gage height, 12.06 feet), from rating curve extended above 13,000 second-feet by logarithmic plotting; minimum, 201 second-feet Nov. 27 to Dec. 2, 1936 (gage height, 1.53 feet).

Remarks.- Records good except those for period of no gage-height record, which are fair.
No diversion or regulation above station.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

2.2	265	3.5	1,150	5.5	4,480
2.4	360	4.0	1,710	6.0	5,760
2.6	470	4.5	2,420	6.5	7,550
3.0	725	5.0	3,360	7.1	9,250

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	306	755	1,850	808	1,380	697	2,230	1,100	704	566	518	325
2	315	636	1,540	752	2,080	800	2,120	1,200	782	542	482	320
3	335	554	1,340	725	2,420	943	1,900	1,260	697	524	524	315
4	325	560	1,250	690	1,960	907	1,870	1,250	690	506	506	310
5	335	554	1,120	669	1,920	832	2,200	1,200	725	494	470	310
6	325	542	1,020	655	1,880	778	2,080	1,200	740	482	448	310
7	335	524	934	636	1,870	770	1,790	1,170	755	476	426	315
8	398	494	934	622	1,760	808	1,720	1,250	1,200	464	420	371
9	350	464	898	603	1,610	1,170	1,740	1,220	2,000	459	415	350
10	330	506	863	603	1,490	3,220	1,640	1,060	1,830	448	404	350
11	320	482	970	642	1,450	2,640	1,530	952	1,540	448	393	330
12	315	459	1,360	622	2,080	1,880	1,440	880	1,270	442	382	320
13	310	442	4,230	616	1,960	1,540	1,580	832	1,090	437	376	310
14	310	432	9,000	596	1,740	1,400	1,810	800	952	426	371	306
15	306	415	6,180	566	1,630	1,370	1,900	762	856	420	371	301
16	306	404	4,170	566	1,580	1,370	1,890	740	925	415	366	301
17	320	442	2,680	560	1,480	1,380	1,880	732	1,060	410	360	301
18	330	3,920	2,030	560	1,340	1,360	1,840	711	925	404	360	310
19	330	4,630	1,710	596	1,200	1,270	1,650	711	840	393	355	306
20	622	2,100	1,490	648	1,090	1,190	1,490	711	778	393	350	301
21	800	1,570	1,330	711	1,010	1,130	1,320	718	725	388	345	301
22	1,080	2,120	1,180	748	925	1,450	1,180	711	676	382	345	296
23	840	2,980	1,070	1,210	864	1,810	1,090	697	648	376	350	292
24	655	2,120	988	1,610	832	1,690	1,020	697	622	371	345	288
25	590	2,570	916	2,340	808	1,530	979	697	596	371	340	288
26	636	7,780	979	5,000	785	1,370	961	690	584	426	335	288
27	554	6,830	1,180	2,790	748	1,230	988	748	648	426	330	288
28	494	5,180	1,070	1,970	718	1,140	1,020	785	725	1,220	325	285
29	464	3,320	997	1,600	-	1,120	1,100	725	636	748	330	285
30	506	2,340	907	1,400	-	1,290	1,130	718	590	610	345	285
31	530	-	856	1,210	-	2,390	-	683	-	548	330	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-foot
October	13,962	1,080	306	450	1.15	1.32	27,690
November	56,125	7,780	404	1,871	4.77	5.32	111,300
December	57,043	9,000	856	1,840	4.69	5.41	113,100
Calendar year 1946	457,841	9,790	306	1,282	3.27	44.58	927,900
January	33,334	5,000	580	1,075	2.74	3.16	66,120
February	40,610	2,420	718	1,450	3.70	3.85	80,550
March	42,475	3,220	697	1,370	3.49	4.03	84,250
April	47,088	2,230	961	1,570	4.01	4.47	93,400
May	27,610	1,260	683	891	2.27	2.62	54,760
June	26,789	2,000	584	893	2.28	2.54	53,140
July	15,251	1,220	371	492	1.26	1.45	30,250
August	12,017	524	325	368	.990	1.14	23,840
September	9,352	415	283	312	.796	.89	16,550
Water year 1946-47	381,656	9,000	283	1,046	2.67	36.20	757,000

Peak discharge.- Nov. 18 (11 p.m.) 8,970 sec.-ft.; Nov. 23 (7 a.m.) 3,320 sec.-ft.; Nov. 26 (12 p.m. to 2 p.m.) 8,450 sec.-ft.; Dec. 14 (7 a.m.) 10,600 sec.-ft.; Dec. 15 (1:30 p.m.) 6,860 sec.-ft.; Jan. 26 (6:30 a.m.) 6,130 sec.-ft.

Middle Fork Willamette River at Eula, Oreg.

Location.- Water-stage recorder, lat. 43°50', long. 122°37', in sec. 18, T. 20 S., R. 2 E., a quarter of a mile southwest of Eula and 8 miles downstream from North Fork.
Datum of gage is 861.65 feet above mean sea level, datum of 1929.

Drainage area.- 941 square miles.

Records available.- July 1923 to September 1947.

Average discharge.- 23 years (1923-26, 1927-47), 2,433 second-feet.

Extremes.- Maximum discharge during year, 32,000 second-feet Dec. 14 (gage height, 12.54 feet); minimum, 709 second-feet Sept. 30 (gage height, 2.27 feet).
1923-47: Maximum discharge, 65,200 second-feet Dec. 28, 1945 (gage height, 18.8 feet, from floodmark), from rating curve extended above 39,000 second-feet; minimum observed, 450 second-feet Nov. 24-25, Dec. 5, 6, 1929, Sept. 4-6, 16, 17, 1931.

Remarks.- Records good except those for Dec. 1-13, which are fair. No large diversions above station. Occasional diurnal fluctuation during periods of low flow by logging operations upstream.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Dec. 1-13)

Oct. 1 to Dec. 13

Dec. 14 to Sept. 30

2.9	700	4.4	2,310	7.0	8,000	2.2	660	4.2	2,690	7.0	9,500
3.3	1,000	5.1	3,470	8.4	12,100	2.6	940	4.8	3,770	8.0	13,000
3.8	1,510	6.0	5,480	10.0	17,800	3.0	1,270	5.4	5,050	9.4	18,400
						3.6	1,870	6.0	6,510	11.6	27,800

Discharge, in second-feet, water year October 1946 to September 1947

Day	Cct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	728	2,190	5,240	2,300	4,320	1,990	6,250	3,010	1,680	1,580	1,240	783
2	763	1,830	4,360	2,140	5,880	2,190	6,300	3,190	1,860	1,520	1,170	776
3	805	1,530	3,820	2,030	6,840	2,530	5,700	3,320	1,700	1,450	1,210	783
4	770	1,510	3,450	1,940	5,730	2,550	5,530	3,320	1,800	1,400	1,160	746
5	819	1,480	3,120	1,880	5,420	2,300	6,590	3,160	1,860	1,350	1,090	741
6	770	1,420	2,830	1,880	5,280	2,180	6,250	3,160	1,920	1,330	1,050	755
7	805	1,410	2,580	1,770	5,280	2,180	5,280	3,080	1,910	1,290	1,030	1,080
8	904	1,320	2,710	1,740	5,050	2,300	5,140	3,190	2,610	1,260	1,010	1,030
9	819	1,280	2,580	1,850	4,670	2,930	5,260	3,300	5,050	1,220	996	948
10	770	1,400	2,560	1,860	4,230	7,600	5,050	2,910	4,800	1,200	996	932
11	749	1,340	3,120	1,780	4,090	7,570	4,780	2,530	4,110	1,180	956	846
12	742	1,270	6,260	1,750	5,530	4,450	2,340	3,550	3,150	1,160	940	797
13	728	1,190	15,800	1,720	5,190	4,420	4,710	2,190	2,840	1,140	924	776
14	728	1,150	27,800	1,660	4,710	3,930	5,400	2,100	2,470	1,120	900	748
15	721	1,100	19,900	1,560	4,600	3,810	5,650	2,000	2,230	1,100	884	734
16	714	1,070	14,000	1,560	4,600	3,770	5,510	1,940	2,310	1,080	868	734
17	742	1,140	9,470	1,550	4,280	3,750	5,460	1,880	2,630	1,080	853	748
18	770	5,800	7,060	1,540	3,910	3,710	5,700	1,660	2,250	1,060	853	804
19	784	9,340	5,680	1,670	3,520	3,470	5,070	1,830	2,070	1,040	846	783
20	1,270	5,430	4,820	1,860	3,190	3,260	4,580	1,800	1,950	1,020	832	746
21	2,020	3,940	4,230	1,990	2,930	3,030	4,010	1,800	1,850	1,020	825	734
22	2,310	4,770	3,730	2,070	2,690	3,930	3,560	1,780	1,720	996	825	734
23	2,200	6,360	3,300	3,450	2,530	5,190	3,210	1,750	1,640	996	832	727
24	1,920	5,310	2,980	4,690	2,400	4,820	3,000	1,730	1,560	972	811	720
25	1,730	5,930	2,780	6,000	2,310	4,340	2,840	1,720	1,510	980	797	720
26	2,050	17,300	2,880	12,700	2,210	3,870	2,790	1,680	1,490	1,120	790	720
27	1,650	15,500	3,410	8,560	2,120	3,500	2,810	1,750	1,630	1,560	790	714
28	1,400	12,000	3,010	6,250	2,040	3,210	2,840	1,650	2,150	2,740	783	708
29	1,270	8,620	2,780	4,940	-	3,160	1,870	1,710	1,870	1,770	804	708
30	1,440	6,480	2,530	4,360	-	3,450	3,190	1,710	1,680	1,430	853	702
31	1,500	-	2,400	3,770	-	6,080	-	1,640	-	1,320	804	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	35,371	2,310	714	1,141	1.21	1.40	70,160
November	130,410	17,300	1,070	4,347	4.62	5.15	258,700
December	161,190	27,800	2,400	5,845	6.21	7.16	359,400
Calendar year 1946	1,202,404	27,800	707	5,294	3.50	47.55	2,585,000
January	94,420	12,700	1,540	3,046	3.24	3.73	187,300
February	115,140	6,640	2,040	4,112	4.37	4.55	228,400
March	116,750	7,800	1,990	3,766	4.00	4.61	231,600
April	140,010	6,590	2,790	4,667	4.96	5.53	277,700
May	71,230	3,320	1,640	2,298	2.44	2.82	141,300
June	68,740	5,050	1,490	2,291	2.43	2.72	136,300
July	39,484	2,740	972	1,274	1.55	1.56	78,320
August	28,722	1,240	783	927	0.85	1.14	56,970
September	23,467	1,060	702	782	0.81	0.93	46,550
Water year 1946-47	1,044,934	27,800	702	2,863	3.04	41.30	2,073,000

Peak discharge.- Nov. 19 (12:30 a.m.) 14,500 sec.-ft.; Nov. 26 (5 p.m.) 19,200 sec.-ft.; Dec. 14 (7:30 a.m.) 32,000 sec.-ft.; Jan. 26 (8 a.m.) 14,400 sec.-ft.; Feb. 3 (1:30 a.m.) 7,430 sec.-ft.; Mar. 11 (1 a.m.) 8,750 sec.-ft.

Middle Fork Willamette River at Lowell, Oreg.

Location.- Staff gage, lat. 43°55', long. 122°47', in NW $\frac{1}{4}$ sec. 23, T. 19 S., R. 1 W., at bridge three-quarters of a mile south of Lowell and $\frac{1}{2}$ miles upstream from Lost Creek. Datum of gage is 667.68 feet above mean sea level, datum of 1929.

Drainage area.- 994 square miles.

Records available.- October 1946 to September 1947.

Extremes.- Maximum discharge during year, 34,200 second-feet Dec. 14 (gage height, 11.50 feet, observed at peak), from rating curve extended above 23,000 second-feet; minimum observed, 724 second-feet Sept. 27-30 (gage height, 2.13 feet).
Maximum stage known, 13.9 feet Dec. 28, 1945 (discharge, 68,400 second-feet, estimated).

Remarks.- Records fair. No large diversions above station. Occasional diurnal fluctuations during periods of low water caused by log ponds upstream.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	732	2,510	5,520	2,500	4,750	2,080	6,710	3,170	1,770	1,680	1,340	818
2	746	2,100	4,410	2,390	6,420	2,430	6,710	3,300	1,940	1,560	1,240	798
3	807	1,720	3,930	2,180	7,600	2,620	6,190	3,430	1,770	1,510	1,290	807
4	789	1,660	3,530	2,090	5,990	2,720	5,910	3,390	1,940	1,460	1,240	798
5	780	1,610	3,150	2,020	5,790	2,560	7,120	3,320	1,910	1,410	1,150	780
6	772	1,600	2,960	1,940	5,460	2,350	6,940	3,280	2,030	1,350	1,110	780
7	789	1,630	2,750	1,870	5,740	2,370	5,740	3,240	2,030	1,340	1,070	1,170
8	1,000	1,510	2,860	1,860	5,170	2,370	5,440	3,390	2,900	1,310	1,050	1,150
9	870	1,530	2,700	1,800	4,730	2,800	5,570	3,410	5,570	1,260	1,010	1,010
10	816	1,560	2,640	1,800	4,270	8,780	5,350	3,030	5,250	1,250	1,010	1,010
11	780	1,490	3,130	1,930	4,020	8,400	5,010	2,670	4,340	1,200	990	910
12	756	1,430	6,680	1,970	4,830	5,880	4,680	2,460	3,490	1,180	1,000	852
13	756	1,370	17,200	1,870	5,350	4,660	4,940	2,320	2,920	1,170	960	834
14	748	1,270	29,800	1,830	4,760	4,060	5,630	2,240	2,660	1,140	950	798
15	740	1,220	22,500	1,720	4,630	3,840	5,680	2,090	2,370	1,140	930	780
16	732	1,180	15,200	1,660	4,530	3,760	5,680	2,030	2,400	1,110	890	780
17	756	1,240	9,910	1,660	4,340	3,740	5,570	1,960	2,800	1,090	852	780
18	807	6,820	7,240	1,660	3,820	3,670	5,960	1,930	2,500	1,070	850	816
19	816	11,500	5,910	1,840	3,530	3,510	5,300	1,910	2,150	1,050	850	780
20	1,480	6,480	4,910	2,060	3,220	3,240	4,760	1,900	2,030	1,030	850	764
21	2,370	4,430	4,270	2,160	3,060	3,060	4,020	1,840	1,940	1,020	852	756
22	2,560	5,460	3,760	2,270	2,820	3,880	3,550	1,830	1,780	1,010	843	748
23	2,510	7,660	3,260	3,470	2,610	5,140	3,240	1,770	1,700	990	870	740
24	2,120	6,050	3,110	4,240	2,480	5,070	2,990	1,740	1,610	990	852	740
25	1,830	6,020	2,890	5,910	2,400	4,530	2,750	1,740	1,560	990	834	740
26	2,270	19,600	2,920	14,200	2,340	3,880	2,860	1,740	1,530	1,180	825	732
27	1,790	17,800	3,510	9,500	2,220	3,530	2,940	1,830	1,800	1,620	816	724
28	1,580	14,000	3,060	6,710	2,150	3,280	3,060	1,850	2,430	5,100	807	724
29	1,410	10,000	2,920	5,090	-	3,190	3,190	1,770	1,940	1,680	834	724
30	1,560	7,300	2,740	4,530	-	3,340	3,300	1,770	1,740	1,520	890	724
31	1,610	-	2,610	3,600	-	7,000	-	1,770	-	1,350	852	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	58,084	2,560	732	1,229	1.24	1.42	75,540
November	149,550	19,600	1,180	4,985	5.02	5.60	296,600
December	191,980	29,800	2,610	6,193	6.23	7.18	380,800
Calendar year	-	-	-	-	-	-	-
January	100,520	14,200	1,660	3,243	3.26	3.76	199,400
February	119,010	7,600	2,150	4,250	4.28	4.45	236,100
March	121,720	8,780	2,060	3,926	3.95	4.55	241,400
April	147,010	7,120	2,750	4,909	4.93	5.50	291,600
May	74,100	3,430	1,740	2,390	2.40	2.77	147,000
June	72,410	5,570	1,530	2,414	2.43	2.71	143,600
July	40,940	3,100	990	1,321	1.33	1.53	81,200
August	29,907	1,340	807	965	.971	1.12	59,320
September	24,575	1,170	724	819	.824	.92	48,740
Water year 1946-47	1,109,806	29,800	724	3,041	3.06	4.51	2,201,000

a No gage-height record; discharge computed on basis of records for station at Eula.

Willamette River at Springfield, Oreg.

Location.- Water-stage recorder, lat. 44°02'45", long. 123°01'40", in SE $\frac{1}{4}$ sec. 34, T. 17 S., R. 3 W., at highway bridge at Springfield. Datum of gage is 423.47 feet above mean sea level, datum of 1929.

Drainage area.- 2,030 square miles.

Records available.- November 1911 to December 1913, October 1928 to September 1947.

June 1919 to September 1928 at site 4 miles downstream, published as Willamette River at Eugene; 1894 to 1947 (records of stage by U. S. Weather Bureau) at site at Eugene.

Average discharge.- 29 years (1912-13, 1919-47), 4,965 second-feet.

Extremes.- Maximum discharge during year, 75,000 second-feet Dec. 14 (gage height, 15.80 feet); minimum, 959 second-feet Sept. 30 (gage height, 1.77 feet); minimum daily, 987 second-feet Sept. 28, 28-30.

1911-13, 1919-47: Maximum discharge, 140,000 second-feet Dec. 29, 1945 (gage height, 20.9 feet), from rating curve extended above 93,000 second-feet; minimum, 500 second-feet Aug. 11, 1926.

Maximum stage recorded by U. S. Weather Bureau, 22.0 feet Jan. 25, 1903, at Eugene. Floods in December 1861 and February 1890 reached about the same stage.

Remarks.- Records good. Slight diurnal fluctuation at low flow caused by logging operations in basin of Middle Fork Willamette River. Small diversions above station. Flow regulated at times by Cottage Grove Reservoir (see p. 125).

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

1.8	980	4.5	4,570	9.5	25,700
2.4	1,460	5.0	5,930	12.0	42,300
3.0	2,030	6.0	9,260	15.0	67,200
3.5	2,690	7.0	13,100		
4.0	3,490	8.0	17,500		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,350	5,080	10,300	4,550	10,600	3,060	14,400	4,030	2,040	2,420	1,810	1,070
2	1,450	5,350	9,300	4,170	14,700	3,350	15,700	3,990	2,460	2,190	1,640	1,060
3	1,480	3,740	6,960	3,760	17,600	5,030	13,400	4,120	2,410	2,090	1,630	1,060
4	1,500	3,010	6,080	3,510	13,500	5,220	13,100	4,100	2,460	1,950	1,650	1,060
5	1,500	2,730	5,410	3,350	11,700	4,870	17,800	3,970	2,590	1,860	1,610	1,040
6	1,510	2,550	4,720	3,350	10,400	4,430	17,000	3,880	2,860	1,810	1,500	1,040
7	1,500	2,430	4,240	3,220	9,900	4,330	13,000	3,880	2,850	1,780	1,440	1,190
8	1,600	2,330	4,380	3,080	9,040	4,640	11,600	3,980	3,720	1,710	1,390	1,600
9	1,600	2,160	4,670	2,920	8,030	5,430	12,200	4,240	9,080	1,640	1,370	1,390
10	1,490	2,320	4,550	2,940	7,290	16,500	11,400	4,080	8,480	1,600	1,370	1,380
11	1,290	2,650	4,950	3,210	6,700	20,200	10,200	3,510	7,360	1,590	1,330	1,270
12	1,210	2,370	9,690	3,350	7,930	13,300	8,900	3,240	6,140	1,550	1,290	1,170
13	1,190	2,150	27,200	3,490	8,620	9,550	8,340	2,980	5,000	1,500	1,270	1,110
14	1,180	2,000	84,900	3,420	7,590	7,830	8,580	2,820	4,100	1,480	1,270	1,090
15	1,150	1,890	50,900	3,160	7,520	7,060	8,520	2,690	3,450	1,450	1,230	1,070
16	1,070	1,780	35,000	2,950	8,200	6,570	7,930	2,550	3,260	1,420	1,220	1,060
17	1,050	1,740	20,800	3,000	8,620	6,170	7,690	2,460	3,990	1,410	1,190	1,060
18	1,110	4,580	14,600	2,980	7,450	5,840	7,660	2,410	3,450	1,370	1,190	1,070
19	1,160	24,500	11,000	3,720	6,450	5,410	7,420	2,320	3,040	1,350	1,170	1,110
20	1,700	14,400	9,120	5,110	5,780	4,950	6,700	2,290	2,820	1,330	1,150	1,060
21	3,780	10,100	7,860	5,430	5,160	4,640	6,080	2,250	2,660	1,310	1,140	1,040
22	4,060	11,900	6,860	5,430	4,700	6,200	5,380	2,210	2,430	1,290	1,140	1,020
23	5,720	13,900	6,080	7,520	4,240	10,700	4,850	2,170	2,270	1,270	1,150	1,020
24	3,820	12,800	5,550	9,440	3,920	11,000	4,450	2,090	2,150	1,270	1,180	994
25	3,280	10,900	5,050	10,700	3,720	9,300	4,170	2,060	2,040	1,260	1,110	1,000
26	3,920	42,200	5,080	24,900	3,580	7,790	3,990	2,050	1,970	1,390	1,110	987
27	3,280	44,500	6,990	20,100	3,450	6,670	3,880	2,050	2,230	1,940	1,080	994
28	2,550	30,500	6,640	13,500	3,220	5,840	3,880	2,250	3,620	3,880	1,070	987
29	2,160	20,400	5,930	10,100	-	5,550	4,030	2,130	3,470	3,310	1,080	987
30	2,650	13,600	5,320	8,800	-	6,570	4,310	2,070	2,750	2,300	1,130	987
31	3,310	-	4,820	7,830	-	14,200	-	2,030	-	1,930	1,150	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	65,610	5,720	1,050	2,116	1.04	1.20	130,100
November	300,550	44,500	1,740	10,020	4.94	5.51	596,100
December	373,950	64,900	4,240	12,060	5.94	6.85	741,700
Calendar year 1946	2,555,342	64,900	858	6,453	3.18	43.14	4,672,000
January	192,990	24,900	2,920	6,225	3.07	3.54	382,800
February	219,510	17,600	3,220	7,940	3.86	4.02	435,400
March	232,200	20,200	3,060	7,490	3.69	4.25	460,600
April	284,760	17,800	3,880	8,825	4.35	4.85	525,100
May	90,890	4,240	2,030	2,932	1.44	1.67	180,300
June	107,130	9,080	1,970	3,571	1.78	1.96	212,500
July	54,610	3,880	1,260	1,762	.868	1.00	108,300
August	40,040	1,810	1,060	1,292	.638	.75	79,420
September	32,976	1,600	987	1,099	.651	.60	65,410
Water year 1946-47	1,975,216	64,900	987	5,412	2.67	36.18	3,918,000

Peak discharge.- Nov. 19 (10:30 a.m.) 31,500 sec.-ft.; Nov. 26 (8 to 9 p.m.) 59,000 sec.-ft.; Dec. 14 (4 p.m.) 75,000 sec.-ft.; Jan. 26 (5 p.m.) 29,600 sec.-ft.

WILLAMETTE RIVER BASIN

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Willamette River at Harrisburg, Oreg.

Location.- Water-stage recorder, lat. 44°16'03", long. 123°10'24", in SW 1/4 sec. 16, T. 15 N., R. 4 W., at east end of State highway bridge at Harrisburg. Datum of gage is 290.07 feet above mean sea level, datum of 1929.

Drainage area.- 3,420 square miles.

Records available.- October 1944 to September 1947. Gage-height records collected at same site since December 1927 (October to April only each year) available in records of U. S. Weather Bureau.

Extremes.- Maximum discharge during year, 134,000 second-feet Dec. 14 (gage height, 17.86 feet), from rating curve extended above 55,000 feet; minimum, 2,510 second-feet Sept. 30.

1944-47: Maximum discharge, 210,000 second-feet Dec. 29, 1945 (gage height, 19.69 feet), from rating curve extended above 55,000 second-feet; minimum, 1,990 second-feet Oct. 30, 1944.

Flood of 1861 reached a stage of about 21 feet (present site and datum). From information by local residents. Flood of Jan. 1, 1943, reached a stage of 19.1 feet (present datum), from U. S. Weather Bureau records.

Remarks.- Records good except those above 60,000 second-feet, which are fair. Many small diversions above station for irrigation; about 15 second-feet diverted from McKenzie River for city of Eugene water supply. Flow regulated at times by Cottage Grove Reservoir (see p. 125).

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 26						Nov. 27 to Sept. 30			
1.6	2,500	6.5	13,700	13.5	54,500	1.2	2,430	5.5	10,300
2.5	3,830	8.0	20,000	14.5	65,600	2.0	3,410	6.5	13,600
3.5	5,680	10.0	29,800	16.0	89,900	3.0	5,030	8.0	20,000
5.0	9,200	12.0	41,900	17.2	116,000	4.5	7,920		

Note.- Same as preceding table above 8.0 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,900	8,480	24,800	9,930	19,000	7,540	25,900	8,800	5,050	5,880	4,270	2,840
2	3,010	10,100	19,800	9,440	27,000	7,890	24,800	8,530	5,530	5,550	3,990	2,780
3	3,140	8,360	16,500	8,650	35,400	9,700	24,700	8,820	5,770	5,340	3,930	2,760
4	3,230	7,190	14,700	8,440	29,800	10,000	25,400	8,570	5,810	5,070	3,930	2,770
5	3,260	6,600	13,300	8,050	24,800	9,740	28,900	8,390	6,070	4,850	3,850	2,710
6	3,320	6,270	12,000	8,050	22,200	9,030	30,900	8,200	6,240	4,680	3,680	2,710
7	3,320	6,020	11,000	7,920	21,000	8,780	25,700	8,150	6,280	4,600	3,540	2,890
8	3,320	5,850	11,100	7,650	19,600	9,420	22,400	8,090	7,060	4,460	3,440	3,630
9	3,460	5,520	11,800	7,420	17,700	10,500	23,300	8,330	14,600	4,340	3,580	3,510
10	3,280	5,440	11,800	7,280	15,800	22,600	22,400	8,420	16,600	4,170	3,400	3,340
11	3,020	6,020	12,100	7,790	14,300	37,800	20,800	7,690	13,900	4,140	3,330	3,200
12	2,840	5,680	20,400	7,880	15,300	29,600	18,400	7,160	11,200	4,030	3,220	2,990
13	2,770	5,280	44,100	8,150	18,100	21,500	16,900	6,780	9,570	3,960	3,150	2,850
14	2,740	4,970	100,000	8,020	17,100	17,300	17,000	6,680	8,350	3,840	3,110	2,780
15	2,700	4,740	116,000	7,600	16,400	15,200	17,100	6,260	7,460	3,820	3,060	2,730
16	2,630	4,480	80,100	7,280	16,900	14,000	16,200	6,070	7,100	3,730	3,040	2,700
17	2,580	4,410	57,000	7,220	17,900	13,200	15,200	5,900	7,460	3,680	3,010	2,700
18	2,660	7,480	35,400	7,200	15,600	12,500	16,400	5,730	7,340	3,580	2,970	2,700
19	2,760	54,100	27,300	7,750	13,700	11,700	16,300	5,620	6,740	3,520	2,950	2,770
20	3,570	30,500	22,600	9,340	12,200	10,900	14,800	5,520	6,380	3,470	2,890	2,700
21	7,450	19,900	19,500	10,200	11,200	10,300	13,000	5,440	6,130	3,410	2,890	2,640
22	7,570	20,800	16,700	10,400	10,300	10,800	11,700	5,370	5,830	3,370	2,890	2,620
23	10,600	24,700	14,600	13,400	9,620	18,400	10,600	5,250	5,570	3,310	2,910	2,600
24	8,730	25,500	13,100	18,600	9,080	20,300	9,870	5,140	5,370	3,280	2,950	2,580
25	8,430	21,400	12,100	23,700	8,730	16,000	9,540	5,050	5,140	3,270	2,870	2,550
26	8,940	42,800	11,400	39,400	8,460	15,300	8,940	5,010	5,030	3,450	2,820	2,540
27	8,580	86,400	13,700	45,400	8,130	13,200	8,710	4,990	5,300	4,260	2,790	2,540
28	7,210	65,500	13,600	31,300	7,840	11,700	8,620	5,140	7,080	5,900	2,770	2,530
29	6,140	46,400	12,100	23,700	-	11,000	8,750	5,140	7,500	6,900	2,790	2,540
30	8,290	32,400	11,200	19,800	-	11,700	9,300	5,030	6,550	5,250	2,900	2,530
31	7,570	-	10,400	17,600	-	20,100	-	5,050	-	4,540	2,980	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	147,930	10,600	2,580	4,772	1.40	1.61	293,400
November	563,290	86,400	4,410	18,780	5.49	6.13	1,117,000
December	820,200	116,000	10,400	26,460	7.74	8.92	1,627,000
Calendar year 1946	4,712,490	116,000	2,470	12,910	7.77	51.26	9,348,000
January	415,960	45,400	7,200	13,420	3.92	4.52	825,000
February	483,160	35,400	7,840	16,540	4.84	5.04	918,700
March	449,500	37,800	7,540	14,500	4.24	4.89	891,600
April	520,130	30,800	8,620	17,340	5.07	5.66	1,032,000
May	204,120	8,800	4,980	6,585	1.93	2.22	404,900
June	224,010	16,600	5,030	7,467	2.18	2.44	444,300
July	153,690	6,900	3,270	4,313	1.26	1.45	265,200
August	99,680	4,270	2,770	3,215	.940	1.08	197,700
September	83,690	3,630	2,530	2,790	.816	.91	166,000
Water year 1946-47	4,125,360	116,000	2,530	11,300	3.30	44.87	8,183,000

WILLAMETTE RIVER BASIN

Willamette River at Albany, Oreg.

Location.- Water-stage recorder, lat. 44°38'20", long. 123°06'20", in SW $\frac{1}{4}$ sec. 6, T. 11 S., R. 3 W., at Albany, just downstream from Calapooya River. Datum of gage is 171.70 feet above mean sea level, datum of 1929.

Drainage area.- 4,840 square miles.

Records available.- November 1878 to April 1882, 1883 to 1888 (fragmentary), January 1892 to September 1947.

Average discharge.- 52 years (1895-1947), 13,595 second-feet.

Extremes.- Maximum discharge during year, 138,000 second-feet Dec. 16 (gage height, 25.82 feet); minimum, 2,780 second-feet Sept. 29 (gage height, -0.48 foot).

1878-82, 1892-1947: Maximum discharge, 286,000 second-feet Jan. 14, 1881 (gage height, 32.8 feet); minimum, 1,840 second-feet Sept. 1, 2, 1940.

Maximum stage known, 36.0 feet Dec. 4, 1861 (discharge, 340,000 second-feet, from rating curve extended above 220,000 second-feet). Flood of Feb. 4, 1890, reached a stage of 33.9 feet (discharge, 291,000 second-feet).

Remarks.- Records good. Flow regulated at times by Cottage Grove and Fern Ridge Reservoirs (see pp. 125, 137). Albany power canal diverts water from South Santiam River into Willamette River above station; small diversions for irrigation.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used July 5 to Sept. 30)

-0.5	2,680	5.5	11,700	20.0	84,100
0.0	3,370	6.5	21,700	23.0	108,000
.8	4,800	10.0	34,900	25.5	134,000
2.0	7,550	15.0	57,200		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,720	8,810	43,100	12,600	28,500	9,600	29,900	11,200	5,700	7,250	5,020	3,140
2	4,720	11,200	32,200	12,100	38,500	9,580	32,100	10,600	5,860	6,530	4,680	3,040
3	4,820	11,300	26,600	11,300	44,700	12,200	32,400	10,400	6,560	6,130	4,520	3,030
4	4,920	9,270	21,600	10,600	47,200	15,100	32,100	10,400	6,650	5,900	4,430	3,040
5	4,920	8,000	19,100	9,910	39,200	14,600	32,200	10,200	7,010	5,580	4,300	3,030
6	4,980	7,500	17,100	9,580	33,000	13,100	36,900	9,880	7,110	5,320	4,170	3,000
7	4,980	7,110	15,300	9,490	29,100	12,100	36,700	9,720	7,420	5,150	3,970	3,030
8	4,920	6,820	14,300	9,220	26,800	12,300	31,500	9,630	7,600	5,020	3,840	3,250
9	4,980	6,480	15,100	8,920	24,300	14,000	30,100	9,690	10,400	4,940	3,760	3,390
10	4,860	6,000	15,200	8,680	21,800	21,000	30,400	10,000	19,400	4,740	3,710	3,780
11	4,220	6,200	15,400	8,890	19,700	38,200	28,400	9,690	18,300	4,640	3,710	3,710
12	3,500	6,530	19,200	9,720	19,400	45,900	25,600	8,870	15,600	4,560	3,630	3,530
13	3,510	6,040	34,400	10,600	23,100	36,800	22,800	8,390	12,900	4,470	3,510	3,250
14	3,220	5,670	56,800	10,800	24,700	28,000	21,600	8,000	11,100	4,390	3,450	3,120
15	3,130	5,340	102,000	10,400	24,400	22,500	21,300	7,680	9,630	4,280	3,360	3,040
16	3,100	5,040	133,000	9,460	24,500	19,700	20,500	7,280	8,810	4,170	3,280	3,040
17	3,060	4,920	110,000	8,950	24,200	18,100	19,300	7,010	8,540	4,080	3,240	3,000
18	3,010	6,290	74,800	8,840	22,800	17,200	18,900	6,820	9,160	3,990	3,200	2,970
19	3,140	19,000	49,400	9,060	19,900	16,100	20,200	6,600	8,340	3,930	3,190	2,970
20	3,510	39,100	36,400	10,600	17,400	14,700	18,900	6,440	7,780	3,810	3,220	3,000
21	5,530	33,700	30,200	12,300	15,600	13,700	17,300	6,270	7,350	3,760	3,190	2,930
22	9,740	29,300	25,800	13,100	14,300	13,400	15,700	6,110	6,990	3,710	3,160	2,890
23	10,800	33,200	21,500	13,900	13,100	18,400	14,200	6,000	6,630	3,660	3,190	2,890
24	12,000	37,100	18,700	20,100	12,200	24,400	13,100	5,830	6,320	3,670	3,190	2,860
25	10,100	35,100	16,700	27,000	11,500	23,900	12,200	5,670	6,000	3,720	3,190	2,860
26	10,100	35,100	15,300	33,900	10,900	20,600	11,500	5,580	5,760	3,830	3,160	2,850
27	11,100	55,500	15,600	49,300	10,500	17,700	10,900	5,520	5,700	4,110	3,100	2,830
28	9,630	79,400	17,600	52,400	10,000	15,600	10,700	5,540	6,530	5,230	3,040	2,830
29	8,000	81,800	16,300	38,800	-	14,400	10,700	5,760	8,870	7,580	3,060	2,790
30	8,960	64,400	14,800	30,200	-	16,000	11,100	5,700	8,400	7,040	3,060	2,880
31	8,000	-	13,500	26,600	-	20,100	-	5,670	-	5,650	3,130	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	183,940	12,000	3,010	5,934	1.23	1.41	364,800
November	671,220	81,800	4,920	22,370	4.62	5.16	1,331,000
December	1,057,000	133,000	13,500	34,100	7.05	8.12	2,097,000
Calendar year 1946	6,092,230	133,000	2,690	16,690	3.45	46.81	12,080,000
January	517,320	52,400	8,680	16,690	3.45	3.98	1,026,000
February	651,300	47,200	10,000	23,260	4.81	5.00	1,292,000
March	588,980	45,900	9,580	19,000	3.93	4.53	1,188,000
April	669,200	36,900	10,700	22,310	4.61	5.14	1,327,000
May	242,150	11,200	5,520	7,811	1.61	1.86	480,300
June	262,360	19,400	5,700	8,745	1.81	2.02	520,400
July	150,840	-	7,680	3,680	4.866	1.16	299,200
August	110,680	5,020	3,040	3,570	7.738	.85	219,500
September	92,570	3,990	2,790	3,086	6.658	.71	183,600
Water year 1946-47	5,197,540	133,000	2,790	14,240	2.94	39.94	10,330,000

Willamette River at Salem, Oreg.

Location.- Water-stage recorder, lat. 44°56'40", long. 123°02'30", in SW $\frac{1}{4}$ sec. 22, T. 7 S., R. 3 W., 300 feet upstream from highway bridge at Salem. Datum of gage is 113.61 feet above mean sea level, datum of 1929.

Drainage area.- 7,280 square miles.

Records available.- October 1909 to December 1916, October 1927 to September 1947. Gage-height records collected at about the same site since 1892 are contained in reports of U. S. Weather Bureau.

Average discharge.- 27 years, 21,770 second-feet.

Extremes.- Maximum discharge during year, 240,000 second-foot Dec. 16 (gage height, 26.72 feet); minimum, 3,710 second-foot Sept. 30 (gage height, -4.13 feet).
1909-16, 1927-47: Maximum discharge observed, 315,000 second-foot Nov. 25, 1909 (gage height, 30.5 feet); minimum, 2,470 second-foot Aug. 27, 1940 (gage height, -4.45 feet).

Maximum discharge known, 500,000 second-foot Dec. 4, 1861 (gage height, about 39 feet), from rating curve extended above 250,000 second-foot in 1916.

Flood of Feb. 5, 1890, reached a stage of 37.1 feet.

Remarks.- Records good. Many small diversions for irrigation above station; part of flow of Salem canal, which diverts water from North Santiam River, returns to Willamette River below station, through Mill Creek at Salem. Flow regulated at times by Cottage Grove and Fern Ridge Reservoirs (see pp. 125, 137).

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,470	16,600	82,100	21,600	49,500	16,100	36,600	17,300	7,950	12,100	7,260	4,420
2	5,430	19,800	58,400	20,600	70,100	15,600	45,400	16,200	8,190	10,900	6,640	4,230
3	5,470	19,700	46,700	19,400	84,800	18,400	46,300	16,000	9,030	10,100	6,360	4,130
4	5,550	16,900	39,400	18,300	82,600	22,700	46,900	15,700	9,720	9,680	6,250	4,070
5	5,720	14,400	35,300	17,400	67,600	22,700	47,200	15,300	10,700	9,180	6,180	4,040
6	5,740	13,500	32,200	16,800	59,100	20,900	52,500	14,800	10,700	8,820	5,940	4,000
7	5,810	12,900	28,700	15,600	52,100	19,400	54,000	14,400	10,800	8,550	5,700	4,040
8	5,690	12,400	28,000	16,100	47,100	19,900	48,800	14,100	11,600	9,310	5,450	4,180
9	5,790	11,700	30,800	15,500	42,600	23,200	49,100	14,000	19,800	8,040	5,330	5,390
10	5,830	11,100	31,400	15,100	38,000	39,400	48,600	14,500	31,300	7,740	5,310	5,980
11	5,530	11,200	33,400	15,800	34,300	66,300	47,300	14,100	30,600	7,490	5,350	5,940
12	4,630	11,200	53,100	17,700	33,800	74,000	42,400	12,900	25,400	7,130	5,270	5,700
13	4,200	10,700	88,700	19,000	41,400	64,400	37,600	12,200	20,900	6,900	5,060	5,020
14	4,040	9,910	124,000	19,200	47,600	49,300	35,200	11,600	17,800	6,820	4,910	4,660
15	3,950	9,330	189,000	18,500	46,000	39,800	34,300	11,000	15,600	6,520	4,790	4,500
16	3,860	8,880	232,000	17,000	44,100	34,400	32,300	10,500	13,900	6,230	4,700	4,290
17	3,820	8,490	189,000	16,000	41,500	31,400	29,900	10,000	13,600	6,120	4,590	4,180
18	3,770	16,700	144,000	h15,600	38,700	29,200	30,800	9,810	13,900	5,960	4,530	4,160
19	3,820	53,500	96,800	h16,000	34,000	27,000	33,500	9,560	13,100	5,790	4,460	4,160
20	4,350	66,500	66,500	h18,200	29,700	24,400	31,700	9,240	12,000	5,650	4,370	4,180
21	10,900	61,400	54,400	h20,800	25,800	22,600	28,700	9,030	11,300	5,530	4,310	4,130
22	15,900	56,100	46,000	h25,700	23,900	22,000	25,300	8,850	10,700	5,450	4,280	4,040
23	19,200	63,700	39,100	29,200	22,000	26,400	22,400	8,670	10,100	5,330	4,370	3,960
24	22,400	67,500	33,800	48,100	20,700	33,800	20,800	8,430	9,490	5,230	4,390	3,810
25	22,300	64,300	30,000	63,000	19,700	34,800	19,300	8,220	9,030	5,190	4,390	3,860
26	26,000	72,600	27,000	76,500	18,400	31,000	17,900	8,100	8,700	5,270	4,330	3,820
27	23,500	99,200	26,700	89,400	17,500	26,600	17,100	7,920	8,700	5,610	4,220	3,780
28	19,300	122,000	28,400	87,900	16,800	23,200	16,700	7,850	11,200	6,970	4,160	3,750
29	15,700	135,000	27,200	72,500	-	21,700	16,600	7,890	14,600	9,360	4,110	3,750
30	13,600	116,000	24,800	55,900	-	23,400	17,700	7,820	14,000	10,400	4,110	3,730
31	14,600	-	22,800	47,700	-	27,600	-	7,890	-	8,370	4,280	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	301,870	26,000	3,770	9,738	1.34	1.54	598,800
November	1,211,210	133,000	8,490	40,370	5.55	6.19	2,402,000
December	1,990,100	232,000	22,800	64,200	8.82	10.17	3,947,000
Calendar year 1946	10,155,220	232,000	3,460	27,820	3.82	51.88	20,140,000
January	964,900	89,400	15,100	31,130	4.28	4.93	1,914,000
February	1,149,400	84,800	16,800	41,050	5.64	5.87	2,280,000
March	951,600	74,000	15,800	30,700	4.22	4.86	1,687,000
April	1,032,300	54,000	16,800	34,410	4.73	5.27	2,048,000
May	353,960	17,300	7,850	11,420	1.57	1.81	702,100
June	414,410	31,500	7,950	13,810	1.90	2.12	822,000
July	230,740	12,100	5,190	7,443	1.02	1.18	457,700
August	155,400	7,260	4,110	5,013	.689	.79	308,200
September	129,830	5,980	3,730	4,328	.595	.66	257,500
Water year 1946-47	8,885,720	232,000	3,730	24,340	3.34	45.39	17,620,000

h Computed from staff-gage reading.

Salt Creek near Oakridge, Oreg.

Location.- Water-stage recorder, lat. 43°44', long. 122°25', in SW $\frac{1}{4}$ sec. 23, T. 21 S., R. 3 E., 0.7 mile upstream from mouth and 2 miles southeast of Oakridge. Datum of gage is 1,245.67 feet above mean sea level, datum of 1929.

Drainage area.- 113 square miles.

Records available.- July 1913 to September 1914, October 1933 to September 1947.

Average discharge.- 15 years, 273 second-feet.

Extremes.- Maximum discharge during year, 2,130 second-feet Dec. 14 (gage height, 5.64 feet); minimum, 124 second-feet Sept. 24-30 (gage height, 2.13 feet).
1913-14, 1933-47: Maximum discharge, 4,320 second-feet Dec. 28, 1945 (gage height, 7.70 feet), from rating curve extended above 1,700 second-feet; minimum, 55 second-feet Jan. 8, 1937 (computed on basis of records for Salmon Creek near Oakridge).

Remarks.- Records fair. No diversion above station; slight diurnal fluctuation at times.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Dec. 16 to Mar. 25)

Oct. 1 to Dec. 14, Dec. 16 to Mar. 25				Dec. 14-16, Mar. 25 to Sept. 30			
2.0	130	3.3	620	2.1	118	3.7	655
2.2	180	3.7	840	2.3	157	4.1	898
2.5	268	4.1	1,080	2.6	220	4.5	1,150
2.9	420	4.6	1,400	2.9	296	5.0	1,520
				3.3	445	5.5	1,940

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	135	243	500	278	380	222	432	427	276	207	181	131
2	140	222	429	259	485	234	465	480	288	198	171	129
3	147	208	388	249	510	237	432	505	268	192	167	129
4	137	202	363	243	447	237	445	505	268	188	165	128
5	a155	200	332	240	434	228	535	490	271	183	159	128
6	a150	194	310	237	416	225	495	500	268	181	155	128
7	a145	191	294	228	411	225	440	485	266	179	153	128
8	a155	186	287	225	388	225	450	525	402	175	151	151
9	a150	180	278	217	359	259	460	545	606	171	151	151
10	a140	200	274	222	339	490	450	450	606	169	153	145
11	a140	188	359	225	335	495	422	384	510	167	147	135
12	a135	183	565	222	393	388	400	353	414	165	145	131
13	a135	177	1,210	217	371	328	436	336	356	163	141	131
14	a135	175	1,860	214	343	300	510	319	316	161	139	129
15	a132	170	1,340	202	a345	290	562	305	293	157	137	128
16	a132	167	983	205	a350	287	578	299	519	155	137	128
17	a135	177	758	202	a340	294	611	293	336	153	135	129
18	a145	583	626	202	324	300	677	288	296	151	133	137
19	a140	812	535	214	300	297	616	285	274	149	133	133
20	a250	510	475	220	284	290	556	290	280	147	133	129
21	a300	402	420	225	274	287	485	293	250	147	131	128
22	347	475	375	237	262	406	432	290	238	145	133	126
23	268	609	339	307	249	485	396	282	229	145	135	126
24	237	505	321	384	243	442	376	282	220	143	133	124
25	228	573	307	452	237	393	364	282	211	143	131	124
26	258	1,200	335	796	231	353	368	279	211	159	151	124
27	222	1,120	359	628	225	380	288	288	248	218	151	124
28	202	954	328	490	222	310	396	288	253	288	129	124
29	191	752	314	406	-	305	432	274	232	211	133	124
30	208	592	297	367	-	325	456	279	218	192	139	124
31	202	-	287	335	-	400	-	268	-	190	133	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-foot
October	5,594	347	132	180	1.59	1.84	11,100
November	12,350	1,200	167	412	3.65	4.06	24,500
December	15,848	1,860	274	511	4.52	5.22	31,430
Calendar year 1946	10,978	1,860	130	359	3.18	43.10	259,800
January	9,140	796	202	295	2.61	3.01	18,130
February	9,497	519	222	359	3.00	3.13	18,840
March	9,879	495	222	319	2.82	3.25	19,590
April	14,037	677	364	468	4.14	4.62	27,840
May	11,169	545	268	360	3.19	3.68	22,150
June	9,203	606	211	307	2.72	3.03	18,250
July	5,392	288	143	174	1.54	1.77	10,690
August	4,445	181	129	143	1.27	1.46	8,820
September	3,944	165	124	131	1.16	1.30	7,820
Water year 1946-47	110,497	1,860	124	303	2.68	36.37	219,200

Peak discharge.- Nov. 18 (11 p.m.), 1,150 sec.-ft.; Nov. 26 (5 p.m.), 1,340 sec.-ft.; Dec. 14 (7 a.m.), 2,130 sec.-ft.; Dec. 15 (11 a.m.), 1,480 sec.-ft.; Jan. 26 (5:30 a.m.) 918 sec.-ft.; Apr. 18 (6 a.m.) 698 sec.-ft.
a No gage-height record; discharge computed on basis of records for Middle Fork Willamette River and Salmon Creek near Oakridge.

Salmon Creek near Oakridge, Oreg.

Location.- Water-stage recorder, lat. 43°45', long. 122°23', in SW $\frac{1}{4}$ sec. 7, T. 21 S., R. 4 E., a quarter of a mile upstream from Slide Creek and 4 miles east of Oakridge.

Drainage area.- 117 square miles at cable a quarter of a mile above gage, where all discharge measurements are made.

Records available.- October 1933 to September 1947. February 1913 to September 1914 at site 2 miles downstream, below Flat Creek; October 1914 to October 1919 at site 1 mile downstream.

Average discharge.- 14 years (1933-47), 364 second-feet.

Extremes.- Maximum discharge during year, 6,000 second-feet Dec. 14 (gage height, 7.15

feet), from rating curve extended above 2,500 second-feet by logarithmic plotting;

minimum, 141 second-feet sometime during Oct. 3-21 (gage height, 1.26 feet).

1913-19, 1933-47: Maximum discharge, 8,720 second-feet Dec. 28, 1945 (gage height, 8.40 feet), from rating curve extended above 2,500 second-feet by logarithmic plotting;

minimum, 63 second-feet Jan. 8, 1937 (gage height, 0.87 feet).

Remarks.- Records good except those for periods of no gage-height record, which are fair. No regulation. Since 1936 village of Oakridge has diverted water around station in an 8-inch pipe. Tunnel and control gates that were built to divert part of outflow from Waldo Lake into Salmon Creek Basin were not used during year (leakage under gates not measured during year).

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

1.2	131	2.4	505	4.7	2,200
1.4	165	2.8	705	5.4	3,060
1.7	235	3.4	1,070	6.1	4,110
2.0	335	4.0	1,520	6.8	5,320

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	147	324	727	363	570	307	754	492	279	286	215	160
2	149	265	615	339	722	335	844	510	296	272	205	158
3	a150	244	546	324	802	355	760	518	286	259	202	160
4	a155	244	496	307	732	347	722	510	324	253	200	156
5	a160	244	456	300	722	328	772	492	314	244	192	156
6	a155	238	411	300	727	321	749	496	321	238	190	158
7	a155	238	383	286	749	321	678	482	324	235	185	222
8	a160	220	387	279	732	335	705	496	460	230	183	190
9	a155	212	367	272	694	395	744	510	722	225	183	185
10	a150	230	379	276	640	722	749	451	705	220	185	177
11	a145	218	560	282	630	772	716	407	615	218	181	167
12	a145	208	1,540	276	710	620	678	383	518	215	179	161
13	a142	205	3,900	276	700	536	749	363	456	210	177	160
14	a142	198	4,700	268	660	510	692	347	407	205	175	158
15	a142	188	2,890	259	672	500	928	332	371	202	173	156
18	a142	181	1,860	253	672	514	898	324	411	200	173	154
17	a145	188	1,340	253	620	518	898	314	415	198	171	160
18	a150	590	1,050	253	550	514	982	307	367	195	169	171
19	a175	964	862	272	496	496	862	304	343	192	169	158
20	a250	645	744	290	460	469	754	307	324	190	167	154
21	a340	514	645	300	424	451	656	304	310	188	167	152
22	335	590	570	318	395	635	585	300	293	185	167	151
23	272	749	514	510	367	722	536	293	279	185	169	149
24	272	650	478	694	359	672	500	293	268	183	167	147
25	290	790	446	868	347	620	482	290	259	185	a165	147
26	355	2,060	482	1,460	332	560	478	282	268	202	a163	147
27	286	1,950	514	1,110	321	518	478	286	332	253	161	147
28	244	1,500	469	880	310	492	487	282	359	367	160	145
29	228	1,150	453	716	-	482	523	276	324	259	167	145
30	244	892	399	625	-	510	510	276	304	230	167	144
31	247	-	383	550	-	661	-	262	-	222	161	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff
						Inches Acre-feet
October	6,227	340	142	201	1.72	1.98 12,350
November	16,909	2,080	181	564	4.82	5.37 33,540
December	29,546	4,790	367	953	8.15	9.39 58,600
Calendar year 1946	183,112	4,700	142	502	4.29	58.21 363,200
January	13,759	1,460	253	444	3.79	4.37 27,290
February	16,115	802	310	578	4.92	5.12 31,960
March	15,538	772	307	501	4.28	4.94 30,820
April	21,069	982	478	702	6.00	6.70 41,790
May	11,489	518	262	371	3.17	3.65 22,790
June	11,254	722	259	375	5.21	3.58 22,320
July	6,946	367	183	224	1.91	2.21 13,780
August	5,488	215	160	177	1.51	1.74 10,890
September	4,795	222	144	160	1.37	1.52 9,510
Water year 1946-47	159,135	4,700	142	436	3.73	50.57 315,600

Peak discharge.- Nov. 26 (7 p.m.) 2,380 sec.-ft.; Dec. 14 (3:30 a.m.) 6,000 sec.-ft.; Dec. 15 (10 a.m.) 5,380 sec.-ft.; Jan. 25 (5 a.m.) 1,620 sec.-ft.

a No gage-height record; discharge computed on basis of recorded range in stage and records for Middle Fork Willamette River above Salt Creek, near Oakridge.

Waldo Lake Outlet near Oakridge, Oreg.

Location.- Water-stage recorder and artificial control on lake outlet, lat. 43°46', long. 122°03', in NW¼ sec. 7, T. 21 S., R. 6 E., on artificial outlet channel of Waldo Lake, 20 miles east of Oakridge. Altitude of water surface of lake and gage, 5,410 feet (from topographic map).

Drainage area.- 30 square miles.

Records available.- October 1936 to September 1947.

Average discharge.- 11 years, 26.3 second-feet.

Extremes.- Maximum discharge during year, 71 second-feet Feb. 2 (gage height, 1.85 feet); minimum, 0.4 second-foot Oct. 14-19.
1936-47: Maximum discharge, 144 second-feet Jan. 2, 1943 (gage height, 2.98 feet), from rating curve extended above 80 second-feet; no flow at times.

Remarks.- Records good. At times seiches on Waldo Lake cause rapid changes in stage at gage several times per hour. Lake not artificially regulated. Diversion tunnel into head of Black Creek, near south end of lake, built about 1914, is not used, but there is leakage past control gates, 5.8 second-feet measured on July 15, 1947.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.0	0	0.4	8.5	1.2	39
.1	1.3	.6	15	1.4	49
.2	3.4	.8	22	1.6	58
.3	5.8	1.0	30	1.9	73

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.2	10	32	47	70	44	53	53	53	51	28	8.8
2	1.3	11	31	47	70	45	54	53	54	49	27	6.2
3	1.3	11	31	45	70	46	54	53	54	48	27	7.7
4	1.5	9.7	30	43	68	47	57	53	55	47	26	7.4
5	1.9	8.8	30	42	67	46	60	53	55	46	25	7.2
6	1.5	8.5	29	42	68	45	59	53	56	44	24	6.9
7	1.5	8.2	28	42	64	45	59	53	57	43	23	9.4
8	1.5	8.0	30	40	63	46	59	55	60	43	23	9.7
9	1.3	8.0	30	39	61	48	59	57	64	41	22	10
10	1.2	8.5	30	39	60	52	60	57	66	40	21	9.4
11	.8	8.2	32	39	60	53	59	56	66	39	20	9.1
12	.6	8.0	36	41	61	52	58	56	65	38	20	8.0
13	.5	7.2	45	45	60	51	57	55	63	37	19	7.4
14	.4	6.8	56	47	59	50	56	54	62	36	18	7.2
15	.4	6.3	61	47	59	49	55	54	62	35	17	6.3
16	.4	5.8	62	46	58	48	54	53	62	34	16	5.8
17	.4	6.1	61	45	58	47	55	52	63	33	16	5.6
18	.4	9.7	60	45	56	46	58	52	61	32	15	5.1
19	.4	14	59	44	55	45	58	51	60	31	14	4.8
20	1.0	15	57	44	54	44	58	51	59	30	13	4.6
21	2.1	16	56	43	53	43	58	51	58	29	13	3.9
22	3.9	17	55	43	52	47	57	50	56	28	12	3.4
23	4.6	18	54	44	50	51	56	50	55	27	11	3.2
24	4.8	20	53	47	49	51	55	50	54	26	11	3.0
25	5.3	21	52	48	48	50	54	50	53	25	10	2.8
26	6.3	28	52	56	48	49	54	49	53	25	9.4	2.6
27	6.1	32	54	56	46	48	53	49	54	26	8.8	2.4
28	5.6	33	53	55	45	47	53	49	54	29	8.5	2.1
29	5.3	33	51	56	-	47	54	50	53	28	9.7	2.1
30	7.2	33	49	61	-	48	54	51	52	27	9.7	1.9
31	7.2	-	48	64	-	52	-	51	-	29	9.1	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	77.9	7.2	0.4	2.51	155
November.....	429.6	33	5.8	14.3	852
December.....	1,407	62	28	45.4	2,790
Calendar year 1946.....	13,979.6	77	.4	36.3	27,720
January.....	1,442	64	39	46.5	2,860
February.....	1,630	70	45	58.2	3,230
March.....	1,482	53	43	47.8	2,940
April.....	1,690	60	53	56.3	3,350
May.....	1,624	57	49	52.4	3,220
June.....	1,739	66	52	58.0	3,450
July.....	1,096	51	25	35.4	2,170
August.....	526.2	28	8.5	17.0	1,040
September.....	176.0	10	1.9	5.87	349
Water year 1946-47.....	13,319.7	70	.4	36.5	26,410

North Fork of Middle Fork Willamette River near Oakridge, Oreg.

Location.- Water-stage recorder, lat. 43°45', long. 122°30', in SW $\frac{1}{4}$ sec. 7, T. 21 S., R. 3 E., 1 mile upstream from mouth and 2 $\frac{1}{2}$ miles northeast of Oakridge. Datum of gage is 1,029.6 feet above mean sea level (from river-profile survey).

Drainage area.- 246 square miles.

Records available.- October 1909 to September 1912 (fragmentary), September 1935 to September 1947. October 1913 to February 1916 at site half a mile upstream, above a small tributary.

Average discharge.- 12 years (1935-47), 704 second-feet.

Extremes.- Maximum discharge during year, 12,300 second-feet Dec. 14 (gage height, 13.96 feet), from rating curve extended above 8,000 second-feet by logarithmic plotting; minimum, 135 second-feet Oct. 14-17 (gage height, 2.70 feet).

1909-16, 1935-47: Maximum discharge, 17,000 second-feet Dec. 28, 1945 (gage height, 16.6 feet), from rating curve extended above 8,000 second-feet by logarithmic plotting; minimum, 26 second-feet (regulated) Oct. 14, 1939.

Remarks.- Records fair. Tunnel and control gates that were built to divert part of outflow from Waldo Lake into Salmon Creek Basin were not used during year. Occasional diurnal fluctuation during low-water periods caused by log pond upstream.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 13					Dec. 14 to Sept. 30				
2.7	135	4.1	610	7.0	2,770	2.7	160	4.6	910
3.0	205	4.6	885	8.2	3,950	3.0	225	5.2	1,350
3.3	290	5.2	1,300	9.5	5,490	3.3	310	6.0	1,980
3.7	430	6.0	1,920	11.3	8,030	3.7	450	7.0	2,880
						4.1	630	8.2	4,120

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	141	721	1,760	635	1,200	600	1,670	796	375	438	283	162
2	145	546	1,440	590	1,560	655	1,730	790	403	414	277	160
3	155	446	1,260	550	1,730	710	1,570	802	389	396	274	162
4	151	418	1,130	522	1,500	725	1,530	790	458	375	268	158
5	175	394	1,010	506	1,440	670	1,690	760	450	354	250	155
6	160	366	911	506	1,440	640	1,590	748	462	344	240	153
7	153	390	837	486	1,510	640	1,410	730	478	331	232	262
8	170	362	950	474	1,510	675	1,430	725	640	316	225	248
9	160	348	904	458	1,390	802	1,470	778	1,180	310	225	218
10	151	402	950	462	1,280	1,910	1,470	730	1,130	307	225	208
11	141	376	1,240	494	1,230	2,040	1,410	650	1,020	307	220	182
12	141	348	3,000	490	1,470	1,570	1,340	600	826	301	210	174
13	139	324	7,960	490	1,520	1,310	1,440	560	715	292	205	164
14	137	314	10,200	462	1,420	1,190	1,680	540	640	285	200	160
15	135	296	7,510	458	1,460	1,180	1,710	514	570	280	196	158
16	135	287	4,560	454	1,470	1,190	1,600	490	575	277	192	156
17	141	314	3,110	450	1,350	1,190	1,550	478	600	271	188	158
18	155	1,660	2,300	450	1,220	1,160	1,710	462	540	265	186	184
19	151	2,460	1,790	490	1,090	1,060	1,500	442	502	259	184	168
20	287	1,470	1,510	526	980	973	1,350	434	474	250	180	a158
21	488	1,140	1,290	560	898	898	1,160	422	454	245	178	a155
22	546	1,280	1,110	580	826	1,130	1,020	410	434	235	178	a152
23	580	1,680	980	994	778	1,390	917	400	406	232	180	a152
24	665	1,460	880	1,410	742	1,270	850	382	386	230	176	a150
25	585	1,990	802	1,870	725	1,160	796	375	372	230	172	a150
26	695	6,090	820	3,660	700	1,050	766	364	364	274	166	a148
27	497	5,740	938	2,560	665	952	754	368	490	337	162	h147
28	390	4,360	820	1,870	625	892	754	372	630	545	160	a145
29	344	3,000	754	1,480	-	886	826	361	530	372	168	a145
30	418	2,220	695	1,290	-	966	838	361	478	313	184	a145
31	438	-	665	1,120	-	1,450	-	354	-	289	170	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	8,769	695	135	283	1.15	1.33	17,390
November	41,222	6,090	287	1,374	5.59	6.23	81,760
December	64,086	10,200	665	2,067	8.40	9.69	127,100
Calendar year 1946	352,429	10,200	135	966	3.93	53.27	699,100
January	27,347	3,660	450	882	3.59	4.13	54,240
February	33,729	1,730	625	1,205	4.90	5.10	66,900
March	32,934	2,040	600	1,062	4.32	4.98	65,520
April	39,511	1,730	754	1,317	5.35	5.97	78,370
May	16,988	802	354	548	2.23	2.57	33,700
June	16,871	1,190	364	566	2.30	2.57	33,660
July	9,672	545	230	312	1.27	1.46	19,180
August	6,354	283	160	205	.833	.96	12,600
September	5,037	262	145	168	.683	.76	9,990
Water year 1946-47	302,620	10,200	135	829	3.37	45.75	600,200

Peak discharge.- Nov. 26 (9 p.m.), 6,940 sec.-ft.; Dec. 14 (6 a.m.), 12,300 sec.-ft.; Dec. 15

(11 a.m.), 8,220 sec.-ft.; Jan. 26 (8 a.m.), 4,100 sec.-ft.

a No gage-height record; discharge computed on basis of recorded range in stage and records for Middle Fork Willamette River at Eula.

h Computed from staff-gage readings.

Fall Creek below Winberry Creek, near Fall Creek, Oreg.

Location.- Staff gage, lat. $43^{\circ}57'$, long. $122^{\circ}47'$, near center of sec. 2, T. 19 S., R. 1 W., $1\frac{1}{2}$ miles downstream from Winberry Creek and $2\frac{1}{2}$ miles southeast of Fall Creek. Datum of gage is 637.80 feet above mean sea level, datum of 1929.

Drainage area.- 190 square miles.

Records available.- October to December 1911 (gage heights only), September 1935 to September 1947.

Average discharge.- 12 years, 510 second-feet.

Extremes.- Maximum discharge during year, 12,900 second-feet Dec. 14 (gage height, 13.8 feet, from floodmark), from rating curve extended above 6,500 second-feet by logarithmic plotting; minimum observed, 28 second-feet Oct. 16 (gage height, 1.12 feet). 1935-47: Maximum discharge, 22,500 second-feet (revised) Dec. 28, 1945 (gage height, 18.0 feet, from floodmark), from rating curve extended above 6,500 second-feet by logarithmic plotting; minimum observed, 19 second-feet Dec. 1, 1936.

Remarks.- Records fair. Gage read once daily, oftener during periods of high water. No diversion above station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 25

Nov. 26 to Sept. 30

1.0	29	2.0	147	4.0	850	1.3	49	3.0	425	6.0	2,150
1.2	44	2.4	239	4.6	1,180	1.6	85	3.5	615	7.0	3,000
1.4	63	2.8	355	5.3	1,650	1.9	136	4.0	850	8.0	4,050
1.7	99	3.4	575	6.2	2,310	2.2	197	4.6	1,180	10.0	6,600
						2.6	300	5.3	1,650	12.2	9,960

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	1,260	860	400	2,090	228	1,760	265	155	245	140	58
2	35	741	674	372	2,650	258	1,590	245	167	222	136	56
3	41	591	527	324	2,350	503	1,400	220	147	206	134	53
4	39	460	474	294	1,710	450	1,940	206	255	193	118	55
5	39	369	418	282	1,510	378	2,910	197	306	167	104	51
6	38	313	282	276	1,340	345	1,920	197	245	155	101	51
7	42	319	336	276	1,100	276	1,380	186	270	147	95	144
8	72	281	732	260	960	519	1,580	206	800	140	89	129
9	49	231	607	245	850	780	1,640	312	1,300	132	86	115
10	42	362	669	242	705	2,490	1,340	220	1,130	125	83	101
11	38	310	741	294	651	2,860	1,250	206	820	122	83	78
12	33	281	3,120	342	656	1,570	960	186	567	115	78	72
13	30	234	9,280	324	611	975	910	173	418	108	75	67
14	30	208	9,830	306	543	810	870	163	360	101	72	62
15	29	180	6,500	260	603	669	800	155	276	98	72	58
16	28	159	3,460	252	599	607	624	151	318	95	70	56
17	30	155	1,940	300	535	488	633	151	318	95	67	58
18	33	970	1,350	306	488	404	633	147	262	92	67	58
19	36	2,310	970	591	432	384	583	146	235	89	65	56
20	343	1,170	800	760	384	333	559	146	215	86	65	56
21	397	1,020	620	780	348	306	488	146	197	86	62	56
22	950	1,760	535	765	321	885	450	125	184	85	62	53
23	624	1,510	481	1,670	300	1,050	404	118	167	83	62	51
24	633	1,190	425	1,750	276	1,280	366	118	159	80	60	51
25	656	1,650	404	1,800	270	955	330	115	155	86	59	51
26	624	7,160	481	3,830	255	732	306	115	163	230	58	49
27	481	2,640	820	2,130	250	615	288	118	432	575	57	49
28	325	2,660	678	1,440	240	492	268	118	425	439	58	49
29	250	1,610	511	1,010	-	495	298	118	411	225	60	49
30	352	1,080	467	925	-	571	276	111	270	163	62	49
31	527	-	436	760	-	2,290	-	101	-	144	60	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	6,889	950	28	222	1.17	1.55	15,660
November	33,404	7,160	155	1,113	5.86	6.54	66,260
December	49,428	9,830	282	1,594	8.39	9.67	98,040
Calendar year 1946	234,693	9,830	28	643	3.38	45.95	465,500
January	23,546	3,830	242	780	4.00	4.61	46,700
February	23,027	2,650	240	622	4.33	4.51	45,670
March	24,978	2,860	228	906	4.24	4.89	49,540
April	28,746	2,910	268	958	5.04	5.63	57,020
May	5,181	312	101	167	8.79	1.01	10,280
June	11,147	1,300	147	372	1.96	2.18	22,110
July	4,927	575	80	159	6.37	.96	9,770
August	2,460	140	57	79.4	4.18	.48	4,880
September	1,839	144	49	64.6	3.40	.38	3,550
Water year 1946-47	215,672	9,830	28	591	3.11	42.21	427,800

Little Fall Creek near Fall Creek, Oreg.

Location.- Staff gage, lat. 43°59', long. 122°45', in sec. 25, T. 18 S., R. 1 W., 4 miles northeast of Fall Creek.

Drainage area.- 48 square miles.

Records available.- September 1935 to September 1947.

Average discharge.- 12 years, 174 second-feet.

Extremes.- Maximum discharge during year, 3,840 second-feet Dec. 14 (gage height, 6.90 feet), from rating curve extended above 2,400 second-feet; minimum observed, 14 second-feet Oct. 16.

1935-47: Maximum discharge, 6,110 second-feet Dec. 28, 1945 (gage height, 8.20 feet), from rating curve extended above 1,800 second-feet by velocity-area studies; minimum observed, 10 second-feet Dec. 1, 1936, Aug. 26, 27, Aug. 30 to Sept. 1, 1940

Remarks.- Records fair. Gage read twice daily Oct. 1 to Apr. 30, once daily thereafter. No regulation or diversion above station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 25

Nov. 26 to Sept. 30

1.2	14	1.9	55	2.8	250	1.3	21	2.6	187	5.0	1,480
1.4	21	2.2	98	3.2	380	1.5	30	3.0	295	5.6	2,110
1.6	31	2.5	170	3.6	540	1.7	42	3.4	450	6.2	2,850
						2.0	69	3.8	640	6.8	3,690
						2.3	119	4.4	1,000		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	338	377	152	605	97	486	111	54	80	48	28
2	16	259	309	138	944	108	472	104	67	75	45	28
3	23	190	257	127	894	119	418	98	70	69	48	27
4	19	165	228	119	665	111	555	97	90	65	43	26
5	26	138	197	117	560	104	762	92	67	61	41	25
6	19	120	177	119	495	98	675	86	76	59	40	25
7	20	107	173	111	446	117	555	85	75	58	38	52
8	27	98	235	104	377	149	555	97	140	55	38	53
9	20	94	254	100	326	168	605	104	385	54	38	41
10	17	111	289	106	283	645	560	90	271	53	39	40
11	17	94	323	119	260	610	500	83	202	51	37	38
12	17	87	1,260	125	254	414	414	77	161	49	35	31
13	15	77	2,780	119	238	312	358	75	132	48	34	28
14	15	73	3,250	111	217	257	309	70	111	47	34	27
15	15	66	2,350	100	222	220	271	69	97	47	33	26
16	15	63	1,330	100	217	192	243	67	95	45	32	26
17	19	64	888	104	194	173	271	65	104	44	32	26
18	21	212	640	108	180	156	246	62	86	43	31	26
19	24	463	490	182	165	140	225	61	82	42	31	25
20	160	358	393	202	154	132	210	59	76	41	30	25
21	120	307	330	217	145	121	197	58	72	41	30	24
22	256	459	277	233	132	225	182	57	67	40	30	24
23	212	431	246	423	123	274	163	55	65	40	31	24
24	223	380	220	531	119	292	154	54	62	39	30	23
25	212	487	197	744	111	243	142	53	60	38	30	23
26	232	2,110	215	1,360	108	212	136	52	59	54	28	23
27	198	1,370	235	804	102	187	127	52	86	75	28	23
28	145	986	202	575	97	165	119	53	169	192	28	23
29	111	680	182	423	-	168	132	50	108	75	28	23
30	274	508	170	573	-	212	117	50	86	58	30	23
31	205	-	158	302	-	570	-	49	-	51	29	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-foot
October	2,709	274	15	87.4	1.62	2.10	5,370
November	10,865	2,110	63	362	7.54	8.42	21,550
December	18,632	3,250	158	601	12.5	14.44	36,960
Calendar year 1946	82,938	3,250	14	227	4.73	64.28	164,500
January	8,448	1,360	100	273	5.69	6.55	16,760
February	8,633	944	97	308	6.42	6.69	17,120
March	6,991	645	97	226	4.71	5.42	13,870
April	10,159	762	117	339	7.06	7.87	20,150
May	2,235	111	49	72.1	1.50	1.73	4,430
June	3,274	385	54	109	2.27	2.54	6,490
July	1,789	192	58	57.7	1.20	1.39	5,550
August	1,069	48	28	34.5	.719	.83	2,120
September	854	53	23	28.5	.594	.66	1,690
Water year 1946-47	75,658	5,250	15	207	4.31	58.64	150,100

Coast Fork Willamette River at London, Oreg.

Location.- Water-stage recorder, lat. 43°39', long. 123°05', in SW $\frac{1}{4}$ sec. 20, T. 22 S., R. 3 W., 0.6 mile north of London and 11 miles south of Cottage Grove. Datum of gage is 852.65 feet above mean sea level, datum of 1929 (levels by Corps of Engineers).

Drainage area.- 69 square miles.

Records available.- September 1935 to September 1947.

Average discharge.- 12 years, 183 second-feet.

Extremes.- Maximum discharge during year, 2,610 second-feet Nov. 26 (gage height, 6.81 feet); minimum, 14 second-feet Oct. 15-17 (gage height, 1.13 feet).

1935-47: Maximum discharge, 8,800 second-feet Dec. 28, 1945 (gage height, 13.25 feet), from rating curve extended above 3,400 second-feet; minimum, 10 second-feet on several days in 1936, 1938, 1939, 1940.

Remarks.- Records good. No diversion above station; millpond 3 miles above station may cause slight regulation at times.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Oct. 1-19, Apr. 6 to May 20)

1.2	18	2.3	195	4.1	970
1.4	30	2.6	290	4.5	1,170
1.6	51	2.9	405	5.0	1,440
1.8	91	3.3	580	5.6	1,800
2.0	119	3.7	770	6.2	2,180

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	246	314	135	820	113	566	94	58	52	43	26
2	22	178	243	128	1,050	187	535	86	58	50	38	27
3	20	115	207	h115	895	300	530	83	55	49	82	27
4	18	88	187	h103	620	225	700	79	71	45	65	24
5	22	71	157	h103	494	192	940	78	73	43	51	24
6	18	67	140	h99	405	175	765	76	92	43	44	24
7	20	67	130	h95	345	178	553	79	109	41	40	78
8	28	70	178	h92	294	201	512	97	354	40	37	55
9	18	70	187	h85	255	397	544	99	445	39	35	49
10	16	111	167	h81	219	1,220	476	86	269	38	34	44
11	16	101	160	h92	207	885	393	78	189	37	33	35
12	15	83	311	h111	297	544	325	73	142	36	32	32
13	14	70	1,040	h103	300	385	290	68	115	35	30	29
14	14	61	1,960	h99	252	304	255	65	97	34	29	28
15	14	54	1,520	h85	249	252	225	61	86	33	28	27
16	14	49	950	h81	544	216	198	59	97	33	27	28
17	28	51	598	h95	433	187	192	58	95	32	27	29
18	25	758	429	h103	325	164	175	55	85	31	26	28
19	22	970	333	189	262	147	164	55	75	31	26	26
20	132	522	272	228	219	135	154	54	70	30	26	26
21	95	405	231	231	192	126	144	51	65	29	25	25
22	276	544	195	231	167	313	135	49	61	29	26	24
23	135	700	170	276	152	499	128	47	58	29	26	23
24	78	562	152	322	140	445	119	46	54	28	24	22
25	64	608	140	496	133	333	113	45	51	29	24	22
26	86	2,150	181	1,090	h124	266	109	44	51	64	24	23
27	76	1,180	249	643	h119	219	103	55	73	95	23	23
28	59	875	210	445	h111	189	101	55	79	124	23	23
29	51	607	181	333	-	204	105	47	64	68	29	23
30	133	425	157	381	-	362	97	46	57	52	52	23
31	115	-	147	333	-	725	-	44	-	44	29	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	1,666	276	14	53.7	0.778	0.90	3,300
November	11,858	2,150	395	49	6.39	6.39	23,520
December	11,496	1,960	130	371	5.38	6.20	22,800
Calendar year 1946	78,593	2,150	14	215	3.12	42.35	155,900
January	7,003	1,090	81	226	3.28	3.77	13,890
February	9,623	1,050	111	344	4.99	5.19	19,090
March	10,088	1,220	113	325	4.71	5.44	20,010
April	9,646	940	97	322	4.67	5.20	19,130
May	2,014	99	44	65.0	3.92	1.09	3,990
June	3,248	445	51	108	1.57	1.75	6,440
July	1,363	124	28	44.0	1.638	.73	2,700
August	1,058	82	23	34.1	1.494	.57	2,100
September	897	78	22	29.9	1.433	.48	1,780
Water year 1946-47	69,960	2,150	14	192	2.78	37.71	138,800

Peak discharge.- Nov. 26 (6 a.m.) 2,610 sec.-ft.; Dec. 14 (7 a.m.) 2,400 sec.-ft.; Dec. 15

(11:30 a.m.) 1,870 sec.-ft.

h Computed from staff-gage reading.

Cottage Grove Reservoir near Cottage Grove, Oreg.

Location. - Water-stage recorder, lat. 43°43', long. 123°03', in NE¼ sec. 28, T. 21 S., R. 3 W., in east abutment of dam on Coast Fork Willamette River, 5½ miles south of Cottage Grove. Gage readings are elevations above mean sea level [surveys by Corps of Engineers].

Drainage area. - 104 square miles.

Records available. - October 1942 to September 1947.

Extremes. - Maximum contents during year, 33,401 acre-feet June 11, 12 (elevation, 791.27 feet); minimum, 2,508 acre-feet Jan. 28 (elevation, 748.09 feet).
1942-47: Maximum contents observed, 34,200 acre-feet June 2, 1943 (elevation, 791.95 feet); minimum observed since first filling, 646 acre-feet Jan. 26, 1944 (elevation, 738.74 feet).

Remarks. - Reservoir is formed by earth-fill dam with concrete spillway completed by Corps of Engineers in 1942; storage began Oct. 31, 1942 (slight pondage at times in water year 1941-42. When inflow temporarily exceeded 2,600 second-feet, capacity of outlets). Capacity, 33,090 acre-feet between elevations 719.0 feet (outlet conduit) and 791.0 feet (crest of spillway). Dead storage negligible. Reservoir used for flood control and improvement of navigation below Albany. Daily contents computed from reservoir elevation at 12 p.m.

Cooperation. - Gage readings furnished and recorder inspected by Corps of Engineers.

Contents, in acre-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16,370	3,199	3,004	2,839	3,496	12,480	27,250	32,790	33,080	32,390	32,180	31,290
2	15,580	3,082	2,887	2,856	3,946	12,940	27,690	32,870	32,890	32,390	32,180	31,270
3	14,400	3,019	2,861	2,987	4,073	13,580	27,900	33,000	32,740	32,350	32,240	31,240
4	15,430	3,056	2,870	3,133	3,952	14,030	28,230	33,080	32,590	32,270	32,270	31,170
5	12,490	3,019	2,814	3,193	4,325	14,380	28,570	33,160	32,510	32,350	32,270	31,100
6	11,560	3,013	2,814	3,280	4,796	14,820	28,560	33,180	32,490	32,300	32,250	31,070
7	10,680	2,984	2,867	3,351	5,110	15,250	28,480	33,230	32,520	32,270	32,210	31,160
8	9,834	2,964	3,027	3,410	5,376	15,730	28,580	33,270	32,850	32,240	32,210	31,220
9	8,940	2,929	3,184	3,459	5,746	16,480	28,690	33,270	32,980	32,200	32,240	31,280
10	8,203	2,969	3,299	3,493	6,033	18,100	28,570	33,260	33,310	32,170	32,250	31,320
11	7,720	3,033	3,274	3,490	6,329	18,550	28,710	33,240	33,400	32,130	32,240	31,370
12	7,240	3,054	3,305	3,538	6,649	18,860	28,840	33,220	33,090	32,090	32,200	31,410
13	6,762	3,016	4,101	3,493	7,024	19,520	29,130	33,220	32,850	32,040	32,120	31,400
14	6,295	2,984	6,168	3,382	7,524	20,210	29,240	33,190	32,760	31,970	32,050	31,350
15	5,986	2,929	7,166	3,235	7,902	20,840	29,520	33,180	32,760	31,940	31,970	31,290
16	5,784	2,861	5,962	3,097	8,413	21,360	29,780	33,180	32,680	31,940	31,950	31,240
17	5,621	2,828	3,774	3,051	8,648	21,880	30,020	33,160	32,600	31,880	31,890	31,180
18	5,444	3,801	3,127	3,077	9,046	22,280	30,210	33,150	32,680	31,810	31,810	31,100
19	5,288	4,080	3,103	3,074	9,463	22,660	30,500	33,120	32,740	31,750	31,750	31,050
20	5,145	3,033	2,898	3,051	9,767	22,910	30,820	33,120	32,800	31,700	31,690	30,960
21	4,858	2,733	2,895	3,071	10,100	23,190	31,080	33,110	32,860	31,620	31,620	30,900
22	4,481	2,853	2,952	3,077	10,420	23,640	31,330	33,100	32,870	31,580	31,570	30,850
23	3,980	3,136	2,943	2,998	10,750	24,090	31,530	33,090	32,880	31,510	31,420	30,770
24	3,805	2,909	2,895	2,866	11,100	24,130	31,710	33,080	32,880	31,460	31,430	30,700
25	3,727	3,211	2,811	3,401	11,440	24,180	31,920	33,080	32,900	31,420	31,360	30,620
26	3,721	5,830	2,869	3,949	11,720	24,410	32,080	33,060	32,930	31,550	31,320	30,570
27	3,688	5,042	3,030	2,901	11,980	24,780	32,220	33,100	32,800	31,810	31,280	30,510
28	3,618	3,589	2,993	2,710	12,230	25,240	32,390	33,120	32,470	32,100	31,260	30,430
29	3,534	3,082	2,895	2,794	-	25,710	32,520	33,130	32,360	32,170	31,270	30,380
30	3,420	3,094	2,811	3,050	-	26,280	32,660	33,120	32,370	32,190	31,290	30,300
31	3,214	-	2,836	3,100	-	26,960	-	33,110	-	32,190	31,510	-

Monthly elevation and contents, water year October 1946 to September 1947

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents during month (acre-feet)
Sept. 30.....	775.22	17,330	-
Oct. 31.....	750.58	3,214	-14,116
Nov. 30.....	750.19	3,094	-120
Dec. 31.....	749.29	2,836	-258
Calendar year 1946.....	-	-	-7,174
Jan. 31.....	750.21	3,100	+264
Feb. 28.....	768.51	12,230	+9,130
Mar. 31.....	765.45	26,960	+14,730
Apr. 30.....	790.63	32,660	+5,700
May 31.....	791.02	33,110	+450
June 30.....	790.38	32,370	-740
July 31.....	790.22	32,190	-180
Aug. 31.....	789.44	31,310	-880
Sept. 30.....	788.54	30,300	-1,010
Water year 1946-47.....	-	-	+12,970

† Elevation at 12 p.m.

Coast Fork Willamette River below Cottage Grove Dam, Oreg.

Location.- Water-stage recorder, lat. 43°43', long. 123°03', in NE $\frac{1}{4}$ sec. 28, T. 21 S., R. 3 W., at bridge a quarter of a mile downstream from Cottage Grove Dam and $\frac{5}{8}$ miles south of Cottage Grove. Datum of gage is 711.00 feet above mean sea level (Corps of Engineers bench mark).

Drainage area.- 104 square miles.

Records available.- October 1944 to September 1947. January 1939 to September 1944 at site 0.8 mile downstream, published as Coast Fork Willamette River near Cottage Grove.

Extremes (regulated).- Maximum discharge during year, 2,090 second-feet Dec. 16 (gage height, 7.50 feet); no flow Aug. 24.
1939-47: Maximum discharge recorded, 3,340 second-feet Jan. 4, 1943 (gage height, 10.06 feet, site and datum then in use); practically no flow July 5-7, 1945, Aug. 24, 1947.

Remarks.- Records excellent. No diversion above station. Flow regulated by Cottage Grove Reservoir.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

2.3	10	3.4	129	5.6	990
2.5	21	3.7	204	6.2	1,320
2.7	34	4.0	290	7.0	1,790
2.9	49	4.5	470	8.0	2,410
3.2	88	5.0	690		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	502	270	490	194	915	31	637	47	113	52	52	38
2	528	275	406	158	1,110	49	586	49	160	52	52	48
3	524	165	289	85	1,130	85	622	49	153	52	52	49
4	514	94	251	85	882	86	822	51	153	52	52	50
5	506	94	248	85	440	88	1,180	58	156	52	51	50
6	498	92	183	85	287	59	1,160	68	141	59	51	a50
7	490	92	148	85	290	43	710	77	109	59	46	a50
8	478	90	143	85	249	43	681	101	293	52	28	a42
9	470	90	143	85	148	132	715	107	377	52	28	25
10	384	90	146	101	148	855	690	105	173	52	28	19
11	251	90	216	125	134	1,030	462	96	173	52	36	16
12	248	92	372	125	237	593	370	90	345	52	54	21
13	246	92	885	172	204	217	243	85	267	52	54	31
14	243	92	1,600	199	160	78	243	80	137	52	54	43
15	152	92	1,840	199	160	47	201	75	92	52	53	52
16	107	92	1,950	199	552	47	134	74	198	52	53	52
17	107	92	1,950	147	478	47	134	71	137	52	53	53
18	107	375	931	118	261	38	134	69	53	52	53	53
19	107	1,170	490	243	170	35	66	52	52	52	53	53
20	209	1,240	486	311	170	34	44	63	52	52	52	53
21	299	689	323	311	104	41	51	62	52	52	52	53
22	558	614	246	311	65	289	52	59	52	52	52	53
23	432	765	246	391	40	546	52	57	52	52	92	53
24	197	785	246	426	40	596	52	56	52	52	12	53
25	114	653	246	430	40	478	52	54	52	52	54	53
26	103	1,610	208	1,140	41	291	52	52	52	52	44	53
27	101	2,030	265	1,440	36	142	51	55	177	53	38	53
28	101	1,930	308	741	31	56	51	60	251	73	35	53
29	101	1,100	305	430	-	112	51	60	120	53	35	53
30	218	569	264	386	-	267	51	59	52	52	35	53
31	257	-	194	445	-	641	-	58	-	52	32	-

Month	Observed				Change in contents in Cottage Grove Reservoir (acre-feet)	Adjusted for change in contents			
	Discharge in second-feet			Runoff in acre-feet		Runoff in acre-feet	Discharge in second-feet		Runoff in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October.....	538	101	295	18,110	-14,116	3,990	65.0	0.625	0.72
November.....	2,030	90	517	30,790	-120	30,670	515	4.95	5.53
December.....	1,950	143	517	31,770	-258	31,510	512	4.92	5.68
Calendar year 1946	2,580	28	298	215,900	-7,174	208,700	288	2.77	37.62
January.....	1,440	85	301	18,520	+264	18,780	305	2.93	3.39
February.....	1,130	31	304	16,900	+9,130	26,030	469	4.51	4.69
March.....	1,030	31	229	14,080	+14,730	28,810	469	4.51	5.19
April.....	1,180	44	345	20,530	+5,700	26,230	441	4.24	4.73
May.....	107	47	68.2	4,190	+450	4,640	75.5	.726	.84
June.....	377	52	142	8,420	-740	7,680	129	1.24	1.38
July.....	73	52	53.2	3,270	-180	3,090	50.3	.484	.56
August.....	92	12	46.3	2,850	-880	1,970	32.0	.308	.36
September.....	53	16	45.9	2,730	-1,010	1,720	28.9	.278	.31
Water year 1946-47	2,030	12	238	172,200	+12,970	185,100	258	2.48	33.38

a No gage-height record; discharge computed on basis of recorded range in stage and operation records for Cottage Grove Reservoir.

Coast Fork Willamette River at Saginaw, Oreg.

Location.- Water-stage recorder, lat. 43°50'05", long. 123°02'30", in NW¼ sec. 15, T. 20 S., R. 3 W., at Saginaw, 1 mile downstream from Row River. Datum of gage is 595.47 feet above mean sea level, datum of 1929.

Drainage area.- 529 square miles.

Records available.- October 1923 to September 1947.

Average discharge.- 21 years (1925-26, 1927-47), 1,147 second-feet.

Extremes.- Maximum discharge during year, 17,500 second-feet Dec. 14 (gage height, 8.74 feet); minimum, 88 second-feet Aug. 25.

1923-47: Maximum discharge, 32,900 second-feet Dec. 28, 1945 (gage height, 12.38 feet), from rating curve extended above 16,000 second-feet; minimum observed, 7 second-feet July 31, 1928.

Remarks.- Records fair, based largely upon summation of flows at upstream stations. Small diversions and regulation by log ponds above station; regulation by Cottage Grove Reservoir (p. 125); some pondage for short periods during construction of Dorena Dam on Row River.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	523	1,630	2,200	961	3,350	455	3,750	413	247	325	251	125
2	570	1,390	1,780	846	5,170	580	3,600	385	385	290	221	125
3	570	922	1,430	862	5,360	1,530	3,560	379	367	275	235	131
4	570	673	1,260	620	3,920	1,420	4,000	361	399	251	271	129
5	570	580	1,140	580	3,190	1,280	6,180	343	464	234	239	125
6	560	514	974	570	2,670	1,110	5,300	343	550	243	214	125
7	550	498	798	540	2,420	1,030	3,540	349	523	232	200	182
8	580	489	870	523	2,080	1,130	3,190	455	1,130	210	170	275
9	550	434	974	506	1,730	1,640	3,480	489	2,750	194	160	185
10	455	600	935	514	1,470	6,950	3,150	498	1,900	188	158	197
11	300	684	1,040	600	1,310	6,380	2,600	420	1,480	185	152	152
12	280	550	1,950	673	1,970	3,670	2,200	373	1,240	176	170	133
13	290	489	8,280	728	1,950	2,400	2,000	337	961	170	165	129
14	280	420	15,100	739	1,630	1,900	1,950	315	673	165	160	129
15	225	392	11,500	662	1,560	1,610	1,660	290	514	165	152	127
16	168	361	7,890	651	2,420	1,370	1,320	275	550	158	150	127
17	170	355	5,320	651	2,630	1,180	1,180	275	684	152	150	131
18	179	3,550	3,400	662	1,970	1,040	1,170	259	489	150	148	127
19	194	8,860	2,350	1,230	1,550	846	1,010	247	413	150	145	125
20	498	4,360	2,040	1,780	2,310	750	822	239	373	145	141	123
21	1,060	2,830	1,700	1,800	1,130	673	762	235	343	143	139	121
22	1,670	3,960	1,390	1,750	909	1,630	673	224	310	141	139	121
23	1,700	4,990	1,230	2,350	700	3,370	620	210	285	141	165	121
24	858	3,900	1,140	2,730	673	3,370	560	207	287	139	123	119
25	620	3,860	1,010	3,120	630	2,540	523	207	251	137	125	117
26	834	14,700	1,040	7,460	580	1,930	498	194	247	179	113	117
27	580	10,200	1,920	5,250	532	1,470	472	200	373	427	105	119
28	420	7,390	1,710	3,370	489	1,080	455	239	670	1,130	99	121
29	367	4,660	1,470	2,370	-	1,130	472	232	640	630	102	123
30	722	2,950	1,240	2,200	-	1,730	455	214	399	399	139	123
31	922	-	1,040	2,040	-	4,840	-	207	-	285	131	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	17,845	1,700	168	576	1.09	1.25	35,400
November	87,191	14,700	355	2,906	5.49	6.13	172,900
December	86,121	15,100	798	2,778	5.25	6.05	170,800
Calendar year 1946	527,982	15,100	57	1,447	2.74	37.11	1,047,000
January	49,118	7,460	506	1,584	2.99	3.45	97,420
February	55,353	5,360	469	1,977	3.74	3.89	109,800
March	62,034	6,950	455	2,001	3.78	4.36	125,000
April	61,152	6,180	455	2,038	3.85	4.30	121,300
May	9,414	498	194	304	.575	.66	18,670
June	20,077	2,750	247	669	1.26	1.41	39,620
July	7,809	1,130	137	252	.476	.55	15,480
August	5,032	271	99	162	.308	.35	9,980
September	4,104	275	117	137	.259	.29	8,140
Water year 1946-47	465,250	15,100	99	1,275	2.41	32.69	922,700

Peak discharge.- Nov. 19 (2 a.m.) 15,500 sec.-ft.; Nov. 26 (12 m.) 16,900 sec.-ft.; Dec. 14 (8 a.m.) 17,500 sec.-ft.; Dec. 15 (3:30 p.m.) 12,400 sec.-ft.

Row River at Star, Oreg.

Location.- Water-stage recorder, lat. 43°44', long. 122°53', in NW¼ sec. 24, T. 21 S., R. 2 W., half a mile west of Star and 3 miles upstream from Teeter Creek. Datum of gage is 856.16 feet above mean sea level, datum of 1929.

Drainage area.- 211 square miles.

Records available.- September 1935 to September 1947.

Average discharge.- 12 years, 538 second-feet.

Extremes.- Maximum discharge during year, 10,200 second-feet Dec. 14 (gage height, 11.02 feet); minimum, 18 second-feet Oct. 1 (gage height, 1.56 feet).

1935-47: Maximum discharge, 19,600 second-feet Dec. 28, 1945 (gage height, 14.33 feet), from rating curve extended above 9,300 second-feet; minimum, 12 second-feet Sept. 2, 1940.

Remarks.- Records good. No diversion above station; possibly slight regulation at times by log ponds.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 13

Dec. 14 to Sept. 30

1.6	20	2.6	112	4.2	560	1.8	37	3.3	267	6.0	1,770
1.8	32	2.9	162	4.8	900	2.0	53	3.7	394	7.0	2,740
2.0	47	3.3	254	5.4	1,310	2.3	83	4.2	600	8.0	3,940
2.3	76	3.7	378			2.6	121	4.8	905	9.0	5,550
						2.9	172	5.4	1,310	10.0	7,650

Note.- Same as following table above 5.4 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	846	840	h326	h1,100	210	1,850	197	99	197	127	45
2	24	531	635	h320	h2,170	330	1,840	192	142	167	108	43
3	27	361	526	h284	h2,270	715	1,610	186	117	151	107	43
4	28	354	496	h262	h1,710	686	1,750	174	165	135	165	42
5	35	312	441	240	h1,690	591	2,820	165	188	121	114	39
6	34	265	371	243	h1,420	494	2,220	159	235	113	94	36
7	31	262	325	230	h1,320	478	1,590	154	235	107	85	130
8	77	231	368	215	h1,060	568	1,480	184	876	99	79	118
9	47	189	410	201	h869	942	1,770	222	1,410	92	75	93
10	33	331	414	201	h740	3,450	1,470	213	984	86	73	106
11	28	315	522	240	h750	2,730	1,260	170	780	83	68	76
12	25	244	1,180	240	h1,160	1,550	1,050	154	546	80	64	61
13	24	197	5,360	235	h991	1,080	1,180	146	390	75	62	53
14	22	168	7,360	225	h770	923	1,030	135	305	72	59	49
15	21	144	4,380	192	h760	823	875	127	246	69	56	46
16	20	126	2,770	190	h869	715	710	120	251	65	54	45
17	24	126	1,660	210	h991	627	640	114	329	63	52	44
18	36	3,010	1,140	248	765	532	614	110	273	61	51	43
19	38	3,490	845	486	672	443	524	107	232	60	50	41
20	222	1,410	690	686	524	380	462	103	201	58	47	39
21	364	.991	582	725	450	336	412	99	180	57	46	36
22	651	1,890	482	700	394	708	366	95	159	54	47	37
23	407	2,360	424	1,250	333	1,360	314	92	144	55	49	36
24	288	1,550	362	1,430	305	1,300	282	88	132	53	47	35
25	246	1,940	320	1,690	279	965	259	86	120	54	45	34
26	472	6,940	401	3,530	267	770	245	83	115	104	44	34
27	260	4,020	657	1,960	245	635	232	91	168	262	42	34
28	170	2,800	645	h1,390	225	532	225	108	443	658	41	34
29	132	1,770	h609	h941	-	564	230	93	326	349	44	34
30	301	1,180	h555	h834	-	888	218	86	243	197	58	35
31	315	-	h431	h812	-	2,620	-	84	-	147	51	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-feet
October	4,422	651	20	143	0.678	0.78	8,770
November	36,353	6,940	126	1,278	6.06	6.76	76,070
December	36,421	7,360	320	1,175	5.57	6.42	72,240
Calendar year 1946	227,454	7,360	16	623	2.95	40.09	451,200
January	20,756	3,530	190	670	3.18	3.66	41,170
February	25,109	2,270	225	897	4.25	4.43	49,800
March	28,946	3,450	210	934	4.43	5.10	57,410
April	29,508	2,820	218	984	4.66	5.20	58,530
May	4,137	222	83	133	.630	.73	8,210
June	9,856	1,410	99	329	1.56	1.74	19,550
July	3,944	658	53	127	.802	.70	7,620
August	2,104	165	41	67.8	.321	.37	4,170
September	1,545	130	34	51.5	.244	.27	3,060
Water year 1946-47	205,101	7,360	20	562	2.66	36.16	406,800

Peak discharge.- Nov. 18 (11 p.m.) 9,320 sec.-ft.; Nov. 26 (7 a.m.) 8,210 sec.-ft.; Dec. 14 (5 a.m.) 10,200 sec.-ft.; Dec. 15 (1 p.m.) 5,200 sec.-ft.; Jan. 26 (8 a.m.) 4,350 sec.-ft.

h Computed from staff-gage reading.

Row River near Dorena, Oreg.

Location.- Water-stage recorder, lat. 43°48', long. 122°57', in NE $\frac{1}{4}$ sec. 36, T. 20 S., R. 3 W., $1\frac{1}{2}$ miles upstream from Mosby Creek and $3\frac{1}{2}$ miles northwest of Dorena. Datum of gage is 685.24 feet above mean sea level, datum of 1929 (levels by Corps of Engineers).

Drainage area.- 270 square miles.

Records available.- January 1939 to September 1947.

Extremes.- Maximum discharge during year, 11,900 second-feet Dec. 14 (gage height, 12.88 feet); minimum, 27 second-feet Oct. 1 (gage height, 1.43 feet).
1939-47: Maximum discharge, 21,400 second-feet Dec. 28, 1945 (gage height, 18.20 feet); minimum, 14 second-feet Aug. 29 to Sept. 2, 1940 (gage height, 1.23 feet).

Remarks.- Records good. No diversion above station; slight regulation at times by Dorena Reservoir, under construction in 1947.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	1,070	1,120	471	1,460	266	2,350	255	116	232	155	59
2	32	769	853	424	2,700	352	2,320	244	171	200	129	56
3	36	480	701	378	2,870	353	2,170	232	146	180	138	59
4	37	442	646	359	2,130	835	2,350	225	187	158	187	56
5	43	387	570	314	1,970	734	3,650	211	214	144	141	51
6	48	318	485	318	1,710	630	2,950	200	270	138	119	51
7	43	314	438	293	1,540	591	2,090	200	274	129	106	111
8	90	282	485	278	1,290	690	1,930	244	732	121	96	164
9	63	240	540	255	1,070	1,020	2,150	274	1,780	111	90	113
10	49	405	540	255	872	4,090	1,880	270	1,270	108	90	138
11	41	415	640	305	763	3,450	1,570	222	988	106	85	99
12	37	318	1,440	318	1,210	2,030	1,320	200	657	99	81	81
13	34	255	6,450	318	1,160	1,410	1,370	184	480	92	77	70
14	32	218	9,190	297	910	1,180	1,310	174	365	90	73	64
15	30	190	5,890	258	829	1,030	1,070	161	297	88	73	56
16	31	164	3,670	251	1,210	891	865	152	289	83	73	54
17	36	158	2,210	282	1,270	757	144	396	79	70	70	56
18	49	3,110	1,530	318	982	652	728	141	326	77	68	54
19	57	4,620	1,140	618	781	540	635	135	274	73	66	52
20	230	1,880	910	910	652	471	565	129	244	73	66	52
21	495	1,260	740	962	555	428	495	126	218	70	62	51
22	771	2,250	618	989	475	975	442	124	194	68	62	49
23	560	2,810	530	1,520	424	1,920	405	119	174	70	64	48
24	361	1,930	461	1,730	387	1,840	365	108	158	68	62	45
25	322	2,270	410	1,910	356	1,370	335	103	144	66	59	43
26	560	8,680	520	4,300	326	1,060	309	99	138	111	54	46
27	339	5,100	1,170	2,580	305	847	297	106	204	282	46	43
28	225	3,460	891	1,730	285	696	282	135	490	841	49	43
29	171	2,270	718	1,240	-	696	289	119	392	410	54	43
30	378	1,540	591	1,080	-	1,010	278	106	282	251	70	43
31	424	-	525	917	-	3,130	-	101	-	187	70	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	5,653	771	29	182	0.674	0.78	11,210
November	47,605	8,680	158	1,587	5.86	6.56	94,420
December	46,622	9,190	140	1,504	5.57	6.42	92,470
Calendar year 1946	286,334	9,190	23	784	2.90	39.44	567,906
January	26,067	4,300	251	841	3.11	3.59	51,700
February	30,492	2,870	285	1,089	4.03	4.20	80,480
March	36,444	4,090	266	1,176	4.36	5.02	72,290
April	37,527	3,650	278	1,251	4.63	5.17	74,430
May	5,243	274	99	169	.826	.72	10,400
June	11,870	1,780	116	396	1.47	1.65	23,540
July	4,805	841	66	155	.574	.66	9,530
August	2,635	187	46	85.0	.315	.36	5,230
September	1,950	164	43	65.0	.241	.27	3,870
Water year 1946-47	256,913	9,190	29	704	2.61	35.38	509,600

Peak discharge.- Nov. 18 (11:30 p.m.) 10,600 sec.-ft.; Nov. 26 (8 a.m.) 10,200 sec.-ft.; Dec. 14 (6 a.m.) 11,900 sec.-ft.

WILLAMETTE RIVER BASIN

Mosby Creek at mouth, near Cottage Grove, Oreg.

Location.- Water-stage recorder, lat. 43°47', long. 123°00', in sec. 1, T. 21 S., R. 3 W., two-thirds of a mile upstream from mouth and $3\frac{1}{2}$ miles southeast of Cottage Grove.

Drainage area.- 96 square miles.

Records available.- October 1946 to September 1947.

Extremes.- Maximum discharge during year, 3,540 second-feet Nov. 26 (gage height, 7.05 feet); minimum, 8 second-feet Oct. 1 and about Oct. 16.

Remarks.- Records excellent except those for period of no gage-height record, which are fair. Small diversions above station for irrigation.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)

1.2	9	2.0	126	4.0	1,040
1.3	16	2.2	187	4.5	1,420
1.4	24	2.5	290	5.0	1,820
1.5	34	2.8	400	5.5	2,220
1.6	46	3.2	570	6.5	3,080
1.8	78	3.6	780		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	a300	353	143	780	80	720	59	35	38	33	17
2	13	a200	269	126	1,080	129	685	54	46	34	29	18
3	12	a120	220	108	944	364	710	52	42	34	35	18
4	12	a90	194	96	645	300	846	49	53	31	53	16
5	12	a70	168	87	530	276	1,300	47	64	29	36	15
6	12	a60	140	85	432	248	964	45	80	27	32	15
7	13	a60	126	78	372	230	650	46	91	27	27	40
8	20	a60	161	76	318	248	534	64	373	25	24	46
9	16	a55	197	71	266	387	590	65	525	23	23	34
10	13	a120	174	67	224	1,720	507	65	318	22	23	35
11	11	a90	161	78	197	1,300	412	56	217	22	22	26
12	10	a70	258	91	322	705	332	49	152	21	21	22
13	a9	a60	1,290	93	346	480	283	45	110	20	20	19
14	a9	a50	2,680	89	294	376	248	41	87	19	18	18
15	a9	a45	1,960	78	266	308	213	40	73	19	16	17
16	a9	a45	1,220	74	502	255	177	36	71	18	16	17
17	a18	a45	670	91	512	213	158	35	87	18	16	17
18	a16	a1,000	468	123	384	181	146	33	74	17	15	16
19	a16	1,320	353	234	297	146	126	32	64	17	15	15
20	a100	625	283	322	241	126	118	32	57	16	15	15
21	a150	472	230	314	200	116	105	31	52	15	17	14
22	a300	720	187	280	165	314	96	30	46	13	16	13
23	a180	846	155	350	135	705	89	29	44	15	17	12
24	a100	630	132	392	118	665	80	27	41	15	17	12
25	a60	734	116	563	108	476	78	26	36	15	17	12
26	a80	2,990	140	1,520	100	360	73	25	36	30	15	12
27	52	1,680	297	834	93	286	67	29	46	74	13	12
28	45	1,100	262	556	85	227	64	39	60	184	14	13
29	a62	705	217	404	-	227	67	32	50	85	15	13
30	a120	480	184	392	-	513	62	30	44	53	25	14
31	a110	-	158	368	-	1,030	-	28	-	40	21	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	1,579	300	9	50.9	0.530	0.61	3,130
November	14,842	2,990	45	495	5.16	5.75	29,440
December	13,423	2,680	116	433	4.51	5.20	26,620
Calendar year	-	-	-	-	-	-	-
January	8,183	1,520	67	264	2.75	3.17	16,230
February	9,956	1,080	85	356	3.71	3.86	19,750
March	12,991	1,720	80	419	4.56	5.03	25,770
April	10,500	1,300	62	350	3.65	4.07	20,830
May	1,271	65	25	41.0	1.427	1.49	2,520
June	3,004	525	35	100	1.04	1.16	5,960
July	1,018	184	15	32.8	1.342	1.39	2,020
August	676	53	13	21.8	1.227	1.26	1,340
September	563	46	12	18.8	1.196	1.22	1,120
Water year 1946-47	78,006	2,990	9	214	2.23	30.21	154,700

Peak discharge.- Nov. 18 (11 p.m.) 3,240 sec.-ft.; Nov. 26 (7 a.m.) 3,540 sec.-ft.; Dec. 14

(7 a.m.) 3,480 sec.-ft.; Dec. 15 (1 p.m.) 2,360 sec.-ft.
a No gage-height record; discharge computed on basis of records for Coast Fork Willamette River at London, Row River at Star, and Row River near Dorena.

McKenzie River at McKenzie Bridge, Oreg.-

Location.- Water-stage recorder, lat. 44°11', long. 122°07', in NE $\frac{1}{4}$ sec. 18, T. 16 S.; R. 6 E., 1.7 miles east of village of McKenzie Bridge. Datum of gage is 1,419.04 feet above mean sea level, datum of 1929, supplementary adjustment of 1947.

Drainage area.- 345 square miles at measuring section three-quarters of a mile above gage.

Records available.- August 1910 to September 1947.

Average discharge.- 31 years (1910-14, 1915-16, 1918-21, 1923-25, 1926-47), 1,581 second-feet.

Extremes.- Maximum discharge during year, 10,300 second-feet Dec. 15 (gage height, 6.63 feet); minimum, 949 second-feet Sept. 28-30 (gage height, 1.03 feet).
1910-47: Maximum discharge, 18,000 second-feet Jan. 6, 1923 (gage height, 8.3 feet, from floodmarks at former gage at highway bridge), from rating curve extended above 2,400 second-feet; minimum, 805 second-feet Oct. 20, 1931.

Remarks.- Records good except those for period of no gage-height record, which are fair. No diversion or regulation above station.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Oct. 29 to Dec. 13)

1.0	925	3.0	3,260
1.3	1,180	3.5	4,040
1.6	1,490	4.0	4,910
2.0	1,950	5.0	6,850
2.5	2,580	6.2	9,360

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	al,050	1,370	2,530	1,770	2,050	1,570	2,110	1,780	1,330	1,390	1,150	1,010
2	al,050	1,330	2,320	1,700	2,450	1,620	2,130	1,780	1,340	1,580	1,140	1,010
3	al,050	1,290	2,220	1,640	2,490	1,640	2,080	1,750	1,340	1,360	1,140	1,000
4	al,050	1,270	2,180	1,620	2,330	1,610	2,070	1,720	1,360	1,360	1,140	1,000
5	al,100	1,260	2,090	1,600	2,240	1,580	2,070	1,680	1,350	1,340	1,140	997
6	al,050	1,250	2,000	1,580	2,220	1,540	2,050	1,670	1,340	1,330	1,140	997
7	al,050	1,230	1,930	1,540	2,200	1,540	2,010	1,630	1,350	1,320	1,140	1,040
8	al,100	1,210	1,930	1,520	2,130	1,570	2,020	1,620	1,500	1,310	1,130	1,020
9	al,050	1,200	1,880	1,490	2,030	1,720	2,020	1,610	1,780	1,500	1,130	1,020
10	al,020	1,210	1,940	1,510	1,950	2,400	2,030	1,560	1,720	1,290	1,130	1,010
11	al,000	1,180	2,420	1,480	1,930	2,490	2,000	1,520	1,620	1,290	1,120	1,000
12	al,000	1,160	4,550	1,490	2,110	2,190	1,960	1,500	1,530	1,280	1,120	997
13	al,000	1,150	7,450	1,480	2,280	2,060	2,020	1,470	1,490	1,270	1,120	989
14	al,000	1,140	9,360	1,450	2,240	1,990	2,120	1,460	1,470	1,260	1,110	989
15	al,000	1,130	8,750	1,410	2,270	1,970	2,150	1,440	1,450	1,260	1,110	989
16	al,000	1,120	5,580	1,400	2,240	2,010	2,130	1,410	1,470	1,250	1,100	981
17	al,000	1,310	4,240	1,390	2,150	2,030	2,280	1,390	1,460	1,240	1,100	981
18	al,000	3,130	3,660	1,380	2,060	2,030	2,520	1,370	1,440	1,250	1,090	981
19	al,050	2,540	3,280	1,380	1,960	2,000	2,370	1,360	1,420	1,220	1,090	961
20	al,300	1,910	3,020	1,360	1,890	1,950	2,230	1,350	1,410	1,210	1,080	973
21	al,350	1,750	2,630	1,360	1,830	1,930	2,110	1,350	1,400	1,210	1,060	973
22	al,500	1,890	2,640	1,410	1,780	2,190	2,030	1,340	1,390	1,200	1,060	973
23	al,400	2,140	2,490	1,810	1,750	2,190	1,960	1,330	1,380	1,190	1,060	965
24	al,450	2,050	2,360	2,410	1,720	2,090	1,910	1,330	1,370	1,180	1,040	965
25	al,450	2,490	2,230	2,680	1,690	2,020	1,870	1,320	1,360	1,170	1,030	957
26	al,500	4,430	2,220	3,690	1,670	1,960	1,870	1,320	1,360	1,180	1,030	957
27	al,350	4,980	2,180	2,810	1,620	1,910	1,840	1,320	1,480	1,190	1,020	957
28	al,200	4,420	2,070	2,500	1,610	1,870	1,830	1,310	1,500	1,230	1,020	949
29	1,280	3,340	1,960	2,270	-	1,860	1,900	1,310	1,450	1,170	1,030	949
30	1,300	2,830	1,880	2,140	-	1,960	1,820	1,310	1,410	1,160	1,030	949
31	1,310	-	1,820	2,020	-	2,030	-	1,300	-	1,160	1,020	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	36,010	1,500	1,000	1,162	3.37	3.88	71,420
November	58,530	4,980	1,120	1,951	5.66	6.31	116,100
December	98,020	9,360	1,820	3,162	9.17	10.57	194,400
Calendar year 1946	670,100	9,360	1,000	1,636	5.32	72.25	1,329,000
January	55,330	3,690	1,380	1,785	5.17	5.96	109,700
February	56,890	2,490	1,610	2,032	5.89	6.13	112,800
March	59,540	2,490	1,540	1,921	5.57	6.42	118,100
April	61,510	2,520	1,820	2,050	5.94	6.63	122,000
May	45,610	1,780	1,300	1,471	4.26	4.92	90,470
June	45,270	1,780	1,330	1,442	4.18	4.66	85,820
July	38,930	1,390	1,160	1,256	3.64	4.20	77,220
August	32,620	1,150	1,020	1,091	3.16	3.65	67,080
September	29,559	1,040	949	985	2.86	3.19	58,630
Water year 1946-47	617,019	9,360	949	1,690	4.90	66.52	1,224,000

Peak discharge.- Nov. 18 (8 p.m.) 4,070 sec.-ft.; Nov. 27 (2 p.m.) 5,510 sec.-ft.; Dec. 15 (6:30 a.m.) 10,300 sec.-ft.; Jan. 26 (3 a.m.) 4,530 sec.-ft.

a No gage-height record; discharge computed on basis of records for station near Vida.

McKenzie River near Vida, Oreg.

Location.- Water-stage recorder, lat. 44°07', long. 122°28', in NE¼ sec. 5, T. 17 S., R. 3 E., 1 mile upstream from head of Martin Rapids and 5 miles east of Vida. Datum of gage is 855.56 feet above mean sea level, datum of 1929.

Drainage area.- 930 square miles.

Records available.- September 1924 to September 1947. June 1910 to March 1911 (gage heights only) at site at Martin Rapids.

Average discharge.- 23 years, 3,620 second-feet.

Extremes.- Maximum discharge during year, 39,400 second-feet Dec. 14 (gage height, 12.20 feet); minimum, 1,560 second-feet Oct. 15, 16 (gage height, 0.77 foot).

1924-47: Maximum discharge, 64,400 second-feet Dec. 28, 1945 (gage height, 17.70 feet), from rating curve extended above 32,000 second-feet; minimum, 1,260 second-feet Nov. 7, 1930, Sept. 17, Oct. 4, 8, 9, 1931 (gage height, 0.36 foot).

Remarks.- Records good. No diversion or regulation above station.

Cooperation.- Water-stage recorder inspected by employee of Eugene Water Board.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 13				Dec. 14 to Sept. 30			
0.7	1,470	2.5	4,490	0.7	1,550	4.5	9,750
1.2	2,180	3.5	6,820	1.2	2,260	5.5	13,000
1.8	3,170	4.5	9,750	1.8	3,280	7.0	18,200
Note.- Same as following table above 4.5 feet.				2.5	4,650	9.0	26,200
				3.5	6,950	11.3	35,600

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,640	3,790	6,610	3,710	5,880	3,240	6,380	4,080	2,660	2,900	2,110	1,750
2	1,650	3,500	5,700	3,540	8,610	3,420	6,310	4,160	2,820	2,800	2,060	1,740
3	1,680	2,930	5,220	3,410	8,910	3,630	5,950	4,140	2,770	2,720	2,110	1,750
4	1,670	2,800	5,000	3,320	7,150	3,610	6,080	4,080	3,190	2,650	2,060	1,740
5	1,740	2,760	4,680	3,260	6,700	3,420	6,750	3,940	2,940	2,580	2,020	1,740
6	1,660	2,690	4,330	3,230	6,700	3,300	6,380	3,940	2,870	2,530	1,990	1,760
7	1,680	2,660	4,130	3,140	6,750	3,370	5,770	3,840	2,890	2,480	1,980	2,080
8	1,730	2,550	4,620	3,060	6,250	3,730	5,810	3,820	3,120	2,450	1,950	1,990
9	1,660	2,440	4,490	2,990	5,700	5,350	6,020	3,960	5,260	2,420	1,980	1,930
10	1,630	2,560	4,720	3,050	5,280	5,930	5,980	3,670	5,520	2,370	1,960	1,890
11	1,610	2,470	6,100	3,170	5,110	9,240	5,770	3,420	4,690	2,360	1,930	1,820
12	1,600	2,360	14,300	3,150	6,020	6,680	5,480	3,300	4,040	2,320	1,900	1,760
13	1,600	2,280	27,300	3,080	6,520	5,610	5,790	3,190	3,650	2,290	1,890	1,740
14	1,590	2,230	35,200	2,970	6,100	5,260	6,250	3,100	3,390	2,260	1,890	1,710
15	1,570	2,150	27,400	2,850	6,100	5,200	6,150	3,010	3,210	2,230	1,880	1,690
16	1,560	2,120	17,600	2,840	6,100	5,200	5,810	2,940	3,240	2,200	1,860	1,680
17	1,600	2,510	11,800	2,800	5,680	5,200	6,100	2,890	3,330	2,180	1,850	1,680
18	1,600	10,400	9,270	2,780	5,180	5,030	7,350	2,820	3,120	2,170	1,830	1,710
19	1,670	10,400	7,800	2,990	4,780	4,800	6,520	2,800	3,010	2,160	1,830	1,680
20	3,000	6,200	6,850	3,150	4,440	4,540	5,950	2,750	2,820	2,120	1,820	1,650
21	3,260	5,150	6,200	3,330	4,220	4,360	5,370	2,750	2,840	2,100	1,820	1,640
22	4,290	6,380	5,630	3,500	4,020	5,320	4,320	2,730	2,770	2,080	1,820	1,630
23	3,620	6,490	5,200	6,180	3,640	5,790	4,500	2,680	2,700	2,060	1,820	1,620
24	3,940	6,480	4,840	8,730	3,740	5,460	4,380	2,660	2,650	2,050	1,810	1,600
25	3,940	8,370	4,570	10,000	3,670	5,070	4,220	2,630	2,610	2,050	1,810	1,590
26	4,190	21,200	4,730	16,300	3,570	4,730	4,120	2,630	2,610	2,150	1,790	1,590
27	3,390	19,800	4,900	9,990	3,460	4,440	4,120	2,610	3,240	2,290	1,750	1,590
28	2,950	15,400	4,500	7,520	3,350	4,240	4,080	2,600	3,820	2,770	1,750	1,590
29	2,690	10,600	4,280	6,200	-	4,240	4,400	2,600	3,320	2,300	1,810	1,590
30	2,970	8,130	4,420	5,680	-	4,590	4,280	2,650	3,600	2,170	1,830	1,590
31	2,950	-	3,840	5,070	-	5,860	-	2,520	-	2,140	1,790	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	72,540	4,290	1,560	2,340	2.52	2.90	143,900
November	180,600	21,200	2,120	6,020	6.47	7.22	358,200
December	265,810	35,200	3,840	6,575	9.22	10.63	527,200
Calendar year 1946	1,680,840	35,200	1,560	4,605	4.95	67.21	3,334,000
January	144,990	16,300	2,780	4,677	5.03	5.80	287,600
February	153,630	8,910	3,350	5,494	5.91	6.15	305,100
March	153,560	9,630	3,240	4,954	5.33	6.14	304,600
April	166,980	7,350	4,080	5,566	5.98	6.68	331,200
May	98,910	4,160	2,520	3,191	3.43	3.96	196,200
June	98,160	5,520	2,610	3,272	3.52	3.93	194,700
July	72,370	2,900	2,050	2,335	2.51	2.89	143,500
August	58,710	2,110	1,750	1,894	2.04	2.35	116,400
September	51,510	2,080	1,590	1,717	1.85	2.06	102,200
Water year 1946-47	1,517,970	35,200	1,560	4,159	4.47	60.71	3,011,000

Peak discharge.- Nov. 18 (11:30 p.m.) 16,400 sec.-ft.; Nov. 26 (11 a.m.) 23,200 sec.-ft.; Nov. 27 (4:30 p.m.) 20,400 sec.-ft.; Dec. 14 (5:30 a.m.) 39,400 sec.-ft.; Dec. 15 (10 a.m.) 35,100 sec.-ft.; Jan. 26 (5:30 a.m.) 19,600 sec.-ft.

McKenzie River near Coburg, Oreg.

Location.- Water-stage recorder, lat. 44°06'48", long. 123°02'49", in NE 1/4 sec. 9, T. 17 S., R. 3 W., at Armitage Bridge, 2 miles southeast of Coburg and 3 miles upstream from mouth. Datum of gage is 395.96 feet above mean sea level, datum of 1929.

Drainage area.- 1,310 square miles.

Records available.- October 1944 to September 1947.

Extremes.- Maximum discharge during year, 59,200 second-feet Dec. 14 (gage height, 14.42 feet); minimum, 1,500 second-feet Oct. 16.

1944-47: Maximum discharge, 88,200 second-feet Dec. 29, 1945 (gage height, 17.36 feet), from rating curve extended above 36,000 second-feet; minimum daily, 1,310 second-feet Oct. 29, 1944.

Remarks.- Records good. Slight diurnal fluctuation caused by log ponds and power plants upstream. Water supply for city of Eugene is diverted about 10 miles upstream; small diversions above station for irrigation.

Cooperation.- Wire-weight gage read once daily during fall and winter months by employee of U. S. Weather Bureau.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 18)

Oct. 1 to Nov. 25

Nov. 26 to Sept. 30

1.9	1,520	5.0	7,760	1.9	1,700	5.0	8,450	11.0	30,400
2.5	2,490	6.0	10,500	2.6	2,900	7.0	14,500	12.6	39,600
3.0	3,390	7.0	13,600	3.6	4,900	9.0	21,800	13.8	51,400
4.0	5,430	8.0	17,100						

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,640	4,870	9,980	5,040	9,520	4,080	9,830	4,900	2,900	3,280	2,310	1,840
2	1,670	4,770	9,820	4,720	13,000	4,250	10,000	4,790	3,240	3,170	2,220	1,810
3	1,730	4,070	7,390	4,550	15,900	4,920	9,800	4,750	3,220	3,080	2,280	1,830
4	1,720	3,680	6,840	4,360	12,400	4,770	9,800	4,680	3,450	2,950	2,260	1,800
5	1,780	3,480	6,310	4,170	10,800	4,550	10,500	4,550	3,410	2,860	2,190	1,750
6	1,730	3,430	5,740	4,250	10,100	4,310	10,700	4,440	3,430	2,770	2,140	1,760
7	1,680	3,530	5,370	4,100	9,800	4,380	9,700	4,420	3,410	2,720	2,090	2,020
8	1,800	3,220	5,940	4,000	9,100	4,320	9,800	4,380	4,400	2,650	2,050	2,340
9	1,720	3,080	6,110	3,900	8,230	5,840	10,600	4,460	8,610	2,630	2,070	2,120
10	1,680	3,160	6,260	3,900	7,490	12,200	9,600	4,560	7,810	2,540	2,120	2,100
11	1,560	3,150	6,950	4,210	7,080	15,100	9,000	4,000	6,360	2,520	2,070	1,990
12	1,550	3,000	15,300	4,250	7,730	11,100	10,600	3,800	5,250	2,500	1,990	1,890
13	1,550	2,800	28,700	4,210	8,670	8,860	10,700	3,640	4,570	2,450	1,940	1,860
14	1,550	2,790	51,400	4,120	8,290	7,810	10,500	3,510	4,140	2,410	1,920	1,840
15	1,550	2,710	48,700	3,860	8,180	7,560	8,450	3,390	3,840	2,360	1,910	1,810
16	1,540	2,610	32,600	3,780	8,260	7,030	7,910	3,300	3,800	2,330	1,910	1,780
17	1,560	2,610	20,600	3,760	7,810	6,820	7,680	3,220	4,020	2,290	1,890	1,800
18	1,640	7,580	15,400	3,780	7,130	6,610	9,190	3,170	3,680	2,260	1,890	1,810
19	1,670	15,900	12,600	4,210	6,480	6,240	8,670	3,120	3,490	2,220	1,880	1,830
20	2,710	9,740	10,700	4,640	5,910	5,840	7,940	3,060	3,360	2,190	1,860	1,800
21	4,660	7,760	9,520	5,040	5,540	5,510	7,180	3,030	3,260	2,160	1,860	1,780
22	4,480	9,740	8,450	5,130	5,200	6,310	6,440	2,950	3,170	2,120	1,860	1,750
23	5,300	10,500	7,650	7,940	4,920	8,020	5,910	2,920	3,080	2,120	1,890	1,730
24	4,730	9,940	7,000	11,400	4,750	7,940	5,560	2,880	3,010	2,100	1,880	1,700
25	4,830	9,400	6,580	12,800	4,610	7,130	5,300	2,860	2,900	2,120	1,860	1,720
26	5,500	26,500	6,560	23,900	4,460	6,510	5,060	2,810	2,900	2,260	1,830	1,720
27	4,730	29,700	6,970	17,700	4,330	5,980	4,950	2,850	3,260	2,590	1,810	1,720
28	4,010	24,500	6,310	12,600	4,170	5,560	4,900	2,660	4,270	3,340	1,810	1,730
29	3,480	17,000	5,840	10,100	-	5,490	5,110	2,610	3,980	2,900	1,860	1,730
30	4,050	12,500	5,420	8,960	-	5,680	5,320	2,860	3,530	2,540	1,910	1,720
31	4,070	-	5,180	7,810	-	8,480	-	2,830	-	2,330	1,910	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-ft
October	83,860	5,500	1,540	2,705	2.06	2.38	166,300
November	247,500	29,700	2,610	12,450	6.30	7.03	490,900
December	386,590	51,400	5,180	8,270	9.52	10.90	766,800
Calendar year 1946	2,257,690	51,400	1,540	6,185	4.72	64.10	4,478,000
January	207,390	23,900	3,760	6,690	5.11	5.89	411,400
February	219,860	15,900	4,170	7,852	5.99	6.24	436,100
March	209,780	15,100	4,080	6,767	5.17	5.96	416,100
April	241,300	11,300	4,900	8,043	6.14	6.85	478,600
May	111,580	4,900	2,810	3,599	2.75	3.17	221,300
June	119,750	8,610	2,900	3,992	3.05	3.40	237,500
July	78,670	3,340	2,100	2,538	1.94	2.23	156,000
August	61,470	2,310	1,810	1,983	1.51	1.75	121,900
September	55,080	2,340	1,700	1,836	1.40	1.56	109,200
Water year 1946-47	2,022,830	51,400	1,540	5,542	4.23	57.44	4,012,000

Peak discharge.- Nov. 26 (9 p.m.) 34,700 sec.-ft.; Dec. 14 (4:30 p.m.) 59,200 sec.-ft.; Dec. 15 (6 p.m.) 53,000 sec.-ft.; Jan. 26 (2:30 p.m.) 27,500 sec.-ft.
a No gage-height record; discharge computed on basis of records for McKenzie River near Vida, Willamette River at Springfield, and Willamette River at Harrisburg.

Blue River near Blue River, Oreg.

Location.- Water-stage recorder, lat. 44°11', long. 122°17', near line between secs. 13 and 14, T. 16 S., R. 4 E., 3 miles upstream from Quartz Creek and 3½ miles northeast of Blue River post office.

Drainage area.- 75 square miles.

Records available.- September 1935 to September 1947.

Average discharge.- 12 years, 349 second-feet.

Extremes.- Maximum discharge during year, 7,360 second-feet Dec. 14 (gage height, 6.70 feet); minimum, 25 second-feet Oct. 15-17.

1935-47: Maximum discharge, 13,300 second-feet Dec. 28, 1945 (gage height, 9.80 feet), from rating curve extended above 6,500 second-feet; minimum, 13 second-feet Sept. 27, 28, Oct. 1, 2, 1938.

Remarks.- Records good except those for Jan. 25 to Feb. 20, which are poor. No diversion or regulation above station.

Rating table, water year 1946-47 (gage height, in feet, and discharge in second-feet)

1.0	23	1.6	255	3.4	1,840
1.1	43	1.8	370	4.0	2,680
1.2	73	2.1	575	4.7	3,810
1.3	110	2.4	805	5.5	5,200
1.4	150	2.8	1,170	6.5	7,000

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	422	718	208	a600	211	710	244	84	146	58	31
2	33	310	590	190	a1,000	255	718	233	106	130	52	29
3	39	244	519	175	a1,100	322	635	206	103	118	58	29
4	33	238	512	165	a750	316	612	195	134	110	52	29
5	39	255	456	155	a650	277	702	185	118	106	49	29
6	33	250	396	155	a600	255	688	170	118	99	46	31
7	35	238	376	146	a550	277	590	160	170	95	43	84
8	49	206	575	146	a500	363	642	165	554	88	43	77
9	35	185	578	138	a470	710	175	975	84	43	58	
10	31	206	688	150	a450	1,960	710	155	710	80	46	55
11	29	180	1,160	175	a420	1,470	680	142	484	77	41	46
12	27	160	3,130	170	a650	912	628	134	358	73	41	39
13	27	142	5,510	165	a750	702	710	122	282	70	39	37
14	27	134	6,170	150	a850	650	733	118	222	70	39	35
15	27	126	5,630	138	a680	642	642	110	190	67	37	33
16	25	114	2,210	138	a650	628	554	106	190	67	37	33
17	33	376	1,280	138	a560	590	605	605	175	64	37	33
18	33	2,960	877	142	a500	526	741	99	150	61	37	43
19	39	1,970	672	160	a450	449	590	95	138	58	37	35
20	561	984	540	190	a400	396	505	92	130	58	35	35
21	376	710	463	250	358	364	422	88	122	52	33	33
22	765	1,030	383	334	334	519	364	84	114	52	33	33
23	484	1,260	334	358	310	533	322	80	106	49	33	33
24	642	1,040	299	1,850	299	491	288	77	103	49	33	31
25	612	1,700	277	a2,100	282	435	272	73	99	49	29	31
26	554	4,060	299	a3,500	266	390	255	73	106	67	29	29
27	383	5,610	316	a2,000	238	546	250	70	175	84	29	29
28	288	2,460	277	a1,100	222	310	244	70	328	142	29	29
29	222	1,450	255	a800	-	316	299	70	228	80	29	29
30	244	966	233	a600	-	370	277	67	175	70	37	29
31	272	-	222	a500	-	533	-	67	-	64	33	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	6,024	765	25	194	2.59	2.99	11,950
November	28,206	4,080	114	940	12.53	13.99	55,950
December	35,942	6,170	222	1,159	15.45	17.82	71,290
Calendar year 1946	175,599	6,170	23	481	6.41	87.07	348,500
January	16,584	3,500	138	535	7.13	8.22	32,890
February	14,689	1,100	222	525	7.00	7.28	29,140
March	16,572	1,960	211	555	7.13	8.22	32,870
April	16,098	741	244	537	7.16	7.98	31,930
May	3,828	244	67	123	1.64	1.90	7,590
June	6,947	975	84	252	3.09	3.44	15,780
July	2,479	146	49	60.0	1.07	1.23	4,920
August	1,217	58	29	39.3	.524	.60	2,410
September	1,127	84	29	37.6	.501	.56	2,240
Water year 1946-47	149,713	6,170	25	410	5.47	74.23	297,000

Peak discharge.- Nov. 18 (8:30 p.m.), 5,930 sec.-ft.; Nov. 26 (9 to 10 a.m.), 4,640 sec.-ft.; Nov. 27 (1 p.m.), 4,150 sec.-ft.; Dec. 14 (2 a.m.), 7,360 sec.-ft.; Dec. 15 (5 a.m.), 6,570 sec.-ft.
 a No gage-height record; discharge computed on basis of recorded range in stage and records for McKenzie River at McKenzie Bridge.

Mohawk River near Springfield, Oreg.

Location.- Wire-weight gage, lat. 44°06', long. 122°57', in sec. 17, T. 17 S., R. 2 W., 1 mile upstream from mouth and 4½ miles northeast of Springfield.

Drainage area.- 180 square miles.

Records available.- September 1935 to September 1947.

Average discharge.- 12 years, 503 second-feet.

Extremes.- Maximum discharge during year, 6,490 second-feet Dec. 15 (gage height, 18.0 feet, from graph based on gage readings); minimum observed, 27 second-feet Oct. 12. 1935-47: Maximum discharge, 8,600 second-feet Dec. 28, 1945 (gage height, 22.1 feet, from floodmark), from rating curve extended above 6,000 second-feet; minimum observed, 11 second-feet Sept. 17, 1938.

Remarks.- Records good. Gage read once daily during low-water periods, twice daily at other times. No diversion above station; some regulation at low flow caused by log ponds.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a29	496	1,260	429	1,910	329	1,020	289	157	135	81	47
2	32	399	1,020	395	2,460	432	1,130	280	147	129	80	46
3	44	314	860	367	2,700	641	1,260	255	172	129	105	46
4	48	263	770	349	1,980	545	1,390	239	164	120	84	44
5	61	222	646	334	1,580	485	1,640	234	181	116	79	42
6	37	206	543	344	1,310	458	1,610	224	151	110	74	46
7	37	187	559	329	1,160	501	1,360	219	183	105	70	96
8	52	187	680	314	1,020	632	1,380	222	562	98	68	76
9	38	172	635	299	892	753	1,520	229	866	92	79	70
10	34	215	618	334	788	2,000	1,430	201	618	96	74	61
11	30	192	685	344	719	2,140	1,240	196	395	94	65	53
12	27	181	2,230	432	857	1,460	1,080	192	316	92	62	48
13	30	164	3,880	403	869	1,150	959	181	265	86	59	45
14	28	155	5,900	382	779	959	869	174	236	84	57	44
15	28	149	6,220	339	822	828	776	170	210	84	54	42
16	28	139	4,320	329	805	713	702	164	284	79	53	41
17	32	1,330	2,860	332	730	624	680	162	234	74	52	46
18	42	1,260	2,110	324	657	557	680	157	203	72	50	45
19	40	2,000	1,630	501	582	496	627	149	187	70	50	42
20	289	1,230	1,320	607	537	456	579	145	181	71	49	42
21	239	1,480	1,120	666	496	424	480	141	164	66	48	41
22	390	1,720	980	711	464	762	434	135	155	64	52	39
23	231	1,480	817	1,020	434	776	400	127	153	64	65	38
24	344	1,360	713	1,420	413	825	374	120	145	64	53	37
25	277	1,290	655	1,580	387	691	354	116	137	64	50	36
26	229	3,850	618	3,150	380	593	334	112	143	116	49	41
27	157	3,990	669	2,340	362	512	304	114	192	151	48	40
28	64	3,300	627	1,720	336	461	302	122	196	280	46	39
29	206	2,280	496	1,520	-	458	387	120	159	137	52	42
30	326	1,640	458	1,200	-	518	309	120	147	108	66	40
31	367	-	437	1,010	-	1,140	-	116	-	96	53	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	3,816	390	27	123	0.683	0.79	7,570
November	31,860	3,990	139	1,062	5.90	6.58	63,190
December	46,336	6,220	437	1,495	8.31	9.57	91,910
Calendar year 1946	226,316	6,220	20	620	3.44	46.77	448,800
January	23,624	3,150	299	762	4.23	4.88	46,860
February	26,429	2,700	356	944	5.24	5.46	52,420
March	23,319	2,140	329	752	4.18	4.82	46,250
April	25,610	1,640	302	854	4.74	5.29	50,800
May	5,403	289	112	174	.967	1.12	10,720
June	7,303	866	137	243	1.35	1.51	14,490
July	3,126	260	64	101	.561	.65	6,200
August	1,937	105	46	62.5	.347	.40	3,840
September	1,415	96	36	47.2	.262	.29	2,810
Water year 1946-47	200,178	6,220	27	548	3.04	41.36	397,100

a No gage-height record; discharge interpolated.

WILLAMETTE RIVER BASIN

Long Tom River near Noti, Oreg.

Location.- Water-stage recorder, lat. 44°03', long. 123°26', in sec. 33, T. 17 S., R. 6 W., an eighth of a mile upstream from railroad bridge, 1 mile downstream from Noti Creek, and 1½ miles southeast of Noti. Datum of gage is 388.76 feet above mean sea level (levels by U. S. Weather Bureau).

Drainage area.- 88 square miles.

Records available.- October 1935 to September 1947.

Average discharge.- 12 years, 215 second-feet.

Extremes.- Maximum discharge during year, 2,460 second-feet Dec. 15 (gage height, 15.70 feet); minimum, 16 second-feet Oct. 16, 17, Sept. 24, 25 (gage height, 0.72 foot). 1935-47: Maximum discharge, 4,490 second-feet Dec. 29, 1945 (gage height, 18.29 feet); minimum observed, 7 second-feet Sept. 25-27, 1939 (gage height, 0.66 foot).

Remarks.- Records good. No diversion above station; slight diurnal fluctuation caused by log pond above Noti.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Nov. 18-26)

0.7	16	1.8	99	5.0	465	11.0	1,240
.9	26	2.5	151	6.5	645	13.0	1,610
1.1	39	3.0	228	8.0	830	15.0	2,190
1.4	62	4.0	345	9.5	1,020	16.0	2,610

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	96	427	174	1,110	190	478	126	66	42	38	20
2	20	107	362	165	1,710	267	446	122	70	41	34	19
3	19	77	414	151	1,270	598	416	119	72	42	32	19
4	22	60	279	143	872	519	423	114	73	41	32	19
5	22	52	240	143	662	394	466	109	71	40	31	18
6	21	48	225	144	535	333	463	103	70	39	28	18
7	19	45	210	137	471	311	429	103	87	37	28	35
8	22	41	235	136	422	315	424	102	100	36	27	39
9	22	40	239	134	381	363	415	100	130	34	27	31
10	20	41	221	137	350	803	392	95	108	33	30	26
11	18	42	225	158	327	911	358	95	77	33	28	24
12	18	40	353	188	365	670	326	93	68	33	26	22
13	17	36	803	214	404	528	302	91	64	33	25	20
14	17	35	1,790	198	395	448	280	89	60	32	24	19
15	17	33	2,320	168	459	395	260	87	58	30	22	19
16	16	33	1,700	153	497	353	242	85	62	30	22	16
17	19	39	983	151	454	317	238	83	63	29	22	19
18	25	569	701	151	398	286	232	81	55	29	22	20
19	29	911	559	184	351	273	214	79	54	28	21	20
20	169	459	469	204	315	249	204	77	52	27	21	19
21	171	441	413	215	290	239	202	76	51	26	21	19
22	91	868	359	221	268	281	186	74	50	25	22	19
23	79	913	309	265	250	329	173	68	49	25	25	18
24	56	864	h297	363	230	314	164	66	48	25	24	17
25	47	712	h228	497	230	279	158	66	45	25	22	17
26	46	1,260	h250	900	217	248	152	65	44	31	21	16
27	52	1,740	h239	707	207	246	147	65	48	51	20	19
28	47	1,270	h228	542	197	224	143	65	54	94	20	19
29	42	778	h206	427	-	224	147	65	48	54	21	19
30	66	561	188	505	-	290	138	65	44	41	23	19
31	76	-	180	503	-	521	-	65	-	40	22	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	1,325	171	16	42.7	0.485	0.56	2,630
November	12,211	1,740	33	407	4.62	5.16	24,220
December	15,632	2,320	180	504	5.73	6.61	31,010
Calendar year 1946	92,659	2,320	13	254	2.89	39.16	183,800
January	8,379	900	134	270	3.07	3.54	16,620
February	13,637	1,710	197	487	5.53	5.76	27,050
March	11,716	911	190	378	4.30	4.95	23,240
April	8,618	478	158	287	3.26	3.64	17,090
May	2,693	126	65	86.9	.987	1.14	5,340
June	1,941	130	44	64.7	.735	.82	3,850
July	1,126	94	25	36.3	.412	.48	2,230
August	781	38	20	25.2	.286	.33	1,550
September	630	39	17	21.0	.239	.27	1,250
Water year 1946-47	78,689	2,320	16	216	2.45	33.26	156,100

h Computed from staff-gage reading.

Fern Ridge Reservoir near Elmira, Oreg.

Location.- Water-stage recorder, lat. 44°07'18", long. 123°17'56", near center of sec. 4, T. 17 S., R. 5 W., in control house at spillway section of dam across Long Tom River and Coyote Creek, 4½ miles northeast of Elmira. Datum of gage is at mean sea level (levels by Corps of Engineers).

Drainage area.- 252 square miles.

Records available.- October 1941 to September 1947.

Extremes.- Maximum contents during year, 100,600 acre-feet June 17, 18 (elevation, 373.43 feet); minimum, 6,640 acre-feet Dec. 11 (elevation, 352.76 feet).
1941-47: Maximum contents, 105,400 acre-feet Jan. 1, 1943 (elevation, 373.74 feet); minimum since first filling in 1942, 3,220 acre-feet Nov. 29, Dec. 11, 12, 17, 1943, Jan. 12, 1944 (elevation, 349.95 feet).

Remarks.- Reservoir is formed by earth-fill dam with concrete outlet and spillway, completed in 1941 by Corps of Engineers; storage began Nov. 13, 1941. Capacity, 101,200 acre-feet between elevations 340 feet (sill of outlet gate) and 373.5 feet (maximum operating pool level); dead storage, 23 acre-feet below elevation 340 feet. Reservoir used for flood control and improvement of navigation. Daily contents computed from elevations at 12 p.m. Capacity table computed by Geological Survey on basis of areas furnished by Corps of Engineers.

Cooperation.- Water-stage recorder inspected by employees of Corps of Engineers.

Contents, in acre-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46,390	7,070	10,770	6,880	15,060	40,900	82,820	94,730	97,350	100,100	98,630	95,180
2	43,130	7,100	7,840	6,910	18,750	43,080	83,560	94,910	97,620	100,000	98,540	95,090
3	39,780	7,100	7,070	6,850	21,200	46,030	83,810	95,090	97,720	99,920	98,540	95,000
4	36,480	7,070	6,910	6,820	21,620	48,750	83,810	95,360	97,810	99,830	98,540	94,910
5	33,420	6,970	6,960	6,930	21,030	50,750	83,970	95,540	98,260	99,650	98,450	94,820
6	30,270	6,900	6,960	7,030	20,760	52,410	83,970	95,630	98,630	99,550	98,360	94,910
7	27,470	6,770	6,900	7,130	20,940	53,810	84,300	95,810	98,910	99,370	98,170	95,000
8	24,480	6,780	6,910	7,210	21,410	55,250	84,470	95,990	99,370	99,280	98,080	95,000
9	21,530	6,900	6,840	7,280	21,890	57,390	84,390	96,080	99,740	99,180	98,080	94,820
10	19,700	6,940	6,710	7,300	22,620	59,840	84,390	96,170	100,000	99,000	97,990	94,640
11	18,920	6,910	6,720	7,270	23,810	62,180	84,800	96,350	100,200	98,820	97,900	94,550
12	18,130	6,910	7,330	7,610	25,720	63,310	85,150	96,440	100,100	98,720	97,720	94,370
13	17,360	6,870	9,010	7,940	27,060	63,040	85,380	96,440	100,100	98,630	97,720	94,100
14	16,610	6,820	10,680	8,080	28,340	63,770	86,140	96,530	100,000	98,450	97,620	94,010
15	15,860	6,770	16,580	8,050	29,580	65,400	87,060	96,620	100,200	98,260	97,530	93,920
16	15,100	6,720	21,530	7,890	30,310	66,780	87,830	96,710	100,500	98,170	97,260	93,750
17	14,440	7,220	21,440	7,730	31,050	67,750	88,770	96,900	100,600	97,990	97,080	93,570
18	13,770	7,590	18,830	7,700	31,810	68,240	89,460	96,900	100,500	97,900	96,800	93,390
19	13,480	7,750	15,150	7,850	32,780	69,100	90,150	96,900	100,500	97,720	96,710	93,300
20	13,170	8,140	11,260	7,970	33,820	69,880	90,750	96,800	100,500	97,530	96,620	93,120
21	11,970	8,550	8,030	8,100	34,840	70,750	91,280	96,800	100,500	97,350	96,440	93,040
22	10,600	9,600	6,910	8,210	35,930	71,910	91,800	96,800	100,400	97,170	96,350	92,950
23	9,660	10,720	6,850	8,320	36,830	72,870	92,150	96,900	100,400	97,080	96,260	92,860
24	9,220	11,070	7,040	8,490	37,660	73,910	92,600	96,900	100,300	96,990	96,170	92,770
25	8,100	11,200	7,900	9,040	38,280	74,810	93,040	96,900	100,200	97,260	96,080	92,680
26	7,500	13,750	7,760	10,280	39,040	75,800	93,300	96,800	100,300	97,530	95,810	92,510
27	7,130	17,540	7,470	10,870	39,680	76,870	93,480	96,900	100,400	98,540	95,720	92,420
28	6,900	18,500	7,120	10,620	40,240	77,800	93,920	96,900	100,400	98,630	95,540	92,240
29	6,840	17,020	6,780	9,970	-	79,130	94,190	96,990	100,300	98,630	95,540	91,800
30	6,850	14,110	6,780	10,520	-	80,640	94,460	96,900	100,200	98,820	95,450	89,800
31	6,910	-	6,850	11,820	-	81,850	-	96,900	-	98,720	95,360	-

Monthly elevation and contents, water year October 1946 to September 1947

Date	Elevation (feet)*	Contents (acre-feet)	Change in contents during month (acre-feet)
Sept. 30.....	366.55	49,800	-
Oct. 31.....	352.95	6,910	-42,890
Nov. 30.....	356.83	14,110	+7,200
Dec. 31.....	352.91	6,850	-7,260
Calendar year 1946....	352.91	6,850	-44,470
Jan. 31.....	355.77	11,820	+4,970
Feb. 28.....	364.68	40,240	+28,420
Mar. 31.....	371.28	81,850	+41,610
Apr. 30.....	372.76	94,460	+12,610
May 31.....	373.03	96,900	+2,440
June 30.....	373.39	100,200	+3,300
July 31.....	373.23	98,720	-1,480
Aug. 31.....	372.86	95,360	-3,360
Sept. 30.....	372.23	89,800	-5,560
Water year 1946-47....	372.23	89,800	+40,000

* Elevation at 12 p.m.

Long Tom River below Fern Ridge Dam, near Smithfield, Oreg.

Location.- Water-stage recorder and masonry control, lat. 44°07'25", long. 123°18'00", in NW $\frac{1}{4}$ sec. 4, T. 17 S., R. 5 W., in canalized river channel 1,000 feet downstream from Fern Ridge Dam, which impounds runoff of Long Tom River and Coyote Creek, and 2 $\frac{1}{2}$ miles south of Smithfield. Datum of gage is 332.00 feet above mean sea level, datum of 1929 (surveys by Corps of Engineers).

Drainage area.- 252 square miles.

Records available.- October 1943 to September 1947. August 1939 to September 1943 at site 2 $\frac{1}{2}$ miles downstream, below Coyote Creek.

Extremes (regulated, not including diversion to Coyote Creek).- Maximum discharge during year, 3,190 second-feet Dec. 17 (gage height, 6.28 feet); minimum, 5 second-feet Mar. 24, 1943-47: Maximum discharge, that of Dec. 17, 1946; no flow part of June 11, 12, 1944.

Remarks.- Records of flow in river channel excellent except those below 100 second-feet, which are good; records of diversion to Coyote Creek poor. A few small diversions above station. Several second-feet diverted around station to Coyote Creek channel through 24-inch concrete pipe 600 feet long, several hundred feet upstream. Record for this diversion based on weir measurements at intake and stage at recorder and on Long Tom River below Fern Ridge Dam, except those for Apr. 15 to June 1, July 15-27, which were interpolated, or computed on basis of field estimates. Fern Ridge Dam, 1,000 feet above station, was completed in 1941, and has regulated flow since Nov. 13, 1941 (see preceding page).

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

1.1	16	1.8	140	3.5	945
1.2	28	2.0	196	4.0	1,300
1.3	42	2.3	305	4.6	1,760
1.4	58	2.6	437	5.3	2,340
1.6	96	3.0	640	6.0	2,940

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,660	115	2,550	285	1,040	36	1,110	32	28	28	29	31
2	1,640	115	2,180	273	1,660	36	1,240	32	28	28	31	31
3	1,620	115	1,190	265	1,910	39	1,340	32	28	28	31	31
4	1,600	115	662	240	1,930	39	1,240	32	28	28	31	29
5	1,570	115	517	193	1,840	39	1,100	32	28	28	31	24
6	1,530	115	447	193	1,380	39	1,110	32	29	28	31	28
7	1,520	115	437	193	919	36	959	32	29	28	31	36
8	1,470	50	437	193	618	31	1,030	32	28	28	31	36
9	1,390	16	432	190	485	27	1,100	32	28	28	31	36
10	909	35	432	247	400	568	906	32	28	28	29	35
11	391	62	423	269	145	1,020	596	32	28	28	29	35
12	373	63	341	269	48	1,270	451	32	28	28	29	35
13	360	63	568	322	361	1,500	451	32	28	28	28	35
14	351	63	1,990	347	555	662	174	32	29	28	28	36
15	347	63	2,000	347	725	97	29	32	29	28	28	36
16	343	63	1,680	347	906	34	28	32	29	28	28	36
17	339	95	2,450	347	797	177	28	32	29	28	28	36
18	330	599	2,900	293	618	224	32	32	29	28	27	36
19	330	1,040	2,800	265	362	47	29	31	29	28	27	35
20	591	1,040	2,680	265	175	34	31	31	29	28	27	36
21	854	1,050	2,350	277	94	27	31	31	29	28	27	38
22	835	1,080	1,290	365	52	363	31	31	29	28	27	38
23	566	1,520	640	400	42	651	31	29	29	29	27	36
24	248	1,760	451	596	59	327	31	29	29	29	27	35
25	588	1,750	125	877	39	148	31	29	29	29	27	35
26	336	1,950	530	1,160	38	20	31	28	29	31	27	35
27	199	2,340	575	1,460	36	24	31	29	29	32	27	35
28	148	2,680	555	1,570	36	31	31	29	29	32	29	34
29	117	2,850	505	1,460	-	94	31	29	29	31	31	258
30	113	2,710	326	917	-	398	31	29	28	31	32	967
31	113	-	265	656	-	867	-	29	-	29	31	-

Month	Observed				Diversion to Coyote Creek channel (acre-feet)	Adjusted for diversion			
	Discharge in second-feet			Runoff in acre-feet		Runoff in acre-feet	Discharge in second-feet		Runoff in inches
	Maxi- mum	Mini- mum	Mean				Mean	Per square mile	
October.....	1,660	113	735	45,180	573	45,750	744	-	-
November.....	2,850	16	791	47,100	609	47,710	802	-	-
December.....	2,900	125	1,121	68,920	615	69,540	1,131	-	-
Calendar year 1946	3,010	16	578	418,400	5,450	423,900	586	2.33	31.54
January.....	1,570	190	486	29,910	569	30,480	496	-	-
February.....	1,930	38	616	34,210	466	34,680	624	-	-
March.....	1,500	20	287	17,660	395	18,060	294	-	-
April.....	1,340	28	443	26,360	367	26,730	449	-	-
May.....	32	28	31.0	1,900	246	2,150	35.0	-	-
June.....	29	28	28.6	1,700	236	1,940	32.6	-	-
July.....	32	28	28.7	1,760	129	1,890	30.7	-	-
August.....	32	27	28.9	1,780	135	1,920	31.2	-	-
September.....	967	24	72.8	4,330	240	4,570	76.8	-	-
Water year 1946-47	2,900	16	388	280,800	4,580	285,400	394	1.56	21.24

Long Tom River at Monroe, Oreg.

Location.- Water-stage recorder and concrete control, lat. 44°18'50", long. 123°17'45", in NE 1/4 sec. 33, T. 14 S., R. 5 W., in canalized river channel at Monroe, 800 feet upstream from a concrete drop structure and just downstream from Shafer Creek. Datum of gage is 270.00 feet above mean sea level, datum of 1929 (levels by Corps of Engineers).

Drainage area.- 391 square miles.

Records available.- November 1920 to September 1947 (1925-27 incomplete).

Average discharge.- 24 years (1921-25, 1927-47), 697 second-feet.

Extremes.- Maximum discharge during year, 5,600 second-feet Dec. 15 (gage height, 8.37 feet); minimum, 25 second-feet Sept. 6 (gage height, 4.15 feet).

1920-47: Maximum discharge, 19,300 second-feet Jan. 2, 1943 (gage height, 17.14 feet, datum then in use, from graph based on gage readings), includes some overflow from Willamette River near Junction City; no flow Oct. 20-22, 1944 (water filling pool at gage); minimum observed prior to regulation of flow, 7 second-feet Sept. 29, Oct. 1, 1939.

Remarks.- Records excellent except those below 100 second-feet, which are good. A few small diversions above station. Flow regulated by Fern Ridge Reservoir beginning Nov. 13, 1941 (see p. 137). In 1943 and 1944 river channel was improved from outlet of Fern Ridge Reservoir to a point below Monroe.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Water-stage recorder inspected by employee of Corps of Engineers.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

4.1	14	4.8	325	6.5	2,100
4.2	37	5.0	460	7.0	2,820
4.3	72	5.3	710	7.5	3,680
4.4	113	5.6	1,000	8.0	4,710
4.6	210	6.0	1,460	8.5	5,940

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,670	150	3,120	411	2,560	174	1,960	109	60	43	43	37
2	1,640	159	2,730	390	3,760	301	2,040	105	64	43	43	37
3	1,620	150	1,800	370	3,480	890	2,070	101	64	43	46	37
4	1,610	145	960	358	2,950	880	2,010	97	60	43	43	37
5	1,580	141	820	344	2,620	578	1,830	92	60	40	40	37
6	1,560	136	665	295	2,040	334	1,720	88	64	40	40	32
7	1,540	136	638	295	1,480	338	1,540	88	68	37	40	46
8	1,500	118	647	295	1,070	351	1,540	92	72	37	37	46
9	1,420	43	629	301	830	560	1,660	88	80	37	37	46
10	1,190	35	612	332	746	1,590	1,580	84	80	37	46	46
11	404	68	612	377	552	2,320	1,100	84	76	37	40	43
12	377	80	710	425	535	2,090	800	84	68	37	43	43
13	370	76	1,000	552	840	2,210	728	80	60	37	40	40
14	364	80	3,500	647	1,210	1,400	520	80	57	37	37	37
15	364	76	5,060	552	1,420	528	265	76	53	35	37	40
16	370	76	3,400	505	1,660	358	221	76	60	35	35	40
17	364	88	3,430	482	1,460	364	205	72	60	35	35	40
18	351	576	3,700	453	1,140	535	195	72	80	35	35	37
19	364	1,560	3,340	425	830	277	190	68	53	35	35	37
20	460	1,460	3,170	439	498	243	179	68	50	35	35	37
21	920	1,700	2,840	439	404	216	169	64	50	32	35	40
22	900	2,130	1,920	498	283	453	159	60	50	35	37	40
23	840	2,510	900	603	260	1,100	145	60	50	35	35	40
24	122	2,960	782	870	226	970	136	57	46	37	35	37
25	612	2,730	325	1,400	210	658	127	57	46	37	35	40
26	460	3,640	629	2,170	200	307	127	53	46	43	35	37
27	238	4,850	755	2,240	184	248	118	57	46	53	35	40
28	200	4,600	746	2,250	174	221	118	57	46	64	35	37
29	150	4,090	710	2,010	-	243	113	57	46	53	40	80
30	136	3,530	512	1,700	-	674	113	53	46	46	37	629
31	141	-	418	1,240	-	1,560	-	53	-	46	37	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	25,637	1,670	122	769	-	-	47,280
November	38,133	4,850	35	1,271	-	-	75,640
December	51,080	5,060	325	1,648	-	-	101,300
Calendar year 1946	315,955	5,060	30	865	2.21	30.04	628,400
January	25,668	2,250	295	763	-	-	46,940
February	35,622	3,760	174	1,201	-	-	66,690
March	22,999	2,320	174	742	-	-	45,620
April	25,678	2,070	113	789	-	-	46,960
May	2,332	109	53	75.2	-	-	4,630
June	1,741	80	46	58.0	-	-	3,450
July	1,239	64	32	40.0	-	-	2,460
August	1,183	46	35	38.2	-	-	2,350
September	1,615	629	32	60.5	-	-	3,600
Water year 1946-47	225,327	5,060	32	617	1.58	21.43	446,900

Coyote Creek near Crow, Oreg.

Location.- Water-stage recorder and concrete control, lat. 44°01'19", long. 123°15'17", in NE 1/4 sec. 11, T. 18 S., R. 5 W., just upstream from backwater of Fern Ridge Reservoir, 1 mile downstream from Spencer Creek, and 5 miles northeast of Crow. Datum of gage is 374.0 feet above mean sea level (Corps of Engineers bench mark).

Drainage area.- 94 square miles.

Records available.- June 1940 to September 1947.

Extremes.- Maximum discharge during year, 1,920 second-feet Nov. 27 (gage height, 11.26 feet); minimum, 1.0 second-foot Oct. 16.

1940-47: Maximum discharge, 9,260 second-feet Dec. 28, 1945 (gage height, 14.13 feet), from rating curve extended above 4,700 second-feet; no flow at times in August and September 1940.

Remarks.- Records fair except those below 10 second-feet and those for Oct. 20 to Nov. 18, which are poor.

Rating tables, water year 1946-47, except periods of backwater
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-19)

Oct. 1 to Nov. 26				Nov. 27 to Sept. 13						
1.8	64	6.0	320	0.4	1.1	1.3	44	8.0	557	
2.6	93	8.0	548	.5	2.5	1.8	64	9.5	880	
3.4	134	9.5	880	.6	5.0	2.6	102	10.5	1,320	
4.5	204			.7	10	3.4	149	11.5	2,210	
				.8	17	4.5	220			
				1.0	30	6.0	335			
Note.- Same as following										

Note.- Same as following table below 1.8 and above 9.5 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.5	45	338	84	808	90	768	49	14	8.6	10	2.7
2	1.3	50	249	78	1,210	201	772	45	16	8.1	8.6	2.7
3	1.3	h48	202	70	978	681	715	42	18	8.1	7.6	2.2
4	1.3	h48	185	64	719	511	584	40	18	7.6	8.1	2.2
5	1.3	h44	157	68	498	348	502	36	17	7.6	8.6	2.0
6	1.3	h40	133	62	360	251	451	35	20	7.1	7.1	2.2
7	1.3	h35	117	64	278	226	373	34	28	6.6	6.6	2.3
8	1.3	h35	116	62	228	219	367	32	48	6.6	6.0	3.1
9	1.6	39	109	63	193	254	406	31	72	6.0	5.5	4.4
10	1.6	39	96	61	175	727	362	28	69	5.5	5.0	4.1
11	1.6	c35	90	68	159	936	300	26	51	5.0	5.0	3.8
12	1.5	c32	111	98	327	742	237	25	34	5.0	5.5	3.8
13	1.2	c30	278	124	430	481	199	23	24	4.7	4.7	3.8
14	1.1	c28	856	126	398	330	172	22	20	4.7	4.1	
15	1.1	c27	1,490	102	477	260	151	21	18	4.7	3.8	
16	1.0	c27	1,210	89	482	212	132	20	18	4.4	3.6	
17	1.5	c31	830	86	454	178	121	19	23	4.4	3.1	
18	2.5	84	535	86	392	155	114	18	20	4.4	2.9	
19	2.9	295	362	100	308	137	103	18	17	4.1	2.9	
20	14	301	267	103	244	123	95	17	16	3.8	2.9	
21	43	281	219	102	205	109	92	16	14	3.8	2.9	c2.5
22	45	532	182	103	175	194	81	16	14	4.1	2.9	
23	38	586	156	117	153	358	72	15	12	3.1	2.9	
24	38	558	137	171	136	353	66	14	12	c3.1	2.9	
25	34	447	123	260	124	283	62	13	10	c3.1	2.9	
26	30	1,160	119	632	114	225	59	13	10	c5.0	2.9	
27	28	1,620	129	711	102	185	55	13	10	10	2.7	
28	30	1,080	110	525	95	159	54	14	11	31	2.5	
29	32	775	99	356	-	166	56	13	11	34	2.3	
30	32	506	93	390	-	276	55	12	10	17	2.2	
31	38	-	86	379	-	725	-	12	-	13	2.5	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	430.2	45	1.0	13.9	0.148	0.17	853
November	8,835	1,620	27	295	3.14	3.50	17,530
December	9,184	1,490	86	296	3.15	3.63	18,220
Calendar year 1946	61,724.5	1,710	.1	169	1.80	24.40	122,400
January	5,414	711	61	175	1.86	2.14	20,740
February	10,222	1,210	85	368	3.68	4.04	20,280
March	10,075	936	90	325	3.46	3.99	19,980
April	7,556	772	54	252	2.68	2.99	14,990
May	732	49	12	23.6	.251	.29	1,450
June	675	72	10	22.5	.239	.27	1,340
July	244.2	34	3.1	7.88	.084	.10	484
August	141.2	10	2.2	4.55	.048	.06	280
September	81.8	4.4	-	2.73	.029	.03	162
Water year 1946-47	53,594.4	1,620	-	147	1.56	21.21	106,300

c Stage-discharge relation affected by backwater; discharge computed on basis of records for Long Tom River near Noti.

h Computed from staff-gage reading.

Marys River near Philomath, Oreg.

Location.- Wire-weight gage, lat. 44°31'35", long. 123°20'00", in SW $\frac{1}{4}$ sec. 18, T. 12 S., R. 5 W., at bridge 2 miles upstream from Muddy Creek and 2 miles southeast of Philomath.

Drainage area.- 155 square miles (including drainage area of Evergreen Creek above road crossing $1\frac{1}{2}$ miles south of station).

Records available.- October 1940 to September 1947.

Extremes.- Maximum discharge during year, 8,250 second-feet Dec. 15 (gage height, 20.67 feet, from floodmark); minimum observed, 10 second-feet Oct. 1.

1940-47: Maximum discharge, that of Dec. 15, 1946; minimum observed, 6 second-feet Sept. 12, 13, 1944.

Remarks.- Records fair except those above 3,000 second-feet, which are poor. Records include flow of Evergreen Creek at road crossing $1\frac{1}{2}$ miles south, with which overflow from Marys River may at times be mingled. Gage read twice daily. City of Corvallis diverts municipal supply from headwaters; other small diversions above station for irrigation. No regulation.

Rating tables, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 17, July 28 to Sept. 30)-

Oct. 1 to Dec. 13					Dec. 14 to Sept. 30				
2.7	8	4.3	154	9.5	1,040	16.5	2,860	19.0	4,870
2.9	19	5.0	243	12.0	1,540	17.5	3,370	20.0	6,670
3.1	33	6.0	395	15.0	2,300	18.0	3,710	20.5	7,820
3.3	49	7.0	570	16.5	2,860	18.5	4,200		
3.7	87	8.0	755						

Note.- Same as preceding table below 16.5 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	285	844	271	3,110	254	491	178	87	58	35	26
2	12	275	717	254	4,310	356	498	166	100	57	35	21
3	15	207	595	237	2,670	759	574	158	136	56	35	25
4	15	162	556	221	1,840	602	709	136	131	55	37	20
5	13	134	507	211	1,380	498	892	144	131	54	39	22
6	15	114	475	212	1,040	439	888	139	116	51	35	20
7	18	101	446	206	877	439	782	136	147	51	31	35
8	14	88	556	198	732	461	827	131	190	47	30	32
9	15	80	570	188	624	784	812	129	260	46	31	38
10	14	80	574	193	548	1,790	774	124	221	43	32	34
11	14	81	711	258	512	1,840	684	121	166	43	31	35
12	12	74	1,740	362	759	1,520	581	116	139	43	32	31
13	12	68	2,860	393	1,110	512	106	121	44	29	25	25
14	12	63	5,700	349	896	924	456	107	106	44	25	24
15	13	58	7,380	297	956	757	409	105	96	43	27	22
16	11	54	4,750	274	842	628	365	98	97	43	23	22
17	12	62	2,430	263	725	548	346	97	96	43	23	20
18	15	1,230	1,620	251	631	477	348	94	91	38	24	22
19	14	1,410	1,210	332	565	426	316	90	81	38	25	22
20	196	911	953	370	502	386	300	68	77	38	25	20
21	193	763	789	420	454	352	282	83	73	37	25	24
22	162	2,000	680	446	415	372	257	79	70	35	23	21
23	149	2,190	574	502	378	365	242	75	66	35	24	21
24	143	1,820	502	774	349	344	224	71	62	34	25	21
25	120	1,480	449	1,060	321	303	213	67	60	35	24	18
26	167	2,170	405	2,000	303	277	203	68	60	36	23	20
27	210	2,750	392	1,880	282	258	193	66	70	46	24	21
28	161	1,950	359	1,490	268	246	188	67	65	65	22	21
29	119	1,470	321	1,120	-	249	194	67	73	55	22	21
30	177	1,100	294	1,170	-	588	193	66	65	45	25	22
31	189	-	277	1,010	-	610	-	67	-	40	22	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	2,242	210	10	72.3	0.466	0.54	4,450
November	23,230	2,750	54	774	4.99	5.57	46,080
December	40,216	7,380	277	1,297	8.37	9.65	79,770
Calendar year 1946	181,356	7,380	8	497	3.21	43.50	359,700
January	17,212	2,000	188	555	3.58	4.13	34,140
February	27,397	4,310	268	978	6.31	6.57	54,340
March	19,022	1,840	246	614	3.96	4.56	37,730
April	13,733	892	188	458	2.95	3.30	27,240
May	3,239	178	66	104	.671	.78	6,420
June	3,273	260	60	109	.703	.79	6,490
July	1,398	65	34	45.1	.291	.34	2,770
August	865	39	22	27.8	.179	.21	1,710
September	726	36	18	24.2	.156	.17	1,440
Water year 1946-47	152,551	7,380	10	41.8	2.70	36.61	302,600

Rock Creek near Philomath, Oreg.

Location.- Water-stage recorder and concrete control, lat. 44°30'05", long. 123°26'20", in NE $\frac{1}{4}$ sec. 29, T. 12 S., R. 6 W., 250 feet upstream from State Highway 34, a quarter of a mile upstream from mouth, and $\frac{1}{4}$ miles southwest of Philomath. Datum of gage is 354.16 feet above mean sea level (Oregon State Highway Department bench mark).

Records available.- October 1945 to September 1947.

Extremes.- Maximum discharge during year, 760 second-feet Dec. 15 (gage height, 4.09 feet); minimum, 0.5 second-foot Aug. 27, 28, Sept. 1-6, 15, 20, 21, 23-25.
1945-47: Maximum discharge, 1,090 second-feet Nov. 27, 1945 (gage height, 4.80 feet); minimum, 0.4 second-foot Aug. 24, Sept. 10, 11, 1945.

Remarks.- Records good except those for periods of no gage-height record; which are fair. Flow regulated by small storage reservoir operated by city of Corvallis; most of low-water flow diverted to Corvallis water-supply system.

Cooperation.- Water-stage recorder inspected by employee of city of Corvallis.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.5	0.5	1.4	14	2.4	164
.6	.8	1.6	25	2.7	246
.8	1.8	1.8	45	3.0	340
1.0	4.3	2.0	76	3.5	520
1.2	7.7	2.2	116		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.7	48	87	a30	392	38	66	22	12	6.8	3.7	0.6
2	2.4	30	76	h29	442	74	62	19	16	6.4	3.5	.6
3	1.7	21	69	a27	246	132	62	18	30	6.4	4.0	.6
4	1.0	16	68	a25	169	97	101	18	22	6.3	5.1	.8
5	1.8	13	61	a23	132	76	123	17	18	5.9	4.0	1.0
6	1.8	11	58	a24	114	64	114	16	15	5.6	3.3	.8
7	2.4	9.5	59	a23	101	66	91	16	34	5.4	2.9	7.5
8	2.6	9.3	87	22	89	68	91	16	44	5.4	2.8	4.5
9	2.1	9.1	86	22	80	146	84	16	51	5.3	2.9	3.3
10	1.4	12	78	24	71	276	78	15	36	4.9	2.9	2.8
11	.8	9.3	97	28	69	209	68	14	24	4.8	2.7	2.5
12	.7	8.4	206	30	110	149	62	11	a20	4.9	2.6	2.2
13	.6	7.7	246	32	190	114	56	10	a20	4.6	2.4	2.0
14	1.0	7.3	470	29	139	93	53	13	a15	4.3	2.4	1.7
15	.7	6.3	519	26	123	80	48	12	a15	4.3	1.6	.7
16	.7	5.9	270	25	110	69	44	11	a20	4.5	1.5	.8
17	.9	18	182	25	95	62	44	11	a23	3.2	2.4	.6
18	1.1	308	134	27	84	58	43	11	a12	3.6	1.4	.6
19	3.4	152	106	34	73	53	40	11	9.8	3.7	2.2	.6
20	82	87	93	41	66	49	37	10	9.8	2.6	1.6	.6
21	22	132	82	46	61	46	36	11	9.1	2.2	.6	.6
22	36	292	69	51	56	49	32	9.5	8.6	2.1	.7	.6
23	29	261	59	59	51	48	30	8.6	8.4	2.0	.9	.6
24	17	187	a53	112	49	43	27	7.7	7.9	2.1	.8	.6
25	23	156	a48	154	45	38	26	7.2	7.7	2.0	.6	.7
26	31	301	a46	226	43	36	24	7.0	7.5	3.3	.6	.8
27	22	327	a43	149	42	34	22	7.2	11	6.3	.6	.7
28	15	209	a39	110	40	31	22	7.3	9.1	11	.6	.8
29	13	137	a37	89	-	34	25	7.0	7.7	6.4	.8	.8
30	42	103	a35	101	-	93	24	7.2	7.3	5.1	.8	.7
31	30	-	a31	95	-	86	-	7.3	-	4.3	.7	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	390.8	82	0.6	12.6	775
November.....	2,895.8	327	5.9	96.5	5,740
December.....	3,594	519	31	116	7,130
Calendar year 1946.....	20,453.2	678	.4	56.0	40,570
January.....	1,738	226	22	56.1	3,450
February.....	3,282	442	40	117	6,510
March.....	2,511	276	31	81.0	4,980
April.....	1,835	123	22	54.5	3,240
May.....	374.0	22	7.0	12.1	742
June.....	530.9	51	7.3	17.7	1,050
July.....	145.7	11	2.0	4.70	289
August.....	63.6	5.1	.6	2.05	126
September.....	41.7	7.5	.6	1.39	83
Water year 1946-47.....	17,200.5	519	.6	47.1	34,120

Peak discharge.- Nov. 18 (2:30 p.m.) 540 sec.-ft.; Dec. 15 (12:30 a.m.) 760 sec.-ft.; Feb. 1 (1 a.m.) 620 sec.-ft.; Feb. 2 (5:30 a.m.) 568 sec.-ft.

a No gage-height record; discharge computed on basis of recorded range in stage and records for Marys River near Philomath.

h Computed from staff-gage readings.

Calapooya River at Holley, Oreg.

Location.- Staff-gage, lat. 44°21', long. 122°47', near line between secs. 14 and 15, T. 14 S., R. 1 W., a quarter of a mile southwest of Holley and 4 miles upstream from Brush Creek. Datum of gage is 527.20 feet above mean sea level, datum of 1929.

Drainage area.- 99 square miles.

Records available.- September 1935 to September 1947.

Average discharge.- 12 years, 396 second-feet.

Extremes.- Maximum discharge during year, 6,150 second-feet Dec. 14 (gage height, 9.48 feet); minimum observed, 27 second-feet Oct. 1, 15, 16.
1935-47: Maximum discharge, 12,200 second-feet Dec. 28, 1945 (gage height, 14.1 feet, from floodmark), from rating curve extended above 5,300 second-feet by logarithmic plotting; minimum observed, 13 second-feet (regulated) Sept. 8, 1940.

Remarks.- Records good. Gage read once daily, oftener during periods of high water. No diversions above station; slight regulation at times during low-water periods by small dam upstream.

Cooperation.- Gage-height record collected in cooperation with U.S. Weather Bureau.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 13						Dec. 14 to Sept. 30					
0.8	22	1.7	215	4.0	1,340	0.8	34	2.0	295	4.8	1,770
.8	39	2.0	315	4.8	1,880	1.0	58	2.4	440	5.6	2,370
1.0	63	2.4	475	5.6	2,490	1.2	88	2.8	610	6.4	3,030
1.2	95	2.8	660	6.4	3,130	1.4	127	3.3	855	7.6	4,150
1.4	137	3.3	920			1.7	200	4.0	1,250	9.0	5,600

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	610	854	260	1,470	195	730	224	88	198	85	46
2	28	498	740	248	2,100	218	805	206	134	175	80	44
3	41	387	620	230	1,780	460	830	195	152	160	78	43
4	36	343	502	215	1,230	386	888	185	195	148	85	42
5	50	323	443	203	1,050	390	1,160	175	155	136	80	41
6	41	298	395	218	960	320	1,030	165	165	129	78	40
7	35	270	355	200	877	312	845	158	160	123	75	72
8	51	239	574	190	755	448	948	180	302	116	72	99
9	40	209	565	175	665	695	1,030	185	1,090	110	85	71
10	34	276	601	175	601	1,970	943	185	765	104	75	75
11	31	236	775	251	547	1,710	868	162	529	104	66	61
12	29	207	2,490	264	695	1,080	760	150	393	101	62	54
13	28	187	3,990	245	730	845	735	143	316	93	59	49
14	28	174	5,650	230	637	785	705	132	264	90	58	45
15	27	161	5,350	200	610	646	610	129	212	88	55	44
16	27	149	2,570	195	556	565	520	123	224	85	55	42
17	28	147	1,530	203	504	504	480	119	245	82	54	45
18	37	1,600	1,190	206	448	448	610	114	203	80	53	42
19	32	1,850	845	330	400	393	512	110	185	78	52	45
20	475	1,040	745	379	568	358	464	106	175	75	50	53
21	538	926	628	472	337	323	408	102	165	72	49	40
22	625	1,470	538	440	302	400	365	99	150	71	48	38
23	475	1,500	464	998	281	472	330	97	143	71	53	37
24	395	1,260	400	1,420	260	520	302	93	136	68	52	36
25	419	1,460	365	1,420	254	456	281	92	127	69	49	37
26	610	3,630	351	2,760	230	412	257	88	125	85	48	37
27	435	3,270	440	1,510	224	465	242	88	134	134	45	36
28	323	2,370	351	1,080	215	337	230	88	480	288	44	34
29	248	1,560	323	805	-	351	236	88	295	145	45	35
30	475	1,160	295	755	-	351	260	85	260	106	62	34
31	379	-	281	610	-	610	-	85	-	93	54	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	6,047	625	27	195	1.97	2.27	11,990
November	27,810	3,630	147	927	9.36	10.45	55,160
December	35,220	5,650	281	1,136	11.5	13.23	69,860
Calendar year 1946	176,580	5,650	-	484	4.89	66.34	350,200
January	16,867	2,760	175	544	5.49	6.34	33,460
February	19,088	2,100	215	682	6.89	7.17	37,860
March	17,305	1,970	195	558	5.64	6.50	34,320
April	18,382	1,160	230	613	6.19	6.91	36,460
May	4,149	224	85	134	1.35	1.66	8,230
June	7,981	1,090	88	266	2.69	3.00	15,630
July	3,477	288	68	112	1.13	1.51	6,900
August	1,908	85	44	61.5	.623	.72	3,780
September	1,417	89	34	47.2	.477	.53	2,810
Water year 1946-47	159,647	5,650	27	437	4.41	59.99	316,700

WILLAMETTE RIVER BASIN

Calapooya River at Albany, Oreg.

Location.- Wire-weight gage, lat. 44°37'15", long. 123°07'40", in NW $\frac{1}{4}$ sec. 13, T. 11 S., R. 4 W., half a mile downstream from Oak Creek, $\frac{1}{2}$ miles southwest of Albany, and 3 miles upstream from mouth. Datum of gage is 180.37 feet above mean sea level (datum of 1929).

Drainage area.- 362 square miles.

Records available.- October 1940 to September 1947.

Extremes.- Maximum discharge observed during year, 11,500 second-feet Dec. 16 (gage height, 20.55 feet, backwater from Willamette River); minimum observed, 18 second-feet (regulated) Oct. 1, Sept. 29; minimum daily, 19 second-feet Sept. 29.

1940-47: Maximum discharge, 18,400 second-feet Jan. 2, 1943; maximum gage height, 25.5 feet Jan. 2, 1943, from graph based on gage readings, backwater from Willamette River; minimum discharge observed, 8 second-feet (regulated) Sept. 12, Oct. 24, 1944; minimum daily, 12 second-feet Aug. 26, 1941, Sept. 11, 1944.

Remarks.- Records fair. Gage read twice daily, oftener at high stages. A few small diversions above station for irrigation. Diurnal fluctuation caused by ponds at flour mills near Shedd.

Rating tables, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Dec. 15-18)

Oct. 1 to Dec. 15					Dec. 16 to Sept. 30					
1.2	23	2.0	73	1.3	21	3.6	340	12.0	3,500	
1.4	32	2.5	135	1.5	34	4.2	485	14.0	4,700	
1.7	49	3.2	260	1.7	49	5.0	720	16.0	6,200	
Note.- Same as follow-					2.0	79	6.0	1,040	18.0	9,200
ing table above 3.2 feet.					2.5	143	7.5	1,570	19.0	11,400
					3.2	260	9.5	2,370		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	488	2,490	428	2,980	320	1,860	316	106	235	114	55
2	28	666	1,630	445	4,230	330	2,070	292	114	210	101	66
3	34	600	1,260	390	4,120	825	2,370	256	143	197	96	60
4	31	475	1,120	336	3,760	1,080	2,440	249	161	177	93	32
5	30	405	1,010	310	2,600	792	2,190	231	187	168	99	56
6	30	380	816	304	1,900	630	2,410	231	190	154	95	60
7	32	350	738	328	1,580	624	2,200	221	200	154	85	62
8	69	328	738	324	1,380	792	1,840	212	188	150	79	27
9	35	284	921	320	1,180	1,120	2,230	217	505	137	74	79
10	37	288	846	308	1,020	2,600	2,150	221	1,220	85	73	93
11	38	320	858	358	907	4,050	1,740	224	876	104	80	85
12	40	302	1,510	505	1,260	3,960	1,420	200	603	108	78	78
13	42	268	3,140	894	1,900	2,480	1,170	197	440	89	79	70
14	24	244	5,400	765	1,750	1,550	1,050	185	346	104	78	66
15	28	233	9,160	600	2,090	1,200	935	190	304	99	66	42
16	33	226	11,000	395	2,010	960	816	128	278	94	62	54
17	34	200	6,810	356	1,420	858	705	143	288	93	65	44
18	34	328	4,200	370	991	738	720	146	282	87	53	53
19	28	1,650	2,670	485	816	654	756	143	246	82	56	39
20	38	2,830	1,710	748	702	576	708	137	224	92	68	37
21	83	2,510	1,310	849	627	516	627	131	204	82	68	38
22	636	2,450	1,050	843	558	612	534	128	190	78	64	43
23	564	3,200	888	1,050	490	1,420	465	122	184	78	62	59
24	534	3,320	759	1,790	458	1,650	420	118	180	77	53	41
25	445	2,790	669	2,500	422	1,130	378	113	164	74	50	44
26	492	2,970	615	3,280	395	807	344	109	164	74	66	42
27	627	5,110	732	4,240	378	1,135	308	113	155	89	60	33
28	516	7,000	792	3,840	338	676	304	104	197	137	58	46
29	402	6,080	597	2,380	-	528	304	102	282	202	62	19
30	324	4,250	525	1,620	-	1,500	330	109	292	200	53	47
31	468	-	465	1,770	-	1,960	-	99	-	144	68	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	5,785	636	.25	187	0.517	0.59	11,470
November	50,545	7,000	200	1,685	4.65	5.19	100,300
December	66,429	11,000	465	2,143	5.92	6.82	131,800
Calendar year 1946	342,554	11,000	19	939	2.59	35.17	679,500
January	33,121	4,240	304	1,068	2.95	3.40	65,690
February	42,140	4,230	338	1,505	4.16	4.33	83,580
March	37,516	4,050	320	1,210	3.34	3.85	74,410
April	35,852	2,440	304	1,195	3.30	3.68	71,110
May	5,387	316	99	174	.481	.55	10,880
June	8,913	1,220	106	297	.820	.92	17,880
July	5,852	255	74	124	.543	.60	7,640
August	2,258	114	50	72.8	.201	.23	4,480
September	1,600	93	15	53.3	.147	.16	3,170
Water year 1946-47	293,398	11,000	19	804	2.22	30.12	582,000

North Santiam River at Detroit, Oreg.

Location.- Water-stage recorder, lat. 44°43', long. 122°08', in NE $\frac{1}{4}$ sec. 12, T. 10 S., R. 5 E., 2 $\frac{1}{2}$ miles upstream from Breitenbush River, 2 $\frac{1}{2}$ miles downstream from Boulder Creek, and 1 mile east of Detroit. Datum of gage is 1,475.68 feet above mean sea level, datum of 1929.

Drainage area.- 224 square miles.

Records available.- January 1907 to October 1909, October 1928 to September 1947. August 1910 to October 1913 at site above Boulder Creek (records not equivalent).

Average discharge.- 20 years (1907-8, 1928-47), 915 second-feet.

Extremes.- Maximum discharge during year, 15,800 second-feet Dec. 15 (gage height, 10.00 feet); minimum, 316 second-feet (regulated) Oct. 1 (gage height, 0.38 foot); minimum daily, 408 second-feet Sept. 30.

1907-9, 1910-11, 1928-47: Maximum discharge, 20,300 second-feet Dec. 28, 1945 (gage height, 11.24 feet); minimum, 254 second-feet Oct. 7, 1940 (gage height, 0.15 foot).

Remarks.- Records good. No diversion above station; slight diurnal fluctuation caused by power plant at Idanha.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 14						Dec. 15 to Sept. 30					
0.7	410	2.0	1,000	4.2	2,740	0.6	390	2.7	1,480	5.8	4,880
1.2	590	2.7	1,480	5.0	3,720	1.0	520	3.4	2,040	7.0	6,990
1.6	770	3.4	2,040	5.8	4,880	1.5	740	4.2	2,810	8.0	9,360
Note.- Same as following table above 5.8 feet.						2.0	1,020	5.0	3,710	9.0	12,400

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	410	800	1,740	882	1,260	852	1,270	1,150	710	650	520	444
2	413	705	1,530	835	1,660	918	1,260	1,180	765	636	504	444
3	428	662	1,400	795	1,600	960	1,220	1,180	775	620	540	438
4	434	646	1,390	780	1,410	936	1,180	1,160	795	608	520	435
5	446	630	1,320	775	1,300	882	1,180	1,130	760	596	500	432
6	422	626	1,210	760	1,250	852	1,150	1,150	750	588	488	429
7	434	630	1,160	735	1,240	864	1,100	1,120	765	584	480	492
8	440	618	1,210	720	1,200	912	1,130	1,090	1,010	572	474	474
9	428	606	1,140	700	1,150	1,110	1,150	1,100	1,340	572	480	480
10	416	634	1,260	735	1,100	1,740	1,180	1,000	1,210	576	474	465
11	413	606	1,900	725	1,100	1,760	1,160	918	1,060	564	465	447
12	415	590	4,380	725	1,340	1,490	1,130	876	936	560	465	438
13	410	574	6,840	715	1,640	1,320	1,180	830	864	560	459	432
14	410	566	11,500	680	1,610	1,250	1,270	805	805	552	459	426
15	410	554	11,200	655	1,610	1,260	1,340	775	755	544	459	423
16	410	542	4,640	650	1,600	1,310	1,350	770	790	536	456	432
17	413	754	3,030	640	1,510	1,360	1,620	755	790	532	453	432
18	413	3,440	2,330	636	1,580	1,360	1,930	740	745	528	450	429
19	434	3,090	1,930	636	1,270	1,310	1,700	725	710	520	447	420
20	864	2,010	1,690	632	1,190	1,260	1,550	730	685	512	441	417
21	838	1,620	al,500	645	1,120	1,230	1,390	735	655	512	438	414
22	1,020	1,830	al,400	700	1,070	1,520	1,260	720	632	504	441	417
23	928	1,990	al,300	1,130	1,030	1,500	1,180	715	624	496	444	414
24	1,100	1,770	al,200	1,940	1,010	1,370	1,130	720	616	492	438	414
25	1,400	2,100	al,150	2,330	978	1,270	1,110	720	612	496	438	417
26	1,230	3,340	al,150	3,140	942	1,180	1,100	740	632	524	438	411
27	976	4,360	1,120	2,180	906	1,120	1,120	730	785	572	438	414
28	815	3,600	1,030	1,750	876	1,070	1,120	705	805	612	438	420
29	740	2,580	990	1,500	-	1,110	1,230	725	720	532	450	411
30	735	2,060	930	1,350	-	1,190	1,200	760	675	516	477	408
31	720	-	906	1,210	-	1,220	-	690	-	532	450	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	19,363	1,400	410	625	2.79	3.21	38,410
November	44,533	4,360	542	1,484	6.62	7.39	88,530
December	75,476	11,500	906	2,435	10.9	12.53	149,700
Calendar year 1946	435,007	11,500	404	1,192	5.32	72.21	862,900
January	32,286	3,140	632	1,041	4.65	5.36	64,040
February	35,352	1,660	876	1,263	5.64	5.87	70,120
March	37,486	1,760	852	1,209	5.40	6.22	74,350
April	37,890	1,930	1,100	1,263	5.64	6.29	75,150
May	27,144	1,180	690	876	3.91	4.51	53,840
June	25,776	1,340	612	793	3.54	3.95	47,180
July	17,198	650	492	555	2.49	2.86	34,110
August	14,424	540	438	465	2.08	2.39	28,610
September	12,969	492	408	432	1.93	2.15	25,720
Water year 1946-47	377,897	11,500	408	1,035	4.62	62.73	749,500

Peak discharge.- Nov. 18 (9:30 p.m.) 5,020 sec.-ft.; Nov. 27 (3 to 5 p.m.) 4,910 sec.-ft.; Dec. 15 (5:30 a.m.) 15,800 sec.-ft.; Jan. 26 (3 a.m.) 3,760 sec.-ft.

a No gage-height record; discharge computed on basis of records for North Santiam River above Mayflower Creek and Breitenbush River above French Creek, near Detroit.

North Santiam River above Mayflower Creek, near Detroit, Oreg.

Location.- Water-stage recorder, lat. 44°44', long. 122°15', in NW $\frac{1}{4}$ sec. 7, T. 10 S., R. 5 E., 850 feet downstream from axis of Detroit dam site, 0.3 mile upstream from Mayflower Creek, and 5 miles west of Detroit. Datum of gage is 1,192.20 feet above mean sea level, datum of 1929.

Drainage area.- 438 square miles.

Records available.- October 1938 to September 1947.

Extremes.- Maximum discharge during year, 31,100 second-feet Dec. 15 (gage height, 15.75 feet), from rating curve extended above 17,000 second-feet by logarithmic plotting; minimum, 531 second-feet Oct. 18 (gage height, 3.73 feet).

1938-47: Maximum discharge, 41,200 second-feet Dec. 28, 1945 (gage height, 18.20 feet), from rating curve extended above 17,000 second-feet by logarithmic plotting; minimum, 410 second-feet (regulated) Oct. 25, 1942 (gage height, 2.87 feet); minimum daily, 432 second-feet Sept. 1, 1940.

Remarks.- Records good. No diversion above station; slight diurnal fluctuation by power plant at Idanha

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Nov. 19 to Dec. 13)

Oct. 1 to Dec. 14					Dec. 15 to Sept. 30				
3.7	510	6.0	2,780	10.5	13,200	3.7	540	6.0	2,710
4.2	880	6.8	4,120	12.5	19,300	4.2	875	6.8	4,020
4.7	1,290	7.8	6,100	14.5	26,300	4.7	1,270	7.8	6,100
5.3	1,860	9.0	9,040			5.3	1,820		

Note.- Same as preceding table above 7.8 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	580	2,040	3,740	1,640	2,810	1,590	2,720	2,040	1,230	1,310	822	624
2	594	1,650	3,150	1,550	4,820	1,760	2,720	2,210	1,350	1,250	779	618
3	629	1,480	2,840	1,480	4,400	1,980	2,570	2,200	1,360	1,200	815	608
4	650	1,410	2,970	1,440	3,460	1,920	2,460	2,110	1,520	1,140	800	600
5	720	1,360	2,750	1,410	3,040	1,790	2,490	2,030	1,390	1,100	751	594
6	636	1,340	2,470	1,410	2,910	1,690	2,490	2,070	1,390	1,070	730	594
7	650	1,380	2,300	1,350	2,920	1,690	2,340	1,990	1,410	1,050	716	779
8	685	1,300	2,600	1,320	2,750	1,860	2,440	1,890	2,330	1,010	702	822
9	629	1,240	2,500	1,300	2,500	2,550	2,610	1,910	3,510	955	723	845
10	608	1,320	2,970	1,360	2,330	5,370	2,680	1,720	2,960	980	723	808
11	587	1,240	5,600	1,410	2,330	5,410	2,580	1,570	2,400	965	688	709
12	580	1,170	14,800	1,390	3,280	3,870	2,420	1,490	1,980	950	674	660
13	573	1,110	19,300	1,360	4,970	3,140	2,580	1,450	1,760	935	667	642
14	566	1,070	25,500	1,300	4,420	2,910	2,850	1,390	1,580	920	660	618
15	559	1,040	24,300	1,240	4,100	2,940	2,920	1,350	1,480	905	654	600
16	552	1,000	12,200	1,240	3,940	3,080	2,820	1,350	1,500	882	642	606
17	552	1,740	5,380	1,210	3,480	3,150	3,230	1,330	1,540	852	636	618
18	552	11,300	5,390	1,190	3,040	3,030	4,420	1,300	1,410	845	636	618
19	629	8,960	4,280	1,240	2,700	2,850	3,600	1,270	1,330	830	636	594
20	2,180	4,800	3,580	1,240	2,430	2,650	3,180	1,300	1,280	815	624	588
21	2,120	3,580	3,150	1,350	2,250	2,510	2,740	1,310	1,200	793	618	582
22	2,560	4,530	2,790	1,590	2,120	3,140	2,450	1,300	1,140	779	618	582
23	2,570	5,400	2,510	4,280	2,040	3,120	2,220	1,260	1,130	765	630	582
24	3,040	6,550	2,530	7,900	1,980	2,740	2,090	1,300	1,110	758	618	576
25	4,010	6,110	2,160	7,840	1,910	2,470	2,000	1,290	1,100	765	612	576
26	3,360	11,300	2,150	10,900	1,820	2,250	1,990	1,300	1,190	830	606	576
27	2,280	13,200	2,170	6,170	1,740	2,070	2,030	1,320	1,650	935	606	570
28	1,780	10,000	1,970	4,400	1,660	1,950	2,060	1,240	1,920	1,110	600	612
29	1,550	6,340	1,850	3,410	-	2,000	2,250	1,230	1,590	912	618	594
30	1,560	4,660	1,750	2,960	-	2,250	2,220	1,330	1,410	838	695	576
31	1,570	-	1,690	2,510	-	2,400	-	1,200	-	838	648	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	40,111	4,010	552	1,294	2.95	3.41	79,560
November	117,600	13,200	1,000	3,920	8.95	9.99	223,300
December	175,140	25,500	1,690	5,650	12.9	14.87	347,400
Calendar year 1946	948,795	25,500	552	2,599	5.93	80.59	1,882,000
January	80,370	10,900	1,190	2,593	5.92	6.82	159,400
February	82,150	4,970	1,660	2,934	6.70	6.98	162,900
March	82,160	5,410	1,590	2,650	6.05	6.98	163,000
April	78,150	4,420	1,990	2,605	5.95	6.64	155,000
May	48,050	2,210	1,200	1,650	3.54	4.08	95,310
June	48,150	3,510	1,103	1,605	3.66	4.09	95,500
July	29,337	1,310	758	946	2.16	2.49	58,190
August	20,947	822	600	676	1.54	1.78	41,550
September	18,969	845	570	632	1.44	1.61	37,620
Water year 1946-47	821,134	25,500	552	2,250	5.14	69.74	1,629,000

Peak discharge.- Nov. 18 (9:30 p.m.) 15,800 sec.-ft.; Nov. 27 (3 p.m.) 14,700 sec.-ft.; Dec. 14 (4 a.m.) 25,900 sec.-ft.; Dec. 15 (4:30 a.m.) 31,100 sec.-ft.; Jan. 24 (10 a.m.) 8,930 sec.-ft.; Jan. 26 (3:30 a.m.) 13,400 sec.-ft.

North Santiam River at Mehama, Oreg.

Location.- Water-stage recorder, lat. 44°47', long. 122°37', in NW¹ sec. 18, T. 9 S., R. 2 E., at Mehama, half a mile downstream from Little North Santiam River. Datum of gage is 601.78 feet above mean sea level, datum of 1929.

Drainage area.- 665 square miles.

Records available.- July 1905 to March 1907, October 1910 to September 1914, September 1921 to September 1947.

Average discharge.- 31 years (1905-6, 1910-14, 1921-47), 3,157 second-feet.

Extremes.- Maximum discharge during year, 52,400 second-feet Dec. 15 (gage height, 12.60 feet), from rating curve extended above 36,000 second-feet on basis of slope-area determination at gage height, 15.37 feet; minimum, 618 second-feet Oct. 15.

1905-7, 1910-14, 1921-47: Maximum discharge, 76,600 second-feet Dec. 28, 1945 (gage height, 15.37 feet), by slope-area method; minimum, 400 second-feet (regulated) Sept. 29, Oct. 13, 1934; minimum daily, 420 second-feet Sept. 18, 1924.

Remarks.- Records excellent except those for periods of no gage-height record, which are good. Slight regulation of flow-water flow by mill dam at Mill City. No diversion above station for irrigation.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)

1.7	650	4.0	4,090	9.0	24,800
2.0	930	4.8	6,040	10.0	31,600
2.4	1,580	5.8	9,140	11.0	39,200
2.9	2,070	7.0	12,800	12.0	47,500
3.4	2,900	8.0	18,700		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	642	4,180	5,690	2,180	5,080	2,060	4,270	2,770	1,380	2,040	1,040	758
2	650	3,190	4,740	2,010	8,830	2,200	4,270	2,860	1,600	1,890	980	749
3	686	2,690	4,240	1,910	7,740	2,600	4,010	2,790	1,600	1,740	990	740
4	704	2,460	4,240	1,820	5,770	2,700	3,940	2,720	2,040	1,610	1,030	731
5	850	2,350	3,980	1,810	4,860	2,410	4,130	2,580	1,840	1,520	940	713
6	740	2,320	3,570	1,820	4,620	2,270	4,270	2,550	1,840	1,470	920	722
7	713	2,380	3,370	1,710	4,620	2,250	3,900	2,530	1,860	1,390	900	930
8	830	2,190	4,350	1,680	4,270	2,640	4,310	2,380	4,230	1,320	880	1,150
9	758	2,020	4,290	1,630	3,820	3,750	4,740	2,480	6,820	1,260	900	1,260
10	713	2,200	4,900	1,770	3,510	8,600	4,690	2,320	5,510	1,240	930	1,280
11	686	2,060	9,990	2,020	3,410	9,180	4,290	2,080	4,310	1,220	880	1,030
12	688	1,910	26,500	2,010	4,740	6,320	4,010	1,920	3,380	1,210	840	930
13	688	1,790	34,500	1,940	6,940	5,000	4,200	1,840	2,630	1,180	830	850
14	659	1,680	44,000	1,820	6,150	4,530	4,400	1,770	2,460	1,140	830	812
15	642	1,600	39,000	1,670	5,560	4,440	4,330	1,700	2,190	1,140	812	776
18	634	1,540	16,200	1,670	5,280	4,580	4,030	1,670	2,190	1,140	812	785
17	642	2,370	10,100	1,640	4,620	4,530	4,240	1,640	2,380	1,120	812	776
18	650	16,400	7,400	1,630	4,030	4,290	6,290	1,590	2,160	1,100	812	794
19	704	14,800	5,680	2,020	3,610	3,920	5,180	1,540	1,940	1,040	794	749
20	2,950	7,830	4,930	2,180	3,310	3,630	4,670	1,550	1,840	1,030	785	740
21	3,880	5,880	4,350	2,650	2,950	3,410	3,960	1,560	1,720	1,000	758	731
22	4,090	7,990	3,820	3,230	2,770	4,310	3,470	1,520	1,630	980	758	722
23	4,980	9,380	3,410	9,320	2,640	4,350	3,100	1,500	1,550	960	785	695
24	5,640	7,740	3,080	13,300	2,580	3,840	2,880	1,510	1,500	940	758	695
25	7,430	115,000	2,830	12,200	2,520	3,470	2,740	1,500	1,430	950	758	695
26	6,410	19,500	2,850	15,400	2,360	3,120	2,690	1,500	1,520	1,050	749	695
27	4,070	21,500	3,040	9,350	2,240	2,900	2,690	1,530	2,720	1,200	740	686
28	3,030	15,100	2,690	6,670	2,140	2,720	2,820	1,430	3,690	1,550	740	722
29	2,550	9,850	2,520	5,180	-	2,720	3,040	1,420	2,830	1,260	749	713
30	2,880	7,240	2,320	4,530	-	3,100	3,160	1,380	2,320	1,000	830	a680
31	2,770	-	2,220	3,750	-	3,510	-	1,380	-	1,050	803	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-feet
October	63,919	7,430	634	2,062	3.10	3.57	126,800
November	197,140	21,500	1,540	6,571	9.88	11.03	391,000
December	275,000	44,000	2,220	8,871	13.3	15.58	545,500
Calendar year 1946	1,434,154	44,000	634	3,929	5.91	80.20	2,845,000
January	122,480	15,400	1,630	3,951	5.94	6.85	242,900
February	120,970	8,830	2,140	4,320	6.50	6.77	239,900
March	119,350	9,180	2,060	3,850	5.79	6.67	236,700
April	118,620	6,290	2,690	3,954	5.95	6.63	235,300
May	59,640	2,860	1,380	1,924	2.89	3.34	118,300
June	75,320	6,820	1,360	2,511	3.78	4.21	149,400
July	38,740	2,040	940	1,280	1.66	2.17	76,840
August	26,145	1,040	740	843	1.27	1.46	51,860
September	24,309	1,280	680	810	1.22	1.36	48,220
Water year 1946-47	1,241,633	44,000	634	3,402	5.12	69.44	2,463,000

Peak discharge.- Nov. 18 (11 p.m.) 25,400 sec.-ft.; Nov. 27 (1:30 p.m.) 24,000 sec.-ft.; Dec. 15 (3:30 a.m.) 52,400 sec.-ft.; Jan. 24 (10:30 a.m.) 14,600 sec.-ft.; Jan. 26 (3:30 a.m.) 19,000 sec.-ft.

a No gage-height record; discharge computed on basis of records for North Santiam River above Mayflower Creek, near Detroit, and Little North Santiam River near Mehama.

WILLAMETTE RIVER BASIN

Santiam River at Jefferson, Oreg.

Location.- Water-stage recorder, lat. 44°42'50", long. 123°00'40", in SE $\frac{1}{4}$ sec. 11, T. 10 S., R. 3 W., in Jefferson, 350 feet upstream from railroad bridge, 2 miles downstream from confluence of North Santiam and South Santiam Rivers, and 9 miles upstream from mouth. Datum of gage is 199.63 feet above mean sea level, datum of 1929.

Drainage area.- 1,790 square miles.

Records available.- July 1905 to July 1906 (gauge heights only), October 1907 to September 1916 and October 1939 to September 1947 in reports of Geological Survey. Gauge-height records collected at same site since April 1904 are contained in reports of U. S. Weather Bureau.

Average discharge.- 17 years (1907-16, 1939-47), 7,188 second-feet.

Extremes.- Maximum discharge during year, 116,000 second-feet Dec. 15 (gage height, 21.15 feet); minimum, 510 second-feet Oct. 17 (gage height, 1.81 feet).

1905-6, 1907-16, 1939-47: Maximum discharge observed, 161,000 second-feet during night of Nov. 22, 1909 (gage height, 18.2 feet, site and datum then in use), from curve of relation between gages based on readings from 1940 to 1945, and rating curve for gage at present site extended above 109,000 second-feet (corresponding gage height at present site, 23.0 feet from curve of relation; minimum observed, 260 second-feet Aug. 15-22, Aug. 24 to Sept. 2, 1940 (gage height, -1.00 foot, site and datum then in use).

Maximum discharge known, about 202,000 second-feet (revised) Nov. 21, 1921 (gauge height, 19.5 feet at railroad bridge 350 feet downstream, site and datum in use prior to Oct. 1, 1940, corresponding gauge height at present site, 24.4 feet from curve of relation).

Revisions.- Maximum discharge for the water year 1943 has been revised to 118,000 second-foot Jan. 1, 1943 (gage height, 21.24 feet), superseding figures published in Water-Supply Papers 984 and 1044.

Remarks.- Records good. Salem Canal diverts from North Santiam River at Stayton for irrigation and power use; most of this water reaches Willamette River through Mill Creek at Salem. Stayton Canal diverts from North Santiam River at Stayton for irrigation of lands near West Stayton; some return flow reaches North Santiam River above station. Albany power canal diverts from South Santiam River at Lebanon; return flow reaches Willamette River at Albany. No regulation.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Revisions.- Revised figures of discharge, in second-feet, for the high-water periods in the water years 1908, 1910, 1912, and 1943 are given here. They supersede those published in Water-Supply Papers 370, 362, 414, 984, and 1044.

Dec. 26, 1907.....	83,400
Mar. 16, 1908.....	94,900
Nov. 23, 1909.....	120,000
24, 1909.....	91,800
Jan. 13, 1912.....	120,000
1, 1943.....	103,000

Month	Second-foot days	Maximum	Mean	Runoff in acre-feet
December 1907.....	-	83,400	21,400	1,310,000
March 1908.....	-	94,900	13,800	847,000
Water year 1907-8.....	-	94,900	7,200	5,230,000
November 1909.....	-	120,000	26,600	1,580,000
Water year 1909-10.....	-	120,000	8,420	6,090,000
January 1912.....	-	120,000	24,800	1,530,000
Water year 1911-12.....	-	120,000	8,540	6,200,000
January 1943.....	545,020	103,000	17,580	1,081,000
Water year 1942-43.....	3,692,975	103,000	10,120	7,324,000
Calendar year 1943.....	2,717,596	103,000	7,445	5,390,000

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 12

Dec. 13 to Sept. 30

1.8	505	5.0	4,020	11.0	21,600	2.4	660	5.8	5,040	14.0	38,700
2.2	740	6.0	5,890	13.0	32,300	2.8	980	7.0	7,730	17.0	61,400
2.5	965	7.5	9,320	15.0	45,300	3.4	1,570	8.5	11,800	19.0	80,400
3.0	1,450	8.5	12,000	16.2	55,000	4.2	2,470	10.0	17,200	20.0	94,100
4.0	2,580	9.5	15,200			5.0	3,570	12.0	26,600	20.8	109,000

WILLAMETTE RIVER BASIN

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Discharge, in second-feet, of Santiam River at Jefferson, Oreg., water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	560	8,880	14,000	5,140	14,400	3,990	9,700	5,170	1,880	3,840	1,470	963
2	564	8,280	11,400	4,790	24,200	4,110	11,200	4,850	2,180	3,360	1,370	878
3	571	6,440	9,900	4,340	27,100	5,140	11,900	4,690	2,340	3,130	1,350	827
4	598	5,500	9,270	4,060	18,600	5,840	11,600	4,450	2,990	2,880	1,420	778
5	663	5,050	8,710	3,980	14,600	5,470	13,100	4,190	3,120	2,660	1,350	746
6	727	4,810	7,810	4,060	12,900	4,830	13,900	3,960	3,120	2,490	1,270	770
7	688	4,790	7,170	3,910	12,800	4,830	11,900	3,920	3,060	2,350	1,170	695
8	720	4,520	8,780	3,710	11,900	5,840	11,900	3,780	5,380	2,210	1,130	1,370
9	761	4,040	9,640	3,570	10,500	7,870	15,200	3,920	16,000	2,060	1,120	1,670
10	708	4,160	10,400	3,520	9,380	21,400	14,000	3,890	13,600	1,970	1,210	1,900
11	621	4,190	14,700	4,470	8,840	29,000	13,600	3,450	10,600	1,940	1,210	1,680
12	588	3,800	48,000	4,830	10,700	19,000	11,500	3,140	8,040	1,900	1,130	1,370
13	560	3,480	72,000	4,910	15,200	13,600	10,900	2,910	6,420	1,840	1,090	1,190
14	560	3,190	100,000	4,550	15,000	11,300	11,000	2,720	5,290	1,750	1,020	1,080
15	549	2,970	109,000	4,030	13,200	10,400	10,400	2,590	4,430	1,700	980	998
16	527	2,780	59,900	3,790	12,200	9,910	9,450	2,490	4,130	1,660	946	980
17	532	2,810	32,500	3,700	10,800	9,560	8,860	2,450	4,730	1,570	920	946
18	544	20,600	22,200	3,680	9,450	8,940	12,500	2,360	4,150	1,480	920	929
19	582	39,900	16,600	4,750	8,280	8,140	11,600	2,290	3,680	1,460	904	929
20	2,540	21,900	13,400	5,780	7,410	7,340	10,400	2,230	3,360	1,440	870	886
21	9,320	14,900	11,500	7,160	6,790	6,760	9,010	2,210	3,160	1,380	818	852
22	7,210	19,900	9,940	7,620	6,130	7,830	7,780	2,150	2,880	1,340	810	827
23	10,200	23,500	8,710	18,400	5,730	9,560	6,860	2,080	2,690	1,310	818	794
24	10,300	20,400	7,850	30,400	5,400	9,090	6,170	2,010	2,540	1,200	818	778
25	12,300	18,000	7,220	30,400	5,120	7,970	5,580	2,000	2,370	1,120	818	738
26	15,400	44,600	6,790	46,000	4,810	7,110	5,230	1,940	2,360	1,240	802	738
27	9,820	54,600	7,710	30,600	4,490	6,370	5,020	1,850	3,120	1,640	794	718
28	7,010	45,800	6,880	20,000	4,200	5,690	4,870	1,930	6,440	2,410	786	709
29	5,440	28,000	6,260	14,600	-	5,540	5,060	1,900	5,930	2,480	802	716
30	6,140	19,200	5,730	12,400	-	6,860	6,040	1,880	4,490	1,890	861	709
31	6,460	-	5,360	10,400	-	7,780	-	1,880	-	1,580	989	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	113,763	15,400	527	3,670	225,600
November.....	450,990	54,600	2,780	15,030	894,500
December.....	669,330	109,000	5,360	21,590	1,328,000
Calendar year 1946	5,141,940	109,000	527	8,608	6,232,000
January.....	313,550	46,000	3,520	10,110	621,900
February.....	310,130	27,100	4,200	11,080	615,100
March.....	277,070	29,000	3,990	8,939	549,600
April.....	296,230	15,200	4,870	9,874	587,600
May.....	91,340	5,170	1,680	2,946	181,200
June.....	144,500	16,000	1,880	4,817	286,600
July.....	61,270	3,840	1,120	1,976	121,500
August.....	31,966	1,470	786	1,031	63,400
September.....	29,362	1,900	709	979	58,240
Water year 1946-47	2,789,501	109,000	527	7,642	5,533,000

Peak discharge.- Nov. 19 (8 a.m.) 49,600 sec.-ft.; Nov. 26 (12 m.) 56,000 sec.-ft.; Nov. 27 (11:30 p.m.) 58,700 sec.-ft.; Dec. 15 (2 p.m.) 116,000 sec.-ft.; Jan. 26 (12:30 p.m.) 51,200 sec.-ft.; Feb. 3 (1 a.m.) 32,600 sec.-ft.

Breitenbush River above French Creek, near Detroit, Oreg.

Location.- Water-stage recorder, lat. 44°45', long. 122°08', in NE $\frac{1}{4}$ sec. 36, T. 9 S., R. 5 E., 0.1 mile downstream from Canyon Creek, $\frac{1}{2}$ miles upstream from French Creek, and 2 miles east of Detroit. Datum of gage is 1,559.64 feet above mean sea level, datum of 1929.

Drainage area.- 108 square miles.

Records available.- June 1932 to September 1947. October 1910 to October 1913 (fragmentary), at site below French Creek; records equivalent except for inflow from French Creek.

Average discharge.- 15 years (1932-47), 516 second-feet.

Extremes.- Maximum discharge during year, 8,520 second-feet Dec. 15 (gage height, 9.70 feet); minimum, 129 second-feet Oct. 15-18 (gage height, 0.84 foot).
1932-47: Maximum discharge, 11,600 second-feet Dec. 28, 1945 (gage height, 11.86 feet); minimum, 87 second-feet Sept. 2, 1940 (gage height, 0.36 foot).

Remarks.- Records good. No diversion or regulation above station.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.8	122	2.6	810	5.3	2,960
1.1	185	3.0	1,050	6.0	3,750
1.4	270	3.5	1,390	7.0	4,950
1.8	410	4.0	1,760	8.0	6,250
2.2	600	4.6	2,260	9.0	7,550

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	135	490	870	370	700	402	690	595	362	a340	200	144
2	138	366	730	346	1,180	460	685	705	382	a320	190	140
3	144	318	695	330	1,020	535	650	710	394	a300	195	138
4	150	306	715	318	816	500	615	690	422	a290	188	136
5	156	297	675	318	725	450	630	655	382	a270	178	136
6	142	291	600	312	715	422	635	680	382	a270	175	138
7	152	297	570	300	730	422	605	635	418	a260	172	192
8	150	279	635	294	700	455	660	580	725	255	168	225
9	144	270	a600	285	660	670	690	550	960	261	178	249
10	138	282	858	306	600	1,370	695	450	750	255	178	216
11	136	284	1,710	312	605	1,350	675	402	615	246	170	182
12	135	252	4,470	309	876	960	635	402	510	249	165	165
13	133	240	6,670	303	1,340	798	675	386	460	243	162	158
14	131	228	7,590	288	1,160	762	745	370	418	237	158	152
15	129	222	6,070	276	1,110	786	780	358	386	231	156	146
16	129	213	2,700	270	1,070	846	762	374	422	219	154	144
17	129	544	1,700	264	924	882	906	378	455	213	152	150
18	129	3,140	1,260	267	792	846	1,070	358	402	210	152	152
19	156	1,990	1,000	276	700	774	900	358	362	205	148	146
20	515	1,820	834	282	650	715	792	382	327	198	148	142
21	455	822	740	312	600	690	685	398	303	195	148	138
22	605	1,230	690	406	565	870	605	386	294	192	148	136
23	580	1,360	620	1,220	545	816	555	382	300	190	148	135
24	730	1,090	565	2,180	535	695	530	398	300	190	146	133
25	1,090	1,730	525	1,930	515	640	520	398	306	192	144	135
26	750	3,000	520	2,540	475	580	540	422	378	208	142	135
27	745	3,370	505	1,480	442	530	575	422	500	243	140	133
28	382	2,240	460	1,060	418	500	600	382	475	291	138	168
29	334	1,470	426	822	-	530	670	382	406	228	142	150
30	330	1,080	402	725	-	590	630	406	a360	205	162	142
31	370	-	386	675	-	635	-	346	-	208	152	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	9,542	1,090	129	308	2.85	3.29	18,930
November	29,501	3,370	213	983	9.10	10.16	58,510
December	46,791	7,590	386	1,509	14.0	16.11	92,810
Calendar year 1946	245,418	7,590	129	672	6.22	84.52	486,800
January	19,356	2,540	264	624	5.78	6.67	38,390
February	21,168	1,340	418	756	7.00	7.29	41,990
March	21,481	1,370	402	693	6.42	7.40	42,610
April	20,405	1,070	520	680	6.30	7.03	40,470
May	14,340	710	358	463	4.29	4.49	28,440
June	13,156	960	294	439	4.06	4.53	26,090
July	7,414	340	190	239	2.21	2.55	14,710
August	4,997	200	138	161	1.49	1.72	9,910
September	4,656	249	133	155	1.44	1.60	9,240
Water year 1946-47	212,807	7,590	129	583	5.40	73.29	422,100

Peak discharge.- Nov. 18 (7 p.m.) 4,420 sec.-ft.; Nov. 26 (7 a.m.) 3,270 sec.-ft.; Nov. 27 (12 m.) 3,780 sec.-ft.; Dec. 13 (10:30 p.m.) 8,580 sec.-ft.; Dec. 15 (12:30 a.m.) 8,520 sec.-ft.; Jan 25 (2 a.m.) 3,410 sec.-ft.

a No gage-height record; discharge computed on basis of records for North Santiam River at Detroit and above Mayflower Creek, near Detroit.

Little North Santiam River near Mehama, Oreg.

Location.- Wire-weight gage, lat. 44°48', long. 122°34', in NW¹ sec. 16, T. 9 S., R. 2 E., 2 miles east of Mehama and mouth of river. Datum of gage is 655.41 feet above mean sea level, datum of 1929.

Drainage area.- 110 square miles.

Records available.- October 1931 to September 1947. July to September 1924 and July to September 1931 at site 4 miles upstream.

Average discharge.- 16 years, 725 second-feet.

Extremes.- Maximum discharge during year, 15,300 second-feet Dec. 13 (gage height, 13.3 feet, from floodmark), from rating curve extended above 10,000 second-feet by logarithmic plotting; minimum observed, 40 second-feet Oct. 1, 2, 16.
1924, 1931-47: Maximum discharge, 19,900 second-feet Dec. 28, 1945 (gage height, 15.20 feet), from rating curve extended above 10,000 second-feet by logarithmic plotting; minimum observed, 21 second-feet Sept. 11, 1934, Sept. 27, 28, 1938, Sept. 1, 1940.

Remarks.- Records fair except those for periods of doubtful gage-height record, which are poor. Gage read once daily. No regulation or diversion above station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 13					Dec. 14 to Sept. 30				
2.8	34	4.3	435	8.3	4,470	2.8	42	4.3	435
2.9	47	4.7	630	9.5	6,750	2.9	52	4.7	685
3.1	78	5.2	920	11.0	10,000	3.1	76	5.2	1,020
3.3	115	5.8	1,330	12.0	12,300	3.3	105	5.8	1,490
3.6	181	6.5	1,970			3.6	165	6.5	2,180
3.9	270	7.3	2,920			3.9	255	7.3	3,230

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	1,460	938	345	1,490	299	1,200	574	112	501	102	d55
2	40	1,040	932	303	3,090	287	1,080	549	186	400	96	d61
3	43	854	872	275	2,310	410	915	477	299	327	94	d49
4	80	764	812	267	1,480	405	964	430	447	291	150	d47
5	82	668	770	252	1,250	400	999	400	315	255	108	46
6	58	646	636	255	1,270	390	1,190	360	323	230	79	60
7	60	636	707	238	1,260	365	1,050	331	287	204	77	171
8	85	620	974	234	1,210	525	1,170	311	1,580	186	76	217
9	73	615	1,370	244	1,060	789	1,690	360	2,790	171	79	453
10	64	570	1,540	275	822	3,400	1,590	375	1,810	148	96	380
11	58	535	3,770	465	841	2,550	1,190	283	1,150	150	83	208
12	56	440	10,000	323	1,410	1,220	1,100	248	936	152	67	154
13	56	422	12,300	311	1,980	d950	1,240	227	692	133	63	117
14	54	399	13,000	291	1,660	d850	1,170	208	519	130	63	104
15	47	341	8,210	271	1,170	d850	1,130	192	410	130	62	96
16	40	d298	3,330	263	1,120	d950	1,030	184	435	119	60	100
17	44	d386	1,970	255	d901	1,010	936	166	519	114	61	90
18	46	2,420	1,530	271	724	d687	1,490	145	501	107	82	76
19	155	4,130	1,100	335	620	d700	1,340	154	390	90	59	68
20	1,240	1,540	978	574	525	581	1,170	152	365	92	56	64
21	1,320	1,170	860	600	471	568	915	139	311	92	56	63
22	1,490	1,860	568	1,160	370	d1,240	756	137	279	93	58	66
23	1,750	2,080	555	4,420	375	d1,000	633	133	244	87	58	65
24	2,280	1,990	562	5,990	365	d700	525	124	224	89	54	60
25	1,940	2,920	501	3,830	380	614	483	124	224	92	53	59
26	d1,800	6,370	600	4,100	331	525	447	122	241	112	51	58
27	d1,400	6,550	588	2,090	315	519	483	115	737	122	49	59
28	d1,200	3,490	562	1,020	307	465	489	115	640	244	48	46
29	d1,000	2,060	507	1,010	-	405	867	112	646	176	d50	49
30	962	1,430	345	892	-	633	698	107	562	122	d70	52
31	1,070	-	345	822	-	834	-	105	-	105	d80	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	18,573	2,260	40	599	5.45	6.28	36,840
November	48,704	6,560	298	1,823	14.8	16.47	98,600
December	71,732	13,000	345	2,314	21.0	24.25	142,300
* Calendar year 1946	344,950	13,000	38	945	8.59	116.62	684,300
January	32,081	5,990	234	1,035	9.41	10.85	65,630
February	29,107	3,090	307	1,040	9.45	9.84	57,750
March	25,322	3,400	287	817	7.43	8.56	50,220
April	29,920	1,690	447	997	9.06	10.12	59,350
May	7,459	574	105	241	2.19	2.52	14,790
June	18,130	2,790	112	604	5.49	6.13	35,960
July	5,264	501	87	170	1.55	1.78	10,440
August	2,200	150	48	71.0	.645	.74	4,360
September	3,181	453	46	106	.964	1.08	6,310
Water year 1946-47	291,672	13,000	40	799	7.26	98.62	578,500

d Doubtful gage-height record; discharge computed on basis of records for North Santiam River above Mayflower Creek, near Detroit, and at Mehama.

South Santiam River below Cascadia, Oreg.

Location.- Water-stage recorder, lat. 44°24', long. 122°30', in SE $\frac{1}{4}$ sec. 36, T. 13 S., R. 2 E., 100 feet downstream from bridge at Cascadia ranger station, half a mile downstream from Tollgate Creek, three-quarters of a mile upstream from Deer Creek, and 1½ miles southwest of Cascadia. Gaging cable is 0.7 mile upstream, above Tollgate Creek. Datum of gage is 759.38 feet above mean sea level, datum of 1929.

Drainage area.- 174 square miles at gaging cable.

Records available.- September 1935 to September 1947. Records do not include runoff from 3 square miles between cable and gage.

Average discharge.- 12 years, 699 second-feet.

Extremes.- Maximum discharge during year, 13,900 second-feet Dec. 14 (gage height, 13.93 feet); minimum, 45 second-feet Oct. 1 (gage height, 1.76 feet).

1935-47: Maximum discharge, 23,400 second-feet Dec. 28, 1945 (gage height, 18.65 feet), from rating curve extended above 12,000 second-feet by logarithmic plotting; minimum, 23 second-feet Dec. 1, 2, 1936 (gage height, 0.98 foot).

Remarks.- Records good except those for period of shifting control and no gage-height record which are fair. No diversion or regulation above station.

Cooperation.- Water-stage recorder inspected by employees of U. S. Forest Service.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Dec. 16 to Jan. 28)

Oct. 1 to Dec. 13					Dec. 14 to Sept. 30						
1.8	48	3.0	360	6.0	2,450	1.9	62	3.4	485	7.0	3,340
2.0	70	3.4	580	7.0	3,400	2.1	88	3.8	715	8.5	5,200
2.2	103	3.8	820	8.5	5,200	2.4	137	4.3	1,060	10.0	7,320
2.4	145	4.3	1,160			2.7	207	5.0	1,570	12.0	10,500
2.7	230	5.0	1,650			3.0	300	6.0	2,380	14.0	14,000
Note.— same as following table above											
8.5 feet.											

Note.- same as following table above
8.5 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48	1,100	1,390	380	1,570	380	1,360	518	194	465	163	88
2	56	802	1,120	356	2,870	470	1,450	502	250	405	154	81
3	69	840	964	308	2,530	601	1,390	476	367	367	150	78
4	63	568	943	286	1,810	607	1,560	445	367	332	154	75
5	74	558	832	282	1,610	512	1,950	415	340	304	141	73
6	64	508	718	282	1,590	475	1,720	400	336	290	132	73
7	66	496	652	259	1,580	502	1,380	380	400	272	126	141
8	103	440	844	247	1,390	555	1,460	410	1,150	253	121	160
9	74	400	868	238	1,220	1,140	1,600	470	al, 800	241	130	167
10	65	490	1,110	262	1,090	2,630	1,550	395	al, 400	232	139	167
11	59	425	2,050	296	1,060	2,460	1,440	354	al, 100	227	123	132
12	56	380	7,490	293	1,470	1,630	1,270	328	a800	215	114	113
13	55	350	11,600	276	1,750	1,240	1,350	308	a650	202	108	100
14	54	310	11,100	253	1,480	1,070	1,420	293	a550	194	103	91
15	52	286	8,640	232	1,380	1,000	1,310	279	a450	186	98	85
16	51	262	4,160	232	1,260	983	1,160	265	540	179	96	91
17	53	382	2,520	235	1,080	955	1,260	259	551	172	92	97
18	57	3,530	1,840	247	920	878	1,630	247	465	167	90	128
19	73	3,550	1,420	455	808	787	1,360	238	410	160	88	100
20	890	2,030	1,160	529	709	703	1,220	227	380	154	85	88
21	887	1,650	990	679	631	649	1,010	218	344	148	84	81
22	1,340	2,680	822	801	573	1,020	864	207	516	143	87	77
23	1,070	2,760	691	1,980	534	1,040	754	199	266	141	100	74
24	1,120	2,180	601	2,900	507	990	673	191	279	135	92	72
25	1,550	2,970	534	3,250	480	864	619	181	259	135	85	70
26	1,490	7,260	595	4,670	460	767	578	172	272	191	81	70
27	929	5,700	722	2,590	420	685	562	165	551	253	80	69
28	658	3,970	578	1,810	395	619	540	167	962	390	77	68
29	538	2,570	496	1,350	-	631	625	160	679	241	86	68
30	790	1,910	440	1,170	-	748	573	158	546	194	137	67
31	730	-	400	962	-	1,070	-	154	-	172	103	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	13,184	1,550	48	425	2.44	2.82	26,150
November	50,977	7,260	262	1,699	9.76	10.90	101,100
December	68,290	11,600	400	2,203	12.7	14.60	135,500
Calendar year 1946	334,299	11,600	45	916	5.26	71.46	663,200
January	28,100	4,670	232	906	5.21	6.01	55,740
February	33,177	2,870	395	1,185	6.81	7.09	65,810
March	28,761	2,630	380	928	5.33	6.15	57,050
April	35,638	1,950	540	1,188	6.83	7.62	70,890
May	9,178	518	154	296	1.70	1.96	18,200
June	16,913	1,800	194	564	3.24	3.61	33,550
July	7,160	465	135	231	1.33	1.53	14,200
August	3,431	163	77	111	.638	.73	6,810
September	2,844	167	67	94.8	.545	.61	5,640
Water year 1946-47	297,653	11,600	48	815	4.68	63.63	590,400

Peak discharge.- Nov. 18 (10 p.m.) 7,180 sec.-ft.; Nov. 26 (9 a.m.) 8,710 sec.-ft.; Dec. 12 (12 m.) 8,690 sec.-ft.; Dec. 14 (1:30 a.m.) 13,900 sec.-ft.; Dec. 15 (7 a.m.) 10,800 sec.-ft.; Jan. 26 (5 a.m.) 5,890 sec.-ft.

a No gage-height record; discharge computed on basis of records for station at Waterloo.

South Santiam River at Waterloo, Oreg.

Location.- Water-stage recorder, lat. 44°29'55", long. 122°49'20", in NW¼ sec. 28, T. 12 S., R. 1 W., 200 yards downstream from bridge at Waterloo and 2½ miles upstream from Hamilton Creek. Datum of gage is 370.39 feet above mean sea level, datum of 1929.

Drainage area.- 640 square miles.

Records available.- July 1905 to March 1907, October 1910 to December 1911, July 1923 to September 1947.

Average discharge.- 25 years (1905-6, 1923-47), 2,689 second-feet.

Extremes.- Maximum discharge during year, 48,100 second-feet Dec. 14 (gage height, 17.30 feet); minimum, 168 second-feet Oct. 16, 17 (gage height, 2.18 feet).
1905-7, 1910-11, 1923-47: Maximum discharge, 74,200 second-feet Dec. 28, 1945 (gage height, 22.85 feet), from rating curve extended above 37,000 second-feet; minimum, 96 second-feet Sept. 1, 2, 1940 (gage height, 1.98 feet).

Remarks.- Records excellent except those for period of no gage-height record, which are good. No diversion or regulation above station.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 13						Dec. 14 to Sept. 30					
2.2	175	3.8	1,510	8.0	11,000	2.2	186	4.3	2,280	11.0	21,700
2.4	268	4.3	2,220	9.5	16,100	2.4	287	5.0	3,500	13.0	29,600
2.7	450	5.0	3,350	11.0	21,600	2.7	490	6.0	5,650	15.0	38,100
3.0	675	6.0	5,390	13.0	29,600	3.0	745	7.0	8,350	17.0	46,800
3.4	1,040	7.0	7,940	15.0	38,100	3.4	1,130	8.0	11,400		
						3.8	1,590	9.5	16,400		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	171	4,180	5,210	1,680	5,720	1,410	4,400	1,760	578	1,470	546	323
2	188	3,350	4,260	1,550	10,400	al, 750	4,950	1,660	844	1,280	506	287
3	228	2,630	3,730	1,470	10,100	a2, 200	5,090	1,550	916	1,170	514	271
4	253	2,250	3,550	1,370	6,720	a2, 250	5,180	1,430	1,420	1,080	546	266
5	268	2,130	3,260	1,330	5,850	al, 900	6,540	1,350	1,210	995	490	255
6	307	2,010	2,900	1,370	5,360	al, 600	6,330	1,270	1,260	935	452	255
7	253	1,980	2,710	1,270	5,460	al, 900	5,130	1,230	1,220	880	430	438
8	318	1,790	3,730	1,220	4,950	a2, 300	5,530	1,250	3,080	835	415	718
9	336	1,580	3,900	1,170	4,260	3, 670	6,910	1,350	7,430	781	438	691
10	263	1,790	4,550	1,220	3,730	10, 500	6, 330	1, 310	5, 230	745	498	799
11	228	1,680	7,280	1,620	3,600	11, 200	5, 880	1, 130	4, 010	727	445	596
12	209	1,510	26, 000	1,620	4, 730	6, 990	4, 880	1, 070	3, 060	691	408	475
13	196	1,370	37, 700	1,540	6, 200	5, 040	4, 820	1, 000	2, 380	646	381	408
14	188	1,250	44, 600	1,420	5, 430	4, 300	4, 820	945	1, 960	604	374	367
15	179	1,150	39, 600	1,260	4, 860	3, 970	4, 300	907	1, 640	570	361	329
16	171	1,070	18, 200	1,220	4, 450	3, 750	3, 610	862	1, 710	554	347	317
17	175	1,100	10, 600	1,220	3, 870	3, 540	3, 690	826	1, 850	530	341	323
18	196	11, 300	7, 380	1,240	3, 330	3, 260	5, 300	790	1, 550	498	329	335
19	228	14, 900	5, 630	1,860	2, 900	2, 900	4, 430	754	1, 370	498	317	335
20	2,890	7, 040	4, 580	2,220	2, 540	2, 560	3, 970	736	1, 270	482	311	299
21	4,290	5,340	3,890	2,900	2,300	2,340	3,350	700	1,200	460	299	276
22	4,170	8,450	3,510	2,970	2,120	3,170	2,900	664	1,100	438	299	266
23	4,380	9,340	2,860	8,290	1,950	3,650	2,510	846	1,020	430	317	255
24	4,700	7,660	2,580	12,100	1,850	3,540	2,250	612	955	422	323	239
25	5,300	9,320	2,300	12,200	1,780	3,040	2,070	587	907	422	311	234
26	5,860	25,300	2,250	18,200	1,690	2,700	1,930	570	898	522	287	234
27	3,580	24,100	2,660	10,300	1,590	2,410	1,820	554	1,430	799	276	229
28	2,610	16,200	2,260	6,800	1,510	2,190	1,750	562	2,850	1,330	266	229
29	2,070	9,680	2,050	5,000	-	2,130	1,960	554	2,200	965	276	224
30	2,630	6,760	1,850	4,340	-	2,440	2,060	546	1,750	700	415	224
31	2,750	-	1,750	3,580	-	3,350	-	533	-	596	415	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	49,785	5,860	171	1,606	2.51	2.89	98,750
November	188,210	25,300	1,070	6,274	9.80	10.94	373,300
December	267,150	44,600	1,750	8,618	13.5	15.52	529,900
Calendar year 1946	1,252,511	44,600	168	3,432	5.36	72.78	2,484,000
January	115,500	18,200	1,170	3,727	5.82	6.71	229,200
February	119,050	10,400	1,510	4,252	6.64	6.92	236,100
March	108,150	11,200	1,410	3,489	5.45	6.28	215,250
April	124,950	6,910	1,750	4,165	6.51	7.26	247,800
May	29,713	1,760	538	958	1.50	1.73	58,930
June	58,198	7,430	578	1,940	3.03	3.38	115,400
July	23,055	1,470	422	744	1.16	1.34	45,730
August	11,933	546	266	385	.802	.69	23,670
September	10,497	799	224	350	.547	.61	20,820
Water year 1946-47	1,106,241	44,600	171	3,031	4.74	64.27	2,194,000

Peak discharge.- Nov. 19 (1:30 a.m.) 24,200 sec.-ft.; Nov. 26 (1:30 p.m.) 29,600 sec.-ft.; Nov. 27 (4:30 p.m.) 25,300 sec.-ft.; Dec. 14 (7:30 a.m.) 48,100 sec.-ft.; Dec. 15 (10:30 a.m.) 47,000 sec.-ft.; Jan. 26 (7 a.m.) 22,000 sec.-ft.

a No gage-height record; discharge computed on basis of records for station below Cascadia.

Middle Santiam River near Foster, Oreg.

Location.- Water-stage recorder, lat. 44°28', long. 122°31', in SE $\frac{1}{4}$ sec. 2, T. 13 S., R. 2 E., half a mile upstream from Green Peter Creek and 8 miles northeast of Foster. Datum of gage is 733.44 feet above mean sea level (Northern Pacific Railway bench mark).

Drainage area.- 271 square miles.

Records available.- August 1931 to August 1947 (discontinued).

Average discharge.- 15 years (1931-46), 1,430 second-feet.

Extremes.- Maximum discharge during period September 1946 to August 1947, 28,600 second-feet Dec. 15 (gage height, 17.6 feet); minimum, 95 second-feet Oct. 1 (gage height, 1.52 feet).

1931-47: Maximum discharge, 41,800 second-feet Dec. 28, 1945 (gage height, 21.6 feet), from rating curve extended above 24,000 second-feet by logarithmic plotting; minimum, 54 second-feet Dec. 1, 1936 (gage height, 1.25 feet).

Remarks.- Records good except those for periods of no gage-height record, which are fair. Recorder shelter severely damaged by flood Dec. 15. No regulation or diversion above station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 15					Dec. 16 to Aug. 20				
1.5	93	4.3	1,090	11.0	10,800	1.9	168	3.0	455
1.9	147	5.0	1,590	13.0	15,400	2.2	224	3.6	710
2.2	209	6.0	2,510	15.0	20,800	2.6	325	4.3	1,110
2.6	320	7.0	3,690	17.0	26,700				
3.0	455	8.0	5,110						
3.6	710	9.5	7,720						

Note.- Same as preceding table above 7.0 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	2,350	2,630	-								
2	105	1,610	2,150	h780								
3	125	1,270	1,880	-								
4	120	1,130	1,850	-								
5	165	1,100	1,690	-								
6	136	1,070	1,480	-								
7	130	1,050	1,420	-								
8	180	937	2,400	-								
9	144	840	2,400	-			h3,230			h388		
10	124	904	2,880	-								
11	112	830	6,010	-								
12	106	780	16,300	-								
13	104	692	22,600	-								
14	102	642	25,200	-								
15	100	598	21,200	-				h471				
16	98	563	8,360	-								
17	101	1,330	4,800	-								
18	106	9,560	a3,600	-								
19	177	6,600	a2,600	-								
20	2,990	3,430	a2,050	-							h168	
21	2,060	2,690	a1,700	h1,500								
22	2,690	4,300	a1,450	-								
23	2,680	4,690	a1,250	-								
24	3,170	3,950	a1,100	-								
25	3,610	6,720	a1,000	-								
26	2,930	13,500	h1,120	-	h932							
27	1,790	13,700	a1,300	-								
28	1,270	8,240	a1,150	-								
29	1,050	4,880	a1,000	-	-							
30	1,350	3,420	a930	-	-							
31	1,380	-	a880	-	-							

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	29,279	3,610	95	944	3.48	4.02	58,070
November	103,358	13,700	583	3,445	12.7	14.18	205,000
December	146,390	25,200	880	4,722	17.4	20.09	290,400
Calendar year 1946	664,523	25,200	95	1,821	6.72	91.20	1,318,000
January							
February							
March							
April							
May							
June							
July							
August							
September							
Water year							

a No gage-height record; discharge computed on basis of records for South Santiam River below Cascadia and at Waterloo.

h Computed from staff-gage reading.

Albany power canal near Lebanon, Oreg.

Location.- Water-stage recorder, lat. 44°32'55", long. 122°54'20", in SW 1/4 sec. 2, T. 12 S., R. 2 W., an eighth of a mile downstream from spillway and 1 mile north of Lebanon. Datum of gage is 322.90 feet above mean sea level, datum of 1929.

Records available.- April, 1926 to September 1947. February to December 1919 at site near Albany.

Average discharge.- 21 years, 220 second-feet.

Extremes.- Maximum discharge during year, 354 second-feet Dec. 12 (gage height, 4.35 feet); minimum, 12 second-feet May 24.
1919, 1926-47: Maximum discharge, that of Dec. 12, 1946; no flow at times.

Remarks.- Records good. Canal diverts from South Santiam River at Lebanon and discharges into Calapooya River at mouth. Lebanon ditch discharges into canal just below canal intake. Water is used for power and water supply at Albany.

Cooperation.- Recorder inspected by employee of Mountain States Power Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	147	262	272	246	227	215	283	227	130	219	163	95
2	148	262	272	235	208	217	295	219	158	204	157	71
3	167	235	285	233	209	240	302	212	170	196	155	99
4	192	181	282	228	202	249	301	212	210	192	153	99
5	185	175	280	220	251	243	291	210	205	177	86	104
6	206	197	273	220	289	232	256	199	204	161	104	100
7	202	249	261	217	292	228	251	195	204	156	104	105
8	201	262	273	217	293	245	251	192	261	143	103	111
9	217	262	277	216	286	268	256	206	298	136	103	116
10	209	261	280	216	277	216	256	233	286	129	104	122
11	191	258	286	233	275	232	253	221	271	128	103	123
12	181	253	259	232	284	258	252	210	256	124	102	117
13	176	254	204	232	291	256	251	195	242	120	100	116
14	164	258	136	230	282	261	250	187	228	113	99	116
15	157	256	132	219	282	261	248	180	222	112	96	120
16	153	254	186	219	281	258	242	168	217	100	96	118
17	156	250	252	218	277	257	249	162	219	92	96	118
18	163	257	252	216	270	255	275	165	209	86	90	118
19	183	250	261	235	267	247	272	151	198	83	86	120
20	260	244	253	253	265	248	272	143	195	83	96	119
21	280	241	258	267	261	247	267	139	202	92	108	117
22	259	255	258	270	254	253	260	135	197	71	108	116
23	268	262	255	274	244	262	261	134	185	80	108	116
24	269	251	254	257	242	265	248	134	173	157	108	120
25	270	249	262	255	240	259	241	131	159	207	108	141
26	268	212	258	255	230	251	237	120	157	214	108	139
27	256	202	262	254	223	248	235	123	195	202	107	139
28	247	231	259	271	217	244	229	128	265	237	104	139
29	239	241	253	261	-	242	232	131	260	220	98	138
30	235	249	250	257	-	255	241	131	235	186	102	138
31	221	-	248	263	-	270	-	130	-	173	99	-
Month						Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet		
October.....						6,470	280	147	209	12,830		
November.....						7,273	262	175	242	14,430		
December.....						7,793	286	132	251	15,460		
Calendar year 1946						85,243	306	101	234	169,100		
January.....						7,419	274	216	239	14,720		
February.....						7,219	293	202	258	14,320		
March.....						7,682	270	215	248	15,240		
April.....						7,757	302	229	259	15,390		
May.....						5,321	233	120	172	10,550		
June.....						6,411	298	130	214	12,720		
July.....						4,393	237	71	148	9,100		
August.....						3,354	163	86	108	6,850		
September.....						3,510	141	71	117	6,960		
Water year 1946-47						74,802	302	71	205	148,400		

Luckiamute River near Hoskins, Oreg.

Location.- Water-stage recorder, lat. 44°43', long. 123°30', in NE $\frac{1}{4}$ sec. 11, T. 10 S., R. 7 W., a quarter of a mile downstream from Benton County line and 3 $\frac{1}{2}$ miles northwest of Hoskins. Datum of gage is 378.7 feet above mean sea level (from river-profile survey).

Drainage area.- 34 square miles.

Records available.- May 1934 to September 1947.

Average discharge.- 13 years, 188 second-feet.

Extremes.- Maximum discharge during year, 5,560 second-feet Dec. 14 (gage height, 13.22 feet), from rating curve extended above 1,900 second-feet; minimum, 11 second-feet Oct. 15, 16.

1934-47: Maximum discharge, that of Dec. 14, 1946; minimum, 7 second-feet Sept. 2-5, 10, 21, 22, 1934.

Remarks.- Records good except those above 3,000 second-feet, which are fair. No diversion or regulation above station; log ponds upstream cause diurnal fluctuation at times.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 14					Dec. 15 to Sept. 30						
1.1	10	2.1	160	5.0	1,090	1.3	14	2.0	133	6.5	1,730
1.3	30	2.5	260	8.0	2,290	1.4	25	2.5	255	8.0	2,440
1.5	55	2.9	370	10.0	3,370	1.5	39	3.5	560	9.0	3,000
1.8	102	3.7	620			1.7	74	4.9	1,070		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	268	439	137	1,680	117	183	97	44	44	26	17
2	15	235	367	131	1,860	164	192	91	53	42	25	16
3	20	192	319	125	1,040	349	200	87	117	42	26	18
4	17	156	373	117	686	296	274	85	117	41	26	16
5	17	136	496	113	508	250	313	80	84	39	25	16
6	14	124	499	111	406	215	328	78	69	39	24	21
7	14	107	508	107	346	228	299	76	97	38	23	56
8	15	97	750	103	299	255	325	74	164	36	22	39
9	14	94	711	99	263	522	325	72	274	35	29	46
10	14	92	812	144	236	986	358	70	212	33	29	35
11	13	82	1,150	169	218	889	331	67	162	39	25	26
12	13	77	1,770	223	255	612	288	63	129	44	23	25
13	13	74	2,810	205	288	454	252	61	111	36	22	23
14	12	69	3,280	180	288	361	220	58	95	33	21	22
15	12	65	2,980	160	302	304	197	56	85	36	20	21
16	12	62	1,270	153	282	263	178	54	91	35	21	20
17	18	241	816	146	260	231	188	53	80	31	21	20
18	19	1,260	806	149	236	207	183	51	70	29	21	21
19	27	816	475	228	212	190	164	49	65	28	20	20
20	343	502	394	247	200	173	155	48	60	26	20	18
21	175	518	343	316	188	162	146	46	56	26	20	18
22	268	994	296	349	178	151	133	44	54	26	21	17
23	248	1,030	260	522	164	164	127	41	51	26	22	17
24	198	788	235	777	151	146	121	36	46	26	21	16
25	170	1,000	210	1,220	140	131	113	36	44	28	20	16
26	202	1,590	197	1,440	131	125	107	35	58	28	18	17
27	195	1,740	192	847	125	117	101	35	78	35	18	17
28	154	1,170	176	588	117	111	99	35	60	42	18	17
29	136	767	160	454	-	119	117	35	54	31	18	17
30	182	544	153	445	-	173	101	35	48	28	18	18
31	180	-	144	388	-	176	-	35	-	26	18	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	2,747	343	12	88.6	2.61	3.00	5,450
November	14,890	1,740	62	496	14.6	16.29	29,530
December	23,189	3,280	144	748	22.0	25.36	45,990
Calendar year 1946	95,050	3,280	9	260	7.65	103.97	168,500
January	10,392	1,440	99	335	9.85	11.37	20,610
February	11,059	1,860	117	395	11.6	12.10	21,940
March	8,641	986	111	279	8.21	9.45	17,140
April	6,118	358	99	204	6.00	6.69	12,130
May	1,785	97	35	57.6	1.69	1.95	3,540
June	2,730	274	44	91.0	2.68	2.99	5,410
July	1,048	44	26	33.8	0.994	1.15	2,080
August	681	29	18	22.0	.647	.74	1,350
September	665	56	16	22.2	.653	.73	1,320
Water year 1946-47	83,945	3,280	12	230	6.76	91.82	166,500

Peak discharge.- Nov. 27 (1 p.m.) 1,950 sec.-ft.; Dec. 14 (11 p.m.) 5,560 sec.-ft.; Feb. 1 (12 m.) 2,110 sec.-ft.; Feb. 2 (7 a.m.) 2,280 sec.-ft.

Luckiamute River at Pedee, Oreg.

Location.- Staff gage, lat. 44°44'45", long. 123°25'05", near line between SW $\frac{1}{4}$ sec. 34 and SE $\frac{1}{4}$ sec. 33, T. 9 S., R. 6 W., half a mile southwest of Pedee and three-quarters of a mile downstream from Pedee Creek. Datum of gage is 243.07 feet above mean sea level, datum of 1929.

Drainage area.- 115 square miles.

Records available.- October 1940 to September 1947.

Extremes.- Maximum discharge during year, 12,000 second-feet Dec. 14 (gage height, 17.99 feet); from rating curve extended above 7,800 second-feet; minimum observed, 24 second-feet Oct. 12, 13.

1940-47: Maximum discharge, that of Dec. 14, 1946; minimum observed, 7 second-feet (regulated) Sept. 12, 1944.

Remarks.- Records fair except those for periods of doubtful or no gage-height record, which are poor. Gage read once daily. Small diversions above station for irrigation. Some diurnal fluctuation in summer caused by log ponds above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	471	909	274	3,830	d260	388	200	97	72	45	30
2	33	411	d800	270	4,750	350	399	a190	117	67	43	29
3	33	318	d700	257	3,020	d820	517	a180	149	65	45	28
4	33	275	d760	248	1,840	d520	587	a170	198	63	43	26
5	32	248	881	244	1,180	d450	629	a160	157	61	41	25
6	32	244	846	236	1,020	405	699	a155	d140	59	40	25
7	27	207	790	228	790	449	720	a150	206	57	38	88
8	27	188	1,210	220	685	496	811	a145	263	53	37	72
9	29	188	1,480	212	510	1,590	754	a140	556	52	38	72
10	26	184	1,960	297	503	2,020	699	a135	318	50	41	59
11	26	170	2,080	316	d480	1,960	657	a135	246	57	38	45
12	24	166	3,440	330	587	1,440	580	a130	210	55	37	41
13	24	159	5,240	377	615	1,340	517	a125	228	55	35	40
14	26	148	7,260	340	685	1,030	442	a120	172	55	36	37
15	29	141	7,600	306	671	692	388	115	157	53	35	33
16	29	134	2,970	301	657	580	355	110	142	55	35	33
17	30	196	1,890	288	587	551	345	106	135	50	35	32
18	32	2,120	1,680	342	510	482	330	103	117	50	33	37
19	36	1,890	a1,300	442	468	442	311	97	106	48	33	35
20	546	1,470	a1,050	436	423	382	283	91	100	46	32	33
21	368	1,150	a840	482	388	350	274	88	94	45	32	32
22	405	1,990	a700	573	368	345	265	85	88	43	33	32
23	411	2,320	a610	685	335	355	248	79	85	41	35	30
24	318	2,340	a530	1,390	325	330	256	77	79	43	33	30
25	266	2,660	a470	2,070	306	320	232	74	74	46	32	30
26	313	3,410	a420	2,420	292	292	a220	70	79	52	32	32
27	323	3,220	399	1,700	274	283	a210	70	135	61	32	33
28	d290	1,880	355	1,080	261	a270	a200	72	131	d65	32	32
29	d230	1,390	325	d900	-	a300	228	70	85	52	32	32
30	d270	1,040	297	811	-	489	224	72	74	48	32	35
31	284	-	292	1,400	-	382	-	88	-	46	30	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	4,608	546	24	149	1.30	1.49	9,140
November	30,728	3,410	134	1,024	8.90	9.94	60,950
December	50,084	7,600	292	1,616	14.1	16.20	99,340
Calendar year 1946	206,043	7,600	18	565	4.91	66.65	408,700
January	19,475	2,420	212	628	5.46	6.30	38,630
February	26,358	4,750	261	941	8.18	8.52	52,280
March	19,755	2,020	260	637	5.54	6.39	39,180
April	12,728	811	200	424	3.69	4.12	25,250
May	3,602	200	70	116	1.01	1.16	7,140
June	4,738	556	74	158	1.37	1.53	9,400
July	1,665	72	41	53.7	4.67	.54	3,300
August	1,115	45	30	36.0	3.13	.36	2,210
September	1,136	88	25	37.9	3.30	.37	2,250
Water year 1946-47	175,992	7,600	24	482	4.19	56.92	349,100

a No gage-height record; discharge computed on basis of records for stations near Suver and near Hoskins.

d Doubtful gage-height record; discharge computed as explained in footnote a.

Luckiamute River near Suver, Oreg.

Location.- Water-stage recorder, lat. 44°47'00", long. 123°14'00", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 18, T. 9 S., R. 4 W., at highway bridge at Helmick State Park, 3 miles downstream from Little Luckiamute River and 3 miles northwest of Suver. Datum of gage is 171.37 feet above mean sea level, datum of 1929.

Drainage area.- 240 square miles.

Records available.- August 1905 to October 1911, July 1940 to September 1947.

Average discharge.- 13 years (1905-11, 1940-47), 864 second-feet.

Extremes.- Maximum discharge during year, 20,200 second-feet Dec. 15 (gage height, 31.86 feet), from rating curve extended above 14,000 second-feet; minimum, 37 second-feet Oct. 13.

1905-11, 1940-47: Maximum discharge, that of Dec. 15, 1946; minimum, 21 second-feet Sept. 10, 1944 (gage height, 1.78 feet).

Maximum stage known at present site, 33.5 feet from floodmark, probably on Dec. 29, 1937 (discharge not determined).

Revisions.- The maximum discharges for the water years 1945 and 1946 have been revised to 8,720 second-feet Feb. 8, 1945 (gage height, 27.87 feet) and 12,000 second-feet Nov. 27, Dec. 29, 1945 (gage height, 29.05 feet), superseding those published in Water-Supply Papers 1044 and 1064.

Remarks.- Records good except those for periods of no gage-height record, which are poor.

A few small diversions above station for irrigation; no diversion around station.

Some diurnal fluctuation during periods of low flow caused by millpond above station.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Revisions.- Revised figures of discharge, in second-feet, for high-water periods in the water years 1945 and 1946, superseding those published in Water-Supply Papers 1044 and 1064, are given herewith:

Feb. 8, 1945.....6,900	Dec. 29, 1945.....10,700
Nov. 27, 1945.....7,200	30, 1945.....7,840
28, 1945.....8,780	Feb. 7, 1946.....6,750

Month and year	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
February 1945	63,498	6,900	722	2,268	9.45	9.45	125,900
Water year 1944-45....	261,923	6,900	30	718	2.99	40.60	519,500
November 1945.....	47,083	8,780	68	1,569	6.54	7.30	93,390
December	51,769	10,700	671	2,638	11.0	12.67	162,200
Calendar year 1945....	368,675	10,700	33	1,010	4.21	57.14	731,260
February 1946.....	59,607	6,750	893	2,129	8.87	9.24	118,200
Water year 1945-46....	366,213	10,700	33	1,003	4.18	56.75	726,420

Peak discharge.- Nov. 27, 1945 (10:30 p.m.) 12,000 sec.-ft.; Dec. 29, 1945 (1 p.m.) 12,000 sec.-ft.; Feb. 7, 1946 (3 a.m.) 7,440 sec.-ft.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 26					Nov. 27 to Sept. 30					
2.0	37	5.4	356		2.0	38	6.6	524	24.0	4,520
2.3	57	6.6	504		2.3	57	8.0	725	26.0	5,780
2.6	78	8.0	695		2.6	78	10.0	1,020	27.0	6,970
3.0	106	10.0	995		3.0	107	13.0	1,500	28.0	9,050
3.4	136	13.0	1,480		3.4	139	16.0	2,050	29.0	11,900
4.3	227	16.0	2,050		4.3	229	19.0	2,770	30.0	14,800
					5.4	362	22.0	3,670	31.0	17,700

Note.- Same as following table above 16.0 feet.

Discharge, in second-feet, of Luckiamute River near Suver, Oreg., water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a80	639	2,170	600	3,150	545	a750	365	131		a80	52
2	a55	761	1,700	563	7,640	879	a750	340	165		a80	49
3	a55	608	1,450	517	7,020	1,270	a800	315	230		a75	47
4	a60	499	1,430	481	4,680	1,330	a900	298	401		a80	48
5	a60	417	1,600	461	3,080	1,100	a1,050	282	316		a75	47
6	a55	368	1,790	464	2,170	956	a1,050	269	253		a70	46
7	a50	336	1,520	440	1,750	917	a1,050	261	252		a70	68
8	a50	294	2,110	418	1,490	1,030	a1,100	249	363		a65	132
9	a55	268	2,290	400	1,310	1,300	a1,100	242	684		a75	121
10	a50	251	2,260	408	1,190	3,250	a1,150	232	750		a65	129
11	a45	246	2,530	593	1,090	4,170	a1,050	227	535		92	101
12	a45	220	3,550	688	1,270	3,430	a1,000	217	415		77	86
13	a40	205	5,210	846	1,620	2,380	a920	210	340		71	77
14	a45	191	9,670	773	1,680	1,790	a840	203	293		66	70
15	a50	179	17,600	639	1,620	1,500	a780	198	258		63	64
16	a50	171	9,920	584	1,580	1,290	760	194	252		63	63
17	a55	174	5,670	555	1,400	1,130	700	189	382		60	59
18	a60	1,660	3,970	538	1,260	1,010	726	185	222		58	62
19	a70	3,450	2,680	788	1,140	906	662	176	207		58	63
20	a1,100	2,490	1,970	851	1,040	828	618	170	a190		58	59
21	a620	1,650	1,640	971	946	766	593	165	a180		56	57
22	583	2,800	1,420	1,050	872	719	544	158	a170		56	56
23	752	4,030	1,240	1,410	797	714	504	162	a160		59	58
24	645	4,110	1,110	1,970	744	766	469	149	a150		61	53
25	524	3,400	1,000	2,670	690	659	441	144	a130		58	50
26	509	4,250	923	4,650	646	597	420	138	a140		55	50
27	573	5,760	863	5,210	605	553	396	133	a190		52	51
28	486	6,310	796	3,660	566	520	380	131	204		51	51
29	391	4,780	725	2,410	-	509	410	131	a160		52	51
30	429	3,300	660	2,100	-	740	411	131	a120		55	53
31	500	-	622	1,860	-	a800	-	131	-		55	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	8,132	1,100	40	262	1.09	1.26	16,130
November	53,817	6,310	171	1,794	7.48	8.34	106,700
December	92,089	17,600	622	2,970	12.4	14.27	182,700
Calendar year 1946	390,045	17,600	33	1,069	4.45	60.44	773,700
January	39,548	5,210	400	1,276	5.32	6.13	78,440
February	53,046	7,640	566	1,894	7.89	8.22	105,200
March	38,054	4,170	509	1,228	5.12	5.90	75,480
April	22,324	1,350	380	744	3.10	3.46	44,280
May	6,395	365	131	206	0.858	.99	12,680
June	8,243	750	120	275	1.15	1.28	16,350
July	2,784	-	-	89.8	.374	.43	5,520
August	2,031	92	51	65.5	.273	.31	4,030
September	1,970	132	46	65.7	.274	.31	3,910
Water year 1946-47	328,433	17,600	40	900	3.75	50.90	651,400

Peak discharge.- Nov. 28 (6 to 7 a.m.) 6,620 sec.-ft.; Dec. 15 (11:30 a.m.) 20,200 sec.-ft.; Feb. 2 (9 p.m.) 9,160 sec.-ft.

a No gage-height record; discharge computed on basis of recorded range in stage and records for stations at Pedee and near Hoskins.

h Computed from staff-gage reading.

Mill Creek at penitentiary annex, near Salem, Oreg.

Location.- Water-stage recorder, lat. 44°52'55", long. 122°58'35", in NE $\frac{1}{4}$ sec. 18, T. 8 S., R. 2 W., at State penitentiary annex, 2 $\frac{1}{2}$ miles downstream from Battle Creek, 5 miles southeast of Salem, and 7 miles upstream from mouth.

Drainage area.- 103 square miles.

Records available.- October 1940 to September 1947 in reports of Geological Survey. November 1938 to September 1940 in files of Oregon State engineer.

Extremes.- Maximum discharge during year, 3,830 second-feet Dec. 15 (gage height, 6.56 feet); minimum, 88 second-feet July 5.

1938-47: Maximum discharge, 3,880 second-feet Feb. 7, 1943 (gage height, 6.95 feet), from rating curve extended above 2,600 second-feet; minimum, 44 second-feet July 13, 1939.

Maximum discharge known, 8,320 second-feet Dec. 29, 1937, computed by velocity-area method on basis of discharge measurement of 7,300 second-feet made that day.

Remarks.- Records good except those for periods of shifting control, which are fair. Salem power canal diverts water from North Santiam River at Stayton into Mill Creek; some diversions from canal and creek above station for irrigation. Flow diverted for irrigation on left bank between gage and control is not included in record. Diurnal fluctuation caused by changes at head gates and small power plants above station.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 10, Dec. 16 to Apr. 8)

0.7	93	2.1	430	4.5	1,680
1.0	132	2.5	590	5.0	2,180
1.2	166	3.0	790	5.6	2,780
1.4	208	3.5	1,000	6.3	3,540
1.7	292	4.0	1,280		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	157	450	666	190	1,020	218	395	190,	206	148	178	118
2	155	384	574	186	1,250	253	506	180	230	140	166	119
3	162	328	530	247	874	336	638	166	230	113	159	129
4	166	295	490	230	658	204	598	155	239	99	159	126
5	176	273	416	228	550	197	634	152	226	92	164	121
6	170	270	395	239	470	172	638	145	218	92	159	121
7	157	241	398	233	409	233	534	143	161	137	153	143
8	170	239	466	236	356	342	654	140	195	142	153	186
9	168	228	395	230	312	530	706	142	239	142	159	208
10	168	244	342	250	289	1,130	634	140	210	138	159	213
11	170	233	402	305	280	910	542	135	176	142	150	172
12	164	218	1,240	412	381	778	474	132	162	145	118	162
13	168	208	1,300	430	578	554	430	201	153	146	97	155
14	161	199	1,950	370	494	470	388	201	146	142	112	150
15	161	195	3,450	270	598	409	353	199	146	142	143	126
16	164	188	2,000	253	482	356	322	197	153	140	143	126
17	174	220	1,090	247	384	315	315	195	159	137	140	128
18	170	900	826	250	328	280	322	195	201	134	126	132
19	176	1,320	670	328	286	258	302	195	199	129	131	129
20	233	897	566	364	256	236	289	188	182	129	134	125
21	244	870	494	381	236	220	270	178	178	129	132	126
22	247	1,540	416	378	216	261	250	172	172	126	140	115
23	250	1,290	360	466	197	267	233	168	168	126	146	121
24	241	1,010	325	610	182	289	225	168	166	125	157	114
25	236	830	289	790	176	233	213	172	168	129	142	114
26	261	1,830	283	1,180	247	204	204	172	172	148	138	129
27	289	2,080	315	790	236	186	197	182	182	157	124	129
28	253	1,540	253	638	228	253	195	186	199	170	126	135
29	236	992	228	510	-	318	204	178	190	148	125	140
30	305	822	195	510	-	594	197	180	184	142	135	137
31	315	-	184	450	-	409	-	184	-	178	142	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	6,267	315	155	202	12,430
November.....	20,354	2,080	188	673	40,330
December.....	21,508	3,450	184	694	42,660
Calendar year 1946	144,263	3,450	58	395	286,100
January.....	12,201	1,180	186	394	24,200
February.....	11,975	1,250	176	428	23,750
March.....	11,315	1,130	172	365	22,440
April.....	11,860	706	195	395	23,520
May.....	5,331	201	132	172	10,570
June.....	5,610	239	146	187	11,130
July.....	4,207	178	92	136	8,340
August.....	4,410	178	97	142	8,750
September.....	4,149	213	114	138	8,230
Water year 1946-47	119,167	3,450	92	326	236,400

Mill Creek at Salem, Oreg.

Location.- Water stage recorder, lat. 44°56'05", long. 123°01'00" in NE $\frac{1}{4}$ sec. 26, T. 7 S., R. 3 W., at State Street Bridge in Salem, 220 feet downstream from 19th Street diversion. Datum of gage is 165.50 feet above mean sea level (datum of 1929).

Drainage area.- 108 square miles.

Records available.- October 1940 to September 1947 in reports of Geological Survey. July 1938 to September 1940 in files of Oregon State engineer.

Extremes (regulated).- Maximum discharge during year, 1,080 second-feet Dec. 15 (gage height, 5.63 feet); minimum, .2 second-feet Sept. 24.
1938-47: Maximum discharge recorded, 1,110 second-feet Feb. 7, 1943; maximum gage height, that of Dec. 15, 1946; no flow Oct. 2, 1939.

Remarks.- Records good. Salem power canal diverts water into Mill Creek near Stayton; several diversions from Mill Creek, including Shelton flood bypass $1\frac{1}{4}$ miles upstream, and 19th Street power diversion 220 feet upstream. Diurnal fluctuation caused by power plants above station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 18					Nov. 19 to Sept. 30						
0.8	27	1.2	74	2.1	250	0.4	4	1.2	80	2.9	450
.9	37	1.4	106	2.5	339	.5	8	1.4	115	3.4	575
1.0	48	1.7	163	3.1	479	.6	13	1.7	172	3.9	700
						.8	29	2.1	258		
						1.0	52	2.5	351		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	228	297	57	370	61	124	139	71	150	57	7
2	33	235	258	56	498	77	172	131	87	139	47	10
3	35	191	238	87	365	119	218	124	94	119	42	16
4	35	159	221	78	265	64	206	120	95	94	41	16
5	45	141	189	74	221	60	218	53	90	85	46	12
6	38	141	182	78	193	45	221	33	87	66	41	10
7	30	113	185	78	164	71	187	32	48	15	40	22
8	40	113	206	77	139	129	212	25	64	18	36	56
9	40	103	185	76	119	212	236	21	101	19	42	70
10	42	115	162	83	111	420	258	22	87	17	56	76
11	40	108	170	111	110	358	283	68	53	18	58	48
12	38	94	450	141	148	258	258	20	44	20	31	39
13	37	82	530	162	223	208	256	62	38	19	10	33
14	40	70	668	148	199	170	225	68	38	19	8	31
15	38	66	928	111	236	146	234	68	37	20	24	12
16	37	60	475	97	191	128	265	68	36	17	26	11
17	45	71	270	88	154	111	258	60	31	14	28	13
18	40	479	216	90	128	94	274	66	62	14	12	15
19	46	695	212	119	115	83	260	71	58	10	14	10
20	98	545	199	133	101	72	251	65	46	11	14	8
21	115	470	197	142	92	64	236	55	46	10	14	8
22	128	582	172	141	155	74	221	53	44	8	20	4
23	117	555	152	174	131	77	206	47	37	8	22	7
24	110	460	133	238	53	90	193	50	52	8	31	5
25	106	378	113	304	44	66	182	47	45	8	22	4
26	117	598	111	448	77	55	197	48	36	12	16	12
27	139	695	122	316	72	46	187	53	40	21	10	11
28	117	602	101	251	70	71	115	57	55	41	14	10
29	110	420	82	208	-	92	120	52	137	33	13	19
30	149	356	71	206	-	191	144	55	185	28	17	16
31	147	-	61	185	-	131	-	55	-	48	68	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	2,182	149	30	70.4	4,330
November.....	8,923	695	60	297	17,700
December.....	7,556	928	61	244	14,990
Calendar year 1946.....	58,763	928	26	161	116,600
January.....	4,557	448	56	147	9,040
February.....	4,732	488	44	169	9,390
March.....	3,843	420	45	124	7,620
April.....	6,415	283	115	214	12,720
May.....	1,886	139	20	60.8	3,740
June.....	1,944	185	31	64.8	3,860
July.....	1,109	150	8	35.8	2,200
August.....	918	68	8	29.6	1,820
September.....	611	76	4	20.4	1,210
Water year 1946-47.....	44,676	928	4	122	88,620

WILLAMETTE RIVER BASIN

South Yamhill River near Willamina, Oreg.

Location.- Water-stage recorder, lat. 45°03', long. 123°30', in sec. 14, T. 6 S., R. 7 W., a third of a mile upstream from Wallace Bridge, 2 miles upstream from Willamina Creek, and 2 miles southwest of Willamina. Datum of gage is 286.01 feet above mean sea level, datum of 1929.

Drainage area.- 133 square miles.

Records available.- May 1934 to September 1947.

Average discharge.- 13 years, 557 second-feet.

Extremes.- Maximum discharge during year, 10,200 second-feet Dec. 15 (gage height, 11.52 feet); minimum, 20 second-feet Oct. 13, 14, 16 (gage height, 0.64 foot).
1934-47: Maximum discharge, 14,000 second-feet Dec. 27, 1937 (gage height, 14.08 feet); minimum, 3 second-feet (regulated) Aug. 22, 1938, Oct. 16, 1942; minimum daily, 7 second-feet Aug. 22, 1938.

Remarks.- Records good. Slight regulation occasionally during summer by millpond upstream, No diversion above station.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.6	17	1.6	229	4.2	1,580
.7	25	1.9	329	5.0	2,200
.8	38	2.2	445	6.0	3,170
1.0	66	2.6	630	7.0	4,270
1.2	112	3.0	830	8.5	6,040
1.4	168	3.6	1,170	10.0	8,030

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	710	1,090	291	3,680	281	429	198	94	139	46	27
2	28	576	984	271	5,920	366	425	189	117	134	44	25
3	30	450	956	251	3,190	825	417	174	255	134	44	23
4	29	362	2,060	239	1,980	690	576	165	239	126	44	24
5	35	301	3,520	239	1,410	562	715	156	195	115	37	23
6	30	271	2,480	235	1,080	494	725	148	174	115	36	24
7	28	232	1,970	229	980	490	645	145	229	100	37	134
8	29	204	2,030	210	785	494	720	136	445	90	36	142
9	30	189	1,710	186	635	946	675	136	815	81	41	120
10	25	223	1,760	278	544	2,060	755	134	548	76	49	100
11	23	183	2,540	413	562	2,000	660	126	382	85	39	72
12	23	162	5,890	540	1,230	1,440	585	117	298	115	35	63
13	21	159	6,850	512	1,720	1,110	576	117	284	90	35	51
14	23	142	5,880	445	1,450	896	468	112	235	81	32	44
15	23	134	7,030	397	1,400	755	413	100	207	87	32	42
16	23	131	3,410	370	1,180	635	374	92	229	83	29	39
17	24	371	2,070	351	1,000	553	359	90	204	70	30	40
18	32	4,620	1,450	348	874	530	397	87	177	66	30	39
19	36	2,790	1,090	530	805	433	355	87	156	66	26	36
20	630	1,670	896	548	660	386	333	83	145	63	26	36
21	413	1,570	750	705	576	359	308	76	139	56	26	55
22	504	5,250	645	863	508	333	291	79	128	54	26	34
23	463	4,480	558	1,240	454	322	271	79	126	52	32	30
24	429	2,930	490	2,210	409	298	258	76	115	52	33	30
25	562	2,530	429	3,450	374	281	235	66	104	61	29	28
26	562	3,220	389	4,710	340	261	226	66	110	61	26	30
27	499	4,000	271	2,725	245	214	214	64	217	64	26	34
28	362	2,600	344	1,810	294	229	201	68	229	87	25	30
29	301	1,840	312	1,350	-	226	255	68	183	61	26	36
30	540	1,340	281	1,380	-	336	217	70	159	51	27	34
31	450	-	274	1,090	-	336	-	74	-	48	26	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-foot
October	6,238	630	21	201	1.51	1.74	12,370
November	43,640	5,250	131	1,455	10.9	12.20	86,560
December	60,424	7,030	274	1,949	14.7	16.90	119,800
Calendar year 1946	271,877	7,790	16	745	5.60	76.03	539,200
January	28,411	4,710	186	916	6.89	7.94	56,350
February	34,232	5,920	294	1,223	9.20	9.57	67,900
March	19,172	2,060	226	618	4.65	5.36	38,030
April	13,078	755	201	436	3.28	3.66	25,940
May	3,378	198	64	109	.820	.94	6,700
June	6,918	815	94	231	1.74	1.93	13,720
July	2,565	139	48	82.7	.622	.72	5,080
August	1,030	49	25	33.2	.250	.29	2,040
September	1,425	142	23	47.5	.357	.40	2,830
Water year 1946-47	220,511	7,030	21	604	4.54	61.65	437,300

Peak discharge.- Nov. 18 (4 p.m.) 5,990 sec.-ft.; Nov. 22 (10 p.m.) 6,080 sec.-ft.; Dec. 13 (4 a.m.) 7,250 sec.-ft.; Dec. 15 (2 a.m.) 10,200 sec.-ft.; Jan. 26 (2:30 a.m.) 5,910 sec.-ft.; Feb. 2 (8:30 a.m.) 7,880 sec.-ft.

South Yamhill River near Whiteson, Oreg.

Location.- Water-stage recorder, lat. 45°10'10", long. 123°12'25", in NW¼ sec. 5, T. 5 S., R. 4 W., at Whiteson Bridge on Pacific Highway West, 1 mile downstream from Salt Creek, and 1½ miles northwest of Whiteson. Datum of gage is 82.30 feet above mean sea level datum of 1929.

Drainage area.- 502 square miles.

Records available.- July 1940 to September 1947.

Extremes.- Maximum discharge during year, 21,700 second-feet Dec. 15 (gage height, 41.22 feet); minimum, 44 second-feet Sept. 5, 6.
1940-47: Maximum discharge, 23,000 second-feet Feb. 6, 1946; maximum gage height, 41.91 feet Apr. 1, 1943; minimum discharge, 18 second-feet Aug. 23, 1941, Sept. 14, 1944.

Remarks.- Records fair. Slight regulation during low-water periods from log ponds upstream. Small diversions above station for irrigation.

Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Dec. 11-22, Feb. 1-8)

Oct. 1 to Feb. 2

Feb. 3 to Sept. 30

1.5	46	5.5	541	33.0	8,870	1.5	42	5.0	445
2.0	84	8.0	1,070	35.0	10,300	1.7	55	7.0	810
3.0	180	14.0	2,530	37.0	12,500	2.0	81	10.0	1,440
4.0	295	24.0	5,200	39.0	15,900	3.0	180	15.0	2,660
4.5	356	29.0	8,800	41.0	21,000	4.0	295	25.0	5,480

Note.- Same as preceding table above 25.0 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	47	1,210	3,680	929	5,230	928	1,370	523	175	265	106	58
2	80	1,470	2,950	903	11,900	952	1,420	496	228	242	101	54
3	70	1,130	2,480	810	12,700	2,020	1,380	459	342	238	95	52
4	69	892	3,170	745	9,210	2,610	1,440	437	620	231	94	46
5	71	705	5,210	705	6,030	2,240	1,720	408	513	231	93	46
6	69	588	6,700	709	4,100	1,780	1,990	391	434	201	78	49
7	74	514	6,000	688	3,070	1,580	1,850	372	418	196	74	57
8	65	447	5,240	661	2,590	1,610	1,850	356	645	180	72	270
9	66	398	4,930	632	2,280	1,830	2,050	345	1,350	168	77	250
10	66	390	4,670	640	1,980	4,450	1,990	342	1,680	160	93	239
11	60	415	5,220	1,170	1,790	5,940	1,960	326	1,090	155	105	196
12	55	358	7,040	1,490	2,440	5,510	1,730	314	783	170	84	155
13	53	323	11,800	1,960	4,010	4,230	1,520	294	626	199	78	125
14	52	300	16,900	1,920	4,810	3,230	1,360	282	515	170	73	110
15	51	281	19,300	1,540	4,450	2,580	1,210	271	445	154	69	101
16	47	265	12,400	1,500	4,330	2,160	1,090	260	415	157	68	90
17	51	262	8,240	1,180	3,710	1,860	998	255	450	152	68	83
18	55	2,000	6,620	1,080	3,070	1,630	1,020	248	372	136	66	90
19	74	6,000	4,330	1,400	2,560	1,450	984	238	332	130	59	94
20	197	5,500	2,960	1,660	2,210	1,300	922	230	305	125	55	82
21	1,600	3,770	2,500	2,000	1,940	1,200	870	220	296	120	57	77
22	964	4,960	2,280	2,220	1,730	1,130	789	209	274	110	59	72
23	1,120	8,700	2,030	2,850	1,540	1,060	730	201	257	103	58	69
24	991	10,400	1,780	4,050	1,390	1,060	675	190	239	103	66	62
25	905	8,330	1,590	5,500	1,280	962	635	181	223	105	67	59
26	1,140	7,080	1,430	7,660	1,170	882	598	171	210	114	59	62
27	1,210	7,440	1,350	9,940	1,070	822	584	162	250	122	57	62
28	947	8,200	1,250	7,840	990	762	544	162	410	156	51	65
29	688	6,900	1,130	5,380	-	730	555	167	366	185	49	65
30	781	5,090	1,030	4,340	-	1,000	593	167	304	132	55	74
31	995	-	949	4,050	-	1,460	-	162	-	115	59	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	12,713	1,600	47	410	0.817	0.94	25,220
November	94,315	10,400	282	3,144	6.26	6.99	187,100
December	157,159	19,300	949	5,070	10.1	11.64	311,700
Calendar year 1946	740,479	19,300	34	2,029	4.04	54.85	1,469,000
January	78,112	9,940	632	2,520	5.02	5.79	154,900
February	103,580	12,700	990	3,699	7.37	7.67	205,400
March	60,958	8,940	730	1,966	3.92	4.52	120,900
April	38,407	2,050	1,214	544	2.42	2.70	72,210
May	8,837	523	162	285	.968	1.05	17,530
June	14,567	1,680	175	486	.968	1.08	28,690
July	4,983	285	103	161	.321	.37	9,880
August	2,245	106	49	72.4	.144	.17	4,450
September	2,914	270	46	97.1	.193	.22	5,780
Water year 1946-47	576,790	19,300	46	1,580	3.15	42.74	1,144,000

WILLAMETTE RIVER BASIN

Willamina Creek near Willamina, Oreg.

Location.- Water-stage recorder, lat. 45°08'35", long. 123°29'40", in N $\frac{1}{2}$ sec. 13, T. 5 S., R. 7 W., 4 miles north of Willamina. Datum of gage is 315.1 feet above mean sea level (from river-profile survey).

Drainage area.- 65 square miles.

Records available.- June 1934 to September 1947.

Average discharge.- 13 years, 224 second-feet.

Extremes.- Maximum discharge during year, 3,960 second-feet Dec. 14 (gage height, 8.46 feet); minimum, 14 second-feet Oct. 11-13, 17.

1934-47: Maximum discharge, 5,720 second-feet Dec. 27, 1937 (gage height, 9.83 feet, present datum); minimum, 9 second-feet Sept. 3, 4, 1934, Sept. 9, 1935, Aug. 8-10, 19, Sept. 22-27, 1939, Aug. 17, 18, 1940.

Remarks.- Records good. No regulation or diversion above station.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

1.2	11	2.1	77	3.3	360	5.0	1,040
1.4	16	2.3	110	3.6	455	5.5	1,310
1.7	31	2.6	170	4.0	600	6.5	1,990
1.9	49	2.9	245	4.5	805	7.5	2,900

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	232	427	170	1,350	178	202	107	54	52	27	17
2	18	172	366	158	2,000	215	200	102	80	52	25	16
3	19	156	369	146	1,286	342	190	96	51	52	22	16
4	19	110	680	140	890	276	239	93	49	49	26	16
5	20	93	1,130	140	686	248	265	90	88	46	23	16
6	16	83	908	136	568	232	270	87	83	46	22	20
7	16	76	774	130	490	240	258	85	103	43	22	77
8	16	66	774	126	424	245	294	82	134	41	23	56
9	16	65	744	124	378	420	303	82	282	38	26	53
10	15	71	940	172	336	684	315	79	192	37	24	39
11	14	62	1,460	200	315	708	291	76	142	40	22	29
12	14	57	2,480	250	396	576	265	74	118	46	22	24
13	14	53	2,870	225	560	476	248	71	102	40	20	22
14	15	50	2,560	195	518	408	228	68	91	37	20	21
15	15	48	2,570	180	560	357	212	66	85	37	19	20
16	14	46	1,410	172	525	315	195	65	96	37	20	19
17	16	82	940	166	466	279	190	64	87	33	20	22
18	18	924	708	178	414	255	188	61	77	33	19	25
19	23	648	564	240	372	235	178	61	72	31	19	21
20	146	466	476	250	336	215	172	58	71	30	18	19
21	79	463	408	324	306	200	160	56	65	29	18	19
22	91	1,300	357	384	276	190	152	53	59	29	19	18
23	116	1,170	312	600	252	192	144	52	57	29	22	18
24	150	908	282	1,000	238	180	136	48	54	29	20	17
25	150	950	255	1,460	222	168	132	47	53	29	19	17
26	178	1,200	238	1,570	205	158	124	45	58	29	18	18
27	146	1,290	225	1,050	192	150	116	45	80	34	17	18
28	98	926	208	1,000	182	144	116	46	76	40	17	19
29	85	680	192	608	-	150	124	47	68	32	19	20
30	146	525	178	550	-	218	114	46	59	29	19	18
31	158	-	170	462	-	210	-	46	-	27	18	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	1,821	178	14	58.7	0.903	1.04	3,610
November	12,952	1,500	46	432	6.85	7.41	25,690
December	25,955	2,870	837	837	12.9	14.85	51,480
Calendar year 1946	106,803	2,870	12	293	4.51	61.11	211,800
January	12,508	1,570	124	403	6.20	7.16	24,810
February	14,739	2,000	182	526	8.09	8.43	29,230
March	8,864	708	144	286	4.40	5.07	17,580
April	6,020	515	114	201	3.09	3.44	11,940
May	2,098	107	45	67.7	1.04	1.20	4,160
June	2,768	282	53	92.3	1.42	1.58	5,490
July	1,156	52	27	37.3	.574	.66	2,290
August	649	27	17	20.9	.322	.37	1,290
September	731	77	16	24.4	.375	.42	1,450
Water year 1946-47	90,261	2,870	14	247	3.80	51.63	179,000

Peak discharge.- Nov. 22 (8:45 p.m.) 1,440 sec.-ft.; Nov. 27 (8 a.m.) 1,460 sec.-ft.; Dec. 13 (1:30 a.m.) 3,500 sec.-ft.; Dec. 14 (11 p.m.) 3,960 sec.-ft.; Jan. 25 10 p.m.) 2,020 sec.-ft.; Feb. 2 (7 a.m.) 2,500 sec.-ft.

North Yamhill River near Pike, Oreg.

Location.- Water-stage recorder, lat. 45°22'15", long. 123°17'10", in NE¹ sec. 27, T. 2 S., R. 5 W., 1½ miles downstream from Haskins Creek and 1½ miles west of Pike. Datum of gage is 249.2 feet above mean sea level (Corps of Engineers bench mark).

Drainage area.- 48 square miles.

Records available.- October 1940 to September 1947.

Extremes.- Maximum discharge during year, 2,740 second-feet Dec. 14 (gage height, 6.94 feet); minimum, 9.8 second-feet Sept. 6.

1940-47: Maximum discharge, 3,830 second-feet Dec. 18, 1941 (gage height, 8.24 feet), affected by release of water from log pond upstream; minimum, 4.2 second-feet (regulated) Sept. 11, 1944; minimum daily, 6.0 second-feet Sept. 10, 1944.

Remarks.- Records good. Occasional diurnal fluctuations caused by small dams upstream; no seasonal regulation. Water supply for city of McMinnville is diverted from Haskins Creek above station, mean annual diversion in water year 1946-47 being 1.23 second-feet.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Nov. 1-17)

1.0	11	1.8	113	3.6	675
1.1	18	2.0	157	4.2	965
1.2	27	2.3	232	5.0	1,420
1.4	49	2.7	345	6.0	2,050
1.6	77	3.1	475		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	141	316	130	1,070	134	157	66	42	36	23	11
2	14	152	270	119	1,760	174	152	68	61	34	19	11
3	17	128	302	111	865	310	143	68	62	35	18	11
4	16	111	574	107	614	251	162	66	53	34	17	11
5	16	89	885	107	486	214	181	64	52	32	17	11
6	14	49	644	105	408	196	186	61	50	32	17	12
7	14	44	538	100	357	204	179	58	59	31	17	30
8	14	42	550	96	319	209	204	57	77	27	17	22
9	14	a40	538	92	281	351	198	56	150	26	18	26
10	13	a42	618	126	256	570	227	54	105	24	17	22
11	12	36	1,030	132	270	530	206	53	84	27	15	17
12	12	a33	1,470	157	276	430	191	52	71	30	14	14
13	12	32	1,520	191	350	354	174	48	64	26	14	14
14	12	31	1,670	121	478	304	157	50	57	25	13	14
15	12	30	1,590	111	492	262	143	52	53	24	13	12
16	12	29	905	107	447	232	132	48	70	23	13	12
17	14	62	626	104	387	209	128	42	57	22	13	13
18	15	982	489	128	339	191	107	44	52	22	13	15
19	18	496	402	179	299	176	100	44	49	22	12	14
20	91	336	348	179	267	162	96	43	48	21	12	12
21	49	375	307	214	246	152	91	41	45	20	12	12
22	65	940	270	290	222	143	86	38	42	19	14	12
23	68	870	240	447	201	143	82	36	41	19	15	11
24	53	486	216	810	186	139	79	35	37	20	14	11
25	65	875	198	1,490	171	126	76	34	35	20	13	11
26	77	925	186	1,190	162	117	72	32	37	20	12	12
27	74	1,020	174	711	150	111	70	31	49	22	11	12
28	62	657	159	518	141	105	71	33	47	31	12	13
29	57	478	148	419	-	113	77	34	43	23	13	14
30	104	372	136	396	-	184	68	34	39	21	12	12
31	94	-	132	336	-	155	-	33	-	21	12	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Runoff Acre-feet
October	1,128	104	12	36.4	0.758	0.87	2,240
November	9,903	1,020	29	330	6.87	7.67	19,640
December	17,451	1,670	132	563	11.7	13.52	34,610
Calendar year 1946	78,912.8	1,920	9.2	216	4.50	61.13	156,500
January	9,273	1,490	92	299	6.23	7.18	18,390
February	11,680	1,760	141	417	8.69	9.05	23,170
March	6,951	570	105	224	4.67	5.39	13,790
April	3,995	227	68	133	2.77	3.10	7,920
May	1,475	68	31	47.6	.992	1.14	2,930
June	1,731	150	35	57.7	1.20	1.34	3,430
July	789	36	19	25.5	.531	.61	1,580
August	432	23	11	14.6	.304	.35	897
September	424	30	11	14.1	.294	.33	841
Water year 1946-47	65,252	1,760	11	179	3.73	50.55	129,400

Peak discharge.- Nov. 18 (2 p.m.) 1,740 sec.-ft.; Dec. 12 (11 p.m.) 1,940 sec.-ft.; Dec. 14 (9 p.m.) 2,740 sec.-ft.; Jan. 25 (12 m.) 2,250 sec.-ft.; Feb. 2 (3:30 a.m.) 2,650 sec.-ft.
a No gage-height record; discharge interpolated.

WILLAMETTE RIVER BASIN

Haskins Creek near McMinnville, Oreg.

Location.- Water-stage recorder and wooden control, lat. 45°18'50", long. 123°21'55", in NE $\frac{1}{4}$ sec. 13, T. 3 S., R. 6 W., 300 feet upstream from high-water line of McMinnville water-supply reservoir and 11 miles northwest of McMinnville.

Drainage area.- 5.7 square miles.

Records available.- October 1928 to September 1947.

Average discharge.- 19 years, 24.6 second-feet (adjusted for diversion, 1937-47).

Extremes (not adjusted for diversion).- Maximum discharge during year not determined (inlet closed); minimum, 0.7 second-foot Sept. 6, 30.
1929-47: Maximum discharge, 610 second-feet Mar. 31, 1931 (gage height, 4.00 feet, before control was built); minimum prior to diversion above station, 1.0 second-foot Oct. 8, 1932.

Remarks.- Records fair except those for periods of doubtful gage-height record, which are poor. Since Sept. 2, 1937, a small amount of water has been diverted at a point 800 feet upstream into a 12-inch steel pipe, which delivers it into intake of McMinnville water-supply pipe line reservoir. No regulation.

Cooperation.- Water-stage recorder inspected by employees of city of McMinnville.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	18		19	126	21	24	10	6.4	6.0	4.0	2.9
2	2.9	12		18	58	28	22	8.6	8.6	6.0	3.4	2.6
3	3.1	9.3		18	54	42	21	8.3	8.6	5.7	3.4	2.6
4	3.3	7.0		18	64	34	26	7.9	8.3	5.3	3.4	2.6
5	3.1	5.7		17	52	30	29	7.9	7.5	5.3	3.1	2.6
6	2.7	5.3		15	50	28	29	7.5	7.2	5.3	3.1	2.4
7	2.7	4.6		14	44	28	27	7.9	8.3	5.0	3.4	5.3
8	2.7	4.1		14	39	28	29	7.5	11	4.8	3.7	4.2
9	2.0	3.9		14	42	48	29	7.5	17	4.8	4.0	5.0
10	1.7	4.6	d90	20	42	79	32	7.5	12	4.5	3.7	3.1
11	1.5	3.9		20	40	79	29	7.2	10	5.0	3.4	2.1
12	1.3	3.7		21	58	67	27	6.8	9.0	5.0	3.4	1.9
13	1.5	3.3		20	58	58	25	6.8	7.9	4.5	3.4	1.5
14	1.5	3.1		18	51	48	23	6.0	7.5	4.5	3.1	1.9
15	1.5	3.1		17	51	40	21	6.0	6.8	4.5	3.1	3.1
16	1.3	2.7		17	48	36	20	5.7	8.6	4.5	3.1	3.4
17	2.0			16	42	31	20	5.3	7.9	4.2	3.1	3.7
18	2.1		h96	18	38	29	19	5.3	7.5	4.2	3.1	4.0
19	3.3			25	38	26	19	5.3	7.2	4.2	3.1	3.4
20	14			25	38	24	17	5.3	7.2	4.0	3.1	3.1
21	6.7			29	37	23	15	4.5	6.8	4.0	3.1	3.1
22	10		d50	42	34	21	13	4.2	6.8	4.0	3.4	3.1
23	8.2			72	33	21	12	4.8	6.4	4.0	3.4	2.9
24	6.3		h144	30	20	12	12	5.7	6.4	4.0	3.4	2.9
25	8.8			81	28	20	11	5.7	6.0	4.0	3.1	2.9
26	8.8		27	67	26	18	11	5.3	6.8	4.0	2.9	3.1
27	8.2		26	66	24	18	10	5.3	7.9	4.5	2.9	3.1
28	6.7		24	68	22	17	11	5.3	7.2	4.8	3.1	3.4
29	6.7		22	62	-	18	11	5.3	6.8	4.2	3.4	2.2
30	12	h48	20	57	-	25	10	5.0	6.4	4.0	3.1	1.9
31	12	-	20	57	-	22	-	5.0	-	3.7	3.1	-

Month	Observed				Diversion for McMinnville water supply (acre-feet)	Adjusted for diversion			
	Discharge in second-feet			Runoff in acre-feet		Runoff in acre-feet	Discharge in second-feet		Runoff in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October.....	14	1.3	4.89	301	50	351	5.70	1.00	1.15
November.....	-	2.7	37.2	2,220	91	2,311	38.8	6.81	7.59
December.....	-	20	68.2	4,200	87	4,287	69.6	12.2	14.08
Calendar year 1946	280	1.2	28.9	20,900	812	21,710	30.0	5.26	71.37
January.....	144	14	35.8	2,200	116	2,316	37.7	6.61	7.62
February.....	126	22	45.2	2,510	109	2,619	47.2	8.28	8.62
March.....	79	17	33.1	2,040	155	2,195	35.6	6.25	7.21
April.....	32	10	20.1	1,200	138	1,338	22.4	3.93	4.39
May.....	10	4.2	6.34	390	89	479	7.79	1.37	1.58
June.....	17	6.0	8.07	490	23	503	8.46	1.48	1.66
July.....	6.0	3.7	4.60	283	0	283	4.60	.807	.93
August.....	4.0	2.9	3.29	202	0	202	3.29	.577	.67
September.....	5.3	1.5	3.00	179	32	211	3.53	.619	.69
Water year 1946-47	-	1.3	22.4	16,200	890	17,100	23.6	4.14	56.20

d Doubtful gage-height record; discharge computed on basis of weather records and records for North Yamhill River near Pike.

h Computed from staff-gage reading.

Molalla River above Pine Creek, near Wilhoit, Oreg.

Location.- Water-stage recorder, lat. 45°01', long. 122°29', near line between secs. 30 and 31, T. 6 S., R. 3 E., 1,700 feet upstream from Pine Creek and 5 miles southeast of Wilhoit.

Drainage area.- 96 square miles.

Records available.- October 1935 to September 1947.

Average discharge.- 12 years, 474 second-feet

Extremes.- Maximum discharge during year, 10,000 second-feet Dec. 15 (gage height, 11.87 feet), from rating curve extended above 4,800 second-feet; minimum, 34 second-feet Oct. 16.

1935-47: Maximum discharge, 11,600 second-feet Nov. 23, 1942, from rating curve extended above 4,000 second-feet by velocity-area studies; maximum gage height, 12.86 feet Dec. 28, 1945; minimum discharge, 19 second-feet Aug. 30 to Sept. 2, 1940.

Remarks.- Records good. No diversion or regulation above station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 27					Nov. 28 to Sept. 30				
0.5	30	2.0	166	4.8	1,300	0.9	42	2.4	300
1.1	43	2.4	262	5.5	1,800	1.1	59	2.8	430
1.3	60	2.8	385	6.5	2,700	1.3	81	3.5	725
1.5	82	3.3	570	7.5	3,740	1.6	125	4.0	970
1.7	112	4.0	870	8.5	4,900	2.0	203	4.5	1,270

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	610	1,000	265	935	231	658	282	100	265	84	47
2	37	469	870	243	2,350	278	658	256	134	233	79	44
3	39	388	766	231	1,700	398	668	238	138	208	84	44
4	42	341	743	217	1,160	434	608	221	270	188	86	43
5	61	189	666	214	925	345	648	208	214	176	76	42
6	45	198	604	228	860	303	694	199	188	162	71	43
7	48	364	582	210	855	309	658	188	197	152	67	130
8	67	326	855	201	748	470	766	166	805	141	65	188
9	52	502	766	192	630	958	840	210	1,340	132	67	182
10	45	357	810	240	546	2,020	875	190	915	125	73	158
11	42	314	2,080	278	558	1,730	785	172	666	120	65	114
12	39	268	4,770	268	910	1,120	689	160	498	119	62	91
13	37	254	4,790	252	1,320	845	738	151	388	111	60	77
14	37	231	6,860	226	1,120	743	734	143	318	106	57	70
15	35	212	6,500	210	935	716	644	136	272	106	56	64
16	35	196	2,640	203	800	702	542	129	278	100	55	64
17	35	759	1,610	201	671	640	574	123	270	94	54	66
18	37	4,880	1,150	210	562	550	653	120	243	90	53	64
19	42	1,990	890	315	482	470	590	117	221	86	52	57
20	915	1,390	734	336	423	412	542	112	210	82	51	54
21	622	1,060	635	458	378	392	462	108	197	80	50	52
22	843	2,030	550	640	342	498	395	104	178	79	52	50
23	856	2,150	474	1,750	321	450	348	100	166	76	54	48
24	985	1,590	416	2,520	303	409	312	97	156	75	51	46
25	1,080	1,830	374	2,080	290	364	268	93	147	77	49	46
26	1,010	3,500	378	3,070	272	330	270	90	168	98	48	50
27	658	4,820	378	1,760	258	300	258	88	384	115	46	47
28	466	2,840	333	1,140	243	280	252	89	510	178	45	45
29	382	1,760	309	840	-	282	367	86	398	120	48	45
30	450	1,270	286	694	-	364	330	84	312	100	57	44
31	427	-	275	550	-	423	-	85	-	90	50	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	9,484	1,080	35	308	3.19	3.67	18,810
November	36,888	4,880	189	1,230	12.8	14.29	73,170
December	43,896	6,860	275	1,416	14.8	17.01	87,070
Calendar year 1946	224,182	6,660	34	614	6.40	86.85	444,700
January	20,222	3,070	192	652	6.79	7.83	40,110
February	20,897	2,350	243	746	7.77	8.10	41,450
March	17,746	2,020	231	572	5.96	6.87	35,200
April	16,844	875	252	561	5.84	6.53	33,410
May	4,567	282	84	147	1.53	1.77	9,060
June	10,269	1,340	100	342	3.58	3.98	20,370
July	3,884	265	75	125	1.30	1.50	7,700
August	1,867	86	45	60.2	.627	.72	3,700
September	2,115	188	42	70.5	.734	.82	4,200
Water year 1946-47	188,679	6,660	35	517	5.39	73.09	374,800

Peak discharge.- Nov. 18 (6:30 p.m.) 7,200 sec.-ft.; Nov. 27 (10:30 a.m.) 5,950 sec.-ft.; Dec. 12 (8 a.m.) 5,260 sec.-ft.; Dec. 13 (10 p.m.) 5,430 sec.-ft.; Dec. 15 (1 a.m.) 10,000 sec.-ft.; Jan. 26 (2 a.m.) 4,130 sec.-ft.

Molalla River near Molalla, Oreg.

Location.- Water-stage recorder, lat. 45°07', long. 122°32', in SW¼ sec. 23, T. 5 S., R. 2 E., 1½ miles below Little Clear Creek and 3 miles southeast of Molalla. Records formerly obtained at practically same site but different datum, and at different site and datum ¾ miles downstream.

Drainage area.- 201 square miles.

Records available.- October 1946 to September 1947. November 1905 to July 1909 at practically the same site. July 1938 to September 1942 (irrigation seasons only) at site ¾ miles downstream.

Extremes.- Maximum discharge during year, 14,400 second-feet Dec. 15 (gage height, 8.41 feet); minimum, 65 second-feet Oct. 16, 17.

1905-9, 1946-47: Maximum discharge, that of Dec. 15, 1946; minimum, 40 second-feet July 28-31, 1907.

Remarks.- Records good except those for periods of no gage-height record, which are fair. No regulation. A few small diversions for domestic use or irrigation.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 15

Dec. 16 to Sept. 30

1.7	48	2.4	355	4.5	2,930	1.4	62	2.1	306	3.8	2,140
1.8	72	2.8	635	5.0	4,020	1.5	85	2.3	420	4.4	3,220
1.9	103	3.2	990	6.0	6,600	1.6	111	2.5	565	5.3	5,300
2.0	141	3.6	1,430	7.1	9,900	1.7	141	2.8	835		
2.1	187	4.0	2,010			1.9	215	3.2	1,270		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a66	1,100	1,480	505	a2,000	a400	966	455	188	505	155	90
2	a68	850	1,250	462	a3,500	a450	1,070	408	252	434	144	80
3	a72	707	1,100	434	a3,000	a600	1,130	378	224	390	148	78
4	a80	620	1,040	408	a2,300	a700	1,110	355	360	344	162	78
5	a110	560	924	396	a1,800	a620	1,150	333	333	317	141	76
6	a85	582	832	427	a1,600	a550	1,220	317	296	296	135	74
7	a90	651	787	390	a1,500	a550	1,150	301	322	282	126	153
8	a125	582	1,100	378	a1,300	a800	1,300	301	1,200	263	126	249
9	a110	546	1,010	366	a1,200	a1,400	1,430	344	2,060	249	126	245
10	a90	675	1,070	427	a1,000	a3,300	1,430	322	1,570	236	132	245
11	a80	605	2,920	535	a950	a2,900	1,280	296	1,170	228	123	180
12	a72	539	8,280	528	a1,400	a2,000	1,130	272	895	224	117	144
13	a68	483	7,300	505	2,030	a1,600	1,190	263	713	207	111	129
14	67	434	8,580	469	1,710	a1,400	1,190	254	574	199	108	117
15	67	394	9,710	420	1,480	a1,300	1,040	245	490	199	106	108
16	65	362	4,540	408	1,280	a1,100	895	236	505	188	103	103
17	65	826	2,910	408	1,100	a950	946	228	490	176	101	120
18	67	6,100	2,060	420	a950	a850	1,100	224	434	166	98	117
19	64	4,750	1,620	722	a850	a750	1,020	215	396	162	95	111
20	1,120	2,430	1,360	768	a750	a700	956	207	378	158	93	101
21	980	1,740	1,200	977	a680	a650	835	199	349	155	93	83
22	1,110	3,240	1,040	1,310	a640	a800	722	196	322	144	95	85
23	1,230	3,490	865	3,320	a600	a750	633	184	306	141	101	80
24	1,420	2,690	784	4,230	a560	a700	558	176	287	135	95	78
25	1,790	2,690	713	4,020	a520	624	505	169	263	138	90	78
26	1,790	5,340	731	5,300	a500	a600	469	166	296	176	88	90
27	1,140	6,660	759	3,160	a460	a550	434	158	865	199	85	80
28	805	4,480	650	2,220	a430	a490	414	162	1,010	322	83	78
29	659	2,770	599	1,620	-	490	558	162	797	232	65	78
30	859	1,930	550	a1,400	-	616	520	158	624	192	117	78
31	796	-	528	a1,200	-	695	-	162	-	169	103	78

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-foot
October	15,230	1,790	65	491	2.44	2.82	30,210
November	58,826	6,660	362	1,961	9.76	10.88	116,700
December	68,296	9,710	528	2,203	11.0	12.64	135,500
Calendar year	-	-	-	-	-	-	-
January	38,133	5,300	366	1,230	6.12	7.06	75,640
February	36,090	3,500	430	1,289	6.41	6.68	71,560
March	29,893	3,300	400	1,364	4.80	5.53	59,290
April	28,411	1,430	414	947	4.71	5.28	56,350
May	7,646	455	158	253	1.26	1.45	15,560
June	17,949	2,060	188	598	2.98	3.32	35,600
July	7,226	505	135	233	1.16	1.34	14,330
August	3,485	162	83	112	.557	.64	6,910
September	5,416	249	74	114	.567	.63	6,780
Water year 1946-47	314,801	9,710	65	862	4.29	58.25	624,400

Peak discharge.- Nov. 18 (7:30 p.m.) 9,470 sec.-ft.; Nov. 27 (1 p.m.) 7,710 sec.-ft.; Dec. 12 (6 a.m.) 8,850 sec.-ft.; Dec. 15 (3:30 a.m.) 14,400 sec.-ft.; Jan. 26 (2 a.m.) 8,640 sec.-ft.
 a No gage-height record; discharge computed on basis of records for stations above Pine Creek, near Wilhoit and near Canby.

Molalla River near Canby, Oreg.

Location.- Water-stage recorder. lat. 45°15', long. 122°41', in NE $\frac{1}{4}$ sec. 9, T. 4 S., R. 1 E., at bridge $\frac{1}{2}$ miles south of Canby. Datum of gage is 104.56 feet above mean sea level, datum of 1929.

Drainage area.- 323 square miles.

Records available.- August 1928 to September 1947.

Average discharge.- 19 years, 996 second-feet.

Extremes.- Maximum discharge during year, 16,200 second-feet Dec. 15 (gage height, 11.99 feet); minimum, 92 second-feet Aug. 28, Sept. 5, 6.

1928-47: Maximum discharge, 22,300 second-feet Mar. 31, 1931 (gage height, 14.7 feet), from rating curve extended above 16,000 second-feet; minimum, 25 second-feet Sept. 14, 1938; minimum daily, 38 second-feet Sept. 7, 1935.

Remarks.- Records good. A few small diversions above station for irrigation.

Cooperation.- Staff gage read once daily October to March by employees of U. S. Weather Bureau.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 14					Dec. 15 to Sept. 30						
2.0	84	2.9	550	5.2	3,030	1.8	90	2.6	370	5.5	3,510
2.2	155	3.3	860	6.2	4,450	1.9	110	2.9	560	7.0	5,840
2.4	250	3.8	1,330	7.5	6,560	2.0	135	3.2	790	9.0	9,510
2.6	360	4.4	2,020	9.0	9,400	2.2	200	3.7	1,260	11.0	13,800
						2.4	275	4.5	2,180		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	100	1,380	2,090	734	2,160	525	1,170	574	228	616	214	110
2	110	1,130	1,710	694	4,640	560	1,340	518	298	559	196	102
3	110	923	1,440	830	4,090	554	1,480	490	284	497	193	96
4	113	788	1,310	595	2,910	774	1,390	466	355	460	210	94
5	151	700	1,140	574	2,330	686	1,390	442	424	418	190	94
6	147	684	1,010	602	2,040	623	1,550	424	394	388	172	94
7	128	780	905	574	1,950	623	1,450	406	370	360	162	108
8	155	724	1,190	553	1,720	790	1,570	394	954	340	156	247
9	155	644	1,180	539	1,460	1,310	2,020	424	2,580	320	147	259
10	156	780	1,190	560	1,280	3,590	1,960	418	2,040	302	156	248
11	120	772	2,680	750	1,190	4,020	1,820	382	1,550	280	150	232
12	116	700	9,180	766	1,560	2,810	1,520	360	1,130	275	138	193
13	110	620	9,000	774	2,180	2,110	1,490	335	889	263	132	159
14	110	550	9,340	726	2,050	1,760	1,490	320	758	255	130	141
15	106	504	13,800	646	1,830	1,580	1,330	306	630	247	120	132
16	103	472	7,170	623	1,620	1,460	1,120	293	609	239	118	128
17	103	485	4,360	616	1,390	1,330	1,050	284	630	228	112	141
18	106	5,560	3,160	609	1,210	1,160	1,360	275	567	221	110	141
19	116	6,970	2,430	853	1,050	1,020	1,210	271	525	210	110	135
20	700	3,680	2,000	988	934	889	1,200	263	497	200	106	120
21	1,380	2,560	1,720	1,210	844	808	1,030	251	478	193	104	115
22	1,080	4,100	1,480	1,460	782	952	918	243	458	190	106	112
23	1,440	4,640	1,260	3,590	726	907	808	235	412	182	110	110
24	1,500	3,690	1,080	5,180	670	880	718	228	382	179	110	102
25	1,720	3,200	970	5,050	638	790	654	218	355	190	106	100
26	2,380	6,040	925	7,200	616	726	609	207	355	207	100	110
27	1,650	7,930	1,060	4,590	574	678	567	204	654	243	94	115
28	1,080	5,900	934	3,200	553	616	546	200	1,080	345	92	108
29	820	3,780	862	2,360	-	609	616	204	925	335	94	104
30	1,100	2,720	790	1,950	-	790	686	200	742	259	106	102
31	1,080	-	750	1,570	-	943	-	200	-	229	122	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	18,205	2,380	100	587	1.82	2.10	36,110
November	73,406	7,930	472	2,447	7.58	8.45	145,600
December	88,086	13,800	750	2,841	8.80	10.14	174,700
Calendar year 1946	477,099	13,800	-	1,507	4.05	54.93	946,200
January	50,766	7,200	539	1,638	5.07	5.85	100,700
February	44,997	4,640	553	1,607	4.98	5.18	89,250
March	36,973	4,020	525	1,193	3.69	4.26	73,330
April	36,060	2,020	546	1,202	3.72	4.15	71,520
May	10,035	574	200	324	1.00	1.16	19,900
June	21,331	2,380	228	711	2.20	2.46	42,310
July	9,209	616	179	297	.920	1.06	18,270
August	4,166	214	92	134	.415	.48	8,260
September	4,092	288	94	136	.421	.47	8,120
Water year 1946-47	397,326	13,800	92	1,089	3.37	45.76	788,100

Peak discharge.- Nov. 19 (1:30 a.m.) 10,100 sec.-ft.; Nov. 27 (4 p.m.) 9,100 sec.-ft.; Dec. 15 (10 a.m.) 16,200 sec.-ft.; Jan. 26 (7 a.m.) 8,510 sec.-ft.

Pudding River near Mount Angel, Oreg.

Location.- Water-stage recorder, lat. 45°03'49", long. 122°49'45", in SE¼ sec. 8, T. 6 S. R. 1 W., at Cline Bridge, 2 miles west of Mount Angel and 4 miles upstream from Little Pudding River. Datum of gage is 119.76 feet above mean sea level, datum of 1929.

Drainage area.- 207 square miles.

Records available.- October 1939 to September 1947.

Extremes.- Maximum discharge during year, 10,700 second-feet Dec. 15 (gage height, 29.99 feet); minimum, 21 second-feet Oct. 1, Sept. 4-6.

1939-47: Maximum discharge that of Dec. 15, 1946; minimum observed, 9 second-feet Sept. 13, 1944 (gage height, 0.49 foot).

Revisions.- Maximum discharge for the water year 1943 has been revised to 8,040 second-feet Jan. 1, 1943 (gage height, 28.85 feet), superseding figure published in Water-Supply Paper 984.

Remarks.- Records excellent except those below 50 second-feet, which are good. Small diversions for irrigation above station; no regulation.

Revisions.- Revised figures of discharge for the high-water period in the water year, 1943, superseding those published in Water-Supply Paper 984, are given herewith:

Jan. 1.....7,760

Month	Maximum	Minimum	Mean	Per square mile	Runoff	
					Inches	Acre-feet
January.....	7,760	460	1,723	8.32	9.80	106,000
Water year 1942-43	7,760	20	873	4.22	87.25	632,080
Calendar year 1943	7,760	29	656	3.17	43.04	475,170

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	878	2,110	500	1,590	349	673	352	108	213	68	26
2	27	569	1,690	468	2,640	377	852	317	163	190	58	24
3	31	724	1,370	421	2,810	461	929	293	151	188	54	22
4	30	616	1,180	364	2,480	526	961	274	175	172	65	22
5	34	526	992	368	2,030	464	1,060	261	192	156	61	22
6	44	480	861	384	1,650	418	1,200	247	189	143	51	22
7	36	488	782	363	1,370	448	1,170	234	174	134	46	26
8	42	442	989	340	1,180	612	1,200	224	384	125	42	94
9	49	390	1,050	321	1,000	798	1,410	232	918	113	41	94
10	38	430	1,010	330	899	1,610	1,450	222	852	105	48	117
11	32	394	1,230	467	837	2,340	1,450	205	634	100	48	61
12	29	353	2,650	499	888	2,060	1,270	190	478	102	40	64
13	27	325	3,900	522	1,060	1,630	1,120	184	384	98	36	51
14	27	301	4,860	498	1,040	1,320	999	172	326	89	34	44
15	26	281	8,780	430	1,040	1,100	873	162	282	88	32	40
16	26	262	5,860	410	1,010	942	764	155	279	87	30	37
17	26	271	4,220	398	905	824	714	149	332	77	32	38
18	29	1,310	3,300	385	808	736	793	144	270	70	30	38
19	36	2,410	2,740	552	724	658	701	140	239	67	28	35
20	238	2,320	2,250	636	662	598	701	134	224	63	27	32
21	564	1,900	1,810	744	612	547	613	130	220	57	27	31
22	436	2,190	1,420	809	565	580	550	116	192	51	26	29
23	606	2,590	1,120	1,400	520	571	497	110	176	50	27	28
24	554	2,510	930	2,070	484	600	452	102	164	47	30	25
25	588	2,270	800	2,210	456	532	419	97	150	49	26	24
26	776	2,720	739	2,810	424	482	390	91	152	67	25	28
27	676	3,400	787	2,720	392	440	358	85	244	106	23	30
28	522	3,600	702	2,270	371	404	343	84	364	129	22	30
29	412	3,110	625	1,610	-	396	390	86	293	123	23	29
30	614	2,600	564	1,510	-	600	416	84	245	86	28	29
31	667	-	522	1,270	-	626	-	87	-	73	32	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October.....	7,266	776	24	234	1.13	1.31	14,410
November.....	40,960	3,600	262	1,365	6.59	7.36	81,240
December.....	61,793	6,750	522	1,993	9.63	11.10	122,600
Calendar year 1946.....	287,189	8,750	16	787	3.80	51.61	569,700
January.....	28,319	2,610	321	914	4.42	5.09	56,170
February.....	30,516	2,910	371	1,090	5.27	5.48	60,530
March.....	24,269	2,340	349	783	3.78	4.36	46,140
April.....	24,698	1,450	343	823	3.98	4.44	48,990
May.....	5,567	352	84	173	.836	.96	10,650
June.....	6,954	918	106	298	1.44	1.61	17,780
July.....	3,214	213	47	104	.502	.58	6,370
August.....	1,162	66	22	37.5	.181	.21	2,300
September.....	1,214	117	22	40.5	.196	.22	2,410
Water year 1946-47.....	237,732	8,750	22	651	3.14	42.72	471,600

Peak discharge.- Nov. 28 (4 a.m.) 3,750 sec.-ft.; Dec. 15 (9 to 10 a.m.) 6,140 sec.-ft.; Jan. 26 (6 p.m.) 2,930 sec.-ft.; Feb. 3 (2 p.m.) 3,030 sec.-ft.; Mar. 11 (11 a.m.) 2,380 sec.-ft.

Pudding River at Aurora, Oreg.

Location.- Wire-weight gage, lat. 45°14', long. 122°45', in SE $\frac{1}{4}$ sec. 12, T. 4 S., R. 1 W., at highway bridge at Aurora, half a mile upstream from Mill Creek. Datum of gage is 76.79 feet above mean sea level, datum of 1929. Auxiliary staff gage 40 feet upstream and at same datum used May 15 to Sept. 15.

Drainage area.- 493 square miles.

Records available.- October 1928 to September 1947.

Average discharge.- 19 years, 1,076 second-feet.

Extremes.- Maximum discharge observed during year, 10,700 second-feet Dec. 16 (gage height, 20.97 feet); minimum observed, 71 second-feet Sept. 5 (gage height, 0.34 foot).

1928-47: Maximum discharge, 25,400 second-feet (revised) Dec. 30, 1937 (gage height, 24.5 feet, from graph based on gage readings), from rating curve extended above 16,000 second-feet; minimum, 37 second-feet Sept. 9, 12, 1935.

Maximum stage known, 25.0 feet Jan. 9, 1923 (discharge, 27,900 second-feet, revised, from subsequent rating curve extended above 16,000 second-feet).

Revisions.- The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede those shown in the water-supply papers indicated.

Water-Supply Paper	Water year	Date	Gage height (feet)	Discharge (second-feet)
724.....	1931	Apr. 1	21.4	13,000
769.....	1934	Dec. 23	21.64	13,900
814.....	1936	Jan. 13	20.26	9,750
864.....	1938	Dec. 30	24.5	25,400
984.....	1943	Nov. 27	21.1	12,100

Remarks.- Records fair. Gage read twice daily Oct. 1 to June 30, once daily thereafter. Small diversions above station; slight regulation at times in summer by mills on tributaries.

Revisions.- Revised figures of discharge for high-water periods in the water years 1931, 1934, 1938, and 1943 are given herewith. They supersede those published in Water-Supply Papers 724, 769, 864, and 984.

Day (water year)	Discharge (second-feet)	Day (water year)	Discharge (second-feet)
1930-31		1937-38	
Apr. 1.....	10,500	Dec. 29.....	11,400
2.....	10,600	30.....	23,900
3.....	9,070	31.....	14,700
		Jan. 1.....	8,560
1933-34		1942-43	
Dec. 22.....	9,640	Jan. 1.....	9,600
23.....	13,300	2.....	11,200
24.....	11,100	3.....	9,480
25.....	8,910	Feb. 7.....	10,300
26.....	8,880		

	Total	Mean	Maximum	Minimum	Second-feet per sq. mi.	Runoff in inches	Runoff in acre-feet
April 1931.....	92,586	3,090	10,600	561	6.27	6.98	184,000
Water year 1930-31.	282,035	773	10,600	49	1.57	21.24	558,800
Calendar year 1931.	386,769	1,060	10,600	49	2.15	29.13	766,200
December 1933.....	160,279	5,170	13,300	380	10.5	12.09	317,900
Calendar year 1933.	584,329	1,596	13,300	72	3.24	44.05	1,159,000
Water year 1933-34.	437,500	1,199	13,300	47	2.43	33.01	867,800
December 1937.....	121,020	3,904	23,900	1,010	7.92	9.13	240,000
Calendar year 1937.	571,815	1,567	23,900	70	3.18	43.14	1,134,000
January 1938.....	113,760	3,670	8,560	1,270	7.44	8.58	225,600
Water year 1937-38.	600,121	1,644	23,900	43	3.53	45.25	1,190,000
Calendar year 1938.	446,189	1,222	8,560	43	2.48	33.64	884,900
January 1943.....	116,797	3,768	11,200	985	7.64	8.81	231,700
February.....	109,641	3,916	10,300	898	7.94	8.27	217,500
Water year 1942-43.	632,708	1,733	11,200	56	3.52	47.72	1,255,000
Calendar year 1943.	469,416	1,286	11,200	74	2.61	35.40	931,000

WILLAMETTE RIVER BASIN

Discharge, in second-feet, of Pudding River at Aurora, Oreg., water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	930	4,400	915	2,540	617	1,560	672	172	417	159	81
2	77	1,210	4,000	872	3,580	605	1,600	597	219	361	146	84
3	84	1,170	3,390	805	4,280	688	1,850	549	295	317	138	77
4	85	985	2,730	730	4,360	828	1,870	509	302	302	130	73
5	91	848	2,190	660	4,100	878	1,830	477	314	288	133	71
6	93	726	1,790	635	3,610	792	1,960	453	349	257	135	75
7	104	678	1,540	655	3,150	752	2,040	417	329	236	126	75
8	102	676	1,430	628	2,510	850	1,970	409	363	228	120	75
9	110	627	1,720	599	2,010	1,120	2,300	391	537	208	112	117
10	112	591	1,740	575	1,680	2,310	2,460	399	1,420	195	115	164
11	102	618	1,700	670	1,480	3,580	2,410	389	1,290	184	115	174
12	95	611	2,790	918	1,450	3,860	2,220	357	968	175	120	165
13	85	553	4,080	1,050	1,700	3,540	1,960	335	755	172	112	138
14	80	505	4,840	1,060	1,960	2,980	1,670	321	617	172	102	117
15	78	465	7,060	945	2,040	2,420	1,570	302	535	161	98	105
16	76	426	10,000	805	2,170	1,980	1,380	288	477	161	93	100
17	74	398	9,240	740	1,970	1,560	1,220	276	473	154	88	96
18	74	690	7,210	698	1,700	1,440	1,250	266	505	148	87	93
19	78	2,760	6,280	710	1,450	1,280	1,290	257	441	137	86	98
20	124	3,510	5,450	965	1,280	1,150	1,190	248	393	135	85	94
21	560	3,460	4,710	1,140	1,160	1,040	1,130	238	373	133	81	92
22	840	3,320	4,010	1,290	1,050	978	1,000	228	355	133	77	88
23	812	3,710	3,120	1,580	952	1,050	908	216	317	117	79	87
24	908	4,030	2,270	2,460	855	1,050	830	198	292	111	79	84
25	840	3,950	1,800	3,300	818	1,040	760	189	269	111	84	78
26	908	3,810	1,470	4,010	762	945	702	181	254	117	85	74
27	1,080	4,290	1,370	4,610	700	865	650	175	266	135	80	74
28	952	4,920	1,400	4,420	642	810	609	167	385	178	78	77
29	762	5,000	1,230	4,000	-	748	593	164	517	232	77	77
30	644	4,720	1,090	3,450	-	890	650	167	473	235	75	86
31	842	-	968	2,850	-	1,410	-	164	-	186	77	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	10,942	1,080	72	353	0.716	0.83	21,700
November	80,187	5,000	398	2,006	4.07	4.54	119,400
December	107,018	10,000	968	3,452	7.00	8.07	212,300
Calendar year 1946	512,956	10,000	56	1,405	2.85	38.72	1,018,000
January	48,745	4,610	575	1,572	3.19	3.68	96,680
February	55,959	4,360	642	1,999	4.05	4.22	111,000
March	44,056	3,860	605	1,421	2.88	3.32	87,380
April	43,432	2,460	593	1,448	2.94	3.28	86,150
May	9,999	672	164	323	.655	.75	19,830
June	14,255	1,420	172	475	.963	1.08	28,270
July	6,096	417	111	197	.400	.46	12,090
August	3,172	159	75	102	.207	.24	6,290
September	2,889	174	71	96.3	.195	.22	5,730
Water year 1946-47	406,750	10,000	71	1,114	2.26	30.69	806,800

Butte Creek at Monitor, Oreg.

Location.- Staff gage, lat. 45°06', long. 122°45', in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 25, T. 5 S., R. 1 W., at highway bridge in Monitor, 5 miles upstream from mouth.

Drainage area.- 64 square miles.

Records available.- October 1940 to September 1947 in reports of Geological Survey. January to December 1936 in files of State engineer.

Extremes.- Maximum discharge observed during year, 3,380 second-feet Dec. 15 (gage height, 11.10 feet); minimum observed, 10 second-feet Sept. 5.
1936, 1940-47: Maximum discharge observed, 4,410 second-feet Nov. 23, 1942 (gage height, 12.70 feet); minimum observed, 5 second-feet Sept. 7-12, 1944, Aug. 20-24, 1945.

Remarks.- Records fair except those for periods of doubtful or no gage-height record, which are poor. Small diversions above station for irrigation. Some diurnal fluctuation caused by mills at Scotts Mills.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	a210	471	141	718	88	214	114	47	81	26	11
2	12	a180	561	150	1,440	100	268	98	58	75	21	11
3	12	a150	518	118	1,000	127	370	91	51	69	23	11
4	13	a130	286	112	698	132	361	84	58	66	26	11
5	16	a90	239	108	519	123	346	78	69	63	23	10
6	16	a196	a225	106	422	116	388	72	80	58	20	13
7	16	a150	a220	100	358	127	361	69	68	52	18	23
8	22	118	a330	93	301	159	382	68	162	48	17	54
9	24	a120	a280	90	260	334	394	69	412	45	21	61
10	18	156	a300	95	245	873	412	72	334	42	26	52
11	15	127	391	144	254	781	373	65	245	42	22	39
12	14	112	1,390	151	316	692	334	62	178	41	20	34
13	14	102	1,590	144	465	541	301	58	157	38	18	29
14	13	96	2,220	134	d400	d400	366	53	127	37	18	26
15	13	88	2,820	112	d350	d340	242	52	102	35	17	21
16	12	80	1,350	110	307	d300	208	51	106	33	16	19
17	13	197	928	125	257	d250	189	48	108	30	14	21
18	d15	1,320	705	144	222	d220	231	48	95	28	13	22
19	d25	1,150	567	162	191	d190	208	48	81	27	13	19
20	263	640	471	170	170	167	197	46	78	26	13	18
21	283	567	403	260	151	162	175	42	74	24	13	16
22	337	876	355	391	139	183	164	39	66	22	12	16
23	337	890	295	586	132	183	151	37	61	22	15	15
24	a360	711	248	1,010	118	162	139	35	57	21	15	14
25	a390	599	214	923	110	151	130	34	52	26	14	13
26	a300	1,320	208	1,300	104	144	118	32	52	33	13	14
27	154	1,640	231	995	96	132	112	30	112	41	12	14
28	139	1,080	200	863	93	120	106	30	102	58	12	13
29	130	731	178	850	-	127	114	31	96	46	12	13
30	a160	557	162	498	-	151	127	30	88	37	12	13
31	a155	-	151	468	-	180	-	38	-	27	11	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	3,303	390	12	107	1.67	1.92	6,550
November	14,363	1,840	80	479	7.48	8.35	28,490
December	18,083	2,820	151	583	9.11	10.51	35,870
Calendar year 1946	94,656	2,820	8	259	4.05	55.01	187,700
January	10,431	1,300	90	336	5.25	6.06	20,690
February	9,836	1,440	93	351	5.48	5.72	19,510
March	7,755	873	68	250	3.91	4.51	15,380
April	7,481	412	108	249	3.89	4.35	14,840
May	1,724	114	30	55.6	.869	1.00	3,420
June	3,376	412	47	113	1.77	1.96	6,700
July	1,293	81	21	41.7	.652	.75	2,560
August	526	26	11	17.0	.266	.31	1,040
September	647	61	10	21.6	.338	.38	1,280
Water year 1946-47	78,818	2,820	10	216	3.38	45.82	158,300

a No gage-height record; discharge computed on basis of records for stations on Molalla River.

d Doubtful gage-height record; discharge computed as explained in footnote a.

Tualatin River at Gaston, Oreg.

Location.- Staff gage, lat. 45°26'10", long. 123°10'05", in W $\frac{1}{2}$ sec. 34, T. 1 S., R. 4 W., 1.5 miles west of Gaston.

Drainage area.- 51 square miles at measuring section at Gaston.

Records available.- October 1940 to September 1947.

Extremes.- Maximum discharge during year, 2,330 second-feet Feb. 2 (gage height, 9.90 feet) minimum observed, 12 second-feet Oct. 11, 12 (gage height 0.16 foot).
1940-47: Maximum discharge, 3,540 second-feet Dec. 19, 1941 (gage height, 13.88 feet, site and datum then in use), from rating curve extended above 2,500 second-feet; minimum observed, 10 second-feet Aug. 24, 26, Sept. 26, 30, 1946.

Remarks.- Records fair. Staff gage read twice daily. Slight diurnal fluctuation caused by 106 ponds upstream. Small diversions above station for irrigation.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Aug. 1 to Sept. 30)

Oct. 1 to Dec. 15					Dec. 16 to Sept. 30				
0.1	10	1.5	100	5.0 693	0.1	14	1.5	107	5.0 748
.3	18	1.9	150	6.5 995	.3	20	1.9	165	6.5 1,020
.5	28	2.4	232	8.0 1,380	.5	28	2.0	182	8.0 1,320
.8	45	3.0	334	9.5 2,080	.8	44	3.0	378	9.1 1,830
1.1	65	4.0	509		1.1	65	4.0	568	

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	170	295	131	820	134	149	75	38	36	24	14
2	17	126	271	115	1,830	154	159	71	54	33	22	14
3	20	89	254	108	1,040	292	143	63	57	36	21	15
4	17	73	505	105	685	242	152	60	56	34	21	14
5	21	63	1,050	105	493	204	168	59	52	32	20	14
6	16	57	706	101	408	184	184	57	45	32	20	15
7	16	52	464	97	354	189	165	56	50	31	19	30
8	18	49	588	93	306	215	195	54	75	28	19	32
9	16	47	473	91	284	338	206	56	140	28	21	41
10	14	49	559	108	262	672	227	54	100	26	24	32
11	12	44	870	136	254	705	208	54	71	27	19	24
12	12	41	1,600	128	417	434	187	51	59	32	18	20
13	13	40	2,020	138	535	350	163	54	50	28	18	18
14	13	37	1,580	126	520	290	144	49	46	29	17	17
15	13	38	1,760	111	529	260	134	48	48	26	17	16
16	13	35	1,090	101	527	244	128	46	63	27	17	16
17	13	39	714	102	380	208	123	47	49	26	17	16
18	15	712	510	99	326	193	128	44	45	23	16	18
19	16	527	404	258	288	174	116	45	45	23	16	16
20	68	292	374	211	258	162	112	43	47	23	16	16
21	83	266	308	252	240	152	110	42	42	22	16	15
22	113	853	278	308	217	143	105	39	38	22	17	14
23	96	1,030	246	640	195	138	97	36	37	23	19	15
24	79	882	223	964	182	138	92	39	35	22	17	14
25	83	1,060	204	1,370	168	126	86	36	34	24	16	14
26	91	1,230	189	1,320	154	117	83	34	36	26	15	14
27	88	1,260	179	849	144	114	78	33	45	26	14	16
28	62	735	174	550	137	112	81	35	48	26	16	16
29	64	469	151	425	-	102	114	36	46	28	16	17
30	99	348	137	402	-	165	78	34	39	26	16	18
31	83	-	131	330	-	149	-	34	-	24	15	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	1,307	113	12	42.2	0.827	0.95	2,590
November	10,513	1,260	35	350	6.86	7.67	20,850
December	18,307	2,020	131	591	11.6	13.35	36,310
Calendar year 1946	82,119	2,020	11	225	4.41	59.89	162,900
January	9,874	1,370	91	319	6.25	7.20	19,580
February	11,953	1,830	137	427	8.37	8.72	23,710
March	7,100	705	102	229	4.49	5.18	14,080
April	4,115	227	78	137	2.69	3.00	8,160
May	1,484	75	33	47.9	.939	1.08	2,940
June	1,590	140	34	53.0	1.04	1.16	3,150
July	849	36	22	27.4	.537	.62	1,680
August	559	24	14	18.0	.353	.41	1,110
September	549	41	13	18.3	.359	.40	1,090
Water year 1946-47	68,200	2,020	12	187	3.67	49.74	135,200

Tualatin River near Dilley, Oreg.

Location.- Wire-weight gage, lat. 45°28'25", long. 123°07'20", in NW¼ sec. 24, T. 1 S., R. 4 W., at county road bridge three-quarters of a mile downstream from Scoggin Creek and 1½ miles south of Dilley. Datum of gage is 151.10 feet above mean sea level, datum of 1929.

Drainage area.- 133 square miles.

Records available.- October 1940 to September 1947.

Extremes.- Maximum discharge, observed during year, 4,520 second-feet Dec. 15 (gage height, 12.62 feet); minimum observed, 17 second-feet Sept. 24-26.
1940-47: Maximum discharge, 5,360 second-feet Dec. 19, 1941 (gage height, 12.90 feet, from floodmark); minimum observed, 4 second-feet Aug. 21, 1941.

Remarks - Records fair except those for Oct. 14-30, which are poor. Gage read once daily.
Divisions above station for irrigation, chiefly in Wapato Lake area. Diurnal fluctuations caused by dam below Gaston.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	257	836	264	1,340	302	336	153	61	50	38	26
2	36	212	732	247	3,700	347	344	145	81	51	38	26
3	32	157	598	233	4,380	559	321	135	98	50	36	26
4	33	110	735	216	2,880	510	327	126	106	50	35	25
5	35	91	1,590	205	1,860	458	315	120	112	48	32	26
6	28	80	1,790	217	1,340	438	319	116	92	49	30	27
7	24	74	1,560	208	1,050	400	331	112	89	46	28	60
8	31	72	1,240	190	902	453	347	106	108	44	27	67
9	24	71	1,210	178	750	604	387	107	165	40	26	67
10	27	70	1,120	192	673	1,060	410	106	178	36	31	58
11	22	68	1,240	271	612	1,780	400	96	127	36	28	49
12	22	66	2,450	269	763	1,390	377	93	106	37	27	36
13	22	62	3,540	270	1,120	1,000	356	93	92	38	26	31
14	a23	60	4,240	256	1,460	824	320	90	84	38	24	28
15	a23	58	4,520	237	1,380	663	292	81	79	36	24	26
16	a23	55	2,820	217	1,190	550	272	73	73	36	23	25
17	a25	187	1,600	191	1,080	500	259	76	84	34	23	24
18	a30	568	1,380	202	922	451	240	74	72	34	22	24
19	a35	1,100	1,050	265	772	412	279	72	67	32	22	23
20	a110	634	888	359	660	383	256	69	66	31	22	23
21	a130	562	742	419	579	357	235	64	65	30	21	20
22	a165	962	630	514	514	315	220	62	63	30	21	19
23	a140	1,440	559	930	467	344	208	61	62	30	22	18
24	a115	1,260	498	1,240	427	327	201	60	61	30	28	17
25	a125	1,600	456	1,810	397	305	192	58	59	29	27	17
26	a120	2,020	418	3,610	347	279	177	57	60	32	26	17
27	a125	2,490	393	2,540	327	264	172	67	64	40	26	20
28	a95	1,940	353	1,700	317	252	167	62	65	63	26	21
29	a100	1,500	327	1,110	-	243	187	62	61	48	26	22
30	a130	1,050	299	1,050	-	252	169	60	55	40	28	21
31	115	-	279	904	-	339	-	58	-	39	28	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	2,005	165	22	64.7	0.486	0.56	3,980
November	19,076	2,490	55	656	4.78	5.33	37,840
December	40,293	4,520	279	1,300	9.77	11.27	79,320
Calendar year 1946	169,379	4,520	9	464	3.49	47.34	336,000
January	20,514	3,610	178	662	4.98	5.74	40,690
February	32,209	4,380	317	1,150	8.65	9.01	63,890
March	16,341	1,760	243	527	3.96	4.57	32,410
April	8,416	410	167	281	2.11	2.35	16,690
May	2,714	153	57	87.5	.659	.76	5,370
June	2,555	178	55	85.2	.641	.71	5,070
July	1,227	63	29	39.6	.298	.34	2,430
August	841	36	21	27.1	.204	.24	1,670
September	889	67	17	29.6	.223	.25	1,760
Water year 1946-47	147,080	4,520	17	403	3.03	41.13	291,700

a No gage-height record; discharge computed on basis of records for other stations on Tualatin River.

e Gage height not representative of mean for day; discharge computed on basis of records for station at Gaston.

Tualatin River at Farmington, Oreg.

Location.- Staff gage, lat. 45°27'00", long. 122°57'00", in SE $\frac{1}{4}$ sec. 29, T. 1 S., R. 2 W., at highway bridge at Farmington, $\frac{7}{8}$ miles southwest of Beaverton. Auxiliary staff gage at highway bridge $\frac{3}{8}$ miles downstream, 1 mile northeast of Scholls. Datum of each gage is 100.42 feet above mean sea level, datum of 1929. All discharge measurements made at Farmington.

Drainage area.- 568 square miles.

Records available.- October 1939 to September 1947.

Extremes.- Maximum discharge observed during year, 11,000 second-feet Dec. 16 (gage height, 32.58 feet); minimum discharge observed, 45 second-feet Aug. 22.
1939-47: Maximum discharge observed, 14,500 second-feet Dec. 20, 1941; maximum gage height observed, 33.45 feet Dec. 21, 1941; minimum discharge observed, 28 second-feet Sept. 13, 14, 1944.
Maximum stage known, about 37 feet at Farmington and 33.4 feet at gage near Scholls, Dec. 22 or 23, 1933.

Remarks.- Records fair. Gages read twice daily. For gage heights above 8 feet, discharge computed by using fall, as determined by twice-daily readings of auxiliary gage, as a factor. Slight regulation by log ponds and dam below Gaston have little effect at this station; considerable pondage between this station and station near Willamette. Some diversions by pumping for irrigation above station, chiefly at Wapato Lake, near Gaston.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	63	305	5,060	1,060	4,430	1,050	1,290	436	168	136	103	63
2	69	418	4,370	979	5,220	1,020	1,310	416	175	121	94	62
3	81	432	5,730	895	6,140	1,070	1,130	383	222	115	89	59
4	84	387	3,410	798	8,210	1,430	1,050	352	261	114	82	55
5	88	326	3,330	743	7,460	1,460	940	320	273	114	76	53
6	87	285	3,540	726	6,810	1,310	957	308	266	113	75	54
7	100	253	3,780	723	6,150	1,260	990	295	250	110	76	60
8	93	234	4,180	732	5,520	1,340	938	283	267	105	69	74
9	86	228	4,320	692	4,610	1,580	1,080	268	307	100	64	118
10	84	210	4,400	683	4,090	1,990	1,150	268	380	88	70	138
11	80	208	4,180	817	3,810	2,890	1,210	271	398	85	81	137
12	80	208	4,140	973	3,120	2,780	1,160	265	308	85	89	118
13	77	198	4,610	1,220	2,960	3,120	1,060	261	257	100	78	101
14	75	183	6,410	1,180	2,960	3,150	905	257	222	100	75	87
15	73	183	9,040	1,060	3,100	2,940	872	245	200	94	69	81
16	75	177	10,900	889	3,140	2,620	815	229	195	84	61	76
17	78	177	9,350	806	3,260	2,520	751	236	206	81	57	71
18	79	374	7,780	798	3,130	2,300	717	229	223	76	59	71
19	81	1,110	6,750	862	3,050	1,790	755	217	211	68	59	74
20	119	2,050	5,920	1,220	2,860	1,400	697	216	192	67	51	75
21	173	2,200	5,330	1,300	2,640	1,370	630	213	180	68	56	76
22	339	2,410	4,740	1,350	2,010	1,290	603	196	177	69	47	74
23	323	2,740	3,950	1,500	1,990	1,130	536	184	164	61	54	72
24	354	3,020	2,970	2,010	1,690	1,110	506	174	156	55	61	75
25	305	3,230	2,700	2,480	1,780	1,100	476	166	143	61	68	71
26	269	3,690	2,640	3,070	1,360	980	466	160	134	69	68	64
27	279	3,520	1,970	3,950	1,220	855	436	159	130	78	61	68
28	281	5,050	1,590	4,890	1,110	796	409	156	319	100	60	71
29	285	5,550	1,340	5,180	-	747	421	157	152	123	54	77
30	274	5,530	1,200	4,730	-	854	427	163	146	139	55	82
31	260	-	1,030	4,560	-	1,290	-	165	-	121	61	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	4,794	354	63	155	0.273	0.51	9,510
November	56,691	5,550	1,777	1,523	2.68	2.99	90,630
December	518,660	10,900	1,050	4,473	7.88	9.08	275,000
Calendar year 1946	596,659	11,600	32	1,635	2.88	39.07	1,183,000
January	52,876	5,180	683	1,706	3.00	3.46	104,900
February	103,830	8,210	1,110	3,708	6.53	6.80	205,900
March	50,542	3,150	747	1,630	2.87	3.31	100,200
April	24,687	1,310	409	823	1.45	1.62	48,970
May	7,648	436	156	247	.435	.50	15,170
June	6,500	396	130	217	.382	.43	12,890
July	2,900	139	55	93.5	.165	.19	5,750
August	2,131	103	47	68.7	.121	.14	4,230
September	2,357	138	53	78.6	.138	.15	4,680
Water year 1946-47	442,616	10,900	47	1,213	2.14	28.98	877,800

Tualatin River near Willamette, Oreg.

Location.- Water-stage recorder, lat. 45°21'05", long. 122°40'35", in SW $\frac{1}{4}$ sec. 34, T. 2 S., R. 1 E., 300 feet upstream from county bridge and 1 mile northwest of Willamette. Datum of gage is 85.61 feet above mean sea level, datum of 1929 (levels by Corps of Engineers).

Drainage area.- 710 square miles.

Records available.- July 1928 to September 1947.

Average discharge.- 19 years, 1,337 second-feet (including flow of Oswego Canal).

Extremes (river only).- Maximum discharge during year, 8,970 second-feet Dec. 18 (gage height, 11.53 feet); minimum, 8 second-feet Sept. 17-20.

1928-47: Maximum discharge, 23,300 second-feet Dec. 23, 1933 (gage height, 17.72 feet, present datum); minimum observed, 2 second-feet Aug. 14-21, 1928 (gage height, 1.27 feet, present datum).

Remarks.- Records excellent except those below 50 second-feet, which are good. Oswego Canal (p. 181) diverts water 4 $\frac{1}{2}$ miles above station for recreational use in Oswego Lake and development of power between outlet of that lake and Willamette River, to which water is returned. Several small diversions above station for irrigation. Some regulation in low-water season by flashboards on crest of diversion dam of Oswego Canal.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Nov. 19-28)

Oct. 1 to Dec. 16

Dec. 17 to Sept. 30

1.6	12	2.8	219	6.5	2,430	1.4	6	2.2	80	5.0	1,290
1.7	18	3.2	346	7.7	3,570	1.5	9	2.5	135	6.0	2,020
1.9	36	3.6	510	9.0	5,110	1.6	13	2.8	208	7.5	3,370
2.1	62	4.1	750	10.7	7,740	1.7	20	3.2	336	9.0	5,110
2.3	97	4.7	1,100			1.8	29	3.6	500	10.5	7,290
2.5	139	5.5	1,640			2.0	52	4.1	750	11.5	8,920

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	271	5,330	1,230	4,980	1,220	1,430	518	135	97	65	18
2	20	350	5,100	1,180	5,790	1,190	1,400	509	153	97	64	18
3	29	431	4,590	1,080	1,250	1,320	491	184	83	52	13	5
4	36	444	4,120	963	6,200	1,440	1,230	451	231	77	51	12
5	36	364	3,820	904	6,850	1,560	1,160	418	252	72	47	10
6	37	312	3,870	844	7,070	1,540	1,110	394	256	80	44	10
7	44	274	3,980	816	6,880	1,460	1,110	378	240	72	39	9
8	46	243	4,160	816	6,540	1,460	1,110	359	246	66	38	10
9	40	225	4,310	778	5,790	1,650	1,170	225	298	72	37	10
10	36	213	4,360	750	5,070	2,540	1,280	133	344	65	32	13
11	32	213	4,380	800	4,400	3,450	1,300	231	378	62	30	46
12	28	207	4,500	969	3,810	3,550	1,300	243	332	61	28	56
13	26	207	4,840	1,130	3,520	3,520	1,250	243	256	60	25	40
14	23	196	5,360	1,220	3,450	3,480	1,170	234	211	65	24	28
15	21	190	6,800	1,190	3,570	3,400	1,090	222	181	65	22	19
16	20	185	7,630	1,060	3,690	3,210	987	211	171	64	20	14
17	22	190	8,580	921	3,750	2,960	904	205	169	56	19	9
18	24	537	8,870	866	3,670	2,660	860	205	184	52	18	8
19	29	1,320	8,350	910	3,550	2,250	838	203	186	50	17	8
20	83	2,040	7,510	1,100	3,360	1,850	805	194	174	42	17	8
21	119	2,370	6,730	1,320	3,140	1,600	766	184	153	38	19	9
22	202	2,900	5,950	1,420	2,850	1,440	739	174	146	36	19	12
23	252	3,350	5,100	1,590	2,510	1,350	695	155	137	28	18	12
24	277	3,550	4,300	2,070	2,160	1,280	645	146	125	25	17	12
25	264	3,580	3,560	2,740	1,840	1,220	615	146	111	24	17	11
26	222	4,170	3,010	3,550	1,600	1,150	590	131	102	25	19	12
27	231	4,620	2,540	3,900	1,450	1,060	555	121	99	27	17	12
28	228	4,880	2,060	4,350	1,320	969	536	115	97	29	18	12
29	222	5,250	1,700	4,720	-	910	522	111	97	39	18	11
30	222	5,370	1,460	4,940	-	995	518	117	101	52	18	11
31	219	-	1,300	4,850	-	1,260	-	131	-	62	16	-

Month	Observed			Runoff in acre-feet	Diversion by Oswego Canal in acre-feet	Adjusted for diversion			
	Discharge in second-Feet		Runoff in acre-feet			Discharge in second-feet	Runoff in inches		
	Maxi- mum	Mini- mum						Mean	Mean
October.....	277	15	100	6,160	4,280	10,440	170	0.239	0.28
November.....	5,370	185	1,615	96,100	688	96,790	1,627	2.29	2.56
December.....	8,870	1,300	4,779	293,900	10,090	304,000	4,944	6.96	8.03
Calendar year 1946	9,620	7	1,790	1,296,000	65,490	1,361,000	1,880	2.65	35.96
January.....	4,940	750	1,773	109,000	4,040	113,000	1,838	2.59	2.96
February.....	7,070	1,320	4,090	227,100	8,550	235,600	4,242	5.97	6.22
March.....	3,550	910	1,899	116,800	4,960	121,800	1,981	2.79	3.22
April.....	1,430	518	967	57,530	3,110	60,640	1,019	1.44	1.60
May.....	518	111	245	15,070	4,400	19,470	317	.446	.51
June.....	378	97	192	11,400	5,030	16,430	276	.389	.43
July.....	97	24	56.2	3,460	3,790	7,250	118	.166	.19
August.....	65	16	28.5	1,760	3,660	5,420	88.2	.124	.14
September.....	56	8	15.8	938	4,000	4,938	83.0	.117	.13
Water year 1946-47	8,870	8	1,297	939,200	56,600	995,800	1,375	1.94	26.29

WILLAMETTE RIVER BASIN

Scoggin Creek near Gaston, Oreg.

Location.- Water-stage recorder, lat. 45°27', long. 123°09', in NW¹ sec. 26, T. 1 S., R. 4 W., 500 feet upstream from highway bridge, $\frac{1}{2}$ miles upstream from mouth, and 1.7 miles northwest of Gaston. Datum of gage is 168.44 feet above mean sea level, datum of 1929.

Drainage area.- 44.0 square miles.

Records available.- October 1940 to September 1947.

Extremes.- Maximum discharge during year, 1,370 second-feet Dec. 15 (gage height, 13.09 feet); minimum not determined.
1940-47: Maximum discharge, 1,610 second-feet Jan. 18, 1941; maximum gage height (corrected), 14.45 feet Feb. 7, 1945; minimum discharge, 1.2 second-feet Aug. 22, 1941, Oct. 7, 8, 1943.

Remarks.- Records good except those for periods of doubtful or no gage-height record, which are poor. Small diversions by pumping above station for irrigation. Water supply for Hillsboro is diverted from Sein Creek above station; some diurnal fluctuation caused by log ponds above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		74	243	92	a550	104	99	56	a22		11	
2		62	212	86	a1,200	118	101	52	22		10	
3		45	203	83	a700	198	97	50	23			
4		37	353	80	a500	171	95	48	22			
5		a27	688	80	a420	147	95	48	d22			a12
6		a22	553	79	a340	134	99		d22			
7		a21	388	75	a290	140	95		d22			
8		a22	423	71	a260	152	115		29			
9		a22	364	67	a230	224	117		46			
10		a22	353	76	a220	404	132		33			h12
11	all	a22	494	86	207	414	125		d26			
12		a23	890	94	295	326	118					
13		a21	1,240	92	374	278	110		a22			
14		a22	1,030	83	372	243	103			a12		
15		a19	1,210	76	368	212	91					
16		a19	742	75	342	186	86		a35	29	a10	
17		a140	471	73	306	166	86					
18		a230	355	75	271	148	86					a8
19		h321	302	121	242	134	82					
20	50	206	261	112	216	121	78					
21	43	171	229	134	192	113	73					
22	51	533	198	162	174	109	67					
23	39	568	176	a300	158	108	64		a18			
24	29	549	156	a500	144	106	62					
25	28	643	142	a1,100	132	98	60					h12
26	28	852	132	a1,000	121	92	59					
27	33	824	122	a700	114	88	56		h22			
28	29	552	112	a400	106	83	56					
29	27	356	105	a300	-	83	62		a22			a12
30	37	293	98	a280	-	117	57			16		
31	37	-	95	a280	-	108	-			12		
										11		

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	640	51	-	20.6	0.468	0.54	1,270
November	6,739	852	19	225	5.11	5.70	13,560
December	12,332	1,240	95	398	9.05	10.42	24,460
Calendar year 1946	57,057	1,420	-	156	3.55	48.23	113,200
January	6,812	1,100	67	220	5.00	5.76	13,510
February	8,844	1,200	106	316	7.18	7.48	17,540
March	5,125	414	83	165	3.75	4.33	10,170
April	2,626	132	56	87.5	1.99	2.22	5,210
May	1,099	56	-	35.5	1.807	.93	2,180
June	658	46	-	21.9	.498	.56	1,310
July	375	-	-	12.1	.275	.32	744
August	311	-	-	10.0	.227	.26	617
September	300	-	-	10.0	.227	.25	595
Water year 1946-47	45,860	1,240	-	126	2.86	38.77	90,970

a No gage-height record; discharge computed on basis of records for stations on Tualatin River at Gaston and near Dilley.

d Doubtful gage-height record; discharge computed as explained in footnote a.

h Computed from staff-gage reading.

Gales Creek near Forest Grove, Oreg.

Location.- Water-stage recorder, lat. 45°33'10", long. 123°11'10", in E $\frac{1}{2}$ sec. 21, T. 1 N., R. 4 W., at bridge $2\frac{1}{2}$ miles southeast of village of Gales Creek and $4\frac{1}{2}$ miles northwest of Forest Grove. Datum of gage is 203.01 feet above mean sea level, datum of 1929.

Drainage area.- 66 square miles.

Records available.- October 1940 to September 1947.

Extremes.- Maximum discharge during year, 3,120 second-feet Feb. 2 (gage height, 7.46 feet); minimum, 1 second-foot (regulated) Aug. 19; minimum daily, 10 second-feet Sept. 23.

1940-47: Maximum discharge, 4,040 second-feet Feb. 7, 1945 (gage height, 8.38 feet); minimum, that of Aug. 19, 1947.

Remarks.- Records good. Small diversions above station for irrigation; some diurnal fluctuations at low flow caused by log ponds upstream.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	156	398	149	832	174	169	90	46	26	21	15
2	18	137	346	140	2,400	212	167	85	62	25	20	14
3	20	112	363	129	1,310	326	153	81	60	26	19	13
4	25	95	624	123	869	287	149	77	58	26	20	13
5	27	90	1,240	123	650	255	160	74	57	26	20	14
6	24	78	832	120	533	235	164	72	57	25	16	15
7	20	75	695	116	463	248	155	72	68	24	15	31
8	21	72	705	110	407	255	176	69	76	24	19	35
9	20	72	638	106	362	350	176	68	77	22	22	31
10	19	70	624	140	335	671	198	64	57	23	27	26
11	19	67	864	146	332	737	190	63	46	28	19	21
12	21	66	1,330	171	491	556	181	51	43	26	20	19
13	18	63	1,950	160	635	443	171	55	40	22	19	18
14	17	82	1,790	151	645	379	160	56	38	22	17	17
15	18	59	1,970	138	635	335	151	56	36	24	16	17
18	18	57	1,040	131	575	296	142	56	43	24	18	18
17	19	90	737	127	495	265	142	56	41	21	16	16
18	20	912	556	135	428	242	138	55	38	20	16	16
19	24	642	455	181	376	222	135	53	36	21	12	17
20	114	346	390	174	358	205	129	51	34	21	13	16
21	84	287	341	205	308	193	123	50	33	18	16	15
22	135	665	299	284	275	181	116	49	31	16	17	21
23	104	1,000	268	424	255	176	112	46	30	18	19	10
24	90	918	245	786	235	176	106	44	29	19	17	12
25	81	1,020	225	1,350	220	158	104	42	29	19	16	12
26	84	1,210	212	1,400	205	146	100	42	33	23	18	13
27	91	1,280	200	886	195	138	96	42	31	24	15	14
28	80	820	183	625	183	131	100	42	32	29	15	16
29	73	624	167	483	-	135	102	43	30	28	15	23
30	102	481	160	435	-	181	92	42	27	24	15	12
31	100	-	155	359	-	158	-	42	-	22	16	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	1,525	135	17	49.1	0.744	0.86	3,020
November	11,626	1,280	57	388	5.88	6.55	23,060
December	20,002	1,970	155	645	9.77	11.27	39,670
Calendar year 1946	94,127	2,280	13	258	3.91	53.03	186,700
January	10,007	1,400	106	323	4.89	5.64	19,850
February	14,987	2,400	183	535	8.11	8.44	29,730
March	8,466	737	131	273	4.14	4.77	16,790
April	4,257	198	92	142	2.15	2.40	8,440
May	1,788	90	42	57.7	.874	1.01	3,550
June	1,318	77	27	43.9	.685	.74	2,610
July	716	29	16	23.1	.350	.40	1,420
August	544	27	12	17.5	.285	.31	1,080
September	530	35	10	17.7	.268	.30	1,050
Water year 1946-47	75,766	2,400	10	208	3.15	42.69	150,300

Peak discharge.- Nov. 19 (9 p.m.) 1,230 sec.-ft.; Nov. 27 (8 a.m.) 1,400 sec.-ft.; Dec. 15 (12:30 a.m.) 2,330 sec.-ft.; Jan. 25 (9 p.m.) 1,890 sec.-ft.; Feb. 2 (7:30 a.m.) 3,120 sec.-ft.

East Fork Dairy Creek at Mountindale, Oreg.

Location.- Water-stage recorder, lat. 45°38'05", long. 123°02'35", in NW¼ sec. 27, T. 2 N., R. 3 W., at dam site three-quarters of a mile north of village of Mountindale.

Datum of gage is 183.04 feet above mean sea level, datum of 1929.

Drainage area.- 43.0 square miles, including two small streams on left bank which enter creek below station.

Records available.- October 1940 to September 1947.

Extremes.- Maximum discharge during year, 1,300 second-feet Feb. 2 (gage height, 12.34 feet); minimum, 9 second-feet Oct. 12.

1940-47: Maximum discharge, 1,380 second-feet Feb. 6, 1946 (gage height, 12.46 feet); minimum, 7 second-feet Sept. 10-12, 1944.

Remarks.- Records good except those for periods of shifting control or no gage-height record, which are fair. Records include measured or estimated discharge of two small streams which flow through dam site at station and enter creek from left bank about a mile below station. Probably some pumping for irrigation above station. Diurnal fluctuation at low flow caused by log pond upstream.

Rating tables, water year 1946-47, except periods of shifting control (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 14

Dec. 15 to Sept. 30

0.5	10	2.3	58	8.0	450	0.4	11	3.5	111	10.5	689
.8	15	3.0	86	9.5	590	.7	15	5.0	199	11.0	775
1.1	21	4.0	134	11.0	780	1.2	25	7.0	356	11.5	910
1.4	28	5.0	199			1.8	43	9.0	530	12.0	1,120
1.8	40	6.5	318								

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	46	192	a96	312	99	94	53	29	20	16	13
2	13	36	160	a90	1,050	107	91	50	32	20	15	12
3	14	30	152	a86	769	124	90	48	37	20	15	12
4	14	24	229	a84	509	108	90	46	40	20	16	13
5	15	20	387	a84	391	101	89	45	35	20	15	13
6	12	20	419	a82	322	98	86	44	33	20	14	14
7	13	20	349	a80	275	105	83	43	33	19	14	18
8	14	20	332	78	240	110	104	43	40	19	14	15
9	13	20	296	77	213	143	106	42	41	18	15	16
10	a12	23	276	89	189	282	111	41	33	18	16	14
11	12	21	346	86	182	334	105	40	29	18	14	12
12	a13	19	572	95	210	278	103	39	28	20	15	12
13	a12	18	675	88	254	228	101	38	26	19	14	12
14	a11	18	680	81	275	193	95	37	25	18	14	12
15	a12	18	1,060	a76	282	169	89	36	24	18	14	11
16	a12	17	672	a72	262	149	85	36	32	18	14	11
17	a13	24	492	a70	239	134	85	36	29	17	14	11
18	a14	361	384	75	214	124	81	35	26	17	14	11
19	a17	355	316	82	191	114	79	35	25	17	13	11
20	a35	182	268	79	170	107	74	33	26	16	13	11
21	a28	146	236	89	156	103	70	32	24	16	14	11
22	a40	407	202	114	142	99	67	32	23	16	14	11
23	a31	492	175	164	132	98	64	30	23	16	15	11
24	a24	428	158	269	124	95	62	29	22	16	14	11
25	h18	391	146	375	117	88	60	29	22	17	14	11
26	a20	446	137	462	112	84	58	28	23	18	13	11
27	a24	482	130	377	107	82	57	27	24	18	13	11
28	a21	420	119	314	103	79	57	28	23	23	13	12
29	19	317	112	257	-	81	61	28	22	20	14	12
30	31	240	102	230	-	103	55	27	20	17	15	12
31	28	-	a100	192	-	93	-	28	-	17	14	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	569	40	11	18.4	0.428	0.48	1,130
November	5,061	492	17	169	3.93	4.38	10,040
December	9,874	1,060	100	319	7.42	8.54	19,580
Calendar year 1946	49,371	1,330	11	135	3.14	42.70	97,930
January	4,493	462	70	145	3.37	3.89	8,910
February	7,542	1,050	103	269	6.26	6.52	14,960
March	4,112	334	79	133	3.09	3.56	8,160
April	2,452	111	55	81.7	1.90	2.12	4,860
May	1,138	53	27	36.7	.853	.98	2,260
June	849	41	20	28.5	.658	.75	1,680
July	566	23	16	18.3	.426	.49	1,120
August	442	16	13	14.3	.333	.38	877
September	367	18	11	12.2	.284	.32	728
Water year 1946-47	37,465	1,060	11	103	2.40	32.40	74,300

Peak discharge.- Nov. 18 (9 p.m.) 637 sec.-ft.; Nov. 23 (9:30 a.m.) 551 sec.-ft.; Nov. 27 (11:30 a.m.) 533 sec.-ft.; Dec. 13 (2 p.m.) 740 sec.-ft.; Dec. 15 (5 a.m.) 1,160 sec.-ft.; Feb. 2 (12 m.) 1,300 sec.-ft.

a No gage-height record; discharge computed on basis of records for Gales Creek near Forest Grove. h Computed from staff-gage reading.

Note.- Shifting-control method used Oct. 3-9, 11, 25, Oct. 29 to Dec. 14, Sept. 7-30.

Oswego Canal near Oswego, Oreg.

Location.- Water-stage recorder, lat. 45°23'30", long. 122°43'10", in NW¼ sec. 20, T. 2 S., R. 1 E., half a mile downstream from point of diversion from Tualatin River, 1 mile upstream from Oswego Lake, and 3 miles southwest of Oswego. Datum of gage is 96.50 feet above mean sea level, datum of 1929. Auxiliary gage at outlet of Oswego Lake for determination of backwater effect of lake on stages at canal gage.

Records available.- October 1928 to September 1947.

Average discharge.- 19 years, 66.1 second-feet.

Extremes.- Maximum daily discharge during year, 325 second-feet Dec. 18 (gage height, 10.59 feet); minimum daily, 1 second-foot Nov. 30, Dec. 1, Jan. 1-5 (head gate closed). 1928-47: Maximum discharge, 6,000 second-feet Dec. 23, 1933 (gage height, 16.1 feet site and datum then in use), computed from slope, area, and lake spillway data; practically no flow at times.

Remarks.- Records good. Oswego Canal diverts water from Tualatin River in NW¼ sec. 20, but diversion dam is in NE¼ sec. 33, about 3 miles downstream. Water used for development of power below Oswego Lake and returned to Willamette River at that point.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

1.4	0.5	2.0	7.5	3.5	40	6.5	125
1.5	1	2.3	13	4.0	53	8.5	210
1.6	2	2.8	23	4.5	67	10.0	290
1.8	4.5	3.2	32	5.5	95	10.6	326

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	40	1	1	185	58	66	40	82	78	73	54
2	67	11	51	1	214	57	66	39	83	76	70	55
3	67	11	144	1	220	59	63	38	85	75	68	55
4	67	11	129	1	229	a64	60	37	87	74	66	55
5	68	11	134	1	250	69	58	37	88	74	65	55
6	68	11	146	16	258	68	57	36	88	73	63	55
7	69	11	149	36	252	66	57	35	89	72	61	57
8	69	11	156	41	236	66	57	34	88	70	60	58
9	69	11	160	40	212	73	58	44	90	68	58	64
10	68	11	162	40	186	103	62	80	92	66	58	72
11	68	10	163	41	162	129	62	88	93	65	59	77
12	68	10	166	45	144	133	62	89	91	61	60	77
13	68	10	178	49	133	132	61	89	88	60	62	76
14	68	9.5	200	52	130	131	59	89	87	60	62	74
15	67	10	248	50	134	128	56	88	86	59	62	73
16	66	9.5	277	47	138	122	53	88	84	57	62	72
17	66	9.5	316	47	139	115	50	88	84	56	61	72
18	65	13	325	48	137	105	48	88	86	54	60	72
19	66	14	307	49	132	92	48	87	86	52	59	72
20	69	14	276	56	125	80	47	87	86	51	58	72
21	71	14	246	63	119	71	47	87	84	50	57	73
22	76	15	217	66	111	66	45	87	83	49	56	72
23	79	17	184	72	100	63	44	86	82	49	55	72
24	78	17	157	88	88	62	42	85	80	48	54	71
25	76	17	133	108	78	60	41	83	79	48	55	70
26	74	11	116	134	70	58	40	82	77	50	55	69
27	73	3.5	101	146	66	55	40	81	76	54	55	69
28	72	1.5	85	161	61	52	40	81	76	60	54	69
29	70	1.5	72	175	-	50	39	81	77	64	53	68
30	70	1	65	182	-	54	39	82	78	69	53	69
31	69	-	23	179	-	62	-	82	-	73	53	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	2,157	79	65	69.6	4,280
November.....	347	40	1	11.6	688
December.....	5,087	325	1	164	10,098
Calendar year 1946.....	33,021	348	1	90.5	65,490
January.....	2,036	182	1	65.7	4,040
February.....	4,309	258	61	154	8,550
March.....	2,503	133	50	80.7	4,960
April.....	1,567	66	39	52.2	3,110
May.....	2,218	89	34	71.5	4,400
June.....	2,534	93	76	84.5	5,030
July.....	1,913	78	48	61.7	3,790
August.....	1,847	73	53	59.6	3,660
September.....	2,019	77	54	67.3	4,000
Water year 1946-47.....	28,537	325	1	78.2	56,600

a No gage-height record; discharge interpolated.

WILLAMETTE RIVER BASIN

Clackamas River at Big Bottom, Oreg.

Location.- Water-stage recorder, lat. 45°01', long. 121°55', in sec. 26, T. 6 S., R. 7 E., just downstream from Pot Creek at lower end of Big Bottom, half a mile upstream from site of proposed dam and 28 miles southeast of Estacada.

Drainage area.- 132 square miles.

Records available.- April 1920 to September 1947.

Average discharge.- 27 years, 443 second-feet.

Extremes.- Maximum discharge during year, 6,750 second-feet Dec. 15 (gage height, 8.58 feet); from rating curve extended above 1,700 second-feet; minimum, 244 second-feet sometime during Sept. 5-30.

1920-47: Maximum discharge, 6,750 second-feet Mar. 31, 1931, Dec. 15, 1946, from rating curves extended above 3,500 and 1,700 second-feet respectively; maximum gage height, that of Dec. 15, 1946; minimum discharge, 184 second-feet Sept. 12, 1942.

Remarks.- Records fair except those for periods of no gage-height record, which are poor. No regulation or diversion above station.

Cooperation.- Water-stage recorder graph and 11 discharge measurements furnished by Portland General Electric Co.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 17)

1.5	220	2.5	575	4.6	1,780
1.6	250	2.8	700	5.4	2,520
1.9	350	3.2	885	6.3	3,530
2.2	455	3.8	1,220	7.3	4,840

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	284	413	691	463	651	495	700	595	364	318	280	250
2	284	382	627	441	930	531	682	611	396	312	274	250
3	287	368	591	424	845	559	655	615	378	304	274	250
4	298	360	655	420	745	535	627	607	392	304	271	250
5	301	354	607	416	678	511	611	595	374	301	265	a250
6	287	354	559	413	639	495	599	591	378	298	265	a250
7	298	357	527	406	615	491	579	575	378	294	262	a250
8	298	350	551	399	591	499	579	559	444	294	259	a259
9	287	350	519	392	567	571	579	547	483	287	265	a252
10	284	360	559	410	551	835	579	519	455	287	265	a250
11	280	346	790	406	547	860	563	495	438	287	262	a250
12	280	340	2,030	402	631	745	543	479	406	284	259	a250
13	280	340	2,830	402	808	686	563	463	385	280	259	a250
14	280	336	4,740	392	781	651	599	444	371	280	256	a250
15	280	332	4,760	371	776	639	635	434	357	277	256	a250
16	277	332	2,440	385	776	647	655	427	364	277	256	a250
17	280	458	1,610	374	740	688	722	410	360	274	256	a255
18	280	1,580	1,260	371	696	688	808	410	343	273	253	a259
19	298	1,300	1,070	378	655	686	765	402	336	271	253	a255
20	479	817	930	368	627	673	732	399	336	271	253	a250
21	438	635	840	374	603	682	668	392	329	271	253	a245
22	441	603	772	385	587	776	631	385	322	271	256	a245
23	444	691	700	479	575	768	603	378	318	268	256	a245
24	452	611	651	732	563	714	587	374	315	268	253	a245
25	495	727	615	845	551	686	583	371	315	271	253	a245
26	467	1,220	603	1,250	535	651	587	368	318	280	253	a250
27	420	1,540	579	915	519	615	595	364	368	315	250	a259
28	385	1,320	535	786	507	a615	603	357	368	340	253	a255
29	371	984	511	700	-	a615	639	354	340	294	259	a250
30	378	794	483	655	-	a630	619	364	326	280	259	a245
31	374	-	475	611	-	a635	-	350	-	264	256	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-foot
October	10,587	495	277	342	2.59	2.98	21,000
November	18,904	1,550	332	630	4.77	5.33	37,503
December	35,090	4,760	475	1,132	8.58	9.89	69,600
Calendar year 1946	208,415	4,760	277	571	4.33	58.73	413,400
January	15,765	1,250	368	509	3.86	4.44	31,270
February	18,289	930	507	653	4.95	5.15	36,280
March	19,850	860	491	640	4.85	5.59	39,370
April	18,868	908	543	630	4.77	5.32	37,460
May	14,240	615	350	459	3.48	4.01	28,240
June	11,057	483	315	369	2.80	3.12	21,930
July	8,916	340	268	288	2.18	2.51	17,680
August	8,044	280	250	259	1.96	2.27	15,960
September	7,514	259	245	250	1.69	2.12	14,900
Water year 1946-47	187,144	4,760	245	513	3.89	52.73	371,200

Peak discharge.- Nov. 18 (9:30 p.m.) 2,530 sec.-ft.; Nov. 27 (3:30 p.m.) 1,790 sec.-ft.; Dec. 15 (4 a.m.) 6,750 sec.-ft.; Jan. 26 (4:30 a.m.) 1,500 sec.-ft.; Feb. 2 (2 p.m.) 1,080 sec.-ft.
a No gage-height record; discharge computed on basis of recorded range in stage and records for Oak Grove Fork above power-plant intake.

Clackamas River above Three Lynx Creek, Oreg.

Location.- Water-stage recorder, lat. 45°07', long. 122°04', in NE $\frac{1}{4}$ sec. 21, T. 5 S., R. 6 E., just downstream from power plant, 500 feet upstream from Three Lynx Creek and 17 miles southeast of Estacada. Datum of gage is 1,098 feet above mean sea level (levels by Portland General Electric Co.).

Drainage area.- 488 square miles.

Records available.- October 1911 to December 1913, October 1921 to September 1947.

Average discharge.- 28 years, 1,810 second-feet.

Extremes.- Maximum discharge during year, 28,900 second-feet Dec. 15 (gage height, 13.92 feet), from rating curve extended above 11,000 second-feet; minimum not determined; minimum daily, 662 second-feet Sept. 6.

1911-13, 1921-47: Maximum discharge, 34,800 second-feet Mar. 31, 1931 (gage height, 15.5 feet), from rating curve extended above 11,000 second-feet; minimum observed, 375 second-feet (regulated) Aug. 10, 16, 1924, Sept. 20, 1936; minimum daily, 536 second-feet Oct. 22, 1930.

Remarks.- Records good except those for periods of fragmentary or no gage-height record, which are fair. Water diverted from Oak Grove Fork is used in power plant on Clackamas River just above station. Considerable diurnal fluctuation during periods of low flow.

Cooperation.- Water-stage recorder graph and 11 discharge measurements furnished by Portland General Electric Co.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

1.0	630	4.0	3,220	9.0	13,500
1.2	720	5.0	4,560	10.0	16,300
1.6	960	6.0	6,260	11.0	19,400
2.2	1,400	7.0	8,340	12.0	22,500
3.0	2,110	8.0	10,800		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	685	1,590	3,100	1,620	2,710	1,600	2,390	1,890	1,040	1,070	816	700
2	685	1,350	2,630	1,580	4,460	1,720	2,400	1,820	1,180	1,100	828	705
3	758	1,160	2,440	1,490	3,950	1,950	2,390	1,820	1,160	1,070	786	680
4	766	1,180	2,530	1,420	3,220	1,980	a2,310	1,830	1,190	936	786	700
5	828	1,090	2,450	1,410	2,830	1,810	a2,210	1,830	1,100	1,010	766	700
6	752	1,060	2,240	1,460	2,580	1,700	a2,210	1,740	1,080	954	780	662
7	810	1,060	2,090	1,620	2,480	1,670	f2,210	1,740	1,060	1,020	769	792
8	828	1,030	2,240	1,670	2,320	1,820	2,210	1,740	1,050	924	752	828
9	816	1,010	2,160	1,670	2,210	2,080	2,310	1,740	2,180	924	752	834
10	786	1,030	2,330	1,650	2,100	3,900	2,270	1,630	1,910	906	774	792
11	774	1,070	4,200	1,600	2,070	4,310	2,250	f1,420	1,710	900	764	752
12	780	981	13,000	1,710	2,520	3,240	2,110	a1,400	1,480	870	747	736
13	752	948	15,500	1,600	3,810	2,830	2,230	a1,350	1,320	828	742	742
14	769	942	20,700	1,710	3,760	2,570	2,440	a1,300	1,190	894	747	690
15	747	936	22,000	1,630	3,430	2,490	2,540	1,260	1,150	834	742	705
16	758	948	10,200	1,790	3,280	2,510	f2,460	1,240	1,170	828	736	700
17	792	1,240	6,570	1,900	3,040	2,680	a2,400	1,200	1,170	834	736	752
18	774	10,200	5,020	1,860	2,760	2,630	a3,100	1,160	1,080	840	742	705
19	628	7,580	4,170	1,870	2,490	2,560	a3,000	1,260	1,030	816	742	720
20	1,700	4,160	3,600	1,790	2,280	2,420	a2,850	1,170	1,000	780	710	736
21	1,790	3,000	3,180	1,770	2,150	2,350	f2,310	1,170	981	798	736	f730
22	1,940	2,800	2,920	1,710	2,030	2,670	2,160	1,160	930	786	758	725
23	2,110	3,600	2,620	2,440	1,990	2,670	2,040	a1,100	874	769	725	680
24	2,290	3,280	2,420	4,520	73,980	2,430	1,960	1,060	918	786	715	780
25	2,600	3,700	2,260	5,300	1,910	2,240	1,940	1,070	900	764	725	685
28	2,390	7,260	2,250	7,660	1,820	2,080	1,880	a1,080	906	640	720	752
27	1,790	10,400	2,150	4,820	1,760	1,980	1,930	1,100	1,120	882	715	810
28	1,470	7,260	2,020	5,590	1,700	1,890	f2,010	1,060	1,400	1,040	730	736
29	1,290	4,710	1,870	2,970	-	1,880	2,060	1,040	1,230	906	695	822
30	1,360	3,700	1,760	2,700	-	2,150	f2,110	995	1,140	858	705	725
31	1,310	-	1,690	2,360	-	2,290	-	1,040	-	846	705	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-feet
October	36,748	2,600	685	1,185	2.43	2.80	72,690
November	90,275	10,400	936	3,009	6.17	6.88	179,100
December	154,300	22,000	1,680	4,977	10.2	11.76	306,000
Calendar year 1946	621,212	22,000	662	2,250	4.61	62.57	1,629,000
January	73,080	7,660	1,410	2,357	4.83	5.57	145,000
February	73,040	4,460	1,700	2,630	5.39	5.61	146,100
March	68,690	4,310	1,600	2,358	4.83	5.57	145,000
April	68,690	3,100	1,880	2,290	4.69	5.23	136,200
May	42,615	1,920	995	1,375	2.82	3.25	84,530
June	36,199	2,180	900	1,207	2.47	2.76	71,800
July	27,613	1,100	764	891	1.83	2.10	54,770
August	23,166	828	695	747	1.53	1.77	45,950
September	22,076	834	662	736	1.51	1.68	43,790
Water year 1946-47	721,502	22,000	662	1,977	4.05	54.98	1,431,000

Peak discharge.- Nov. 18 (9 p.m.) 14,400 sec.-ft.; Nov. 27 (12 m.) 12,300 sec.-ft.; Dec. 15

(5 a.m.) 28,900 sec.-ft. Jan. 25 (4:30 a.m.) 9,290 sec.-ft.

a No gage-height record; discharge computed on basis of records for station near Cazadero.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Clackamas River near Cazadero, Oreg.

Location.- Water-stage recorder, lat. 45°14', long. 122°16', in NE¼ sec. 11, T. 4 S., R. 4 E., half a mile upstream from backwater from Cazadero Dam of Portland General Electric Co. and 3 miles southeast of Cazadero. Datum of gage is 532.0 feet above mean sea level (levels by Portland General Electric Co.); gage readings have been reduced to elevations above mean sea level.

Drainage area.- 665 square miles.

Records available.- January 1909 to September 1947.

Average discharges.- 38 years, 2,559 second-feet.

Extremes.- Maximum discharge during year, 46,000 second-feet Dec. 15 (elevation, 552.8 feet), from rating curve extended above 24,000 second-feet; minimum, 667 second-feet (regulated) Oct. 1 and 2; minimum daily, 790 second-feet Oct. 2, 16, Sept. 24.

1909-47: Maximum discharge, 60,800 second-feet Mar. 31, 1931 (elevation, 556.5 feet), by computation of flow over dam; minimum, 410 second-feet Oct. 20, 1925, Sept. 28, 1930 (elevation, 532.03 feet), caused by shut-down in power plant at Three Lynx; minimum daily, 587 second-feet Aug. 17, 1930.

Remarks.- Records fair except for those for periods of doubtful or no gage-height record, which are poor. Some diurnal fluctuation during low flow caused by Oak Grove power plant. No diversion above station.

Cooperation.- Water-stage recorder graph and 11 discharge measurements furnished by Portland General Electric Co.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 14					Dec. 15 to Sept. 30				
533.5	785	537.0	4,150	544.0	18,700	533.6	740	536.0	2,620
534.0	1,170	538.5	6,400	546.0	24,200	534.0	970	537.0	3,800
535.0	1,910	540.0	9,100	548.0	33,500	535.0	1,670	538.0	5,280
536.0	2,920	542.0	13,600			536.0		542.0	13,600

Note.- Same as preceding table above 542.0 feet.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	805	h1,760	h5,700	1,980	3,760	2,080	3,080	2,400	1,250	1,620	a1,030	886
2	790	h1,620	h4,880	1,930	6,660	2,100	3,130	2,340	1,400	1,520	a1,000	880
3	815	h1,490	h4,120	1,800	6,570	2,400	3,230	2,310	1,370	1,450	a1,000	862
4	885	1,580	3,500	1,720	5,200	2,470	3,100	2,280	1,400	1,340	a1,000	800
5	951	1,490	3,190	1,750	4,540	2,510	3,000	2,260	1,400	1,300	1,000	806
6	855	1,540	2,920	1,770	3,930	2,180	3,110	2,170	1,360	1,290	940	800
7	912	1,600	2,700	1,900	3,760	2,150	3,060	2,120	1,530	1,290	934	916
8	940	1,520	2,950	1,850	3,480	2,320	3,050	2,060	1,790	1,260	934	1,030
9	860	1,490	2,920	1,850	3,200	2,660	3,370	2,070	2,910	1,180	940	1,010
10	855	1,620	3,140	1,850	2,980	5,250	3,340	2,060	3,250	1,160	958	1,030
11	835	1,600	9,040	1,850	2,900	6,950	3,230	2,100	3,040	1,150	970	940
12	840	1,450	22,700	1,900	3,580	5,350	2,960	2,000	2,400	1,130	946	886
13	805	1,400	24,400	1,900	5,280	4,840	2,920	2,000	2,020	1,100	940	862
14	810	1,330	30,800	2,000	5,200	3,700	3,220	1,700	1,790	1,110	940	844
15	795	1,290	32,600	2,100	4,770	3,530	3,350	1,640	1,630	1,110	940	839
16	790	1,250	14,400	2,050	4,500	3,580	3,290	1,580	1,640	1,070	940	850
17	825	2,920	8,960	2,100	4,080	3,710	3,280	1,530	1,630	1,060	934	910
18	820	h3,400	6,710	2,050	3,680	3,630	4,260	1,490	1,550	1,040	910	910
19	1,010	a11,500	5,640	2,000	3,550	3,460	4,040	1,490	1,470	1,020	928	874
20	2,690	6,400	4,960	2,050	3,120	3,260	3,830	1,470	1,440	994	928	839
21	2,090	4,490	4,280	2,090	2,940	3,100	3,410	1,420	1,400	1,010	910	812
22	2,760	4,900	3,930	2,270	2,750	3,470	3,040	1,400	1,330	988	934	812
23	3,080	5,950	3,600	4,400	2,610	3,640	2,770	1,350	1,320	970	940	806
24	h5,100	5,220	3,240	4,080	2,560	3,370	2,620	1,300	1,290	964	910	790
25	h4,590	5,760	2,900	8,850	2,490	3,030	2,510	1,310	1,250	970	916	822
26	h3,550	11,400	2,780	13,200	2,380	2,760	2,420	1,290	1,270	1,020	904	844
27	h2,640	15,000	2,780	8,080	2,270	2,590	2,410	1,270	1,740	1,100	886	822
28	h2,160	9,970	2,480	6,020	2,190	2,440	2,430	1,260	2,170	1,280	886	910
29	a2,050	h7,480	2,300	4,740	-	2,390	2,490	1,240	2,060	1,170	886	874
30	h1,890	h6,570	2,160	4,040	-	2,660	2,590	1,210	1,810	1,050	928	822
31	h1,760	-	2,060	3,440	-	2,980	-	1,210	-	1,000	928	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	50,548	5,100	790	1,631	2.45	2.83	100,300
November	135,000	15,000	1,250	4,500	6.77	7.55	267,800
December	228,740	32,600	2,060	7,379	13.1	12.79	453,700
Calendar year 1946	1,169,270	32,600	767	3,203	4.82	65.39	2,319,000
January	103,590	13,200	1,720	3,342	5.03	5.79	205,500
February	104,520	6,680	2,190	3,733	5.61	5.85	207,300
March	99,740	6,950	2,080	3,217	4.84	5.58	197,800
April	92,570	4,290	2,410	3,086	4.64	5.18	183,600
May	55,310	2,400	1,210	1,720	2.59	2.98	105,700
June	51,710	1,250	1,250	1,724	2.69	2.89	102,600
July	35,716	1,620	964	1,152	1.73	2.00	70,840
August	29,158	1,030	886	941	1.42	1.63	57,830
September	26,068	1,030	790	870	1.31	1.46	51,740
Water year 1946-47	1,010,690	32,600	790	2,769	4.16	56.53	2,005,000

Peak discharge.- Nov. 27 (10:30 a.m.) 17,100 sec.-ft.; Dec. 15 (2:30 a.m.) 46,000 sec.-ft.; Jan. 26 (7 a.m.) 15,800 sec.-ft.

a No gage-height record; discharge computed on basis of records for station above Three Lynx Creek.

b Doubtful gage-height record; discharge computed as explained in footnote a.

c Computed from tape-gage reading.

Oak Grove Fork above power-plant intake, Oreg.

Location.- Water-stage recorder, lat. 45°04', long. 121°57', in SW $\frac{1}{4}$ sec. 3, T. 6 S., R. 7 E., two-thirds of a mile upstream from Kink Creek, 1 mile upstream from intake of power development of Portland General Electric Co., and 24 miles southeast of Estacada.

Drainage area.- 126 square miles.

Records available.- December 1923 to September 1947. May 1909 to December 1923 (incomplete) at site 1 mile downstream below Kink Creek; records equivalent except for slight inflow from springs and Kink Creek.

Average discharge.- 23 years (1924-47), 456 second-feet.

Extremes.- Maximum discharge during year, 4,220 second-feet Dec. 15 (gage height, 5.91 feet), from rating curve extended above 1,100 second-feet; minimum, 296 second-feet Sept. 22-24 (gage height, 1.78 feet).
1909-47: Maximum discharge, 5,000 second-feet Jan. 7, 1923 (gage height, 5.45 feet, site and datum then in use), computed from flow at stations on Clackamas River; minimum, 286 second-feet Oct. 15, 16, 18, 1931 (gage height, 1.42 feet).

Remarks.- Records fair. Discharge includes flow of Spring Creek, just below gage. No diversion or regulation above station.

Cooperation.- Water-stage recorder graph and 11 discharge measurements furnished by Portland General Electric Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	h368	465	595	519	601	494	627	648	479	395	325	304
2	h368	a436	560	499	692	519	627	648	494	390	325	304
3	h372	a427	534	479	648	524	627	642	479	390	325	304
4	h372	413	534	470	621	524	616	632	479	390	329	304
5	a377	408	519	470	601	514	606	627	474	386	325	304
6	a381	413	494	470	590	504	601	627	470	386	325	308
7	h386	413	484	455	560	504	595	616	474	381	321	317
8	h381	408	494	450	544	514	601	611	514	381	317	317
9	h372	413	489	446	534	539	606	627	514	381	317	321
10	h368	427	529	450	529	611	601	580	519	381	317	304
11	h368	413	929	446	524	659	595	565	499	381	317	304
12	a368	408	2,360	446	560	627	585	554	455	381	317	300
13	a368	404	3,010	441	627	601	585	549	446	381	317	300
14	h368	399	3,420	431	606	590	595	539	450	381	317	300
15	h368	399	3,430	413	606	595	616	534	446	355	317	300
16	h364	395	2,200	413	611	601	627	524	446	355	317	300
17	368	418	1,560	408	606	601	670	519	446	359	312	304
18	368	769	1,250	408	585	606	800	519	404	355	312	317
19	377	1,070	1,050	413	570	601	762	504	404	350	312	304
20	470	733	943	413	560	601	744	499	399	350	312	304
21	431	611	846	418	554	601	738	494	395	355	308	300
22	436	565	781	431	544	637	715	494	395	355	308	296
23	465	554	715	524	539	642	704	489	386	350	308	296
24	642	539	670	676	539	621	681	479	386	355	308	296
25	627	539	637	727	529	616	676	479	386	355	308	321
26	570	756	627	894	519	606	664	474	395	359	308	333
27	484	819	606	750	514	601	664	470	418	364	308	338
28	446	887	575	686	504	595	659	470	418	368	308	325
29	436	733	554	648	-	595	698	465	404	333	308	317
30	441	654	529	616	-	627	664	474	395	329	312	312
31	446	-	524	580	-	637	-	470	-	325	308	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-foot
October	12,956	642	364	418	3.32	3.82	25,700
November	16,288	1,070	395	543	4.31	4.81	32,310
December	32,448	3,430	464	1,047	8.31	9.58	64,360
Calendar year 1946	205,320	3,430	340	563	4.47	60.60	407,300
January	15,800	894	408	513	4.07	4.69	31,520
February	16,017	692	504	572	4.54	4.73	31,770
March	18,107	659	494	584	4.63	5.34	35,910
April	19,549	800	585	652	5.17	5.77	38,770
May	16,822	648	465	543	4.31	4.97	33,370
June	13,269	519	366	442	3.61	3.92	26,320
July	11,357	395	325	366	2.90	3.35	22,530
August	9,768	325	308	315	2.50	2.88	19,370
September	9,254	338	296	308	2.44	2.73	18,360
Water year 1946-47	191,725	3,430	296	525	4.17	56.59	380,300

Peak discharge.- Nov. 19 (1:30 a.m.), 1,350 sec.-ft.; Nov. 28 (1:30 a.m.) 950 sec.-ft.; Dec. 15 (4:30 a.m.) 4,220 sec.-ft.; Jan. 26 (2 a.m.) 978 sec.-ft.

a No gage-height record; discharge computed on basis of records for Clackamas River near Big Bottom.
h Computed from staff-gage reading.

Johnson Creek at Sycamore, Oreg.

Location.- Water-stage recorder and concrete control with steel weir for low flows, lat. 45°28'40", long. 122°30'30", in lot 2, SW $\frac{1}{4}$ sec. 13, T. 1 S., R. 2 E., a third of a mile southwest of Sycamore station. Datum of gage is 228.03 feet above mean sea level, datum of 1929.

Drainage area.- 28.2 square miles.

Records available.- June 1940 to September 1947.

Extremes.- Maximum discharge during year, 1,420 second-feet Dec. 12 (gage height, 11.25 feet, from floodmark); minimum, 1.2 second-feet Oct. 14, 15.
1940-47: Maximum discharge, 1,770 second-feet Nov. 23, 1942 (gage height, 11.76 feet); minimum, 0.2 second-foot Aug. 14-16, 18-22, 1940, Aug. 2, 21, 22, 1941.

Remarks- Records good except those for periods of shifting-control or no gage-height record, which are fair. Small diversions above station for irrigation; no regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.9	54	82	18	270	14	134	8.7	4.9	5.3	3.1	1.6
2	2.6	42	69	16	287	16	100	7.4	9.2	4.9	3.1	1.6
3	2.0	28	59	13	180	19	74	6.6	7.0	4.5	2.9	2.1
4	2.6	20	67	b12	128	22	64	6.2	6.2	4.5	2.0	2.1
5	2.6	15	63	11	92	17	66	5.8	6.6	3.8	2.9	2.1
6	2.4	14	60	13	73	14	83	5.3	6.6	3.8	2.7	2.2
7	2.2	15	58	13	59	25	73	5.8	14	3.6	2.7	3.1
8	2.1	13	69	12	48	36	108	5.8	44	3.1	2.4	2.4
9	1.9	11	a60	11	39	80	135	5.8	101	3.1	2.7	3.1
10	2.0	15	a55	18	36	212	107	5.8	83	3.1	2.4	3.4
11	2.0	15	a400	36	34	202	79	5.3	53	3.1	1.8	2.7
12	2.1	13	1,110	61	41	122	63	4.3	33	3.1	2.4	2.0
13	2.2	12	539	69	40	86	49	5.3	22	3.1	2.2	2.0
14	1.3	12	410	56	54	67	40	4.9	17	2.9	2.2	2.0
15	2.1	10	509	40	86	51	32	4.5	14	2.7	2.2	1.7
16	2.6	9.0	275	34	75	40	26	4.5	15	2.4	2.2	2.2
17	2.6	14	159	32	61	33	25	4.3	15	2.1	2.2	2.4
18	2.0	237	112	41	51	28	24	4.3	11	2.2	1.7	2.2
19	3.5	312	69	132	43	24	22	3.8	9.9	a2.1	2.4	2.2
20	10	151	73	140	36	22	19	4.0	9.0	a2.1	2.2	2.2
21	10	126	61	133	32	19	16	3.8	8.2	a2.1	2.2	2.4
22	6.8	269	51	136	28	24	14	3.6	7.0	a2.0	2.2	1.7
23	6.4	216	43	168	a25	30	13	3.6	7.0	a2.0	2.1	2.4
24	7.4	153	37	196	a22	34	12	3.4	6.6	a2.0	2.0	2.2
25	7.1	184	33	238	20	28	11	3.4	5.7	a3.0	1.7	2.0
26	11	339	32	225	18	22	10	3.1	6.1	a4.5	2.1	2.1
27	18	311	36	148	16	19	9.2	2.9	7.0	4.0	2.0	2.2
28	9.8	208	28	110	14	16	9.2	2.7	9.0	4.5	2.1	2.2
29	9.4	145	23	83	-	27	10	2.9	7.4	4.9	2.1	1.8
30	34	107	19	83	-	95	9.6	3.1	6.1	4.0	2.2	2.2
31	28	-	18	69	-	114	-	4.0	-	3.6	2.1	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	200.6	34	1.3	6.47	0.229	0.26	398
November	3,070.0	339	9.0	102	3.62	4.05	6,090
December	4,699	1,110	18	152	5.39	6.20	9,320
Calendar year 1946	19,089.1	1,110	1.3	52.3	1.85	25.17	37,860
January	2,367	238	11	76.4	2.71	3.12	4,690
February	1,908	287	14	68.1	2.41	2.52	3,780
March	1,560	212	14	50.3	1.78	2.06	3,090
April	1,437	135	9.2	47.9	1.70	1.90	2,850
May	144.9	8.7	2.7	4.67	.168	.19	287
June	551.5	101	4.9	18.4	.652	.73	1,090
July	102.1	5.3	2.0	3.29	.117	.13	203
August	71.2	3.1	1.7	2.30	.082	.09	141
September	66.5	3.4	1.6	2.22	.079	.09	132
Water year 1946-47	16,177.8	1,110	1.3	44.3	1.57	21.34	32,070

Peak discharge.- Nov. 18 (11:30 p.m.) 460 sec.-ft.; Nov. 22 (7:30 a.m.) 342 sec.-ft.; Nov. 26 (3 a.m.) 455 sec.-ft.; Nov. 27 (7:30 p.m.) 364 sec.-ft.; Dec. 12 (8 a.m.) 1,420 sec.-ft.; Dec. 15 (3 a.m.) 819 sec.-ft.; Feb. 2 (5:30 a.m.) 443 sec.-ft.

a No gage-height record; discharge computed on basis of recorded range in stage and records for Gales Creek near Forest Grove and East Fork Creek at Mountindale.

b Stage-discharge relation affected by ice.

Note.- Shifting-control method used Oct. 31 to Nov. 16, Mar. 21-26.

Salmon Creek near Battle Ground, Wash.

Location.- Staff gage, lat. 45°46'25", long. 122°26'35", in NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 3 N., R. 3 E., 100 feet upstream from county highway bridge, 150 feet downstream from Rock Creek, and 4 miles east of Battle Ground.

Drainage area.- 18.3 square miles.

Records available.- October 1943 to September 1947.

Extremes.- Maximum discharge during year, 1,200 second-feet Dec. 11 (gage height, 2.80 feet, from graph based on gage readings); minimum observed, 2.9 second-feet Sept. 23, 24.

1943-47: Maximum discharge, that of Dec. 11, 1946; minimum not determined, probably occurred sometime Sept. 8-11, 1944, when water was below gage.

Remarks.- Records good except those for periods of no gage-height record, which are fair. Gage read once daily. No diversion or regulation.

Rating tables, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used May 13 to Sept. 16)

Oct. 1 to Dec. 10

Dec. 11 to Sept. 30

0.0	2.2	0.5	21	1.3	224	0.0	2.8	0.7	48	1.7	450
.1	3.2	.7	48	1.7	415	.2	4.8	1.0	116	2.1	695
.3	7.5	1.0	116	2.2	709	.4	12.3	1.3	230	2.6	1,050

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.2	162	85	30	362	28	110	25	10	8.6	4.5	3.4
2	3.8	95	76	23	540	36	90	25	14	7.8	4.1	3.2
3	3.5	52	67	25	280	36	80	25	12.5	8.6	4.1	3.2
4	6.4	59	72	25	178	33	80	25	19	7.6	4.6	3.2
5	5.3	45	116	25	134	33	105	25	12.5	7.1	4.3	3.2
6	a5.1	36	122	25	110	28	110	21	11	7.1	4.1	3.4
7	4.8	42	155	23	90	48	100	22	10	7.1	4.1	6.5
8	4.5	36	184	21	75	90	138	23	22	6.5	4.1	5.5
9	3.8	33	155	21	63	148	170	25	32	5.3	3.8	a5.2
10	3.2	36	155	36	55	202	178	21	28	6.2	4.0	4.6
11	3.0	33	830	59	55	141	134	19	20	5.7	3.7	4.3
12	3.2	33	978	63	48	110	116	19	16	8.2	3.7	3.8
13	3.5	31	695	63	67	90	90	18	14.5	5.7	3.5	3.4
14	3.5	28	800	52	90	75	75	16	13	5.7	3.5	3.6
15	3.2	26	662	52	122	63	59	16	10.5	6.8	3.5	3.4
16	3.0	23	335	52	a104	55	55	18	14.5	5.7	4.5	3.4
17	3.2	142	220	48	85	48	59	18	22	5.5	4.0	3.5
18	3.2	678	162	33	71	45	71	16	16	5.1	3.4	3.3
19	6.2	442	122	162	59	39	90	14.5	14.5	5.1	3.4	3.1
20	a120	224	95	170	52	36	80	13	12.5	5.5	3.4	3.1
21	33	162	105	186	48	36	59	14.5	12.5	5.5	3.4	3.1
22	23	242	71	250	45	33	55	13	11	4.3	3.3	3.0
23	26	200	59	362	33	52	52	11.5	10	5.1	3.8	2.9
24	90	162	52	335	36	a48	48	10.5	10	4.6	3.6	2.9
25	132	296	45	390	36	33	52	9.5	9.0	4.8	3.2	3.0
26	90	315	42	335	33	30	39	9.0	12.5	6.2	3.2	3.1
27	a65	224	42	220	33	30	39	9.0	15.5	5.7	3.2	3.1
28	45	166	36	162	30	30	36	10	14	8.2	3.2	4.0
29	48	142	33	122	-	30	39	10	11	5.7	3.4	3.7
30	155	106	30	110	-	80	33	9.0	10	4.8	4.3	3.5
31	113	-	30	95	-	80	-	10	-	4.8	3.6	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	1,016.6	155	3.0	32.8	1.79	2.07	2,020
November	4,271	678	23	142	7.76	8.68	8,470
December	6,411	978	30	207	11.3	13.03	12,720
Calendar year 1946	25,601.4	978	2.4	70.1	3.83	52.03	50,790
January	3,575	390	21	115	6.28	7.27	7,090
February	2,934	540	30	105	5.74	5.96	5,820
March	1,864	202	28	60.1	3.28	3.79	3,700
April	2,442	178	33	81.4	4.45	4.96	4,840
May	520.5	25	9.0	16.8	.918	1.06	1,030
June	438.0	32	9.0	14.6	.798	.89	869
July	190.8	8.6	4.3	6.15	.336	.39	378
August	116.5	4.6	3.2	3.78	.205	.24	231
September	108.6	6.5	2.9	3.62	.198	.22	215
Water year 1946-47	23,888.0	978	2.9	65.4	3.57	48.56	47,380

a No gage-height record; discharge interpolated, or computed on basis of records for stations on nearby streams.

Lewis River near Cougar, Wash.

Location.- Water-stage recorder, lat. 46°03'30", long. 122°12'50", in SE $\frac{1}{4}$ sec. 29, T. 7 N., R. 5 E., 1 mile downstream from Swift Creek and 4 miles east of Cougar. Datum of gage is 576.4 feet above mean sea level (from river-profile survey).

Drainage area.- 481 square miles.

Records available.- July 1910 to March 1912 (gage heights only), June 1924 to September 1947, July 1909 to June 1910 at site 1,000 feet upstream from Swift Creek.

Average discharge.- 23 years (1924-47), 2,692 second-feet.

Extremes.- Maximum discharge during year, 32,300 second-feet Dec. 13, from rating curve extended above 17,000 second-feet; maximum gage height, 13.22 feet Dec. 13; minimum discharge, 745 second-feet Oct. 18, 19.

1910-12, 1924-47: Maximum discharge, 54,400 second-feet Dec. 21, 1933 (gage height, 15.7 feet, datum then in use), from rating curve extended above 15,000 second-feet; minimum, 454 second-feet Oct. 21, 1931 (gage height, 0.01 foot, datum then in use).

Remarks.- Records excellent except those for period of shifting control, which are good, and those for periods of no gage-height record or discharge above 15,000 second-feet, which are fair. No diversion or regulation.

Rating tables, water year 1946-47, except periods of shifting control
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 13

Dec. 13 to Sept. 30

3.2	745	5.0	2,490	8.0	8,990	2.95	800	5.0	3,120	8.0	10,000
3.4	860	5.5	3,250	9.0	12,200	3.2	965	5.5	3,890	9.0	13,800
3.6	1,000	6.0	4,140	10.0	16,000	3.5	1,200	6.0	4,780	10.0	18,000
4.0	1,340	6.5	5,150	11.0	20,200	4.0	1,740	6.5	5,850	11.0	22,400
4.5	1,870	7.0	6,290	11.7	23,400	4.5	2,400	7.0	7,070	12.4	29,300

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	806	1,930	5,480	2,190	3,730	2,610	3,890	3,570	1,860	1,540	965	800
2	818	1,650	5,150	2,060	7,310	2,610	3,890	3,570	1,920	1,290	965	800
3	818	1,540	4,940	1,920	5,740	3,040	3,650	3,570	1,920	1,290	965	800
4	850	1,440	6,290	1,860	4,880	3,040	3,500	3,420	1,860	1,240	1,000	800
5	842	1,390	8,130	1,920	4,320	2,750	3,420	3,420	1,740	1,240	965	800
6	818	1,440	7,580	1,920	3,980	2,610	3,270	3,340	1,680	1,200	965	800
7	830	1,440	6,540	1,800	3,650	2,610	3,120	3,500	1,740	1,200	930	1,350
8	836	1,340	6,540	1,800	3,420	2,680	3,270	3,500	2,680	1,200	930	2,060
9	800	1,340	5,820	1,740	3,200	2,900	3,270	3,270	2,820	1,180	895	1,680
10	778	1,340	6,790	1,990	3,040	3,890	3,730	2,970	2,350	1,120	895	1,290
11	778	1,300	17,400	1,920	3,200	4,410	3,650	2,820	2,060	1,240	862	1,120
12	772	1,250	23,500	1,860	4,140	4,060	3,500	2,680	1,860	1,290	862	1,040
13	767	all,200	29,300	1,740	7,120	3,810	3,500	2,540	1,800	1,200	862	1,000
14	772	all,180	24,000	1,620	10,000	3,730	3,730	2,400	1,680	1,160	895	965
15	762	all,140	24,800	1,560	9,060	3,730	4,060	2,260	1,620	1,160	895	930
16	756	all,120	13,800	1,560	7,600	3,890	4,230	2,190	1,990	1,120	862	930
17	756	all,200	9,060	1,560	6,560	4,140	4,410	2,120	1,920	1,080	862	930
18	745	all,600	6,810	1,560	5,110	4,320	4,780	2,120	1,740	1,080	862	965
19	812	all,000	5,740	1,500	4,880	4,320	4,880	2,060	1,620	1,080	830	895
20	2,050	6,540	4,880	1,500	4,320	4,230	4,780	2,120	1,500	1,080	830	895
21	1,700	5,150	4,410	1,680	3,980	4,230	4,320	2,260	1,440	1,040	830	862
22	1,990	4,630	3,890	1,920	3,650	4,140	3,890	2,260	1,440	1,040	830	862
23	2,110	4,730	3,570	3,650	3,500	3,890	3,650	2,190	1,390	1,000	830	862
24	2,360	4,730	3,270	7,450	3,270	3,730	3,420	2,260	1,390	1,000	800	830
25	3,500	5,700	3,120	8,160	3,120	3,420	3,540	2,350	1,340	1,000	800	830
26	3,090	8,410	2,970	8,750	2,970	3,200	3,340	2,400	1,620	1,120	800	830
27	2,300	12,900	2,820	6,560	2,820	3,040	3,500	2,400	1,800	1,040	800	830
28	1,930	11,500	2,610	5,300	2,680	2,900	3,730	2,260	1,620	1,120	830	1,110
29	1,820	8,410	2,470	4,500	-	2,900	4,060	2,060	1,440	1,040	830	895
30	1,700	6,540	2,260	3,980	-	3,270	3,890	1,990	1,390	1,000	862	895
31	1,760	-	2,260	3,500	-	3,340	-	1,860	-	965	830	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	41,406	3,500	745	1,336	2.78	3.20	82,130
November	130,280	16,000	1,120	4,343	9.03	10.07	258,400
December	256,000	29,300	2,260	8,258	17.2	19.79	507,800
Calendar year 1946	1,329,194	29,300	745	3,642	7.57	102.75	2,636,000
January	91,030	8,750	1,500	2,936	6.10	7.04	180,600
February	131,250	10,000	2,680	4,688	9.75	10.15	260,500
March	107,440	4,410	2,610	3,466	7.21	8.31	213,100
April	115,670	4,880	3,120	3,789	7.98	8.79	225,500
May	81,710	3,570	1,860	2,636	5.48	6.32	162,100
June	53,210	2,820	1,340	1,774	3.69	4.11	105,500
July	35,135	1,340	965	1,133	2.36	2.72	69,690
August	27,139	1,000	800	875	1.82	2.10	53,830
September	29,656	2,060	800	989	2.06	2.29	58,820
Water year 1946-47	1,097,926	29,300	745	3,008	6.25	84.89	2,178,000

Peak discharge.- Nov. 27 (1 p.m.) 15,200 sec.-ft.; Dec. 13 (10:30 a.m.) 32,500 sec.-ft.; Jan. 26 (1:30 a.m.) 9,710 sec.-ft.; Feb. 14 (1 to 3 p.m.) 10,000 sec.-ft.

No gage-height record; discharge computed on basis of recorded range in stage and records for East Fork Lewis River near Heisson.

Note.- Shifting-control method used July 28 to Sept. 7.

Lewis River at Ariel, Wash.

Location.- Water-stage recorder, lat. 45°57'10", long. 122°33'45", in NW¼ sec. 4, T. 5 N., R. 2 E., at Ariel, half a mile downstream from Ariel Dam and power plant and 3 miles upstream from Cedar Creek. Datum of gage is 44 feet above mean sea level, unadjusted (levels by Northwestern Electric Co.).

Drainage area.- 731 square miles.

Records available.- July 1922 to September 1947. July to November 1909 at site 3 miles upstream.

Average discharge.- 24 years (1923-47), 4,411 second-feet, adjusted for storage since March 1931.

Extremes (regulated).- Maximum discharge during year, 67,300 second-feet Dec. 13 (gage height, 24.04 feet); minimum, 513 second-feet Oct. 2 (gage height, 0.65 foot); minimum daily, 640 second-feet Aug. 31.

1909, 1922-47: Maximum discharge, 129,000 second-feet Dec. 22, 1933 (gage height, 35.0 feet, from floodmarks), from rating curve extended above 22,000 second-feet and from spillway-gate openings; no flow at times June 30, July 1-3, 6-9, 1931 (caused by regulation during construction of Ariel Dam); minimum daily discharge, 1 second-foot July 6, 1931.

Remarks.- Records good. No diversions. Flow regulated by Lake Merwin Reservoir on Lewis River, lat. 45°57'30", long. 122°33'10", in SW¼ sec. 34, T. 6 N., R. 2 E., at Ariel, completed in 1931; usable storage, 246,000 acre-feet between elevations 165 feet (set by Federal Power Commission) and 235 feet (spillway crest) above mean sea level. Water is used for power.

Cooperation.- Gage-height record collected in cooperation with Pacific Power & Light Co.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.5	440	2.5	1,970	6.0	6,860	15.0	31,700
1.0	700	3.0	2,520	8.0	11,100	18.0	42,900
1.5	1,050	4.0	3,740	10.0	16,100	21.0	54,800
2.0	1,480	5.0	5,150	12.0	21,900	24.0	67,100

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,150	5,140	8,850	3,710	8,390	3,620	6,750	4,450	659	2,630	1,420	642
2	1,450	4,400	7,930	3,750	19,100	3,920	6,280	4,610	2,680	2,590	697	1,060
3	1,080	4,220	7,290	4,030	12,400	4,940	6,060	4,450	2,720	2,440	684	824
4	1,250	3,630	9,250	4,080	9,410	4,970	5,610	4,210	2,670	649	1,530	948
5	814	3,050	12,600	4,000	7,620	4,400	5,390	4,230	2,630	1,560	1,450	949
6	727	3,410	11,900	3,830	7,080	4,120	5,530	4,180	2,600	764	1,390	1,410
7	1,460	3,390	10,800	3,960	6,300	4,440	5,380	4,220	1,880	1,800	1,070	1,440
8	1,080	3,370	12,600	3,300	5,840	4,520	6,020	4,410	1,060	1,760	958	2,660
9	850	3,310	11,300	3,350	5,500	5,090	6,460	3,960	4,150	1,840	806	3,450
10	924	1,620	15,500	3,290	4,800	8,120	7,880	3,690	3,790	1,950	658	2,620
11	1,060	2,500	44,000	3,250	4,930	9,360	7,370	3,830	3,800	1,990	al,030	2,080
12	770	3,250	50,600	3,110	6,650	7,630	6,350	3,740	2,870	1,080	al,010	1,490
13	785	3,250	60,800	3,230	10,700	6,710	6,130	3,980	2,430	794	al,010	658
14	1,080	3,260	43,300	3,840	15,600	6,090	5,930	4,010	1,950	2,180	al,360	654
15	1,240	3,270	42,400	3,420	15,600	6,120	6,160	2,760	674	1,900	al,350	1,290
16	1,090	1,980	22,300	3,470	12,600	6,050	6,100	3,230	3,210	1,760	al,370	1,400
17	1,200	1,080	15,200	al,360	10,300	6,050	6,440	3,140	2,700	1,840	672	1,790
18	1,090	22,700	11,300	al,300	8,620	6,470	7,020	2,300	2,770	896	1,200	1,750
19	896	21,200	9,100	3,200	7,390	5,890	7,550	2,950	2,810	668	1,150	1,580
20	2,140	11,600	7,910	3,240	6,420	5,810	7,030	2,770	2,680	671	1,070	1,400
21	3,070	8,670	6,900	3,300	5,940	5,630	6,460	2,800	2,010	2,130	1,050	664
22	3,120	7,080	6,050	4,010	5,350	5,500	5,560	2,800	660	1,620	992	1,680
23	4,150	8,070	5,600	3,930	4,900	5,290	5,250	2,690	2,490	1,140	688	1,250
24	5,620	9,720	4,730	17,800	4,800	4,610	4,940	2,710	2,090	1,350	754	1,500
25	9,040	13,900	4,640	19,600	4,490	4,420	4,570	997	2,250	1,730	948	1,970
26	8,120	20,000	4,640	19,300	4,180	4,670	4,400	2,840	2,290	804	916	1,970
27	4,710	25,300	4,090	12,700	3,990	3,770	4,470	2,580	2,640	716	902	1,250
28	4,150	19,100	4,070	9,500	3,780	3,660	4,810	2,580	2,790	1,770	1,030	710
29	4,160	13,900	3,810	7,930	-	3,610	5,170	2,490	656	1,710	1,070	1,580
30	4,170	10,800	3,830	7,020	-	5,460	5,040	1,630	2,270	1,660	659	1,700
31	4,020	-	3,940	5,950	-	5,430	-	1,590	-	1,780	640	-

Month	Observed			Change in contents in Lake Merwin Reservoir (acre-feet)	Adjusted for change in reservoir contents				
	Discharge in second-feet		Runoff in acre-feet		Runoff in acre-feet	Discharge in second-feet		Runoff in inches	
	Maxi-mum	Mini-mum				Mean	Mean		Per square mile
October	9,040	727	2,473	152,100	+5,570	157,700	2,565	3.51	4.04
November	25,300	1,080	8,206	488,300	-800	487,500	8,193	11.2	12.55
December	60,600	3,630	15,070	926,400	-2,780	923,600	15,020	20.5	23.59
Calendar year 1946	60,800	474	6,031	4,367,000	-2,390	4,369,000	6,035	8.26	112.06
January	19,800	3,110	5,863	360,500	+2,780	363,300	5,909	8.08	9.32
February	19,100	3,780	7,949	441,500	+400	441,900	7,957	10.9	11.35
March	9,360	3,610	5,367	330,000	-400	329,600	5,360	7.33	8.45
April	7,880	4,400	5,937	353,300	0	353,300	5,937	8.12	9.06
May	4,810	997	3,246	199,600	-2,780	196,800	3,201	4.38	5.05
June	4,150	656	2,371	141,100	+4,380	145,500	2,445	3.34	3.73
July	2,630	649	1,554	95,550	-2,790	92,760	1,509	2.06	2.38
August	1,530	640	1,017	62,540	+2,790	65,330	1,062	1.45	1.68
September	3,450	642	1,479	87,980	-10,320	77,660	1,305	1.79	1.99
Water year 1946-47	60,800	640	5,026	3,639,000	-3,950	3,635,000	5,021	6.87	93.22

a No gage-height record; discharge computed on basis of power output.

East Fork Lewis River near Heisson, Wash.

Location.- Water-stage recorder, lat. 45°50', long. 122°28', in N $\frac{1}{2}$ sec. 17, T. 4 N., R. 3 E., just downstream (revised) from Basket Creek, 1 $\frac{1}{2}$ miles northeast of Heisson and 20 miles upstream from mouth. Datum of gage is 366.8 feet above mean sea level (from river-profile surveys).

Drainage area.- 125 square miles.

Records available.- September 1929 to September 1947.

Average discharge.- 18 years, 705 second-feet.

Extremes.- Maximum discharge during year, 11,900 second-feet Dec. 11 (gage height, 10.84 feet); minimum, 59 second-feet Oct. 16, Sept. 6 (gage height, 0.37 foot).
1929-47: Maximum discharge, 15,600 second-feet Dec. 22, 1933 (gage height, 12.3 feet), from rating curve extended above 12,000 second-feet; minimum, 29 second-feet Nov. 3, 1935 (gage height, 0.04 foot).

Remarks.- Records good. No diversion or regulation.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Dec. 12 to Jan. 22)

0.3	53	2.0	370	6.0	3,200
.5	72	2.5	550	7.0	4,590
.8	105	3.0	765	8.0	6,230
1.0	133	3.5	1,010	9.0	8,080
1.3	187	4.0	1,320	10.0	10,100
1.6	254	5.0	2,100		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	67	1,460	1,250	413	2,500	351	1,320	406	153	323	104	66
2	64	1,100	1,100	383	6,040	395	1,220	373	195	288	100	63
3	68	860	1,040	360	2,890	852	985	351	187	275	100	64
4	93	698	1,130	351	1,960	698	985	329	259	247	104	63
5	95	610	1,280	354	1,500	550	1,010	311	208	228	97	62
6	71	652	1,250	351	1,250	477	1,100	294	181	212	93	64
7	79	610	1,390	329	1,100	550	1,010	280	182	200	90	204
8	86	550	2,100	323	960	765	1,360	275	d540	185	91	317
9	72	511	1,920	308	835	1,070	1,640	302	d1,010	178	90	195
10	56	530	2,880	472	742	1,840	1,840	259	d800	166	91	237
11	63	469	9,900	550	720	1,800	1,600	247	d640	198	85	164
12	62	430	5,720	570	910	1,390	1,280	232	d500	206	86	133
13	64	396	8,900	530	1,460	1,100	1,130	223	d410	170	82	118
14	65	377	7,210	455	1,680	960	1,010	212	d350	164	80	109
15	63	351	6,540	413	1,840	910	885	208	d300	166	80	98
16	61	329	3,570	393	1,500	810	765	200	d430	150	88	103
17	62	1,170	2,390	380	1,160	720	895	193	d490	140	86	103
18	63	8,060	1,800	473	960	652	1,220	187	d410	132	81	94
19	93	4,330	1,420	910	810	590	1,160	185	d370	128	78	88
20	1,200	2,220	1,190	910	698	511	1,010	176	d330	122	77	82
21	801	1,560	1,010	1,500	630	496	885	168	d300	120	76	78
22	742	1,530	985	2,500	570	507	765	161	d280	117	75	72
23	1,010	1,840	788	4,590	511	507	675	152	d260	115	73	71
24	1,720	2,190	698	4,800	484	488	610	142	d240	118	73	69
25	2,350	3,420	652	4,390	455	441	550	136	d220	130	70	69
26	1,800	4,440	630	4,020	420	406	500	132	286	155	65	70
27	1,130	4,420	590	2,440	390	373	466	128	459	133	66	70
28	788	2,660	511	1,760	370	357	444	132	530	157	65	88
29	1,720	1,860	481	1,360	-	370	511	132	459	130	72	77
30	1,130	1,530	1,160	1,160	769	441	126	459	377	114	81	70
31	1,100	-	430	935	-	1,130	-	127	-	109	71	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-foot
October	15,848	2,350	61	511	4.09	4.72	31,430
November	51,263	8,060	329	1,709	13.7	15.25	101,700
December	71,099	9,900	430	2,294	18.4	21.15	141,000
Calendar year 1946	318,601	9,900	54	873	6.98	94.78	631,900
January	38,483	4,600	308	1,241	9.93	11.45	76,330
February	35,345	6,040	370	1,262	10.1	10.52	70,110
March	22,693	1,840	351	732	5.86	6.75	45,010
April	29,272	1,840	441	976	7.81	8.71	58,060
May	6,779	406	126	219	1.75	2.02	13,450
June	11,366	1,010	163	379	3.03	3.38	22,540
July	5,276	323	109	170	1.36	1.57	10,460
August	2,580	104	65	83.2	.666	.77	5,120
September	3,161	317	62	105	.840	.94	6,270
Water year 1946-47	293,165	9,900	61	803	6.42	87.23	581,500

Peak discharge.- Nov. 18 (4 p.m.) 10,100 sec.-ft.; Nov. 27 (8 a.m.) 5,720 sec.-ft.; Dec. 11 (6:30 p.m.) 11,900 sec.-ft.; Dec. 13 (1 a.m.) 11,000 sec.-ft.; Dec. 14 (10 p.m.) 10,400 sec.-ft.; Feb. 2 (5:30 a.m.) 8,690 sec.-ft.
d Doubtful gage-height record; discharge computed on basis of records for Washougal River near Washougal.

Kalama River below Italian Creek, near Kalama, Wash.

Location.- Staff gage, lat. 46°02'30", long. 122°49'00", in NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 33, T. 7 N., R. 1 W., $\frac{3}{4}$ miles northeast of Kalama, 4 miles upstream from mouth, and 5 miles downstream from Italian Creek.

Drainage area.- 201 square miles.

Records available.- September 1946 to September 1947.

Extremes.- Maximum discharge observed during period September 1946 to September 1947, 14,400 second-feet Dec. 13, 1946 (gage height, 18.40 feet), from rating curve extended above 6,700 second-feet; minimum observed, 214 second-feet Sept. 6, 1947.

Remarks.- Records good except those for periods of shifting control and rapidly changing stage, which are fair. Gage read twice daily, oftener during rises prior to January. No known diversion or regulation.

Rating table, Sept. 11, 1946, to Sept. 30, 1947, except periods of shifting control (gage height, in feet, and discharge, in second-feet)

1.8	223	4.0	1,420	9.0	7,010
2.0	271	5.0	2,240	10.0	8,530
2.5	481	6.0	3,200	11.0	10,200
3.0	761	7.0	4,330	12.5	12,800
3.5	1,070	8.0	5,600		

Discharge, in second-feet, 1946-47

1946

Day	Discharge	Day	Discharge	Day	Discharge	Day	Discharge
Sept. 11	271	Sept. 16	408	Sept. 21	286	Sept. 26	286
12	271	17	321	22	286	27	286
13	271	18	302	23	286	28	286
14	286	19	286	24	286	29	286
15	362	20	286	25	286	30	302

1946-47

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	302	1,650	1,810	881	2,510	821	1,420	761	384	456	286	234
2	302	1,540	1,650	821	7,310	761	1,490	761	408	408	286	223
3	302	1,140	1,570	821	4,080	1,140	1,270	701	456	384	271	223
4	362	1,000	2,600	761	2,800	1,140	1,200	701	533	384	271	223
5	340	881	3,640	761	2,240	1,000	1,270	643	507	362	271	223
6	302	881	3,510	761	1,890	942	1,270	615	431	362	271	223
7	340	881	2,800	761	1,730	1,000	1,200	587	431	340	271	456
8	340	821	3,200	701	1,570	1,140	1,650	587	533	340	258	615
9	302	761	2,800	701	1,420	1,340	1,890	615	481	340	258	821
10	302	761	3,420	1,070	1,340	2,240	2,150	560	821	340	258	615
11	302	701	10,700	1,000	1,270	2,510	1,890	560	701	340	258	456
12	286	672	10,500	1,070	1,970	2,080	1,730	533	615	384	258	362
13	286	615	12,600	1,000	3,100	1,730	1,570	507	560	340	258	321
14	286	587	9,170	881	3,420	1,570	1,490	481	507	340	258	286
15	286	587	8,950	821	3,420	1,570	1,420	481	481	340	258	271
16	271	533	5,080	761	2,600	1,420	1,270	456	672	340	258	271
17	286	761	3,530	761	2,080	1,340	1,270	456	587	321	245	271
18	271	6,710	2,700	761	1,730	1,270	1,270	431	533	321	245	258
19	321	4,820	2,080	881	1,570	1,140	1,420	456	533	302	245	271
20	1,270	2,600	1,970	881	1,420	1,070	1,420	431	507	302	245	258
21	1,070	1,890	1,810	1,270	1,270	1,000	1,270	431	481	302	245	258
22	1,420	2,330	1,650	1,570	1,140	1,000	1,140	408	431	302	245	245
23	1,490	2,600	1,490	3,000	1,140	1,000	1,000	408	431	286	245	245
24	1,970	3,000	1,340	5,080	1,000	881	942	408	408	286	245	245
25	2,700	3,860	1,270	5,340	1,000	821	881	384	408	302	245	245
26	2,600	5,340	1,200	5,470	942	761	821	384	481	302	234	245
27	1,650	6,150	1,140	3,420	881	761	821	362	481	302	234	245
28	1,200	4,210	1,070	2,600	821	761	881	362	507	384	234	258
29	1,070	3,000	1,000	2,080	-	761	881	384	481	321	234	245
30	1,270	2,240	942	1,810	-	1,000	821	362	431	302	234	234
31	1,200	-	942	1,490	-	1,140	-	362	-	286	234	-

Note.- Shifting-control method used Feb. 2 to Mar. 12, Aug. 29 to Sept. 30.

Monthly discharge, in second-feet, 1946-47

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-foot
September 11-30, 1946.....	5,940	408	271	297	1.48	1.10	11,780
October 1946	24,699	2,700	271	797	3.97	4.57	48,990
November	65,322	8,710	533	2,111	10.5	11.72	125,600
December	107,274	12,600	942	3,480	17.2	19.85	212,800
Calendar year	-	-	-	-	-	-	-
January 1947.	49,966	5,470	701	1,612	8.02	9.24	99,110
February	57,654	7,310	821	2,059	10.2	10.67	114,400
March	37,090	2,510	761	1,196	5.95	6.66	73,570
April	39,018	2,150	821	1,301	6.47	7.22	77,390
May	15,578	761	362	503	2.50	2.88	30,900
June	15,221	821	384	507	2.52	2.82	30,190
July	10,421	456	286	336	1.67	1.93	20,670
August	7,858	286	234	253	1.26	1.45	15,590
September	9,546	821	223	312	1.55	1.73	18,540
Water year 1946-47	437,447	12,600	223	1,198	5.96	80.94	867,800

Cowlitz River at Packwood, Wash.

Location.- Water-stage recorder, lat. 46°36'40", long. 121°40'45", in SE $\frac{1}{4}$ sec. 16, T. 13 N., R. 9 E., half a mile upstream from Skate Creek and half a mile northwest of Packwood.

Drainage area.- 287 square miles.

Records available.- September 1929 to September 1947. July 1911 to December 1919 at site 1 mile upstream, published as Cowlitz River at Lewis.

Average discharge.- 26 years, 1,542 second-feet.

Extremes.- Maximum discharge during year, 19,000 second-feet Dec. 11 (gage height, 10.77 feet); from rating curve extended above 7,500 second-feet; minimum, 348 second-feet Oct. 19.

1911-19, 1929-47: Maximum discharge, 36,600 second-feet Dec. 21, 1933 (gage height, 13.0 feet); from rating curve extended above 12,600 second-feet; minimum, 160 second-feet Nov. 21, 1929 (gage height, 2.10 feet).

Remarks.- Records good except those for periods of shifting control or no gage-height record, which are fair. No diversion or regulation.

Rating tables, water year 1946-47, except periods of shifting control (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 11

Dec. 12 to Sept. 30

3.3	362	5.0	1,570	7.5	6,270	3.5	466	5.5	1,610	7.5	5,410
3.5	463	5.5	2,150	8.5	7,750	4.0	680	6.0	2,470	8.0	6,580
3.7	574	6.0	2,920	9.0	11,100	4.5	910	6.5	3,290	9.0	9,640
4.0	760	6.5	3,850	10.0	14,900	5.0	1,280	7.0	4,270	10.2	13,900
4.5	1,120	7.0	4,970								

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	479	951	1,840	775	1,240	1,040	1,580	2,780	2,860	1,810	800	620
2	427	881	1,900	728	1,640	1,000	1,580	3,860	2,700	1,930	825	600
3	401	846	1,840	728	1,520	1,000	1,470	3,860	2,400	1,810	850	580
4	432	846	2,520	705	1,370	1,000	1,420	3,470	2,330	1,580	825	580
5	432	h867	2,750	705	1,280	940	1,320	3,470	2,260	1,640	800	600
6	411	a860	2,440	705	1,190	910	1,280	3,860	2,470	1,640	775	600
7	h427	a840	2,150	680	1,110	910	1,240	4,490	2,860	1,520	750	825
8	a430	a820	2,020	680	1,080	880	1,240	4,180	3,860	1,470	728	1,080
9	a420	h812	1,900	680	1,040	910	1,280	3,470	3,760	1,470	660	1,110
10	a410	a800	2,570	728	1,000	970	1,320	2,940	3,110	1,470	620	880
11	a410	a790	13,600	728	1,040	1,080	1,280	2,540	2,470	1,420	620	728
12	a410	a780	8,390	705	1,370	1,080	1,320	2,620	2,330	1,470	640	660
13	a410	a730	12,400	682	2,330	1,080	1,580	2,330	2,400	1,280	682	640
14	f406	a710	9,320	640	3,560	1,110	2,120	2,120	2,190	1,280	705	600
15	f377	a700	6,680	640	3,580	1,320	2,700	2,120	2,060	1,240	705	580
16	f382	h683	4,160	660	2,780	1,640	2,860	2,260	3,200	1,080	682	600
17	f372	a1,500	2,470	640	2,260	2,000	3,020	2,260	3,200	1,110	660	580
18	f367	a9,500	1,930	620	1,930	2,260	3,470	2,190	2,540	1,190	682	580
19	f362	a4,500	1,640	620	1,690	2,260	3,560	2,620	2,120	1,150	640	560
20	f1,110	a2,500	1,420	620	1,470	2,190	3,290	3,200	1,870	1,080	600	466
21	f1,000	a2,000	1,280	640	1,370	2,190	2,700	3,560	1,690	1,000	600	521
22	f816	a2,100	1,190	728	1,320	2,260	2,330	3,560	1,870	940	580	580
23	f960	a1,800	1,110	2,340	1,320	2,000	2,190	3,470	2,060	910	580	580
24	2,480	h1,670	1,040	5,650	1,280	1,810	2,120	3,860	2,190	850	580	580
25	6,900	h1,720	1,000	4,490	1,280	1,580	2,260	4,270	2,190	825	600	580
26	2,610	a3,200	970	4,160	1,190	1,470	2,470	4,710	2,540	825	600	540
27	a1,600	5,460	940	2,860	1,150	1,320	3,110	4,820	2,620	775	600	560
28	f1,380	3,750	880	2,120	1,080	1,280	3,470	4,270	2,000	880	600	682
29	f1,240	2,670	850	1,690	1,190	1,280	3,560	3,760	1,750	825	620	682
30	f1,080	2,080	800	1,470	-	1,520	2,940	3,470	1,690	800	660	620
31	1,000	-	800	1,280	-	1,520	-	3,110	-	825	620	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	29,941	6,900	362	966	3.37	3.88	59,390
November	57,346	9,500	683	1,912	6.66	7.43	113,700
December	94,800	13,600	800	3,058	10.7	12.28	188,000
Calendar year 1946	733,631	13,600	362	2,010	7.00	95.06	1,455,000
January	41,037	5,650	620	1,324	4.61	5.32	81,400
February	44,270	3,560	1,000	1,581	5.61	5.74	87,810
March	43,810	2,260	880	1,413	4.92	5.68	86,900
April	66,080	3,560	1,240	2,203	7.68	8.56	131,100
May	103,480	4,820	2,120	3,338	11.6	13.41	205,200
June	73,590	3,860	1,690	2,453	8.55	9.54	146,000
July	38,095	1,930	755	1,229	4.28	4.94	75,560
August	20,889	850	580	674	2.35	2.71	41,430
September	19,394	1,110	466	646	2.25	2.51	38,470
Water year 1946-47	632,732	13,600	362	1,734	6.04	82.00	1,255,000

Peak discharge.- Oct. 25 (10:30 a.m.) 10,400 sec.-ft.; Dec. 11 (1:15 p.m.) 19,000 sec.-ft.; Dec. 13 (5:45 p.m.) 14,900 sec.-ft.; Jan. 24 (8:30 a.m.) 6,410 sec.-ft.

a No gage-height record; discharge computed on basis of records for station near Mossyrock.

f Computed on basis of partly estimated gage-height record.

h Computed from staff-gage reading.

Note.- Shifting-control method used Oct. 1-25, Nov. 28 to Dec. 11, Jan. 26 to Apr. 14.

Cowlitz River at Mossyrock, Wash.

Location.- Water-stage recorder, lat. 46°33'00", long. 122°29'30", in SE¹ sec. 1, T. 12 N., R. 2 E., 200 feet upstream from Harmony Bridge and 1 mile north of Mossyrock.

Drainage area.- 1,170 square miles.

Records available.- January 1912 to September 1917 (incomplete), March 1926 to September 1935, August 1946 to September 1947.

Average discharge.- 15 years, 5,151 second-feet.

Extremes.- 1946: Minimum discharge during period August to September, 1,190 second-feet Sept. 29.

1946-47: Maximum discharge during water year not determined, occurred sometime during period of no gage-height record Dec. 7 to Jan. 8; minimum, 1,040 second-feet Oct. 16, 17, 18, 19.

1912-17, 1926-35, 1946-47: Maximum discharge observed, 81,000 second-feet Dec. 22, 1933 (gage height, 36.55 feet); minimum, 630 second-feet Nov. 21-24, Dec. 3, 5-8, 1929.

Remarks.- Records good except those for periods of no gage-height record, which are fair.

No diversion or regulation.

Discharge, in second-feet, 1946-47

1946

Day	Discharge	Day	Discharge	Day	Discharge
Aug. 31	1,750	Sept. 11	1,480	Sept. 21	1,310
Sept. 1	1,700	12	1,480	22	1,310
2	1,660	13	1,480	23	1,270
3	1,660	14	1,520	24	1,270
4	1,680	15	1,570	25	1,310
5	1,700	16	1,820	26	1,270
6	1,700	17	1,520	27	1,270
7	1,620	18	1,440	28	1,230
8	1,570	19	1,350	29	1,230
9	1,520	20	1,350	30	1,230
10	1,480				

1946-47

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,270	3,450	7,490	4,000	6,320	4,600	5,130	7,220	5,870	3,760	1,940	1,200
2	1,230	3,070	6,830	3,700	8,460	4,400	5,270	7,670	5,720	3,760	1,890	1,200
3	1,190	2,890	6,510	3,500	8,600	4,500	5,130	8,600	5,270	3,760	1,940	1,200
4	1,230	2,710	7,830	3,500	7,670	4,800	4,990	8,280	4,850	3,500	1,990	1,200
5	1,270	2,650	10,600	3,500	6,920	4,500	4,850	7,970	4,710	3,370	1,940	1,200
6	1,230	2,590	10,800	3,700	6,320	4,500	4,710	7,970	4,710	3,370	1,890	1,200
7	1,230	2,590	10,200	3,600	6,020	4,500	4,430	8,920	4,850	3,250	1,840	1,400
8	1,230	2,540	9,800	3,500	5,720	4,500	4,430	9,240	6,100	3,130	1,790	1,700
9	1,190	2,420	9,600	3,500	5,420	4,500	4,430	8,600	7,070	3,010	1,790	2,400
10	1,150	2,460	11,000	3,760	5,130	5,000	4,430	7,670	6,770	2,950	1,700	2,000
11	1,110	2,420	20,000	4,020	4,990	6,000	4,710	6,770	6,020	2,950	1,600	1,700
12	1,110	2,260	30,000	3,890	5,720	5,600	4,570	6,320	5,270	3,010	1,550	1,500
13	1,110	2,200	40,000	3,760	8,460	5,000	4,570	6,020	4,990	3,070	1,500	1,400
14	1,070	2,150	35,000	3,500	11,900	4,430	5,130	5,570	4,850	2,950	1,500	1,400
15	1,070	2,050	30,000	d3,250	13,100	4,570	6,470	5,270	4,570	2,890	1,550	1,350
16	1,070	2,000	25,000	d3,290	11,900	5,270	7,520	5,270	4,570	2,770	1,500	1,350
17	1,040	2,150	17,000	d3,330	10,200	6,170	7,620	5,270	6,170	2,600	1,500	1,350
18	1,040	9,410	14,000	3,370	8,920	6,760	8,760	5,130	5,420	2,600	1,450	1,350
19	1,070	21,600	11,000	3,630	7,370	7,370	9,400	5,270	4,850	2,650	1,400	1,350
20	1,310	13,300	9,500	3,500	7,070	7,220	9,720	6,020	4,290	2,540	1,300	1,300
21	2,480	8,850	8,000	3,630	6,470	7,070	8,920	6,470	3,890	2,430	1,300	1,250
22	2,260	7,320	7,500	3,890	6,020	7,370	7,670	6,920	3,760	2,320	1,250	1,250
23	2,590	7,490	6,800	6,250	5,720	7,220	7,070	6,620	3,890	2,260	1,200	1,260
24	3,020	7,320	6,400	13,000	5,570	6,770	6,620	6,770	4,020	2,160	1,200	1,260
25	7,530	6,850	6,000	16,800	5,270	6,170	6,470	7,220	4,150	2,100	1,150	1,260
26	11,200	8,510	5,800	17,800	5,130	5,570	6,620	7,670	4,020	2,100	1,200	1,250
27	6,510	11,600	5,400	14,200	5,000	5,270	7,220	8,280	4,990	2,100	1,200	1,250
28	4,820	15,200	5,000	10,900	4,800	4,850	8,120	8,120	4,850	2,100	1,200	1,400
29	4,120	11,700	4,700	8,920	-	4,570	8,440	7,370	4,150	2,160	1,300	1,600
30	3,710	9,200	4,500	7,670	-	4,570	8,120	6,770	3,890	1,990	1,300	1,500
31	3,320	-	4,400	6,620	-	4,990	-	6,320	-	1,940	1,250	-

Monthly discharge, in second-feet, 1946-47

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
September 1946.....	43,780	1,700	1,230	1,459	1.25	1.39	86,840
October 1946.....	74,780	11,200	1,040	2,412	2.08	2.38	148,300
November.....	180,950	21,600	2,000	6,032	5.16	5.75	358,900
December.....	386,660	40,000	4,400	12,470	10.7	12.29	766,900
January 1947.....	181,480	17,800	3,250	5,854	5.00	5.77	360,000
February.....	200,720	13,100	4,800	7,169	6.13	6.38	398,100
March.....	168,920	7,370	4,400	5,449	4.66	5.37	335,000
April.....	191,740	9,720	4,430	6,391	5.46	6.09	380,300
May.....	217,580	9,240	5,130	7,019	6.00	6.92	431,600
June.....	148,530	7,070	3,760	4,951	4.23	4.72	294,600
July.....	85,550	3,760	1,940	2,760	2.36	2.72	189,700
August.....	47,110	1,990	1,150	1,520	1.30	1.50	93,440
September.....	42,030	2,400	1,200	1,401	1.20	1.34	83,370
Water year 1946-47.....	1,928,050	40,000	1,040	5,277	4.51	61.23	3,820,000

Peak discharge.- Nov. 19 (7:30 a.m.) 24,000 sec.-ft.; Jan. 26 (11 a.m.) 18,300 sec.-ft.

d Doubtful gage-height record; discharge computed on basis of records for station near Mayfield.

Note.- No gage-height record Dec. 7 to Jan. 8, Feb. 27 to Mar. 13, Aug. 10 to Sept. 22, Sept.

26-30; discharge computed on basis of 1 discharge measurement and records for station near Mayfield.

COWLITZ RIVER BASIN

Cowlitz River near Mayfield, Wash.

Location.- Water-stage recorder, lat. 46°30'40", long. 122°36'50", in NE $\frac{1}{4}$ sec. 24, T. 12 N., R. 1 E., 1 mile upstream from Mill Creek, 2 miles downstream from Winston Creek, and $\frac{1}{2}$ miles west of Mayfield. Datum of gage is 226.6 feet above mean sea level, datum of 1929.

Drainage area.- 1,400 square miles.

Records available.- April 1934 to September 1947. August 1910 to November 1911 at site $\frac{1}{2}$ miles upstream, published as Cowlitz River at Mayfield.

Average discharge.- 13 years, 5,415 second-feet.

Extremes.- Maximum discharge during year, 58,000 second-feet Dec. 13 (gage height, 24.75 feet); minimum, 1,080 second-feet Oct. 18, 19.

1910-11, 1934-47: Maximum discharge, that of Dec. 13, 1946; minimum, 766 second-feet Nov. 30, Dec. 1, 1936 (gage height, 7.18 feet).

Flood of December 1933 is known to have exceeded that of Dec. 13, 1946.

Remarks.- Records excellent. No diversion or regulation.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 10				Dec. 11 to Sept. 30			
8.1	1,080	12.0	8,430	7.9	1,240	11.0	6,420
8.5	1,550	13.0	11,100	8.2	1,580	12.0	8,800
9.0	2,230	14.0	14,000	8.5	1,950	13.0	11,500
9.5	3,060	15.0	17,100	9.0	2,660	14.0	14,500
10.0	3,990	16.0	20,400	9.5	3,470	15.0	17,500
11.0	6,050	17.2	24,800	10.0	4,370	16.0	21,000

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,380	4,820	9,520	4,660	8,720	5,150	6,400	7,980	6,130	4,260	2,150	1,370
2	1,370	4,260	8,510	4,390	13,500	4,950	6,570	8,280	5,920	4,260	2,070	1,340
3	1,310	3,740	8,130	4,140	12,400	5,190	6,200	9,290	5,460	4,220	2,080	1,350
4	1,320	3,480	9,310	4,000	10,500	5,410	6,130	8,900	5,110	3,950	2,160	1,310
5	1,420	3,400	13,600	3,960	9,240	4,890	6,110	8,580	4,990	3,710	2,120	1,320
6	1,580	3,400	13,500	4,000	8,420	4,840	5,790	8,600	4,910	3,710	2,030	1,330
7	1,370	3,420	11,600	3,780	8,000	4,580	5,500	9,480	5,130	3,620	1,920	1,570
8	1,410	3,240	10,900	3,620	7,590	4,800	5,830	9,330	6,350	3,470	1,900	2,450
9	1,370	3,040	10,400	3,580	7,120	4,580	6,090	9,270	7,710	3,320	1,830	3,070
10	1,290	3,170	15,300	4,180	6,760	5,710	6,600	8,250	7,430	3,220	1,740	2,860
11	1,240	2,990	39,400	4,500	6,710	6,800	6,690	7,240	6,550	3,220	1,650	2,300
12	1,200	2,810	52,500	4,280	7,670	6,440	6,130	6,710	5,730	3,280	1,630	1,950
13	1,190	2,680	57,200	4,020	10,900	5,940	6,110	6,440	5,370	3,350	1,600	1,770
14	1,180	2,590	55,400	3,780	15,800	5,810	6,690	5,960	5,210	3,230	1,650	1,650
15	1,170	2,480	51,300	3,440	16,600	6,020	7,790	5,690	4,890	3,160	1,640	1,560
16	1,140	2,380	34,700	3,450	14,500	6,510	8,680	5,580	5,090	3,030	1,660	1,520
17	1,110	3,000	22,800	3,440	12,500	7,310	9,090	5,600	6,760	2,840	1,600	1,540
18	1,090	13,100	18,900	3,560	10,700	8,050	10,600	5,480	5,960	2,810	1,570	1,540
19	1,160	24,800	13,600	4,110	9,400	8,330	11,800	5,520	5,290	2,860	1,550	1,510
20	2,030	16,300	11,200	3,910	8,400	8,380	12,200	6,180	4,770	2,800	1,500	1,420
21	3,580	11,300	9,740	4,830	7,710	8,000	10,600	6,800	4,330	2,640	1,420	1,380
22	3,100	9,770	8,700	5,390	7,120	8,180	9,160	7,170	4,090	2,520	1,370	1,380
23	3,840	9,580	7,810	10,800	6,760	7,880	8,180	7,030	4,220	2,460	1,330	1,420
24	4,780	9,980	7,190	18,900	6,510	7,350	7,670	7,030	4,330	2,420	1,300	1,440
25	11,400	9,710	6,710	23,800	6,290	6,600	7,430	7,470	4,410	2,350	1,270	1,440
26	14,200	11,800	6,380	25,500	6,000	6,110	7,450	7,930	4,520	2,300	1,280	1,450
27	8,690	14,600	6,160	18,900	5,580	5,560	8,030	8,520	5,750	2,300	1,310	1,430
28	6,200	17,800	5,730	14,400	5,410	5,170	8,930	8,480	5,850	2,380	1,310	1,530
29	5,170	14,400	5,350	11,500	-	4,990	9,450	7,710	5,030	2,450	1,340	1,760
30	4,760	11,500	4,990	9,850	-	5,600	9,010	7,080	4,460	2,250	1,430	1,680
31	4,320	-	4,810	8,450	-	6,000	-	6,600	-	2,160	1,450	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	95,970	14,200	1,090	3,096	2.21	2.55	190,400
November	229,540	24,800	2,380	7,651	5.46	6.10	455,300
December	539,340	57,200	4,810	17,400	12.4	14.33	1,070,000
Calendar year 1946	2,822,080	57,200	1,090	7,732	5.52	74.97	5,598,000
January	231,060	25,500	3,440	7,454	5.32	6.14	458,300
February	256,810	16,600	5,410	9,172	6.55	6.82	509,400
March	190,700	8,380	4,580	6,152	4.39	5.07	378,200
April	232,910	12,200	5,500	7,764	5.55	6.19	462,000
May	230,780	9,930	5,480	7,445	5.32	6.13	457,700
June	161,770	7,710	4,090	5,392	3.95	4.30	320,800
July	94,550	4,260	2,160	3,050	2.18	2.51	187,500
August	50,820	2,180	1,270	1,639	1.17	1.35	100,800
September	49,640	3,070	1,310	1,655	1.18	1.32	98,460
Water year 1946-47	2,363,890	57,200	1,090	6,476	4.63	62.81	4,689,000

Peak discharge.- Nov. 19 (7 a.m.) 27,300 sec.-ft.; Nov. 28 (6 a.m.) 18,700 sec.-ft.; Dec. 13 (10:30 a.m.) 58,000 sec.-ft.; Jan. 26 (12:15 a.m.) 27,900 sec.-ft.; Feb. 14 (10 p.m. and 11:30 p.m.) 17,100 sec.-ft.

Cowlitz River at Castle Rock, Wash.

Location.- Water-stage recorder, lat. 46°16'30", long. 122°55'00", in SE $\frac{1}{4}$ sec. 10, T. 9 N., R. 2 W., at highway bridge in Castle Rock, $\frac{3}{4}$ miles downstream from Toutle River and 14 miles upstream from mouth. Datum of gage is 19.73 feet above mean sea level, datum of 1929.

Drainage area.- 2,240 square miles.

Records available.- December 1926 to September 1947.

Average discharge.- 20 years (1927-47), 8,380 second-feet.

Extremes.- Maximum discharge during year, 85,100 second-feet Dec. 13 (gage height, 24.40 feet); minimum, 1,330 second-feet Oct. 19 (gage height, 5.82 feet).

1926-47: Maximum discharge observed, 139,000 second-feet Dec. 23, 1933 (gage height, 31.6 feet, present datum), from rating curve extended above 80,000 second-feet; minimum discharge, 998 second-feet Nov. 7, 8, 1935.

Remarks.- Records excellent except those for period of shifting control, which are good. No diversion or regulation.

Rating tables, water year 1946-47, except period of shifting control
(gage height, in feet, and discharge, in second-feet)

Oct. 1 to Feb. 17					Feb. 18 to Sept. 30				
5.8	1,300	9.0	7,430	16.5	35,600	7.6	1,660	10.0	8,000
6.0	1,580	10.0	9,980	18.0	43,600	8.0	2,600	11.0	11,000
6.5	2,360	11.0	12,900	19.5	52,200	8.5	3,870	12.0	14,400
7.0	3,240	12.0	16,200	21.0	61,600	9.0	5,200	13.0	18,300
7.5	4,180	13.5	22,000	22.5	71,500				
8.0	5,200	15.0	28,400	24.1	82,800				

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,780	8,380	15,900	7,260	15,200	7,170	10,100	10,700	7,450	5,550	2,800	1,890
2	1,760	7,570	13,900	6,840	29,400	6,970	10,400	10,200	7,280	5,360	2,800	1,900
3	1,730	6,460	13,100	6,580	23,900	7,280	9,540	11,400	6,860	5,420	2,750	1,760
4	1,680	5,820	15,300	6,370	18,800	8,400	9,330	11,400	6,470	5,200	2,820	1,710
5	1,930	5,390	25,200	6,240	15,800	7,390	9,120	10,700	6,240	4,820	2,820	1,680
6	1,840	5,260	25,500	6,370	13,800	6,800	9,030	10,600	6,050	4,740	2,700	1,750
7	1,820	5,280	21,000	6,100	12,600	6,720	8,460	11,500	6,080	4,690	2,580	2,140
8	1,960	5,100	19,000	5,990	11,700	7,250	8,790	12,000	7,110	4,520	2,500	3,200
9	1,820	4,760	17,800	5,840	10,800	7,360	10,100	11,700	9,660	4,360	2,480	4,030
10	1,680	4,930	21,700	6,480	10,100	11,200	10,600	10,600	9,630	4,260	2,360	4,130
11	1,600	4,800	47,600	7,790	9,870	13,300	11,000	9,300	8,850	4,210	2,190	3,450
12	1,540	4,440	75,100	7,530	11,600	11,600	9,900	8,440	7,460	4,260	2,120	2,850
13	1,480	4,200	82,400	7,030	16,700	10,100	9,360	8,140	6,860	4,360	2,100	2,530
14	1,470	4,010	79,700	6,480	23,600	9,330	9,630	7,510	6,660	4,210	2,120	2,260
15	1,450	3,840	80,200	5,950	25,900	9,210	10,600	7,080	8,240	4,210	2,120	2,100
16	1,410	3,670	57,000	5,910	23,600	9,420	11,700	6,890	6,220	4,100	2,170	2,000
17	1,380	3,930	35,800	5,180	20,300	10,200	12,100	6,690	7,710	3,830	2,190	2,100
18	1,340	27,700	26,100	5,930	17,300	11,000	14,000	6,800	7,680	3,640	2,070	2,070
19	1,410	43,100	21,100	7,240	14,900	11,300	15,500	6,750	6,800	3,670	2,050	1,980
20	2,190	28,100	17,900	7,010	13,100	11,000	16,700	7,140	6,160	3,640	2,000	1,870
21	5,220	19,600	15,900	8,080	11,800	10,700	14,900	7,860	5,710	3,510	1,910	1,750
22	5,120	20,300	14,200	12,800	10,800	11,100	12,800	8,280	5,330	3,350	1,870	1,680
23	5,910	19,100	12,800	14,300	10,500	10,800	11,300	8,440	5,250	3,280	1,920	1,680
24	6,980	19,800	11,700	25,800	9,450	10,500	10,400	8,230	5,390	3,220	1,750	1,730
25	13,400	18,500	10,800	37,400	8,970	9,390	9,810	8,700	5,470	3,200	1,680	1,710
26	20,200	20,700	10,100	43,600	8,550	8,460	9,690	8,240	5,660	3,120	1,680	1,750
27	14,200	24,200	9,930	31,900	8,030	7,710	9,030	9,870	5,550	3,150	1,680	1,730
28	9,900	27,900	9,080	24,100	7,590	7,200	11,100	10,100	7,510	3,280	1,730	1,840
29	8,050	23,600	8,410	18,800	-	6,940	12,100	9,420	6,580	3,350	1,780	2,240
30	8,110	19,200	7,890	16,200	-	8,140	11,900	8,460	5,850	3,120	1,780	2,240
31	7,140	-	7,450	13,800	-	8,880	-	7,940	-	2,920	1,960	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-feet
October	137,530	20,200	1,340	4,436	1.98	2.26	272,800
November	399,640	43,100	3,670	13,320	5.95	6.64	792,700
December	829,560	82,400	7,450	26,760	11.9	13.77	1,645,000
Calendar year 1946	4,220,190	82,400	1,340	11,560	5.16	70.07	8,370,000
January	374,670	43,600	5,840	12,080	5.40	6.22	743,100
February	414,460	29,400	7,590	14,800	6.61	6.68	822,100
March	282,820	13,300	6,720	9,123	4.07	4.70	561,000
April	328,990	16,700	8,460	10,970	4.90	5.46	652,500
May	281,420	12,000	6,750	9,078	4.05	4.67	558,200
June	202,740	9,660	5,250	6,758	3.02	3.37	402,100
July	124,550	5,550	2,920	4,018	1.79	2.07	247,000
August	67,270	2,820	1,660	2,170	.969	1.12	135,400
September	65,670	4,130	1,680	2,189	.977	1.09	130,500
Water year 1948-47	3,509,320	82,400	1,340	9,815	4.29	58.27	8,960,000

Peak discharge.- Nov. 18 (12 p.m.) 43,500 sec.-ft.; Nov. 28 (10 a.m. to 1 p.m.) 28,500 sec.-ft.; Dec. 13 (7:15 p.m.) 85,100 sec.-ft.; Dec. 15 (8 a.m.) 84,000 sec.-ft.; Jan. 26 (6 a.m.) 46,100 sec.-ft.; Feb. 2 (12 m.) 37,200 sec.-ft.

Note.- Shifting-control method used Dec. 15 to Feb. 17.

Hall Creek near Packwood, Wash.

Location.- Water-stage recorder, lat. 46°34'50", long. 121°41'10", in NW¹ sec. 33, T. 13 N., R. 9 E., 800 feet upstream from Washington State Highway 5 and 2 miles southwest of Packwood.

Drainage area.- 10.9 square miles.

Records available.- October 1946 to September 1947.

Extremes.- Maximum discharge during year and period of record, 604 second-feet Dec. 13 (gauge height, 6.63 feet); minimum, 3.7 second-feet probably Oct. 17, 18 (gauge height, 1.59 feet, from recorded range in stage).

Remarks.- Records fair. No diversion. Some regulation for power at Packwood Lumber Co. dam, 1 mile upstream.

Rating table, water year 1946-47 (gauge height, in feet,
and discharge, in second-feet)
(Shifting-control method used Dec. 4-11)

1.5	1.3	2.5	70	4.5	315
1.7	7.5	2.7	92	5.0	380
1.9	19	3.0	126	5.5	450
2.1	33	3.5	186	6.0	520
2.3	50	4.0	250		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.7	36	70	37	76	39	39	39	26	19	11.5	6.4
2	4.7	32	60	36	105	38	39	39	28	18.5	11	6.1
3	4.7	29	51	34	100	39	38	39	28	18.5	10	6.1
4	4.4	26	59	32	85	38	38	38	25	18.5	10	6.1
5	4.7	25	66	32	74	36	35	37	24	18	10	6.1
6	4.7	22	67	32	67	35	35	36	24	18	9.7	6.1
7	5.4	22	62	30	62	34	33	36	24	18	9.7	6.4
8	5.0	21	61	29	58	34	33	36	28	17	8.6	7.5
9	4.7	20	64	28	55	34	33	35	28	16.5	7.5	8.6
10	4.5	20	84	32	52	38	35	35	28	16	7.5	8.6
11	4.3	19	391	30	50	42	35	33	26	15.5	7.5	8.0
12	4.2	18	450	29	58	43	34	32	25	15.5	7.5	7.5
13	4.1	17	511	28	79	41	35	31	24	15.5	8.0	7.2
14	4.0	16.5	492	27	108	40	36	30	23	15.5	7.5	6.8
15	4.0	16.5	424	25	116	40	39	30	23	15.5	7.5	6.8
16	4.0	16	302	26	111	41	41	29	24	15	7.2	6.4
17	3.7	28	224	27	98	45	44	28	25	15	7.2	6.4
18	3.7	112	174	27	86	47	50	27	24	15	7.2	6.4
19	4.0	133	140	30	76	47	55	27	22	15	6.8	6.4
20	8.0	111	114	29	68	47	56	27	22	14	6.8	6.4
21	8.4	94	99	30	62	47	52	27	21	14	6.8	6.8
22	8.6	89	84	32	58	49	47	27	20	13.5	6.8	6.4
23	13.5	85	73	57	55	47	44	27	19.5	13.5	6.4	6.4
24	23	90	64	146	32	44	41	27	19.5	13	6.4	6.4
25	56	94	59	234	49	42	40	27	19	13	6.4	6.4
26	51	105	54	276	46	39	39	27	19.5	13	6.4	6.4
27	39	116	49	198	44	38	39	28	21	13	6.4	6.1
28	33	110	46	149	41	35	40	27	22	13	6.4	6.4
29	32	90	43	114	-	35	42	27	21	12.5	6.1	6.4
30	31	92	40	94	-	39	39	27	20	12	6.4	6.4
31	30	-	39	78	-	39	-	26	-	11.5	6.4	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	417.0	56	3.7	13.5	1.24	1.42	827
November	1,705.0	133	16	56.8	5.21	5.82	3,380
December	4,516	511	39	146	13.4	15.41	8,960
Calendar year 1946	-	-	-	-	-	-	-
January	2,008	276	25	64.8	5.94	6.85	3,980
February	1,991	116	41	71.1	6.52	6.79	3,950
March	1,252	49	34	40.4	3.71	4.27	2,480
April	1,206	56	33	40.2	3.69	4.11	2,390
May	961	39	26	31.0	2.84	3.28	1,910
June	701.5	28	19	23.4	2.15	2.39	1,390
July	471.5	19	11.5	15.2	1.39	1.61	935
August	239.6	11.5	6.1	7.73	.709	.82	475
September	200.4	8.6	6.1	6.68	.613	.68	397
Water year 1946-47	15,669.0	511	3.7	42.9	3.94	53.45	31,070

Note.- No gage-height record Oct. 7-22, Nov. 25 to Dec. 3; discharge computed on basis of recorded range in stage and records for Johnson Creek near Packwood.

Johnson Creek near Packwood, Wash.
(Formerly published as Johnson Creek at mouth, near Lewis, Wash.)

Location.- Water-stage recorder, lat. 46°34'30", long. 121°42'00", in NE¹/₄ sec. 32, T. 13 N., R. 9 E., 400 feet upstream from mouth and 3 miles southwest of Packwood. Prior to Sept. 24, 1914, staff gage at site three-quarters of a mile upstream at different datum.

Drainage area.- 49.6 square miles (revised).

Records available.- August 1907 to September 1914, October 1918 to September 1924.
October 1946 to September 1947.

Extremes.- Maximum discharge during year, 2,990 second-feet Dec. 11; maximum gage height, 8.22 feet Dec. 11 (result of drift caught on control for 7½ hours); minimum discharge, 15 second-feet Oct. 17, 18, 19.
1907-14, 1918-24, 1946-47: Maximum discharge, that of Dec. 11, 1946; minimum, that of Oct. 17-19, 1946.

Remarks.- Records good except those for periods of no gage-height record, which are poor.
No diversion or regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	h20	53	251	150	160	150	200	322	332	157	82	50
2	20	57	217	140	195	145	193	410	309	160	82	49
3	h20	54	200	130	170	145	184	410	262	155	84	48
4	21	54	270	130	155	145	169	410	247	150	82	48
5	22	54	304	130	143	138	163	415	235	147	77	47
6	22	54	283	132	140	135	160	470	235	147	74	47
7	h23	52	247	124	137	135	160	535	275	144	73	56
8	22	48	228	121	134	130	160	515	395	134	73	57
9	20	47	217	120	132	133	160	455	395	132	68	64
10	19	46	310	140	131	136	160	390	395	129	67	61
11	f18	43	2,240	133	140	138	157	345	322	129	66	53
12	17	41	2,400	125	220	142	160	336	283	129	66	50
13	16	40	2,160	117	300	144	181	309	266	122	64	47
14	16	38	1,740	110	390	155	251	287	243	116	64	47
15	16	36	1,340	110	370	166	341	266	228	113	63	46
16	16	35	900	113	335	214	375	254	291	107	63	47
17	15	72	714	110	300	287	405	243	300	105	61	47
18	15	715	535	108	260	336	455	239	247	107	61	47
19	17	702	430	108	230	345	495	300	204	105	59	46
20	38	405	350	109	210	345	470	350	178	99	59	45
21	40	262	296	115	195	341	390	395	163	93	58	44
22	41	243	279	170	190	341	341	405	166	89	56	43
23	61	262	258	f304	190	309	313	395	175	89	54	43
24	207	235	232	f583	180	258	296	435	187	88	53	43
25	760	266	204	610	180	224	296	475	178	84	52	42
26	272	455	204	470	170	190	332	530	193	88	52	42
27	125	520	190	425	165	175	385	545	207	86	52	41
28	74	495	187	315	155	168	420	480	178	89	51	54
29	57	390	180	250	-	168	395	415	166	86	51	47
30	47	296	170	210	-	193	341	390	160	86	52	45
31	45	-	162	180	-	190	-	360	-	86	50	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	2,122	760	15	68.5	1.58	1.59	4,210
November	6,070	715	35	202	4.07	4.55	12,040
December	17,898	2,400	162	571	11.5	13.27	35,100
Calendar year	-	-	-	-	-	-	-
January	6,092	610	108	197	3.97	4.57	12,080
February	5,677	390	131	203	4.09	4.26	11,260
March	6,217	345	130	201	4.05	4.66	12,330
April	8,508	495	157	284	5.73	6.38	16,880
May	12,086	545	239	390	7.86	9.06	23,970
June	7,415	395	160	247	4.98	5.56	14,710
July	3,551	160	84	115	2.32	2.66	7,040
August	1,989	84	50	63.5	1.28	1.48	3,910
September	1,446	64	41	48.2	.972	1.08	2,870
Water year 1946-47	78,851	2,400	15	216	4.35	59.12	156,400

f Computed on basis of partly estimated gage-height record.

h Computed from staff-gage readings.

Note.- No gage-height record Oct. 2, 4-6, 8-10, Dec. 29 to Jan. 22, Jan. 25 to Mar. 11; discharge interpolated, or computed on basis of recorded range in stage and records for stations on nearby streams.

Cispus River near Randle, Wash.

Location.- Water-stage recorder, lat. 46°26'50", long. 121°51'35", in NW¼ sec. 18, T. 11 N., R. 8 E. (unsurveyed), 500 feet upstream from bridge to Tower Rock ranger station, 4 miles downstream from North Fork, and 8 miles southeast of Randle. Datum of gage is 1,221.4 feet above mean sea level (from river-profile survey).

Drainage area.- 323 square miles.

Records available.- October 1910 to February 1912, September 1929 to September 1947.

Average discharge.- 19 years (1910-11, 1929-47), 1,241 second-feet.

Extremes.- Maximum discharge during year, 11,500 second-feet Dec. 14 (gage height, 9.65 feet); from rating curve extended above 6,200 second-feet; minimum, 346 second-feet Oct. 15, 16 (gage height, 2.98 feet).

1910-12, 1929-47: Maximum discharge, 20,000 second-feet Dec. 22, 1933 (gage height, 12.7 feet), from rating curve extended above 8,000 second-feet; minimum, 183 second-feet Dec. 30, 1936; minimum gage height, 2.55 feet Oct. 25, 1942.

Remarks.- Records good. No diversion or regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	376	832	2,180	1,180	1,550	1,230	1,470	1,980	1,430	848	518	405
2	372	739	2,180	1,100	2,750	1,200	1,420	2,320	1,400	864	513	409
3	369	690	2,250	1,070	2,390	1,180	1,360	2,390	1,290	832	524	401
4	386	670	3,300	1,030	2,050	1,140	1,300	2,320	1,210	808	534	401
5	415	658	3,890	1,060	1,860	1,070	1,240	2,250	1,160	800	518	397
6	386	651	3,380	1,010	1,730	1,040	1,180	2,320	1,110	808	504	386
7	394	644	2,750	983	1,670	1,010	1,150	2,600	1,170	784	499	420
8	394	613	2,460	956	1,550	983	1,130	2,600	1,670	746	490	462
9	379	596	2,180	929	1,450	992	1,120	2,460	1,730	732	485	462
10	372	613	2,390	965	1,390	1,100	1,120	2,120	1,550	725	475	462
11	362	584	8,020	929	1,450	1,120	1,080	1,860	1,360	725	471	428
12	355	561	8,720	920	2,250	1,120	1,070	1,790	1,240	768	486	420
13	352	550	10,700	888	3,600	1,090	1,110	1,670	1,210	753	482	409
14	352	529	9,950	832	4,620	1,120	1,480	1,550	1,150	725	462	401
15	352	513	9,200	808	3,890	1,280	1,860	1,500	1,080	711	466	397
16	352	499	5,800	840	3,220	1,450	2,050	1,480	1,240	670	462	409
17	352	633	4,160	832	2,820	1,670	2,120	1,450	1,380	651	458	413
18	349	5,540	3,380	832	2,460	1,860	2,250	1,420	1,220	651	449	420
19	352	5,580	2,860	816	2,180	1,920	2,320	1,490	1,110	638	445	401
20	572	3,300	2,460	808	1,980	1,920	2,390	1,610	1,010	619	437	394
21	644	2,460	2,250	816	1,860	1,920	2,120	1,790	929	607	432	386
22	677	2,320	2,050	888	1,730	1,920	1,920	1,790	920	590	420	386
23	739	2,460	1,860	1,480	1,670	1,860	1,790	1,790	947	572	416	386
24	974	2,320	1,730	2,750	1,610	1,670	1,790	1,790	965	566	409	383
25	2,130	2,120	1,670	2,980	1,530	1,550	1,860	1,920	947	561	409	386
26	1,960	2,530	1,610	3,060	1,440	1,420	1,980	1,920	992	572	409	386
27	1,560	4,060	1,500	2,460	1,350	1,330	2,180	2,050	1,110	561	405	383
28	1,100	3,980	1,380	2,120	1,310	1,260	2,390	1,980	983	572	405	445
29	965	3,140	1,320	1,860	-	1,250	2,390	1,790	896	555	416	424
30	888	2,530	1,230	1,730	-	1,390	2,120	1,610	864	534	428	405
31	840	-	1,210	1,540	-	1,410	-	1,510	-	518	409	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-feet
October	19,868	2,130	349	641	1.98	2.29	39,410
November	52,915	5,580	499	1,764	5.46	6.09	105,000
December	109,980	10,700	1,210	3,548	11.0	12.66	218,100
Calendar year 1946	646,249	10,700	349	1,771	5.48	74.40	1,282,000
January	40,472	3,060	808	1,306	4.04	4.66	80,280
February	59,560	4,620	1,510	2,127	6.59	6.86	118,100
March	42,475	1,920	983	1,370	4.24	4.89	84,250
April	50,760	2,390	1,070	1,692	5.24	5.84	100,700
May	59,120	2,600	1,420	1,907	5.90	6.81	117,300
June	35,273	1,730	864	1,176	3.64	4.06	69,960
July	21,066	864	518	660	2.11	2.43	41,780
August	14,196	534	405	458	1.42	1.63	28,160
September	12,267	462	383	409	1.27	1.41	24,330
Water year 1946-47	517,952	10,700	349	1,419	4.39	59.63	1,027,000

Peak discharge.- Nov. 18 (8 p.m.) 8,960 sec.-ft.; Nov. 27 (6 p.m.) 4,810 sec.-ft.; Dec. 11 (4:45 p.m.) 10,700 sec.-ft.; Dec. 13 (12 m.) 11,000 sec.-ft.; Dec. 14 (10:30 p.m.) 11,500 sec.-ft.; Feb. 14 (3 a.m.) 4,810 sec.-ft.

Tilton River near Cinebar, Wash.

Location.- Water-stage recorder, lat. 46°34'35", long. 122°31'15", in SW $\frac{1}{4}$ sec. 26, T. 13 N., R. 2 E., 1,000 feet downstream from Cinnabar Creek, 2 miles southeast of Cinebar, and $2\frac{1}{2}$ miles upstream from mouth. Datum of gage is 397.6 feet above mean sea level (from river-profile survey).

Drainage area.- 158 square miles.

Records available.- February 1941 to September 1947.

Extremes.- Maximum discharge during year, 14,500 second-feet sometime during period of no gage-height record in December (gage height, 14.36 feet, from high-water mark), from rating curve extended above 4,000 second-feet; minimum, 89 second-feet Sept. 6 (gage height, 3.75 feet).
1941-47: Maximum discharge, that of December 1946; minimum, 66 second-feet Sept. 11, 12, 1944.

Remarks.- Records good except those for periods of no gage-height record, which are poor.
No diversion or regulation.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Dec. 17 to Jan. 24)

3.7	81	4.5	252	6.0	970	9.0	4,190
3.9	114	4.7	314	6.5	1,340	10.0	5,760
4.1	152	5.0	422	7.0	1,770	11.0	7,520
4.3	198	5.5	660	8.0	2,840	13.1	11,700

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	244	1,340	1,450	605	1,610	535	1,000	750	208	430	152	99
2	241	1,080	1,400	564	3,750	526	1,110	650	238	377	152	95
3	249	905	1,500	535	2,490	762	970	600	224	338	144	94
4	301	810	1,950	507	1,880	872	905	550	216	317	140	92
5	366	780	3,500	516	1,540	720	938	500	216	298	134	92
6	331	872	2,900	535	1,380	654	970	434	214	273	130	97
7	350	840	2,500	494	1,300	660	938	422	216	258	127	299
8	360	750	2,100	476	1,260	720	1,040	407	338	244	123	780
9	310	696	2,200	467	1,180	780	1,100	414	559	232	121	1,000
10	260	720	2,900	889	1,110	1,600	1,650	390	494	219	119	654
11	240	649	5,200	938	1,220	2,010	1,550	370	426	224	116	422
12	240	595	7,600	840	1,500	1,590	1,400	350	362	235	116	321
13	230	554	11,700	750	2,060	1,340	1,350	330	321	211	114	270
14	240	521	7,500	660	3,090	1,220	1,350	320	301	201	111	232
15	240	489	5,000	600	2,660	1,180	1,300	300	273	208	110	203
16	230	463	3,700	585	2,010	1,110	1,200	294	502	198	114	201
17	220	1,190	2,720	554	1,590	1,040	1,300	290	540	184	112	188
18	210	4,950	2,110	627	1,340	958	1,700	288	451	176	110	176
19	250	4,000	1,720	905	1,150	872	2,000	285	392	174	112	165
20	580	2,600	1,500	840	1,000	780	1,900	273	348	170	112	159
21	580	1,850	1,340	1,590	905	750	1,700	261	317	163	106	150
22	580	2,600	1,220	1,860	840	750	1,400	246	292	159	102	146
23	620	2,500	1,110	4,930	780	684	1,200	238	273	154	100	140
24	700	2,300	1,000	6,270	750	702	1,050	227	252	154	104	136
25	3,900	2,500	938	6,150	690	627	960	219	258	159	102	134
26	2,320	3,500	905	5,790	632	580	920	216	380	167	97	132
27	1,590	4,200	872	3,280	595	535	900	208	678	172	95	130
28	1,180	3,400	780	2,320	564	507	900	203	780	224	94	134
29	970	2,400	714	1,620	-	494	1,000	203	622	206	95	136
30	905	2,050	660	1,500	-	696	850	198	512	174	106	130
31	938	-	638	1,260	-	750	-	198	-	159	107	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	19,955	3,900	210	644	4.08	4.70	39,580
November	52,104	4,950	463	1,737	11.0	12.26	103,800
December	61,327	11,700	638	2,623	16.6	19.14	161,800
Calendar year 1946	412,079	11,700	102	1,129	7.15	96.99	817,300
January	49,657	6,270	467	1,602	10.1	11.69	98,490
February	40,856	3,750	564	1,459	9.23	9.62	81,040
March	26,984	2,010	494	870	5.51	6.35	53,520
April	36,551	2,000	850	1,218	7.71	8.60	72,500
May	10,634	750	198	343	2.17	2.50	21,090
June	11,185	780	208	373	2.36	2.63	22,180
July	6,858	430	154	221	1.40	1.61	13,600
August	3,577	152	94	115	.728	.84	7,090
September	7,007	1,000	92	234	1.48	1.65	13,900
Water year 1946-47	346,693	11,700	92	950	6.01	81.59	687,600

Note.- No gage-height record Oct. 7-25, Nov. 19 to Dec. 16, Apr. 9 to May 5, May 10-15, 17, 18; discharge computed on basis of recorded range in stage and records for Mineral Creek near Mineral.

Toutle River near Silver Lake, Wash.

Location. - Water-stage recorder, lat. 46°20'10", long. 122°43'30", in SE $\frac{1}{4}$ sec. 19, T. 10 N., R. 1 E., at highway bridge half a mile downstream from confluence of North and South Forks and 5 miles northeast of Silver Lake. Datum of gage is 407.3 feet above mean sea level (from river-profile survey).

Drainage area. - 474 square miles.

Records available. - October 1919 to December 1923, September 1929 to September 1947
September 1909 to August 1912 at site 2 miles downstream, published as Toutle River near Castle Rock.

Average discharge. - 23 years (1909-11, 1919-21, 1922-23, 1929-47), 1,934 second-foot.

Extremes. - Maximum discharge during year, 29,800 second-foot Dec. 11 (gage height, 17.56 feet), from rating curve extended above 9,500 second-foot; minimum not determined, occurred sometime during period of no gage-height record Aug. 23 to Sept. 24.

1909-12, 1919-23, 1929-47: Maximum discharge observed, 35,600 second-foot Mar. 2, 1910; maximum gage height recorded, 22.7 feet Dec. 23, 1933; minimum discharge, 240 second-foot Nov. 21, 1929.

Remarks. - Records fair except those for periods of no gage-height record, and those above 15,000 second-foot, which are poor. No diversion or regulation.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-foot)

Oct. 1 to Dec. 10					Dec. 11 to Sept. 30						
1.8	395	3.5	1,680	7.5	8,580	1.8	345	4.0	2,750	9.0	12,500
2.0	480	4.0	2,260	9.0	11,100	2.0	440	4.5	3,650	11.0	16,200
2.2	645	4.5	2,950	11.0	14,400	2.2	630	5.0	4,700	13.0	20,200
2.4	855	5.0	3,850			2.6	900	5.5	5,850	14.5	23,200
3.0	1,200	6.0	5,890			3.0	1,370	6.0	7,060		
						3.5	2,000	7.0	9,100		

Discharge, in second-foot, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	505	2,420	3,280	1,860	4,130	1,510	2,100	1,680	933	988	468	325
2	453	1,980	2,940	1,750	10,300	1,560	2,110	1,610	1,020	911	451	320
3	453	1,740	3,080	1,680	6,340	1,900	1,960	1,800	955	890	451	320
4	505	1,600	4,480	1,590	4,790	2,010	1,990	1,540	977	840	457	310
5	558	1,470	7,160	1,540	5,890	1,750	2,010	1,470	933	791	440	315
6	480	1,480	5,510	1,560	3,400	1,620	2,010	1,470	880	755	440	320
7	525	1,460	4,530	1,490	2,970	1,650	1,950	1,510	890	710	430	800
8	546	1,380	4,230	1,470	2,920	1,770	2,150	1,480	1,360	702	425	1,050
9	485	1,320	3,910	1,410	2,730	1,860	2,250	1,570	1,730	670	425	1,160
10	458	1,480	5,240	1,500	2,560	2,730	2,590	1,440	1,700	638	425	800
11	444	1,350	21,800	1,750	2,570	2,820	2,430	1,330	1,600	638	410	720
12	431	1,270	22,500	1,750	3,420	2,530	2,250	1,240	1,370	670	405	640
13	427	1,200	22,600	1,740	4,920	2,300	2,210	1,180	1,250	623	395	560
14	419	1,160	17,900	1,610	6,090	2,180	2,210	1,110	1,190	623	395	520
15	411	1,080	18,600	1,490	5,430	2,150	2,200	1,080	1,070	623	415	480
16	407	1,020	11,600	1,470	4,480	2,150	2,130	1,050	1,270	594	420	530
17	403	1,550	8,000	1,410	3,710	2,170	2,240	1,020	1,300	559	405	540
18	399	14,100	5,630	1,420	2,140	2,150	2,450	1,150	548	400	460	480
19	448	9,400	4,740	1,710	2,780	2,030	2,720	1,030	1,090	540	395	460
20	1,650	5,280	4,220	1,830	2,510	1,920	2,570	1,020	1,010	509	390	430
21	1,630	3,630	3,890	1,940	2,310	1,860	2,270	1,030	933	502	381	410
22	1,580	4,080	3,560	2,220	2,170	1,970	2,080	1,050	890	496	350	400
23	2,130	4,230	3,160	4,550	2,080	1,890	1,920	1,010	880	490	345	365
24	2,580	4,100	2,900	6,320	1,970	1,820	1,820	1,020	850	496	335	378
25	5,250	4,640	2,700	11,600	1,870	1,700	1,710	1,050	800	515	330	368
26	4,380	5,390	2,530	12,200	1,780	1,610	1,660	1,080	944	566	325	363
27	2,950	7,680	2,430	7,340	1,680	1,500	1,690	1,150	1,250	559	320	354
28	2,200	5,600	2,300	5,100	1,600	1,430	1,750	1,030	1,370	646	315	451
29	1,950	4,550	2,140	4,130	-	1,410	1,970	988	1,210	559	325	446
30	2,090	3,730	1,990	3,610	-	1,840	1,770	911	1,070	502	360	400
31	1,940	-	1,920	3,350	-	1,870	-	890	-	490	335	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-foot
October	39,097	5,250	399	1,261	2.66	3.07	77,550
November	101,550	14,100	1,020	3,385	7.14	7.97	201,400
December	211,470	22,600	1,920	6,822	14.4	16.59	419,400
Calendar year 1946	950,301	22,600	399	2,604	5.49	74.56	1,885,000
January	96,590	12,200	1,410	3,116	6.57	7.58	191,600
February	96,540	10,300	1,600	3,519	7.42	7.73	195,500
March	59,650	2,920	1,410	1,924	4.06	4.68	118,300
April	63,170	2,720	1,660	2,106	4.44	4.96	125,300
May	37,619	1,680	890	1,214	2.56	2.95	74,620
June	33,855	1,730	800	1,128	2.38	2.66	67,150
July	19,641	988	490	634	1.34	1.54	38,960
August	12,163	468	315	392	.827	.95	24,120
September	15,035	1,160	310	501	1.06	1.18	29,820
Water year 1946-47	788,380	22,600	310	2,160	4.56	61.86	1,564,000

Peak discharge. - Nov. 18 (5:30 p.m.) 20,500 sec.-ft.; Dec. 11 (3:30 p.m.) 29,800 sec.-ft.; Dec. 13 (4 a.m.) 25,600 sec.-ft.; Dec. 15 (1 p.m.) 23,200 sec.-ft.; Jan. 26 (1 a.m.) 14,300 sec.-ft.; Feb. 2 (7:30 a.m.) 12,700 sec.-ft.

Note. - No gage-height record Aug. 23 to Sept. 24; discharge computed on basis of records for near-by stations.

Green River near Toutle, Wash.

Location.- Water-stage recorder, lat. 46°22'30", long. 122°33'50", in SW $\frac{1}{4}$ sec. 4, T. 10 N., R. 2 E., 1 mile upstream from mouth and 7 miles northeast of Toutle.

Drainage area.- 131 square miles.

Records available.- October 1946 to September 1947.

Extremes.- Maximum discharge during year, 12,000 second-feet Dec. 11 (gage height, 13.23 feet) from rating curve extended above 2,600 second-feet by logarithmic plotting; minimum, 52 second-feet probably Sept. 4 (gage height, 2.63 feet, from recorded range in stage).

Remarks.- Records good except those above 5,000 second-feet and those for periods of no gage-height record, which are fair. No diversion or regulation.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

2.6	49	4.0	372	7.0	2,380
2.8	69	4.5	615	8.0	3,400
3.0	97	5.0	900	9.0	4,630
3.3	154	5.5	1,220	11.0	7,690
3.6	230	6.0	1,570	13.0	11,600

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	125	637	900	365	1,100	310	452	424	242	258	86	54
2	111	530	810	350	2,000	310	476	433	258	242	84	53
3	107	456	780	340	1,400	352	447	433	224	227	82	53
4	127	415	1,080	320	1,000	385	466	406	222	213	81	52
5	148	381	1,790	310	850	325	490	389	216	197	77	53
6	122	381	1,500	300	740	306	505	398	202	187	76	54
7	139	372	1,220	290	660	314	476	438	216	177	73	110
8	190	352	1,120	280	600	344	500	424	356	168	73	116
9	127	332	1,050	275	540	344	541	438	438	161	73	125
10	120	415	1,500	300	500	539	599	385	510	152	73	100
11	114	372	8,710	400	560	593	583	325	456	148	70	85
12	111	340	7,690	400	753	520	530	306	352	148	69	75
13	109	321	7,200	400	990	461	520	285	314	139	67	69
14	109	306	6,400	350	1,430	438	530	271	299	139	65	64
15	109	288	5,520	310	1,430	433	566	255	284	135	65	60
16	107	271	2,300	300	1,220	456	566	249	317	125	70	65
17	106	455	1,600	300	990	495	593	242	332	120	68	65
18	106	4,190	1,350	320	840	505	703	239	292	114	64	60
19	118	2,900	1,120	400	708	486	780	255	275	109	62	59
20	369	1,680	960	400	626	461	753	268	249	104	60	58
21	364	1,180	860	450	551	456	637	281	233	99	58	57
22	325	1,260	770	600	500	525	541	292	216	96	57	57
23	461	1,180	680	900	456	476	481	285	213	94	56	56
24	660	1,150	610	1,300	424	461	443	302	210	97	55	55
25	1,910	1,080	570	2,200	394	402	415	321	205	104	54	54
26	1,480	1,430	540	1,800	364	364	402	332	245	125	54	55
27	930	1,720	500	1,300	340	332	435	368	344	118	54	54
28	659	1,600	460	1,000	321	306	476	321	424	139	54	78
29	561	1,320	430	850	-	310	515	278	332	111	56	85
30	588	1,050	400	700	-	411	456	255	285	97	62	69
31	525	-	380	600	-	406	-	242	-	90	58	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-feet
October	11,097	1,910	106	358	2.73	3.15	22,010
November	28,364	4,190	271	945	7.21	8.05	56,260
December	60,800	8,710	380	1,961	15.0	17.26	120,600
Calendar year	-	-	-	-	-	-	-
January	18,410	2,200	275	594	4.53	5.23	36,520
February	22,287	2,000	321	796	6.08	6.33	44,210
March	12,826	593	306	414	3.16	3.64	25,440
April	15,875	780	402	529	4.04	4.51	31,490
May	10,140	438	239	327	2.50	2.88	20,110
June	8,741	510	202	291	2.22	2.48	17,340
July	4,433	258	90	143	1.09	1.26	8,790
August	2,056	54	54	66.3	5.06	.58	4,080
September	2,050	125	52	68.3	5.21	.58	4,070
Water year 1946-47	197,079	8,710	52	540	4.12	55.95	390,900

Peak discharge.- Oct. 25 (3:30 to 4 p.m.) 2,580 sec.-ft.; Nov. 18 (4 p.m.) 5,760 sec.-ft.; Dec. 11 (2:45 p.m.) 12,000 sec.-ft.; Dec. 14 (10 p.m.) 8,040 sec.-ft.

Note.- No gage-height record Dec. 16-18, Dec. 20 to Feb. 11, Aug. 20 to Sept. 24; discharge computed on basis of recorded range in stage and records for South Fork Toutle River at Toutle and Toutle River near Silver Lake.

South Fork Toutle River at Toutle, Wash.

Location.- Water-stage recorder, lat. 46°19'20", long. 122°41'45", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 28, T. 10 N., R. 1 E., half a mile southwest of Toutle, $\frac{1}{2}$ miles upstream from mouth, and 3 miles downstream from Johnson Creek. Datum of gage is at mean sea level (from river-profile survey).

Drainage area.- 118 square miles.

Records available.- October 1939 to September 1947.

Extremes.- Maximum discharge during year, 8,710 second-feet Dec. 11 (elevation, 458.54 feet); minimum, 63 second-feet Sept. 4.
1939-47: Maximum discharge, that of Dec. 11, 1946; minimum, that of Sept. 4, 1947.

Remarks.- Records good except those for period of no gage-height record, which are fair.
No diversion or regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	130	781	1,380	a368	1,180	340	685	362	155	203	114	68
2	120	608	1,270	a352	3,580	353	822	332	192	202	112	66
3	124	497	1,280	a356	2,040	524	548	315	194	189	112	66
4	135	444	1,790	a320	1,360	574	534	296	228	174	114	64
5	144	408	2,940	303	1,050	467	567	284	203	172	104	66
6	118	416	2,440	303	882	422	560	273	174	164	103	71
7	140	411	1,980	277	789	422	522	266	177	156	101	252
8	142	376	1,850	273	718	455	672	259	342	154	103	311
9	124	358	1,870	262	658	532	702	284	479	151	101	332
10	114	386	1,850	482	594	1,060	872	252	386	144	104	259
11	110	345	6,320	416	629	1,140	805	235	336	156	101	212
12	108	324	6,900	416	1,170	926	725	222	292	172	99	174
13	106	300	6,580	411	2,040	781	695	212	262	156	95	151
14	106	288	5,060	315	2,370	733	688	203	256	154	92	140
15	104	266	4,890	300	1,850	710	665	197	225	161	90	126
16	103	256	2,860	292	1,370	688	587	192	309	146	101	140
17	101	547	1,850	292	1,070	680	594	189	281	140	94	142
18	101	5,610	1,370	370	873	629	702	186	248	135	82	126
19	134	3,700	1,110	541	733	580	765	197	228	133	79	122
20	723	2,180	962	485	629	534	725	180	222	122	77	116
21	560	1,670	864	608	560	515	622	169	206	120	76	110
22	672	1,790	773	770	509	522	534	164	192	120	76	106
23	797	1,980	680	1,400	479	473	473	156	177	118	74	103
24	1,010	2,070	615	2,370	444	455	428	154	167	126	73	99
25	1,700	2,180	574	3,520	416	406	400	149	159	142	70	97
26	1,340	2,580	554	3,240	391	362	372	142	221	159	68	97
27	848	3,460	541	1,960	367	332	362	140	262	146	67	94
28	615	2,580	479	1,340	349	311	367	140	256	186	67	130
29	534	1,980	433	998	-	324	473	137	228	144	70	110
30	580	1,610	400	805	-	485	381	133	219	124	80	99
31	625	-	a384	658	-	497	-	130	-	120	73	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	12,268	1,703	101	396	3.36	5.87	24,330
November	40,399	5,610	256	1,547	11.4	12.73	80,130
December	62,649	6,900	384	2,021	17.1	19.75	124,300
Calendar year 1946	295,363	6,900	101	809	6.86	93.11	585,900
January	24,800	3,520	262	800	6.78	7.82	49,190
February	29,100	3,580	349	1,039	8.81	9.17	57,720
March	17,232	1,140	311	556	4.71	5.43	34,180
April	17,627	872	362	588	4.98	5.56	34,960
May	6,550	362	130	211	1.79	2.06	12,990
June	7,276	479	155	243	2.06	2.29	14,430
July	4,689	203	118	151	1.28	1.48	9,300
August	2,772	114	67	89.4	.758	.87	5,500
September	4,049	332	64	135	1.14	1.28	8,030
Water year 1946-47	229,411	6,900	64	629	5.33	72.31	455,100

Peak discharge.- Nov. 18 (4 a.m.) 8,290 sec.-ft.; Dec. 11 (5:30 p.m.) 8,710 sec.-ft.; Dec. 13 (2:30 a.m.) 8,090 sec.-ft.; Dec. 14 (11 p.m.) 6,710 sec.-ft.; Jan. 25 (1 p.m.) 4,550 sec.-ft.; Feb. 2 (7 a.m.) 4,890 sec.-ft.

a No gage-height record; discharge interpolated.

Elokomin River near Cathlamet, Wash.

Location.- Water-stage recorder, lat. 46°13'10", long. 123°20'30", in SE $\frac{1}{4}$ sec. 31, T. 9 N., R. 5 W., 2 miles northeast of Cathlamet and 4 miles upstream from mouth. Datum of gage is 29.60 feet above mean sea level, datum of 1929.

Drainage area.- 66 square miles.

Records available.- October 1940 to September 1947.

Extremes.- Maximum discharge during year, 6,210 second-feet Jan. 25 (gage height, 10.76 feet); from rating curve extended above 1,600 second-feet by slope-area method; minimum, 32 second-feet Sept. 8.

1940-47: Maximum discharge, that of Jan. 25, 1947; minimum, 24 second-feet Aug. 21, 22, Sept. 2, 3, 1945.

Maximum stage known, 17.2 feet in December 1933, from information by local residents.

Remarks.- Records excellent except those for periods of shifting control, which are good, and those for periods of no gage-height record, which are fair. Small diversions for irrigation. No regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	370	850	217	1,510	219	280	191	98	102	49	36
2	51	410	800	203	2,800	226	264	178	91	94	47	33
3	56	320	1,000	191	1,550	348	251	165	87	91	47	35
4	68	f283	1,100	185	1,020	302	324	159	96	86	47	35
5	58	f256	1,500	191	780	256	353	148	84	80	46	33
6	49	250	1,500	189	645	238	360	142	84	79	44	38
7	58	220	1,200	176	566	261	330	138	86	75	46	103
8	54	200	1,200	169	492	272	424	134	126	74	50	144
9	49	190	1,300	167	441	392	441	132	217	70	50	189
10	43	180	2,000	365	402	855	585	124	154	62	57	116
11	42	170	3,250	325	402	938	492	120	122	79	47	89
12	41	160	3,500	360	566	688	424	115	107	91	46	75
13	41	150	3,000	302	1,100	547	376	111	98	74	43	66
14	41	150	2,400	261	1,550	458	328	109	93	68	41	60
15	39	140	2,000	241	1,300	398	291	105	87	72	42	56
16	38	140	1,500	229	938	351	264	105	163	69	44	56
17	38	150	1,100	217	710	316	268	102	130	62	42	54
18	38	320	830	294	585	288	296	102	113	60	41	50
19	45	650	710	373	492	266	336	105	103	60	39	47
20	150	560	585	370	441	248	333	96	107	57	39	46
21	250	500	510	565	392	246	294	89	96	56	39	44
22	300	1,400	458	780	351	238	261	86	87	54	38	43
23	250	2,600	398	1,680	322	241	241	80	82	54	39	41
24	650	2,800	360	2,490	296	274	229	79	79	57	38	41
25	1,050	2,700	328	4,500	274	234	212	77	75	63	36	42
26	750	2,000	310	3,180	256	214	196	74	140	60	35	43
27	500	2,100	291	1,710	241	203	187	72	174	60	36	43
28	350	2,000	266	1,140	229	191	187	74	148	82	35	43
29	300	1,400	248	830	-	203	248	74	124	68	35	43
30	280	1,000	231	688	-	241	200	72	111	54	39	41
31	310	-	229	566	-	219	-	75	-	51	39	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	6,038	1,050	38	195	2.95	3.40	11,980
November	23,769	2,800	140	792	12.0	13.39	47,150
December	34,954	3,500	229	1,128	17.1	19.70	69,330
Calendar year 1946	166,104	3,500	35	455	6.89	93.60	329,500
January	23,155	4,500	167	747	11.3	13.05	45,930
February	20,451	2,800	229	730	11.1	11.52	40,560
March	10,371	938	191	335	5.08	5.84	20,570
April	9,253	585	187	308	4.67	5.21	18,360
May	3,481	191	72	111	1.68	1.93	6,810
June	3,362	217	75	112	1.70	1.89	6,670
July	2,164	102	51	69.8	1.06	1.22	4,290
August	1,316	57	35	42.5	.644	.74	2,610
September	1,785	189	33	59.5	.902	1.01	3,540
Water year 1946-47	140,049	4,500	33	384	5.82	78.90	277,800

Peak discharge.- Jan. 24 (2:30 to 3 a.m.) 2,800 sec.-ft.; Jan. 25 (1:30 p.m.) 6,210 sec.-ft.; Feb. 2 (8 a.m.) 3,850 sec.-ft.

f Computed on basis of partly estimated gage-height record.

Note.- No gage-height record; discharge computed on basis of recorded range in stage and records for North River near Raymond. Shifting-control method used Mar. 28 to Sept. 30.

Youngs River near Astoria, Oreg.

Location.- Water-stage recorder, lat. 46°04', long. 123°47', in NW $\frac{1}{4}$ sec. 27, T.7 N., R. 9 W., 50 feet upstream from crest of Youngs River Falls, $2\frac{1}{2}$ miles southwest of Olney, and 9 miles southeast of Astoria. Datum of gage is 62.64 feet above mean sea level, datum of 1929.

Drainage area.- 32 square miles.

Records available.- January 1934 to September 1947. March 1916 to September 1917 (gage heights only) at site 3 miles upstream. August 1927 to December 1933 at site 1 mile upstream.

Average discharge.- 13 years (1934-47), 161 second-feet.

Extremes.- Maximum discharge during year, 3,000 second-feet Dec. 11 (gage height, 10.90 feet); minimum, 5.1 second-foot Sept. 5, 6 (gage height, 0.72 foot).
1927-47: Maximum discharge, 6,300 second-feet Nov. 24, 1927 (gage height, 6.52 feet, site and datum then in use), from rating curve extended above 2,000 second-feet; minimum, 3.7 second-feet Sept. 22, 23, 1938.

Remarks.- Records good. No diversion or regulation above station.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.7	4.8	2.2	43	6.0	720
.9	7.7	2.6	69	7.0	1,050
1.1	11	3.0	103	8.0	1,450
1.3	15	3.5	157	9.0	1,920
1.6	22	4.0	232	10.0	2,450
1.9	31	5.0	450		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.6	322	232	95	1,120	74	101	52	17	39	12	5.8
2	7.6	234	239	91	1,660	80	90	48	20	35	11	5.4
3	9.8	177	313	75	699	141	78	44	20	33	9.8	5.5
4	22	138	1,140	70	458	143	116	40	22	31	10	5.5
5	27	118	982	77	330	116	126	38	21	27	9.3	5.4
6	16	117	555	82	261	104	133	35	18	26	8.8	10
7	17	103	450	73	209	122	117	34	22	24	9.0	40
8	17	97	540	68	171	158	125	32	56	22	9.6	28
9	14	102	472	64	147	258	124	36	90	19	10	43
10	11	122	561	172	134	572	176	34	63	18	10	33
11	10	99	2,240	229	138	480	142	30	50	19	9.5	20
12	9.3	89	1,640	285	322	332	127	29	36	22	9.0	14
13	9.0	81	1,860	225	630	246	113	28	31	20	8.3	12
14	9.0	75	1,180	177	956	188	99	26	28	17	7.7	11
15	8.8	69	994	146	660	155	89	25	25	19	7.7	9.5
16	8.3	63	648	132	445	131	78	25	43	19	8.3	9.8
17	8.2	222	455	119	313	116	83	24	43	16	8.7	9.8
18	8.0	1,330	334	254	243	104	118	23	34	14	8.8	9.0
19	9.8	708	269	357	196	95	126	25	32	14	7.7	8.5
20	136	442	222	285	165	87	122	23	44	13	7.4	7.7
21	88	438	187	309	144	84	104	21	40	12	6.8	7.2
22	123	1,530	161	309	130	80	92	19	31	11	7.4	6.8
23	176	1,130	143	425	117	77	84	18	30	11	8.0	6.4
24	505	928	127	651	105	78	81	16	26	13	7.2	6.1
25	542	702	115	1,490	98	70	73	15	24	21	6.6	5.9
26	430	636	111	1,100	90	63	65	15	47	22	6.2	6.1
27	277	786	109	609	84	58	58	14	107	16	6.2	6.2
28	180	525	97	408	79	54	58	14	77	22	6.2	6.2
29	178	375	88	311	-	54	68	14	56	22	6.2	6.2
30	250	277	83	348	-	58	57	13	45	16	6.2	6.2
31	218	-	83	269	-	55	-	14	-	13	6.1	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	3,331.4	542	6.6	107	3.34	3.87	6,610
November	12,035	1,530	63	401	12.5	13.99	23,870
December	16,630	2,240	83	536	16.8	19.33	32,990
Calendar year 1946	77,189.1	2,240	6.1	211	6.59	89.71	153,100
January	9,325	1,490	64	301	9.41	10.84	18,500
February	10,104	1,660	79	361	11.3	11.74	20,040
March	4,433	572	54	143	4.47	5.15	8,790
April	3,023	176	57	101	3.16	3.51	6,000
May	824	52	13	26.6	.831	.96	1,630
June	1,198	107	17	39.9	1.25	1.39	2,380
July	627	39	11	20.2	.631	.73	1,240
August	255.7	12	6.1	8.25	.268	.30	507
September	356.4	43	5.4	11.9	.372	.41	707
Water year 1946-47	62,142.5	2,240	5.4	170	5.31	72.22	123,300

Peak discharge.- Nov. 22 (9 a.m.), 2,290 sec.-ft.; Dec. 11 (1 p.m.), 3,000 sec.-ft.; Dec. 13 (1 a.m.), 2,530 sec.-ft.; Jan. 25 (2 p.m.), 2,140 sec.-ft.; Jan. 25 (8 p.m.), 2,080 sec.-ft.; Feb. 2 (4 a.m.), 2,680 sec.-ft.

NEHALEM RIVER BASIN

Nehalem River near Foss, Oreg.

Location.- Water-stage recorder, lat. 45°42', long. 123°45', in NW¹ sec. 35, T. 3 N., R. 9 W., a quarter of a mile upstream from Cook Creek and 2.2 miles northeast of Foss.
Datum of gage is 32.60 feet above mean sea level, datum of 1929 (Oregon State Highway Department bench mark).

Drainage area.- 667 square miles.

Records available.- October 1939 to September 1947.

Extremes.- Maximum discharge during year, 35,100 second-feet Dec. 13 (gage height, 18.45 feet); minimum, 100 second-feet Sept. 5 (gage height, 1.67 feet).

1939-47: Maximum discharge, that of Dec. 13, 1946; minimum, 78 second-feet Sept. 11-13, 1944 (gage height, 1.45 feet).

Remarks.- Records good. No known diversion or regulation.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 12				Dec. 13 to Sept. 30			
1.5	107	2.6	625	1.6	75	3.5	1,260
1.7	168	3.0	895	1.8	150	4.2	1,840
2.0	285	3.5	1,260	2.0	245	5.0	2,620
2.3	435			2.3	410	6.0	3,760
Note.- Same as following table above 3.5 feet.				2.6	600	7.5	5,950
				3.0	880	9.0	8,940

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	110	2,860	5,420	1,370	9,250	1,380	1,390	895	356	496	235	106
2	122	2,810	4,600	1,300	21,800	1,390	1,410	852	392	452	210	106
3	145	2,400	4,460	1,200	13,200	1,940	1,330	796	458	422	195	106
4	175	1,900	8,090	1,120	13,100	2,240	1,440	754	458	404	186	103
5	216	1,560	16,600	1,100	7,970	2,020	1,650	726	446	386	182	103
6												
7	212	1,390	15,300	1,150	5,850	1,810	1,840	691	446	368	177	122
8	200	1,230	11,300	1,100	4,630	1,840	1,780	670	464	350	172	255
9	200	1,130	8,990	1,080	3,840	2,330	1,850	656	712	334	168	339
10	190	1,060	7,820	1,020	3,290	2,920	1,990	656	1,000	312	172	404
11	172	1,120	8,420	1,280	2,910	6,140	2,360	635	866	295	186	416
12												
13	162	1,060	19,000	1,860	2,730	7,970	2,320	594	775	295	182	339
14	146	993	26,200	2,340	4,120	6,700	2,120	574	649	300	172	280
15	139	916	32,500	2,420	6,410	5,140	1,930	548	568	295	164	245
16	133	860	26,000	2,220	8,490	4,200	1,750	528	509	285	159	210
17	130	818	23,400	1,960	8,490	3,450	1,600	522	464	285	150	186
18												
19	124	769	18,000	1,750	7,150	2,930	1,470	516	535	280	150	177
20	124	1,190	11,700	1,660	5,810	2,560	1,420	502	594	265	150	172
21	124	13,700	7,690	1,910	4,810	2,270	1,510	483	561	250	146	168
22	139	14,100	5,750	3,100	4,010	2,010	1,500	470	522	245	142	154
23	877	9,920	4,560	2,830	3,420	1,800	1,520	464	522	240	134	146
24												
25	1,030	6,100	3,760	3,340	2,960	1,640	1,420	446	509	220	134	142
26	1,390	12,900	3,210	4,250	2,610	1,540	1,500	422	476	210	134	158
27	1,470	17,700	2,610	7,100	2,340	1,500	1,200	404	452	205	138	134
28	2,230	17,600	2,440	11,300	2,090	1,460	1,150	386	416	205	138	130
29	3,590	15,900	2,200	17,100	1,880	1,380	1,100	368	398	235	130	126
30												
31	3,080	14,200	2,000	19,600	1,710	1,260	1,030	350	428	250	122	126
32	2,580	16,100	1,880	14,800	1,580	1,170	970	344	642	250	118	126
33	1,940	12,100	1,720	9,820	1,480	1,110	940	334	726	285	118	126
34	1,660	8,990	1,560	6,910	-	1,080	992	328	635	306	114	126
35	2,370	6,810	1,460	5,560	-	1,120	948	328	561	280	110	130
36	2,270	-	1,360	4,570	-	1,220	-	328	-	265	106	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-foot
October	27,481	3,590	110	886	1.33	10.60	54,510
November	190,186	17,700	769	6,340	9.51	16.18	377,200
December	290,220	32,500	1,380	9,362	14.0	16.18	575,600
Calendar year 1946	1,227,905	32,500	102	3,364	5.04	68.45	2,435,000
January	139,100	19,600	1,020	4,455	6.68	7.70	273,900
February	163,930	21,800	1,480	5,855	9.78	9.14	325,200
March	77,520	7,970	1,080	2,501	3.75	4.32	153,800
April	45,230	2,360	940	1,508	2.26	2.52	89,710
May	16,570	895	328	535	.802	.92	32,870
June	16,540	1,000	356	551	.826	.92	32,810
July	9,270	496	205	299	.448	.52	18,390
August	4,794	235	106	155	.232	.27	9,510
September	5,441	416	103	181	.271	.30	10,790
Water year 1946-47	985,282	32,500	103	2,699	4.05	54.92	1,954,000

Peak discharge.- Nov. 18 (2:30 p.m.) 18,800 sec.-ft.; Nov. 27 (10 a.m.) 17,800 sec.-ft.; Dec. 13 (3 a.m.) 35,100 sec.-ft.; Dec. 14 (11 a.m.) 27,500 sec.-ft.; Jan. 25 (12 p.m.) 22,400 sec.-ft.; Feb. 2 (8 a.m.) 23,800 sec.-ft.

Wilson River near Tillamook, Oreg.

Location.- Water-stage recorder, lat. 45°29', long. 123°43', in NW¼ sec. 18, T. 1 S., R. 8 W., 1 mile upstream from North Fork and 6½ miles east of Tillamook. Datum of gage is 42.13 feet above mean sea level, datum of 1929.

Drainage area.- 159 square miles.

Records available.- July 1931 to September 1947. December 1914 to November 1916 (incomplete) at site three-quarters of a mile downstream.

Average discharge.- 16 years (1931-47), 1,175 second-feet.

Extremes.- Maximum discharge during year, 18,100 second-feet Dec. 13 (gage height, 14.96 feet); minimum, 78 second-feet Oct. 17.
1914-16, 1931-47: Maximum discharge, 30,000 second-feet Dec. 21, 1933 (gage height, 19.28 feet, site and datum then in use) from rating curve extended above 15,000 second-feet; minimum observed, 55 second-feet Sept. 10-12, 1944.

Remarks.- Records good. No diversion or regulation above station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 12						Dec. 13 to Sept. 30					
0.9	80	2.3	585	6.2	4,290	0.9	90	2.3	620	6.2	4,460
1.1	122	2.8	890	7.5	5,980	1.1	136	2.8	950	7.5	6,150
1.3	172	3.3	1,260	9.0	8,080	1.3	190	3.3	1,340	9.0	8,220
1.6	265	4.0	1,850	11.6	11,900	1.6	285	4.0	1,960	11.0	11,100
1.9	385	5.0	2,870			1.9	410	5.0	3,020	14.0	16,200

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	94	1,580	2,040	526	5,080	516	1,020	470	193	333	165	94
2	96	1,360	1,800	470	11,900	592	1,100	435	220	317	162	92
3	113	1,130	1,820	445	5,240	1,460	929	410	289	293	157	92
4	124	946	3,940	420	3,190	1,450	1,020	388	365	278	152	92
5	141	812	6,670	420	2,320	1,140	1,180	374	289	264	144	94
6	113	760	4,250	425	1,890	985	1,390	361	254	257	141	114
7	104	670	3,400	392	1,630	1,100	1,260	341	285	247	136	378
8	102	618	4,030	370	1,400	1,310	1,330	337	671	232	136	784
9	98	607	3,760	365	1,210	1,770	1,320	337	1,600	226	141	726
10	88	629	4,980	759	1,070	4,150	1,720	329	1,090	220	139	543
11	84	585	8,860	936	1,060	4,330	1,570	305	764	244	136	396
12	82	546	11,900	1,030	2,240	2,880	1,340	293	609	268	131	317
13	82	505	15,300	894	3,300	2,090	1,530	285	510	244	124	264
14	82	470	10,100	745	3,440	1,660	964	271	450	223	119	238
15	82	440	9,310	638	3,130	1,370	845	260	392	229	117	220
16	80	426	4,940	598	2,470	1,170	745	250	532	223	117	208
17	82	1,330	3,180	565	1,940	1,010	804	244	460	211	114	205
18	82	10,500	2,360	824	1,590	894	880	232	410	199	112	196
19	113	5,560	1,860	1,770	1,360	804	852	229	378	196	112	184
20	1,390	2,980	1,540	1,550	1,170	726	859	217	374	190	110	176
21	1,080	2,240	1,330	1,990	1,020	668	790	208	345	182	110	168
22	1,730	4,680	1,150	2,730	915	620	712	202	325	173	112	162
23	1,540	5,750	992	4,600	810	626	650	193	305	170	114	157
24	1,730	4,950	894	7,130	738	632	609	190	285	168	112	149
25	2,090	6,330	810	8,360	668	565	560	187	274	168	110	146
26	1,740	7,320	745	8,220	614	516	516	184	353	165	105	146
27	1,320	7,900	712	4,330	576	480	475	184	475	168	101	144
28	1,000	4,970	632	2,840	543	455	470	184	460	220	99	144
29	932	3,370	587	2,150	-	460	582	182	401	220	97	141
30	1,360	2,540	554	1,900	-	538	510	182	361	187	97	139
31	1,320	-	526	1,540	-	570	-	184	-	173	97	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	19,074	2,090	80	615	3.87	4.46	37,830
November	82,504	10,500	426	2,750	17.3	19.30	163,600
December	114,972	15,300	526	3,709	23.3	26.89	228,000
Calendar year 1946	516,192	15,300	78	1,414	8.89	120.74	1,024,000
January	59,932	8,360	365	1,933	12.2	14.02	118,900
February	62,514	11,900	543	2,233	14.0	14.62	124,000
March	37,537	4,330	455	1,211	7.62	8.78	74,450
April	28,132	1,720	470	938	5.90	6.58	55,800
May	8,448	470	182	273	1.72	1.98	16,760
June	15,719	1,600	193	457	2.87	3.21	27,210
July	6,888	333	165	222	1.40	1.61	13,660
August	5,819	165	97	123	.774	.89	7,570
September	6,909	784	92	230	1.45	1.62	13,700
Water year 1946-47	444,448	15,300	80	1,218	7.66	103.96	881,500
Peak discharge.- Nov. 18 (3 p.m.) 14,500 sec.-ft.; Dec. 13 (2 a.m.) 18,100 sec.-ft.; Dec. 14 (11:30 p.m.) 12,400 sec.-ft.; Jan. 25 (9:30 p.m.) 12,000 sec.-ft.; Feb. 2 (6 a.m.) 17,400 sec.-ft.							

Trask River near Tillamook, Oreg.

Location.- Water-stage recorder, lat. 45°27', long. 123°44', in NW $\frac{1}{4}$ sec. 31, T. 1 S., R. 8 W., half a mile upstream from Gold Creek and 6 miles east of Tillamook.

Drainage area.- 143 square miles.

Records available.- July 1931 to September 1947.

Average discharge.- 16 years, 952 second-feet.

Extremes.- Maximum discharge during year, 16,400 second-feet Dec. 13 (gage height, 11.45 feet); minimum, 66 second-feet Oct. 16.

1931-47: Maximum discharge, 20,000 second-feet Dec. 22, 1933 (gage height, 13.00 feet); minimum, 58 second-feet Sept. 26, 27, 1939.

Maximum stage known, about 17 feet, probably occurred during flood of November 1921 or Mar. 31, 1931 (discharge, 30,000 second-feet, from rating curve extended above 12,000 second-feet).

Remarks.- Records good. No diversion or regulation above station.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Apr. 24 to Sept. 30)

0.4	62	1.4	375	2.8	1,230	6.0	5,710
.6	105	1.7	520	3.3	1,800	7.5	8,390
.8	158	2.0	690	4.0	2,640	9.0	11,300
1.1	255	2.4	960	4.8	3,800	10.5	14,400

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	103		1,680	558	3,990	510	708	425	201	366	150	94
2	89	1,190	1,420	495	8,810	575	690	402	255	359	141	91
3	91	968	1,430	470	1,060	630	340	298	322	136		91
4	112	802	2,610	445	2,820	1,010	815	362	306	310	136	91
5	125	678	5,160	455	2,080	857	960	348	262	286	133	89
6	91	619	3,700	450	1,690	782	1,060	339	248	280	133	105
7	94	558	2,820	420	1,410	815	960	326	290	266	130	255
8	98	505	3,140	406	1,220	915	1,040	318	558	252	130	352
9	84	490	3,100	398	1,080	1,200	1,040	322	1,100	241	147	375
10	78	510	4,140	672	960	2,640	1,200	310	770	250	136	294
11	76	460	8,860	770	922	3,460	1,140	294	586	244	128	220
12	74	420	13,500	878	1,410	2,420	1,020	283	495	256	125	182
13	72	402	13,500	776	1,930	1,760	885	272	430	227	122	161
14	72	384	9,240	660	2,070	1,380	796	266	368	214	120	150
15	70	366	9,150	597	2,030	1,150	714	262	357	224	115	138
16	68	352	4,790	570	1,800	992	654	258	470	217	118	138
17	70	690	3,060	536	1,490	878	708	252	398	204	118	144
18	72	6,540	2,240	736	1,280	789	829	244	362	191	110	150
19	100	4,330	1,760	1,280	1,120	720	815	244	339	188	108	130
20	619	2,440	1,420	1,210	992	660	789	234	330	182	105	125
21	470	1,940	1,240	1,600	885	630	720	227	306	179	103	120
22	750	3,980	1,080	2,130	615	586	660	220	290	170	110	118
23	808	4,710	938	3,650	750	608	614	210	280	167	118	115
24	1,100	3,840	850	5,020	684	580	570	201	269	167	108	112
25	1,800	4,240	776	6,310	642	520	536	198	258	167	103	110
26	1,440	5,150	732	6,670	597	490	505	188	362	164	100	112
27	1,020	5,490	702	3,770	564	465	470	188	564	164	98	115
28	770	3,950	630	2,510	536	4450	460	188	564	204	98	118
29	738	2,750	597	1,910	-	8500	520	185	470	173	98	115
30	1,100	2,070	558	1,710	-	592	460	179	406	155	98	110
31	1,040	-	548	1,400	-	575	-	179	-	150	98	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	13,297	1,800	68	429	3.00	3.46	26,370
November	62,234	6,540	352	2,074	14.5	16.19	123,400
December	105,371	13,500	548	3,399	23.8	27.40	209,000
Calendar year 1946	433,898	13,500	68	1,189	8.31	112.83	860,600
January	49,462	6,670	398	1,596	11.2	12.86	99,110
February	49,067	8,810	536	1,752	12.3	12.76	97,320
March	30,569	3,460	450	986	6.90	7.95	60,630
April	22,968	1,200	460	766	5.36	5.97	45,560
May	8,308	425	179	268	1.87	2.16	16,480
June	12,212	1,100	201	407	2.85	3.18	24,220
July	6,901	366	150	223	1.56	1.79	13,690
August	3,675	150	98	119	.832	.96	7,290
September	4,520	375	89	151	1.06	1.18	8,970
Water year 1946-47	368,584	13,500	68	1,010	7.06	95.86	731,000

Peak discharge.- Nov. 18 (4 p.m.) 9,260 sec.-ft.; Dec. 12 (10 a.m.) 13,700 sec.-ft.; Dec. 13 (1 a.m.) 16,400 sec.-ft.; Dec. 15 (12:30 a.m.) 12,200 sec.-ft.; Jan. 25 (11 p.m.) 8,690 sec.-ft.; Feb. 2 (7 a.m.) 11,500 sec.-ft.

a No gage-height record; discharge computed on basis of records for Wilson River near Tillamook.

Siletz River at Siletz, Oreg.

Location.- Water-stage recorder, lat. 44°43', long. 123°53', in NW¼ sec. 11, T. 10 S., R. 10 W., 1½ miles east of Siletz. Datum of gage is 102.32 feet above mean sea level, datum of 1929.

Drainage area.- 202 square miles.

Records available.- November 1905 to May 1912, January 1924 to September 1947.

Average discharge.- 27 years (1906-11, 1925-47), 1,578 second-feet.

Extremes.- Maximum discharge during year, 31,200 second-feet Dec. 15 (gage height, 24.5 feet), from rating curve extended above 9,000 second-feet on basis of former curve defined to 15,000 second-feet; minimum, 115 second-feet Oct. 15 (gage height, 2.42 feet). 1905-12, 1924-47: Maximum discharge, 34,600 second-feet Nov. 22, 1909, from rating curve extended above 19,000 second-feet; minimum observed, 51 second-feet Dec. 6, 7, 1929.

Maximum discharge known, 40,800 second-feet Nov. 20, 1921 (gage height, 31.6 feet, site and datum then in use), from rating curve extended above 19,000 second-feet.

Remarks.- Records good except those above 15,000 second-feet, which are fair. No diversion above station. Some diurnal fluctuation caused by log pond at Valseltz.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

2.3	95	4.6	960	11.0	6,660
2.5	129	5.2	1,320	13.0	9,220
2.8	194	6.0	1,870	15.0	12,300
3.1	275	7.0	2,650	18.0	17,500
3.5	415	8.0	3,550	21.0	23,400
4.0	640	9.5	5,020		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	171	2,580	2,840	675	9,560	650	1,260	630	263	468	249	151
2	147	2,270	2,480	605	14,200	866	1,280	586	350	459	235	149
3	169	1,890	2,230	572	7,270	1,720	1,190	558	972	423	235	149
4	162	1,560	3,550	550	4,470	1,620	1,570	522	996	391	246	147
5	178	1,330	5,920	540	3,240	1,410	1,910	500	730	375	227	145
6	151	1,250	4,890	536	2,510	1,250	2,050	473	615	361	214	160
7	147	1,060	4,290	509	2,090	1,300	1,870	455	720	344	209	482
8	160	927	5,530	486	1,790	1,510	2,010	435	1,550	326	209	491
9	143	872	5,130	468	1,560	2,840	2,070	447	3,320	312	258	640
10	133	910	6,210	768	1,580	5,680	2,510	411	2,440	302	275	514
11	124	756	8,610	990	1,300	5,650	2,280	387	1,710	375	230	395
12	120	700	18,300	1,270	2,160	4,020	1,930	368	1,320	500	219	330
13	118	655	19,900	1,220	3,320	2,950	1,650	354	1,090	383	209	290
14	118	820	18,700	1,070	3,190	2,300	1,390	344	922	336	199	263
15	116	581	20,200	938	2,880	1,880	1,210	333	812	387	194	246
16	116	554	8,060	850	2,470	1,590	1,090	322	850	368	189	230
17	143	1,230	4,820	800	2,070	1,370	1,110	312	751	333	187	219
18	164	9,590	3,400	817	1,770	1,210	1,200	302	655	326	180	227
19	202	6,400	2,600	1,410	1,530	1,080	1,070	299	586	308	176	212
20	2,950	4,010	2,160	1,490	1,350	978	1,030	287	550	296	171	199
21	1,980	3,400	1,880	2,150	1,210	894	960	278	509	284	169	194
22	2,470	7,160	1,600	2,550	1,090	850	888	269	468	272	173	189
23	2,450	7,750	1,360	4,520	978	861	822	255	439	263	182	187
24	2,810	5,460	1,210	6,760	905	806	773	249	407	263	173	182
25	3,040	5,790	1,090	8,640	856	768	720	246	387	281	167	178
26	2,960	8,930	1,010	11,100	784	685	675	241	460	269	164	176
27	2,450	13,100	960	6,010	730	620	640	238	705	269	160	173
28	1,880	8,050	850	3,950	690	581	610	235	640	330	160	178
29	1,600	5,030	735	2,970	-	581	834	230	563	287	160	173
30	2,090	3,590	685	2,830	-	894	690	224	514	263	160	171
31	1,980	-	645	2,430	-	1,020	-	232	-	255	156	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	31,442	3,040	116	1,014	5.02	5.79	62,360
November	108,005	13,100	554	3,600	17.8	19.88	214,200
December	158,825	20,200	645	5,123	25.4	29.24	315,000
Calendar year 1946	669,133	20,200	115	1,833	9.07	123.19	1,327,000
January	70,474	11,100	468	2,273	11.3	12.97	139,800
February	77,353	14,200	690	2,763	13.7	14.24	153,400
March	50,414	5,680	581	1,626	8.05	9.28	100,000
April	38,292	2,280	610	1,310	6.49	7.23	77,930
May	11,022	630	224	356	1.76	2.03	21,860
June	26,274	3,320	263	876	4.34	4.84	52,110
July	10,389	500	255	335	1.66	1.91	20,610
August	6,135	275	156	198	0.980	1.13	12,170
September	7,440	640	145	248	1.23	1.37	14,760
Water year 1946-47	597,065	20,200	116	1,636	8.10	109.91	1,184,000

Peak discharge.- Nov. 27 (10:30 a.m.) 15,400 sec.-ft.; Dec. 12 (10 a.m.) 16,300 sec.-ft.; Dec. 13 (11 a.m.) 20,700 sec.-ft.; Dec. 15 (1 a.m.) 31,200 sec.-ft.; Jan. 26 (2 a.m.) 14,500 sec.-ft.; Feb. 2 (6:30 a.m.) 18,400 sec.-ft.

Alsea River near Tidewater, Oreg.

Location.- Water-stage recorder, lat. 44°23', long. 123°50', in NW¼ sec. 6, T. 14 S., R. 9 W., three-quarters of a mile downstream from Grass Creek, 2.3 miles upstream from Scott Creek, and 3.8 miles southeast of Tidewater. Datum of gage is 48.16 feet above mean sea level, datum of 1929.

Drainage area.- 334 square miles.

Records available.- October 1939 to September 1947.

Extremes.- Maximum discharge during year, 26,400 second-feet Dec. 15 (gage height, 21.7 feet), from rating curve extended above 12,000 second-feet; minimum, 88 second-feet Oct. 16 (gage height, 1.58 feet).
1939-47: Maximum discharge, that of Dec. 15, 1946; minimum, 62 second-feet Sept. 1, 1940 (gage height, 1.43 feet).
Maximum stage known; 29.5 feet, from floodmark shown by old resident, on or about Feb. 3, 1890.

Remarks.- Records good except those above 15,000 second-feet, which are fair. No regulation; a few small diversions above station for irrigation.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 15					Nov. 19 to Sept. 30				
1.6	92	2.4	324	3.8	995	1.7	104	3.8	980
1.8	137	2.8	468	4.5	1,410	2.0	176	4.5	1,400
2.1	222	3.3	750	5.5	2,060	2.3	270	5.5	2,060
Note.- Same as following table above									
5.5	feet.					2.7	425	7.0	3,250
						3.2	660	8.5	4,760
								10.0	6,600
								12.0	9,400
								14.0	12,500
								17.0	17,700
								20.0	23,200

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	132	1,340	3,000	914	9,620	859	2,100	645	321	317	224	126
2	127	1,290	2,550	859	13,200	1,200	2,050	615	421	309	224	122
3	130	1,000	2,230	815	8,480	2,290	1,950	585	762	309	224	119
4	127	810	2,220	760	5,240	2,240	2,250	560	903	302	260	119
5	137	680	2,170	740	3,810	1,840	2,830	538	665	284	218	117
6	130	605	2,060	730	2,980	1,580	2,870	524	551	277	193	122
7	127	539	1,960	700	2,470	1,520	2,400	510	655	263	185	257
8	142	484	2,790	755	2,130	1,690	2,280	492	1,300	254	182	260
9	137	453	2,830	655	1,870	2,530	2,200	492	2,210	244	199	244
10	120	484	2,680	705	1,710	6,680	2,160	461	1,620	237	215	227
11	105	470	2,940	848	1,560	6,830	1,990	443	1,150	237	188	179
12	102	427	5,640	1,080	1,930	4,460	1,790	430	903	254	176	158
13	98	394	12,200	1,220	2,830	3,250	1,610	413	760	240	168	143
14	96	366	18,000	1,130	2,740	2,590	1,460	401	665	227	180	136
15	94	351	22,300	980	2,490	2,190	1,330	393	600	240	155	128
16	92	332	10,700	903	2,350	1,890	1,220	381	600	244	148	126
17	123	520	6,180	864	2,110	1,670	1,200	373	560	224	145	126
18	153	8,300	4,260	854	1,880	1,500	1,180	361	506	218	140	128
19	172	7,750	3,240	1,250	1,690	1,360	1,080	349	470	205	136	128
20	2,040	3,860	2,650	1,320	1,540	1,250	1,020	337	452	196	131	124
21	1,850	3,670	2,270	1,360	1,410	1,150	980	325	430	190	126	122
22	1,360	9,080	1,960	1,350	1,290	1,200	914	313	405	185	133	119
23	1,090	9,690	1,720	1,600	1,210	1,250	854	302	381	179	145	117
24	874	6,600	1,560	2,540	1,120	1,250	810	291	365	182	143	117
25	880	5,200	1,410	4,100	1,050	1,120	771	288	345	205	136	117
26	956	9,770	1,310	8,360	992	1,030	735	280	353	206	131	115
27	852	12,300	1,260	5,170	942	964	700	284	443	247	126	115
28	700	8,490	1,160	3,570	886	908	685	288	438	389	128	115
29	605	5,280	1,060	2,780	-	903	720	280	373	288	128	115
30	880	3,790	986	3,240	-	1,670	685	277	337	227	133	113
31	912	-	942	3,050	-	2,350	-	280	-	218	131	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	15,343	2,040	92	495	1.48	1.71	30,430
November	104,325	12,300	332	3,477	10.4	11.62	206,900
December	128,238	22,300	942	4,137	12.4	14.28	254,400
Calendar year 1946	607,415	22,300	88	1,664	4.98	67.65	1,205,000
January	55,122	8,360	655	1,778	5.32	6.14	109,300
February	81,530	13,200	886	2,912	6.72	9.08	161,700
March	63,214	6,830	859	2,039	6.10	7.04	125,400
April	44,824	2,870	685	1,494	4.47	4.99	89,910
May	12,511	645	277	404	1.21	1.39	24,820
June	19,984	2,210	321	668	1.99	2.23	39,640
July	7,599	589	179	245	1.754	.85	15,070
August	5,129	260	126	165	.494	.57	10,170
September	4,254	260	113	142	.425	.47	8,440
Water year 1946-47	542,073	22,300	92	1,485	4.45	60.37	1,075,000

Peak discharge.- Nov. 18 (9:30 p.m.) 13,100 sec.-ft.; Nov. 27 (3 p.m.) 13,000 sec.-ft.; Dec. 14 (5 a.m.) 17,500 sec.-ft.; Dec. 15 (6:30 a.m.) 26,400 sec.-ft.; Feb. 1 (5 p.m.) 13,200 sec.-ft.; Feb. 2 (1 p.m.) 14,700 sec.-ft.

Lake Creek at Triangle Lake, Oreg.

Location.- Water-stage recorder, lat. 44°10', long. 123°34', in SW $\frac{1}{4}$ sec. 20, T. 16 S., R. 7 W., 500 feet downstream from outlet of Triangle Lake. Datum of gage is 672.41 feet above mean sea level, datum of 1929.

Drainage area.- 50 square miles.

Records available.- August 1931 to September 1947.

Average discharge.- 16 years, 197 second-feet.

Extremes.- Maximum discharge during year, 2,740 second-feet Dec. 15 (gage height, 6.69 feet); minimum, 11 second-feet Oct. 1, 2, 16, 17.

1931-47: Maximum discharge, 3,960 second-feet Dec. 22, 1933, Jan. 13, 1936 (gage height, 8.1 feet), from rating curve extended above 2,400 second-feet; minimum, 2.7 second-feet (regulated) Aug. 1, 1944; minimum daily, 5.5 second-feet Sept. 30 to Oct. 3, 1939.

Remarks.- Records fair except those for periods of no gage-height record, which are poor. No diversion above station. Flow regulated by natural storage in Triangle Lake.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.6	12	1.6	107	4.0	950
.7	16	1.9	163	4.5	1,230
.8	22	2.2	234	5.0	1,530
.9	28	2.6	346	6.0	2,210
1.1	45	3.0	485	7.0	2,990
1.3	66	3.5	700		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	100	588	153	682	143	340	102	46	43	34	17
2	12	110	455	145	1,340	159	328	98	51	42	32	17
3	12	114	375	135	975	239	302	95	55	44	30	17
4	13	104	322	130	1,140	296	302	89	63	43	30	17
5	13	94	282	124	805	279	340	86	67	41	30	16
6	13	84	252	121	596	247	381	82	64	40	26	16
7	14	76	237	119	474	226	378	81	67	40	26	16
8	14	70	268	114	395	226	362	78	79	37	26	25
9	14	64	310	110	343	269	352	76	122	31	26	25
10	14	60	313	112	304	485	337	74	157	30	27	20
11	14	58	310	121	279	745	319	71	141	30	24	19
12	13	56	349	137	284	735	293	68	117	30	23	18
13	13	53	614	157	322	574	268	67	100	30	23	17
14	12	51	1,400	157	349	444	242	66	86	30	22	16
15	12	48	2,540	147	362	365	222	64	77	30	20	15
16	11	46	2,060	132	362	310	195	63	73	28	20	14
17	13	50	1,270	124	346	271	181	60	71	25	19	15
18	13	187	680	121	310	242	178	58	67	23	19	15
19	16	588	624	124	279	222	172	56	63	23	18	15
20	34	760	493	141	252	204	161	54	58	23	18	15
21	78	619	412	159	228	190	153	53	55	23	17	14
22	114	632	356	181	212	190	143	52	53	22	17	13
23	126	920	307	202	195	199	132	51	51	22	17	13
24	119	1,000	271	255	181	204	122	49	48	22	18	12
25	104	915	244	409	170	195	117	48	46	22	18	12
26	95	1,000	224	682	161	181	112	47	43	23	18	13
27	92	1,430	209	790	153	167	104	45	46	27	17	13
28	85	1,480	192	655	147	157	102	44	48	34	17	13
29	61	1,120	513	513	-	153	106	44	48	39	18	13
30	79	810	167	463	-	190	106	43	47	39	19	13
31	86	-	159	437	-	287	-	43	-	36	18	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	1,343	126	11	43.3	0.866	1.00	2,660
November	12,699	1,480	46	423	8.46	9.45	25,190
December	16,684	2,540	159	538	10.8	12.39	33,050
Calendar year 1946	85,747.7	2,540	8.5	235	4.70	63.78	170,100
January	7,370	790	110	238	4.76	5.48	14,620
February	11,644	1,340	147	416	8.32	8.66	23,100
March	8,793	745	143	284	5.68	6.54	17,440
April	6,850	381	102	228	4.56	5.10	13,590
May	2,007	102	43	64.7	1.29	1.49	3,980
June	2,109	157	43	70.3	1.41	1.57	4,180
July	972	44	22	31.4	.628	.72	1,930
August	687	34	17	22.2	.444	.51	1,360
September	474	25	12	15.8	.316	.35	940
Water year 1946-47	71,612	2,540	11	196	3.92	53.26	142,000

Note.- No gage-height record Aug. 3-10, Aug. 29 to Sept. 30; discharge computed on basis of records for Long Tom River near Noti.

South Umpqua River at Tiller, Oreg.

Location.- Water-stage recorder, lat. 42°56', long. 122°57', in NE¹/₄ sec. 33, T. 30 S., R. 2 W., 0.3 mile upstream from Elk Creek, 0.4 mile downstream from Salt Creek, and 0.4 mile east of Tiller. Datum of gage is 991.8 feet above mean sea level, datum of 1929 (from river-profile survey).

Drainage area.- 454 square miles.

Records available.- November 1910 to November 1911, October 1939 to September 1947.

Extremes.- Maximum discharge during year, 10,600 second-feet Dec. 14 (gage height, 11.09 feet); minimum, 37 second-feet Oct. 1 (gage height, 0.84 foot).
1910-11, 1939-47: Maximum discharge, 29,900 second-feet Dec. 31, 1942 (gage height, 18.96 feet), from rating curve extended above 12,000 second-feet; minimum observed, 20 second-feet Sept. 3, 4, 1911.

Remarks.- Records excellent except those for periods of no gage-height record, which are fair. Small diversions above station for irrigation; no regulation.

Cooperation.- Water-stage recorder inspected by employee of U. S. Forest Service.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.8	33	1.5	173	2.9	740	6.0	3,150
.9	44	1.7	235	3.5	1,080	7.0	4,200
1.1	77	2.0	340	4.2	1,540	8.5	6,150
1.3	120	2.4	505	5.0	2,220	10.0	8,550

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	41	600	1,390	523	1,110	492	1,840	514	238	a285	263	93
2	47	452	1,080	474	1,740	600	1,810	518	319	a270	229	85
3	59	291	900	440	2,810	828	1,960	523	270	a255	206	79
4	66	277	801	432	2,580	812	2,080	505	252	a240	284	75
5	56	277	695	416	2,670	740	3,110	478	340	a225	219	72
6	58	242	618	400	2,550	655	2,930	460	474	a210	185	70
7	53	213	550	372	2,610	613	2,260	452	460	a200	165	138
8	66	188	590	356	2,440	622	2,600	532	728	a190	151	176
9	66	153	670	336	2,180	772	3,490	514	1,620	a180	140	125
10	53	162	626	340	1,920	3,680	3,010	464	1,210	a165	135	118
11	47	167	680	444	1,870	3,090	2,500	412	953	a160	128	102
12	44	148	1,450	428	3,450	2,090	2,040	376	720	a155	122	87
13	43	135	5,450	416	2,690	1,560	1,960	352	598	a145	115	81
14	43	128	8,280	396	2,040	1,360	1,920	333	496	a135	113	75
15	42	118	5,830	336	1,710	1,250	1,740	312	436	a130	106	70
16	42	111	4,240	348	1,980	1,150	1,470	298	584	a120	102	70
17	46	108	2,700	368	1,680	1,080	1,400	284	1,030	a115	97	68
18	70	2,140	1,930	372	1,400	997	1,280	274	725	a115	95	68
19	66	4,760	1,480	474	1,190	916	1,110	265	586	a110	91	72
20	94	1,580	1,210	680	1,030	823	985	256	505	a105	87	68
21	372	955	1,020	801	916	750	878	246	444	a105	85	66
22	596	1,510	884	812	823	878	780	235	396	a102	85	63
23	478	2,560	760	1,580	740	1,400	705	222	356	a100	87	59
24	238	1,580	670	2,030	685	1,390	650	216	326	a95	85	58
25	170	1,670	604	2,410	650	1,210	608	206	294	a90	83	58
26	179	5,810	608	4,460	608	1,060	577	200	277	a300	77	58
27	176	5,910	878	2,880	568	933	559	252	308	a900	73	58
28	151	4,510	760	2,100	528	834	546	308	36C	1,520	72	58
29	128	2,820	735	1,580	-	818	572	242	a330	613	83	56
30	167	1,910	608	1,410	-	1,060	541	222	a300	400	179	56
31	242	-	559	1,210	-	2,250	-	225	-	308	120	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-feet
October	3,999	596	41	129	0.284	0.33	7,930
November	41,485	5,910	108	1,383	3.05	3.40	82,280
December	49,256	8,280	550	1,589	3.50	4.03	97,700
Calendar year 1946	358,957	9,710	37	983	2.17	29.40	712,000
January	29,624	4,460	336	956	2.11	2.43	58,760
February	47,168	3,450	528	1,685	3.71	3.86	93,560
March	36,713	3,680	492	1,184	2.61	3.01	72,820
April	47,911	3,490	541	1,597	3.52	3.92	95,030
May	10,694	532	200	345	.760	.88	21,210
June	15,911	1,620	238	530	1.17	1.30	31,560
July	8,043	1,520	90	259	.570	.66	15,950
August	4,060	284	72	131	.289	.33	8,050
September	2,382	176	56	79.4	.175	.20	4,720
Water year 1946-47	297,246	8,280	41	814	1.79	24.35	589,600

Peak discharge.- Nov. 26 (1 p.m.) 6,260 sec.-ft.; Nov. 27 (6:30 p.m.) 6,760 sec.-ft.; Dec. 14 (2 a.m.) 10,600 sec.-ft.; Dec. 15 (3 p.m.) 7,320 sec.-ft.

a No gage-height record; discharge computed on basis of recorded range in stage and records for South Umpqua River near Brookway and Elk Creek near Trail.

b Computed from wire-weight gage reading.

South Umpqua River near Brockway, Oreg.

Location.- Wire-weight gage, lat. 43°08', long. 123°24', in SW¹ sec. 15, T. 28 S., R. 6 W., at Winston Bridge on Pacific Highway, 2½ miles northeast of Brockway and 4 miles downstream from Lockingglass Creek. Datum of gage is 461.84 feet above mean sea level, datum of 1929 (Oregon State Highway bench mark).

Drainage area.- 1,640 square miles.

Records available.- December 1905 to June 1912, October 1923 to September 1926, January 1942 to September 1947.

Average discharge.- 13 years (1906-11, 1923-26, 1942-47), 2,419 second-feet.

Extremes.- Maximum discharge observed during year, 19,300 second-feet Dec. 14 (gage height, 14.22 feet); minimum observed, 96 second-feet Oct. 1.

1905-12, 1923-26, 1942-47: Maximum discharge, 71,000 second-feet Jan. 4, 1907 (gage height, 26.0 feet, from floodmark, former site and datum), from rating curve extended above 15,000 second-feet parallel to later curve defined by discharge measurements to 24,000 second-feet; minimum observed, 36 second-feet Aug. 12, 13, 1926.

Flood of Feb. 21, 1927, reached a stage of about 31.8 feet, present site and datum (discharge, about 78,000 second-feet). Flood of February 1890 reached a stage just 2 feet higher, according to John Lander who lived nearby at the time of both floods (discharge, about 85,000 second-feet).

Remarks.- Records fair except those for period of doubtful or no gage-height record, which are poor. Gage read twice daily. Many small diversions above station for irrigation; no regulation.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used July 1-25, Aug. 1 to Sept. 30)

3.0	70	4.2	380	6.0	1,590	10.0	8,340
3.3	121	4.6	570	7.0	2,770	11.0	10,800
3.6	180	5.0	800	8.0	4,260	12.0	13,300
3.9	265	5.5	1,160	9.0	6,190	14.0	18,700

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	500	4,750	1,290	3,990	d1,600	db,200	1,030	416	490	515	250
2	107	940	3,070	1,200	3,660	d3,500	4,870	1,040	456	438	525	214
3	114	d650	2,380	1,110	4,400	7,790	5,090	1,000	535	412	438	182
4	125	550	2,080	1,020	6,240	7,850	4,790	940	716	384	300	178
5	132	456	1,990	954	6,180	d6,500	5,520	884	814	376	454	176
6	132	448	1,750	926	5,170	d4,300	d9,000	842	947	356	d360	136
7	134	407	1,770	877	4,470	d2,500	7,650	842	1,060	328	d340	174
8	136	398	1,660	842	4,330	d2,600	d5,200	870	1,140	320	a320	192
9	144	407	1,450	828	4,380	2,670	6,760	912	2,300	304	a300	312
10	150	402	1,460	856	4,430	4,260	6,400	884	2,320	296	d285	214
11	146	389	1,460	912	4,570	10,600	5,960	835	1,900	286	a280	238
12	134	364	1,520	975	5,660	7,790	4,680	800	1,480	282	272	220
13	129	324	3,720	1,080	14,200	5,760	4,030	764	1,210	279	220	182
14	127	265	17,600	1,190	12,000	5,060	3,790	716	975	268	211	166
15	121	279	14,300	1,270	9,620	4,330	3,420	658	842	256	198	170
16	117	259	10,000	1,110	d11,000	3,660	3,070	614	1,000	244	166	134
17	121	241	5,980	968	d8,000	3,030	2,770	581	1,160	232	192	156
18	125	454	4,500	912	5,460	2,630	2,500	550	1,520	220	220	166
19	121	15,400	3,600	968	4,400	2,300	2,280	520	1,300	208	156	156
20	130	5,520	2,770	1,370	3,530	2,190	2,030	d490	1,080	198	174	162
21	160	3,040	2,610	2,020	2,770	2,080	1,860	d465	940	195	170	158
22	636	3,830	2,430	2,110	2,580	1,820	1,670	d450	828	192	188	150
23	1,050	5,720	2,150	1,940	2,660	4,060	1,490	420	716	188	188	134
24	698	5,360	1,700	3,440	2,180	3,120	1,330	d410	647	182	182	150
25	425	4,750	1,540	6,200	1,990	2,730	1,240	d390	586	182	176	146
26	340	9,810	1,640	9,180	1,830	2,330	1,070	d380	550	586	150	127
27	500	12,800	1,880	10,800	d1,750	2,220	968	d370	540	1,210	176	130
28	324	10,400	1,990	9,570	d1,680	-	d2,150	968	d420	d700	2,740	170
29	328	8,660	1,750	7,390	-	-	d2,100	982	443	d580	2,170	172
30	290	5,960	1,550	6,510	-	-	d2,500	1,010	443	530	1,140	174
31	320	-	1,360	4,630	-	-	d5,500	-	434	770	226	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-ft
October	7,412	1,050	96	239	0.146	0.17	14,700
November	98,963	15,400	241	3,299	2.01	2.24	196,300
December	108,400	17,600	1,360	3,497	2.13	2.46	215,000
Calendar year 1946	898,098	22,500	64	2,461	1.50	20.36	1,781,000
January	84,448	10,800	828	2,724	1.66	1.92	167,500
February	146,930	14,200	1,680	5,248	3.20	3.33	291,400
March	121,510	10,600	1,600	3,920	2.39	2.76	241,000
April	107,598	9,000	968	3,587	2.19	2.44	213,400
May	20,387	1,040	370	658	.401	.46	40,480
June	29,798	2,320	416	993	.605	.68	59,080
July	15,732	2,740	182	507	.309	.36	31,200
August	7,858	525	150	253	.154	.18	15,590
September	5,177	312	130	173	.105	.12	10,270
Water year 1946-47	754,213	17,600	96	2,066	1.26	17.12	1,496,000

a No gage-height record; discharge computed on basis of records for South Umpqua River at Tillier and Umpqua River near Elkton.

d Doubtful gage-height record; discharge computed as explained in footnote a.

Umpqua River near Elkton, Oreg.

Location.- Staff gage, lat. 43°35', long. 123°33', in sec. 8, T. 23 S., R. 7 W., 4 miles south of Elkton. Datum of gage is 91.33 feet above mean sea level, datum of 1929.

Drainage area.- 3,680 square miles.

Records available.- October 1905 to September 1947 (incomplete prior to November 1908).

Average discharge.- 42 years, 7,020 second-feet.

Extremes.- Maximum discharge during year, 74,000 second-feet during night of Dec. 14 (gage height, 22.6 feet, from floodmark); minimum observed, 1,010 second-feet Oct. 1 (gage height, 1.30 feet).

1905-47: Maximum discharge, 172,000 second-feet Feb. 21, 1927, Dec. 31, 1942, from rating curve extended above 50,000 second-feet; maximum gage height, 41.1 feet Dec. 31, 1942; minimum discharge observed, 640 second-feet July 18, 1926 (gage height, 0.71 foot).

Maximum stage known, 45.5 feet sometime in 1861.

Remarks.- Records fair. Gage read twice daily. Some diversions for irrigation from streams in South Umpqua River Basin, but low flow probably only slightly affected. Slight fluctuation by gates and racks of fish hatchery at Diamond Lake and by power plant at Winchester ordinarily does not affect discharge at this station.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

1.3	1,010	5.0	6,060	13.0	30,700
1.8	1,490	6.0	8,200	16.0	43,100
2.3	2,050	7.0	10,700	19.0	56,600
3.0	2,920	9.0	16,500		
4.0	4,330	11.0	23,400		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,010	2,330	15,600	3,610	14,000	4,410	19,500	3,960	2,370	2,340	3,810	1,350
2	1,030	3,170	11,500	3,740	16,200	6,260	16,200	3,810	2,420	2,230	3,430	1,370
3	1,040	3,880	7,190	3,670	20,900	9,920	15,900	3,810	2,470	2,110	2,820	1,350
4	1,060	3,100	6,360	3,600	19,600	12,900	15,200	3,810	2,580	2,040	2,210	1,340
5	1,080	2,660	5,960	3,530	16,500	12,000	17,800	3,740	2,750	1,930	1,710	1,340
6	1,090	2,410	5,410	3,460	14,000	9,040	22,600	3,740	2,980	1,850	1,590	1,370
7	1,110	2,230	5,060	3,420	13,200	6,870	19,200	3,670	3,330	1,820	1,610	1,440
8	1,120	2,090	4,900	3,310	12,300	6,870	15,200	3,670	5,320	1,790	1,580	1,490
9	1,130	1,840	4,810	3,140	11,500	16,500	19,200	3,530	9,920	1,760	1,560	1,420
10	1,110	1,760	4,730	3,040	10,200	26,200	17,500	3,460	8,080	1,720	1,520	1,390
11	1,100	1,780	4,730	2,980	9,300	29,900	15,900	3,390	6,060	1,660	1,520	1,360
12	1,080	1,720	4,810	3,240	10,200	22,300	13,200	3,310	4,650	1,590	1,480	1,320
13	1,070	1,640	10,700	3,530	20,900	14,600	12,500	3,220	3,960	1,560	1,420	1,310
14	1,060	1,600	55,800	3,670	17,800	10,700	11,800	3,130	3,810	1,530	1,370	1,290
15	1,050	1,570	43,500	3,610	14,000	10,200	10,700	2,970	3,880	1,510	1,360	1,240
16	1,040	1,530	24,400	3,740	19,500	9,040	9,670	2,830	4,400	1,500	1,350	1,210
17	1,040	1,490	21,600	3,600	22,300	7,970	8,440	2,710	4,100	1,470	1,330	1,170
18	1,090	1,800	16,200	3,400	15,600	7,300	7,520	2,610	4,030	1,460	1,320	1,150
19	1,120	19,600	12,600	3,670	11,500	6,760	6,870	2,490	4,030	1,450	1,310	1,140
20	1,220	19,200	9,800	4,030	8,920	6,160	6,560	2,420	3,960	1,430	1,290	1,120
21	1,720	10,400	7,740	5,150	7,520	5,870	6,160	2,360	3,960	1,400	1,280	1,110
22	3,460	9,420	6,660	5,960	7,300	5,680	5,780	2,330	3,740	1,370	1,290	1,100
23	4,030	19,200	6,060	5,960	6,760	9,170	5,500	2,270	3,430	1,340	1,280	1,090
24	3,810	24,400	5,320	7,190	6,060	11,200	5,320	2,210	2,840	1,300	1,290	1,080
25	2,870	34,600	4,900	14,300	5,500	9,800	4,980	2,180	2,600	1,270	1,280	1,080
26	2,360	45,300	4,650	24,800	5,060	8,680	4,650	2,160	2,490	1,260	1,270	1,080
27	2,040	47,500	5,410	24,800	4,730	7,190	4,260	2,190	2,610	1,600	1,260	1,060
28	1,940	36,700	5,780	17,200	4,570	6,360	4,030	2,460	2,930	3,010	1,250	1,080
29	1,880	24,100	5,680	12,900	-	5,960	4,030	2,650	2,510	4,570	1,250	1,060
30	1,780	17,200	5,320	12,300	-	8,800	4,030	2,630	2,400	4,570	1,280	1,050
31	1,820	-	4,810	12,600	-	19,800	-	2,470	-	4,100	1,330	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-foot
October	49,360	4,030	1,010	1,592	0.433	0.50	97,900
November	346,220	47,500	1,490	11,540	3.14	3.50	686,700
December	337,990	55,800	4,650	10,900	2.96	3.42	670,400
Calendar year 1946	2,775,894	61,300	992	7,605	2.07	28.05	5,506,000
January	213,550	24,800	2,980	6,889	1.87	2.16	423,600
February	346,120	22,300	4,570	12,360	3.36	3.50	686,500
March	334,410	29,900	4,410	10,790	2.93	3.38	663,300
April	330,000	22,600	4,030	11,000	2.99	3.33	654,500
May	92,090	3,960	2,160	2,971	.807	.93	182,700
June	114,310	9,920	2,370	3,810	1.04	1.16	226,700
July	60,540	4,570	1,260	1,933	.531	.61	120,100
August	49,850	3,610	1,260	1,602	.435	.50	98,480
September	36,940	1,490	1,050	1,231	.335	.37	73,270
Water year 1946-47	2,311,180	55,800	1,010	6,332	1.72	23.36	4,584,000

UMPQUA RIVER BASIN

Cow Creek near Azalea, Oreg.

Location.- Staff gage, lat. 42°50', long. 123°11', in sec. 4, T. 32 S., R. 4 W., 4 miles northeast of Azalea.

Drainage area.- 76 square miles.

Records available.- April 1926 to September 1947.

Average discharge.- 17 years (1929-31, 1932-47), 90.2 second-feet.

Extremes.- Maximum discharge observed during year, 1,260 second-feet Mar. 10 (gage height, 5.70 feet); minimum observed, 8.7 second-feet Sept. 28-30.

1926-47: Maximum discharge, 5,280 second-feet Dec. 28, 1945 (gage height, 11.2 feet), from rating curve extended above 1,200 second-feet; minimum observed, 4 second-feet Sept. 9-19, 1929, Aug. 26-28, 1931, Aug. 21 to Sept. 6, 1934.

Remarks.- Records good Oct. 1 to Nov. 17 and June 1 to Sept. 30, fair Nov. 18 to May 31 except those above 500 second-feet, which are poor. Staff gage read once daily. Small diversions above station for irrigation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	38	115	51	91	99	126	44	30	21	29	13
2	13	29	97	49	133	172	133	42	32	21	26	12
3	13	25	93	49	158	224	153	41	35	20	22	12
4	12	20	91	50	138	163	158	41	38	20	20	12
5	11	18	86	51	128	133	218	38	82	19	20	13
6	10	18	78	49	119	115	177	38	54	18	19	16
7	13	19	71	43	110	110	163	42	43	18	18	19
8	20	20	65	41	106	119	177	59	54	17	18	15
9	14	23	63	38	99	209	209	63	57	16	18	14
10	13	25	62	38	89	1,030	182	47	60	17	18	13
11	11	21	462	41	209	446	153	42	49	17	18	12
12	11	20	480	39	730	332	133	41	43	16	17	11
13	11	20	460	38	284	251	119	38	41	15	16	11
14	11	18	73	36	218	218	110	36	36	14	15	11
15	11	18	133	33	233	182	99	35	31	14	14	11
16	11	18	122	33	308	158	84	32	57	13	14	11
17	14	21	117	31	209	138	80	32	75	12	13	11
18	15	158	106	31	166	124	75	30	57	12	13	11
19	14	418	91	43	138	110	70	29	49	12	12	11
20	21	158	86	43	119	95	67	27	43	11	12	10
21	41	84	67	46	106	97	62	26	38	11	12	10
22	62	284	63	44	95	99	59	26	36	12	13	10
23	31	885	62	91	91	110	57	24	31	12	12	10
24	21	530	59	102	89	91	56	24	29	12	12	9.8
25	18	344	57	110	87	86	51	23	26	13	13	9.8
26	18	400	70	233	86	78	49	23	27	21	12	9.2
27	20	446	91	158	84	77	49	26	31	106	13	9.2
28	20	353	73	133	77	78	49	27	28	140	13	8.7
29	21	218	70	122	-	86	47	25	26	54	23	8.7
30	21	158	67	110	-	203	46	22	23	41	21	8.7
31	27	-	67	102	-	153	-	26	-	31	18	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	559	62	10	18.0	0.237	0.27	1,110
November	4,787	865	18	160	2.11	2.54	9,490
December	2,477	133	57	79.9	1.05	1.21	4,910
Calendar year 1946	37,321.8	1,320	7.2	102	1.34	18.26	74,020
January	2,078	233	31	67.0	.882	1.02	4,120
February	4,500	730	77	161	2.12	2.20	8,930
March	5,586	1,030	77	180	2.37	2.73	11,080
April	3,211	218	46	107	1.41	1.57	6,370
May	1,069	63	22	34.5	.454	.52	2,120
June	1,261	82	23	42.0	.553	.62	2,500
July	776	140	11	25.0	.329	.38	1,540
August	514	29	12	16.6	.218	.25	1,020
September	343.1	19	8.7	11.4	.150	.17	681
Water year 1946-47	27,161.1	1,030	8.7	74.4	.979	13.28	53,870

d Doubtful gage reading reduced 2 feet to obtain discharge.

North Umpqua River below Lake Creek, Oreg.

Location.- Water-stage recorder, lat. 43°19', long. 122°11', in NW¹/₄ sec. 13, T. 26 S., R. 5 E., 200 yards downstream from Lake Creek and 30 miles southwest of Crescent. Altitude of gage, 4,090 feet (from river-profile map).

Drainage area.- 175 square miles.

Records available.- October 1927 to September 1947.

Average discharge.- 19 years (1927-45, 1946-47), 367 second-feet.

Extremes.- Maximum discharge during year, 653 second-feet May 4 (gage height, 1.58 feet); minimum, 324 second-feet about Jan. 17 (gage height, 0.93 foot).
1927-47: Maximum discharge, 1,190 second-feet June 9, 1933 (gage height, 2.34 feet), from rating curve extended above 700 second-feet; minimum, 206 second-feet Dec. 9, 1931.

Remarks.- Records good except those for periods of no gage-height record, which are fair. No diversion above station. Flow slightly regulated by Diamond Lake.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)

0.8	275
1.0	353
1.2	441
1.4	545
1.6	665

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	357	392	410	a380	383	374	466	589	485	405	383	345
2	357	387	405	a370	392	379	461	587	470	405	374	345
3	362	387	400	a370	392	379	451	629	480	405	374	345
4	362	383	400	a380	383	374	461	641	475	400	374	345
5	357	383	400	a390	383	374	456	611	475	396	374	345
6	362	379	396	a380	a390	374	456	599	466	396	370	349
7	374	379	396	a370	a390	374	456	629	456	414	366	362
8	379	379	396	a360	a380	374	451	623	485	400	366	353
9	370	379	387	a360	a380	383	423	605	501	392	366	353
10	366	379	383	a360	a380	400	400	605	501	392	362	349
11	366	379	396	357	a390	392	396	593	480	392	362	345
12	366	374	405	357	a400	387	a410	575	475	475	362	345
13	366	374	441	362	a400	387	436	563	456	480	362	345
14	362	374	496	362	a390	387	441	563	451	480	362	345
15	357	370	470	362	a380	392	451	545	446	475	357	345
16	357	370	456	357	a380	392	466	545	466	466	353	341
17	396	379	441	353	a380	396	501	518	451	461	353	341
18	392	432	432	a360	a380	400	534	523	441	423	353	341
19	392	428	428	366	a380	400	540	523	436	374	353	341
20	410	400	423	366	a380	400	534	512	432	370	353	341
21	418	396	418	357	a375	405	528	506	432	370	353	341
22	436	410	414	357	a375	436	523	501	428	374	353	341
23	410	423	410	366	a375	432	518	501	423	379	353	341
24	405	410	405	370	374	436	512	512	418	379	349	341
25	400	414	400	379	374	456	506	506	414	374	349	341
26	400	441	410	387	374	451	518	490	418	387	349	337
27	396	466	405	374	374	451	523	528	423	405	345	337
28	396	441	400	374	370	446	534	518	418	410	345	337
29	392	423	396	374	-	451	540	512	410	387	353	337
30	396	418	387	379	-	461	557	501	405	383	353	337
31	392	-	a380	383	-	466	-	480	-	387	349	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	11,851	436	357	382	2.18	2.52	23,510
November	11,949	466	370	398	2.27	2.54	23,700
December	12,786	496	380	412	2.35	2.72	25,360
Calendar year	-	-	-	-	-	-	-
January	11,422	390	353	368	2.10	2.43	22,660
February	10,704	400	370	382	2.18	2.27	21,230
March	12,609	466	374	407	2.33	2.68	25,010
April	14,449	557	396	482	2.75	3.07	28,660
May	17,113	641	480	552	3.15	3.64	33,940
June	13,537	501	405	451	2.58	2.87	26,810
July	12,836	480	370	408	2.33	2.69	25,060
August	11,130	383	345	359	2.05	2.37	22,080
September	10,311	362	337	344	1.97	2.19	20,450
Water year 1946-47	150,477	641	337	412	2.35	31.99	298,500

a No gage-height record; discharge computed on basis of recorded range in stage and records for North Umpqua River at Toketee Falls and Lake Creek at Diamond Lake.

NORTH Umpqua River at Toketee Falls, Oreg.

Location.- Water-stage recorder, lat. 43°16', long. 122°25', in T. 26 S., R. 3 E. (unsurveyed), an eighth of a mile downstream from Clearwater River, half a mile upstream from Toketee Falls, and 30 miles east of Hoaglin. Datum of gage is 2,373 feet above mean sea level (surveys of The California Oregon Power Co.).

Drainage area.- 337 square miles.

Records available.- February 1908 to July 1909, December 1914 to November 1917 (incomplete), July 1924 to September 1947.

Average discharge.- 21 years (1925-45, 1946-47), 866 second-feet.

Extremes.- Maximum discharge during year, 2,660 second-feet Dec. 14 (gage height, 3.55 feet); minimum, 670 second-feet Sept. 25-30 (gage height, 1.01 feet).
1908-9, 1914-17, 1924-47: Maximum discharge, 5,080 second-feet Dec. 31, 1942 (gage height, 5.90 feet), from rating curve extended above 1,900 second-feet by logarithmic plotting; minimum, 475 second-feet Nov. 27-29, Dec. 12, 14, 1931.

Remarks.- Records good except those for periods of no gage-height record Oct. 1-14, which are fair, and Jan. 17-27, Feb. 7 to Mar. 7, Mar. 9-24, which are poor. No diversions above station; regulation at Diamond Lake has little effect.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.9	610	2.2	1,500
1.1	720	2.8	1,990
1.6	1,040	3.6	2,700

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a700	758	1,110	880	935	a900	1,340	1,310	1,060	848	781	692
2	a700	736	1,050	848	970	a920	1,330	1,350	1,030	848	770	692
3	a710	736	998	848	984	a920	1,290	1,390	1,020	835	781	692
4	a710	736	984	842	977	a900	1,280	1,400	1,020	829	764	687
5	a710	731	956	848	1,000	a890	1,280	1,360	1,030	829	758	687
6	a720	731	928	854	1,040	a880	1,240	1,360	1,020	823	753	692
7	a730	731	900	817		a880	1,210	1,360	1,020	823	753	731
8	a760	720	894	799		h874	1,240	1,360	1,180	835	748	704
9	a740	720	874	793			1,240	1,320	1,320	811	742	704
10	a730	731	848	793			1,210	1,280	1,280	811	736	692
11	a720	720	880	805			1,200	1,240	1,200	805	736	687
12	a710	714	991	799			1,180	1,200	1,140	880	731	687
13	a710	709	1,420	793			1,280	1,170	1,090	894	731	687
14	a700	709	2,460	775			1,380	1,160	1,050	887	731	682
15	698	704	2,120	764			1,430	1,140	1,030	880	726	682
16	692	704	1,850	758		al,050	1,460	1,130	1,100	868	720	682
17	731	720	1,570	a780			1,520	1,100	1,090	861	720	682
18	731	1,020	1,390	a820	a990		1,540	1,100	1,030	842	714	682
19	736	1,170	1,260	a860			1,510	1,090	1,010	775	714	682
20	805	914	1,170	a900			1,440	1,080	991	770	714	676
21	817	842	1,120	a860			1,380	1,080	970	764	714	676
22	921	848	1,080	a880			1,320	1,070	956	764	709	676
23	817	1,000	1,030	a900			1,280	1,050	942	770	709	676
24	781	935	991	a960			1,260	1,060	921	764	704	676
25	770	942	977	al,060		1,210	1,240	1,060	914	764	704	670
26	775	1,450	963	al,120			1,170	1,240	1,030	914	805	704
27	758	1,870	998	al,050			1,140	1,240	1,120	942	880	704
28	748	1,620	948	1,000			1,150	1,240	1,100	914	914	698
29	742	1,400	928	970	-		1,120	1,300	1,090	874	805	704
30	753	1,200	900	956	-		1,180	1,300	1,080	861	787	670
31	753	-	900	921	-		1,320	-	1,040	-	793	698

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Acres-foot
October	23,078	921	692	744	2.21	2.55	45,770
November	27,321	1,670	704	911	2.70	3.02	54,180
December	35,489	2,460	848	1,145	3.40	3.92	70,390
Calendar year							
January	27,047	1,120	758	872	2.59	2.98	53,650
February	27,686	-	-	989	2.93	3.06	54,910
March	32,254	-	-	1,040	3.09	3.56	63,970
April	38,400	1,540	1,180	1,513	3.90	4.35	78,150
May	36,680	1,400	1,050	1,183	3.51	4.05	72,750
June	30,919	1,320	861	1,031	3.06	3.41	61,350
July	25,564	914	764	825	2.45	2.82	50,710
August	22,580	781	698	728	2.16	2.49	44,790
September	20,526	731	670	684	2.03	2.27	40,710
Water year 1946-47	348,544	2,460	670	955	2.83	38.48	691,300

a No gage-height record; discharge computed on basis of recorded range in stage and records for North Umpqua River below Lake Creek and Clearwater River above Trap Creek.

b Computed from staff-gage reading.

Lake Creek at Diamond Lake, near Fort Klamath, Oreg.

Location.- Water-stage recorder, lat. 43°11', long. 122°10', in SW¹/₄ sec. 30, T. 27 S., R. 6 E., 260 feet downstream from outlet of Diamond Lake and 35 miles north of Fort Klamath. Altitude of gage, 5,180 feet (from river-profile map).

Drainage area.- 57 square miles.

Records available.- May 1922 to September 1925 (incomplete), October 1926 to September 1947.

Average discharge.- 20 years (1926-29, 1930-47), 48.2 second-feet.

Extremes.- Maximum discharge during year, 146 second-feet (regulated) July 11, 12 (gage height, 1.87 feet); minimum, 1.3 second-feet (regulated) Oct. 5; minimum daily, 22 second-feet July 19-21.

1922-25, 1926-47: Maximum discharge observed, 336 second-feet Jan. 1, 1943 (gage height, 2.8 feet), from rating curve extended above 120 second-feet; no flow (result of regulation) Aug. 25-27, 1931.

Remarks.- Records good except those for period of no gage-height record, which are poor. Flow regulated by gates and fish racks at lake outlet, and at times by collection of moss on racks. No diversion above station.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.8	17	1.4	72
1.0	30	1.6	101
1.2	49	1.9	151

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	60	85	68	58	50	89	72	a35	35	34	26
2	24	61	83	68	67	51	89	79	h35	33	31	26
3	24	62	83	67	65	53	70	86	a35	33	32	26
4	24	61	85	66	65	53	80	78	a35	34	32	26
5	23	60	82	65	66	53	86	57	a35	33	32	26
6	33	58	80	56	66	53	88	48	a35	34	32	26
7	40	58	79	39	64	53	85	75	a35	61	32	26
8	40	57	76	38	59	53	65	67	a35	34	29	27
9	39	57	70	38	58	54	44	55	a35	34	29	27
10	39	57	68	38	57	61	25	86	a35	34	25	27
11	39	57	67	38	57	64	26	90	a35	50	25	27
12	39	57	67	39	60	64	34	79	a35	142	25	27
13	38	57	70	41	60	62	57	75	a35	137	25	27
14	35	56	73	43	58	61	51	83	35	131	25	27
15	28	54	86	44	58	60	50	86	37	122	25	26
16	40	56	88	44	57	60	50	35	120	25	26	26
17	66	59	86	44	57	60	54	34	114	26	26	26
18	64	88	83	45	57	58	86	36	58	26	26	26
19	62	75	82	45	56	57	64	36	22	26	26	26
20	64	76	80	45	56	56	60	37	22	25	26	26
21	66	95	79	45	54	54	60	35	22	25	26	26
22	68	83	76	45	53	56	58	35	29	25	26	26
23	67	82	75	45	54	59	58	34	53	25	26	26
24	66	83	75	47	53	64	59	34	32	25	26	26
25	65	83	73	48	53	66	58	33	32	25	26	26
26	65	86	72	52	52	88	57	34	32	25	26	26
27	64	88	73	53	51	88	58	36	34	25	26	26
28	64	88	72	53	51	85	59	35	37	25	26	26
29	62	86	71	54	-	83	62	34	36	25	26	26
30	62	86	71	56	-	85	67	34	34	25	26	26
31	62	-	70	56	-	89	-	-	35	25	-	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-foot
October	1,496	68	23	48.3	0.847	0.98	2,970
November	2,066	96	54	68.9	1.21	1.35	4,120
December	2,378	88	67	76.7	1.55	1.55	4,720
Calendar year 1946	22,070	144	23	60.5	1.06	14.40	45,780
January	1,525	88	38	49.2	.863	.99	3,020
February	1,622	67	51	57.9	1.02	1.06	3,220
March	1,973	89	50	63.6	1.12	1.29	3,910
April	1,829	89	25	61.0	1.07	1.19	3,630
May	2,076	-	-	67.0	1.18	1.35	4,120
June	1,049	37	33	35.0	.614	.68	2,080
July	1,639	142	22	52.9	.928	1.07	3,250
August	836	34	25	27.0	.474	.55	1,660
September	787	27	26	26.2	.450	.51	1,560
Water year 1946-47	19,276	142	22	52.8	.926	12.57	36,240

a No gage-height record; discharge computed on basis of notes by gage observer and records for North Umpqua River below Lake Creek.

h Computed from staff-gage reading.

Clearwater River above Trap Creek, Oreg.

Location.- Water-stage recorder, lat. 43°15', long. 122°17', in SE¹ sec. 1, T. 27 S., R. 4 E., 150 yards upstream from Trap Creek and 40 miles east of Glide. Altitude of gage, 3,760 feet (from river-profile map).

Drainage area.- 40 square miles.

Records available.- October 1927 to September 1947.

Average discharge.- 18 years (1928-45, 1946-47), 145 second-feet.

Extremes.- Maximum discharge during year, 253 second-feet June 8 (gage height, 1.48 feet); minimum, 138 second-feet Sept. 21-30 (gage height, 0.93 foot).
1927-47: Maximum discharge, 451 second-feet Jan. 1, 1943 (gage height, 2.17 feet), from rating curve extended above 200 second-feet; minimum, 91 second-feet Nov. 4-6, 27, Dec. 12, 29, 1931, Jan. 3, 1932.

Remarks.- Records good. No diversion or regulation above station.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)

0.9	133
1.0	149
1.2	187
1.4	233

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	143	143	171	160	154	160	189	209	187	180	153	143
2	143	141	165	158	156	162	187	214	187	160	153	143
3	144	145	163	158	156	162	185	219	181	160	153	143
4	143	142	163	158	154	162	185	221	179	160	153	141
5	143	143	162	158	153	160	185	219	181	160	153	141
6	141	143	160	158	153	158	183	219	177	160	153	143
7	144	145	158	158	153	158	181	216	179	158	153	147
8	143	141	158	158	153	158	183	214	209	158	153	144
9	141	143	156	158	153	160	181	211	223	158	153	143
10	141	143	156	158	153	163	181	200	209	158	151	143
11	141	141	163	158	156	162	181	194	191	156	151	143
12	141	141	167	156	181	158	181	191	181	186	147	141
13	139	139	194	156	173	158	185	189	179	154	147	141
14	139	139	219	154	171	180	191	185	177	154	146	141
15	139	139	219	154	169	160	202	183	175	154	146	139
16	139	141	200	154	169	162	214	183	191	154	146	139
17	141	146	189	154	169	163	226	181	187	154	146	139
18	139	200	183	154	167	165	228	181	177	154	146	139
19	141	169	179	154	165	165	223	181	173	153	146	139
20	154	156	177	154	165	167	219	183	171	153	146	139
21	149	153	175	154	163	167	211	183	167	153	146	138
22	169	169	171	154	163	187	207	183	165	153	146	138
23	147	173	169	154	163	185	205	181	185	153	146	138
24	146	160	167	156	163	181	202	183	163	153	144	138
25	146	163	167	158	162	179	200	183	163	153	144	138
26	144	179	169	160	162	177	198	181	185	188	143	138
27	144	211	167	156	162	175	200	194	189	167	143	138
28	143	202	165	156	162	175	208	191	168	171	143	138
29	143	185	163	154	-	181	209	185	163	158	144	138
30	143	175	162	154	-	187	207	187	162	154	144	138
31	143	-	162	154	-	189	-	185	-	154	143	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	4,456	169	139	144	3.60	4.14	8,840
November	4,707	211	139	157	3.92	4.38	9,340
December	5,339	219	156	172	4.30	4.96	10,590
Calendar year	-	-	-	-	-	-	-
January	4,840	180	154	156	3.90	4.50	9,600
February	4,523	181	153	162	4.05	4.21	8,970
March	5,208	189	158	168	4.20	4.84	10,330
April	5,931	228	181	198	4.95	5.51	11,760
May	6,029	221	181	194	4.85	5.61	11,960
June	5,361	223	162	179	4.48	4.98	10,630
July	4,865	171	153	157	3.92	4.51	9,630
August	4,581	153	143	148	3.70	4.26	9,090
September	4,211	147	138	140	3.50	3.92	8,350
Water year 1946-47	60,039	228	138	164	4.10	55.82	119,100

South Fork Coquille River at Powers, Oreg.

Location.- Water-stage recorder, lat. 42°54', long. 124°04', in SE $\frac{1}{4}$ sec. 12, T. 31 S., R. 12 W., half a mile northeast of bridge at Powers and three-quarters of a mile upstream from Woodward Creek. Altitude of gage, 200 feet (from river-profile map).

Drainage area.- 169 square miles.

Records available.- October 1928 to September 1947. September 1916 to September 1926 at site $\frac{1}{2}$ miles upstream.

Average discharge.- 28 years (1916-26, 1929-47), 713 second-feet.

Extremes.- Maximum discharge during year, 11,100 second-feet Nov. 18 (gage height, 11.72 feet); minimum, 17 second-feet Oct. 16 (gage height, 1.03 feet).
1916-26, 1928-47: Maximum discharge, 27,700 second-feet Dec. 28, 1945 (gage height, 20.57 feet), from rating curve extended above 11,000 second foot; minimum, 12 second-feet Sept. 22-25, 27-30, 1939.

Remarks.- Records good except those for periods of no gage-height record, which are fair. No regulation above station. Small diversions for irrigation.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

1.0	15	2.4	330	5.0	2,220
1.2	30	2.8	530	5.5	2,710
1.4	52	3.2	760	6.0	3,240
1.6	82	3.6	1,030	7.0	4,420
1.8	119	4.0	1,340	8.0	5,720
2.0	170	4.5	1,770	9.3	7,520

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	289	1,100	237	1,350	289	1,480	156	128	119	254	66
2	25	330	870	218	2,870	2,220	1,420	145	635	117	211	63
3	25	250	754	211	2,840	2,860	1,410	140	877	113	180	60
4	28	185	606	203	1,920	1,900	1,640	137	470	105	162	58
5	24	145	694	193	1,550	1,390	2,360	130	370	101	142	56
6	22	133	652	186	1,290	1,090	1,980	126	335	99	130	56
7	22	128	624	170	1,160	939	1,470	126	410	97	121	56
8	24	115	806	162	1,020	925	1,280	126	1,060	94	117	55
9	23	105	780	150	890	1,720	1,350	130	1,340	89	113	55
10	22	130	664	148	799	4,720	1,200	126	953	85	107	55
11	21	164	607	170	1,190	3,430	1,010	119	706	84	101	53
12	21	142	634	200	4,800	2,090	838	115	541	82	96	53
13	20	126	974	237	3,300	1,440	706	113	435	79	92	51
14	20	119	2,010	245	2,140	1,080	602	107	350	77	90	48
15	18	105	2,870	226	1,540	870	520	105	289	76	85	47
16	17	97	2,280	196	1,250	724	465	101	355	74	82	46
17	28	151	1,480	207	1,060	624	420	99	400	71	80	45
18	38	6,040	1,080	211	890	546	365	96	325	69	77	45
19	30	4,680	838	245	760	490	350	94	284	66	74	45
20	357	2,120	694	316	652	430	321	90	254	66	71	42
21	402	2,310	585	405	585	385	298	87	230	65	69	42
22	876	7,380	510	435	520	385	275	84	203	62	68	a42
23	415	5,820	445	748	455	430	250	80	183	60	71	a42
24	214	3,400	390	1,110	410	405	230	79	170	59	69	a40
25	148	2,960	345	1,690	375	345	211	77	156	58	69	a40
26	133	7,040	330	3,120	345	316	200	a75	142	134	66	a40
27	150	6,010	370	2,020	321	289	183	a90	162	658	66	a40
28	145	3,610	321	1,480	293	271	180	a95	156	1,220	66	a39
29	124	2,230	293	1,200	-	298	180	a90	137	688	66	a39
30	211	1,500	271	2,070	-	1,610	173	a85	126	460	66	a39
31	293	-	250	1,440	-	2,220	-	a90	-	330	66	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	3,920	876	17	126	0.746	0.86	7,780
November	57,792	7,380	97	1,926	11.4	12.72	114,600
December	25,307	2,870	250	816	4.83	5.57	50,200
Calendar year 1946	261,458	7,380	15	716	4.24	57.54	518,600
January	19,849	3,120	148	640	3.79	4.37	39,370
February	36,355	4,800	293	1,298	7.68	8.00	72,110
March	36,711	4,720	271	1,184	7.01	8.08	72,820
April	23,587	2,360	173	780	4.62	5.15	46,390
May	3,513	156	75	107	633	75	6,570
June	12,182	1,340	126	406	2.40	2.68	24,160
July	5,757	1,220	58	186	1.10	1.27	11,420
August	3,127	254	66	101	598	69	6,200
September	1,458	66	39	46.6	268	32	2,890
Water year 1946-47	229,158	7,380	17	628	3.72	50.44	454,500

Peak discharge.- Nov. 18 (6:30 p.m.) 11,100 sec.-ft.; Nov. 22 (9 p.m.) 9,300 sec.-ft.; Nov. 26 (7:30 p.m.) 7,510 sec.-ft.

a No gage-height record; discharge computed on basis of recorded range in stage and records for South Umpqua River at Tillier.

Rogue River above Bybee Creek, Oreg.

Location.- Water-stage recorder, lat. 42°56', long. 122°26', in NE $\frac{1}{4}$ sec. 26, T. 30 S., R. 3 E., 700 feet upstream from Bybee Creek and 2 miles northeast of Union Creek. Altitude of gage, 3,465 feet (from river-profile map).

Drainage area.- 155 square miles.

Records available.- January 1930 to September 1947.

Average discharge.- 17 years, 469 second-feet.

Extremes.- Maximum discharge during year, 2,040 second-feet Dec. 14 (gage height, 4.80 feet); minimum, 296 second-feet Sept. 28-30 (gage height, 1.32 feet).
1930-47: Maximum discharge, 4,430 second-feet Nov. 29, 1942, Dec. 28, 1945 (gage height, 7.84 feet), from rating curve extended above 2,000 second-feet; minimum daily, 180 second-feet Jan. 7, 1937 (estimated).

Remarks.- Records good except those for periods of ice effect, which are fair. No diversion or regulation above station.

Cooperation.- Water-stage recorder inspected by employee of The California Oregon Power Co.

Rating table, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

1.3	290	3.0	990
1.5	350	3.6	1,310
1.9	490	4.2	1,670
2.4	705	5.0	2,180

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	320	347	628	450	426	478	804	790	574	404	356	317
2	326	332	584	b426	490	510	759	860	562	394	353	314
3	341	332	562	b410	494	502	714	880	514	390	353	314
4	323	338	566	b420	454	498	687	875	498	387	353	311
5	335	335	538	b430	443	470	664	855	558	360	344	311
6	323	335	518	418	443	458	624	850	538	377	344	314
7	335	335	498	408	450	458	602	822	530	374	338	387
8	335	329	494	404	462	454	620	826	736	371	335	341
9	323	329	470	398	466	478	620	786	860	368	335	335
10	317	341	458	418	466	558	610	718	710	368	332	326
11	314	329	510	426	502	546	610	678	633	368	329	317
12	314	326	687	412	800	502	615	660	584	365	326	314
13	317	326	1,150	387	741	498	692	633	554	362	326	314
14	314	326	1,870	b350	664	518	813	620	550	359	323	311
15	314	323	1,510	b350	628	554	915	606	510	356	323	308
16	314	323	1,160	b350	624	602	970	602	602	353	320	308
17	329	365	920	b400	602	660	1,020	584	588	350	320	311
18	329	951	795	b400	574	705	1,020	574	522	347	320	308
19	335	967	718	b410	550	718	935	570	498	344	317	308
20	404	558	689	b410	534	718	855	570	482	344	320	305
21	440	466	628	377	518	710	786	566	470	341	317	302
22	570	510	592	377	510	826	746	550	458	341	320	302
23	418	732	562	432	502	855	728	538	446	341	323	302
24	365	554	538	490	514	741	714	530	436	338	317	299
25	356	534	522	494	518	705	714	522	426	335	314	299
26	368	960	538	651	510	684	718	518	426	377	314	299
27	353	1,150	542	542	498	646	756	579	458	478	314	299
28	341	1,110	502	510	482	633	750	554	450	530	314	299
29	338	985	486	478	-	674	818	518	422	384	329	299
30	347	710	466	404	-	759	786	542	408	365	356	299
31	344	-	462	443	-	836	-	550	-	362	323	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	10,802	570	314	348	2.25	2.59	21,430
November	15,758	1,150	323	525	3.39	3.78	31,260
December	21,143	1,870	458	682	4.40	5.07	41,940
Calendar year 1946	207,951	1,870	314	570	3.68	49.89	412,500
January	13,275	651	350	428	2.76	3.19	26,530
February	14,665	800	426	531	3.43	3.57	29,490
March	18,934	855	454	611	3.94	4.54	37,560
April	22,645	1,020	602	755	4.87	5.43	44,920
May	20,326	880	518	656	4.23	4.88	40,320
June	16,983	860	408	533	3.44	3.63	31,700
July	11,553	530	335	373	2.41	2.77	22,920
August	10,208	356	314	329	2.12	2.45	20,250
September	9,373	387	299	312	2.01	2.25	18,590
Water year 1946-47	184,865	1,870	299	506	3.26	44.35	366,700

Peak discharge.- Nov. 18 (11:30 p.m.) 1,670 sec.-ft.; Nov. 23 (5:30 a.m.) 850 sec.-ft.; Nov. 26 (6 p.m.) 1,140 sec.-ft.; Dec. 14 (2 to 3 a.m.) 2,040 sec.-ft.; Dec. 15 (2 p.m.) 1,780 sec.-ft.

b Stage-discharge relation affected by ice.

Rogue River above Prospect, Oreg.

Location.- Water-stage recorder, lat. 42°47', long. 122°30', in NE $\frac{1}{4}$ sec. 19, T. 32 S., R. 3 E., $\frac{1}{2}$ miles upstream from intake of diversion of The California Oregon Power Co., 2 miles northwest of Prospect, and 3 miles upstream from Mill Creek. Altitude of gage, 2,620 feet (from river-profile map).

Drainage area.- 332 square miles.

Records available.- July 1907 to February 1912 (incomplete), October 1923 to September 1947

Average discharge.- 25 years (1910-11, 1923-47), 721 second-feet.

Extremes.- Maximum discharge during year, 3,920 second-feet Dec. 14 (gage height, 4.66 feet); minimum, 374 second-feet Sept. 25-30 (gage height, 1.51 feet).

1907-12, 1923-47: Maximum discharge, 11,900 second-feet Dec. 28, 1945 (gage height, 8.4 feet, from floodmark), from rating curve extended above 4,900 second-feet; minimum observed, 200 second-feet Nov. 20, 1931 (gage height, 1.07 feet).

Remarks.- Records good except those above 1,400 second-feet, which are fair. No diversion or regulation above station.

Cooperation.- Water-stage recorder graph furnished by The California Oregon Power Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	433	490	1,090	693	735	742	1,330	1,100	770	534	460	402
2	442	465	976	651	812	791	1,280	1,180	784	522	451	397
3	470	460	920	606	848	819	1,180	1,230	707	516	446	397
4	446	465	904	612	798	819	1,100	1,220	672	510	451	392
5	456	465	848	644	791	763	1,090	1,190	749	505	446	388
6												
7	442	465	805	624	805	735	1,040	1,180	749	495	438	388
8	456	465	770	600	848	721	1,000	1,120	735	490	428	485
9	470	460	756	588	898	721	1,040	1,130	978	485	428	446
10	451	456	721	582	904	805	1,090	1,090	1,320	485	424	424
11	442	465	693	582	904	1,510	1,070	992	1,040	480	424	415
12												
13	438	456	742	606	936	1,320	1,040	928	912	480	420	406
14	438	451	1,020	582	1,560	1,060	1,040	896	826	480	420	397
15	438	446	2,070	564	1,520	968	1,140	864	791	475	415	397
16	438	442	3,640	516	1,320	952	1,340	826	735	470	410	392
17	438	442	3,000	a500	1,210	1,000	1,480	812	700	465	410	388
18												
19	433	442	2,310	a500	1,200	1,060	1,520	798	777	460	406	388
20	442	465	1,740	594	1,140	1,130	1,610	784	864	456	406	388
21	451	1,530	1,420	588	1,040	1,170	1,650	770	742	451	406	388
22	460	1,950	1,240	606	968	1,170	1,470	763	700	446	406	388
23	516	928	1,120	600	912	1,130	1,540	763	672	446	402	388
24												
25	637	742	1,030	564	872	1,090	1,200	763	658	442	406	384
26	784	756	952	552	949	1,230	1,100	749	830	458	406	384
27	618	1,270	880	665	833	1,380	1,050	721	618	438	410	384
28	522	928	840	805	833	1,170	1,030	714	594	433	406	379
29	495	904	812	872	826	1,090	1,020	700	576	433	406	374
30												
31	516	2,000	812	1,330	812	1,020	1,020	693	570	460	406	374
2	495	2,370	840	1,050	784	976	1,040	756	606	630	406	374
3	480	2,220	777	952	756	952	1,050	763	618	749	406	374
4	470	1,680	749	856	-	984	1,130	700	576	522	415	374
5	480	1,290	700	756	-	1,170	1,100	728	582	485	456	374
6	480	-	707	770	-	1,370	-	742	-	470	415	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-foot
October	14,977	784	433	483	1.45	1.68	29,710
November	26,368	2,370	442	879	2.65	2.95	52,300
December	35,884	3,640	693	1,158	3.49	4.02	71,170
Calendar year 1946	344,107	3,640	433	943	2.84	38.54	682,600
January	21,010	1,330	500	678	2.04	2.35	41,670
February	26,703	1,560	735	954	2.87	2.99	52,960
March	31,618	1,510	721	1,026	3.09	3.56	63,110
April	35,560	1,650	1,000	1,185	3.57	3.98	70,530
May	27,665	1,230	693	892	2.69	3.10	54,870
June	22,221	1,320	552	741	2.23	2.49	44,070
July	15,151	749	433	489	1.47	1.70	30,050
August	13,035	460	402	420	1.27	1.46	25,850
September	11,829	485	374	394	1.19	1.33	23,460
Water year 1946-47	282,221	3,640	374	733	2.33	31.61	559,800

Peak discharge.- Nov. 19 (12:30 a.m.) 3,540 sec.-ft.; Nov. 26 (5 p.m.) 2,440 sec.-ft.; Dec. 14 (4 p.m.) 3,920 sec.-ft.; Dec. 15 (4 p.m.) 3,440 sec.-ft.

a No gage-height record; discharge computed on basis of weather records and records for station above Eyeb Creek.

Rogue River below South Fork Rogue River, near Prospect, Oreg.

Location.- Water-stage recorder, lat. 42°42', long. 122°36', in NW¹ sec. 16, T. 33 S., R. 2 E., at bridge 6 miles southwest of Prospect. Altitude of gage, 1,708 feet (from river-profile map).

Drainage area.- 643 square miles.

Records available.- April 1929 to September 1947.

Average discharge.- 18 years, 1,589 second-feet.

Extremes.- Maximum discharge during year, 6,100 second-feet Dec. 14 (gage height, 5.25 feet), from rating curve extended above 2,500 second-feet; minimum, 502 second-feet (regulated) Aug. 20 (gage height, 0.09 foot); minimum daily, 884 second-feet Sept. 26, 27, 29, 30.

1929-47: Maximum discharge, 19,800 second-feet Dec. 28, 1945 (gage height, 12.2 feet), from rating curve extended above 2,500 second-feet; minimum gage height and minimum daily discharge not determined, as stage falls too low at times to be recorded.

Remarks.- Records good. Small diversions above station for irrigation. Considerable diurnal fluctuation caused by power plant 4 miles above station.

Cooperation.- Water-stage recorder graph furnished by The California Oregon Power Co.

Rating tables, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)

0.7	820	3.0	2,950
.9	955	4.0	4,250
1.4	1,350	5.0	5,700
2.0	1,870		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,000	1,110	1,990	1,400	1,600	1,550	2,490	2,190	1,680	1,270	1,100	960
2	1,010	1,080	1,820	1,330	1,710	1,630	2,380	2,350	1,730	1,260	1,090	949
3	1,060	1,030	1,700	1,350	1,780	1,690	2,250	2,450	1,620	1,230	1,070	948
4	1,020	1,050	1,680	1,310	1,700	1,690	2,200	2,450	1,580	1,230	1,090	959
5	1,000	1,040	1,590	1,330	1,690	1,600	2,230	2,370	1,670	1,220	1,060	942
6	1,010	1,050	1,550	1,320	1,720	1,550	2,160	2,370	1,740	1,200	1,050	931
7	1,030	1,050	1,490	1,290	1,760	1,540	2,090	2,280	1,680	1,190	1,030	1,070
8	1,050	1,040	1,490	1,270	1,810	1,550	2,180	2,260	1,940	1,180	1,030	1,050
9	1,020	1,030	1,440	1,250	1,840	1,670	2,260	2,270	2,630	1,160	1,010	984
10	1,010	1,020	1,400	1,280	1,850	2,850	2,240	2,080	2,190	1,160	1,000	970
11	1,000	1,020	1,430	1,320	1,870	2,580	2,190	1,950	1,970	1,150	1,000	944
12	962	1,020	1,860	1,270	2,720	2,200	2,160	1,910	1,810	1,150	1,000	930
13	962	978	3,480	1,270	2,670	2,050	2,230	1,860	1,710	1,120	990	916
14	1,000	1,000	5,520	1,210	2,370	2,000	2,470	1,820	1,650	1,120	982	912
15	955	970	4,670	1,130	2,230	2,010	2,650	1,770	1,580	1,100	976	916
16	955	970	3,730	1,190	2,340	2,040	2,750	1,760	1,690	1,090	968	915
17	985	1,000	2,910	1,210	2,200	2,100	2,850	1,740	1,880	1,090	964	908
18	1,020	2,220	2,480	1,210	2,060	2,150	2,940	1,720	1,650	1,070	959	916
19	992	3,200	2,200	1,270	1,950	2,140	2,710	1,700	1,560	1,060	947	906
20	1,050	1,690	2,040	1,280	1,850	2,100	2,490	1,680	1,520	1,080	937	904
21	1,290	1,450	1,920	1,210	1,780	2,090	2,320	1,680	1,460	1,060	960	900
22	1,330	1,470	1,810	1,210	1,730	2,290	2,180	1,660	1,420	1,060	953	895
23	1,440	2,060	1,690	1,380	1,700	2,630	2,120	1,610	1,400	1,050	966	894
24	1,130	1,670	1,630	1,600	1,690	2,270	2,110	1,600	1,350	1,040	960	894
25	1,090	1,640	1,580	1,730	1,590	2,160	2,090	1,580	1,320	1,060	951	889
26	1,050	1,890	1,590	2,540	1,660	2,050	2,110	1,570	1,300	1,100	938	884
27	1,090	3,660	1,700	2,180	1,610	1,980	2,130	1,620	1,360	1,350	950	880
28	1,020	3,610	1,570	1,980	1,590	1,930	2,150	1,690	1,410	1,530	938	888
29	1,050	2,930	1,600	1,810	-	1,990	2,250	1,590	1,340	1,250	964	884
30	1,050	2,290	1,430	1,740	-	2,260	2,250	1,620	1,300	1,150	1,040	884
31	1,070	-	1,430	1,630	-	2,550	-	1,670	-	1,120	974	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-foot
October	32,701	1,440	955	1,055	1.64	1.89	64,880
November	47,238	3,660	970	1,575	2.45	2.73	93,700
December	64,300	5,520	1,400	2,074	3.23	3.72	127,500
Calendar year 1946	714,173	5,520	955	1,957	3.04	41.30	1,417,000
January	44,490	2,540	1,130	1,435	2.23	2.57	88,240
February	53,150	2,720	1,590	1,898	2.95	3.07	105,400
March	62,890	2,850	1,540	2,029	3.16	3.64	124,700
April	69,630	2,940	2,090	2,321	3.61	4.03	138,100
May	59,870	2,450	1,570	1,899	2.95	3.40	116,800
June	49,140	2,630	1,300	1,638	2.55	2.84	97,470
July	35,890	1,530	1,040	1,158	1.80	2.08	71,190
August	30,847	1,100	937	995	1.55	1.78	61,180
September	27,806	1,070	884	927	1.44	1.61	55,150
Water year 1946-47	576,952	5,520	884	1,581	2.46	33.36	1,144,000

Rogue River at Dodge Bridge, near Eagle Point, Oreg.

Location.- Water-stage recorder, lat. 42°32', long. 122°50', in SE¹ sec. 17, T. 35 S., R. 1 W., at Dodge Bridge, 0.6 mile downstream from Reese Creek and 4½ miles northwest of Eagle Point. Datum of gage is 1,273.66 feet above mean sea level, datum of 1929.

Records available.- October 1938 to September 1947.

Extremes.- Maximum discharge during year, 9,950 second-feet Nov. 19 (gage height, 5.24 feet); minimum, 807 second-feet Sept. 25 (gage height, 1.27 feet); minimum daily, 996 second-feet Sept. 29.

1938-47: Maximum discharge, 41,900 second-feet (revised) Dec. 28, 1945; gage height, 11.52 feet (revised), from rating curve extended above 30,000 second-feet; minimum, 611 second-feet Aug. 6, 14, 29, Sept. 9, 1940 (gage height, 0.99 foot); minimum daily, 830 second-feet Sept. 1, 1940.

Revisions.- The figures of maximum gage height and discharge for some water years have been revised, as shown in the following table. They supersede those published in the water-supply papers indicated.

Water Supply Paper	Water year	Date	Gage height (feet)	Discharge (second-feet)
964.....	1942	Dec. 2, 1941	7.36	17,300
984.....	1943	Dec. 31, 1942	10.12	32,700
1044.....	1945	Feb. 14, 1945	7.99	20,400

Remarks.- Records good. Many small diversions above station for irrigation; most of the flow of Big Butte Creek is diverted near Butte Falls. Some diurnal fluctuation caused by power plant above 30 miles upstream.

Revisions.- Revised figures of discharge for high-water periods in the water years 1943 and 1946 are given herewith. They supersede those published in Water-Supply Papers 984, 1014, and 1064.

Day (water year)	Discharge (second-feet)	Day (water year)	Discharge (second-feet)
1942-43		1942-43	
Nov. 29....	13,700	Jan. 1....	26,200
30....	15,700	2....	18,000
Dec. 28....	16,600		
30....	15,000	1945-46	
31....	30,000	Dec. 28....	28,600
		29....	25,300

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
November 1942.....	118,740	15,700	1,070	3,958	235,500
December 1942.....	235,330	30,000	3,420	7,591	466,800
Calendar year 1942.....	949,276	30,000	840	2,601	1,883,000
January 1943.....	207,730	26,200	2,930	6,701	412,000
Water year 1942-43.....	1,299,246	30,000	852	3,560	2,577,000
Calendar year 1943.....	1,066,690	26,200	1,230	2,922	2,116,000
December 1945.....	153,510	28,600	1,840	4,952	304,500
Calendar year 1945.....	972,813	28,600	980	2,665	1,930,000
Water year 1945-46.....	1,048,920	28,600	1,020	2,874	2,080,000

Peak discharge.- Nov. 30, 1942 (1 a.m.) 23,700 sec.-ft.; Dec. 27, 1942 (8 p.m. to 9 p.m.) 20,500 sec.-ft.; Jan. 1, 1943 (4 p.m.) 28,600 sec.-ft.; Jan. 21, 1943 (6 p.m. to 7 p.m.) 16,600 sec.-ft.

Discharge, in second-feet, of Rogue River at Dodge Bridge, near Eagle Point, Oreg.,
water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,130	1,400	2,800	1,810	2,470	1,940	3,430	2,470	1,920	1,350	1,210	1,080
2	1,250	1,370	2,490	1,750	3,020	2,080	3,240	2,830	2,020	1,340	1,210	1,080
3	1,280	1,340	2,270	1,830	3,410	2,410	3,160	2,710	1,860	1,330	1,180	1,040
4	1,240	1,290	2,220	1,820	3,220	2,290	3,060	2,710	1,760	1,300	1,200	1,060
5	1,170	1,310	2,080	1,680	3,160	2,130	3,510	2,830	1,890	1,300	1,180	1,040
6	1,170	1,280	1,960	1,640	3,040	2,050	3,580	2,810	2,080	1,290	1,140	1,060
7	1,180	1,280	1,910	1,600	3,040	1,990	3,220	2,580	1,970	1,280	1,120	1,140
8	1,180	1,260	1,890	1,570	3,020	2,050	3,510	2,560	2,150	1,250	1,090	1,210
9	1,170	1,240	1,910	1,560	2,940	2,790	4,290	2,590	3,140	1,240	1,070	1,120
10	1,140	1,290	1,810	1,520	2,820	7,570	3,930	2,430	2,710	1,240	1,080	1,110
11	1,130	1,250	1,800	1,620	2,860	5,340	3,600	2,250	2,380	1,220	1,070	1,080
12	1,090	1,250	2,220	1,570	4,770	3,970	3,300	2,150	2,130	1,220	1,070	1,070
13	1,110	1,240	3,860	1,560	4,440	3,350	3,240	2,070	1,990	1,220	1,040	1,040
14	1,130	1,240	7,450	1,510	3,750	3,080	3,370	2,040	1,890	1,210	1,060	1,030
15	1,110	1,240	6,620	1,380	3,390	2,960	3,490	1,960	1,810	1,200	1,040	1,040
16	1,110	1,210	5,790	1,380	3,950	2,900	3,510	1,910	1,890	1,180	1,040	1,030
17	1,130	1,240	4,240	1,470	3,600	2,880	3,560	1,860	2,340	1,180	1,030	1,030
18	1,160	2,490	3,430	1,450	3,200	2,880	3,640	1,840	1,990	1,170	1,030	1,040
19	1,160	6,480	3,040	1,480	2,920	2,820	3,570	1,880	1,830	1,160	1,030	1,040
20	1,240	2,710	2,740	1,600	2,720	2,740	3,140	1,840	1,760	1,140	1,040	1,030
21	1,510	2,020	2,540	1,580	2,560	2,650	2,920	1,830	1,690	1,140	1,030	1,030
22	1,690	2,000	2,360	1,560	2,400	2,740	2,710	1,830	1,630	1,150	1,030	1,020
23	1,720	3,200	2,240	2,120	2,290	3,560	2,580	1,760	1,580	1,130	1,040	1,010
24	1,380	2,630	2,100	2,380	2,240	3,060	2,500	1,760	1,500	1,120	1,030	1,020
25	1,300	2,310	2,040	2,720	2,200	2,820	2,430	1,740	1,470	1,120	1,020	1,010
26	1,310	4,570	2,050	4,360	2,150	2,690	2,400	1,740	1,450	1,160	1,000	1,010
27	1,510	6,170	2,450	3,620	2,080	2,580	2,400	1,780	1,470	1,470	1,040	1,010
28	1,260	5,550	2,200	3,100	2,000	2,470	2,430	1,970	1,540	1,750	1,020	1,010
29	1,250	4,530	2,070	2,740	-	2,490	2,520	1,780	1,480	1,450	1,030	996
30	1,300	3,370	1,910	2,650	-	3,080	2,580	1,800	1,400	1,260	1,140	1,010
31	1,330	-	1,880	2,560	-	3,580	-	1,890	-	1,250	1,110	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October	38,620	1,720	1,090	1,246	76,600
November	69,760	6,480	1,210	2,325	138,400
December	86,370	7,450	1,800	2,786	171,300
Calendar year 1946	985,060	10,900	1,090	2,699	1,954,000
January	60,790	4,360	1,380	1,961	120,600
February	83,700	4,770	2,000	2,989	166,000
March	91,940	7,570	1,940	2,965	182,400
April	94,620	4,290	2,400	3,154	187,700
May	65,600	2,710	1,740	2,116	130,100
June	56,720	3,140	1,400	1,891	112,500
July	36,800	1,750	1,120	1,252	76,960
August	33,420	1,210	1,000	1,078	66,290
September	31,476	1,210	996	1,049	62,430
Water year 1946-47	751,816	7,570	996	2,060	1,491,000

Peak discharge.- Nov. 19 (5 a.m.) 9,950 sec.-ft.; Dec. 15 (10 p.m.) 7,730 sec.-ft.

Rogue River at Raygold, near Central Point, Oreg.

Location.- Water-stage recorder, lat. 42°26', long. 122°59', in sec. 18, T. 36 S., R. 2 W., at Raygold, just downstream from dam and powerhouse of The California Oregon Power Co., half a mile downstream from Bear Creek, and 6 miles northwest of Central Point.

Datum of gage is 1,121.78 feet above mean sea level, datum of 1929.

Drainage area - 2,020 square miles.

Records available.- August 1905 to September 1947.

Average discharge.- 42 years, 2,728 second-feet.

Extremes.- Maximum discharge during year, 11,500 second-feet Nov. 19 (gage height, 6.37 feet); minimum, 610 second-feet (regulated) Sept. 14 (gage height, 0.05 foot); minimum daily, 1,020 second-feet Sept. 21.

1905-47: Maximum discharge, 91,500 second-feet Feb. 21, 1927 (gage height, 24.8 feet, from floodmark), from rating curve extended above 36,000 second-feet; minimum not determined; minimum daily, 616 second-feet Sept. 6, 1931.

Remarks.- Records good except those for periods of doubtful or no gage-height record which are fair. Many diversions above station for irrigation. Diurnal fluctuation caused by power plant just above station.

Cooperation.- Water-stage recorder inspected by employees of The California Oregon Power Co.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.6	990	2.5	3,170
1.0	1,330	3.0	4,000
1.5	1,850	4.0	5,900
2.0	2,480	5.1	8,290

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,190	1,490	3,080	2,210	3,060	2,330	3,850	2,550	2,040	1,490	1,340	1,130
2	1,290	1,520	2,720	2,130	3,380	2,370	3,680	2,820	2,180	1,430	1,330	1,110
3	1,370	1,410	2,490	2,030	3,980	2,830	3,920	2,740	2,010	1,400	1,300	1,100
4	1,360	1,370	2,460	1,940	3,680	2,800	3,710	2,780	1,930	1,370	1,300	1,090
5	1,310	1,350	2,350	1,930	3,490	2,590	4,170	2,690	2,120	1,370	1,280	1,080
6	1,290	1,340	2,200	1,890	3,380	2,500	4,350	2,660	2,520	1,330	1,220	1,070
7	1,290	1,370	2,150	1,860	3,560	2,420	3,650	2,600	2,280	1,330	1,200	1,130
8	1,350	1,330	2,150	1,820	3,350	2,460	4,050	2,620	2,400	1,320	1,190	1,270
9	1,330	1,310	2,250	1,780	3,330	2,510	5,410	2,650	3,410	1,280	1,160	1,180
10	1,290	1,330	2,160	1,760	3,280	8,180	4,770	2,580	3,110	1,270	1,160	1,150
11	1,280	1,340	2,100	1,830	3,180	6,360	4,370	2,370	2,720	1,270	1,160	1,130
12	1,280	1,330	2,200	1,770	5,230	4,640	4,000	2,280	2,400	1,260	1,150	1,090
13	1,280	1,330	3,330	1,740	5,290	3,850	3,810	2,190	2,210	1,250	1,130	1,080
14	1,270	1,300	6,990	1,720	4,350	3,460	3,880	2,090	2,080	1,240	1,110	1,090
15	1,280	1,310	6,610	1,600	3,880	3,280	3,950	2,090	1,980	1,220	1,100	1,060
16	1,280	1,300	6,470	1,530	4,480	3,200	3,970	2,000	2,010	1,210	1,100	1,060
17	1,280	1,300	4,600	1,630	4,280	3,160	3,950	1,980	2,630	1,200	1,090	1,080
18	1,330	1,880	3,710	1,700	3,710	3,140	4,080	1,850	2,280	1,190	1,090	1,060
19	1,310	7,990	3,280	1,700	3,580	3,110	3,850	1,930	2,040	1,150	1,090	1,070
20	1,340	3,460	3,050	1,820	3,220	3,020	3,540	1,880	1,960	1,170	1,090	1,090
21	1,600	2,420	2,730	1,840	3,050	2,920	3,280	1,870	1,880	1,140	1,090	1,020
22	1,740	2,190	2,540	1,810	2,900	2,920	3,040	1,850	1,820	1,150	1,100	1,100
23	2,020	3,510	2,400	2,130	2,790	4,390	2,870	1,800	1,730	1,170	1,110	1,070
24	1,550	3,140	2,260	2,630	2,690	3,640	2,700	1,770	1,640	1,150	1,100	1,050
25	1,430	2,620	2,190	2,870	2,630	3,190	2,600	1,750	1,560	1,150	1,110	1,050
26	1,390	4,080	2,190	5,070	2,590	3,000	2,550	1,750	1,540	1,200	1,100	1,040
27	1,400	6,700	3,250	4,310	2,510	2,880	2,500	1,800	1,670	1,560	1,100	1,070
28	1,380	6,150	2,770	3,560	2,450	2,800	2,500	2,070	1,660	1,900	1,090	1,040
29	1,360	5,230	2,500	3,330	-	2,800	2,580	1,890	1,600	1,670	1,100	1,060
30	1,370	3,760	2,420	3,270	-	3,390	2,630	1,880	1,610	1,430	1,160	1,070
31	1,410	-	2,210	3,250	-	4,020	-	1,980	-	1,360	1,190	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October	42,650	2,020	1,190	1,376	84,600
November	76,160	7,990	1,300	2,539	151,100
December	93,790	6,990	2,100	3,025	186,000
Calendar year 1946	1,125,640	13,000	1,180	3,084	2,233,000
January	70,460	5,070	1,530	2,273	192,200
February	96,880	5,290	2,450	3,460	192,200
March	104,160	8,180	2,330	3,360	206,600
April	108,390	5,410	2,500	3,613	215,000
May	87,640	2,760	1,750	2,182	154,200
June	62,800	3,410	1,510	2,093	124,600
July	40,630	1,900	1,140	1,311	80,590
August	35,840	1,340	1,090	1,156	71,090
September	32,670	1,270	1,020	1,089	64,800
Water year 1946-47	832,070	8,180	1,020	2,280	1,651,000

Peak discharge.- Nov. 19 (8:30 a.m.) 11,500 sec.-ft.; Nov. 27 (3 p.m.) 6,820 sec.-ft.; Dec. 14 (2 p.m.) 7,850 sec.-ft.; Dec. 16 (12:30 a.m.) 7,830 sec.-ft.; Mar. 10 (11 a.m.) 9,180 sec.-ft.

a No gage-height record; discharge computed on basis of records for stations at Grants Pass and at Dodge Bridge, near Eagle Point.

d Doubtful gage-height record; discharge computed as explained in footnote a.

Rogue River at Grants Pass, Oreg.

Location.- Water-stage recorder, lat. 42°26', long. 123°19', in NW¼ sec. 20, T. 36 S., R. 5 W., at filter plant 0.6 mile east of Pacific Highway bridge at Grants Pass. Datum of gage is 888.28 feet above mean sea level, datum of 1929.

Records available.- January 1939 to September 1947.

Extremes.- Maximum discharge during year, 12,400 second-feet Mar. 10 (gage height, 7.10 feet); minimum, 846 second-feet (regulated) Sept. 16, 27 (gage height, 0.74 feet); minimum daily, 862 second-feet Sept. 17, 24, 27.
1939-47: Maximum discharge, 70,000 second-feet Dec. 29, 1945 (gage height, 23.16 feet), from rating curve extended above 23,000 second-feet; minimum, 560 second-feet (regulated) Aug. 8, 1940 (gage height, 0.30 foot); minimum daily, 637 second-feet Aug. 8, 1940.

Maximum stages known, about 32 feet in February 1890 and about 28 feet Feb. 22, 1927, from floodmarks.

Remarks.- Records good. Many diversions from Rogue River and tributaries above station, the largest of which are at Savage Rapids Dam of Grants Pass Irrigation District, 5 miles upstream. Flow slightly regulated by Fish Lake and Emigrant Gap Reservoirs and by pools above dams at Raygold and Savage Rapids.

Cooperation.- Water-stage recorder inspected by employees of Grants Pass Water Department.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Dec. 1-15, Dec. 19 to Jan. 25,
Jan. 29 to Feb. 2, Feb. 6-11, Feb. 19 to Mar. 9)

0.7	810	3.0	3,800
1.0	1,100	4.8	7,280
1.5	1,680	6.6	11,300
2.0	2,300		

Discharges, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,090	1,480	3,600	2,300	3,280	2,470	4,390	2,420	1,870	1,500	1,280	970
2	1,220	1,600	3,110	2,210	3,580	2,710	4,110	2,420	2,040	1,250	1,210	950
3	1,380	1,480	2,800	2,080	4,610	3,640	4,290	2,510	1,940	1,190	1,190	930
4	1,880	1,420	2,730	2,030	4,250	3,280	4,050	2,570	1,820	1,190	1,140	930
5	1,300	1,420	2,630	2,040	3,980	3,040	4,450	2,510	1,980	1,180	1,140	920
6	1,310	1,400	2,460	2,050	3,940	2,810	4,830	2,430	2,570	1,160	1,080	920
7	1,320	1,450	2,360	2,030	3,850	2,710	4,230	2,430	2,290	1,140	1,030	950
8	1,340	1,340	2,340	1,980	3,800	2,740	4,250	2,470	2,510	1,130	1,000	1,110
9	1,320	1,360	2,380	1,940	3,680	2,950	5,880	2,400	3,250	1,110	960	1,170
10	1,510	1,340	2,290	1,940	3,560	10,600	5,350	2,480	3,240	1,090	970	1,050
11	1,240	1,400	2,210	2,020	3,460	8,380	4,830	2,220	2,800	1,080	990	1,020
12	1,280	1,390	2,430	1,960	5,620	5,850	4,390	2,100	2,420	1,080	980	970
13	1,260	1,400	3,430	2,030	6,390	4,660	4,140	2,000	2,160	1,070	960	950
14	1,240	1,290	6,920	1,940	5,120	4,110	4,160	1,920	1,990	1,070	930	930
15	1,250	1,590	7,010	1,820	4,450	3,800	4,200	1,860	1,660	1,060	930	910
16	1,240	1,320	7,380	1,640	4,690	3,560	4,200	1,760	1,920	1,030	920	891
17	1,280	1,530	5,210	1,800	4,970	3,530	4,140	1,730	2,550	980	910	882
18	1,320	1,680	4,160	1,840	4,250	3,460	4,210	1,700	2,300	980	910	900
19	1,320	9,080	3,680	1,870	3,930	3,380	3,870	1,690	1,980	1,000	910	930
20	1,330	4,270	3,330	1,960	3,580	3,270	3,680	1,630	1,680	980	910	940
21	1,520	2,670	3,090	2,000	3,550	3,140	3,400	1,630	1,610	980	900	910
22	1,840	2,820	2,970	1,970	3,170	3,110	3,010	1,600	1,680	970	900	900
23	2,180	4,030	2,700	2,280	3,000	4,430	2,830	1,570	1,570	980	900	891
24	1,700	3,680	2,550	2,870	2,680	4,140	2,530	1,520	1,490	970	900	882
26	1,510	2,880	2,440	3,110	2,810	3,490	2,520	1,500	1,400	960	900	891
26	1,440	4,390	2,420	5,270	2,760	3,270	2,420	1,480	1,390	1,120	900	891
27	1,460	7,970	3,460	4,930	2,690	3,080	2,360	1,540	1,380	1,540	891	882
28	1,430	6,510	3,030	3,980	2,890	2,980	2,360	1,620	1,450	2,020	910	891
29	1,370	6,250	2,670	3,720	-	2,810	2,430	1,750	1,490	1,970	930	891
30	1,420	4,500	2,500	3,610	-	2,680	2,530	1,670	1,530	1,520	940	920
31	1,450	-	2,310	3,720	-	4,650	-	1,780	-	1,320	1,070	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	43,530	2,180	1,090	1,494	86,340
November.....	85,200	9,080	1,290	2,840	169,000
December.....	102,500	7,380	2,210	3,366	203,300
Calendar year 1946	1,161,170	15,100	995	3,236	2,343,000
January.....	76,950	5,270	1,640	2,448	152,600
February.....	108,440	6,390	2,890	3,672	215,100
March.....	119,710	10,600	2,470	3,865	257,460
April.....	114,050	5,890	2,360	3,602	226,200
May.....	61,190	2,570	1,480	1,974	121,460
June.....	60,170	3,250	1,330	2,009	119,360
July.....	36,410	2,020	960	1,176	72,280
August.....	30,481	1,290	891	963	60,460
September.....	28,172	1,170	882	958	55,650
Water year 1946-47	866,803	10,600	882	2,375	1,719,000

Peak discharge.- Nov. 19 (12 m.) 12,300 sec.-ft.; Dec. 14 (6 p.m.) 8,120 sec.-ft.; Dec. 16 (3:30 a.m.) 8,490 sec.-ft.; Mar. 10 (11:30 a.m.) 12,400 sec.-ft.

Reservoirs in Rogue River Basin, Oreg.

Fish Lake Reservoir.- Staff gage, lat. 42°23', long. 122°21', in SW $\frac{1}{4}$ sec. 3, T. 37 S., R. 4 E., at reservoir outlet, 18 miles east of Lake Creek. Datum of gage is at mean sea level (irrigation district datum). Drainage area, 17 square miles. Records available, December 1915 to September 1947. Maximum contents observed during year, 6,340 acre-feet June 24 (elevation, 4,823.00 feet); minimum observed, 382 acre-feet Sept. 16, 17 (elevation, 4,803.38 feet). Maximum contents observed during period 1915-47, 7,975 acre-feet June 20, 1938 (elevation, 4,827.09 feet); no usable contents at times.

Reservoir is formed by rock-faced earth dam, completed in fall of 1915; storage began in November 1915. Capacity, 7,527 acre-feet between elevations 4,799 feet (outlet tunnel) and 4,826 feet (spillway channel, incomplete). Water is diverted during summer from Fourmile Lake in Klamath River Basin through Cascade Canal into Fish Lake. Gage read once daily by employee of Medford Irrigation District.

Emigrant Gap Reservoir.- Staff gage, lat. 42°10', long. 122°36', in SE $\frac{1}{4}$ sec. 20, T. 39 S., R. 2 E., at Emigrant Gap Dam of Talent Irrigation District on Emigrant Creek, 6 miles southeast of Ashland. Datum of gage is at mean sea level (levels by Talent Irrigation District). Records available, December 1924 to September 1947. Maximum contents observed during year, 8,318 acre-feet Apr. 18 (elevation, 2,173.4 feet); minimum observed, 40 acre-feet Aug. 17 (elevation, 2,082.0 feet). Maximum contents during period 1924-47, 8,748 acre-feet Feb. 20, 1927 (elevation, 2,175.2 feet); no usable contents at times.

Reservoir is formed by concrete arch dam, completed in 1924 by Talent Irrigation District; storage began in December 1924. Capacity, 8,342 acre-feet between elevations 2,070 feet (16-inch sluice pipe) and 2,173.5 feet (crest of spillway). Dead storage negligible. Water is used for irrigation of lands near Talent. Gage read once to seven times weekly by employee of Talent Irrigation District.

Monthly gage height and contents, water year October 1946 to September 1947

Date	Fish Lake Reservoir			Emigrant Gap Reservoir		
	Elevation (feet)	Contents (acre- feet)	Change in contents during month (acre-feet)	Elevation (feet)	Contents (acre- feet)	Change in contents during month (acre-feet)
Sept. 30.....	4,804.09	508	-	-	a90	-
Oct. 31.....	4,809.96	1,971	+1,463	-	a420	+330
Nov. 30.....	4,813.58	3,057	+1,086	-	b1,355	+935
Dec. 31.....	4,815.42	3,648	+591	-	b1,966	+611
Calendar year 1946..	-	-	+304	-	-	-8,028
Jan. 31.....	4,816.56	4,025	+377	-	b2,746	+780
Feb. 28.....	4,817.29	4,274	+249	-	b4,968	+2,222
Mar. 31.....	4,818.28	4,616	+342	2,166.8	6,866	+1,898
Apr. 30.....	4,819.33	4,984	+368	-	b6,098	+1,232
May 31.....	4,817.89	4,410	-574	2,161.6	5,875	-2,223
June 30.....	4,822.52	6,158	+1,748	2,155.8	4,905	-970
July 31.....	4,813.45	3,016	-3,142	2,115.0	941	-3,964
Aug. 31.....	4,804.56	602	-2,414	-	a48	-893
Sept. 30.....	4,805.80	453	-149	-	a50	+2
Water year 1946-47..	-	-	-55	-	-	-40

a Computed on basis of records of inflow and outflow of reservoir.

b Interpolated.

Note.- Time of gage readings not known.

South Fork Rogue River above Imnaha Creek, near Prospect, Oreg.

Location.- Water-stage recorder, lat. 42°42', long. 122°23', in NE¼ sec. 18, T. 33 S., R. 4 E., 300 yards upstream from Imnaha Creek, 400 yards upstream from South Fork diversion dam, and 6 miles southeast of Prospect.

Drainage area.- 52 square miles.

Records available.- October 1931 to September 1947.

Average discharge.- 16 years, 124 second-feet.

Extremes.- Maximum discharge during year, 358 second-feet Dec. 14 (gage height, 2.95 feet); minimum, 46 second-feet Sept. 22-30.
1931-47: Maximum discharge, 2,170 second-feet Dec. 1, 1942 (gage height, 6.21 feet), from rating curve extended above 250 second-feet on basis of former curve well defined to 1,000 second-feet; minimum, 27 second-feet Oct. 1-21, 1931.

Remarks.- Records good. No diversion or regulation above station.

Cooperation.- Water-stage recorder graph furnished by The California Oregon Power Co.

Rating table, water year 1946-47 (gage height, in feet,
and discharge, in second-feet)
(Shifting-control method used Aug. 19 to Sept. 30)

1.3	44	2.1	171
1.4	55	2.4	230
1.6	83	2.7	295
1.8	116	3.0	370

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	77	139	93	114	111	212	196	134	101	71	55
2	67	72	125	89	114	111	198	222	138	99	71	54
3	67	71	118	89	125	109	182	232	134	97	70	54
4	67	70	114	88	118	111	177	224	134	97	68	54
5	67	67	108	88	108	108	169	218	143	96	68	54
6	65	65	102	86	109	106	163	212	130	94	67	54
7	65	65	99	85	109	104	160	204	145	94	65	59
8	67	65	97	85	109	104	160	206	173	89	65	58
9	65	64	96	83	111	121	162	238	222	86	64	54
10	64	64	93	83	113	175	162	202	206	86	64	53
11	64	64	99	86	114	163	169	180	171	86	63	52
12	64	64	138	85	143	147	169	171	152	85	63	52
13	64	63	248	83	152	141	173	163	141	85	33	52
14	63	63	312	83	147	141	194	156	134	83	63	52
15	63	63	272	b80	141	141	214	148	127	80	63	51
16	63	63	238	b80	143	141	228	147	138	78	63	50
17	64	163	82	145	145	145	242	143	163	77	63	50
18	67	103	162	80	139	150	262	141	138	76	62	50
19	67	160	150	80	134	152	242	138	130	76	60	50
20	70	101	143	80	130	154	224	134	129	74	60	48
21	80	86	136	80	129	154	202	134	125	72	60	48
22	104	86	125	80	127	188	188	130	120	72	59	47
23	82	104	118	94	123	232	180	127	116	72	59	46
24	74	94	113	106	121	190	179	121	111	72	59	46
25	74	91	109	114	118	180	179	118	108	72	59	47
26	72	132	109	179	118	167	186	116	106	72	56	47
27	72	224	111	148	116	163	184	118	108	80	56	47
28	71	264	104	130	114	160	188	120	113	88	56	46
29	70	232	101	123	-	160	194	120	108	76	56	46
30	71	163	96	120	-	177	196	127	104	72	60	46
31	71	-	94	118	-	216	-	130	-	71	58	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	2,149	104	63	69.3	1.33	1.54	4,260
November	2,963	264	63	98.8	1.90	2.12	5,880
December	4,257	312	93	137	2.63	3.04	8,440
Calendar year 1946	55,167	390	63	151	2.90	39.45	109,400
January	2,980	179	80	96.1	1.85	2.13	5,910
February	3,480	152	105	124	2.38	2.49	6,900
March	4,622	232	104	149	2.87	3.31	9,170
April	5,758	282	160	191	3.67	4.10	11,380
May	5,036	238	116	162	3.12	3.60	9,990
June	4,101	222	104	137	2.63	2.93	8,130
July	2,558	101	71	82.5	1.59	1.83	5,070
August	1,932	71	56	62.3	1.20	1.38	3,830
September	1,522	59	46	50.7	0.975	1.09	3,020
Water year 1946-47	41,358	312	46	113	2.17	29.56	81,900

Peak discharge.- Nov. 28 (10 p.m.) 312 sec.-ft.; Dec. 14 (1 a.m.) 358 sec.-ft.; Dec. 15 (4 p.m.) 332 sec.-ft.

b Stage-discharge relation affected by ice.

Imnaha Creek near Prospect, Oreg.

Location.- Staff gage, lat. 42°42' long. 122°23', in NE¼ sec. 18, T. 33 S., R. 4 E., 400 yards upstream from mouth and 6 miles southeast of Prospect.

Drainage area.- 26 square miles.

Records available.- September 1931 to September 1947.

Average discharge.- 16 years, 41.3 second-feet.

Extremes.- Maximum daily discharge during year, 100 second-feet Dec. 14 (gage not read); minimum daily, 20 second-feet Sept. 2-5, 10-30.
1931-47: Maximum daily discharge, 500 second-feet Feb. 13, 1945 (gage not read), computed on basis of records for South and Middle Forks Rogue River near Prospect; minimum observed, 11 second-feet Dec. 14, 1931 (gage height, 0.46 foot).

Remarks.- Records fair for days when gage was read, poor for other periods. Staff gage read once weekly; discharge for intervening days computed on basis of records for stations on South Fork Rogue River and South Fork power canal. No diversion or regulation above station.

Cooperation.- Gage readings furnished by The California Oregon Power Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	26	51	32	34	45	60	h50	36	30	24	21
2	22	25	46	h31	35	44	58	53	36	29	24	20
3	h23	24	h42	31	38	43	h55	56	36	h28	23	20
4	22	24	35	31	36	42	54	55	38	28	23	h20
5	22	23	h31	30	35	41	52	54	h39	28	23	20
6	22	23	30	30	h35	h41	52	51	40	27	23	21
7	22	h22	29	30	34	40	53	48	44	27	h23	23
8	23	22	28	30	34	40	54	h47	48	26	23	21
9	22	22	27	h30	35	50	57	53	53	26	23	21
10	h22	22	27	30	36	59	h60	48	47	h26	22	20
11	22	22	28	30	h37	56	61	46	43	26	22	h20
12	22	22	h39	30	40	53	62	44	h40	26	22	20
13	22	22	68	30	h43	h51	62	43	38	26	22	20
14	22	h22	100	30	50	49	63	42	35	26	h22	20
15	22	22	85	29	52	47	64	h41	34	25	22	20
16	22	22	70	h28	51	45	64	41	39	25	22	20
17	h22	22	54	29	50	45	h64	40	40	h25	22	20
18	22	22	47	30	49	46	63	40	h37	25	22	h20
19	22	36	h43	30	48	47	60	40	h35	25	23	20
20	23	29	41	30	h48	h48	59	40	34	24	22	20
21	28	h26	39	30	48	51	57	39	33	24	h22	20
22	30	25	38	30	48	56	h55	h39	33	24	22	20
23	26	30	38	h30	48	61	53	38	32	24	22	20
24	h25	27	37	34	48	58	h52	37	32	h24	22	20
25	24	26	37	36	47	52	50	34	31	24	22	h20
26	24	37	h36	60	47	51	48	33	h31	26	22	20
27	24	50	56	41	h47	h50	48	32	33	29	22	20
28	23	78	37	38	46	50	49	33	34	32	h22	20
29	23	66	35	37	-	50	49	h34	32	28	22	20
30	23	58	34	h35	-	58	49	35	31	26	23	20
31	h23	-	33	34	-	60	-	35	-	h24	21	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Runoff Acre-feet
October	715	30	21	23.1	0.888	1.02	1,420
November	897	78	22	29.9	1.15	1.28	1,780
December	1,321	100	27	42.6	1.64	1.89	2,620
Calendar year 1946	17,385	130	20	47.6	1.83	24.84	34,490
January	1,006	60	28	32.5	1.25	1.44	2,000
February	1,199	52	34	42.8	1.65	1.72	2,380
March	1,529	61	40	49.3	1.90	2.19	3,030
April	1,687	64	48	56.2	2.16	2.41	3,350
May	1,321	56	32	42.6	1.64	1.89	2,620
June	1,114	53	31	37.1	1.43	1.59	2,210
July	813	32	24	26.2	1.01	1.16	1,610
August	693	24	21	22.4	.862	.99	1,370
September	607	23	20	20.2	.777	.87	1,200
Water year 1946-47	12,902	100	20	35.3	1.36	18.45	25,590

h Gage read on this day.

South Fork power canal near Prospect, Oreg.

Location.- Water-stage recorder, lat. 42°43', long. 122°24', in E $\frac{1}{2}$ sec. 12, T. 33 S., R. 3 E., 1 mile downstream from head gate at diversion dam and 5 miles southeast of Prospect; electrical-output meter in power plant in W $\frac{1}{2}$ sec. 1, T. 33 S., R. 3 E. Datum of gage is about 3,357 feet above mean sea level (levels by The California Power Co.

Records available.- April 1932 to September 1947.

Average discharge.- 15 years, 104 second-feet.

Extremes.- Maximum daily discharge during year, 156 second-feet for several days in period February to June; minimum daily, 60 second-feet Sept. 28; 29.
1932-47: Maximum daily discharge, 170 second-feet June 18, 1933, Feb. 22, 1936, May 14, 1938, Apr. 4, 5, 16, 1939; no flow at times.

Remarks.- Records good. Daily discharge computed on basis of electrical output of power plant below station, the relation between electrical output and discharge being based on discharge measurements. This canal, completed in March 1932, diverts water from South Fork Rogue River 200 feet below mouth of Imnaha Creek for use at power plant in W $\frac{1}{2}$ sec. 1, T. 33 S., R. 3 E., from which water may be wasted into Middle Fork Rogue River or mingled with flow of other diversions in Main power canal.

Cooperation.- Water-stage recorder graph and record of electrical output furnished by The California Oregon Power Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	79	88	153	120	141	148	148	155	154	121	89	70
2	82	80	148	117	122	151	145	155	155	118	86	69
3	89	80	145	111	152	149	145	156	155	117	86	68
4	82	79	139	109	143	154	142	155	148	114	85	67
5	82	77	131	109	143	143	142	156	154	114	82	66
6	80	80	128	110	139	144	142	155	154	113	82	66
7	81	77	120	107	137	143	142	155	154	109	80	76
8	82	75	118	104	135	141	144	154	156	106	80	70
9	79	75	113	103	135	148	144	154	155	106	80	70
10	78	77	108	103	145	155	144	155	156	103	79	69
11	77	74	120	105	149	156	146	155	156	103	78	67
12	76	75	146	103	154	155	145	155	156	102	77	66
13	76	73	151	102	154	154	87	156	155	100	77	64
14	76	74	150	102	155	154	153	155	155	99	76	65
15	74	72	150	95	155	150	154	156	154	97	75	63
16	74	72	150	101	154	150	155	155	153	96	74	64
17	77	72	150	99	154	151	155	155	154	94	74	65
18	78	110	153	97	155	152	155	156	156	95	74	64
19	78	152	153	95	155	151	156	156	155	94	72	64
20	78	121	154	97	155	150	156	156	152	95	71	64
21	112	105	153	94	154	146	156	156	148	93	72	63
22	131	106	150	94	155	149	154	156	144	90	73	62
23	98	133	144	121	156	153	154	154	142	90	73	61
24	87	112	139	131	155	149	155	149	135	89	71	62
25	80	107	138	134	154	150	155	146	133	88	71	62
26	81	148	140	147	155	146	155	143	131	93	69	61
27	80	154	140	147	154	148	155	148	135	101	69	61
28	78	154	133	146	150	147	155	154	132	120	69	60
29	76	154	131	146	-	147	156	148	132	95	73	60
30	77	153	122	142	-	147	155	154	126	91	78	61
31	80	-	122	142	-	152	-	155	-	89	72	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	2,560	131	74	82.6	5,080
November.....	3,009	154	72	100	5,970
December.....	4,291	154	109	138	8,510
Calendar year 1946.....	42,371	158	0	116	84,050
January.....	3,533	147	94	114	7,010
February.....	4,165	156	122	149	8,280
March.....	4,633	156	141	149	9,190
April.....	4,450	156	87	148	8,850
May.....	4,769	156	143	154	9,460
June.....	4,448	156	126	148	8,820
July.....	3,135	121	88	101	6,220
August.....	2,367	89	69	76.4	4,690
September.....	1,950	76	60	65.0	3,870
Water year 1946-47.....	43,308	156	60	119	85,910

Middle Fork Rogue River near Prospect, Oreg.

Location.- Water-stage recorder, lat. 42°44', long. 122°24', in NE¹ sec. 1 T. 33 S., R. 3 E., 1,000 feet downstream from diversion dam and intake of Middle Fork power canal and 4¹/₂ miles southeast of Prospect. Altitude of gage, 2,620 feet (from river-profile map).

Drainage area.- 57 square miles.

Records available.- May 1925 to September 1947 (include flow of Middle Fork power canal).

Average discharge.- 22 years, 172 second-feet.

Extremes.- Maximum combined discharge of river and canal during year, 675 second-feet (river gage height, 2.93 feet); minimum daily, 108 second-feet Sept. 29, 30.

1925-47: Maximum discharge, 2,760 second-feet Nov. 29, 1942 from rating curve extended above 1,100 second-feet; maximum river gage height, 5.2 feet Nov. 29, 1942, Dec. 28, 1945; minimum discharge, 72 second-feet Aug. 24 to Sept. 5, 1931.

Remarks.- Records fair except those for periods of no gage-height record and those below 10 second-feet, which are poor. Rating curve for river only defined to 240 second-feet by measurements and to 1,100 second-feet by study of increments of discharge when flow in canal was changed. Low flow in river controlled since Nov. 19, 1931, by head gates at diversion dam of power canal which diverts water around station; practically no storage above diversion dam. Records include flow of Middle Fork power canal.

Cooperation.- Water-stage recorder graph furnished by The California Oregon Power Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	127	132	215	154	171	160	229	252	224	152	131	116
2	129	127	196	154	176	164	223	294	222	149	129	115
3	132	126	184	149	178	169	224	314	206	147	128	115
4	128	127	176	146	174	170	223	308	202	144	128	114
5	128	124	165	141	175	159	223	303	229	145	127	114
6	127	124	159	140	184	157	216	303	218	141	126	114
7	130	124	165	138	186	156	213	289	214	141	125	127
8	128	122	155	138	187	155	219	273	298	140	123	122
9	128	122	151	136	191	173	223	276	320	139	123	117
10	128	123	149	137	195	212	223	245	266	139	122	155
11	127	121	166	188	204	198	216	230	235	139	121	115
12	127	180	282	137	245	189	214	223	213	140	121	113
13	128	120	472	136	232	187	222	217	203	139	120	112
14	127	180	541	153	226	187	243	213	192	140	120	111
15	128	120	423	153	223	186	259	210	186	138	120	110
16	128	120	339	131	226	186	273	215	221	136	120	110
17	131	194	284	131	219	191	300	213	228	136	120	111
18	128	211	252	129	212	193	308	213	206	135	120	111
19	127	228	226	132	204	193	276	213	193	135	119	112
20	137	152	310	130	195	194	254	219	185	134	120	110
21	141	141	198	130	192	193	234	219	180	134	120	110
22	181	152	187	132	187	227	223	219	170	134	120	110
23	138	168	180	158	181	234	220	214	165	134	120	109
24	130	151	175	169	187	209	219	210	184	135	119	109
25	128	158	170	190	175	200	218	208	162	135	117	109
26	129	255	178	244	172	192	222	203	164	142	116	109
27	128	313	174	210	170	190	a229	214	178	146	116	109
28	126	392	164	198	167	186	a235	203	169	147	116	109
29	125	316	162	187	-	192	a237	200	161	132	121	108
30	130	242	158	173	-	214	a240	224	156	132	121	108
31	130	-	156	171	-	234	-	217	-	132	117	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches	Runoff Acres-feet
October	4,059	181	125	151	2.30	2.65	8,050
November	4,967	392	120	166	2.91	3.24	9,850
December	6,772	541	149	218	3.82	4.42	13,430
Calendar year 1946	75,464	541	120	207	3.63	49.25	149,700
January	4,723	244	129	152	2.67	3.08	9,370
February	5,430	245	167	194	3.40	3.54	10,770
March	5,850	234	155	189	3.32	3.82	11,600
April	7,058	308	213	235	4.12	4.61	14,000
May	7,354	314	200	237	4.16	4.80	14,590
June	6,127	320	156	204	2.58	4.00	12,150
July	4,306	152	132	139	2.44	2.81	8,540
August	3,766	131	116	121	2.12	2.46	7,470
September	3,374	127	108	112	1.96	2.20	6,690
Water year 1946-47	63,766	541	108	175	3.07	41.63	126,500

a No gage-height record; discharge computed on basis of records for South Fork Rogue River and Middle Fork power canal.

ROGUE RIVER BASIN

Middle Fork power canal near Prospect, Oreg.

Location.- Water-stage recorder, lat. 42°44', long. 122°24', in NE $\frac{1}{4}$ sec. 1, T. 33 S., R. 3 E., 1,000 feet downstream from head gate at diversion dam and $4\frac{1}{2}$ miles southeast of Prospect. Datum of gage is about 2,632 feet above mean sea level (levels by The California Oregon Power Co.).

Records available.- November 1931 to September 1947.

Average discharge.- 16 years, 108 second-feet.

Extremes.- Maximum daily discharge during year, 142 second-feet June 26, 27; minimum daily, 0.5 second-foot Dec. 26 to Jan. 1.

1931-47: Maximum daily discharge, 191 second-feet Feb. 2, 1935; no flow at times.

Remarks.- Records excellent except those below 5 second-feet, which are poor. This canal, completed in November 1931, diverts water from Middle Fork Rogue River into Main power canal to supplement flow of Rogue River above Prospect diversion dam.

Cooperation.- Water-stage recorder graph furnished by The California Oregon Power Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	124	128	101	0.5	128	104	93	120	101	139	126	115
2	125	124	101	.8	128	104	93	120	101	139	125	114
3	127	123	101	.7	128	45	32	120	101	136	124	114
4	124	124	101	37	126	53	9	1	120	101	137	124
5	124	122	101	127	95	53	1	1	120	102	137	123
6	123	122	101	127	75	79	1	120	102	136	122	114
7	125	122	101	126	79	79	1	120	102	136	122	124
8	124	120	101	127	96	93	1	120	a105	135	120	a120
9	124	120	108	127	96	94	1	120	a105	134	120	a115
10	124	121	122	127	35	37	1	120	a105	134	119	114
11	124	119	122	127	1	1	1	120	a105	134	118	114
12	124	118	48	127	1	1	55	120	75	134	118	113
13	124	118	2	127	1	1	119	120	106	132	118	112
14	123	118	1	126	1	1	120	120	105	132	118	111
15	124	118	1	124	1	54	120	95	105	131	118	110
16	124	118	1	125	1	99	120	79	105	129	118	110
17	125	122	.8	125	1	100	120	95	105	128	118	111
18	124	121	.8	124	1	100	120	95	106	127	a118	110
19	123	96	.7	128	1	98	120	95	106	127	117	109
20	127	102	.6	126	.8	45	120	96	106	126	118	108
21	130	117	.6	125	.8	47	120	96	106	126	118	107
22	135	129	.6	126	.8	93	120	96	115	126	118	107
23	132	133	.6	130	.8	93	115	95	122	125	118	106
24	126	133	.6	117	.8	93	120	96	134	124	117	106
25	125	133	.6	115	.8	93	119	96	141	124	116	106
26	125	119	.5	56	.8	93	119	96	142	131	115	106
27	124	101	.5	1	.8	93	119	96	142	133	115	106
28	123	101	.5	1	49	93	120	98	141	a130	115	106
29	122	101	.5	1	-	93	120	101	140	127	119	105
30	125	101	.5	81	-	93	120	101	140	127	118	104
31	126	-	.5	128	-	93	-	101	-	127	116	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	3,879	135	122	125	7,690
November.....	3,544	133	96	118	7,030
December.....	1,221.9	122	.5	39.4	2,420
Calendar year 1946	44,911.9	158	.5	123	89,060
January.....	2,939.6	130	.5	94.8	5,830
February.....	1,050.4	128	.8	37.5	2,080
March.....	2,165.9	104	.9	69.9	4,300
April.....	2,432	120	1	81.1	4,820
May.....	3,308	120	79	107	6,560
June.....	3,372	142	75	112	6,690
July.....	4,065	139	124	131	8,060
August.....	3,689	128	115	119	7,320
September.....	3,325	124	104	111	6,600
Water year 1946-47	34,992.0	142	.5	95.9	69,400

a No gage-height record; discharge computed on basis of recorded range in stage and records for Middle Fork Rogue River near Prospect.

Red Blanket Creek near Prospect, Oreg.

Location.- Staff-gage, lat. 42°47', long. 122°26', in NE $\frac{1}{4}$ sec. 23, T. 32 S., R. 3 E., 3 miles northeast of Prospect.

Drainage area.- 40 square miles.

Records available.- May 1925 to September 1947. Prior to October 1928 in NE $\frac{1}{4}$ sec. 34, T. 32 S., R. 3 E.

Average discharge.- 22 years, 104 second-feet.

Extremes.- Maximum daily discharge during year, 280 second-feet Dec. 14; minimum daily, 50 second-feet Sept. 24-28.
1925-47: Maximum discharge observed, 1,880 second-feet Nov. 29, 1942 (gage height, 5.1 feet, from floodmark), from rating curve extended above 350 second-feet; minimum observed, 34 second-feet Sept. 3, 4, 25, Oct. 9, 16, 1931.

Remarks.- Records fair for days when gage was read, poor for other periods. Gage read only once weekly; discharge for intervening days computed on basis of records for South Fork Rogue River near Prospect and Red Blanket power canal. One diversion above station for irrigation.

Cooperation.- Gage readings furnished by The California Oregon Power Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	h81	135	95	103	96	150	140	117	92	h71	55
2	72	77	125	94	107	99	140	h145	120	88	70	54
3	76	76	115	93	117	99	130	160	120	84	70	54
4	h71	76	110	91	112	99	h122	168	119	h81	69	53
5	71	75	105	91	110	97	115	167	117	80	68	h53
6	71	75	h98	88	112	95	112	163	h114	80	h68	53
7	74	74	96	86	h117	h92	110	160	120	80	68	67
8	73	h73	96	86	118	93	110	158	135	79	h67	62
9	71	73	94	84	120	102	112	h152	150	79	66	58
10	70	73	92	h83	122	140	115	148	145	78	65	56
11	h67	72	98	86	128	130	h120	143	130	h77	64	54
12	67	71	125	85	133	120	122	138	120	76	63	h53
13	67	70	h181	86	135	115	128	133	h115	75	62	53
14	67	70	280	85	h138	h111	150	130	110	74	62	53
15	67	h69	230	84	136	110	140	127	105	74	h61	53
16	67	69	190	83	134	110	150	h122	115	73	61	52
17	70	75	170	h77	134	115	155	120	h119	72	61	52
18	h69	100	150	77	125	h124	h164	117	115	h72	60	52
19	69	130	135	79	120	125	165	126	110	70	60	h52
20	72	100	h127	80	115	120	150	116	h104	70	60	52
21	88	96	120	78	h107	h114	140	115	102	69	59	52
22	94	94	115	78	105	130	130	115	100	69	h59	52
23	90	98	112	105	103	180	h120	h115	100	68	59	51
24	80	96	110	h124	100	160	122	113	98	68	59	50
25	h76	96	108	140	99	135	h124	110	97	h68	58	50
26	76	120	107	160	98	120	126	109	98	78	58	h50
27	75	200	h106	130	97	115	128	109	h104	90	58	50
28	74	240	108	120	h95	h111	130	110	108	96	57	50
29	74	h200	103	h114	-	110	135	112	100	82	h57	54
30	78	150	101	110	-	125	137	h114	94	76	60	54
31	79	-	97	h104	-	160	-	115	-	73	56	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	2,287	94	67	73.8	1.84	2.13	4,540
November	2,969	240	69	99.0	2.48	2.76	5,890
December	3,939	280	92	127	3.18	3.66	7,810
Calendar year 1946	48,266	280	67	132	3.30	44.89	95,740
January	2,976	160	77	96.0	2.40	2.77	5,900
February	3,240	138	95	116	2.90	3.01	6,430
March	3,652	180	92	118	2.95	3.40	7,240
April	3,932	165	110	131	3.28	3.66	7,800
May	4,060	168	109	131	3.28	3.77	8,050
June	3,401	150	94	113	2.82	3.16	6,750
July	2,391	96	68	77.1	1.93	2.22	4,740
August	1,936	71	56	62.5	1.56	1.80	3,840
September	1,604	67	50	53.5	1.34	1.49	3,180
Water year 1946-47	36,387	280	50	99.7	2.48	33.83	72,170

h Gage read on this day.

Red Blanket power canal near Prospect, Oreg.

Location.- Water-stage recorder, lat. 42°45', long. 122°27', in SE $\frac{1}{4}$ sec. 27, T. 32 S., R. 3 E., 200 yards downstream from head gate and diversion dam and 2 miles east of Prospect. Datum of gage is 2,612 feet above mean sea level (levels by The California Oregon Power Co.).

Records available.- November 1931 to September 1947.

Average discharge.- 15 years, 67.9 second-feet.

Extremes.- Maximum daily discharge during year, 100 second-feet Dec. 13, 14; minimum daily, 49 second-feet Apr. 10, Sept. 25-27.
1931-47: Maximum daily discharge, 106 second-feet July 7-13, 1932; no flow for part of day Sept. 24, 25, 1932.

Remarks.- Records excellent. This canal, completed in October 1932, diverts water from Red Blanket Creek into Main power canal to supplement flow of Rogue River above Prospect. diversion dam.

Cooperation.- Water-stage recorder graph furnished by The California Oregon Power Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	63	94	94	97	95	95	95	95	86	72	55
2	72	75	94	92	97	97	95	95	96	84	71	54
3	76	74	94	90	97	97	70	95	96	82	71	53
4	71	74	95	90	97	97	94	95	95	81	70	52
5	72	74	98	88	97	95	94	95	95	80	67	52
6	70	73	97	88	97	93	94	95	97	79	66	53
7	73	73	96	86	97	93	93	95	97	78	66	55
8	72	72	95	86	97	93	95	95	98	79	64	59
9	70	72	91	84	97	95	95	95	95	78	63	57
10	69	73	91	84	97	95	49	95	90	77	63	55
11	88	71	95	87	98	92	52	94	90	76	62	54
12	67	70	98	84	97	92	94	94	89	78	61	54
13	67	69	100	85	97	92	94	94	83	76	60	54
14	67	69	100	83	97	94	94	94	83	74	60	52
15	66	69	97	82	97	94	95	94	83	74	58	52
16	66	68	95	83	97	95	95	95	90	74	58	52
17	70	73	95	76	97	94	96	94	84	72	58	51
18	69	94	94	77	97	95	96	94	93	70	57	52
19	67	97	94	78	97	95	95	94	92	69	57	52
20	72	95	94	78	97	95	95	94	91	69	57	52
21	84	92	94	76	97	95	94	94	90	69	57	51
22	91	93	94	76	97	95	94	94	90	69	57	51
23	88	95	96	81	97	98	94	94	93	69	57	51
24	78	95	97	95	97	95	94	94	93	69	56	50
25	76	94	97	87	97	95	94	95	92	68	55	49
26	76	95	97	98	97	95	94	93	90	75	55	49
27	74	95	97	97	96	95	94	94	96	88	55	49
28	73	95	97	97	95	94	95	93	93	95	55	50
29	73	94	97	97	-	94	95	93	89	80	58	54
30	77	94	95	97	-	94	95	94	87	74	59	54
31	77	-	95	97	-	94	-	94	-	73	55	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	2,263	91	86	73.0	4,490
November.....	2,460	97	68	82.0	4,880
December.....	2,963	100	91	95.6	5,880
Calendar year 1946	31,624	100	66	86.6	62,730
January.....	2,715	98	76	87.6	5,390
February.....	2,714	98	95	96.9	5,380
March.....	2,930	97	92	94.5	5,810
April.....	2,733	96	49	91.1	5,420
May.....	2,920	95	93	94.2	5,790
June.....	2,736	98	69	91.2	5,430
July.....	2,563	95	68	76.2	4,690
August.....	1,880	72	55	60.6	3,730
September.....	1,588	65	49	52.9	3,150
Water year 1946-47	30,265	100	49	82.9	60,040

Main power canal below all feeders, near Prospect, Oreg.

Location.- Water-stage recorder, lat. 42°45', long. 122°28', in SW¹ sec. 28, T. 32 S., R. 3 E., 0.8 mile downstream from outlet of Red Blanket power canal, 1 mile east of Prospect, and 1.6 miles upstream from diversion dam on Rogue River. Datum of gage is 2,599.0 feet above mean sea level, datum of 1929.

Records available.- November 1931 to September 1947.

Average discharge.- 15 years (1932-47), 268 second-feet.

Extremes.- Maximum daily discharge during year, 385 second-feet Jan. 31; minimum daily, 72 second-feet Apr. 10.
1931-47: Maximum daily discharge, 423 second-feet June 23-28, 1936; no flow at times.

Remarks.- Records good except those below 150 second-feet, which are fair. This canal, completed in November 1931, carries water diverted from South and Middle Forks Rogue River and Red Blanket Creek into Rogue River above Prospect diversion dam.

Cooperation.- Water-stage recorder graph furnished by The California Oregon Power Co.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	282	303	280	220	383	337	294	185	357	346	299	259
2	286	286	274	213	351	340	294	221	357	340	295	258
3	297	284	270	199	383	303	161	308	357	337	292	256
4	284	284	268	242	359	264	113	308	352	334	291	264
5	284	280	264	344	340	310	113	299	354	331	286	254
6	278	280	258	344	332	346	113	302	324	327	284	254
7	286	277	253	354	329	339	113	290	339	324	286	282
8	284	274	252	332	347	358	114	275	339	323	284	268
9	277	272	289	331	347	352	114	261	260	318	278	265
10	274	277	303	337	297	276	72	303	256	318	278	259
11	271	271	292	339	259	233	78	303	256	315	277	252
12	271	288	236	329	266	231	172	264	208	311	277	248
13	271	266	177	332	266	233	252	259	271	308	274	247
14	270	265	125	329	266	236	284	268	334	305	274	243
15	268	262	123	326	266	304	220	279	346	302	272	241
16	268	268	121	324	266	374	189	295	339	300	274	240
17	277	278	120	319	266	329	190	346	319	299	266	240
18	277	266	120	316	266	299	190	347	318	295	270	238
19	276	244	113	319	266	299	189	302	303	295	270	233
20	288	223	112	316	266	243	187	300	303	294	270	231
21	310	270	253	305	266	244	187	304	344	292	271	229
22	359	331	247	308	266	300	187	302	349	292	271	227
23	327	313	238	357	282	302	184	348	351	291	270	226
24	299	295	241	366	266	299	185	344	352	277	266	224
25	289	295	237	368	266	297	185	340	366	288	265	222
26	289	308	241	317	266	294	275	337	362	a310	262	222
27	284	282	241	253	265	295	332	342	362	337	258	220
28	280	282	233	253	294	295	264	349	342	340	260	220
29	278	280	231	253	-	295	184	347	334	316	274	222
30	289	280	a225	336	-	297	184	352	334	303	271	220
31	289	-	223	385	-	299	-	354	-	300	262	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	8,862	359	268	286	17,580
November.....	8,364	331	223	279	16,590
December.....	6,860	303	112	221	13,610
Calendar year 1946.....	107,443	375	112	294	213,100
January.....	9,646	385	199	311	19,130
February.....	8,272	383	259	295	16,410
March.....	9,221	374	231	297	18,290
April.....	5,619	332	72	187	11,150
May.....	9,430	354	185	304	18,700
June.....	9,788	368	208	326	19,410
July.....	9,668	346	277	312	19,180
August.....	8,527	299	258	275	16,910
September.....	7,254	282	220	242	14,590
Water year 1946-47.....	101,511	385	72	278	201,400

a No gage-height record; discharge computed on basis of records for 3 feeder canals.

South Fork Big Butte Creek near Butte Falls, Oreg.

Location.- Water-stage recorder, lat. 42°32', long. 122°33', in SW $\frac{1}{4}$ sec. 11, T. 35 S., R. 2 E., just downstream from Ginger Creek and 1 mile east of Butte Falls.

Records available.- September 1910 to October 1911, August to October 1915, October 1917 to September 1922, March 1925 to September 1947. August 1922 to March 1925 at site at Butte Falls.

Average discharge.- 31 years (1910-11, 1917-47), 155 second-feet.

Extremes.- Maximum discharge during year, 376 second-feet Nov. 19 (gage height, 1.48 feet); minimum, 65 second-feet Aug. 27, 28, Sept. 4, 12, 14, 15, 28-30 (gage height, 0.56 foot).

1910-11, 1915, 1917-47: Maximum discharge, 2,470 second-feet Feb. 20, 1927 (gage height, 4.05 feet); from rating curve extended above 1,600 second-feet; minimum, 39 second-feet Oct. 14, 1931 (gage height, 0.32 foot).

Remarks.- Records good except those for Jan. 26 and those for periods of no gage-height record, which are fair. Diversions above station for irrigation, and since 1927 for Medford municipal supply. No regulation.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

0.5	54	1.0	172
.6	72	1.2	243
.7	93	1.4	334
.8	117		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	85	96	127	107	146	127	185	127	107	89	80	68
2	85	89	117	a100	152	135	122	107	87	80	68	68
3	87	87	115	a95	163	135	202	120	103	87	78	68
4	87	87	110	a85	160	138	209	117	100	85	78	67
5	85	85	105	a95	163	130	232	115	117	85	76	68
6	85	85	103	a100	166	125	228	112	115	82	74	68
7	85	85	100	98	169	127	224	107	112	82	72	70
8	85	85	103	95	179	130	256	107	127	80	72	70
9	82	85	100	95	188	149	315	125	138	80	72	70
10	80	87	98	98	188	232	300	120	130	80	72	70
11	78	87	98	98	192	202	277	112	125	80	72	68
12	78	85	107	98	235	185	252	110	115	80	72	67
13	78	85	120	95	220	172	235	105	110	78	70	68
14	78	85	127	93	202	166	232	103	105	76	70	68
15	78	85	158	a90	192	158	220	100	103	76	68	67
16	80	85	168	a93	209	152	213	98	115	76	70	68
17	82	85	146	a95	195	146	202	95	127	76	70	68
18	82	143	135	a95	179	143	195	95	112	76	68	70
19	82	228	130	a95	166	140	182	93	107	78	68	70
20	85	138	122	a95	158	135	172	93	105	78	68	68
21	93	120	120	95	152	130	169	89	103	78	70	68
22	110	120	115	98	146	158	158	87	98	76	70	68
23	95	138	107	122	140	209	152	87	93	a76	70	68
24	87	127	105	140	138	179	143	85	91	a78	70	68
25	85	125	103	198	135	166	140	85	89	a72	70	68
26	85	138	112	296	133	160	138	85	91	a72	68	68
27	85	175	138	209	130	155	135	95	95	a80	67	67
28	85	166	125	188	127	152	133	93	95	89	67	67
29	85	160	120	189	-	155	135	91	91	85	68	67
30	89	140	112	160	-	179	130	95	89	82	70	67
31	89	-	107	152	-	198	-	103	-	80	70	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	2,635	110	78	85.0	5,230
November.....	3,388	228	65	113	6,720
December.....	3,651	166	98	118	7,240
Calendar year 1946	80,685	650	78	166	120,400
January.....	3,752	296	90	121	7,440
February.....	4,723	235	127	169	9,370
March.....	4,868	232	125	157	9,660
April.....	5,958	315	130	199	11,810
May.....	3,171	127	85	102	6,290
June.....	3,211	138	89	107	6,370
July.....	2,475	89	72	79.8	4,910
August.....	2,210	80	67	71.3	4,380
September.....	2,045	70	67	68.2	4,060
Water year 1946-47	42,085	315	67	113	83,480

a No gage-height record; discharge computed on basis of records for stations at Big Butte Springs, near Butte Falls (not published by Geological Survey) and South Fork Little Butte Creek near Lake Creek.

Big Butte Creek near McLeod, Oreg.

Location.- Staff gage, lat. 42°39', long. 122°41', in NW¼ sec. 3, T. 34 S., R. 1 E., at bridge on county road 1 mile upstream from mouth and 1 mile south of McLeod.

Records available.- October 1945 to September 1947.

Extremes.- Maximum discharge observed during year, 771 second-feet Mar. 10 (gage height, 3.66 feet); minimum observed, 70 second-feet Sept. 23.
1945-47: Maximum discharge, 3,050 second-feet Dec. 28, 1945 (gage height, 7.2 feet, from graph based on gage readings); minimum, that of Sept. 23, 1947.

Remarks.- Records good except those for periods of no gage-height record, which are poor. Slight regulation by fish hatchery 200 yards above station. Several diversions in vicinity of Butte Falls, the two largest being the city of Medford diversion and Eagle Point Irrigation District canal. Gage read twice daily.

Rating table, water year 1946-47 (gage height, in feet, and discharge, in second-feet) (Shifting-control method used July 2 to Sept. 30)

1.4	67	2.6	400
1.6	105	2.9	505
1.8	146	3.2	610
2.0	198	3.5	715
2.3	295	3.7	785

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	91	204	244	198	576	228	348	151	125	103	81	72
2	146	201	234	187	418	244	351	143	132	101	81	72
3	151	195	228	179	432	281	407	119	119	97	80	72
4	151	168	222	176	407	278	400	154	115	97	80	72
5	146	166	219	179	365	250	491	128	168	93	78	72
6	148	174	213	179	348	234	466	123	161	93	78	72
7	146	182	207	176	348	234	435	117	166	91	77	78
8	146	182	195	176	348	247	526	125	228	89	77	78
9	148	176	184	179	344	400	736	144	238	87	75	75
10	146	171	176	182	372	701	656	137	198	85	77	75
11	148	166	179	179	519	491	558	128	171	83	77	73
12	146	166	d180	182	d650	421	505	119	148	81	75	72
13	146	164	d185	182	502	379	470	115	134	81	75	72
14	146	161	d190	184	449	348	442	111	123	80	75	72
15	146	164	d250	176	449	330	414	111	119	78	73	72
16	146	168	393	168	463	302	379	107	174	77	73	72
17	148	179	354	174	a450	292	358	103	184	78	72	73
18	146	355	306	179	362	278	337	103	164	78	72	72
19	151	592	247	184	340	264	316	103	139	78	72	73
20	161	288	222	193	a310	250	292	97	134	80	72	72
21	164	278	213	195	295	244	278	95	128	78	72	72
22	228	292	210	184	284	257	257	91	a126	77	72	72
23	228	267	198	d220	281	435	241	91	125	77	72	72
24	187	241	190	292	257	344	213	87	117	73	75	72
25	171	228	204	312	250	306	193	87	111	72	73	72
26	164	281	358	568	244	288	179	87	111	81	72	72
27	161	281	302	432	241	274	168	113	115	93	72	72
28	161	278	250	407	231	257	161	109	115	113	72	72
29	166	267	222	368	-	257	171	101	a111	89	72	73
30	164	247	216	382	-	407	164	107	107	85	75	73
31	166	-	204	358	-	395	-	117	-	81	73	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	4,873	228	91	157	9,670
November.....	6,880	592	161	229	13,650
December.....	7,195	393	176	232	14,270
Calendar year 1946	109,296	1,730	77	299	216,800
January.....	7,330	568	168	236	14,540
February.....	10,335	650	231	369	20,500
March.....	9,914	701	228	320	19,660
April.....	10,912	736	161	364	21,640
May.....	3,519	151	87	114	6,980
June.....	4,301	258	107	143	8,530
July.....	2,649	115	72	85.5	5,250
August.....	2,320	81	72	74.8	4,600
September.....	2,183	78	72	72.8	4,330
Water year 1946-47	72,411	736	72	198	143,600

a No gage-height record; discharge computed on basis of records for South Fork Big Butte Creek at Butte Falls.

d Doubtful gage-height; discharge computed as explained in footnote a.

Elk Creek near Trail, Oreg.

Location.- Staff gage, lat. 42°40', long. 122°45', in SW $\frac{1}{4}$ sec. 30, T. 33 S., R. 1 E., 0.7 mile upstream from mouth and 3 $\frac{1}{2}$ miles northeast of Trail.

Drainage area.- 133 square miles.

Records available.- November 1945 to September 1947.

Extremes.- Maximum discharge during year, 2,720 second-feet Nov. 18 (gage height, 6.7 feet, from floodmark); minimum discharge observed, 2.6 second-feet Oct. 1, 3.
1945-47: Maximum discharge, 9,880 second-feet Dec. 23, 1945 (gage height, 13.2 feet, from floodmark, present site and datum), from rating curve extended above 6,600 second-feet by logarithmic plotting; minimum observed, 0.9 second-foot Aug. 29, 1946.

Remarks.- Records good. No regulation. Several small diversions above station for irrigation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.8	53	191	96	193	86	251	62	33	18	18	5.0
2	3.0	39	152	85	305	107	237	57	45	17	15	5.5
3	2.8	30	114	86	512	204	229	56	37	16	16	5.0
4	3.4	25	100	85	554	189	237	57	34	15	20	5.0
5	3.4	26	82	72	614	165	398	55	56	14	18	5.0
6	3.8	24	76	64	570	145	558	51	54	14	16	5.0
7	4.2	23	66	60	542	139	426	48	55	12	13	7.4
8	5.5	21	71	57	464	138	461	52	82	12	10	10
9	5.8	20	75	54	398	365	650	56	147	12	10	9.5
10	5.5	20	73	55	335	2,100	598	52	120	11	8.8	8.8
11	6.0	22	80	61	292	1,160	492	50	92	10	8.1	8.1
12	5.2	21	167	59	695	622	395	45	71	9.2	6.7	7.4
13	5.0	20	692	58	618	425	344	42	56	7.8	5.5	6.4
14	4.2	18	960	58	416	341	311	39	46	8.4	4.2	5.8
15	4.2	17	1,090	47	344	288	268	36	42	7.8	4.5	5.0
16	4.5	16	812	60	538	248	233	32	46	6.7	4.2	4.2
17	5.2	16	467	58	428	225	210	29	85	9.7	4.5	4.0
18	6.0	339	295	60	347	202	191	27	86	6.4	4.2	5.0
19	7.9	1,020	242	68	280	175	169	25	54	7.0	4.0	6.0
20	14	255	197	86	229	158	180	26	47	6.7	4.2	6.0
21	21	139	169	124	193	139	134	25	41	6.4	3.8	6.0
22	41	261	143	131	167	141	122	22	35	6.0	4.5	5.5
23	32	502	126	320	145	181	111	20	30	6.4	4.8	4.8
24	23	282	100	358	131	167	98	23	26	5.8	5.0	4.8
25	23	244	86	335	119	150	90	23	21	5.0	5.0	4.2
26	17	740	92	618	111	132	83	22	20	6.0	5.0	4.0
27	16	740	169	492	103	117	78	29	24	36	5.0	4.5
28	16	602	154	359	90	112	72	34	23	112	4.5	4.5
29	14	407	136	265	-	132	76	31	23	56	4.5	5.0
30	16	258	119	231	-	212	70	31	23	30	4.0	5.2
31	26	-	106	191	-	320	-	30	-	24	4.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	347.3	41	2.8	11.2	0.084	0.10	889
November	6,200	1,020	16	207	1.56	1.73	12,300
December	7,402	1,090	66	239	1.80	2.07	14,680
Calendar year 1946	-	-	-	-	-	-	-
January	4,749	618	47	153	1.15	1.33	9,420
February	8,733	695	90	348	2.62	2.72	19,310
March	9,286	2,100	86	300	2.26	2.60	18,420
April	7,762	650	70	259	1.95	2.17	15,400
May	1,187	62	20	38.3	.288	.33	2,350
June	1,532	147	20	51.1	.384	.43	3,040
July	511.3	112	5.0	16.5	.124	.14	1,010
August	845.0	20	3.8	7.90	.059	.07	486
September	172.6	10	4.0	5.75	.043	.05	342
Water year 1946-47	49,126.2	2,100	2.8	135	1.02	13.74	97,450

South Fork Little Butte Creek near Lake Creek, Oreg.

Location.- Water-stage recorder, lat. 42°25', long. 122°36', in SE¹ sec. 29, T. 36 S., R. 2 E., a quarter of a mile upstream from intake of Rogue River Valley Canal and 1½ miles southeast of Lake Creek post office.

Records available.- April 1921 to September 1947. November 1910 to April 1913 at site in sec. 11, T. 37 S., R. 2 E., 5 miles above Lake Creek.

Average discharge.- 27 years (1911-12, 1921-47), 95.2 second-feet.

Extremes.- Maximum discharge during year, 718 second-feet Nov. 19 (gage height, 3.12 feet), from rating curve extended above 300 second-feet; minimum, 9.4 second-feet Aug. 14 (gage height, 1.20 feet).
1910-13, 1921-47: Maximum discharge, 2,870 second-feet Jan. 21, 1943 (gage height, 5.77 feet, from floodmark), from rating curve extended above 400 second-feet by logarithmic plotting; minimum, 2 second-feet Aug. 10, 1931 (gage height, 0.97 foot).

Remarks.- Records good except those for Jan. 15-18, Feb. 12 to Mar. 23, which are fair. Diversions above station for irrigation.

Rating tables, water year 1946-47, except periods of ice effect
(gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 18,
Feb. 12 to Mar. 8, Mar. 25 to May 5)

Oct. 1 to Mar. 22					Mar. 23 to Sept. 30				
1.4	24	1.7	65	2.0	153	1.2	9.4	1.7	75
1.5	35	1.8	88	2.2	230	1.3	15	1.8	102
1.6	48	1.9	118	2.4	315	1.4	24	1.9	133
						1.5	35	2.1	206
						1.6	52	2.4	331

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	28	70	48	83	67	158	102	52	31	20	14
2	21	24	62	42	100	70	164	97	49	30	20	14
3	22	22	55	39	112	79	237	91	45	28	18	13
4	21	23	53	40	*100	97	214	83	50	28	17	12
5	19	21	47	38	94	76	245	78	86	27	17	13
6	19	21	44	38	86	72	229	73	73	26	17	14
7	19	21	45	36	88	76	214	70	66	26	16	14
8	20	20	42	*36	91	86	270	68	70	25	15	15
9	19	21	43	35	91	94	318	91	111	23	14	15
10	18	23	42	35	91	150	279	80	105	22	13	14
11	18	21	47	39	109	136	253	66	88	22	11	14
12	18	19	63	36	270	112	233	59	75	23	12	14
13	18	19	70	34	202	103	233	54	68	22	12	12
14	18	19	70	35	168	100	233	49	61	21	11	12
15	18	18	109	b52	153	100	237	44	59	21	12	12
16	18	19	128	b53	175	100	233	42	80	20	12	12
17	20	18	85	b53	164	103	229	40	99	19	12	13
18	21	50	72	b53	139	108	228	37	73	19	12	12
19	21	292	70	36	125	109	206	35	64	19	11	12
20	20	81	65	42	a115	112	193	34	61	18	10	12
21	23	53	62	45	106	112	179	32	57	18	12	12
22	30	66	56	40	97	193	168	31	52	19	12	12
23	25	160	51	53	91	874	184	28	49	18	13	12
24	21	83	48	85	91	198	144	27	45	18	13	12
25	21	74	47	79	86	176	133	26	42	18	12	12
26	21	79	71	125	76	158	124	28	40	21	12	12
27	22	122	168	97	74	144	118	40	44	24	13	12
28	21	132	98	81	72	133	114	47	44	24	13	12
29	21	128	70	74	-	136	113	37	37	25	14	12
30	22	91	56	81	-	172	108	40	33	21	14	12
31	22	-	50	76	-	172	-	49	-	21	14	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	634	30	17	20.5	1,260
November.....	1,768	292	18	58.9	3,510
December.....	2,045	168	42	66.0	4,060
Calendar year 1946	38,717	459	14	106	76,790
January.....	-	125	32	50.1	3,080
February.....	1,552	270	72	116	6,440
March.....	3,249	274	67	123	7,570
April.....	5,959	318	108	199	11,820
May.....	1,678	102	26	54.1	3,330
June.....	1,878	111	33	62.6	3,720
July.....	704	32	18	22.7	1,400
August.....	424	20	10	13.7	841
September.....	583	15	12	12.8	760
Water year 1946-47	24,090	318	10	66.0	47,790

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for North Fork Little Butte Creek near Lake Creek and South Fork Big Butte Creek near Butte Falls.

b Stage-discharge relation affected by ice.

Little Butte Creek below Eagle Point, Oreg.

Location.- Staff gage, lat. 42°27'45", long. 122°48'45", in SW $\frac{1}{4}$ sec. 3, T. 36 S., R. 1 W., 300 feet upstream from State Highway 62, 1 mile southwest of Eagle Point, and 3 $\frac{1}{2}$ miles upstream from mouth.

Records available.- May 1924 to September 1926 (irrigation seasons only), October 1945 to September 1947. July 1907 to April 1916 at site 2 $\frac{1}{2}$ miles upstream.

Extremes.- Maximum discharge during year, 945 second-feet Nov. 19 (gage height, 3.5 feet, from floodmark); minimum discharge, 10 second-feet (regulated) July 4.
1907-16, 1924-26, 1945-47: Maximum discharge, 5,850 second-feet Dec. 28, 1945 (gage height, 8.5 feet, from floodmark); minimum observed, 5.1 second-feet Sept. 18, 1924.

Remarks.- Records good except those for periods of doubtful or no gage-height record, which are poor. Gage read twice daily. Flow regulated by Fish Lake Reservoir. Diversions above station for irrigation. Since September 1923 water has been diverted by Cascade Canal from Fourmile Lake, in Klamath River Basin, into Fish Lake Basin.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet) (Shifting-control method used Oct. 1 to Nov. 9, Dec. 19 to Jan. 25)

Oct. 1 to Mar. 9				Mar. 10 to Sept. 30			
0.2	14	1.6	173	0.1	11	1.3	98
.4	22	1.9	260	.4	21	1.6	150
.7	40	2.2	361	.7	36	1.9	233
1.0	66	2.5	475	1.0	62	2.2	348
1.3	110	2.8	605				

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		17	78	a160	a120	263	145	268	28	a36	15	27
2		20	84	136	103	a310	a160	272	23	35	17	23
3		26	a80	121	93	326	189	619	19	50	14	a20
4		35	73	121	96	254	266	417	a16	51	12	16
5		30	74	107	a93	223	173	511	12	123	12	16
6		a30	74	102	90	200	154	409	17	113	a12	18
7		30	74	96	87	195	151	396	22	98	12	19
8		32	49	a100	87	200	189	560	28	a110	12	19
9		31	42	103	84	a190	a225	745	37	160	14	19
10		29	a80	92	87	184	520	547	37	160	13	a20
11		28	76	88	100	181	276	475	a32	98	17	22
12		27	77	117	96	491	181	422	28	57	18	18
13		a28	74	132	93	336	181	a390	26	38	a16	18
14		28	66	138	87	276	170	360	24	29	15	17
15		30	65	a190	67	257	155	340	27	a26	17	16
16		31	66	306	93	a350	a155	316	24	48	18	15
17		36	a70	200	96	302	155	296	25	158	18	a14
18		38	182	159	95	248	146	284	a20	66	15	13
19		39	638	147	a105	223	155	261	16	39	20	13
20		a45	209	136	114	206	150	a235	14	29	a17	16
21		53	132	134	114	195	152	212	12	26	15	16
22		70	103	a125	110	184	189	168	13	a22	22	16
23		76	340	117	197	a175	a470	150	13	18	22	18
24		61	a210	112	195	168	340	113	15	19	19	a18
25		56	141	a110	178	159	284	101	a16	24	20	17
26		50	173	123	a380	149	247	71	16	22	28	16
27		a55	405	d400	273	147	221	a55	32	23	a40	19
28		67	383	d180	217	141	212	43	36	20	58	21
29		65	350	a140	212	-	215	42	31	a18	30	25
30		67	206	128	361	-	a330	35	34	17	26	23
31		72	-	124	260	-	332	-	36	-	23	a20

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	1,302	76	17	42.0	2,580
November.....	4,654	638	42	155	9,230
December.....	4,444	86	86	143	8,810
Calendar year	-	-	-	-	-
January.....	4,383	380	67	141	8,690
February.....	6,553	491	141	233	12,960
March.....	6,888	520	145	222	13,680
April.....	9,115	745	35	304	18,080
May.....	729	37	12	23.5	1,450
June.....	1,693	160	17	56.4	3,360
July.....	607	58	12	19.6	1,200
August.....	568	27	13	18.3	1,130
September.....	568	23	16	18.9	1,130
Water year 1946-47	41,482	745	12	114	82,280

a No gage-height record; discharge computed on basis of records for South and North Forks Little Butte Creek near Lake Creek.

d Doubtful gage-height record; discharge computed as explained in footnote a.

North Fork Little Butte Creek at Fish Lake, near Lake Creek, Oreg.

Location.- Water-stage recorder, lat. 42°23', long. 122°21', in S $\frac{1}{2}$ sec. 4, T. 37 S., R. 4 E., half a mile downstream from outlet of Fish Lake and 18 miles east of Lake Creek post office.

Drainage area.- 18 square miles.

Records available.- October 1914 to September 1947.

Average discharge.- 32 years (1915-47), 32.7 second-feet.

Extremes (regulated).- Maximum discharge during year, 135 second-feet July 23-26 (gage height, 1.58 feet); minimum observed, 1.0 second-foot Oct. 8, 14.
1914-46: Maximum discharge, 158 second-feet July 10, 1930; no flow at times.

Remarks.- Records good May to September, fair October to April, except those for periods of no gage-height record, which are poor. Flow regulated by Fish Lake Reservoir. Since September 1923 water has been diverted by Cascade Canal from Fourmile Lake, in Klamath River Basin, into Fish Lake Basin. No diversion from creek above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	38	a4.0	11	15	16	16	19	24	22	86	71	48
2	15	a4.5	12	15	16	16	19	24	21	92	71	.46
3	2.5	a5.0	12	15	16	16	19	24	21	96	67	44
4	a2.0	5.0	12	15	16	16	20	24	21	100	67	41
5	a2.0	5.0	12	15	16	16	20	24	22	109	69	40
6	a1.5	5.0	12	15	16	16	20	24	22	113	71	38
7	a1.5	a5.0	12	15	16	16	20	24	22	115	74	36
8	h1.0	a5.5	12	15	16	16	20	24	21	115	74	34
9	a1.0	a5.5	12	15	16	16	20	24	21	121	77	34
10	a1.5	a6.0	12	15	16	16	20	24	22	126	88	32
11	h1.5	6.0	12	15	16	16	20	24	22	126	90	32
12	a1.5	6.5	13	15	16	16	21	24	22	126	96	29
13	a1.0	6.5	13	15	16	16	21	24	22	126	109	28
14	h1.0	6.5	13	15	16	16	21	30	23	126	106	26
15	a1.0	7.0	14	15	16	16	22	57	24	126	106	25
16	a1.0	7.0	14	15	16	17	22	72	24	126	104	25
17	a1.5	7.0	14	15	16	17	22	63	25	126	102	24
18	a1.5	7.5	14	15	16	17	22	54	25	124	98	24
19	a2.0	8.5	14	15	16	17	22	54	26	124	88	24
20	h2.0	8.5	14	15	16	17	23	54	26	124	85	24
21	2.5	9.0	14	15	16	18	23	58	27	128	81	24
22	2.5	9.0	14	15	16	19	23	85	27	132	77	25
23	a2.5	9.0	14	15	16	18	23	98	38	132	75	26
24	a2.5	9.5	14	15	16	18	23	98	81	135	71	25
25	a3.0	9.5	14	16	16	18	24	98	81	135	69	19
26	a3.0	10	14	16	16	19	24	96	81	132	67	14
27	a3.5	10	14	16	16	19	24	68	81	128	61	14
28	3.5	11	14	16	16	19	24	47	83	75	58	11
29	3.5	11	15	16	-	19	24	75	85	64	56	9.0
30	a3.5	11	15	16	-	19	24	74	86	67	53	9.0
31	a4.0	-	15	16	-	19	-	42	-	69	51	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	114.0	38	1.0	3.68	226
November.....	220.5	11	4.0	7.35	437
December.....	411	15	11	15.3	815
Calendar year 1946.....	14,413.5	121	1.0	39.5	28,580
January.....	472	16	15	15.2	936
February.....	448	16	16	16.0	889
March.....	530	19	16	17.1	1,050
April.....	649	24	19	21.6	1,290
May.....	1,535	98	24	49.5	3,040
June.....	1,124	86	21	37.5	2,230
July.....	3,524	135	64	114	6,990
August.....	2,432	109	51	78.5	4,820
September.....	830.0	48	9.0	27.7	1,650
Water year 1946-47.....	12,289.5	135	1.0	33.7	24,370

a No gage-height record; discharge interpolated.
h Computed from staff-gage reading.

North Fork Little Butte Creek near Lake Creek, Oreg.

Location.- Water-stage recorder, lat. 42°24', long. 122°32', in SW $\frac{1}{4}$ sec. 25, T. 36 S., R. 2 E., a quarter of a mile upstream from point of diversion of Hanley South Canal and $\frac{1}{2}$ miles east of Lake Creek post office. Datum of gage is 2,125.01 feet above mean sea level, datum of 1929.

Records available.- September 1911 to March 1913 (incomplete), May 1922 to September 1928 (incomplete) and October 1931 to September 1947 in reports of Geological Survey. September 1911 to March 1913 and May 1922 to September 1936 in reports of State engineer.

Average discharge.- 21 years (1911-12, 1922-23, 1928-47), 66.2 second-feet.

Extremes.- Maximum discharge during year, 163 second-feet July 21, 22 (gage height, 2.25 feet); minimum, 21 second-feet Oct. 15, 16 (gage height, 1.50 feet).

1911-13, 1922-28, 1931-47: Maximum discharge, 680 second-feet Dec. 30, 1924 (gage height, 3.30 feet), from rating curve extended above 170 second-feet; minimum, 11 second-feet (computed on basis of records for station at Fish Lake, near Lake Creek) Oct. 29 to Nov. 8, 1931.

Remarks.- Records good except those for period of no gage-height record, which are fair. Flow regulated by Fish Lake Reservoir. Small diversions above station for irrigation; some water diverted into Fish Lake from Fourmile Lake, in Klamath River Basin, since September 1923.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	28	39	a43	52	45	55	50	44	108	106	75
2	45	27	38	a42	56	46	59	50	43	111	98	73
3	24	27	38	a40	55	48	75	50	43	116	88	69
4	23	27	37	a40	*52	52	89	49	43	116	86	66
5	23	27	38	a40	50	48	75	49	55	122	90	63
6	23	27	38	a40	52	48	71	49	45	129	90	61
7	23	27	37	a40	52	49	69	49	45	132	95	61
8	23	27	37	*41	52	50	86	52	49	129	95	59
9	23	27	38	40	52	50	100	56	50	132	98	58
10	22	27	38	41	52	55	88	53	48	142	113	56
11	22	27	40	43	55	53	80	52	45	142	111	53
12	22	27	44	43	63	52	73	52	45	145	113	52
13	22	27	45	41	56	52	69	52	45	135	132	50
14	22	27	44	43	53	50	69	52	44	145	132	49
15	21	27	55	b41	52	50	67	80	44	135	135	49
16	22	28	a50	41	53	49	66	106	52	135	135	46
17	22	28		41	53	49	84	95	49	142	129	46
18	22	33		41	50	49	84	80	46	148	119	48
19	22	50		43	50	49	63	77	46	148	108	48
20	23	38		43	49	49	63	77	46	156	111	48
21	26	37		43	49	49	61	77	45	159	108	48
22	28	40		43	48	73	59	108	45	159	108	48
23	24	43	a50	49	48	71	58	129	48	156	106	48
24	23	39		52	48	59	56	122	93	158	100	48
25	24	39		55	46	56	55	122	95	152	100	43
26	24	41		63	46	53	55	122	95	145	98	37
27	24	48		53	46	52	53	113	98	119	90	34
28	24	48		50	45	52	53	62	98	82	86	33
29	24	44		49	-	52	52	93	98	88	86	29
30	26	40		49	-	55	50	90	106	100	82	29
31	27	-		48	-	55	-	66	-	100	77	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	782	59	21	25.2	1,550
November.....	1,002	50	27	33.4	1,990
December.....	1,406	37	37	45.4	2,790
Calendar year 1946	27,484	175	21	75.3	54,510
January.....	1,381	63	40	44.5	2,740
February.....	1,435	63	45	51.2	2,850
March.....	1,620	73	45	52.3	3,210
April.....	1,977	100	50	65.9	3,920
May.....	2,334	129	49	75.3	4,630
June.....	1,748	106	43	58.3	3,470
July.....	4,084	159	82	132	8,100
August.....	3,225	135	77	104	6,400
September.....	1,527	75	29	50.9	3,030
Water year 1946-47	22,521	159	21	61.7	44,680

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for South Fork Big Butte Creek near Butte Falls and Big Butte Springs near Butte Falls (not published by Geological Survey).

b Stage-discharge relation affected by ice.

Diversions from Little Butte Creek near Lake Creek, Oreg.

The following canals divert water from Little Butte Creek and its tributaries near Lake Creek post office:

Hanley South and Hanley North Canals, from North Fork in SW $\frac{1}{4}$ sec. 26, T. 36 S., R. 2 E. Water used for irrigation of land on both sides of Little Butte Creek near Lake Creek.

Rogue River Valley Canal, from South Fork in SE $\frac{1}{4}$ sec. 29, T. 36 S., R. 2 E., and from North Fork in NE $\frac{1}{4}$ sec. 20, T. 36 S., R. 2 E. Water used for irrigation of about 15,000 acres of land, chiefly in Bear Creek Basin, on both sides of that creek below Phoenix.

Eagle Point Canal, from main stream in SE $\frac{1}{4}$ sec. 31, T. 35 S., R. 1 E. Water used for irrigation of lands near Eagle Point.

Records for Hanley South and North Canals and Eagle Point Canal are partly estimated.

Records for these canals, published as a group, are available from April 1929 to September 1947; records of some of the canals published separately prior to 1929.

Many smaller canals divert from Little Butte Creek and its tributaries.

Diversions, in acre-feet, water year October 1946 to September 1947

Month	Hanley South Canal	Hanley North Canal	Rogue River Valley Canal below junction of intakes	Eagle Point Canal
October.....	-	-	a502	b563
November.....	-	-	-	-
December.....	-	-	-	-
January.....	-	-	-	-
February.....	-	-	-	-
March.....	-	-	-	-
April.....	-	-	c2,730	-
May.....	d247	d420	6,090	e704
June.....	283	519	4,890	897
July.....	282	539	7,760	1,020
August.....	303	562	5,230	1,040
September.....	282	634	2,260	918
Water year 1946-47.....	-	-	-	-

a Oct. 1-10.
b Oct. 1-20.
c Apr. 14-30.
d May 8-31.
e May 12-31.

ROGUE RIVER BASIN

Emigrant Creek near Ashland, Oreg.

Location.- Water-stage recorder, lat. 42°10', long. 122°36', in sec. 20, T. 39 S., R. 2 E., 500 feet downstream from Emigrant Gap Reservoir Dam and 6 miles southeast of Ashland.

Records available.- January 1920 to September 1947.

Average discharge.- 14 years (1924-28, 1929-30, 1933-35, 1940-47), 20.1 second-feet.

Extremes.- Maximum discharge during year, 56 second-feet Apr. 5 (gage height, 1.40 feet); practically no flow at times.

1920-47: Maximum discharge, 5,260 second-feet Feb. 20, 1927, by computation of flow over dam; no flow at times.

Remarks.- Records good except those below 10 second-feet, which are poor. Flow regulated since December 1924 by Emigrant Gap Reservoir. Diversions above station for irrigation; principal canals are Ashland lateral and East lateral. Water diverted by Keene Creek Canal from Klamath River Basin into Emigrant Creek above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							a0.8	a0.6	0.8	22	14	
2							a.8	a.6		27	14	
3							13	a.5	.8	29	13	
4							49	a.5	.8	29	13	
5							33	a.5	.9	29	9.5	
6							.6	.8	.9	30	1.3	
7							.6	2.8	.8	30	1.0	
8							.6	3.2	.8	29	.8	
9							.6	3.2	.8	29	.7	
10							.6	3.2	.8	29	3.8	
11							a.6	3.2	.6	28	24	
12							a.6	3.1	.6	27	24	
13							a.7	3.1	.6	27	22	
14							.7	2.8	.6	25	20	
15							.8	2.6	.6	25	19	
16		a0.1	a0.2	a0.3	a0.5	a0.7	6.4	2.4	.7	30	18	
17							15	2.4	.8	33	12	
18							19	2.1	.6	34	.5	
19							14	1.8	.6	34	d.2	
20							7.4	1.8	.6	34	0	
21							3.7	2.9	.6	34	0	
22							1.3	6.2	.5	33	0	
23							.8	7.7	1.1	28	0	
24							.8	13	8.0	27	0	
25							.8	13	21	27	0	
26							.6	14	21	30	0	
27							.6	12	20	30	0	
28							.6	4.5	20	22	0	
29						-	a.6	1.0	20	17	0	
30						-	a.6	1.0	20	14	0	
31		-			-	-	-	1.0	-	14	0	

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	0	0	0	0	0
November.....	3.0	-	-	.1	6.0
December.....	6.2	-	-	.2	12
Calendar year 1946	10,937.0	312	0	30.0	21,690
January.....	9.3	-	-	.3	18
February.....	14.0	-	-	.5	28
March.....	21.7	-	-	.7	43
April.....	175.5	49	.6	5.85	348
May.....	117.5	14	.5	3.79	233
June.....	146.7	21	.5	4.89	291
July.....	856	34	14	27.6	1,700
August.....	210.8	24	0	6.80	416
September.....	0	0	0	0	0
Water year 1946-47	1,560.7	49	0	4.28	3,100

a No gage-height record; discharge computed on basis of recorded range in stage, or interpolated.
d Doubtful gage-height record; discharge interpolated.

Emigrant Creek below Walker Creek, near Ashland, Oreg.

Location.- Water-stage recorder, lat. 42°12', long. 122°39', in NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 12, T. 39 S., R. 1 E., 200 feet downstream from Walker Creek and 2 miles east of Ashland. Prior to Mar. 5, 1947, water-stage recorder at site 160 feet upstream and at datum 2.99 feet higher.

Records available.- October 1945 to September 1947 in reports of Geological Survey. October 1943 to September 1945 in files of State engineer.

Extremes.- Maximum discharge during year, 98 second-feet (regulated) Feb. 12 (gage height, 1.74 feet); minimum, 0.1 second-foot Sept. 27-30, 1943-47; Maximum discharge, 496 second-feet (regulated) Jan. 5, 1946 (gage height, 2.41 feet); minimum, that of Sept. 27-30, 1947.

Remarks.- Records good except those for periods of no gage-height record, which are poor. Flow partly regulated by Emigrant Gap Reservoir. Diversions above station for irrigation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	al.0	5.5	4.2	3.4	7.8	5.0	12	5.3	4.0	27	19	0.3
2	al.0	4.6	3.4	1.5	15	6.0	12	4.4	3.4	31	18	.3
3	al.0	4.2	2.9	2.1	21	6.8	29	4.0	3.2	34	17	.3
4	al.0	4.6	2.9	2.6	15	9.0	59	3.4	3.7	34	15	.3
5	al.0	4.6	2.4	2.9	13	7.1	58	2.9	9.7	35	13	.3
6	al.0	4.6	2.4	2.9	12	8.4	32	3.2	9.1	37	3.2	.3
7	al.0	4.6	2.1	2.6	12	9.1	28	11	9.7	37	2.5	.4
8	al.0	4.2	1.5	2.6	12	11	39	16	7.5	37	2.0	.3
9	.8	4.2	2.1	2.9	11	10	44	16	12	36	1.7	.3
10	.8	4.2	2.1	3.2	11	18	41	15	9.7	35	2.3	.4
11	.7	4.2	2.6	4.2	25	18	34	13	7.5	34	26	.3
12	.6	3.7	5.5	3.4	67	16	29	12	5.3	34	26	.4
13	.7	3.4	5.5	3.4	28	14	27	12	4.0	33	25	.4
14	.7	2.9	5.5	2.9	19	12	23	9.7	3.4	33	24	.3
15	.7	2.6	7.3	1.3	15	11	19	8.4	3.4	33	23	.3
16	.9	2.6	11	3.2	32	9.1	22	7.5	5.8	34	21	.4
17	.9	2.4	6.4	3.2	28	8.4	29	6.6	10	35	17	.4
18	1.0	2.9	4.2	3.2	17	7.5	33	6.2	7.1	36	3.2	.4
19	1.0	16	4.2	3.7	14	7.1	29	5.3	8.0	37	1.8	.4
20	.9	4.2	4.2	7.8	12	6.2	22	4.0	8.0	37	1.5	.4
21	1.0	2.4	3.7	7.3	11	5.8	18	5.8	8.0	38	1.2	.4
22	2.4	6.0	3.4	5.5	9.0	7.1	14	9.7	8.0	37	1.1	.3
23	2.6	16	3.2	8.2	8.2	16	11	12	7.5	36	1.0	.4
24	2.6	6.0	3.2	14	8.2	13	9.7	17	11	36	.9	.4
25	2.4	5.0	2.9	11	7.3	12	8.0	18	26	36	.7	.4
26	2.4	6.4	3.4	25	6.8	10	7.1	17	26	37	.5	.2
27	2.4	11	13	13	8.4	8.4	6.6	16	27	36	.4	.1
28	2.6	12	6.8	9.0	5.5	7.5	6.6	9.7	27	30	.2	.1
29	3.2	9.0	5.5	7.8	-	8.0	6.2	5.3	27	25	.5	.1
30	3.7	5.5	2.9	7.8	-	13	5.8	4.9	26	21	.5	.2
31	4.6	-	3.7	6.8	-	15	-	4.0	-	20	.4	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	47.6	4.6	0.6	1.54	94
November.....	169.5	16	2.4	5.65	336
December.....	133.6	13	1.5	4.31	265
Calendar year 1946	18,066.8	343	.6	49.5	35,850
January.....	178.4	25	1.3	5.75	354
February.....	449.2	67	5.5	16.0	891
March.....	315.5	18	5.0	10.2	626
April.....	714.0	59	5.8	23.6	1,420
May.....	285.3	18	2.9	9.20	566
June.....	328.0	27	3.2	10.9	651
July.....	1,041	38	20	33.6	2,080
August.....	269.6	26	.2	8.70	535
September.....	9.5	.4	.1	.32	19
Water year 1946-47	3,941.2	67	.1	10.8	7,820

a No gage-height record; discharge computed on basis of records for Emigrant Creek near Ashland and Bear Creek at Medford.

Bear Creek at Medford, Oreg.

Location.- Water-stage recorder, lat. 42°19', long. 122°52', in NW¼ sec. 30, T. 37 S., R. 1 W., just upstream from Main Street Bridge in Medford. Datum of gage is 1,343.47 feet above mean sea level, datum of 1929.

Records available.- March 1915 to September 1947 (incomplete prior to April 1927).

Average discharge.- 26 years (1920-26, 1927-47), 77.7 second-feet.

Extremes.- Maximum discharge during year, 466 second-feet Nov. 19 (gage height, 1.85 feet); minimum, 3.8 second-feet Aug. 29, Sept. 14, 15, 28-30 (gage height, 0.20 foot). 1915-47: Maximum discharge, 10,200 second-feet Feb. 20, 1927 (gage height, 10.57 feet, present datum), from rating curve extended above 1,600 second-feet; practically no flow at times.

Remarks.- Records good except those for periods of shifting control, which are fair. Diversions above station for irrigation. Flow partly regulated since December 1924 by Emigrant Gap Reservoir.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet) (Shifting-control method used Oct. 1 to Jan. 5, July 28 to Sept. 30)

Oct. 1 to Feb. 11

Feb. 12 to Sept. 30

0.4	22	0.9	113	0.2	4.2	0.8	90
.5	37	1.1	160	.3	12	1.0	136
.7	72	1.3	225	.4	20	1.2	190
				.5	34	1.4	265
				.6	49	1.6	355

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	28	61	49	56	44	64	12	37	11	15	4.2
2	18	28	56	42	61	49	62	12	37	9.3	13	4.9
3	24	24	56	37	74	68	92	12	46	8.6	12	4.9
4	16	17	56	39	68	83	120	12	34	10	12	4.9
5	7.8	17	65	40	65	72	138	12	72	11	9.3	4.9
6	6.4	17	51	42	63	64	111	12	90	12	8.6	5.7
7	6.4	21	46	40	63	62	97	14	70	12	7.8	5.7
8	7.8	21	44	39	65	64	108	17	79	12	7.1	5.7
9	7.1	21	42	37	61	68	129	16	83	11	6.4	4.9
10	18	22	40	39	59	113	120	17	83	12	6.4	5.7
11	20	22	40	44	68	97	113	18	72	10	6.4	4.9
12	19	22	44	42	319	83	97	16	70	10	6.4	4.9
13	20	21	46	40	154	75	18	70	11	11	6.4	4.9
14	21	20	46	39	129	75	95	17	60	10	5.7	4.2
15	22	20	49	34	113	68	83	16	62	12	5.7	4.2
16	21	20	59	34	127	66	81	12	79	10	5.7	4.9
17	24	21	51	40	120	66	72	13	92	8.6	5.7	5.7
18	24	49	44	40	102	66	72	13	48	8.6	5.7	5.7
19	21	231	42	40	88	66	66	11	40	8.6	5.7	4.9
20	21	84	44	44	77	62	53	10	48	9.3	6.4	4.9
21	21	56	44	47	70	57	48	10	43	7.8	5.7	4.9
22	34	65	46	44	64	58	31	as.5	37	10	5.7	4.9
23	30	140	42	47	60	79	25	7.1	23	9.3	4.9	4.9
24	24	84	42	52	57	72	18	6.4	10	8.6	5.7	5.7
25	22	70	42	59	55	68	15	6.4	11	9.3	4.9	4.9
26	24	70	51	82	49	62	15	6.4	12	14	4.2	4.2
27	24	80	88	70	48	58	14	11	12	23	4.2	4.2
28	24	82	61	63	46	55	18	19	12	25	4.2	4.2
29	22	82	56	59	-	55	17	18	14	14	4.9	4.2
30	21	68	51	65	-	77	14	19	14	14	5.7	4.2
31	22	-	46	59	-	75	-	25	-	14	4.9	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	605.5	34	6.4	19.5	1,200
November.....	1,523	231	17	50.8	3,020
December.....	1,551	88	40	50.0	3,080
Calendar year 1946	36,485.4	708	6.4	100	72,370
January.....	1,448	82	34	46.7	2,870
February.....	2,381	319	46	85.0	4,720
March.....	2,127	113	44	68.6	4,220
April.....	2,085	138	14	69.5	4,140
May.....	1,418.8	25	6.4	15.4	827
June.....	1,480	92	10	48.7	2,900
July.....	358.0	25	7.8	11.5	706
August.....	212.4	15	4.2	6.85	421
September.....	147.0	5.7	4.2	4.90	292
Water year 1946-47	14,512.7	319	4.2	39.2	28,400

a No gage-height record; discharge interpolated.

Bear Creek near Central Point, Oreg.

Location.- Staff gage, lat. 42°24', long. 122°55', in SE $\frac{1}{4}$ 34, T. 36 S., R. 2 W., at county road bridge, 1.3 miles north of Central Point and $4\frac{1}{2}$ miles upstream from mouth.

Records available.- October 1945 to April 1947 in reports of Geological Survey (discontinued). March 1923 to July 1926 (irrigation season only) at site 1 mile upstream, in reports of State engineer.

Extremes.- Maximum discharge during period, 625 second-feet Nov. 19 (gage height, 4.6 feet, from floodmark); minimum observed, 15 second-feet Apr. 30, 1923-26, 1945-47. Maximum discharge observed, 1,400 second-feet Dec. 28, 1945 (gage height, 6.16 feet), from rating curve extended above 510 second-feet; no flow at times in 1924.

Remarks.- Records poor. Many diversions above station. Flow regulated by Emigrant Gap Reservoir near Ashland.

Discharges, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	63	78	74	76	55	64					
2	30	67	82	74	80	53	63					
3	75	61	83	70	87	78	94					
4	75	49	77	63	92	90	113					
5	47	42	83	60	88	82	124					
6	29	38	50	60	82	76	117					
7	16	36	47	58	80	65	101					
8	19	42	76	60	80	63	111					
9	25	47	72	63	77	66	159					
10	30	51	70	65	77	176	126					
11	45	55	66	71	78	122	109					
12	47	49	66	74	d450	94	101					
13	51	47	71	53	169	82	97					
14	55	43	70	58	152	80	97					
15	79	40	78	63	128	77	95					
16	82	36	87	51	164	74	94					
17	77	45	71	63	145	70	87					
18	92	75	66	60	126	68	83					
19	94	480	70	63	101	65	77					
20	92	131	68	66	90	61	65					
21	86	107	66	68	66	60	52					
22	135	83	64	63	63	76	36					
23	97	d200	59	65	60	78	29					
24	73	113	57	70	57	71	28					
25	65	97	57	76	55	70	24					
26	61	107	64	101	53	65	20					
27	69	131	164	111	50	80	20					
28	75	152	94	90	51	66	22					
29	63	113	83	83	-	64	17					
30	55	97	80	90	-	117	16					
31	59	-	77	80	-	77	-					

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	1,914	135	16	61.7	3,800
November.....	2,697	480	36	89.9	5,350
December.....	2,296	164	47	74.1	4,550
Calendar year 1946	43,054	1,010	2	118	85,400
January.....	2,168	111	51	69.9	4,300
February.....	2,877	450	50	103	5,710
March.....	2,421	176	53	78.1	4,800
April.....	2,241	159	16	74.7	4,440
May.....	-	-	-	-	-
June.....	-	-	-	-	-
July.....	-	-	-	-	-
August.....	-	-	-	-	-
September.....	-	-	-	-	-
The period.....	-	-	-	-	32,950

d Doubtful gage-height record; discharge computed on basis of records for station at Medford.

Diversions in Bear Creek Basin, Oreg.

The following canals divert from streams in Bear Creek Basin:

Ashland lateral of Talent Irrigation District, from Sampson Creek in SW $\frac{1}{4}$ sec. 26, T. 39 S., R. 2 E. Water used to irrigate lands near Ashland. Most of flow is received from Keene Creek, in Klamath River Basin, through Keene Creek Canal.

East lateral of Talent Irrigation District, from Emigrant Gap Reservoir in SE $\frac{1}{4}$ sec. 20, T. 39 S., R. 2 E. Water used to irrigate lands mostly on east side of Bear Creek above Medford.

Talent lateral of Talent Irrigation District, from Bear Creek in SW $\frac{1}{4}$ sec. 33, T. 38 S., R. 1 E. Water used to irrigate lands near Talent.

Phoenix Canal, from Bear Creek in NW $\frac{1}{4}$ sec. 23, T. 38 S., R. 1 W. Water supplements flow of Medford Irrigation District Canal, used to irrigate lands west of Bear Creek.

Bear Creek Canal, from Bear Creek at Medford. Water used to irrigate lands west of Bear Creek near Central Point.

Records of these canals, published as a group, are available from April 1929 to September 1947; records for some of the canals published separately prior to 1929.

Many smaller canals also divert from Bear Creek and its tributaries.

Diversions, in acre-feet, water year October 1946 to September 1947

Month	Ashland lateral	East lateral	Talent lateral	Phoenix Canal	Bear Creek Canal
October.....	-	0	-	a160	b511
November.....	-	0	-	-	-
December.....	-	0	-	-	-
January.....	-	0	-	-	-
February.....	-	0	-	-	-
March.....	-	0	-	-	-
April.....	c7.5	632	d651	c653	-
May.....	88	2,300	1,460	554	704
June.....	550	1,430	920	496	492
July.....	796	3,820	2,270	599	597
August.....	319	501	550	432	411
September.....	0	0	0	239	275
Water year 1946-47.....	1,760	8,680	5,850	-	-

a Oct. 1-10.

b Oct. 1-21.

c Apr. 8-30.

d Apr. 15-30.

Applegate River near Copper, Oreg.

Location.- Water-stage recorder, lat. 42°03', long. 123°07', in SE $\frac{1}{4}$ sec. 25, T. 40 S., R. 4 W., a quarter of a mile downstream from French Gulch, $\frac{1}{2}$ miles downstream from Squaw Creek, and 3 miles northeast of Copper store. Datum of gage is 1,759.66 feet above mean sea level, datum of 1929.

Drainage area.- 220 square miles.

Records available.- December 1938 to September 1947.

Extremes.- Maximum discharge during year, 2,820 second-feet Nov. 18 (gage height, 6.82 feet); minimum, 28 second-feet Sept. 27-30 (gage height, 1.01 feet).
1938-47: Maximum discharge, 12,000 second-feet Dec. 28, 1945 (gage height, 16.7 feet, from floodmark), from rating curve extended above 6,300 second-feet by logarithmic plotting; minimum, 20 second-feet Sept. 23-25, 1939.

Remarks.- Records good. About 11 second-feet diverted for irrigation of 482 acres above station in Applegate River Basin; Grand Applegate ditch diverts about 3.3 second-feet around station on left bank. About 21 second-feet for irrigation and 8 second-feet for mining use are diverted at times into Thompson Creek Basin. Several hundred acre-feet normally stored each winter in Squaw Lake for irrigation for following summer.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 22				Nov. 23 to Sept. 30			
1.2	34	2.5	258	1.0	27	2.2	200
1.4	55	2.9	376	1.2	45	2.5	275
1.6	82	3.4	560	1.4	69	2.9	400
1.9	130	4.0	835	1.6	94	3.4	585
2.2	187	4.8	1,310	1.9	141	3.0	745

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	63	488	182	235	275	593	407	209	85	68	39
2	45	60	463	172	272	432	561	460	191	84	63	37
3	47	59	532	163	311	491	525	438	163	81	59	37
4	45	55	745	161	290	428	484	410	150	81	57	35
5	45	53	585	161	287	372	466	390	288	79	52	35
6	44	54	521	163	287	344	438	379	258	77	52	34
7	43	54	452	155	305	329	424	368	218	75	51	41
8	47	53	414	152	320	314	428	407	268	71	49	40
9	46	53	362	148	326	517	418	359	311	70	49	37
10	43	55	332	150	329	1,090	407	314	245	71	47	35
11	41	55	335	154	624	781	407	287	205	70	46	33
12	40	54	347	150	2,000	629	418	272	176	73	46	31
13	38	54	359	148	1,190	557	502	260	165	69	47	31
14	38	54	432	143	825	553	629	252	155	65	46	30
15	40	53	456	127	693	593	693	240	143	63	45	29
16	40	53	446	132	645	637	689	232	167	61	45	29
17	46	59	379	132	577	689	637	225	178	59	44	30
18	50	981	332	134	513	737	569	210	148	58	44	31
19	48	1,090	308	141	466	733	521	205	138	57	41	34
20	53	343	290	132	428	669	502	196	132	56	40	34
21	90	245	275	131	396	617	463	185	129	56	41	33
22	179	1,050	258	127	368	641	435	176	121	53	40	32
23	103	1,200	242	157	347	633	418	168	108	52	40	30
24	75	569	230	202	332	537	410	163	104	50	39	29
25	65	452	222	266	323	502	396	155	98	50	38	29
26	62	689	225	525	314	470	393	152	97	97	38	29
27	58	934	238	299	452	383	163	94	170	36	29	29
28	54	1,140	210	320	284	442	400	165	94	148	36	28
29	53	781	200	275	-	575	390	152	91	98	38	29
30	55	581	187	268	-	713	376	145	90	81	43	28
31	56	-	187	238	-	665	-	141	-	75	40	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	1,729	179	39	55.8	3,430
November.....	10,994	1,200	53	366	21,810
December.....	11,052	745	187	357	21,920
Calendar year 1946.....	146,963	2,010	33	403	291,500
January.....	5,871	525	127	189	11,640
February.....	13,587	2,000	235	485	28,950
March.....	17,415	1,090	275	562	34,540
April.....	14,385	693	376	480	28,530
May.....	8,076	480	141	261	16,020
June.....	4,934	311	90	164	9,790
July.....	2,335	170	50	75.3	4,630
August.....	1,420	68	36	45.8	2,820
September.....	378	41	28	32.6	1,940
Water year 1946-47.....	92,776	2,000	28	254	184,000
Peak discharge.- Nov. 18 (11 p.m.) 2,820 sec.-ft.; Nov. 22 (10:30 p.m.) 2,620 sec.-ft.; Feb. 12 (8 a.m.) 2,380 sec.-ft.					

Applegate River near Ruch, Oreg.

Location.- Water-stage recorder, lat. 42°11', long. 123°03', in sec. 15, T. 39 S., R. 3 W., at Cameron Bridge, 1½ miles upstream from Little Applegate River and 4½ miles south of Ruch. Datum of gage is 1,475.09 feet above mean sea level, datum of 1929 (levels by Corps of Engineers).

Drainage area.- 297 square miles.

Records available.- June 1911 to September 1914, September 1925 to September 1947.

Average discharge.- 24 years (1911-14, 1925-26, 1927-47), 344 second-feet.

Extremes.- Maximum discharge during year, 3,240 second-feet Nov. 18 (gage height, 4.55

feet); minimum, 27 second-feet Sept. 25, 26.

1911-14, 1925-47: Maximum discharge, 20,000 second-feet Feb. 20, 1927 (gage height, 16.0 feet), from rating curve extended above 8,000 second-feet; minimum, 7 second-feet Sept. 2, 1929 (gage height, 0.26 foot).

Revisions.- The maximum discharge for the water year 1946 has been revised to 13,100 second-feet Dec. 28, 1945 (gage height, 12.2 feet, from floodmark), superseding figure published in Water-Supply Paper 1064.

Remarks.- Records good except those for periods of no gage-height record, which are fair.

Diversions above station for irrigation.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Feb. 12

Feb. 13 to Sept. 30

-0.3	38	0.4	159	2.0	900	-0.4	24	0.1	95	1.4	540
-.2	47	.7	246	2.5	1,280	-.3	32	.3	139	1.8	760
-.1	60	1.0	355	3.0	1,690	-.2	43	.5	190	2.2	1,040
0	76	1.3	485	3.5	2,140	-.1	57	.8	292	2.6	1,360
.2	114	1.6	640	4.0	2,640	0	75	1.1	410		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	44	65	467	a180	220	288	605	390	202	77	79	35
2	52	65	444	a170	250	418	570	446	214	79	71	35
3	54	62	485	a160	295	531	558	430	182	75	68	35
4	51	59	767	a155	278	454	490	406	168	73	64	36
5	48	56	585	a155	274	394	472	386	266	70	53	33
6	47	56	510	159	274	358	442	374	288	70	51	34
7	47	56	431	154	288	338	426	354	234	71	49	34
8	50	56	387	152	299	322	434	386	262	68	43	40
9	50	55	340	152	303	487	426	354	330	64	39	46
10	48	56	313	150	360	1,300	410	307	266	64	38	38
11	47	57	310	152	529	879	410	285	230	62	36	33
12	46	56	321	150	2,300	670	422	270	199	64	36	32
13	44	56	332	148	1,350	580	490	259	182	66	42	35
14	43	55	400	145	914	565	625	244	174	61	40	34
15	45	55	422	a125	724	600	718	234	161	59	39	31
16	45	55	426	a130	670	640	718	230	163	57	38	30
17	48	56	355	a130	600	706	670	227	205	57	36	30
18	54	814	317	a135	531	774	585	217	163	56	35	36
19	54	1,350	295	a140	486	760	536	211	151	53	36	39
20	55	404	281	a130	438	694	518	202	146	53	39	35
21	87	285	287	a130	410	630	472	190	141	56	39	31
22	154	979	250	a125	358	655	442	187	134	49	40	30
23	121	1,400	236	150	358	658	422	182	118	49	47	30
24	80	570	224	182	338	550	410	171	110	50	43	29
25	70	413	217	214	330	504	394	163	101	51	38	28
26	65	652	217	515	319	472	398	156	99	75	38	28
27	62	914	230	336	311	450	394	163	93	179	39	28
28	59	1,180	208	299	296	438	398	168	91	171	39	30
29	57	823	a200	264	-	550	390	161	89	121	36	30
30	59	575	a185	256	-	742	370	156	87	98	36	30
31	60	-	a185	230	-	694	-	153	-	87	36	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October	1,846	154	43	59.5	3,660
November	11,335	1,400	55	378	22,480
December	10,607	767	185	342	21,040
Calendar year 1946	153,832	2,150	36	421	305,100
January	5,673	515	125	183	11,250
February	14,073	2,300	220	503	27,310
March	18,081	1,300	288	593	35,860
April	14,593	718	370	486	28,940
May	8,062	446	153	260	15,990
June	5,249	330	87	175	10,410
July	2,286	179	49	73.7	4,530
August	1,367	79	35	44.1	2,710
September	995	46	28	33.2	1,970
Water year 1946-47	94,167	2,300	28	258	186,800

Peak discharge.- Nov. 18 (12 p.m.) 3,240 sec.-ft.; Nov. 22 (11:30 p.m.) 3,000 sec.-ft.; Nov. 28 (11 a.m.) 1,260 sec.-ft.; Feb. 12 (9:30 a.m.) 2,730 sec.-ft.; Mar. 10 (1:30 a.m.) 1,640 sec.-ft.
 a No gage-height record; discharge computed on basis of records for stations at Copper and near Applegate.

Applegate River near Applegate, Oreg.

Location.- Water-stage recorder, lat. 42°14', long. 123°08', in NE $\frac{1}{4}$ sec. 26, T. 38 S., R. 4 W., 0.9 mile downstream from Keeler Creek and 2 miles southeast of Applegate. Datum of gage is 1,285.33 feet above mean sea level, datum of 1929.

Drainage area.- 480 square miles.

Records available.- October 1938 to September 1947.

Extremes.- Maximum discharge during year, 4,040 second-feet Nov. 19 (gage height, 6.10 feet); minimum, 12 second-feet Sept. 17, 18 (gage height, 0.62 foot).
1938-47: Maximum discharge, 16,800 second-feet Dec. 28, 1945 (gage height, 12.5 feet), from rating curve extended above 4,300 second-feet; minimum, 7 second-feet Sept. 18, 1945 (gage height, 0.30 foot).

Remarks.- Records good. Many diversions above station for irrigation of about 4,000 acres in Applegate River Basin. About 10 second-feet is diverted through Wagner Gap to Bear Creek Basin for several months each year; Fowler-Keeler and Berryman ditches may divert 4.3 and 13.6 second-feet, respectively, around station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 18					Nov. 19 to Sept. 30				
0.7	21	1.9	216	0.6	11	2.0	237	4.0	1,480
.9	37	2.2	322	.8	23	2.4	405	4.5	2,000
1.1	58	2.6	510	1.0	42	2.8	610	5.0	2,580
1.3	86	3.0	745	1.3	81	3.2	845	5.5	3,230
1.6	140	3.5	1,100	1.6	133	3.6	1,130		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	74	550	210	251	325	704	420	199	57	63	17
2	38	77	530	194	276	470	665	500	248	58	57	14
3	43	71	520	185	338	643	648	490	188	49	54	14
4	44	70	832	185	316	560	594	455	175	42	50	13
5	41	66	670	191	312	485	577	430	294	35	39	13
6	41	64	594	194	312	445	545	405	356	28	38	15
7	46	64	505	183	325	420	530	390	265	28	33	15
8	56	64	460	178	343	390	535	425	286	25	28	16
9	54	63	405	175	347	464	530	405	385	24	30	17
10	51	64	366	175	352	1,490	515	343	308	25	28	17
11	49	68	361	183	492	1,040	515	316	262	26	23	16
12	47	64	376	178	2,810	806	520	292	225	26	19	16
13	46	64	390	172	1,630	704	599	276	204	26	20	17
14	43	68	465	170	1,070	670	744	251	194	26	17	18
15	42	68	480	151	858	698	845	244	178	25	15	16
16	47	70	515	151	793	750	852	231	178	25	14	14
17	50	74	420	160	714	793	819	231	231	22	16	14
18	54	862	371	158	643	864	726	225	180	25	17	14
19	55	1,710	338	170	577	864	648	213	160	22	20	17
20	58	480	321	162	530	800	643	199	158	22	21	18
21	82	300	300	155	490	732	582	185	148	26	22	16
22	152	824	280	151	445	714	540	185	135	23	20	18
23	145	1,890	265	165	425	786	500	183	122	23	23	18
24	92	720	248	204	400	648	475	172	106	22	23	17
25	78	520	240	228	395	604	455	158	92	22	22	16
26	72	709	244	582	376	566	445	146	78	44	22	15
27	71	973	272	420	361	540	440	151	71	185	17	17
28	68	1,260	237	366	343	525	450	178	75	175	16	16
29	66	945	234	308	-	626	430	165	75	112	17	20
30	67	676	213	300	-	845	420	162	68	84	14	21
31	70	-	210	265	-	800	-	155	-	74	16	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	1,895	152	27	61.1	3,760
November.....	13,022	1,890	63	434	25,830
December.....	12,212	832	210	394	24,220
Calendar year 1946.....	176,413	2,360	18	483	349,900
January.....	6,669	582	151	215	13,230
February.....	16,524	2,810	251	590	32,770
March.....	21,067	1,490	325	680	41,790
April.....	17,491	852	420	583	34,890
May.....	8,581	500	146	277	17,020
June.....	5,644	365	68	188	11,130
July.....	1,408	185	22	45.4	2,790
August.....	814	63	14	26.3	1,610
September.....	485	21	13	16.2	962
Water year 1946-47.....	105,810	2,810	13	290	209,900

Peak discharge.- Nov. 19 (2 a.m.) 4,040 sec.-ft.; Nov. 23 (2 a.m.) 3,580 sec.-ft.; Feb. 12 (11 a.m.) 3,350 sec.-ft.; Mar. 10 (3:30 a.m.) 1,870 sec.-ft.

Applegate River near Wilderville, Oreg.

Location.- Staff gage, lat. 42°21', long. 123°24', in W $\frac{1}{2}$ sec. 15, T. 37 S., R 6 W., 900 feet downstream from Jackson Creek and 4 miles southeast of Wilderville. Datum of gage is 949.54 feet above mean sea level, datum of 1929 (levels by Corps of Engineers).

Drainage area.- 694 square miles (revised).

Records available.- October 1938 to September 1947.

Extremes.- Maximum discharge observed during year, 3,900 second-feet Nov. 19 (gage height, 6.78 feet); minimum observed, 7 second-feet Aug. 20, 21.
1938-47: Maximum discharge, 22,800 second-feet Dec. 28, 1945 (gage height, 16.3 feet, from floodmark), from rating curve extended above 9,500 second-feet by logarithmic plotting; minimum observed, 3.0 second-feet Sept. 12-15, 18-25, 1939.

Remarks.- Records good. Gage read once daily Oct. 1-31, Apr. 1 to Sept. 30, twice daily Nov. 1 to Mar. 31. Many diversions above station for irrigation and mining. Two irrigation ditches on left bank divert about 17 second-feet around station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge in second-feet)

Oct. 1 to Apr. 15						Apr. 16 to Sept. 30					
1.5	2.5	2.3	172	3.8	945	0.8	5	1.8	73	3.4	680
1.5	38	2.6	275	4.5	1,460	1.0	10	2.2	145	3.8	940
1.7	60	2.9	415	5.3	2,200	1.2	20	2.6	260	4.0	1,080
2.0	106	3.3	635	6.3	3,290	1.4	33	3.0	440		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	114	893	320	504	465	1,150	440	225	39	122	18
2	41	117	822	311	587	1,010	1,070	488	292	36	94	16
3	55	116	719	275	713	1,150	1,040	524	268	27	85	12
4	60	114	1,090	255	683	971	945	500	253	25	59	15
5	64	106	958	271	623	791	906	430	372	26	49	17
6	66	106	815	275	587	719	834	420	548	25	39	29
7	68	108	725	263	575	685	803	410	430	27	29	32
8	71	92	659	259	581	635	791	440	420	26	27	30
9	82	96	617	251	553	701	779	430	512	29	26	16
10	73	96	531	259	553	2,960	767	345	452	27	27	26
11	77	108	504	259	564	2,200	749	336	405	17	22	15
12	71	103	526	263	3,040	1,590	731	327	363	13	25	16
13	68	96	531	251	2,340	1,320	803	300	309	9	26	18
14	77	101	564	235	1,630	1,130	938	292	284	9	19	11
15	74	108	629	221	1,270	1,090	1,040	276	253	11	17	14
16	71	104	707	201	1,180	1,130	1,050	260	256	9	13	17
17	74	108	593	189	1,060	1,140	1,030	253	327	10	10	18
18	82	518	520	215	938	1,170	940	228	256	9	10	18
19	83	2,920	476	232	828	1,180	797	222	239	10	9	19
20	110	880	455	221	755	1,120	752	204	246	15	7	27
21	121	553	445	211	695	1,010	719	198	225	16	7	30
22	162	834	420	208	847	997	662	d190	165	14	8	27
23	228	2,920	395	219	599	1,090	632	d170	136	13	9	26
24	172	1,330	365	259	570	932	584	150	104	12	8	28
25	134	912	293	316	548	828	500	155	85	14	9	34
26	121	1,150	356	761	514	761	476	150	69	42	8	32
27	125	1,630	405	671	514	749	464	165	56	264	9	32
28	116	1,970	365	617	470	719	452	213	47	284	10	33
29	119	1,540	360	542	-	767	440	201	56	210	14	30
30	121	1,110	334	605	-	1,330	430	207	42	170	15	29
31	114	-	316	581	-	1,450	-	204	-	140	14	-

Month	Second-feet-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	2,935	228	35	94.7	5,820
November.....	20,060	2,920	92	669	39,790
December.....	17,388	1,090	293	561	34,490
Calendar year 1946.....	250,108	4,100	6	685	496,100
January.....	10,016	761	189	323	19,870
February.....	24,121	3,040	470	861	47,840
March.....	33,770	2,960	465	1,089	66,980
April.....	23,274	1,150	430	776	46,160
May.....	9,128	524	150	294	18,110
June.....	7,695	548	42	256	15,260
July.....	1,578	284	9	50.9	3,130
August.....	826	122	7	26.6	1,640
September.....	685	34	11	22.8	1,360
Water year 1946-47.....	151,476	3,040	7	415	300,400

d Doubtful gage-height record; discharge computed from gage height 1 foot lower.

East Fork Williams Creek near Williams, Oreg.

Location.- Staff gage, lat. 42°11', long. 123°16', in NW¼ sec. 14, T. 39 S., R. 5 W., a quarter of a mile downstream from Rocky Creek (also known as Rock Creek and Clapboard Gulch) and 4 miles south of Williams.

Drainage area.- 11.8 square miles.

Records available.- August 1946 to September 1947 (irrigation seasons only).

Extremes (not including diversion).- Maximum discharge observed during year, 18 second-feet Apr. 2 (gage height, 1.02 feet); minimum observed, 1.5 second-feet July 17-20, 22. 1946-47: Maximum discharge observed, that of Apr. 2, 1947; minimum observed, 0.7 second-foot Sept. 26, 27, 1946.

Remarks.- Records fair. Staff gage read twice daily. Several small diversions above station for irrigation; Eastside Canal diverts on right bank around station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							16	4.8	2.9	2.4	1.9	1.9
2							17	5.2	2.4	2.2	1.9	1.9
3							17	5.2	2.9	2.4	1.9	1.7
4							17	5.2	3.5	2.4	1.9	1.9
5							18	5.6	9.3	2.4	1.9	1.9
6							16	5.6	6.6	2.2	1.7	1.9
7							15	5.9	6.6	2.4	1.7	1.9
8							15	6.6	8.0	1.9	1.7	1.9
9							15	5.2	7.0	1.7	1.7	1.9
10							15	5.6	5.2	1.9	1.7	1.9
11							14	5.2	4.5	1.9	2.2	1.9
12							14	5.2	4.2	1.9	1.7	1.9
13							14	4.8	5.5	1.9	1.7	1.9
14							15	4.8	2.7	1.9	2.2	1.9
15							15	4.5	2.4	1.9	2.2	1.9
16							15	4.0	7.6	1.7	1.9	1.9
17							14	2.9	3.5	1.5	1.9	1.9
18							13	2.9	2.9	1.5	1.9	2.2
19							12	3.2	2.9	1.5	1.9	2.2
20							12	3.2	2.4	1.5	1.7	2.2
21							10	2.9	2.4	1.7	1.7	2.4
22							9.7	3.2	2.7	1.7	1.7	2.4
23							8.8	2.9	2.7	1.9	1.7	2.4
24							8.8	2.9	2.4	1.9	1.7	2.7
25							8.4	2.4	2.4	1.9	1.7	2.7
26							7.3	2.7	2.4	5.6	dl.8	2.7
27							7.3	2.9	2.4	8.0	dl.8	2.9
28							6.2	2.9	2.2	5.7	1.9	2.9
29							5.9	2.9	1.9	1.7	2.2	2.9
30							5.2	2.9	1.9	1.9	1.9	2.9
31							-	2.9	-	1.9	1.9	-

Month	Observed				Eastside Canal diversion (acre-feet)	River and canal combined			
	Discharge in second-feet			Runoff in acre-feet		Runoff in acre-feet	Discharge in second-feet		Runoff in inches
	Maxi- mum	Mini- mum	Mean				Mean	Per square mile	
October.....									
November.....									
December.....									
Calendar year									
January.....	-	-	-	-	-	-	-	-	
February.....	-	-	-	-	-	-	-	-	
March.....	-	-	-	-	-	-	-	-	
April.....	17	5.2	12.5	745	121	864	14.5		
May.....	6.6	2.4	4.10	252	249	501	8.15		
June.....	9.3	1.9	3.81	227	180	407	6.84		
July.....	8.0	1.5	2.29	141	150	271	4.41		
August.....	2.2	1.7	1.85	114	87	201	3.27		
September.....	2.9	1.7	2.19	130	53	183	3.08		
The period.....	-	-	-	1,610	820	2,450	-		

† Result of discharge measurement.

d Doubtful gage-height record; discharge computed on basis of weather records and records of canal flow.

West Fork Williams Creek near Williams, Oreg.

Location.- Staff gage, lat. 42°11', long. 123°20', in NW¹ sec. 18, T. 39 S., R. 5 W., three-quarters of a mile upstream from Lone Creek and 5½ miles southwest of Williams.

Drainage area.- 12.8 square miles.

Records available.- August 1946 to September 1947 (irrigation seasons only).

Extremes.- Maximum discharge observed during year, 69 second-feet Apr. 1 (gage height, 2.36 feet); minimum observed, 3.7 second-feet Sept. 23, 24.

1946-47: Maximum discharge observed, that of Apr. 1, 1947; minimum observed, that of Sept. 23, 24, 1947.

Remarks.- Records good. Gage read once daily. One diversion above station for irrigation.

Discharge, in second-feet, April to September 1947

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	68	17	13	7.0	7.5	5.2	16	37	11	22	5.2	5.2	4.3
2	64	17	9.4	7.0	7.0	5.2	17	35	11	11	5.2	5.2	4.3
3	64	16	8.7	7.0	6.6	4.9	18	34	11	10	5.2	4.9	4.3
4	60	16	8.7	7.0	6.1	4.6	19	31	10	10	5.2	4.9	4.3
5	52	16	28	7.5	6.1	4.6	20	29	10	9.4	5.7	4.9	4.3
6	48	15	11	7.0	6.1	4.9	21	27	10	8.7	5.2	4.9	4.0
7	48	15	10	6.1	6.1	4.9	22	26	10	8.7	5.2	4.9	4.0
8	52	14	24	5.7	6.1	4.9	23	24	9.4	8.7	5.2	5.2	3.7
9	62	13	14	5.7	5.2	24	24	8.7	5.2	4.9	3.7		
10	56	13	13	5.7	6.1	4.6	25	22	9.4	8.1	5.2	4.6	4.0
11	47	13	11	5.7	5.7	4.6	26	20	8.7	8.7	26	4.6	4.3
12	45	12	10	5.2	5.7	4.6	27	19	9.4	9.4	16	4.6	4.3
13	41	12	10	6.1	5.2	4.6	28	19	9.4	8.1	14	4.9	4.3
14	41	11	9.4	6.1	5.2	4.3	29	19	8.7	7.5	9.4	7.5	4.3
15	40	11	9.4	5.7	5.2	4.3	30	19	8.7	7.0	8.1	6.6	4.3
							31	-	8.7	-	7.5	5.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
April.....	1,173	68	19	39.1	2,330
May.....	365.8	17	8.7	11.8	726
June.....	335.6	28	7.0	11.2	666
July.....	228.0	26	5.2	7.35	452
August.....	173.4	7.5	4.6	5.59	344
September.....	133.8	5.2	3.7	4.46	265
The period.....	-	-	-	-	4,780

Note.- Daily discharge for Mar. 4 was 35 second-feet.

Mungers Creek near Williams, Oreg.

Location.- Staff gage, lat. 42°13', long. 123°20', in NW¹ sec. 6, T. 39 S., R. 5 W., 75 feet downstream from Swamp Creek and 4 miles southwest of Williams.

Drainage area.- 6.8 square miles.

Records available.- August 1946 to September 1947 (irrigation seasons only).

Extremes.- Maximum discharge observed during year, 43 second-feet Apr. 1 (gage height, 2.09 feet); minimum observed, 1.5 second-feet several days in August and September.

1946-47: Maximum discharge observed, that of Apr. 1, 1947; minimum observed, 0.8 second-foot Aug. 24, 25, 1946.

Remarks.- Records good. Gage read once daily. No diversions above station.

Discharge, in second-feet, April to September 1947

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	43	6.8	4.1	2.4	2.7	1.7	16	14	4.2	3.6	1.9	1.5	1.8
2	38	6.8	3.6	2.3	2.6	1.5	17	13	4.2	3.7	1.9	1.5	1.8
3	32	6.3	3.4	2.2	2.7	1.5	18	12	4.1	3.4	1.8	1.5	1.9
4	28	6.1	3.2	2.2	2.4	1.7	19	12	4.1	3.4	1.8	1.5	1.9
5	26	5.6	3.6	2.2	2.4	1.5	20	12	3.9	3.2	1.8	1.5	1.9
6	22	5.4	3.7	2.2	2.4	1.5	21	11	3.7	3.0	1.8	1.5	1.9
7	22	5.8	3.7	2.2	2.2	2.0	22	10	3.7	2.7	1.9	1.5	1.8
8	21	5.8	4.2	2.0	2.2	1.8	23	9.8	3.6	2.7	1.9	1.5	1.8
9	20	5.6	5.4	2.0	2.0	1.8	24	9.2	3.6	2.7	1.9	1.7	1.7
10	20	5.4	4.9	2.0	1.9	1.8	25	8.9	3.4	2.7	1.9	1.7	1.8
11	18	5.4	4.4	2.0	1.8	1.7	26	8.6	3.4	2.7	2.0	1.5	1.8
12	18	4.9	4.1	1.9	1.8	1.7	27	8.3	3.6	2.7	2.2	1.5	1.8
13	17	4.6	3.7	1.9	1.8	1.7	28	8.0	3.6	2.6	2.2	1.5	1.8
14	16	4.4	3.4	1.9	1.7	1.7	29	7.7	3.4	2.4	5.4	1.5	2.0
15	15	4.4	3.4	1.9	1.5	1.7	30	7.4	3.4	2.4	3.7	1.7	2.0
							31	-	3.2	-	3.0	1.8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff
April.....	507.9	43	7.4	16.9	2.49	2.78
May.....	142.4	6.8	3.2	4.59	.675	.78
June.....	102.7	5.4	2.4	3.42	.503	.56
July.....	74.8	6.6	1.8	2.41	.354	.41
August.....	57.0	2.6	1.5	1.84	.271	.31
September.....	53.1	2.0	1.5	1.77	.260	.29
The period..	-	-	-	-	-	1,860

Note.- Daily discharge for Mar. 4 was 19 second-feet.

Powell Creek near Williams, Oreg.

Location.- Water-stage recorder, lat. 42°16', long. 123°18', near center of sec. 16, T. 38 S., R. 5 W., 0.1 mile upstream from Blodgett ditch intake and 2 miles northwest of Williams.

Drainage area.- 8.6 square miles.

Records available.- September 1946 to September 1947.

Extremes.- Maximum discharge during period September 1946 to September 1947, 173 second-feet Mar. 10 (gage height, 3.31 feet), from rating curve extended above 50 second-feet on basis of slope-area determination at gage height 4.92 feet; minimum, 1.3 second-feet Sept. 9-12, 24, 25, 1946, Sept. 15, 1947.

Remarks.- Records good except those above 25 second-feet and those for periods of no gage-height record, which are poor. No diversions above station.

Discharge, in second-feet, 1946-47

1946							
Day	Discharge	Day	Discharge	Day	Discharge	Day	Discharge
Sept. 1	al.5	Sept. 9	1.3	Sept. 17	2.0	Sept. 25	1.4
2	al.5	10	1.5	18	1.8	26	1.5
3	al.5	11	1.5	19	1.7	27	1.6
4	al.5	12	1.5	20	1.6	28	1.6
5	al.5	13	1.6	21	1.6	29	1.5
6	al.4	14	1.7	22	1.6	30	1.6
7	al.4	15	2.1	23	1.5	31	-
8	al.3	16	2.5	24	1.4		

a No gage-height record; discharge computed on basis of recorded range in stage, weather records, and records for Mungers Creek near Williams and Slate Creek at Wonder.
h Computed from staff-gage reading.

1946-47

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.1	2.3	1.8	5.5	12	7.0	34	5.5	4.2	2.5	33	1.8
2	1.9	2.2	1.5	5.3	20	13	28	5.3	3.9	2.5	31	1.8
3	2.3	2.0	1.5	5.2	31	19	24	5.2	3.8	2.7	31	1.8
4	1.9	1.9	1.2	5.0	28	17	20	5.0	3.5	2.7	29	1.6
5	1.9	1.8	1.1	5.0	23	15	18	5.0	7.0	2.7	28	1.7
6	1.8	1.8	1.0	5.0	20	14	17	4.8	5.0	2.7	27	1.8
7	1.9	1.8	9.3	4.8	17	13	15	5.2	4.3	2.5	25	2.0
8	2.0	1.8	9.0	4.7	16	12	15	5.0	5.0	2.5	25	1.8
9	1.9	1.8	8.1	4.7	15	50	14	4.7	4.8	2.4	25	1.8
10	1.8	2.0	7.7	4.7	13	155	13	4.5	4.4	2.4	25	1.8
11	1.8	1.9	7.3	4.5	15	92	12	4.5	4.0	2.4	23	1.7
12	1.7	1.9	7.0	4.7	32	57	11	4.4	3.8	2.4	23	1.7
13	1.7	1.9	6.8	4.5	32	42	11	4.3	3.6	2.3	22	1.7
14	1.7	1.9	6.6	4.4	26	34	10	4.3	3.5	2.2	22	1.6
15	1.8	1.9	7.5	4.3	22	29	9.6	4.2	3.4	2.2	21	1.6
16	1.8	1.9	7.9	4.2	19	24	9.0	4.0	4.2	2.2	21	1.7
17	2.8	2.8	7.7	4.2	17	20	8.8	4.0	3.9	2.1	20	1.9
18	2.2	42	7.5	4.2	15	18	8.4	3.9	3.5	2.1	19	2.0
19	2.1	35	7.3	4.2	13	16	8.1	3.9	3.4	2.1	19	2.0
20	3.6	10	7.0	4.2	12	14	7.7	3.8	3.3	2.1	20	1.8
21	3.0	7.7	6.6	4.0	11	13	7.7	3.8	3.3	2.1	20	1.7
22	6.3	27	6.2	4.2	9.8	13	7.3	3.6	3.1	2.1	20	1.7
23	2.4	51	6.1	4.4	9.0	12	7.0	3.5	3.1	2.0	20	1.7
24	2.0	26	5.9	4.5	8.6	11	6.6	3.4	3.0	2.0	20	1.7
25	2.0	19	5.5	6.4	8.1	10	6.4	3.4	2.9	1.9	19	1.7
26	2.0	26	5.9	12	7.9	9.6	6.2	3.4	2.9	5.5	18	1.8
27	al.9	46	7.0	12	7.5	9.3	6.1	3.8	3.0	8.4	18	1.7
28	al.8	51	6.2	12	7.0	8.8	6.1	3.8	2.9	6.8	18	1.8
29	al.8	34	6.2	9.6	-	10	6.1	3.8	2.8	4.4	23	1.8
30	al.0	24	5.9	12	-	30	5.7	3.5	2.7	3.8	21	1.8
31	al.1	-	5.9	11	-	44	-	3.6	-	3.4	20	-

a No gage-height record; discharge computed on basis of recorded range in stage, weather records, and records for Mungers Creek near Williams and Slate Creek at Wonder.

Monthly discharge, in second-feet, 1946-47

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
September 1946	47.8	2.5	1.3	1.59	0.185	0.21	95
October	68.0	6.3	1.7	2.19	.255	.29	135
November	432.3	51	1.8	14.4	1.67	1.87	857
December	253.1	18	5.5	8.16	.949	1.09	502
Calendar year	-	-	-	-	-	-	-
January 1947	185.4	12	4.0	5.98	.695	.80	368
February	466.9	32	7.0	16.7	1.94	2.02	926
March	831.7	155	7.0	26.8	3.12	3.60	1,650
April	358.8	34	5.7	12.0	1.40	1.55	712
May	131.1	5.5	3.4	4.23	.492	.57	260
June	112.2	7.0	2.7	3.74	.435	.49	223
July	90.1	8.4	1.9	2.91	.338	.39	179
August	70.6	3.3	1.8	2.28	.265	.31	140
September	53.0	2.0	1.6	1.77	.206	.23	105
Water year 1946-47	3,053.2	155	1.6	8.36	.972	13.21	6,060

Peak discharge.- Nov. 18 (9:30 p.m.) 112 sec.-ft.; Nov. 22 (9 p.m.) 72 sec.-ft.; Nov. 27 (10 p.m.) 62 sec.-ft.; Mar. 10 (1 a.m.) 173 sec.-ft.; Mar. 31 (3 a.m.) 49 sec.-ft.

Slate Creek at Wonder, Oreg.

Location.- Water-stage recorder, lat. 42°22', long. 123°31', in SW $\frac{1}{4}$ sec. 10, T. 37 S., R. 7 W., half a mile upstream from Elliott Creek and 0.4 mile east of Wonder. Datum of gage is 1,035.1 feet (Bureau of Reclamation bench mark). Prior to Nov. 21, staff gage at site 150 feet downstream at different datum.

Drainage area.- 30.9 square miles.

Records available.- October 1945 to September 1947 in reports of Geological Survey. October 1943 to September 1945 in files of State engineer.

Extremes.- Maximum discharge during year, 2,080 second-feet Nov. 22 (gage height, 6.75 feet); from rating curve extended above 850 second-feet on basis of slope-area determination at gage height 8.29 feet; minimum, 0.8 second-foot Sept. 26, 27 (gage height, 0.98 foot).

1943-47: Maximum gage height, 9.0 feet Dec. 28, 1945, from floodmark, former site and datum (discharge not determined); minimum discharge observed, 0.3 second-foot July 16, 17, 1944.

Remarks.- Records good except those for periods of doubtful gage-height record, which are poor. Several small diversions above station for irrigation.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet) (Shifting-control method used Dec. 29 to Jan. 25)

Oct. 1 to Nov. 20

Nov. 21 to Sept. 30

0.3	0.8	0.8	13	1.6	75	0.9	0.3	1.6	28	3.2	295
.4	2.2	1.0	23	2.0	127	1.0	.9	1.8	45	3.6	415
.5	4.4	1.2	36	2.4	210	1.1	2.9	2.0	66	4.0	540
.6	7.0	1.4	53			1.2	6.0	2.4	116	4.5	740
						1.4	15	2.8	190	5.0	950

Discharge, in second-foot, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.6	4.9	78	19	103	32	156	18	13	5.7	8.8	3.2
2	2.1	4.9	63	18	220	233	124	17	14	4.8	8.0	2.9
3	3.7	4.0	65	17	249	322	102	16	13	4.1	7.2	2.9
4	2.6	4.0	81	16	184	176	89	14	11	4.4	6.0	2.5
5	2.6	4.2	77	15	145	121	81	14	44	4.8	5.1	2.1
6	2.4	4.2	69	15	119	98	70	14	34	4.8	4.4	1.7
7	2.2	4.4	62	14	108	85	65	14	30	5.1	3.5	2.3
8	2.2	4.0	55	14	99	74	62	14	34	5.1	4.1	2.5
9	2.1	4.0	48	14	88	382	58	14	33	4.8	5.1	2.3
10	1.5	4.0	41	14	78	905	52	14	27	4.4	4.8	2.3
11	1.5	4.0	40	14	234	466	48	14	22	3.8	3.5	1.9
12	1.8	4.0	38	14	664	260	43	14	19	3.2	2.5	1.3
13	2.2	4.0	36	14	355	174	40	12	16	3.5	2.7	1.3
14	2.2	3.7	34	14	206	134	39	11	12	3.5	3.5	.9
15	2.2	4.0	46	14	143	108	36	11	12	4.1	3.2	.9
16	2.2	4.0	52	14	110	90	34	12	16	3.8	2.9	1.1
17	4.9	5.4	49	16	92	78	33	11	14	4.1	2.7	1.3
18	3.7	174	42	14	78	70	30	10	12	3.8	2.7	1.5
19	3.5	173	38	14	67	62	30	10	11	3.2	2.5	1.7
20	45.0	75	35	13	59	55	27	9.2	10	2.5	2.3	1.5
21	7.6	109	33	13	53	51	26	9.2	9.6	1.1	2.5	1.3
22	22	900	30	13	48	50	25	8.8	8.8	.9	2.7	1.1
23	8.5	533	28	14	43	51	23	8.4	6.8	.9	2.9	1.1
24	6.7	218	26	17	40	46	22	8.8	6.0	1.3	2.3	.9
25	4.9	152	24	35	37	42	22	8.0	6.8	1.5	2.3	.9
26	44.5	310	23	92	36	40	20	7.6	6.4	22	2.7	.8
27	44.3	478	22	78	35	58	19	8.8	6.8	50	2.9	1.1
28	4.2	271	21	75	33	36	20	10	6.8	28	1.7	1.3
29	4.2	150	20	62	-	42	21	10	6.0	19	3.5	1.3
30	4.4	101	19	113	-	134	20	8.8	6.0	14	4.4	1.5
31	4.4	-	19	109	-	228	-	8.4	-	12	3.8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Rnnoff Inches	Acres-foot
October	128.7	22	1.5	4.15	0.134	0.15	255
November	3,715.7	900	3.7	124	4.01	4.47	7,370
December	1,514	81	19	42.4	1.37	1.58	2,610
Calendar year 1946	21,156.3	900	.6	58.0	1.88	25.46	41,970
January	918	113	13	29.6	.958	1.10	1,820
February	3,726	664	33	133	4.30	4.48	7,390
March	4,681	905	32	151	4.89	5.63	9,280
April	1,437	156	19	47.9	1.55	1.73	2,850
May	360.0	18	7.6	11.6	.575	.43	714
June	487.0	44	6.0	15.8	.505	.58	926
July	234.2	50	2.9	7.55	.244	.28	465
August	118.2	8.8	2.3	3.93	.123	.14	234
September	49.4	3.2	.8	1.65	.053	.06	98
Water year 1946-47	17,149.2	905	.8	47.0	1.52	20.61	34,010

d Doubtful gage-height record; discharge computed on basis of records for Deer Creek near Dryden.

Grave Creek at Pease Bridge, near Placer, Oreg.

Location.- Water-stage recorder, lat. 42°39', long. 123°12', in NW¹/₄SW¹/₄ sec. 5, T. 34 S., R. 4 W., at bridge 5½ miles northeast of Placer. Prior to Aug. 22, water-stage recorder at site 105 feet upstream at same datum.

Drainage area.- 22 square miles.

Records available.- October 1945 to September 1947 in reports of Geological Survey. April 1940 to September 1945 in files of State engineer.

Extremes.- Maximum discharge during year, 1,390 second-foot Nov. 18 (gage height, 4.36 feet) from rating curve extended above 510 second-feet; minimum, 0.8 second-foot Oct. 1.

1940-47: Maximum discharge recorded 2,000 second-foot Dec. 20, 1942 (gage height, 6.10 feet, site and datum then in use), computed on basis of unpublished records for station near Grants Pass; minimum, 0.3 second-foot Sept. 13, 1944, Aug. 16-27, 1946.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are poor. Columbia upper ditch diverts water about 2 miles above station for irrigation. No regulation.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.9	18	88	24	42	21	98	10	11	5.9	11	3.4
2	1.0	15	67	25	81	67	83	9.5	11	5.7	9.1	3.0
3	1.3	11	59	21	127	96	70	9.1	9.5	5.4	8.4	3.0
4	1.4	8.4	61	20	123	85	67	8.8	9.1	4.2	8.1	2.9
5	1.6	7.0	54	19	117	64	81	9.5	31	4.0	7.3	2.7
6	1.6	6.6	47	a18	107	52	83	9.5	26	4.5	5.7	2.9
7	1.5	5.9	42	a17	103	46	72	10	21	4.7	4.5	4.2
8	2.2	5.9	46	a16	92	44	81	13	28	4.2	5.7	3.9
9	1.9	5.4	52	a15	79	140	107	13	39	4.0	5.9	3.7
10	1.8	9.1	47	a14	67	511	96	12	34	4.0	5.7	3.6
11	1.6	9.5	44	a14	105	259	81	11	25	4.2	6.6	3.2
12	1.5	8.8	50	a14	277	168	69	10	20	4.7	5.9	2.9
13	1.4	8.1	54	a15	181	125	62	10	17	4.0	5.7	2.2
14	1.4	7.7	77	a13	131	113	54	9.6	15	3.7	5.4	1.8
15	1.4	7.3	123	*b12	107	103	47	7.3	13	3.5	5.4	1.8
16	1.5	7.0	139	b11	101	90	40	7.0	25	3.5	5.2	2.0
17	1.9	8.8	105	b11	88	76	35	7.7	31	3.4	4.2	2.2
18	2.8	384	79	b12	72	64	30	7.7	25	2.9	2.8	2.4
19	2.9	284	64	18	61	53	25	7.7	21	2.6	3.2	2.5
20	4.9	103	52	18	52	42	23	7.3	18	2.6	3.4	2.7
21	13	69	44	19	*44	37	20	7.7	15	2.4	3.7	2.7
22	36	290	37	24	37	41	18	7.3	12	2.4	3.7	2.4
23	16	353	35	61	33	42	16	7.0	10	2.6	3.7	2.1
24	9.5	157	28	85	30	37	15	5.5	10	2.9	3.6	2.0
25	5.9	136	26	103	27	34	13	6.6	9.5	2.9	3.4	1.8
26	4.2	340	30	181	26	29	9.1	6.6	10	8.0	3.4	1.9
27	4.9	363	39	131	24	26	10	8.4	9.5	44	3.4	1.9
28	4.7	281	33	101	22	24	11	8.4	8.8	41	3.2	1.9
29	4.2	173	31	72	-	28	12	7.7	7.7	22	3.2	1.9
30	6.6	121	27	59	-	79	11	7.0	7.0	15	3.0	2.0
31	8.8	-	26	47	-	119	-	7.0	-	12	3.4	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	150.3	36	0.9	4.85	298
November.....	3,183.5	384	5.4	106	6,310
December.....	1,705	139	26	54.9	3,590
Calendar year 1946.....	17,820.1	-	.3	48.8	35,340
January.....	1,206	181	11	38.9	2,390
February.....	2,356	277	22	84.1	4,670
March.....	2,715	511	21	87.6	5,390
April.....	1,439.1	107	9.1	48.0	2,850
May.....	269.9	13	6.6	8.71	535
June.....	529.1	39	7.0	17.6	1,050
July.....	236.9	44	2.4	7.64	470
August.....	156.9	11	2.8	5.06	311
September.....	77.6	4.2	1.8	2.59	154
Water year 1946-47.....	14,023.3	511	.9	38.4	27,810

Peak discharge.- Nov. 18 (9 p.m.) 1,390 sec.-ft.; Nov. 22 (9 p.m.) 785 sec.-ft.; Nov. 26 (3 p.m.) 393 sec.-ft.; Nov. 27 (4 p.m.) 419 sec.-ft.; Feb. 12 (6 a.m.) 318 sec.-ft.; Mar. 10 (1:30 a.m.) 725 sec.-ft.

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for station near Placer and Cow Creek near Asasias.

b Stage-discharge relation affected by ice.

East Fork Illinois River near Takilma, Oreg.

Location.- Staff gage, lat. 42°01', long. 123°38', in SE $\frac{1}{4}$ sec. 10, T. 41 S., R. 8 W., 500 Feet upstream from county road bridge, a quarter of a mile upstream from Long Gulch, and 3 miles south of Takilma. Prior to Oct. 31, staff gage 470 feet downstream at different datum.

Drainage area.- 42.6 square miles.

Records available.- October 1945 to September 1947 in reports of Geological Survey. April 1926 to April 1932 in reports of State engineer. November 1940 to September 1945 in files of State engineer.

Extremes.- Maximum discharge observed during year, 1,680 second-feet Nov. 22 (gage height, 5.78 Feet); minimum observed, 5.7 second-feet Oct. 10-12.

1926-32, 1940-47: Maximum gage height, 9.4 feet Dec. 28, 1945, from floodmark, site and datum then in use (discharge not determined); minimum discharge observed, 5.2 second-feet Sept. 24-29, 1944.

Remarks.- Records good except those for periods of rapidly changing stage or doubtful gage-height record, which are poor. Staff gage read once daily. No regulation. Esterly Upper Canal and Osgood Canal diverted water above station in periods of heavy runoff prior to 1942.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-30, June 9 to Sept. 30)

Oct. 1-30				Oct. 31 to Sept. 30			
4.1	4.0	4.4	34	0.5	7.8	2.0	108
4.2	9.8	4.5	52	.7	12	2.5	188
4.3	21	4.6	73	1.0	22	3.0	299
				1.5	55	3.5	458
						5.5	1,500

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.6	17	261	63	249	73	299	72	46	20	30	12
2	8.6	16	236	57	326	227	249	77	38	20	26	12
3	8.6	15	147	53	294	299	227	82	34	20	26	12
4	9.2	15	188	51	227	227	207	65	64	20	24	11
5	8.6	15	147	47	203	188	198	64	122	20	22	11
6	8.6	15	134	47	188	137	188	61	72	19	18	11
7	8.6	15	122	45	196	130	170	60	64	19	18	11
8	8.6	14	119	45	199	188	203	58	135	16	18	14
9	6.9	14	116	45	184	659	d250	53	150	16	18	14
10	5.7	14	114	45	170	1,320	207	54	85	16	17	13
11	5.7	14	108	45	493	760	188	51	67	16	16	12
12	5.7	14	114	47	d915	444	188	46	58	16	16	11
13	8.6	14	122	44	d660	283	227	41	51	15	15	11
14	8.6	14	147	39	d495	d230	209	41	45	15	14	11
15	8.6	13	207	41	326	d200	198	41	43	15	14	10
16	8.6	13	227	38	227	188	184	38	59	15	14	9.9
17	8.6	13	185	39	179	198	174	37	43	15	13	9.7
18	8.6	568	130	39	143	203	172	36	40	15	13	9.5
19	8.6	599	105	39	128	207	145	32	57	15	13	9.5
20	8.6	249	98	44	108	170	115	32	34	15	13	10
21	19	170	93	44	105	156	104	32	31	15	13	10
22	73	1,150	d90	47	105	153	95	30	30	15	13	9.9
23	38	1,500	d80	83	95	153	87	30	28	14	13	9.9
24	24	660	d70	153	90	153	80	28	27	14	12	9.9
25	21	541	63	551	83	143	78	28	25	14	12	9.9
26	17	660	67	798	78	137	76	27	25	58	12	9.9
27	14	915	71	289	d75	125	74	27	27	116	11	9.5
28	14	810	71	238	73	134	77	29	24	94	11	9.9
29	14	458	d68	d150	-	153	73	27	22	84	21	9.9
30	14	289	d66	249	-	480	68	26	22	40	16	9.9
31	15	-	d65	170	-	572	-	26	-	32	14	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	425.2	73	5.7	13.7	0.322	0.37	843
November	8,812	1,500	13	294	6.90	7.69	17,480
December	3,611	261	63	123	2.89	3.33	7,560
Calendar year 1946	57,654.2	1,570	5.7	158	3.71	50.32	114,400
January	3,485	798	38	112	2.63	3.04	6,910
February	6,614	915	73	236	5.54	5.77	13,120
March	8,690	1,320	73	280	6.57	7.59	17,240
April	4,810	299	68	160	3.76	4.20	9,540
May	1,351	82	26	43.6	1.02	1.18	2,680
June	1,548	150	22	51.8	1.21	1.35	3,070
July	834	116	14	28.9	.631	.73	1,650
August	506	30	11	16.3	.383	.44	1,000
September	326.3	14	9.5	10.9	.256	.28	647
Water year 1946-47	41,212.5	1,500	5.7	113	2.65	35.97	81,740

d Doubtful gage-height record; discharge computed on basis of records for West Fork, Illinois River near O'Brien and Althouse Creek near Holland.

Illinois River at Kerby, Oreg.

Location.- Water-stage recorder, lat. 42°13', long. 123°39', in NW $\frac{1}{4}$ sec. 4, T. 39 S., R. 8 W., 1 mile northwest of Kerby. Altitude of gage, 1,218 feet (from river-profile map).

Drainage area.- 367 square miles.

Records available.- March 1926 to September 1947.

Average discharge.- 21 years, 1,068 second-feet.

Extremes.- Maximum discharge during year, 16,300 second-feet Nov. 22 (gage height, 14.42 feet); minimum daily, 37 second-feet Oct. 1, 10, 11.
1926-47: Maximum discharge, 50,000 second-feet Feb. 20, 1927 (gage height, 19.6 feet, site and datum then in use), from rating curve extended above 26,000 second-feet; minimum, 13 second-feet Sept. 10-15, 1934.

Remarks.- Records good except those for Dec. 14 to Jan. 21, which are fair, and those for periods of no gage-height record, which are poor. Diversions above station for irrigation.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 22					Nov. 23 to Sept. 30						
-0.5	32	0.8	281	3.0	1,290	-0.4	50	1.2	440	5.0	2,900
-.2	66	1.1	380	4.0	1,980	-.2	75	1.6	620	5.5	3,350
0	96	1.4	490	5.0	2,850	0	108	2.0	820	6.0	3,850
.2	131	1.8	655	5.5	3,350	.2	143	2.5	1,100	8.0	6,120
.5	197	2.2	845			.5	210	3.0	1,400	10.0	8,850
						.8	294	4.0	2,050	12.0	12,000
Note - Same as following table above											

Note.- Same as following table above 5.5 feet.

Discharge, in second-feet, water year=October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a37	a125	1,690	484	1,590	575	2,840	472	168	a130	a310	a95
2	a43	a128	1,440	440	2,860	2,180	2,350	444	228	a120	a270	h90
3	a50	h131	1,400	424	3,120	3,230	2,170	436	242	a115	a230	a80
4	h48	a130	1,770	416	2,200	2,140	1,840	408	228	a110	a200	h74
5	a40	a135	1,560	404	1,790	1,650	1,740	389	469	h106	h186	a72
6	a39	a130	1,390	396	1,560	1,380	1,650	371	815	a103	a170	a72
7	a39	a125	1,270	389	1,440	1,230	1,470	350	595	a100	a155	a80
8	a38	a115	1,660	360	1,380	1,150	1,450	348	974	a99	a140	a77
9	a38	a105	1,530	350	1,290	3,440	1,760	340	1,390	a98	a130	h75
10	a37	h99	1,260	350	1,230	11,000	1,640	322	968	a97	a120	a73
11	a37	a95	1,080	360	1,940	5,580	1,450	298	700	a96	a115	a72
12	a45	a93	1,000	388	6,740	3,340	1,310	288	558	a95	a110	a71
13	h49	a92	990	382	3,900	2,400	1,260	261	440	a95	a106	a70
14	a52	a92	1,320	371	2,570	1,970	1,260	236	378	h95	h104	a68
15	a58	a92	1,610	357	2,000	1,740	1,210	226	336	a93	a100	a67
18	a65	a95	1,790	326	1,730	1,600	1,120	213	336	a91	a98	a66
17	a72	h96	1,370	315	1,520	1,480	1,030	208	378	a90	a95	a65
18	a72	3,790	1,140	308	1,330	1,410	958	196	304	a89	a83	a64
19	a65	5,510	985	315	1,190	1,310	870	193	267	a88	a92	a63
20	a60	1,950	880	340	1,080	1,200	805	179	247	a87	a90	h62
21	182	1,450	770	357	980	1,090	755	175	236	a86	a89	a61
22	613	7,280	675	354	897	1,060	700	160	215	a86	a88	a60
23	482	8,900	610	480	831	1,240	655	151	203	a85	h88	a59
24	272	3,820	570	958	780	1,160	605	149	188	a84	a87	a58
25	202	3,040	548	1,290	725	1,070	570	141	173	h84	a86	a57
26	166	5,840	538	3,500	675	1,010	552	137	160	188	a86	a56
27	149	6,290	605	2,040	645	958	525	141	151	1,120	a87	a56
28	139	5,000	548	1,630	600	908	502	147	151	1,250	a90	h55
29	a135	3,160	554	1,340	-	974	494	147	143	735	a100	a54
30	a130	2,180	502	1,980	-	3,000	484	141	a135	476	a115	a54
31	a125	-	494	1,760	-	4,690	-	141	-	a370	a110	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	3,575	613	37	115	7,090
November.....	60,068	8,900	92	2,002	119,100
December.....	33,539	1,790	494	1,082	66,520
Calendar year 1946.....	391,273	8,900	28	1,072	776,000
January.....	23,162	3,500	308	747	45,940
February.....	46,593	6,740	600	1,735	96,380
March.....	67,145	11,000	575	2,166	133,200
April.....	36,025	2,840	484	1,201	71,450
May.....	7,806	472	137	252	15,480
June.....	11,756	1,390	155	392	23,320
July.....	6,541	1,250	84	211	12,970
August.....	3,140	94	86	127	7,810
September.....	2,026	95	54	67.5	4,020
Water year 1946-47.....	304,176	11,000	37	833	603,300

Peak discharge.- Nov. 19 (12:15 a.m.) 11,500 sec.-ft.; Nov. 22 (11:30 p.m.) 16,300 sec.-ft.; Feb. 12 (4 a.m.) 7,820 sec.-ft.; Mar. 10 (1:30 a.m.) 14,600 sec.-ft.

a No gage-height record; discharge interpolated or computed on basis of records for East Fork Illinois River near Takilma and West Fork Illinois River near O'Brien.

h Computed from staff-gage reading.

Althouse Creek near Holland, Oreg.

Location.- Water-stage recorder, lat. 42°06', long. 123°32', in SE $\frac{1}{4}$ sec. 9, T. 40 S., R. 7 W., half a mile upstream from Carter Gulch and 2 miles southeast of Holland.
Prior to Oct. 3, water-stage recorder at site $\frac{1}{2}$ miles upstream at different datum.

Drainage area.- 23.8 square miles.

Records available.- October 1945 to September 1947 in reports of Geological Survey.
July 1945 to September 1946 in files of State engineer.

Extremes.- Maximum discharge during year, 750 second-feet Nov. 22 (gage height, 3.70 feet), from rating curve extended above 250 second-feet on basis of slope-area determination at gage height 5.14 feet; minimum discharge, 3.2 second-feet Sept. 23-25 (gage height, 1.29 feet).
1945-47: Maximum daily discharge, 900 second-feet Dec. 28, 1945; minimum, that of Sept. 23-25, 1947.

Remarks.- Records good except those above 250 second-feet, which are poor. Slight regulation from mining operations above station. Water used for placer mining is returned to creek above station.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.5	9.6	80	30	53	42	156	37	24	12	12	6.1
2	6.9	8.4	69	28	71	89	139	36	22	12	11	5.6
3	7.5	8.4	67	28	84	108	124	35	20	12	10	5.6
4	7.0	8.4	76	28	78	86	110	32	19	12	9.3	5.2
5	6.5	8.4	65	28	76	74	105	31	36	12	9.3	5.2
6	6.5	7.9	60	27	74	65	95	30	26	12	9.3	5.6
7	6.5	7.9	54	27	76	61	88	30	25	11	8.8	6.9
8	6.5	7.9	53	26	80	58	92	30	40	11	8.8	6.5
9	6.5	7.9	46	26	78	251	98	28	39	11	8.8	6.5
10	6.5	8.4	42	26	78	454	92	27	29	11	8.3	6.1
11	6.0	8.4	42	25	219	278	86	26	25	11	7.8	5.2
12	6.0	8.4	42	25	387	187	84	25	22	11	7.4	4.8
13	6.0	8.4	40	24	235	145	86	25	21	10	7.4	4.8
14	6.0	7.9	43	24	161	130	88	24	20	9.8	6.9	4.4
15	6.5	7.9	56	23	132	127	88	23	19	9.8	6.9	4.4
16	7.5	7.9	56	23	111	124	84	22	30	9.8	6.9	4.4
17	8.9	9.6	49	22	96	124	76	22	25	9.3	6.5	3.9
18	8.9	82	46	22	84	121	70	22	22	8.8	5.6	4.8
19	8.4	69	45	23	76	112	66	21	19	8.3	4.8	4.8
20	10	24	42	22	67	100	61	20	19	8.8	5.6	4.4
21	12	20	38	22	61	90	57	19	18	8.3	6.1	3.9
22	25	286	36	22	56	100	54	19	17	8.3	6.1	3.5
23	11	240	33	27	53	92	49	18	16	8.3	6.5	3.5
24	7.9	98	32	30	49	82	48	17	15	8.3	6.1	3.5
25	7.5	80	31	44	46	76	45	17	15	7.8	5.6	3.5
26	7.5	113	36	74	43	74	44	17	15	28	4.4	3.9
27	7.5	205	38	58	42	68	42	18	15	42	3.9	3.5
28	7.5	205	33	56	39	66	41	19	15	35	4.4	3.5
29	7.9	142	32	48	-	78	39	18	14	19	7.4	3.9
30	8.4	103	30	56	-	177	38	17	13	15	8.3	3.5
31	8.4	-	30	51	-	201	-	18	-	13	6.9	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acre-feet
October	252.7	25	6.0	8.15	0.342	0.39	501
November	1,808.7	286	7.9	60.3	2.53	2.83	3,590
December	1,440	80	30	46.5	1.95	2.25	2,860
Calendar year	-	-	-	-	-	-	-
January	995	74	22	32.1	1.35	1.55	1,970
February	2,703	387	39	96.5	4.05	4.22	5,360
March	3,840	454	42	124	5.21	6.00	7,620
April	2,345	156	38	78.2	3.29	3.66	4,650
May	743	37	17	24.0	1.01	1.16	1,470
June	655	40	13	21.8	.916	1.02	1,300
July	405.6	42	7.8	13.1	.550	.65	804
August	227.1	12	3.9	7.33	.308	.35	450
September	141.4	6.9	3.5	4.71	.198	.22	280
Water year 1946-47	15,556.5	454	3.5	42.6	1.79	24.28	30,860

Peak discharge.- Nov. 18 (10:30 p.m.) 210 sec.-ft.; Nov. 22 (7 p.m.) 750 sec.-ft.; Feb. 11 (11 p.m.) 508 sec.-ft.; Mar. 9 (9:30 a.m.) 739 sec.-ft.

Sucker Creek near Holland, Oreg.

Location.- Staff gage, lat. 42°09', long. 123°28', in NE $\frac{1}{4}$ sec. 25, T. 39 S., R. 7 W., 1 mile downstream from Grayback Creek and 4.3 miles northeast of Holland. Prior to Sept. 16, staff gage at site 125 feet upstream and at datum 1.73 feet higher.

Drainage area.- 76 square miles.

Records available.- October 1945 to September 1947 in reports of Geological Survey. April 1940 to August 1941 at site half a mile upstream, September 1941 to September 1945 in files of State engineer.

Extremes.- Maximum discharge observed during year, 1,140 second-feet Nov. 22 (gage height, 3.50 feet), from rating curve extended above 720 second-feet; minimum observed, 19 second-feet Sept. 27, 28.
1940-47: Maximum gage height, 6.62 feet Dec. 31, 1942, from floodmark, site and datum then in use (discharge not determined); minimum observed, that of Sept. 27, 28, 1947.

Remarks.- Records good except those for periods of doubtful or no gage-height record, which are poor. Gage read once daily, oftener during periods of high water. No regulation. Grayback Canal diverts water from Grayback Creek above station for domestic use and irrigation; most of return flow of this canal enters creek above station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet) (Shifting-control method used Aug. 5 to Sept. 15)

Oct. 1 to Sept. 15				Sept. 16-30			
0.1	30	1.3	235	1.1	18		
.3	48	1.7	370	1.2	24		
.5	75	2.1	510	1.3	32		
.7	111	2.7	755				
1.0	167	3.4	1,090				

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	42	241	97	129	144	370	159	125	46	46	26
2	30	36	187	93	167	235	370	167	89	44	44	26
3	30	36	192	86	175	285	335	163	a82	44	42	25
4	29	33	192	86	175	201	286	152	75	44	d39	25
5	29	33	167	82	167	183	300	144	179	44	36	24
6	29	32	167	89	167	159	253	140	171	42	34	25
7	27	32	148	82	163	156	241	140	107	44	36	31
8	29	32	140	75	163	167	265	140	133	42	34	28
9	29	32	133	75	159	393	265	129	129	42	32	26
10	27	32	122	79	156	800	253	122	125	40	32	25
11	27	30	137	75	470	510	235	118	115	40	32	25
12	27	30	129	75	890	394	253	115	107	38	29	25
13	27	29	129	72	585	300	265	111	79	38	29	24
14	27	29	148	72	440	265	300	104	75	36	29	22
15	27	32	210	69	370	286	321	100	75	36	28	22
16	27	30	175	69	300	286	279	97	129	35	28	22
17	36	35	159	66	253	300	259	93	93	35	27	22
18	35	405	148	63	220	300	235	89	75	35	27	23
19	32	372	140	63	201	300	230	86	72	33	26	23
20	38	d160	133	a64	183	265	210	82	72	35	26	22
21	36	355	129	66	167	230	196	79	69	33	26	20
22	152	882	118	66	167	307	183	75	63	33	27	23
23	46	598	111	75	163	250	175	75	60	32	27	22
24	36	265	107	100	156	235	171	60	58	32	27	22
25	35	265	107	129	144	210	163	69	53	32	26	22
26	33	370	129	235	137	201	163	75	50	88	26	20
27	35	545	125	159	129	187	159	79	58	129	26	19
28	33	510	111	d140	125	140	156	79	50	115	26	19
29	33	335	107	129	-	235	156	72	48	56	29	22
30	38	259	104	129	-	440	152	60	46	48	28	22
31	46	-	100	129	-	475	-	72	-	46	26	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	1,119	152	27	36.1	0.475	0.55	2,220
November	5,856	882	29	195	2.57	2.87	11,620
December	4,445	241	100	143	1.88	2.18	8,820
Calendar year 1946	66,894	882	26	183	2.41	32.73	132,700
January	2,889	235	63	95.2	1.23	1.41	5,730
February	6,721	890	125	240	3.16	3.29	13,330
March	8,819	800	140	284	3.74	4.32	17,490
April	7,199	370	152	240	3.16	3.52	14,280
May	3,246	167	60	105	1.38	1.59	6,440
June	2,652	179	46	88.7	1.17	1.30	5,280
July	1,435	129	32	46.3	.609	.70	2,850
August	950	46	26	30.6	.403	.46	1,880
September	702	31	19	23.4	.308	.34	1,390
Water year 1946-47	46,043	890	19	126	1.66	22.53	91,330

a No gage-height record; discharge computed on basis of records for Grayback Creek near Holland.
d Doubtful gage-height record; discharge computed as explained in footnote a.

ROGUE RIVER BASIN

Grayback Creek near Holland, Oreg.

Location.- Water-stage recorder, lat. 42°08', long. 123°27', in NW $\frac{1}{4}$ sec. 31, T. 39 S., R. 6 W., 600 feet upstream from mouth and 4 $\frac{1}{2}$ miles northeast of Holland.

Drainage area.- 24.1 square miles.

Records available.- September 1946 to September 1947.

Extremes (not adjusted for diversion).- Maximum discharge during period September 1946 to September 1947, 558 second-feet Nov. 22 (gage height, 3.94 feet), from rating curve extended above 200 second-feet on basis of a slope-area determination at gage height 5.80 feet; minimum, 5.3 second-feet Sept. 23, 1947.

Remarks.- Records good. Water diverted above station for irrigation by Grayback Canal.

Discharge, in second-feet, 1946-47

1946

Day	Discharge	Day	Discharge	Day	Discharge
Sept. 19	6.4	Sept. 23	6.6	Sept. 27	6.2
20	6.4	24	6.4	28	6.2
21	6.4	25	6.2	29	6.2
22	6.4	26	6.2	30	6.2
				31	-

1946-47

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.7	15	66	31	46	36	130	45	28	14	13	6.4
2	7.5	12	57	30	55	54	117	47	24	14	12	6.4
3	8.0	12	52	28	68	58	110	46	22	13	11	6.4
4	7.1	11	50	27	66	54	100	43	21	11	10	6.2
5	7.3	11	45	27	62	49	95	42	11		9.9	6.0
6	6.9	10	42	27	60	46	86	42	32	11	9.6	6.4
7	6.6	11	39	26	60	45	80	42	27	11	9.3	8.2
8	6.9	10	38	25	57	44	88	43	35	11	9.3	7.3
9	6.6	10	37	24	54	110	102	41	37	10	9.3	7.3
10	6.4	11	34	25	51	253	104	37	31	10	9.0	7.3
11	6.2	11	35	25	118	164	97	35	27	10	8.8	6.9
12	6.2	10	35	24	235	119	88	33	24	10	8.5	6.4
13	6.9	10	35	24	140	98	88	31	22	10	8.2	6.2
14	7.5	10	38	23	106	86	93	30	21	9.9	7.7	6.2
15	7.5	10	62	22	93	83	93	28	20	9.9	7.3	6.2
16	7.5	10	61	22	85	78	88	27	30	9.9	7.1	6.2
17	8.8	12	53	22	72	74	83	27	27	9.6	6.9	6.4
18	8.8	11	49	22	63	72	76	26	22	9.3	6.6	6.4
19	8.2	88	46	22	57	68	71	25	20	9.6	6.4	6.2
20	9.9	28	43	22	53	62	66	24	20	9.0	6.4	6.0
21	13	25	41	22	51	57	62	24	18	9.0	6.4	5.8
22	32	254	38	22	48	63	58	22	17	9.0	6.6	5.8
23	12	185	35	27	47	71	56	22	16	9.0	6.4	5.8
24	10	80	34	31	44	63	53	22	16	8.8	6.2	5.8
25	11	74	32	42	42	60	51	21	15	8.8	6.0	6.0
26												
27	10	115	39	71	40	56	50	21	16	24	5.8	6.0
28	10	162	46	56	39	54	49	22	16	37	5.8	6.0
29	9.9	157	39	52	37	53	48	24	16	39	6.0	6.2
30	9.9	113	36	47	-	66	47	22	15	20	6.4	6.0
31	11	83	34	48	-	123	45	21	15	16	7.1	6.0
31	11	-	33	44	-	162	-	22	-	15	6.4	-

Monthly discharge, in second-feet, 1946-47

Month	Observed				Grayback Canal diversion (acre-feet)	Adjusted for diversion				
	Discharge in second-feet			Runoff in acre-feet		Runoff in acre-feet	Discharge in second-feet		Runoff in inches	
	Maxi- mum	Mini- mum	Mean				Mean	Per square mile		
September 19-30, 1946	6.6	6.2	6.32	150	105	255	10.7	0.444	0.20	
October 1946	32	6.2	9.30	572	259	811	13.2	.548	.83	
November	254	10	55.4	3,290	86	3,376	56.7	2.35	2.62	
December	66	32	42.7	2,630	93	2,723	44.3	1.84	2.12	
Calendar year	-	-	-	-	-	-	-	-	-	
January 1947	71	22	31.0	1,900	62	1,962	31.9	1.32	1.52	
February	235	37	69.6	3,870	106	3,976	71.6	2.97	3.09	
March	253	36	80.0	4,920	140	5,060	82.3	3.41	3.93	
April	150	45	79.1	4,700	141	4,841	81.4	3.38	3.77	
May	47	21	30.9	1,900	240	2,140	54.8	1.44	1.66	
June	42	15	23.1	1,370	252	1,622	27.3	1.13	1.26	
July	39	8.8	13.2	811	359	1,150	18.7	.776	.89	
August	13	5.8	7.92	487	367	854	13.9	.577	.67	
September	8.2	5.8	6.35	378	311	689	11.6	.481	.54	
Water year 1946-47	254	5.8	37.1	26,830	2,380	29,200	40.3	1.67	22.70	

West Fork Illinois River near O'Brien, Oreg.

Location.- Staff gage, lat. 42°04', long. 123°43', in NW¼ sec. 25, T. 40 S., R. 9 W., 800 feet upstream from bridge on U. S. Highway 199 and half a mile southwest of O'Brien. Prior to Nov. 1, staff gage at site 1 mile upstream and at different datum.

Drainage area.- 46.6 square miles.

Records available.- October 1945 to September 1947 in reports of Geological Survey. February to November 1930 and February 1943 to September 1945 in files of State engineer.

Extremes.- Maximum discharge observed during year, 3,740 second-feet Nov. 22 (gage height, 7.1 feet, from graph based on gage readings); minimum observed, 8.3 second-feet Oct. 12-16.

1930, 1943-47: Maximum gage height, 12.63 feet, from floodmark, present site and datum, Dec. 28, 1945 (discharge not determined); minimum discharge, 2.1 second-feet Sept. 16, 17, 1945.

Remarks.- Records good except those for periods of doubtful or no gage-height record, which are fair. Staff gage read once daily Oct. 1-31, May 23 to Sept. 30; twice daily for rest of year. One small diversion above station.

Rating tables, water year 1946-47 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-31, Aug. 6 to Sept. 30)

0.3	10	1.2	121	3.0	720
.4	15	1.4	164	4.0	1,210
.6	30	1.7	240	5.0	1,840
.8	53	2.0	330	6.0	2,690
1.0	84	2.5	505		

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	21	255	70	395	81	541	56	39	25	71	17
2	15	21	202	65	910	745	430	53	38	25	59	16
3	18	22	223	64	792	820	395	52	36	24	53	16
4	12	21	351	62	497	477	d350	45	32	24	43	16
5	11	20	273	59	374	330	321	45	115	24	40	14
6	10	19	243	56	508	255	294	44	123	22	35	14
7	10	18	212	56	267	226	249	43	95	22	33	18
8	10	18	420	54	246	207	264	43	304	22	31	17
9	10	16	336	53	218	1,210	378	43	312	21	29	16
10	10	15	252	53	200	2,440	306	40	197	19	29	16
11	9.2	15	202	53	461	1,140	249	40	134	19	26	14
12	8.3	15	176	65	1,110	603	207	38	97	19	24	14
13	8.3	15	171	65	612	423	176	37	81	19	23	14
14	8.3	15	273	60	416	327	157	36	68	18	21	14
15	8.3	14	451	53	306	261	140	35	59	18	21	12
16	8.3	14	381	53	258	218	125	34	d70	18	21	12
17	18	22	270	53	215	192	117	32	59	18	21	12
18	18	1,480	207	53	182	171	108	30	48	16	19	12
19	12	1,120	169	53	164	153	102	30	43	15	19	12
20	110	384	144	76	146	140	95	28	40	15	18	12
21	38	371	127	81	132	125	89	28	38	14	18	12
22	172	2,040	112	81	119	134	84	28	34	14	18	12
23	66	1,780	100	182	108	162	79	27	32	14	18	12
24	47	850	93	330	102	162	74	27	30	15	17	12
25	40	720	86	492	97	149	71	25	28	15	16	11
26	26	1,200	86	970	91	136	66	24	25	163	16	11
27	19	1,310	84	485	86	119	65	24	25	280	14	11
28	19	895	79	374	81	112	62	25	25	315	14	10
29	19	509	76	273	-	121	62	25	25	178	20	10
30	20	333	71	585	-	1,040	59	25	25	117	17	10
31	21	-	70	418	-	1,140	-	25	-	84	17	-

Month	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet
October.....	711.7	172	8.3	23.0	1,410
November.....	13,293	2,040	14	443	26,370
December.....	6,195	451	70	200	12,290
Calendar year 1946.....	69,592.9	2,040	5.5	191	138,000
January.....	5,445	970	53	176	10,800
February.....	8,891	1,110	81	318	17,640
March.....	13,819	2,440	81	446	27,410
April.....	5,715	541	59	190	11,340
May.....	1,087	56	24	35.1	2,160
June.....	2,277	312	25	75.9	4,520
July.....	1,612	315	14	52.0	3,200
August.....	821	71	14	26.5	1,630
September.....	399	18	10	13.3	791
Water year 1946-47.....	60,265.7	2,440	8.3	165	119,600

a No gage-height record; discharge computed on basis of records for East Fork Illinois River near Takilma, Althouse Creek near Holland, and Illinois River at Kerby.

d Doubtful gage-height record; discharge computed as explained in footnote a.

Deer Creek near Dryden, Oreg.

Location.- Water-stage recorder, lat. 42°16', long. 123°27', near center of sec. 18, T. 38 S., R. 6 W., 500 feet downstream from confluence of North and South Forks, and 5 miles east of Dryden.

Drainage area.- 23 square miles.

Records available.- October 1945 to September 1947 in reports of Geological Survey. November 1941 to September 1945 in files of State engineer.

Extremes.- Maximum discharge during year, 1,250 second-feet Mar. 9 (gage height, 6.16 feet); minimum, 1.5 second-feet Oct. 1 (gage height, 1.35 feet).

1941-47: Maximum discharge, 2,750 second-feet Dec. 28, 1945 (gage height, 8.1 feet, present datum, from graph based on gage readings), from rating curve extended above 850 second-feet on basis of logarithmic plotting; minimum observed, 1 second-foot Sept. 3-7, 22-27, Oct. 2-7, 9, 1942.

Remarks.- Records good except those for periods of no gage-height record, which are fair.

Discharge, in second-feet, water year October 1946 to September 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.2	6.4	105	27	68	25	213	17	a20	6.7	16	3.4
2	2.2	5.7	90	24	133	82	155	17	h12	6.7	14	3.3
3	3.6	4.8	78	22	168	117	122	17	a10	6.4	12	3.3
4	2.5	4.4	86	20	156	90	102	16	a10	6.4	11	3.1
5	2.0	5.8	79	20	117	74	88	16	a40	6.0	9.8	2.9
6	1.9	3.6	69	20	103	64	79	14	a25	5.7	9.0	2.9
7	1.9	3.4	a62	19	99	58	72	14	18	5.7	8.2	3.4
8	1.9	3.4	a56	18	92	56	74	14	44	5.4	7.8	3.4
9	1.9	3.4	a52	17	84	292	80	14	44	5.1	7.0	3.3
10	1.8	3.4	a50	17	72	820	76	13	35	5.1	6.7	3.3
11	1.8	3.3	a48	17	84	405	68	12	29	5.1	6.4	3.1
12	1.7	3.3	47	18	205	227	64	12	22	5.1	6.0	2.9
13	1.7	3.3	47	17	172	163	70	12	19	5.1	5.7	2.7
14	1.7	3.3	h62	16	129	135	71	11	17	4.8	5.1	2.7
15	1.8	3.1	92	15	103	127	66	10	15	4.4	4.8	2.5
16	1.8	3.1	108	14	86	114	58	10	19	4.1	4.8	2.5
17	2.5	5.1	a80	14	75	100	51	9.8	20	3.8	4.4	2.5
18	3.3	252	a60	14	65	87	45	9.4	16	2.6	4.1	2.5
19	3.3	230	a54	14	56	74	41	9.0	15	3.6	3.8	2.5
20	4.4	76	46	14	49	65	37	8.6	14	3.4	3.8	2.5
21	9.4	58	43	14	44	57	34	7.8	13	3.4	3.8	2.4
22	41	293	a40	15	41	59	30	7.4	12	3.4	3.8	2.4
23	12	392	a37	27	37	61	28	7.4	11	3.4	3.8	2.4
24	7.4	170	a35	46	33	55	25	7.0	11	3.3	3.8	2.4
25	5.4	144	a33	70	50	52	24	7.0	9.8	3.1	3.6	2.4
26	4.1	267	a36	159	29	49	22	7.0	9.4	14	3.4	2.4
27	3.6	400	a42	111	27	46	21	7.4	9.0	58	3.3	2.4
28	3.4	386	a36	87	26	42	20	8.6	8.6	84	3.3	2.4
29	3.6	225	a32	67	-	48	20	a8.0	6.2	40	3.4	2.4
30	4.1	144	h28	72	-	250	19	a8.0	7.4	27	4.1	2.4
31	4.8	-	28	62	-	386	-	a9.0	-	20	3.6	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Runoff	
						Inches	Acres-feet
October	144.7	41	1.7	4.67	0.203	0.23	287
November	3,105.8	400	3.1	103	4.48	5.02	6,180
December	1,761	108	28	56.8	2.47	2.85	3,490
Calendar year 1946	20,010.3	476	1.2	54.8	2.38	32.36	39,690
January	1,087	159	14	35.1	1.53	1.76	2,160
February	2,561	205	28	84.3	3.67	3.82	4,680
March	4,280	820	25	138	6.00	6.92	8,490
April	1,875	213	19	82.5	2.72	3.03	3,720
May	340.4	17	7.0	11.0	.478	.55	675
June	543.4	44	7.4	18.1	.787	.86	1,080
July	361.8	84	3.1	11.7	.509	.59	718
August	190.3	16	3.3	6.14	.287	.31	377
September	82.7	3.4	2.4	2.76	.120	.13	164
Water year 1946-47	16,131.1	820	1.7	44.2	1.92	28.09	32,000

Peak Discharge, Nov. 18 (10:30 p.m.) 570 sec.-ft.; Nov. 22 (11 p.m.) 629 sec.-ft.; Nov. 27 (6 p.m.) 489 sec.-ft.; Feb. 12 (2 p.m.) 237 sec.-ft.; Mar. 9 (10 p.m.) 1,250 sec.-ft.

a No gage-height record; discharge computed on basis of records for Grayback Creek near Holland.

h Computed from staff-gage readings.

Springs in the Walla Walla River Basin, Oreg.-Wash.

Ground-water overflow through many springs on the alluvial fan of the Walla Walla River near Milton and Freewater, Oreg., amounts to about 50,000 acre-feet a year. During the irrigation season practically all the overflow is used to water crops on land not served by diversion from the river. A survey made in 1933 listed 57 springs or spring groups in the area, arranged in "inner," "intermediate," and "outer" zones concentric about the apex of the alluvial fan.¹

The inner zone is 3 to 3½ miles downstream from Freewater and extends from the vicinity of Nicholas Spring, which is about half a mile east of the Walla Walla River at McCoy Bridge, to springs in the vicinity of Dugger Creek. Within this zone are fully three-fourths of the springs in the Walla Walla Basin. The intermediate and outer zones, each of which contains only a few springs, are about 2 miles and 4 miles, respectively, beyond the inner zone.

In order to bring about a more effective use of the available water supply through a better understanding of the relation between surface- and ground-water supplies in the basin, discharge measurements of each of the principal springs and measurements of ground-water levels in representative wells have been made and the results published periodically since 1932.

Discharge measurements, in second-feet, of springs in Walla Walla River Basin, Oreg.-Wash., during water year October 1946 to September 1947†

Springs of the inner zone

Date	Spring	Locality	Discharge (sec.-ft.)
Dec. 29	Nicholas Spring, Oreg.	NE¼NE¼ sec. 24, T. 6 N., R. 35 E., 150 feet above confluence of spring channel and Walla Walla River.	1.86
Apr. 6	do.....	do.....	1.69
July 10	do.....	do.....	.57
Dec. 23	Big Spring Branch (west prong) Oreg.	SE¼NW¼ sec. 24, T. 6 N., R. 35 E., at Ballou residence, 75 feet above bridge on county road.	11.27
Apr. 2	do.....	do.....	9.80
July 10	do.....	do.....	5.33
Dec. 23	Big Spring Branch (east prong) Oreg.	NE¼SW¼ sec. 24, T. 6 N., R. 35 E., above flow line of small reservoir supplying two diversion pumps.	4.17
Apr. 2	do.....	do.....	3.62
July 12	do.....	do.....	2.14
Dec. 23	Engle Spring, Oreg.	NW¼SE¼ sec. 25, T. 6 N., R. 35 E., total flow at diversion dam.	3.81
Apr. 6	do.....	do.....	2.94
July 12	do.....	do.....	3.13
Dec. 23	Downing Spring, Oreg.	SE¼SW¼ sec. 25, T. 6 N., R. 35 E., at weir, 200 feet below spring orifice.	.84
Apr. 2	do.....	do.....	1.50
July 12	do.....	do.....	1.97
Dec. 23	Haun Spring, Oreg.	NW¼SE¼ sec. 25, T. 6 N., R. 35 E., at Haun farm, 200 feet above highway crossing.	1.66
Apr. 2	do.....	do.....	1.30
July 10	do.....	do.....	1.81

Springs of the intermediate and outer zones

Dec. 23	McEvoy Spring, Wash.	SE¼NW¼ sec. 10, T. 6 N., R. 35 E., at McEvoy farm, 200 feet above Walla Walla Valley Railway.	2.90
Apr. 2	do.....	do.....	2.03
July 17	do.....	do.....	2.42
Dec. 23	Lewis Spring, Oreg.	NW¼NW¼ sec. 25, T. 6 N., R. 35 E., below road crossing.	1.89
Apr. 2	do.....	do.....	1.61
July 10	do.....	do.....	1.91
Dec. 23	Unnamed spring, Wash.	NW¼NE¼ sec. 16, T. 6 N., R. 35 E., at a small diversion structure.	1.89
Apr. 2	do.....	do.....	1.81
July 17	do.....	do.....	2.61
Dec. 29	East Mud Creek (west prong), Oreg.	SW¼SW¼ sec. 22, T. 6 N., R. 35 E., at two weirs..	1.39
Apr. 5	do.....	do.....	1.71
July 12	do.....	do.....	2.30
Dec. 29	East Mud Creek (east prong), Oreg.	SE¼SW¼ sec. 22, T. 6 N., R. 35 E., in diversion ditch, 150 feet below diversion dam.	.95
Apr. 5	do.....	do.....	.42
July 12	do.....	do.....	1.37
Dec. 23	East Mud Creek (branch of), Oreg.	SW¼SW¼ sec. 16, T. 6 N., R. 35 E., near Lockwood dwelling.	3.82
Apr. 2	do.....	do.....	4.44
July 17	do.....	do.....	2.63
Dec. 29	South Mud Creek, Oreg.	SE¼NW¼ sec. 28, T. 6 N., R. 35 E., at Van der Ahe farm.	2.01
Apr. 5	do.....	do.....	3.05
July 17	do.....	do.....	1.76
Dec. 28	Johnson Creek, Oreg.	SE¼NW¼ sec. 29, T. 6 N., R. 35 E., at two weirs..	3.01
Apr. 5	do.....	do.....	2.65
July 17	do.....	do.....	2.20
Dec. 28	Dugger Creek, Oreg.	NW¼NW¼ sec. 32, T. 6 N., R. 35 E., at two weirs..	5.06

† Measurements by Umatilla County deputy watermaster.

¹ Piper, A. M., Robinson, T. W., and Thomas, H. E., Ground Water in the Walla Walla Basin, Oreg.-Wash.: Supreme Court of the United States, October term 1935, State of Washington vs. State of Oregon, transcript of record, p. 132A, October 14, 1935.

SPRINGS IN THE WALLA WALLA RIVER BASIN, OREG.-WASH.

Discharge measurements, in second-feet, of springs in Walla Walla River Basin, Oreg.-Wash., during water year October 1946 to September 1947†--Continued

Springs of the intermediate and outer zones--Continued

Date	Spring	Locality	Discharge (sec.-ft.)
Apr. 5	Dugger Creek, Oreg.....	NW $\frac{1}{4}$ sec. 32, T. 6 N., R. 35 E., at two weirs..	4.19
July 16	do.....	do.....	7.54
Dec. 28	Schwartz Spring Branch (south prong), Oreg.	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 23, T. 6 N., R. 34 E., at weirs.....	9.30
Apr. 5	do.....	do.....	7.16
July 16	do.....	do.....	3.91
Dec. 28	Schwartz Spring Branch (north prong), Oreg.	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 23, T. 6 N., R. 34 E., in ditch di- verting from spring.	3.46
Apr. 5	do.....	do.....	6.89
July 16	do.....	do.....	4.16
Dec. 28	South Mud Creek, Oreg.....	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 13, T. 6 N., R. 34 E., at Krumbaugh farm.	6.56
Apr. 5	do.....	do.....	5.08
July 16	do.....	do.....	6.06

† Measurements by Umatilla County deputy watermaster.

Measurements of stream flow in the Pacific slope basins in Oregon and lower Columbia River Basin made at points other than gaging stations are given in the following table:

Miscellaneous discharge measurements in Pacific slope basins in Oregon and lower Columbia River Basin during water year October 1946 to September 1947

Walla Walla River Basin, Wash.

Date	Stream	Tributary to or diverting from--	Locality	Discharge (sec.-ft.)
Oct. 7	Touchet River.....	Walla Walla River..	On line between secs. 7 and 8, T. 9 N., R. 37 E., at road bridge 1/8 mile south of Bolles.	50.8
Nov. 30	do.....	do.....	do.....	345
Jan. 16	do.....	do.....	do.....	194
Feb. 27	do.....	do.....	do.....	175
Apr. 21	do.....	do.....	do.....	438
June 9	do.....	do.....	do.....	155
July 22	do.....	do.....	do.....	28.9
Sept. 8	do.....	do.....	do.....	40.0
Oct. 8	Wolf Creek.....	East Fork Touchet River.	SW 1/4 sec. 23, T. 9 N., R. 39 E., 500 feet below Robinson Creek, near Dayton.	22.8
Dec. 1	do.....	do.....	do.....	81.5
Jan. 17	do.....	do.....	do.....	42.8
Feb. 27	do.....	do.....	do.....	64.3
Apr. 22	do.....	do.....	do.....	101
June 9	do.....	do.....	do.....	39.7
July 21	do.....	do.....	do.....	21.2
Sept. 9	do.....	do.....	do.....	25.6
Oct. 7	South Fork Touchet River.	Touchet River.....	Sec. 32, T. 10 N., R. 39 E., just above mouth, near Dayton.	4.48
Dec. 1	do.....	do.....	do.....	80.2
Jan. 16	do.....	do.....	do.....	36.1
Feb. 28	do.....	do.....	do.....	33.1
Apr. 21	do.....	do.....	do.....	86.8
June 10	do.....	do.....	do.....	21.8
July 21	do.....	do.....	do.....	1.94
Sept. 9	do.....	do.....	do.....	5.21
Oct. 7	Patit Creek.....	do.....	Sec. 30, T. 10 N., R. 39 E., 400 feet above mouth, at Dayton.	*.03
Nov. 30	do.....	do.....	do.....	16.3
Jan. 16	do.....	do.....	do.....	8.58
Feb. 27	do.....	do.....	do.....	11.6
Apr. 21	do.....	do.....	do.....	40.1
June 9	do.....	do.....	do.....	5.48
July 21	do.....	do.....	do.....	†.01
Sept. 8	do.....	do.....	do.....	.07

* Estimated.

Deschutes River Basin, Oreg.

Feb. 13	Deschutes River....	Columbia River....	SE 1/4 sec. 31, T. 17 S., R. 12 E., at Gilchrist Street Bridge in Bend.	860
Dec. 4	Davis Creek.....	Deschutes River....	SE 1/4 sec. 5, T. 22 S., R. 8 E., 1/8 mile below unnamed tributary and 5/8 mile above former gaging station.	214
Oct. 29	do.....	do.....	SW 1/4 sec. 4, T. 22 S., R. 8 E., 1/2 mile below unnamed tributary and 1/4 mile above former gaging station.	226
1	Lost River (distributary).	do.....	NW 1/4 sec. 27, T. 18 S., R. 11 E., 1,500 feet above Arnold Canal diversion.	*2.0
Nov. 5	do.....	do.....	do.....	*.25
Apr. 18	do.....	do.....	do.....	*2.0
May 9	do.....	do.....	do.....	2.74
June 27	do.....	do.....	do.....	5.17
Apr. 22	Trout Creek.....	do.....	Sec. 2, T. 9 S., R. 15 E., below Big ditch diversion.	16.7
July 30	Clear Creek.....	White River.....	Outlet of Clear Lake, 8 miles southeast of Government Camp.	2.6
Sept. 23	do.....	do.....	do.....	1.5

* Estimated.

Klickitat River Basin, Wash.

Oct. 3	Indian Ford Spring No. 2.	Klickitat River....	N 1/2 sec. 4, T. 6 N., R. 13 E., 5 1/2 miles northeast of Glenwood.	2.41
Nov. 11	do.....	do.....	do.....	2.92
Feb. 16	do.....	do.....	do.....	3.45
Mar. 26	do.....	do.....	do.....	4.02
Apr. 4	do.....	do.....	do.....	3.52
May 3	do.....	do.....	do.....	2.96
June 22	do.....	do.....	do.....	3.36
Aug. 20	do.....	do.....	do.....	2.52
Sept. 2	do.....	do.....	do.....	2.85

Little White Salmon River Basin, Wash.

May 1	Little White Salmon River.	Columbia River....	SE 1/4 sec. 26, T. 4 N., R. 9 E., 300 feet below Moss Creek, near Willard.	196
Nov. 12	Broughton Lumber Co. diversion.	Little White Salmon River.	SW 1/4 sec. 36, T. 4 N., R. 9 E., at Willard.	21.4
Dec. 16	do.....	do.....	do.....	28.4

Miscellaneous discharge measurements in Pacific slope basins in Oregon and lower Columbia River Basin during water year October 1946 to September 1947--Continued

Little White Salmon River Basin, Wash.--Continued

Date	Stream	Tributary to or diverting from--	Locality	Discharge (sec.-ft.)
Feb. 1	Broughton Lumber Co. diversion.	Little White Salmon River	SW $\frac{1}{4}$ sec. 36, T. 4 N., R. 9 E., at Willard	10.3
Mar. 20	...do.	...do.	...do.	20.0
Apr. 7	...do.	...do.	...do.	22.7
May 1	...do.	...do.	...do.	22.6
June 18	...do.	...do.	...do.	20.6
Aug. 18	...do.	...do.	...do.	20.9
Sept. 23	...do.	...do.	...do.	22.8

Willamette River Basin, Oreg.

Sept. 15	Leakage through tunnel from Waldo Lake.	Black Creek.....	Outlet of unused tunnel from Klov Dahl Bay.	5.8
Oct. 1	Olallie Creek.....	...do.	Mouth, 5 miles north of Belknap Springs	a143
Dec. 16	...do.	...do.	...do.	a188
Dec. 21	...do.	...do.	...do.	a141
Apr. 25	...do.	...do.	...do.	a156
June 18	...do.	...do.	...do.	a152
Oct. 28	Horse Creek.....	...do.	Sec. 24, T. 16 S., R. 5 E., 1.3 miles south of McKenzie Bridge.	580
Dec. 13	...do.	...do.	...do.	1,900
14	...do.	...do.	...do.	3,510
16	...do.	...do.	...do.	b1,950
27	...do.	...do.	...do.	590
Jan. 17	...do.	...do.	...do.	401
Feb. 20	...do.	...do.	...do.	568
Mar. 27	...do.	...do.	...do.	545
Apr. 29	...do.	...do.	...do.	721
June 10	...do.	...do.	...do.	794
Aug. 19	...do.	...do.	...do.	513
Oct. 28	South Fork McKenzie River.	...do.	NW $\frac{1}{4}$ sec. 31, T. 16 S., R. 5 E., above Cougar Creek.	471
Dec. 12	...do.	...do.	...do.	3,250
13	...do.	...do.	...do.	8,820
14	...do.	...do.	...do.	10,400
16	...do.	...do.	...do.	b5,540
27	...do.	...do.	...do.	982
Jan. 16	...do.	...do.	...do.	426
Feb. 20	...do.	...do.	...do.	945
Mar. 27	...do.	...do.	...do.	918
Apr. 29	...do.	...do.	...do.	1,090
June 11	...do.	...do.	...do.	1,050
Aug. 19	...do.	...do.	...do.	251
Dec. 12	Oate Creek.....	...do.	Highway bridge at Vida.	1,610
16	...do.	...do.	...do.	b1,200
Jan. 17	...do.	...do.	...do.	107
Feb. 21	...do.	...do.	...do.	147
Mar. 26	...do.	...do.	...do.	179
Apr. 30	...do.	...do.	...do.	121
June 11	...do.	...do.	...do.	204
Aug. 20	...do.	...do.	...do.	31.7
May 28	Calapooya River...	Willamette River...	Mouth, below tailrace of power plant at Albany.	c225
July 17	...do.	...do.	...do.	180
Sept. 4	...do.	...do.	...do.	150
Dec. 15	Wiley Creek.....	South Santiam River	Below Little Wiley Creek, 4 miles southeast of Foster.	b2,260
17	...do.	...do.	...do.	b794
Mar. 5	Albany power canal.	...do.	Above power plant at Albany.	232
Dec. 15	Thomas Creek.....	...do.	Dam site, 8 miles east of Scio.	b5,470
June 18	Little Luckiamute River.	Luckiamute River...	Bridge in SW $\frac{1}{4}$ sec. 26, T. 8 S., R. 6 W.	75.7
Nov. 19	...do.	...do.	Bridge 0.5 mile above mouth, near Suver.	1,100
Apr. 26	...do.	...do.	...do.	131
Aug. 12	...do.	...do.	...do.	26.9
Sept. 26	...do.	...do.	...do.	b22.8
Dec. 14	Rickreall Creek...	Willamette River...	At Rickreall.	b2,820
17	...do.	...do.	...do.	b626
Jan. 7	Turner Creek.....	North Yamhill River	Mouth, 4 miles northwest of Yamhill.	23.8
Feb. 27	...do.	...do.	...do.	35.9
Apr. 1	...do.	...do.	...do.	37.2
May 12	...do.	...do.	...do.	8.1
June 24	...do.	...do.	...do.	3.6
Aug. 8	...do.	...do.	...do.	9
May 15	Mill Creek.....	Pudding River...	Mouth, at Aurora.	13.0
June 19	...do.	...do.	...do.	9.8
Aug. 4	...do.	...do.	...do.	9.6
Sept. 15	...do.	...do.	...do.	7.3

a By engineers of Eugene Water Board.

b By Corps of Engineers.

c Erroneously published in Water-Supply Paper 1064 as May 28, 1946.

Lake River Basin, Wash.

Sept. 17	Salmon Creek.....	Lake River.....	NE $\frac{1}{4}$ sec. 12, T. 3 N., R. 2 E., at road crossing, near Battle ground.	4.24
17	...do.	...do.	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 15, T. 3 N., R. 2 E., 100 feet above Weaver Creek, near Brush Prairie.	5.95

Miscellaneous discharge measurements in Pacific slope basins in Oregon and lower Columbia River Basin during water year October 1946 to September 1947--Continued

Lake River Basin, Wash.--Continued

Date	Stream	Tributary to or diverting from--	Locality	Discharge (sec.-ft.)
Sept. 17	Salmon Creek.....	Lake River.....	E $\frac{1}{2}$ sec. 28, T. 3 N., R. 1 E., $\frac{1}{2}$ mile above Cougar Creek, near Vancouver.	22.4
17	Muddy Creek.....	Salmon Creek.....	SE $\frac{1}{2}$ sec. 12, T. 3 N., R. 2 E., at road crossing, near Battle ground.	1.15
17	Weaver Creek.....	do.....	Center sec. 15, T. 3 N., R. 2 E., 100 feet below bridge, near Brush Prairie.	1.00
17	Unnamed creek.....	do.....	N. line sec. 29, T. 3 N., R. 2 E., at culvert, $\frac{1}{2}$ mile above mouth, near Lauren.	3.15
17	Mill Creek.....	do.....	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 24, T. 3 N., R. 1 E., at bridge, near St. John.	.67
17	Cougar Creek.....	do.....	NE $\frac{1}{4}$ sec. 28, T. 3 N., R. 1 E., 20 feet above mouth, near Vancouver.	1.00
19	Whipple Creek.....	Lake River.....	NW $\frac{1}{4}$ sec. 23, T. 3 N., R. 1 E., at culvert, near Sara.	.01
19	do.....	do.....	N. line sec. 17, T. 3 N., R. 1 E., at highway crossing, at Sara.	1.63

Gee Creek Basin, Wash.

Sept. 18	Gee Creek.....	Columbia River....	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 33, T. 4 N., R. 1 E., at road culvert, near Ridgefield.	0.07
18	do.....	do.....	Center sec. 19, T. 4 N., R. 1 E., at highway crossing, at Ridgefield.	.59

Lewis River Basin, Wash.

Sept. 18	Cedar Creek.....	Lewis River.....	SW $\frac{1}{4}$ sec. 35, T. 5 W., R. 3 E., at road crossing at Yacolt.	3.91
18	do.....	do.....	On line between secs. 16 and 21, T. 5 N., R. 3 E., at culvert at Amboy.	2.33
18	do.....	do.....	NE $\frac{1}{4}$ sec. 8, T. 5 N., R. 2 E., at road crossing, near Etna.	12.9
18	Pup Creek.....	Cedar Creek.....	SE $\frac{1}{4}$ sec. 3, T. 5 N., R. 2 E., 300 feet below culvert, near Dayton.	1.39

Umpqua River Basin, Oreg.

Aug. 15	Clearwater River...	North Umpqua River.	SE $\frac{1}{4}$ sec. 35, T. 26 S., R. 3 E., $\frac{1}{2}$ mile above mouth and 3 miles northeast of Big Camas ranger station.	243
14	Fish Creek.....	do.....	NW $\frac{1}{4}$ sec. 19, T. 27 S., R. 4 E., below Rough Creek, $3\frac{1}{2}$ miles southeast of Big Camas ranger station.	62.6
14	do.....	do.....	SE $\frac{1}{4}$ sec. 10, T. 27 S., R. 3 E., at bridge $\frac{1}{2}$ mile above Camas Creek.	70.0
14	Camas Creek.....	Fish Creek.....	SW $\frac{1}{4}$ sec. 10, T. 27 S., R. 3 E., at bridge $\frac{1}{2}$ mile east of Big Camas ranger station.	2.31

Coquille River Basin, Oreg.

Oct. 2	Middle Fork Coquille River.	Coquille River....	Site of former gaging station 3.8 miles southeast of Myrtle Point.	17.2
2	North Fork Coquille River.	do.....	Site of former gaging station 4.5 miles northeast of Myrtle Point.	42.6

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