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SURFACE WATER SUPPLY *of* HAWAII

JULY 1, 1933, to JUNE 30, 1934

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Prepared in cooperation with the
TERRITORY OF HAWAII



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SCOPE OF WORK

This volume contains results of measurements of the flow of streams and ditches in the Territory of Hawaii during the year ending June 30, 1934. Since the beginning of stream-gaging work in Hawaii in 1910 records of flow of streams and ditches have been obtained at about 470 stations for periods ranging from a few months to 24 years. In addition hundreds of miscellaneous measurements have been made, and rather extensive studies of ground water have been made in Kau, Hawaii,¹ and on Oahu.

In this volume are given the records of daily flow that were obtained at the 95 stations that were operated during the year ending June 30, 1934, and the results of miscellaneous measurements of stream flow made during that year. The results of ground-water studies will be published in separate water-supply papers. See "Publications" on page 7 for a record of other water-supply papers pertaining to Hawaii.

DEFINITION OF TERMS

The units in which stream-flow data are presented in this report are defined as follows:

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

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

In the Territory of Hawaii the unit most commonly used in measuring water is the "million gallons." This is used with two meanings--(1) to indicate a rate of flow and (2) to express an actual quantity of water. In the former sense "million gallons a day" is inferred, 1,000,000 gallons being taken as the unit of quantity and 24 hours as the unit of time. With this meaning the term is generally used in connection with pumping and irrigation. In the latter sense "million gallons" as an absolute quantity is used in the measurement of storage capacities of reservoirs.

The following convenient approximate relations exist between second-feet, million gallons a day, and acre-feet; 1 second-foot flowing 24 hours equals about 2 acre-feet; 1,000,000 gallons equals about 3 acre-feet or about 1.55 second-feet.

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 gage heights and discharge measurements in determining the daily discharge. The records of stage are obtained from water-stage recorders that give continuous records 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. Rating tables giving the discharge for any

¹ Stearns, H. T., and Clark, W. O., Geology and the water resources of the Kau District, Hawaii: U. S. Geological Survey Water-Supply Paper 616, 1930.

stage are prepared from the discharge measurements. The application of the daily gage heights to these rating tables gives the discharge from which the daily, monthly, and yearly discharges are determined. Occasionally discharge is determined from a weir or a rating flume, using standard formulas, and for a few stations the high water discharge has been determined by the use of models.

The data presented in this report comprise, for each gaging station, a description of the station, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off. All rates of flow are expressed as million gallons a day.

The description of the station gives location, drainage area, records available, discharge corresponding to maximum and minimum recorded stages, average discharge if there has been more than 10 years of record, and, under "Remarks", notes on accuracy of the records, diversions that decrease the flow at the gage, and artificial regulation.

The table of daily discharge gives, in general, the discharge corresponding to the mean daily gage heights. But when, owing to sudden or rapid diurnal fluctuation, the discharge obtained from the rating table by applying the mean daily gage height would not be within 5 percent of the true mean, the mean has been obtained by averaging discharges for intervals during the day.

In the table of monthly discharge the column headed "Maximum" gives the flow for the day when the total discharge was greatest. This does not correspond to the rate of flow at the crest of the flood. The maximum rate of flow is given in the station description under the heading "Extremes", and the corresponding stage is always taken from the water-stage recorder graph unless otherwise noted. Likewise, in the column headed "Minimum" the quantity given is the flow for the day when the total discharge was least. The columns headed "Mean" give the average flow in million gallons a day and cubic feet a second during the month. The "total in million gallons" is the sum of the daily flows, and the "total in acre-feet" is computed from the total monthly discharge in million gallons a day.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily (1) on the permanency of the stage-discharge relation, and (2) on the accuracy of observation of stage, measurements of flow, and interpretation of records.

A general statement under "Remarks" gives the accuracy of records, the terms "excellent", "good", "fair", or "poor", indicating that the record is probably accurate within 5, 10, 15, and 20 percent, respectively.

It should be borne in mind that the observations in each succeeding year may be expected to throw new light on data previously published.

Computations are carried to not more than three significant figures except that monthly and yearly total run-off (million gallons and acre-feet) above 10,000 is carried to four significant figures.

PUBLICATIONS

The following table gives by years the numbers of the papers on the surface-water supply of Hawaii published from 1903 to 1934, and, used in conjunction with the list of stations maintained (see Water-Supply Paper 595), provides a convenient index for finding the data for any station. The data for any particular station will be found in the reports covering the years during which the station was maintained except when publication is delayed, owing to undeveloped rating curves. Occasionally data are revised and republished in later papers. Miscellaneous discharge measurements made during any year at points other than regular gaging stations are published in the paper containing that year's data.

Numbers of water-supply papers containing data on the surface-water supply of Hawaii, 1903-34

Year	Number	Year	Number	Year	Number
1903.....	*77	1918-19.....	515	1926-27.....	655
1909-11†.....	318	1919-20.....	516	1927-28.....	675
1912†.....	336	1920-21.....	535	1928-29.....	695
1913†.....	373	1921-22.....	555	1929-30.....	710
1913-15.....	430	1922-23.....	575	1930-31.....	725
1915-16.....	445	1923-24.....	595	1931-32.....	740
1916-17.....	465	1924-25.....	615	1932-33.....	755
1917-18.....	485	1925-26.....	635	1933-34.....	770

*Water resources of Molokai, by Waldemar Lindgren.

†Calendar years; reports subsequent to Water-Supply Paper 373 cover the year beginning July 1 and ending June 30.

COOPERATION

The work during the year ending June 30, 1934, was done under cooperative agreement with the Territory of Hawaii through the commissioner of public lands.

Some of the data in this paper have been obtained in cooperation with the City and County of Honolulu and the city of Hilo. Assistance in collecting records was also rendered as follows: Island of Kauai--Kekaha Sugar Co., McBryde Sugar Co., East Kauai Water Co., Kilauea Sugar Co., and Lihue Plantation Co.; Island of Oahu--Board of Water Supply, City and County of Honolulu, and Wahiawa Water Co.; Island of Maui--Pioneer Mill Co. and East Maui Irrigation Co.; Island of Hawaii--Hilo Waterworks, Kohala Ditch Co., and Olaa Sugar Co.

Acknowledgment of records collected and furnished by individuals or corporations is made in connection with the description of each station affected.

DIVISION OF WORK

The data were collected and prepared for publication under direction of M. H. Carson, district engineer, Honolulu, Hawaii.

ISLAND OF KAUAI

Waimea River below Kekaha Ditch Intake, near Waimea

Location.- Water-stage recorder in Waimea Canyon, 500 feet below Kekaha Ditch intake and 8 miles by trail north of Waimea. Altitude, 490 feet by barometer.

Drainage area.- 45.0 square miles.

Records available.- July 1921 to June 1934.

Extremes.- Maximum discharge during year, 5,600 million gallons a day (8,660 second-feet) Dec. 21 (gage height, 15.04 feet); minimum, 0.06 million gallons a day (0.09 second-foot) Dec. 20.

1921-34: Maximum discharge, 10,700 million gallons a day (16,600 second-feet) Dec. 24, 1927 (gage height, 20.40 feet); no flow several days from January to November 1926, November to December 1929.

Remarks.- Records good for medium stages; poor for all extremely high and low stages and estimated periods. Kokee Ditch and Kekaha Ditch divert above the station taking practically all the water at low and medium stages for irrigation near Waimea and Kekaha.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	64	0.3	0.3	0.2	5.8	0.2		40	0.3	0.3	0.2	*0.2
2	65	.3	.3	.3	.4	.2		.7	.3	62	.2	.2
3	31	.3	.3	.3	.2	.2	+0.2	8.4	.3	179	.3	172
4	55	.3	.3	.3	4.1	.2		11.5	.3	29	.3	827
5	21	.3	.3	.3	8.6	.2		.3	.3	36	29	127
6	5.1	10.5	2.2	.3	.3	.2		.3	.3	6.3	157	79
7	.4	1.1	.3	.4	.2	.2	+1.1	.3	.3	52.3	166	63
8	.4	.3	.2	1.0	.2	.2		.4	.3	99	34	39
9	.4	.3	.2	.3	.2	.2	.1	43	.3	35	.4	5.9
10	1.2	1.7	.2	.3	.2	.1	.1	6.4	.3	88	.3	11
11	1.1	.3	.2	.2	.2	.2	.1	.4	.3	232	.3	4.9
12	.4	.3	.2	.2	.2	.2	625	.1	.3	2	.4	10
13	.3	.2	.4	.2	.2	.2	80	.2	.3	47	.3	7.3
14	6.5	.2	.3	.2	.2	*7.0	.2	.3	.2	4.0	.3	2*0
15	.6	.2	.3	.2	.2	*4.4	.2	.3	.2	9.5	.2	.1
16	.3	.2	.3	.2	.2	*4.1	.1	4.3	.3	.4	.3	.1
17	.8	.2	.4	.2	.2	*2.2	.1	124	.2	.3	.3	.1
18	5.1	.2	1.3	.2	.2	1.2	.2	175	.2	.3	.3	36
19	.3	.2	.6	.2	.2	.2	.2	156	.2	.3	.2	44
20	.2	.2	.3	.2	.2	.2	31	14.5	.2	.2	.2	37
21	.3	.2	.3	.2	.2	*1,590	79	7.3	.2	.3	.2	3.4
22	.3	.2	4.4	.2	.2	*391	21	1.2	.2	.3	.2	11
23	.9	.2	.3	.2	.2	.2	6.8	.6	.2	.3	.2	34
24	.4	.2	.3	.2	.2	*150	.6	.5	.2	123	.2	172
25	.3	.2	.2	.2	172	.2	.3	.4	.2	269	.2	144
26	13.5	.2	.2	.2	24	.2	3.6	.4	.2	248	*.2	22
27	3.5	.2	.2	.2	.3	.2	4.0	.3	.2	149	7.5	.2
28	.3	.2	.2	.2	.2	.2	.3	.3	.2	9.8	*.2	1.2
29	.3	.3	.2	.2	.2	.2	.2	.3	.4	.3	.4	58
30	13.5	.3	.2	.2	.2	.2	.3	.3	4.6	.3	+2	17
31	1.0	.3	-	.2	-	-	47	-	1.7	-	-	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	65	0.2	9.46	14.6	293	900
August.....	10.5	.2	.65	1.01	20.1	62
September.....	4.4	.2	.51	.79	15.4	47
October.....	1.0	.2	.25	.39	7.9	24
November.....	172	.2	7.33	11.3	220	675
December.....	1,590	.1	100	155	3,100	9,510
Calendar year 1933	1,590	.1	37.9	58.6	13,830	42,430
January.....	79	.1	5.82	9.00	180	554
February.....	175	.3	22.4	34.7	628	1,930
March.....	4.6	.2	.43	.57	15.4	41
April.....	269	.2	56.1	86.5	1,680	5,160
May.....	166	.2	12.9	20.0	400	1,230
June.....	827	.1	64.3	99.5	1,930	5,920
Fiscal year 1933-34	1,590	.1	23.3	36.1	8,490	26,050

*Partly estimated.

†Estimated.

KAWAIKOI STREAM NEAR WAIMEA

Location.- Water-stage recorder 2 miles northeast of Kokee ranger station and 12½ miles northeast of Waimea. Altitude, 3,420 feet by barometer.

Drainage area.- 4.1 square miles.

Records available.- April 1909 to June 1934. July 1917 to July 1919 not published.

Average discharge.- 15 years (1919-34), 21.2 million gallons a day (32.8 second-feet).

Extremes.- Maximum discharge during year, 938 million gallons a day (1,450 second-feet) June 4 (gage height, 8.40 feet); minimum, 1.6 million gallons a day (2.5 second-feet) Mar. 13, 21, 22.

1909-34: Maximum discharge, 1,670 million gallons a day (2,580 second-feet) Dec. 13, 1924, and Aug. 3, 1931 (gage height, 12.11 and 11.49 feet respectively); minimum, 1.3 million gallons a day (2.0 second-feet) Sept. 15, 1921.

Highest known flood, 15.2 feet Dec. 18, 1916 (discharge not determined).

Remarks.- Records good for ordinary stages; poor for extremely high stages and estimated periods. No diversions above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	36	9.6	3.8	*3.1	*14	2.8	4.8	19.5	2.2	6.0	11	40	
2	47	6.8	6.9			2.6	4.6	6.0	2.2	40	25	52	
3	19.5	9.6	4.4			2.5	4.3	3.9	2.1	50	14.5	80	
4	47	10	5.6	*20	*20	2.6	4.1	2.9	1.9	41	48	197	
5	16	22	12.5			2.5	3.7	2.6	1.8	27	70	28	
6	18	24	12.5			2.4	3.2	2.2	1.8	28	133	20	
7	6.9	9.3	4.8	*6	*5	2.3	3.0	2.1	1.8	81	106	16	
8	6.0	5.4	3.3			3.0	2.8	5.5	1.9	47	32	10	
9	6.9	5.1	2.9			2.8	2.8	27	2.2	45	23	8.6	
10	23	11.5	2.6	*2.9	*2.6	3.2	2.6	7.0	1.8	89	30	13.5	
11	15	6.0	4.5			3.7	2.8	4.3	1.8	107	18.5	12.5	
12	10	4.7	4.0			145	2.8	3.0	1.7	26	13	7.8	
13	6.8	3.9	5.6	*2.9	*2.6	19	2.8	2.6	1.7	17	10.5	6.8	
14	19	3.6	3.8			7.8	2.4	2.3	2.1	40	9.0	6.4	
15	8.5	3.4	3.2			5.6	2.3	7.0	3.0	23	8.2	10.5	
16	19	3.2	*14	†2.6	*2.1	4.6	2.2	12	4.6	21	7.8	6.6	
17	30	4.7				4.1	2.1	13.5	4.1	21	8.0	21	
18	29	3.7				3.6	2.1	19.5	3.4	9.9	7.0	30	
19	14	3.8	*5.5	†2.0	*2.1	3.2	2.2	38	2.3	14.5	6.4	32	
20	7.7	4.2				2.4	3.4	3.9	11.5	1.9	18	6.0	23
						2.3							
21	8.6	3.2	*4.0	*1.9	160	1.9	208	5.0	5.6	1.7	12.5	5.6	10
22	15.5	2.9				1.8	44	9.0	4.5	1.6	8.6	5.2	18.5
23	21	2.6				1.8	48	21	3.6	12	7.4	5.0	55
24	13	2.5	*2.6	*1.9	*1.9	1.8	60	8.3	3.0	4.6	127	4.8	60
25	17	2.5				14.5	10.5	4.8	2.4	5.6	192	5.9	17.5
26	31	2.7				5.5	8.6	7.0	2.6	7.3	52	7.5	11
27	16.5	2.6	*2.6	*2.6	*2.6	4.4	7.4	4.5	2.3	20	21	5.0	11.5
28	11	2.7				3.6	6.4	3.0	-	13	15	4.5	14
29	16.5	6.6				3.0	5.8	2.8	-	7.4	13	10.5	11.5
30	17	7.6	-	-	-	5.0	56	-	7.8	-	18	-	-
31	8.0	7.2				-	-	-	-	-	-	-	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	47	6.0	18.1	28.0	560	1,720
August.....	24	2.5	6.37	9.86	198	606
September.....	-	-	5.93	9.18	178	546
October.....	-	-	2.92	4.52	90.5	278
November.....	160	1.8	11.0	17.0	331	1,020
December.....	208	2.3	20.8	32.2	645	1,980
Calendar year 1933	208	-	14.7	22.7	5,380	16,520
January.....	56	2.1	6.05	9.36	187	575
February.....	38	2.1	7.83	12.1	219	673
March.....	20	1.6	4.26	6.59	132	405
April.....	218	6.0	47.5	73.2	1,420	4,350
May.....	133	4.5	21.4	33.1	663	2,040
June.....	197	6.4	29.6	45.8	888	2,720
Fiscal year 1933-34	218	-	15.1	23.4	5,510	16,910

*Estimated.

†Partly estimated.

Kokee Ditch near Waimea

Location.- Water-stage recorder 1,000 feet west of road and 10½ miles north of Waimea.
Altitude, 3,310 feet by barometer.

Records available.- September 1926 to June 1934.

Extremes.- Maximum discharge during year, 73 million gallons a day (113 second-feet) Dec. 21 (gage height, 2.83 feet); no flow several times when water was shut out of ditch.

1926-34: Maximum discharge, that of Dec. 21, 1933; no flow occasionally when water was turned out of ditch just above weir.

Remarks.- Records excellent except those for estimated periods, which are poor. Kokee Ditch, at elevation 3,400 feet, diverts water from all streams tributary to Waimea River east of Mohihi Stream, for irrigation near Kehaha. Regulated by head gates.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	41	11	6.6	3.8	32	4.7	11	33	6.3	9.7	18.5	32
2	35	9.5	9.0	6.8	22	4.1	10	11.5	6.0	16	27	41
3	27	10.5	7.6	4.7	11	3.8	9.5	7.9	5.8	49	24	49
4	39	12.5	7.4	3.8	26	3.8	8.0	6.6	5.7	38	42	40
5	20	19.5	13.5	4.7	25	3.8	8.1	6.0	5.5	38	56	40
6	21	26	17.5	9.4	9.7	3.5	7.7	5.6	5.6	32	56	31
7	11	13	8.1	10.5	6.3	3.4	7.4	5.2	5.2	34	56	28
8	8.6	7.8	5.4	14.5	4.8	4.0	7.1	5.6	5.8	44	45	18.5
9	9.3	7.6	4.4	8.4	7.3	4.1	6.9	36	5.6	49	31	15.5
10	22	13	4.0	6.2	14	3.8	6.6	13.5		47	32	16
11	18.5	9.2	5.8	4.5	7.9	4.8	6.5	8.4	*5	56	27	23
12	12.5	7.3	5.7	3.7	5.0	28	6.6	6.9		41	21	14.5
13	9.9	6.5	6.9	3.4	3.8	28	6.5	6.3		28	17.5	12.5
14	21	6.0	5.7	3.4	3.7	15	6.2	5.8		34	15	11.5
15	11.5	5.8	4.5	4.8	3.3	10.5	5.8	9.5		38	14	15
16	18.5	5.6	16	4.1	3.0	8.3	5.7	17	*6	30	13.5	12
17	28	6.8	11.5	3.3	2.9	6.9	5.6	18.5		31	13	20
18	28	6.0	23	3.2	2.7	6.3	5.6	22		20	12	34
19	20	5.8	16	2.8	2.7	5.8	5.4	45		22	11	35
20	10.5	6.6	7.1	2.8	2.4	5.8	6.6	22		26	10.5	28
21	10.5	5.4	5.4	2.7	2.4	56	7.3	12.5	*12	21	10	16
22	12	5.0	9.9	2.4	2.3	56	11	9.9		16	9.7	21
23	25	4.7	8.1	2.4	2.2	45	18.5	8.8		14	9.2	35
24	15.5	4.5	5.6	2.3	2.2	45	16	8.1		47	8.8	46
25	15	4.1	4.7	2.3	39	13	8.1	7.4		56	8.5	43
26	31	4.4	4.1	2.3	27	18.5	8.1	7.1	*8.5	56	9.3	26
27	20	4.4	3.7	2.2	10	18.5	12	6.8		53	13	16
28	13.5	4.1	3.5	2.1	8.1	16	8.4	6.5		10	34	9.0
29	14	8.9	4.0	2.1	6.5	14	6.8	-		12	26	8.3
30	21	9.7	3.7	2.3	5.2	13	6.3	-		11	21	12
31	11.5	10.5	-	2.4	-	11.5	32	-	11.5	-	17.5	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	41	8.6	19.4	30.0	601	1,850
August.....	26	4.1	8.44	13.1	262	805
September.....	23	3.5	7.95	12.3	238	732
October.....	14.5	2.1	4.33	6.70	134	413
November.....	39	2.2	10.0	15.5	300	922
December.....	56	3.4	15.0	23.2	465	1,430
Calendar year 1933	68	2.1	15.6	24.1	5,710	17,530
January.....	32	5.4	8.98	13.9	278	854
February.....	45	5.2	12.8	19.8	359	1,100
March.....	-	-	6.94	10.7	215	660
April.....	56	9.7	34.2	52.9	1,030	3,150
May.....	56	8.3	21.2	32.8	657	2,020
June.....	49	11.5	25.6	39.6	768	2,360
Fiscal year 1933-34	56	2.1	14.5	22.4	5,310	16,290

*Estimated.

Waiahulu Stream near Waimea

Location.- Water-stage recorder in Waimea Canyon, half a mile above confluence with Koale Stream and 8½ miles north of Waimea. Altitude, 890 feet by barometer.

Drainage area.- 20.0 square miles.

Records available.- February to October 1916, October 1917 to June 1918, May 1925 to June 1934.

Extremes.- Maximum discharge during year, 1,550 million gallons a day (2,400 second-feet) Dec. 21 (gage height, 7.33 feet); minimum, 6.6 million gallons a day (10.2 second-feet) Oct. 2, 3.
1916, 1917-18, 1925-34: Maximum discharge, 2,550 million gallons a day (3,950 second-feet) Dec. 24, 1927 (gage height, 9.92 feet); minimum, 5.2 million gallons a day (8.0 second-feet) Nov. 4, 1927.

Remarks.- Records good for ordinary stages, poor for high stages. Kokee Ditch diverts water for irrigation above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24	8.0	9.1	7.0	33	7.8	8.7	20	9.5	10	10.5	11
2	25	7.8	9.3	6.8	16	7.6	9.0	11	9.2	25	10.5	21
3	19	7.8	10	6.6	10	7.6	8.7	9.5	9.2	79	11	117
4	24	8.0	9.6	7.0	18	7.6	8.5	9.0	9.2	30	12	319
5	15	6.4	10	7.0	17.5	7.5	8.5	8.5	9.5	20	33	46
6	12	9.1	11.5	6.6	10.5	7.8	8.5	8.5	9.5	15.5	130	26
7	11	*10	11.5	7.4	9.1	7.8	8.5	6.5	9.2	69	106	19.5
8	10	*8.8	9.8	8.2	8.6	7.6	8.7	10.5	9.2	63	22	13
9	9.8	*8.8	9.3	8.4	8.2	7.6	8.7	16	9.2	35	13	11.5
10	10	*9.1	9.3	8.0	8.2	7.6	8.7	12	9.0	86	12	11.5
11	12	9.1	8.6	7.6	8.0	7.6	8.7	10.5	9.0	201	12	12.5
12	11	9.1	9.1	7.6	8.0	348	8.7	9.2	8.7	31	11.5	10.5
13	10.5	9.1	8.6	7.6	6.0	46	8.5	9.0	9.0	15	11	9.7
14	10.5	9.1	9.5	8.0	7.8	21	8.5	8.5	9.0	26	10.5	9.4
15	11	8.6	9.3	6.2	7.6	19	8.5	9.5	9.0	23	*10	9.7
16	10	8.6	9.6	8.2	7.6	17.5	9.3	11	9.0	14	*10	9.7
17	11	8.6	11	8.4	7.6	17	8.3	32	9.0	13		10
18	13	9.6	10.5	8.4	7.6	16.5	8.3	68	9.0	12.5	*10	11.5
19	13	9.8	12	6.2	7.4	16	6.3	58	9.0	11.5		14
20	11	9.8	9.6	8.2	7.4	33	9.0	23	9.0	12	10	14.5
21	10	9.6	6.6	6.2	7.4	585	9.2	15	9.0	12.5	10	13
22	10	6.6	8.6	8.2	7.4	172	9.7	13	9.0	11.5	9.7	11
23	11	8.6	9.3	8.2	7.4	66	12	11.5	9.0	11	9.7	35
24	11	8.8	8.8	8.2	7.4	172	10.5	11	9.0	109	9.7	56
25	10	9.1	6.2	8.2	196	56	9.5	10.5	9.0	278	10	48
26	14.5	9.1	7.8	8.2	20	22	13.5	10.6	9.0	230	11	16
27	12	9.1	7.6	8.0	10.5	13.5	13	10	9.0	61	11	11.5
28	10	8.6	7.4	8.0	8.6	11.5	11	9.7	9.0	14	10.5	11
29	8.8	8.4	7.0	8.0	8.4	10.5	10.5	-	11	11.5	9.7	11
30	9.3	6.6	7.0	8.0	8.2	9.5	10.5	-	10	11	9.7	12
31	9.3	9.1	-	8.0	-	9.2	47	-	10	-	9.7	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	25	8.8	12.5	19.5	389	1,190
August.....	10	7.8	8.88	13.7	275	845
September.....	12	7.0	9.27	14.3	278	854
October.....	6.4	6.6	7.63	12.1	243	745
November.....	196	7.4	16.6	25.7	489	1,530
December.....	585	7.6	55.7	38.2	1,730	5,300
Calendar year 1933	585	6.6	24.8	38.4	9,050	27,730
January.....	47	8.3	10.6	16.4	328	1,010
February.....	68	8.6	15.2	24.4	443	1,360
March.....	11	8.7	9.21	14.2	285	876
April.....	278	10	51.4	79.5	1,540	4,750
May.....	130	9.7	18.6	28.8	576	1,770
June.....	319	9.4	31.0	48.0	932	2,860
Fiscal year 1933-34	565	6.6	20.6	31.9	7,520	23,070

*Partly estimated.

†Estimated.

Kekaha Ditch at Camp No. 1, near Waimea

Location.- Water-stage recorder in Waimea Canyon, 6½ miles N. 16° E. of Waimea.
Altitude, 520 feet by barometer.

Records available.- November 1907 to June 1915, March 1916 to June 1934.

Average discharge.- 15 years (1918-24, 1925-34), 37.7 million gallons a day (58.3 second-feet).

Extremes.- Maximum discharge during year, 66 million gallons a day (102 second-feet) June 25 (gage height, 4.15 feet); no flow Feb. 3-4, when water was shut out of ditch.
1907-34: Maximum discharge, 71 million gallons a day (110 second-feet) Apr. 25, 1928 (gage height, 4.33 feet); no flow occasionally when water was shut out of ditch.

Remarks.- Records good for ordinary stages; poor for extremely low stages. Intake on Waimea River 8 miles north of Waimea. Water used for irrigation of sugarcane at Kekaha plantation. Regulated by head gates.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	51	36	28	26	29	23	22	49	31	*32	37	27
2	50	39	28	27	44	23	29	43	30	†33	39	37
3	49	32	31	26	32	22	29	28	29	†48	39	49
4	50	39	28	25	40	23	29	23	29	†49	37	41
5	49	39	36	25	50	24	28	29	30	†47	50	34
6	50	51	48	30	34	23	27	28	32	†46	51	27
7	42	43	36	34	28	22	27	27	29	†48	50	12.5
8	36	32	28	47	25	23	26	33	29	†46	49	11.5
9	39	30	28	35	24	22	26	51	28	†47	47	31
10	42	45	25	29	23	22	25	47	27	†47	39	35
11	45	38	25	26	23	25	25	36	26	†48	39	34
12	38	32	28	25	24	22	26	31	26	†47	44	18
13	37	28	36	24	24	24	26	29	25	†46	34	12.5
14	42	27	34	24	23	22	26	26	26	†42	31	24
15	40	26	30	25	23	24	25	33	31	†46	30	30
16	37	26	32	26	23	24	25	45	29	†46	33	30
17	43	26	45	25	22	24	24	50	30	†44	35	29
18	49	26	45	24	22	24	24	47	28	†41	30	49
19	43	26	45	24	22	24	25	46	27	†37	28	50
20	33	27	31	23	22	24	49	50	26	36	30	48
21	31	26	31	23	22	19	50	51	25	39	29	46
22	30	25	46	23	22	24	48	48	26	34	27	46
23	40	24	39	23	21	24	50	46	26	32	26	48
24	39	24	31	22	21	23	45	41	26	44	25	48
25	33	24	29	22	39	23	35	37	26	50	25	47
26	45	25	27	22	49	23	44	36	25	49	28	47
27	49	24	26	22	35	22	50	34	24	49	45	46
28	41	24	25	22	28	22	43	33	25	50	31	49
29	33	26	28	22	25	23	37	-	28	43	27	48
30	50	27	28	22	24	23	38	39	39	26	28	49
31	44	29	-	22	-	22	49	-	45	-	26	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	51	30	41.9	64.8	1,300	3,990
August.....	51	24	30.5	47.2	946	2,900
September.....	48	25	32.5	50.3	975	2,990
October.....	47	22	28.6	39.6	795	2,440
November.....	50	21	28.1	43.5	843	2,590
December.....	24	19	22.9	35.4	710	2,180
Calendar year 1933	51	9.8	34.3	53.1	12,320	37,840
January.....	50	22	33.3	51.5	1,030	3,170
February.....	51	23	36.6	59.7	1,080	3,320
March.....	45	24	28.5	44.1	882	2,710
April.....	50	32	43.6	67.5	1,310	4,010
May.....	51	25	35.1	54.3	1,090	3,340
June.....	50	11.5	36.8	56.9	1,100	3,390
Fiscal year 1933-34	51	11.5	33.0	51.1	12,060	37,030

*Partly estimated.

†Estimated.

Kekaha Ditch below tunnel no. 12, near Waimea

Location.- Water-stage recorder 1 mile north of Waimea.

Records available.- April 1908 to November 1914, July 1916 to September 1934 (discontinued).

Average discharge.- 16 years (1917-24, 1925-34), 31.9 million gallons a day (49.4 second-feet).

Extremes.- Maximum discharge during period, 54 million gallons a day (84 second-feet) June 4 (gage height, 4.22 feet); no flow Feb. 4, when water was shut out of ditch.
1908-14, 1916-34: Maximum discharge, 70 million gallons a day (108 second-feet) Dec. 24, 1927 (gage height, 5.17 feet); no flow occasionally, when water was shut out of ditch.

Remarks.- Records good. Intake on Waimea River 6 miles north of Waimea. Water used for irrigation of sugarcane at Kekaha plantation. Regulated by head gates.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	46	34	24	22	*25	18.5	18.5	44	30	32	35	27
2	46	37	26	22	*40	17.5	23	41	28	32	35	35
3	44	30	28	22	*32	17.5	26	30	27	46	39	46
4	44	35	26	22	*37	18.5	25	16.5	27	46	34	44
5	44	34	33	21	*44	19	24	27	27	44	44	35
6	44	44	42	24	*33	19	23	24	30	44	46	30
7	39	41	35	32	*26	18.5	23	23	27	46	48	11.5
8	34	30	26	41	*22	18.5	22	27	27	46	46	8.1
9	35	28	23	34	*20	18.5	22	42	27	44	44	28
10	37	39	22	27	*20	17.5	22	42	26	44	39	34
11	42	35	22	22	*19	18.5	22	34	25	46	37	34
12	35	30	22	21	*20	19	22	26	24	44	42	18.5
13	35	27	32	20	*20	22	23	27	23	44	34	10
14	37	25	32	20	*19	20	23	25	23	39	30	20
15	37	24	27	22	*19	20	22	28	28	44	28	28
16	34	23	27	22	*19	20	22	37	27	44	32	28
17	39	23	41	21	*19	20	22	44	23	42	35	27
18	44	23	39	19.5	*18	21	22	41	27	39	30	42
19	41	23	42	18.5	*18	21	23	42	25	34	28	46
20	31	24	28	18.5	*18	21	39	44	24	34	30	44
21	28	22	27	18.5	*18	24	44	44	23	37	26	44
22	28	22	41	18.5	*18	22	44	42	23	34	27	42
23	35	21	37	18.5	*17	22	44	41	24	32	25	42
24	39	21	26	*18	17.5	21	41	37	23	39	25	44
25	32	21	25	*18	33	19	34	34	22	48	24	44
26	39	21	23	*18	44	19	35	32	22	46	25	44
27	44	21	22	*16	34	18.5	44	32	22	46	42	42
28	39	20	21	*18	24	18.5	39	30	22	46	32	44
29	32	22	23	*18	21	19	34	-	24	42	27	42
30	42	23	24	*16	19	18.5	34	-	31	39	25	44
31	42	27	-	*18	-	18.5	42	-	42	-	25	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	46	28	38.3	59.5	1,190	3,650
August.....	44	20	27.4	42.4	860	2,610
September.....	42	21	28.8	44.6	865	2,650
October.....	41	-	21.6	35.4	671	2,080
November.....	-	-	24.4	37.8	754	2,250
December.....	24	17.5	19.5	30.2	606	1,860
Calendar year 1933	46	2.6	32.3	50.0	11,620	35,640
January.....	44	18.5	29.1	45.0	902	2,770
February.....	44	16.5	34.2	52.9	968	2,940
March.....	42	22	26.0	40.2	907	2,490
April.....	48	24	41.4	64.1	1,240	3,610
May.....	48	24	33.6	52.0	1,040	3,190
June.....	46	8.1	34.3	53.1	1,030	3,160
Fiscal year 1933-34	48	6.1	29.8	46.1	10,890	35,430

*Estimated.

Kekaha Ditch below tunnel no. 12, near Waimea

(Continued)

Discharge, in million gallons a day, July to September 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	41	32	22									
2	35	32	39									
3	32	35	44									
4	28	37	41									
5	28	32	28									
6	28	35	39									
7	28	28	39									
8	37	25	30									
9	44	24	27									
10	37	22	25									
11	34	22	27									
12	44	22	39									
13	44	22	28									
14	42	23	32									
15	44	23	37									
16	39	22	37									
17	32	22	27									
18	*28	22	-									
19	*28	22	-									
20	*29	25	-									
21	*27	28	-									
22	*38	23	-									
23	*43	22	-									
24	*40	21	-									
25	*31	21	-									
26	*35	21	-									
27	*41	21	-									
28	*43	21	-									
29	*36	20	-									
30	*29	20	-									
31	*29	19	-									
Month				Million gallons a day			Second-foot (mean)	Total run-off				
				Maximum	Minimum	Mean		Million gallons	Acre-feet			
July.....				~	~	35.3	54.6	1,090	3,360			
August.....				37	19	24.6	38.1	764	2,340			
September 1-17.....				44	22	33.0	51.1	561	1,720			
October.....												
November.....												
December.....												
Calendar year												
January.....												
February.....												
March.....												
April.....												
May.....												
June.....												
The period.....								2,420	7,420			

*Estimated.

Hanapepe River at Koula, near Eleele

Location.- Water-stage recorder just below junction with Manuahi Stream, 500 feet below siphon at Koula, and 4 miles northeast of Eleele. Altitude, 150 feet by barometer.

Drainage area.- 18.8 square miles.

Records available.- August 1910 to January 1921, December 1926 to June 1934.

Average discharge.- 13 years (1913-20, 1927-34), 54.5 million gallons a day (84.3 second-feet).

Extremes.- Maximum discharge during year, 2,280 million gallons a day (3,500 second-feet) June 4 (gage height, 5.40 feet); minimum, 10.5 million gallons a day (16.2 second-feet) Apr. 2, 13, 14, 15, 16.

1910-21, 1926-34: Maximum discharge, at least 5,000 million gallons a day (7,740 second-feet) Dec. 18, 1916 (at old station above mouth of Manuahi Stream; gage height not known, as station was destroyed by this flood); minimum, 7.1 million gallons a day (11.0 second-feet) Dec. 30, 31, 1913.

Remarks.- Records good for ordinary stages, poor for estimated periods and extremely high stages. Hanapepe Ditch diverts water from river 3 miles above station for irrigation.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	*70	*44	18.5	22	16.5	*20	*16	20	17.5	11	14	12.5
2			24	31	16			16.5	16.5	11	28	17.5
3			19	19.5	16			15.5	16.5	15	15.5	37
4			34	19	16			15	16	13	13.5	536
5	*42	*24	24	22	16	*17	13.5	15	25	12	15	90
6			36	29	16		13.5	22	22	11	+29	181
7			19.5	70	16		13.5	23	16.5	13	+29	42
8			38	28	16		12.5	39	16.5	18	+16.5	24
9			22	21			12.5	50	16	11	13.5	17
10			25	16.5			*22	12	27	16	11	14.5	17.5
11	31	23	32	17.5	*17	*70	16	25	15.5	11	59	15.5
12			28	17.5			23	16.5	15	11	20	15
13			33	19			15	16	15	10.5	14.5	13.5
14			39	27			20	13.5	15.5	24	10.5	16	13
15	27	*24	20	20	*15	*22	13	34	19	10.5	128	16
16			28	18			12.5	44	35	10.5	134	13.5
17			24	19			13	100	17.5	11	34	25
18			49	18			16.5	87	16	11	26	121
19	23	*17	27	17.5	*14	*80	30	75	17	11	26	82
20			20	17			163	51	16.5	11	23	84
21			49	16.5			328	42	16.5	11	16	37
22			40	16.5			74	38	16.5	12.5	14	48
23	29	*17	25	16.5	*20	*22	59	33	16.5	12	13.5	91
24			22	16.5			26	36	16.5	26	12.5	250
25			22	16.5			18.5	29	16	104	12.5	205
26			20	16.5			54	17.5	16	205	49	68
27	32	*20	19.5	18	*14	*18	31	19	15	199	21	58
28			30	16			20	18.5	15	40	15	85
29			21	23			21	-	13.5	24	13.5	253
30			19.5	16.5			21	-	12.5	17	13.5	98
31	*46	*20	16	16	*14	*18	39	-	11	-	12.5	-
Month			Million gallons a day			Second-feet (mean)	Total run-off					
			Maximum	Minimum	Mean		Million gallons	Acre-feet				
July.....			-	20	39.5	61.1	1,220	3,750				
August.....			-	-	26.7	41.3	827	2,540				
September.....			49	18.5	27.2	42.1	815	2,500				
October.....			70	16	21.0	32.5	650	1,990				
November.....			-	-	16.2	25.1	488	1,500				
December.....			-	-	28.3	43.8	876	2,690				
Calendar year 1933			562	-	50.3	77.8	18,370	56,340				
January.....			328	12	37.0	57.2	1,150	3,520				
February.....			100	15	33.6	52.0	840	2,580				
March.....			35	11	17.3	26.8	536	1,640				
April.....			205	10.5	29.5	45.6	854	2,710				
May.....			134	12.5	27.8	43.0	862	2,650				
June.....			536	12.5	84.9	131	2,550	7,810				
Fiscal year 1933-34			536	10.5	32.3	50.0	11,800	36,180				

*Estimated.

†Partly estimated.

Hanapepe Ditch below intake, near Eleele

Location.- Water-stage recorder 1 mile below intake and 7 miles northeast of Eleele.
Altitude, 500 feet by barometer.

Records available.- March 1930 to June 1934.

Extremes.- Maximum discharge during year, 35 million gallons a day (54 second-feet) June 4; maximum gage height, 3.68 feet Jan. 20, 21; no flow occasionally, when water was turned out of ditch.
1930-34: Maximum discharge, 41 million gallons a day (63 second-feet) Nov. 12, 1931 (gage height, 3.96 feet); no flow occasionally, owing to closing of head gates.

Remarks.- Records good except those for estimated periods, which are fair. Ditch diverts water from Hanapepe River at intake 1 mile above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	32	32	26	26	23	18	20	26	16.5	18	25	20
2	32	32	29	29	22	19.5	22	24	15	18.5	30	25
3	32	32	26	26	21	18.5	22	23	15	22	25	30
4	32	32	29	26	20	26	19.5	23	15	22	23	32
5	32	32	29	27	20	20	19.5	22	19.5	19	25	32
6	32	32	30	27	20	19	19.5	11.5	20	18	30	32
7	32	30	27	29	20	19	19	8.9	18	20	30	32
8	32	30	29	30	20	19	19	15	18	20	26	32
9	32	32	29	*25	20	18.5	19	27	18	18	22	28
10	32	32	27	25	20	23	19	17	18	17	22	28
11	32	32	30	24	23	20	23	11.5	18	18	30	28
12	32	30	29	24	22	25	25	19.5	18	16.5	26	26
13	32	30	30	26	20	17.5	22	19	18	16	23	26
14	32	29	29	21	20	21	20	18.5	25	15.5	23	23
15	32	29	27	26	20	19	19.5	24	20	15	32	25
16	32	29	29	24	19.5	18	19	26	26	15.5	32	23
17	32	29	29	25	19.5	17.5	19.5	29	23	17	32	28
18	32	29	30	24	19.5	18	23	29	22	15	30	31
19	30	30	29	24	19.5	18	24	12	20	14	30	28
20	32	29	26	24	19	18.5	30	0	20	16.5	28	26
21	32	27	30	23	19.5	29	33	0	19	16	25	23
22	30	26	30	22	19.5	29	30	0	19	19	23	30
23	32	29	29	22	19.5	27	32	1.2	19	17	22	30
24	32	+26	29	22	19	27	30	0	18.5	25	20	32
25	32	+25	27	22	21	22	27	4.8	18.5	33	20	30
26	32	+25	27	22	19	21	30	15.5	18.5	32	25	29
27	32	+25	26	22	18.5	22	30	16.5	18.5	32	26	30
28	32	+26	29	22	18.5	22	27	18	18.5	30	23	30
29	32	+27	27	26	18	22	27	-	18.5	32	22	32
30	32	+26	26	22	18	21	27	-	20	28	20	32
31	32	+25	-	22	-	21	29	-	18.5	-	20	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	32	30	31.9	49.4	988	3,030
August.....	32	-	29.0	44.9	899	2,760
September.....	30	26	28.3	43.8	849	2,610
October.....	30	22	24.7	38.2	765	2,350
November.....	23	18	20.0	30.9	598	1,840
December.....	29	17.5	21.2	32.8	656	2,010
Calendar year 1933	33	3.2	26.4	40.8	9,640	29,590
January.....	33	19	24.0	37.1	746	2,290
February 1-19, 23, 25-28.....	29	1.2	18.4	28.5	442	1,360
March.....	26	15	19.0	29.4	590	1,810
April.....	33	14	20.5	31.7	614	1,890
May.....	32	20	25.6	39.5	789	2,420
June.....	32	20	26.4	43.9	851	2,610
Fiscal year 1933-34 (361 days)	33	1.2	24.3	37.6	8,790	26,980

*Partly estimated.

†Estimated.

Hanapepe Ditch at Koula, near Eleele

Location.- Water-stage recorder at first flume below siphon at Koula, 4 miles below intake and 4 miles north of Eleele. Altitude, 490 feet by barometer.

Records available.- January 1910 to June 1921, March 1927 to June 1934.

Average discharge.- 17 years (1910-20, 1927-34), 26.1 million gallons a day (40.4 second-feet).

Extremes.- Maximum discharge recorded during year, 33 million gallons a day (51 second-feet) June 4 (gage height, 2.93 feet); minimum, 1.55 million gallons a day (2.40 second-feet) Feb. 23.

1910-21, 1927-34: Maximum discharge, 36 million gallons a day (56 second-feet) Apr. 10, 1918, and Aug. 3, 1931 (gage height, 3.18 and 3.05 feet respectively); no flow occasionally, owing to closing of head gates.

Remarks.- Records good. Diverts water for irrigation from Hanapepe River 3 miles above station. Regulated by head gates and spillways.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	27	27	21	21	18.5	15	17	22	16	15	22	18.5
2	27	27	22	22	17	17	18.5	22	15	16	25	22
3	27	25	21	21	17	16	18.5	21	15	18.5	21	24
4	27	25	22	21	17	22	17	21	15	18.5	21	29
5	27	27	22	21	17	18.5	17	19.5	17	17	21	29
6	27	27	24	22	17	17	17	11.5	18.5	16	24	29
7	27	25	22	22	17	17	17	9.5	16	17	25	27
8	27	25	22	24	17	17	17	13	16	18.5	21	27
9	27	25	22	21	17	16	17	24	15	16	19	25
10	27	27	22	21	17	19.5	17	15	15	15	19.5	24
11	27	25	24	19.5	18.5	17	19.5	11.5	15	16	24	24
12	27	25	22	19.5	18.5	22	19.5	17	15	15	22	22
13	27	24	24	21	17	15	18.5	17	15	15	19.5	21
14	27	24	22	21	17	19.5	17	17	19.5	15	19.5	19.5
15	27	22	21	21	17	17	17	21	17	13.5	25	22
16	27	22	22	19.5	17	16	17	23	21	14	27	19.5
17	27	24	22	19.5	16	15	17	25	19.5	15	25	24
18	25	24	24	19.5	16	15	19.5	25	18.5	15	24	25
19	25	24	22	19.5	16	15	19.5	10	17	15	24	24
20	27	22	21	19.5	16	16	25	1.7	16	15	24	24
21	27	22	24	18.5	16	27	29	1.65	16	15	21	21
22	25	22	24	18.5	17	19	26	1.6	16	17	19.5	25
23	27	24	24	18.5	17	12	27	2.4	16	15	19.5	25
24	25	22	22	18.5	17	12	27	1.6	16	19.5	18.5	27
25	27	21	22	18.5	18.5	9.3	24	5.9	16	27	18.5	27
26	27	21	22	18.5	16	14.5	27	15	16	29	22	24
27	27	21	21	18.5	17	18.5	25	16	16	29	22	26
28	27	22	22	18.5	16	18.5	22	17	15.5	29	21	26
29	27	22	22	21	16	18.5	22	-	16	27	18.5	27
30	27	22	21	18.5	16	18.5	22	-	17	25	18.5	27
31	27	21	-	17	-	18.5	25	-	16	-	17	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	27	25	26.7	41.3	829	2,540
August.....	27	21	23.7	36.7	736	2,230
September.....	24	21	23.3	34.5	668	2,050
October.....	24	17	20.0	30.9	620	1,900
November.....	18.5	16	16.9	26.1	507	1,560
December.....	27	9.3	17.1	26.5	529	1,620
Calendar year 1933	32	1.3	22.3	34.5	8,130	24,960
January.....	29	17	20.6	31.9	638	1,960
February.....	25	1.6	14.6	22.6	408	1,250
March.....	21	15	16.4	25.4	508	1,560
April.....	29	13.5	18.3	28.3	548	1,680
May.....	27	17	21.6	33.4	668	2,050
June.....	29	18.5	24.5	37.9	734	2,250
Fiscal year 1933-34	29	1.6	20.3	31.4	7,390	22,680

South Fork of Wailua River near Lihue

Location.- Water-stage recorder a third of a mile above Wailua Falls and 5 miles northeast of Lihue. Prior to Nov. 18, 1918, station was a third of a mile farther upstream. Altitude, 230 feet by barometer.

Drainage area.- 22.4 square miles.

Records available.- December 1911 to June 1934.

Average discharge.- 12 years (1921-24, 1925-34), 67.7 million gallons a day (105 second-feet).

Extremes.- Maximum discharge during year, 1,820 million gallons a day (2,820 second-feet) Jan. 21 (gage height, 5.16 feet); minimum, 1.7 million gallons a day (2.6 second-feet) Nov. 16.

1911-34: Maximum discharge, 29,000 million gallons a day (44,900 second-feet) Jan. 16, 1920 (gage height, 11.25 feet); minimum, 1.2 million gallons a day (1.9 second-feet) May 3, 1928.

Remarks.- Records good except those for extremely high stages, which are poor. Lihue Ditch and Hanalei Ditch divert water above station at elevations of 600 feet and 500 feet respectively for irrigation.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	81	47	2.7	2.4	2.2	2.0	26	3.9	2.4	2.0	9.6	4.2
2	164	68	2.7	2.8	2.1	2.1	15.5	3.6	2.2	2.0	16.5	3.8
3	46	44	2.4	2.6	2.2	2.1	6.0	3.6	2.2	2.1	5.3	12.5
4	162	34	2.3	2.3	2.0	36	3.4	3.7	2.1	2.2	4.6	435
5	60	22	2.5	2.4	2.0	3.4	2.9	4.0	2.2	2.2	4.9	91
6	26	42	3.0	2.7	2.0	3.0	2.5	3.7	2.5	2.3	29	309
7	6.7	24	3.2	9.4	2.0	2.4	2.4	3.5	2.6	2.7	56	62
8	9.2	6.4	40	9.0	2.0	2.3	2.3	3.5	2.2	7.9	24	48
9	11	5.9	9.6	3.0	2.2	2.2	2.3	9.1	2.2	2.9	6.6	30
10	7.8	8.0	3.5	2.6	2.3	3.9	2.2	4.2	2.2	2.2	4.5	39
11	5.8	8.0	2.9	2.2	2.2	3.8	2.6	3.3	2.1	2.2	12.5	21
12	4.9	6.9	3.1	2.1	2.3	314	3.1	3.0	2.0	2.2	7.2	5.6
13	5.6	6.0	3.1	2.1	2.0	8.6	3.0	2.7	2.2	2.2	16	4.8
14	5.9	5.9	2.9	2.3	1.9	3.5	2.7	2.6	2.5	2.1	6.4	4.6
15	5.9	5.9	2.7	2.5	1.8	2.6	2.5	2.6	2.5	2.0	109	5.2
16	5.9	5.9	2.8	2.3	1.7	2.3	2.5	2.9	3.0	2.2	127	5.6
17	5.9	5.2	2.7	3.3	*1.8	2.2	2.5	*3.5	3.2	2.7	13.5	4.8
18	5.6	3.4	4.7	2.9	*1.8	2.2	2.5	3.1	2.7	2.6	16	47
19	4.4	3.6	8.1	2.6	1.8	2.1	2.7	3.0	2.3	2.4	16.5	8.6
20	4.5	3.2	3.3	2.2	1.8	2.2	89	2.7	2.2	2.3	11.5	5.0
21	4.2	2.8	2.7	2.1	1.9	662	482	2.6	2.1	2.3	6.5	4.5
22	3.7	2.7	3.0	2.0	1.9	286	38	2.5	2.0	2.3	5.4	4.2
23	3.7	3.1	2.7	1.9	1.9	79	90	2.5	2.0	2.4	5.3	30
24	3.6	2.9	2.6	1.9	1.9	114	31	2.6	2.0	2.2	5.6	152
25	3.6	2.6	2.8	1.8	2.3	48	9.2	2.5	1.9	47	5.6	73
26	3.9	2.7	2.3	1.8	2.0	31	7.4	2.4	1.8	730	48	11
27	29	2.7	2.2	1.8	2.0	32	13	2.5	1.8	286	49	6.1
28	5.8	2.7	2.4	1.9	2.2	22	28	2.7	1.9	55	30	14.5
29	3.9	2.8	2.4	2.2	2.2	26	6.9	-	2.0	41	6.4	70
30	71	2.8	2.5	2.2	2.2	23	6.4	-	2.1	19.5	5.3	48
31	30	2.8	-	2.1	-	28	5.0	-	2.0	-	3.7	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	164	3.6	25.5	39.5	790	2,430
August.....	68	2.6	12.4	19.2	386	1,180
September.....	40	2.2	4.46	6.90	134	411
October.....	9.4	1.8	2.75	4.25	85.4	262
November.....	2.3	1.7	2.02	3.13	60.6	186
December.....	662	2.0	56.6	87.6	1,750	5,380
Calendar year 1933	2,520	1.7	70.1	108	25,580	78,530
January.....	482	2.2	28.9	44.7	896	2,750
February.....	9.1	2.4	3.30	5.11	92.5	284
March.....	3.2	1.8	2.23	3.45	69.1	212
April.....	730	2.0	42.0	66.0	1,260	3,860
May.....	127	3.7	21.5	33.3	667	2,050
June.....	435	3.8	52.0	80.5	1,560	4,790
Fiscal year 1933-34	730	1.7	21.2	32.8	7,750	23,800

*Partly estimated.

North Fork of Wailua River at elevation 650 feet, near Lihue

Location.- Water-stage recorder $1\frac{1}{2}$ miles above intake of Kanaha Ditch and $7\frac{1}{2}$ miles northwest of Lihue. Altitude, 650 feet from topographic map.

Drainage area.- 6.6 square miles.

Records available.- August 1910 to June 1934.

Average discharge.- 13 years (1921-34), 49.6 million gallons a day (76.7 second-feet).

Extremes.- Maximum discharge during year, 2,110 million gallons a day (3,260 second-feet) Dec. 12 (gage height, 6.73 feet); minimum, 4.8 million gallons a day (7.4 second-feet) Apr. 23.

1910-34: Maximum discharge, 3,410 million gallons a day (5,280 second-feet) Dec. 24, 1927 (gage height, 8.46 feet); minimum, that of Apr. 23, 1934.

Remarks.- Records good for ordinary stages and poor for high stages and estimated periods. Hanalei tunnel discharges water into stream, and the North Wailua Ditch diverts water from stream above station for irrigation.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	65	57	*18	32	*55	16.5	23	22	12	17.5	36	32
2	85	60		32		40	36	19	12	25	42	34
3	48	70		22		47	30	19	11.5	27	25	64
4	74	48		29	21	74	22	21	11.5	20	17	241
5	54	50	27	26	19	21	21	18	14	14.5	25	79
6	46	52	40	29	17	19	21	17	12	14	51	209
7	38	36	23	34	16	18.5	20	16.5	12	57	64	58
8	53	33	68	23	15.5	18	17	24	12	31	32	56
9	39	38	30	22	19.5	17.5	15.5	28	11	20	32	28
10	46	36	32	*20	19	34	15	22	11	31	25	24
11	33	34	30		19	20	20	21	11	40	45	19.5
12	36	27	30		17	*200	19.5	21	10.5	15.5	20	16
13	30	25	33		18		16	16	10.5	17	14	13
14	39	24	27	*22	17	38	15	13.5	14	20	26	19
15	32	23	25		16	30	14	16	12	17	127	66
16	33	27	27		15.5	†28	14	24	16	17	160	32
17	46	24	26		15	†26	14	19	13	17	54	40
18	38	25	40	*22	15	25	16	21	12	12	77	86
19	30	28	28		17	24	40	21	11	8.2	46	79
20	40	22	26		15.5	24	125	16	15	6.1	38	74
21	33	22	30		15		366	14	17	5.8	33	40
22	32	21	29		15	*180	89	13.5	17	11	31	47
23	38	23	27		15	†72	77	13.5	22	6.1	29	54
24	32	21	27		15	†54	46	14	17.5	86	19	111
25	32	21	25	*16	48	40	32	13	17	65	6.3	95
26	36	21	27		20	33	36	12	17	385	63	48
27	70	21	25		17.5	25	26	12	17	248	11.5	60
28	42	21	37		16	15.5	23	12.5	19	74	20	58
29	38	20	28	*19	15.5	17	22	-	19	58	29	175
30	79	*20	27		15.5	24	20	-	22	43	26	103
31	46		-		-	24	25	-	18.5	-	27	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	85	30	44.6	69.0	1,380	4,240
August.....	70	-	31.3	48.4	970	2,930
September.....	68	-	29.4	45.5	881	2,700
October.....	-	-	21.9	33.9	679	2,080
November.....	-	15	21.6	33.4	650	1,990
December.....	-	15.5	52.0	80.5	1,610	4,950
Calendar year 1933	516	-	50.3	77.8	18,350	56,340
January.....	366	14	41.2	63.7	1,280	3,920
February.....	28	12	17.8	27.5	500	1,530
March.....	22	10.5	14.4	22.3	447	1,370
April.....	365	5.8	47.0	72.7	1,410	4,320
May.....	160	6.3	40.3	62.4	1,250	3,840
June.....	241	13	66.7	106	2,060	6,320
Fiscal year 1933-34	385	5.6	35.9	55.5	13,120	40,240

*Estimated.

†Partly estimated.

Hanalei Tunnel outlet near Lihue

Location.- Water-stage recorder on North Branch of North Fork of Wailua River, 2½ miles northwest of Lihue Plantation's Wailua Stable Camp and 9 miles from Lihue. Altitude, about 1,210 feet by Lihue Plantation levels.

Records available.- July 1932 to June 1934.

Extremes.- Maximum discharge during year, 75 million gallons a day (116 second-feet) Dec. 12 (gage height, 1.78 feet); minimum, 0.30 million gallons a day (0.48 second-foot) June 9-14.
1932-34: Maximum discharge, that of Dec. 12, 1933; no flow occasionally when water is turned out of ditch.

Remarks.- Records good. Tunnel diverts water from Hanalei River at intake 4,400 feet northwest of station. Regulated by spillway and head gate.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	25	24	18	22	27	18	17	19.5	14.5	15	21	22
2	27	24	14.5	23	20	29	20	17	14.5	19	22	23
3	23	26	18	19.5	21	22	17.5	17.5	14.5	20	19	28
4	27	23	19	20	23	29	16	18	14.5	21	21	36
5	24	23	20	20	20	21	16.5	16.5	15.5	19	25	27
6	22	24	22	21	18.5	19	16.5	16	14.5	18	30	34
7	21	21	18	23	17.5	18.5	16	16	14.5	27	31	21
8	24	20	26	21	17	18	16	18	15	26	23	19
9	22	21	21	19.5	18.5	18	16	20	14.5	23	21	4.9
10	23	21	21	18.5	19.5	23	16.5	16.5	14.5	27	23	.3
11	21	21	21	18	20	19	19	16.5	14	29	25	.3
12	21	19.5	21	18	17.5	44	19.5	15.5	14	22	21	.3
13	19.5	19	22	20	19	26	17	15	14	20	19	.3
14	21	19	21	21	18	23	16	16	16.5	23	23	9.5
15	20	18.5	20	20	17	21	16	18	15	20	31	29
16	21	19.5	22	18	17	19.5	15.5	18.5	17.5	20	31	20
17	24	18.5	20	22	17	19	16	18	15.5	21	23	26
18	22	19.5	25	19	17	18.5	17.5	17.5	15	17.5	24	39
19	20	20	21	18	18	17.5	23	20	14.5	17.5	22	40
20	21	18.5	19.5	18	17	19	32	17	14	18	21	33
21	20	18	21	18	16.5	42	35	15.5	14	17.5	20	23
22	20	18	21	17.5	16	28	28	15	14	23	18.5	27
23	21	18	21	17.5	16	29	26	15.5	18	20	17.5	31
24	20	18	21	17	16	25	22	15.5	14.5	34	17.5	42
25	21	18	20	17	32	21	20	15	14.5	33	17	38
26	24	18	20	17	21	20	20	15	14	43	26	26
27	26	17.5	19.5	17	18	11	19	14.5	14	37	19.5	31
28	22	18.5	23	17	17	3.1	18	15	16	26	18.5	29
29	22	18.5	20	21	17	9.3	18	-	15.5	24	18	49
30	28	18	20	18	16.5	17.5	17	-	19.5	23	*17	38
31	23	18	-	17	-	17	22	-	15.5	-	18	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	26	19.5	22.4	34.7	696	2,130
August.....	26	17.5	20.0	30.9	618	1,900
September.....	26	18	20.7	32.0	620	1,900
October.....	23	17	19.1	29.6	594	1,820
November.....	32	16	18.8	29.1	566	1,740
December.....	44	3.1	21.4	33.1	665	2,040
Calendar year 1933	44	3.1	21.1	32.6	7,720	23,670
January.....	35	15.5	19.5	30.2	604	1,850
February.....	20	14.5	16.6	25.7	466	1,430
March.....	19.5	14	15.0	23.2	466	1,430
April.....	43	15	23.4	36.2	704	2,160
May.....	31	17	22.0	34.0	684	2,100
June.....	49	.3	24.9	38.5	747	2,290
Fiscal year 1933-34	49	.3	20.3	31.4	7,430	22,790

*Partly estimated.

North Wailua Ditch near Lihue

Location.-- Water-stage recorder 300 feet below intake diversion dam on North Fork of Wailua River, 8 miles northwest of Wailua, and 8½ miles northwest of Lihue. Zero of gage is 1,105.45 feet above mean seal level by Lihue Plantation levels.

Records available.-- July 1932 to June 1934. Records from 1926 to June 1932 may be obtained from Lihue Plantation Office, Lihue, T. H.

Extremes.-- Maximum discharge during year ending June 30, 1933, 56 million gallons a day (87 second-feet) Oct. 19 (gage height, 1.52 feet); no flow Jan. 5, 6, Feb. 28, when water was turned out of ditch.

Maximum discharge during year ending June 30, 1934, 59 million gallons a day (91 second-feet) May 26 (gage height, 1.57 feet); no flow Jan. 24, when water was shut out of ditch.

1932-34: Maximum discharge, that of May 26, 1934; no flow occasionally when water is shut out of ditch.

Remarks.-- Records good except those for estimated periods, which are poor. Regulated by gates. All records from July 1, 1932, to June 30, 1933, have been revised in this report.

Discharge, in million gallons, fiscal year July 1932 to June 1933

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14	15.5	15.5	12.5	15	11	8.7	*0.10	8.4	12	15.5	11.5
2	17.5	16.5	16.5	12.5	15.5	11	7.5	.10	4.6	12.5	14	12
3	16.5	17	17.5	13.5	14	12	6.6	.14	.40	12	14.5	11
4	16	24	17	12.5	13	12	6.1	.55	.40	12	12.5	13
5	*22	24	14.5	12.5	13	12	1.8	.22	.71	12	12	12
6	21	16.5	14	12	15.5	12	†4.8	3.0	.72	12.5	12	12
7	18	15.5	13.5	14	14.5	12		9.2	.31	12	11.5	10.5
8	18.5	17	18.5	13	13	12.5	†9.5	9.2	.22	12.5	12	9.5
9	26	17.5	25	13.5	12.5	13		9.2	.14	13	12	9.5
10	19	16.5	22	12	12.5	12.5		7.3	5.1	12	13.5	9.2
11	18.5	20	19	12	13	12.5	†9.9	6.2	6.6	11.5	13	9.2
12	19	20	19	12	13	12.5	†10	7.1	6.6	12	12	9.0
13	22	21	18	12	13	13.5	†9.4	6.6	7.6	12	11.5	9.5
14	20	19	16.5	12	12	13		6.8	9.2	12.5	9.5	9.5
15	21	19.5	16	13	14.5	11.5		6.8	9.2	10.5	9.8	9.5
16	19	19	16.5	15	15.5	9.5	†6.7	6.8	9.5	12	9.5	9.6
17	17.5	20	15.5	23	9.5	9.8		5.4	9.5	13	9.2	9.8
18	18.5	19	16	26	9.5	9.8		4.6	9.5	12	9.2	10.5
19	22	18	15.5	31	6.6	9.8	*6.8	4.6	9.8	12.5	9.8	12
20	21	16.5	14	25	8.4	9.8	2.7	4.9	9.2	12.5	9.5	12
21	21	17.5	14.5	26	9.2	10.5	.31	4.6	12.5	14	9.5	12.5
22	20	18	13.5	22	12	12.5	.31	4.0	12	14	10.5	12.5
23	17.5	17.5	13.5	22	10.5	12.5	.31	2.8	11.5	14	12	15
24	16.5	18	13.5	19	9.0	12	.31	6.8	12	13	12.5	14
25	21	18.5	13.5	17.5	9.5	9.8		9.5	11.5	13	12.5	13.5
26	18	20	13	19	9.2	9.8		9.8	11.5	13	12.5	13
27	16	19	13	20	9.2	9.5	†.2	.77	11.5	17	12.5	13.5
28	18	13	13	20	9.5	9.2		3.6	12	17.5	12.5	12
29	20	15.5	16.5	11.5	9.5	9.5		-	12	16.5	12.5	13
30	19	18	12.5	16	11.5	9.2		-	12	15.5	8.8	13
31	18	16.5	-	15	-	8.7		-	12	-	9.5	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	26	14	19.1	29.6	591	1,610
August.....	24	15.5	19.5	28.3	568	1,740
September.....	25	12.5	15.8	24.4	472	1,450
October.....	31	12	16.8	26.0	522	1,600
November.....	15.5	6.6	11.8	18.3	355	1,090
December.....	13.5	8.7	11.1	17.2	345	1,060
Calendar year 1932	38	.10	11.6	17.9	4,250	13,040
January.....	-	-	4.76	7.36	147	452
February.....	9.8	.10	5.04	7.80	141	433
March.....	12.5	.14	7.98	11.9	238	731
April.....	17.5	10.5	13.0	20.1	390	1,200
May.....	15.5	8.8	11.5	17.8	358	1,100
June.....	15	9.0	11.4	17.6	343	1,050
Fiscal year 1932-33	31	.10	12.3	19.0	4,470	13,720

*Partly estimated.

†Estimated.

North Wailua Ditch near Lihue

(Continued)

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13	12.5	14	18.5	20	11.5	11.5	12	10	9.6	16	15
2	12.5	12.5	14	18	14.5	20	13	11.5	10.5	16.5	18	17
3	12.5	12.5	13	14	14	14	13	12	10	16.5	14.5	23
4	10.5	12	16.5	14.5	15.5	17.5	12	13	10	20	18	22
5	11.5	12.5	18	15.5	13	13	11.5	11.5	12	14	22	12.5
6	11.5	12.5	18.5	17	12.5	12	11.5	11	10.5	13	27	13
7	13	12	13	20	12	12	11.5	11	9.8	28	20	12
8	16.5	13	29	16	11.5	11.5	11	15	10	22	11.5	12.5
9	14.5	13	18	13.5	12	11.5	11	16	10	15	12	12.5
10	15	13.5	18	12.5	11.5	18	10.5	12	10	22	13	13
11	14.5	15.5	17.5	12	11.5	13.5	15	11.5	9.8	26	12.5	13
12	14	14	18.5	12	11.5	11.5	16	11	9.5	15.5	12	15.5
13	13.5	13.5	18	14	12	13	12	10.5	9.5	13	12	14
14	16.5	13.5	16.5	15.5	11.5	15.5	11.5	10.5	13.5	13.5	15.5	15
15	14.5	13.5	14	14.5	11	14	10.5	13	11	12	14.5	} *15
16	15	14	18	12.5	11	13	10.5	13.5	14.5	13	12	
17	16.5	13.5	16.5	16	11	13	12	16	11.5	13.5	12	
18	18	15	22	13.5	11	12	12	15.5	10.5	11.5	18	} *20
19	16.5	16	16	12.5	12	12	19	14	9.8	11.5	19	
20	15.5	13.5	14	12	11	14	27	11.5	9.5	12	17	
21	14	13	17.5	12	10.5	38	22	11	9.5	12	15	15.5
22	14	13	16.5	11.5	10.5	23	18.5	10.5	9.5	13	14	18
23	14.5	14	15.5	11.5	10.5	21	15.5	11	9.5	12	13	21
24	14	12.5	15	11.5	10.5	10.5	10	11	9.5	38	12.5	23
25	17.5	12.5	14	12	22	10	12	10.5	9.5	36	14	15
26	20	12.5	16	11.5	12.5	12	13	10.5	9.2	22	29	15.5
27	21	12	14.5	11.5	11.5	13	12	10.5	9.2	11.5	18	16.5
28	16	14	21	11.5	10.5	13	12	11.5	9.8	12	16.5	16
29	14	13	16.5	18	10.5	12.5	12.5	-	10	12	15.5	19
30	18	13	18.5	13	10.5	12	12	-	15	14.5	14	17.5
31	16.5	12	-	11.5	-	12	13	-	9.9	-	13	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	21	10.5	15.0	23.2	464	1,430
August.....	16	12	13.2	20.4	410	1,280
September.....	29	13	16.9	26.1	506	1,550
October.....	20	11.5	13.9	21.5	430	1,320
November.....	22	10.5	12.3	19.0	370	1,130
December.....	38	10	14.5	22.4	450	1,380
Calendar year 1933	38	10	11.6	17.9	4,250	13,040
January.....	27	10	13.4	20.7	414	1,270
February.....	18	10.5	12.2	18.9	340	1,040
March.....	36	9.2	10.4	16.1	322	990
April.....	38	9.6	16.9	26.1	506	1,550
May.....	29	11.5	15.8	24.4	491	1,510
June.....	-	12	16.4	25.4	492	1,510
Fiscal year 1933-34	36	9.2	14.2	22.0	5,200	15,940

†Estimated.

Kanaha Ditch near Lihue

Location.-- Water-stage recorder a quarter of a mile above point where Kauai Electric Co.'s power line crosses ditch and 7 miles northwest of Lihue. Altitude, 540 feet by barometer.

Records available.-- August 1910 to June 1934.

Average discharge.-- 14 years (1916-22, 1926-34), 8.98 million gallons a day (13.9 second-feet).

Extremes.-- Maximum discharge during year, 16.4 million gallons a day (25.4 second-feet) Dec. 3 (gage height, 0.64 foot); no flow several times during year when intake gate was closed.
1910-34: Maximum discharge recorded, 45 million gallons a day (70 second-feet) Dec. 24, 1927 (gage height, 3.22 feet); no flow occasionally, when water was shut out of ditch.

Remarks.-- Records good. Intake $8\frac{1}{2}$ miles above mouth of river at elevation of about 600 feet. Water used for irrigation of sugarcane. Regulated by head gates and spillways.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.3	5.5	6.4	5.5	5.3	5.3	1.2	0.73	5.8	6.1	5.8	11
2	5.0	5.3	8.4	5.3	5.3	8.9	4.5	4.9	6.1	6.1	5.8	11.5
3	4.8	5.0	5.0	5.5	5.3	9.1	5.5	6.4	5.8	6.1	5.5	11
4	4.8	5.0	5.0	5.5	5.3	10.5	5.8	6.1	6.1	7.8	5.8	6.3
5	4.8	5.3	5.0	5.8	5.0	10	5.8	6.1	6.1	11.5	5.8	5.0
6	4.8	5.3	5.0	5.5	5.3	9.1	5.8	6.1	5.5	11	5.8	5.5
7	4.8	5.0	5.0	5.3	5.3	8.7	6.1	6.1	5.8	9.4	5.8	5.3
8	5.0	5.0	5.3	5.0	5.3	8.4	5.8	6.1	6.1	6.1	5.8	5.3
9	4.8	5.3	5.0	5.5	5.3	8.2	6.1	5.8	5.8	6.1	5.8	5.3
10	5.0	5.3	5.0	5.5	5.3	10.5	5.8	5.8	5.8	6.1	5.8	5.3
11	4.8	4.8	5.3	5.5	4.8	10	5.5	5.8	5.5	6.1	5.5	5.5
12	4.8	5.0	5.3	5.5	5.3	4.1	5.5	6.1	7.5	6.1	5.3	5.3
13	4.8	5.0	5.3	5.5	5.5	5.0	5.8	5.8	9.4	5.8	5.5	5.3
14	4.8	5.0	5.3	5.3	5.3	5.3	5.8	5.8	11.5	6.1	5.5	5.3
15	4.8	5.0	5.3	5.3	5.3	5.3	5.8	6.1	10.5	5.5	5.3	5.3
16	4.8	5.3	5.3	5.3	5.0	5.3	6.1	5.8	11.5	7.5	5.3	5.3
17	5.0	5.3	5.3	5.5	5.5	5.3	6.1	5.8	10.5	11	5.5	5.3
18	5.0	5.0	5.0	5.5	5.3	5.3	6.1	5.8	10.5	10	5.3	5.3
19	4.8	5.0	5.3	5.5	5.5	5.3	5.8	5.8	8.7	6.9	5.3	5.3
20	4.8	4.8	5.5	6.3	5.0	5.5	5.6	5.8	6.1	5.0	5.0	5.3
21	4.8	4.8	5.8	5.3	5.0	1.8	2.9	5.8	6.1	4.5	5.3	5.3
22	5.0	5.0	5.5	5.3	5.0	2.6	4.9	5.8	6.1	8.6	5.3	5.3
23	5.0	5.3	5.5	5.3	5.0	2.1	6.1	5.8	5.8	4.5	5.3	5.3
24	5.0	5.3	5.5	5.3	5.0	2.5	5.8	6.1	5.8	13	4.8	5.3
25	5.3	5.8	5.5	5.3	5.8	2.3	5.8	5.8	6.1	10.5	4.5	5.3
26	5.5	6.1	5.5	5.3	4.8	.61	1.2	5.8	6.1	1.8	5.3	5.3
27	5.5	5.0	5.5	5.3	5.0	0	.34	5.8	6.4	5.0	4.8	5.5
28	5.3	3.9	5.5	5.0	5.3	.50	.36	5.8	6.4	5.7	5.3	5.5
29	5.3	1.0	5.3	5.3	5.3	1.0	.36	-	6.1	5.5	6.4	5.3
30	5.3	1.0	5.5	5.0	5.3	1.0	.36	-	6.1	5.8	11.5	5.3
31	5.3	2.5	-	5.0	-	1.0	.36	-	6.1	-	11.5	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	5.5	4.8	4.99	7.72	155	475
August.....	6.1	1.0	4.77	7.38	148	454
September.....	8.4	5.0	5.44	8.42	163	501
October.....	5.8	5.0	5.35	8.28	166	509
November.....	5.8	4.8	5.22	8.08	157	481
December 1-26, 28-31.....	10.5	.50	5.35	8.28	161	493
Calendar year 1933	10.5	.1	4.18	6.47	1,520	4,670
January.....	6.1	.34	4.48	6.93	139	427
February.....	6.4	.73	5.69	8.80	159	489
March.....	11.5	5.5	7.02	10.9	218	668
April.....	13	1.8	7.04	10.8	211	648
May.....	11.5	4.5	5.85	9.05	181	566
June.....	11.5	5.0	5.94	9.19	178	547
Fiscal year 1933-34 (364 days)	13	.34	5.59	8.65	2,040	6,260

East Branch of North Fork of Wailua River near Lihue

Location.- Water-stage recorder 1,200 feet above confluence with North Fork and 7½ miles northwest of Lihue. Altitude, 500 feet by barometer.

Drainage area.- 6.2 square miles.

Records available.- July 1912 to June 1934.

Average discharge.- 14 years (1920-34), 32.0 million gallons a day (49.5 second-feet).

Extremes.- Maximum discharge during year ending June 30, 1933, 1,440 million gallons a day (2,230 second-feet) Jan. 2 (gage height, 8.09 feet); minimum, 9.8 million gallons a day (15.2 second-feet) Oct. 12-15.

Maximum discharge during year ending June 30, 1934, 874 million gallons a day (1,550 second-feet) Dec. 12 (gage height, 6.58 feet); minimum, 6.9 million gallons a day (10.7 second-feet) Apr. 1.

1912-34: Maximum discharge, 3,340 million gallons a day (5,170 second-feet) Dec. 24, 1927 (gage height, 10.57 feet); minimum, 4.4 million gallons a day (6.8 second-feet) July 3, 13, 1928.

Remarks.- Records fair except those for estimated periods and extremely high stages, which are poor. No diversions above station. All records from Feb. 5, 1932, to June 30, 1933, have been revised in this report.

Discharge, in million gallons, fiscal year July 1931 to June 1932

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	17.5	16	*46	24	19	19	81	95	71	37	244	30
2	14	33		53	28	17	33	110	79	26	127	25
3	13	62		70	56	82	26	52	64	21	61	22
4	12.5	43		64	35	35	24	329	46	32	46	66
5	14	26		37	24	50	22	274	46	38	57	39
6	13.5	28	*65	40	24	33	21	244	38	27	54	36
7	14	22		116	22	26	21	135	33	24	69	35
8	99	21		45	22	22	19	90	33	28	49	26
9	30	26		59	28	22	21	136	29	23	57	24
10	19	26		40	28	22	32	108	26	38	41	28
11	21	30	*34	37	22	21	25	82	24	29	46	22
12	22	35		33	76	28	21	160	22	36	38	22
13	60	24		30	33	30	19	107	24	26	33	20
14	28	51		28	29	40	30	74	21	26	30	21
15	24	33		28	24	93	24	58	27	21	51	19
16	21	151	*60	28	39	40	21	49	22	21	38	19
17	19	49		29	40	33	19	117	18	31	28	24
18	17	37		40	33	33	19	49	17	19	26	19
19	16	61		37	38	28	42	46	16	17	26	17
20	17.5			30	30	24	40	63	46	15.5	17	24	19
21	26	*32	28	37	22	45	44	15	37	51	16.5	
22	30		34	35	22	37	28	34	14.5	32	27	15.5
23	33		33	28	21	42	26	30	14	53	44	15
24	21		42	35	21	31	32	41	14	46	69	14.5
25	17.5		52	33	19	26	28	52	15.5	46	50	14
26	17	*20	37	35	21	33	28	30	14	63	28	14
27	16		30	26	17.5	30	32	110	13	31	41	13.5
28	15.5		26	24	17	26	28	87	16	52	49	20
29	14.5		24	22	16.5	22	241	71	26	34	30	15
30	17		24	22	16.5	33	35	-	39	40	36	13
31	16	-	-	21	-	32	106	-	57	-	28	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	99	12.5	23.1	35.7	716	2,200
August.....	151	-	40.8	53.1	1,260	3,680
September.....	-	-	42.4	55.6	1,270	3,610
October.....	116	21	38.1	58.9	1,180	3,620
November.....	76	16.5	27.6	42.7	828	2,540
December.....	93	17	35.0	54.2	1,080	3,330
Calendar year 1931	-	10	25.1	38.8	9,170	28,160
January.....	241	19	38.4	59.4	1,190	3,660
February.....	329	30	98.5	152	2,860	8,770
March.....	78	13	29.3	45.3	908	2,790
April.....	63	17	32.4	50.1	971	2,980
May.....	244	24	50.9	78.8	1,580	4,840
June.....	66	13	22.8	35.3	684	2,100
Fiscal year 1931-32	329	12.5	39.7	61.4	14,530	44,620

*Estimated.

East Branch of North Fork of Waialua River near Lihue

(Continued)

Discharge, in million gallons, fiscal year July 1932 to June 1933

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13	*18	15	10.5	13	28	135	63	*70	22	15	24
2	15		14.5	10.5	13	32	368	41		41	14	21
3	17		16	11	12.5	46	123	36		31	14	24
4	15.5		16	11	12	28	100	32		23	24	21
5	13	*130	14	10.5	11.5	28	61	28	*65	20	21	32
6	14		17.5	13.5	10.5	14	24	26		19.5	17	32
7	13		15	13	10.5	24	21	44		17.5	39	35
8	13		24	16	10.5	14.5	19.5	38		17.5	24	32
9	20	*40	42	10.5	12.5	17.5	34	24	*28	17.5	20	41
10	15.5		15.5	56	10.5	11.5	17	30		17	76	32
11	25		44	30	10	12	15.5	27		16	*75	35
12	17		25	18.5	10	11.5	15	26	*46	15.5	48	29
13	35	*40	30	32	10	11	44	27		17	32	26
14	20		23	23	10	11	57	27		21	*38	24
15	23		23	17	9.8	11.5	99	26		†24	†38	22
16	18	*28	36	16	10	23	48	53	*55	†17.5	*50	22
17	15.5		28	14.5	14	65	41	56		†21	†28	21
18	16.5		37	14.5	20	248	36	36		†15	†28	19
19	33		28	14	26	72	32	45		†14	35	17.5
20	24	*38	21	13	35	42	53	59	*100	†14	36	17
21	46		26	16	29	32	28	59		15.5	24	18
22	22		19	13	21	31	24	49		39	17	21
23	19		17.5	12.5	24	130	23	49	*38	36	19	24
24	16.5	*38	23	12.5	17.5	69	24	47		24	15.5	19
25	25		22	12	15	44	24	40		14	17.5	22
26	19		22	12	14	56	29	40		22	14	17
27	15.5	*100	19	11.5	16.5	38	26	76	*100	19	16	37
28	15		20	11.5	17.5	42	24	44		36	16.5	15.5
29	19		16.5	11	14	29	31	44		53	19	63
30	21		16	11	13	32	65	49		35	16	57
31	*17	17	-	12.5	-	88	49	-	26	-	26	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	46	13	19.7	30.5	610	1,870
August.....	44	-	22.4	34.7	694	2,130
September.....	56	11	17.7	27.4	532	1,630
October.....	35	9.8	14.7	22.7	455	1,400
November.....	248	11	36.3	59.3	1,150	3,520
December.....	99	15	34.4	53.2	1,070	3,280
Calendar year 1932	329	9.8	34.7	53.7	12,700	38,970
January.....	368	25	61.6	95.3	1,910	5,860
February.....	-	24	45.3	70.1	1,270	3,890
March.....	-	19	51.8	80.1	1,610	4,930
April.....	41	14	19.1	29.6	574	1,760
May.....	76	14	32.3	50.0	1,000	3,070
June.....	85	17	27.5	42.5	824	2,530
Fiscal year 1932-33	368	9.8	32.0	49.5	11,700	35,870

*Estimated.

†Partly estimated.

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East Branch of North Fork of Wailua River near Limue

(Continued)

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	36	32	11.5	11	21	8.3	11	15.5	6.3	7.0	20	17.5
2	53	40	13.5	12.5	13	9.3	11.5	12.5	8.3	8.2	25	†18.5
3	28	44	12	11.5	10.5	9.1	12	11.5	8.3	10.5	16.5	42
4	52	35	13	11.5	10.5	30	11	11.5	8.2	8.3	22	94
5	32	37	15	12.5	10.5	9.8	10.5	11.5	8.6	8.4	31	41
6	29	37	17.5	13.5	9.6	8.8	9.8	10.5	8.8	9.0	69	41
7	24	24	12	16.5	9.6	8.8	9.6	10.5	8.2	25	64	26
8	31	21	28	14.5	9.3	8.8	9.3	10	8.0	17	32	27
9	24	22	14.5	12	10.5	8.6	9.1	11	7.8	10	23	21
10	29	24	14	11	11	12.5	9.1	10.5	7.6	14.5	24	21
11	21	23	16	10.5	11	11.5	10.5	10	7.7	27	36	19.5
12	21	19	15	10.5	10	208	11	9.6	7.5	12.5	23	20
13	17.5	17	21	11	9.3	35	9.8	9.5	7.5	10.5	17.5	17
14	19.5	16	13	12	9.3	19.5	9.3	9.3	8.5	11.5	17.5	16.5
15	18.5	15.5	12	12	9.0	15.5	9.0	9.3	8.3	11	35	†33
16	20	15.5	13	10.5	8.8	13	8.8	10.5	10.5	10	29	18.5
17	26	15.5	12	33	8.6	13	8.8	11	9.0	12.5	19.5	18.5
18	22	15.5	17	13	8.5	11.5	10	9.6	8.5	9.4	37	28
19	19	18	15	11.5	9.6	10.5	14.5	11.3	8.2	9.0	24	28
20	24	14.5	12	11	8.8	10.5	24	9.8	7.6	9.0	21	30
21	19	13.5	13	10.5	8.6	116	121	9.1	7.8	9.0	18.5	20
22	17	13	12.5	10	8.3	46	61	9.1	7.8	10.5	16	20
23	22	13.5	12.5	10	8.3	24	60	9.3	9.5	9.5	15	23
24	22	12.5	12	9.8	8.3	22	30	9.3	*9.5	62	14.5	50
25	21	12.5	12	9.6	37	17	23	9.5	85	14	44	
26	23	12	11.5	9.6	12.5	15.5	22	8.8	213	22	24	
27	42	12	11.5	9.5	9.5	14	18	8.8	*8	91	16	25
28	26	12.5	14	9.3	9.0	13	18	8.6	38	14.5	26	
29	24	12.5	12	12.5	8.6	12	15	-	30	14	49	
30	39	12	12.5	10.5	8.5	11.5	14	-	24	13.5	39	
31	29	11.5	-	9.6	-	11.5	22	-	7.4	-	13.5	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	53	17	26.9	41.6	834	2,560
August.....	44	11.5	20.1	31.1	623	1,910
September.....	28	11.5	14.0	21.7	420	1,290
October.....	33	9.3	12.0	15.6	372	1,140
November.....	37	8.3	10.9	16.9	327	1,000
December.....	208	8.3	24.7	38.2	764	2,350
Calendar year 1933	368	8.3	28.8	44.6	10,530	32,290
January.....	121	8.8	20.0	30.9	621	1,900
February.....	15.5	9.6	10.3	15.9	297	882
March.....	-	7.4	8.25	12.8	256	785
April.....	213	7.0	27.1	41.9	813	2,490
May.....	69	13.5	24.5	37.9	760	2,330
June.....	94	16.5	29.9	46.3	898	2,760
Fiscal year 1933-34	213	7.0	19.1	29.6	6,980	21,400

*Estimated.

†Partly estimated.

Kapahi Ditch near Kealia

Location.- Water-stage recorder 500 feet below intake and $4\frac{1}{2}$ miles west of Kealia.
Altitude. 380 feet by barometer.

Records available.- April 1909 to May 1914, May 1915 to June 1934.

Average discharge.- 16 years (1917-20, 1921-34), 7.44 million gallons a day (11.5 second-feet).

Extremes.- Maximum discharge during year, 107 million gallons a day (166 second-feet)
 Oct. 17 (gage height, 1.88 feet); no flow Aug. 5, Dec. 19, 20 when water was shut out of ditch.

1909-14, 1915-34: Maximum discharge, 233 million gallons a day (361 second-feet)
 Mar. 31, 1923 (gage height, about 3.15 feet); no flow occasionally, when water was shut out of ditch.

Remarks.- Records good except those for extremely low stages and estimated periods, which are poor. Diverts water from Kapaa River at elevation of about 400 feet. Water used for irrigation. Regulated by head gates.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24	2.5	4.4	2.4	15	3.4	1.1	2.1	2.6	} *2.2	6.8	13.5
2	11	7.0	5.6	4.2	6.6	4.8	2.4	2.4	1.9		8.3	12
3	4.6	16.5	2.6	4.0	2.6	2.2	2.4	2.4	1.7		7.3	4.1
4	3.8	5.9	3.2	5.0	2.4	5.5	1.9	2.1	1.5		8.3	12
5	17.5	1.3	4.9	6.2	2.4	3.2	1.9	2.9	1.7		2.1	7.4
6	15	3.2	5.1	5.2	2.1	2.9	1.9	2.1	1.7		.55	6.8
7	12.5	6.5	4.6	7.2	2.1	2.6	1.9	1.9	1.9		17.5	5.0
8	*3.8	5.2	11.5	3.5	2.1	3.2	2.1	1.7	1.7		6.2	15.5
9		5.5	5.5	5.2	3.7	2.1	2.4	2.1	2.6		2.6	12.5
10		7.6	6.5	4.0	4.0	2.1	2.6	2.1	2.6		5.0	10.5
11	} *9	7.6	7.2	4.0	3.7	2.4	3.6	1.7	1.9	13	10.5	8.1
12		6.9	6.8	3.2	2.6	2.2	3.7	1.7	2.9	8.7	4.8	8.2
13		3.7	8.6	2.6	3.4	.3	2.4	1.5	2.9	4.0	5.5	4.5
14		6.2	6.0	5.2	3.2	.9	2.1	1.5	2.9	2.6	7.6	5.2
15		4.6	5.8	4.9	3.2	1.3	3.4	1.9	2.6	2.8	5.2	7.2
16	.55	5.5	5.7	3.4	2.1	.55	3.2	2.9	4.6	7.0	8.0	4.9
17	5.1	6.4	3.2	17	2.1	.55	2.9	4.0	2.9	11	8.0	2.0
18	8.1	5.4	8.3	4.6	2.1	.55	4.2	3.4	2.6	6.5	7.5	7.2
19	2.9	7.2	6.0	3.7	1.1	.44	4.0	6.5	1.9	5.5	6.5	14.5
20	3.2	3.2	4.3	3.4	2.1	1.4	3.7	4.9	1.5	5.2	4.6	13
21	4.6	4.0	5.3	2.6	1.9	1.8	2.1	4.3	} *1.4	3.4	6.5	5.2
22	5.2	3.7	4.0	2.4	1.9	.55	7.5	4.0		3.4	6.2	7.4
23	8.1	3.7	4.7	4.0	1.9	.55	6.2	3.2		2.1	5.5	5.0
24	9.3	3.7	2.6	4.0	1.9	.55	4.6	2.9		12.5	4.6	1.2
25	11	3.4	4.4	3.7	3.7	.55	3.4	3.4		12	4.3	9.4
26	10.5	3.4	4.0	3.7	2.1	.55	2.1	3.2	} *2.2	2.8	8.9	7.2
27	32	2.1	4.2	3.7	2.4	.55	2.9	3.2		.7	5.3	8.7
28	17.5	3.8	5.4	3.4	2.1	.55	.9	3.4		.7	8.6	6.7
29	5.2	4.6	4.0	3.4	2.9	.9	1.9	-		.7	6.8	5.2
30	5.1	3.7	4.7	2.4	2.9	1.1	2.9	-		3.7	6.8	12
31	13.5	4.0	-	2.1	-	1.1	3.2	-		-	6.8	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	32	0.55	9.35	14.5	290	890
August.....	16.5	1.3	5.13	7.94	159	488
September.....	11.5	2.6	5.25	8.12	157	483
October.....	17	2.1	4.21	6.51	131	401
November.....	15	1.1	3.08	4.77	92.3	283
December.....	5.5	.3	1.66	2.57	51.3	158
Calendar year 1933	32	.08	4.01	6.20	1,390	4,260
January.....	7.5	.9	2.95	4.56	91.5	281
February.....	6.5	1.5	2.84	4.39	79.4	244
March.....	-	-	2.55	3.95	79.1	243
April.....	17.5	.7	5.18	8.01	156	477
May.....	15.5	.55	7.41	11.5	230	705
June.....	14.5	.3	7.01	10.8	210	645
Fiscal year 1933-34	32	.3	4.73	7.32	1,730	5,300

*Estimated.

Anahola River near Kealia

Location.- Water-stage recorder a quarter of a mile above dam at Kiokala and $4\frac{1}{2}$ miles northwest of Kealia. Altitude, 220 feet by barometer.

Drainage area.- 5.5 square miles.

Records available.- August to November 1910, December 1912 to June 1934.

Average discharge.- 15 years (1919-34), 13.0 million gallons a day (20.1 second-feet).

Extremes.- Maximum discharge during year, 775 million gallons a day (1,200 second-feet) Dec. 12 (gage height, 6.70 feet); minimum, 1.7 million gallons a day (2.6 second-feet) several days in October, November, December, and January.
1910, 1912-34: Maximum discharge, 1,820 million gallons a day (2,820 second-feet) Jan. 25, 1930 (gage height, 10.32 feet); minimum, 1.4 million gallons a day (2.2 second-feet) Sept. 12-13, 1923.

Remarks.- Records good for ordinary stages, poor for estimated periods and high stages. Anahola Ditch diverts water 3 miles above station for irrigation and domestic supply.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.8	6.6	3.8	3.8	27	1.8	2.1	7.5	3.6	3.1	9.9	} *10
2	17.5	7.9	3.8	4.1	5.9	1.8	2.2	4.1	3.4	3.0	9.1	
3	5.8	7.8	3.8	3.8	2.7	1.9	2.2	3.7	3.6	3.1	7.8	
4	10	7.2	4.6	3.8	2.5	7.0	2.1	3.6	3.4	3.0	9.5	
5	5.8	6.6	4.9	4.6	3.4	2.0	2.0	3.4	3.4	2.8	13.5	
6	5.5	6.2	5.1	4.9	3.1	1.8	2.0	3.2	3.4	3.7	44	} *50
7	4.8	5.1	4.5	5.8	2.4	1.8	2.0	3.1	3.2	6.8	40	
8	4.9	4.9	7.7	4.9	2.2	1.8	1.9	3.4	4.5	6.2	13	
9	5.5	4.9	4.9	4.1	2.2	1.8	1.8	6.5	4.5	4.1	9.5	
10	6.6	5.5	4.1	3.7	2.2	2.5	1.8	3.4	3.1	3.1	17.5	
11	4.8	5.8	5.3	3.5	2.4	2.3	2.0	3.1	3.0	5.9	16.5	7.5
12	4.8	4.9	4.5	3.5	2.2	126	2.2	3.0	3.0	3.6	9.5	6.9
13	4.5	4.6	4.9	3.5	2.0	6.1	2.2	3.0	2.8	2.8	7.8	6.2
14	4.6	4.5	4.1	3.8	2.0	3.1	2.0	2.8	3.4	6.3	6.4	6.4
15	4.5	4.3	3.8	3.5	1.9	3.8	2.0	5.8	3.2	3.5	} *55	12.5
16	4.5	4.5	4.1	3.5	1.9	2.7	1.9	6.2	6.3	4.4		7.8
17	7.8	4.6	4.0	8.2	1.9	2.7	1.8	3.6	3.9	7.2		6.9
18	5.8	4.3	4.6	2.5	1.8	2.3	2.0	3.2	3.7	3.4		7.8
19	5.1	4.6	4.5	2.2	2.1	2.1	1.9	43	3.1	3.0		7.5
20	5.4	4.3	4.1	2.0	2.1	2.1	2.3	7.2	3.0	2.7	} *17	7.2
21	4.6	4.1	4.9	2.0	2.0	52	104	4.5	2.8	2.6		5.9
22	4.3	4.0	4.8	1.9	1.9	6.5	26	4.1	2.8	3.2		5.7
23	5.8	4.1	4.8	1.9	1.9	3.9	16.5	3.7	12	3.9		5.8
24	6.0	4.0	4.1	1.9	1.8	3.4	5.7	8.2	3.6	104		22
25	5.5	4.0	3.8	1.9	3.0	2.8	4.1	5.2	3.1	145		15
26	6.6	4.0	3.5	1.9	2.1	2.5	5.4	3.9	2.8	269	} *10	7.5
27	12.5	3.8	3.7	1.8	2.1	2.4	3.9	3.7	2.8	76		7.2
28	7.9	4.0	4.8	1.8	2.2	2.4	3.2	3.6	2.8	22		6.9
29	6.0	4.1	4.1	2.2	1.9	2.2	3.1	-	2.8	15.5		12
30	10.5	4.0	4.0	2.1	1.8	2.2	3.0	-	2.7	12.5		9.0
31	6.4	3.8	-	2.0	-	2.2	63	-	2.7	-		-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	17.5	4.3	6.45	9.99	200	614
August.....	7.9	3.8	4.94	7.64	153	470
September.....	7.7	3.5	4.44	6.87	133	409
October.....	8.2	1.8	3.26	5.04	101	310
November.....	27	1.8	3.15	4.87	94.6	290
December.....	126	1.8	8.38	13.0	260	795
Calendar year 1933	-	1.9	8.59	13.3	3,130	9,630
January.....	104	1.8	8.98	13.9	278	854
February.....	43	2.8	5.70	8.82	160	490
March.....	12	2.7	3.64	5.63	113	346
April.....	289	2.6	25.2	39.0	755	2,320
May.....	-	-	16.9	26.1	524	1,610
June.....	-	5.7	14.2	22.0	428	1,310
Fiscal year 1933-34	289	1.8	8.76	13.6	3,200	9,820

*Estimated.

Anahola Ditch above Kaneha Reservoir, near Kealia

Location.- Water-stage recorder at upper end of second tunnel above Kaneha Reservoir and 5 miles northwest of Kealia. Altitude, 740 feet by barometer.

Records available.- May 1915 to June 1934.

Average discharge.- 11 years (1921-25, 1927-34), 3.72 million gallons a day (5.76 second-feet).

Extremes.- Maximum discharge during year, 58 million gallons a day (90 second-feet) Dec. 12 (gage height, 3.95 feet); no flow occasionally, when water was shut out of ditch.
1915-34: Maximum discharge recorded, 130 million gallons a day (201 second-feet) Jan. 16, 1921 (gage height, 6.25 feet); no flow occasionally, when water was shut out of ditch.

Remarks.- Records good except those for high stages and estimated periods, which are poor. This station measures water diverted from Anahola River to Kaneha Reservoir, where it is stored for irrigation. Regulated by head gates and spillways.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	*7	0.09	1.45	1.3	9.6	0.80	0.95	3.8	1.05	0.85	0.36	1.2
2		.06	2.2	2.5	3.8	1.05	4.8	3.5	1.05	1.65	.44	.11
3		.82	1.45	1.45	1.65	2.1	1.6	2.7	1.0	1.5	.48	.06
4		.02	2.3	1.45	1.7	8.1	1.1	2.4	1.0	1.5	.52	.19
5		4.2	2.7	2.7	3.8	1.5	.95	2.1	1.0	1.25	.65	.15
6	*4.5	5.8	4.0	2.8	1.9	1.15	.90	1.75	1.0	3.0	.70	.12
7		†3.8	3.3	1.6	5.1	1.3	1.15	.85	.95	8.9	.60	.56
8		8.1	3.9	9.0	2.9	1.1	1.1	.80	1.75	1.55	5.0	.48
9		5.8	4.6	2.6	1.8	1.9	.95	.75	3.2	1.45	2.7	.44
10		9.5	7.7	2.0	1.5	†1.25	1.8	.75	1.5	1.0	2.5	.52
11	†3.8	4.2	6.7	6.2	1.3	*1.3	†1.65	1.3	1.4	.95	8.8	.52
12		4.4	3.7	2.5	1.4	†1.15	†8.2	4.0	1.25	.90	2.3	.32
13		3.0	3.0	5.2	1.6	1.1	.01	1.8	1.15	.85	1.55	*2
14		†3.8	2.8	2.2	2.1	1.0	.01	1.05	1.15	1.5	11	4.3
15			2.7	1.8	1.65	.95	.01	.95	6.6	1.45	3.5	9.0
16	*5.5	2.8	1.9	1.45	.95	.01	.90	3.4	5.1	5.4	5.9	4.9
17		3.4	1.9	6.9	.90	.01	1.75	2.1	2.1	6.9	4.7	4.0
18		2.7	6.2	2.2	.90	.99	1.25	1.65	1.6	2.6	8.5	7.2
19		4.4	3.2	1.6	1.05	1.4	2.1	13.5	1.0	2.1	4.9	6.0
20		2.4	2.9	1.45	.95	1.45	7.3	3.5	.95	1.8	2.5	7.2
21	*4.4	2.2	2.7	1.4	.90	6.1	17	2.0	.85	1.75	2.6	4.2
22		1.9	2.1	1.25	.85	.07	16	1.6	.85	5.4	3.0	5.4
23		8.7	2.6	4.0	1.15	.80	.11	1.45	7.1	3.5	2.7	7.2
24		8.1	1.9	1.9	1.15	.80	.02	.04	1.4	1.65	16	2.6
25		8.6	1.65	1.65	1.05	4.4	.04	1.25	1.1	.11	2.5	.09
26	15.5	8.5	1.9	1.45	1.0	1.15	.71	.01	1.1	1.0	.04	10.5
27		15.5	1.75	1.8	1.0	1.0	1.25	0	1.1	.90	.02	4.4
28		9.3	2.1	3.5	1.0	1.1	1.25	1.15	1.05	.90	.21	5.8
29		7.8	2.7	1.65	2.7	.85	1.15	1.8	-	1.1	.36	4.7
30		15	2.0	1.6	1.3	.85	1.1	1.5	-	.65	.36	6.3
31		3.2	1.6	-	1.0	-	1.0	9.1	-	.90	4.0	-
Month		Million gallons a day			Second-feet (mean)	Total run-off						
		Maximum	Minimum	Mean		Million gallons	Acre-feet					
July.....		15.5	-	6.58	10.2	204	626					
August.....		7.7	0.02	2.82	4.36	87.4	268					
September.....		9.0	1.45	2.86	4.43	85.6	263					
October.....		6.9	1.0	1.91	2.96	59.2	182					
November.....		9.6	.80	1.70	2.63	51.0	156					
December.....		8.2	.01	1.61	2.49	49.9	153					
Calendar year 1933		16	.01	3.49	5.40	1,060	3,260					
January 1-26, 28-31.....		17	.01	2.60	4.02	77.9	239					
February.....		13.5	1.05	2.53	3.91	70.8	217					
March.....		7.1	.80	1.44	2.23	44.6	137					
April.....		16	.02	3.42	5.29	103	315					
May.....		10.5	-	2.98	4.61	92.3	283					
June.....		11.5	.04	3.83	5.93	115	353					
Fiscal year 1933-34 (364 days)		17	.01	2.86	4.43	1,040	3,190					

*Estimated.

†Partly estimated.

Ka Loko Ditch near Kilauea

Location.- Water-stage recorder 60 feet below junction of Ka Loko and Molooa Ditches, 400 feet above Ka Loko Reservoir and $3\frac{1}{2}$ miles southeast of Kilauea. Altitude, 750 feet, from topographic map.

Records available.- August 1932 to June 1934.

Extremes.- Maximum discharge during year, 92 million gallons a day (142 second-feet) June 4 (gage height, 3.99 feet); minimum, 0.32 million gallons a day (0.50 second-foot) Sept. 25.

1932-34: Maximum discharge, 108 million gallons a day (167 second-feet) Jan. 2, 1933 (gage height, 4.41 feet); minimum, 0.19 million gallons a day (0.29 second-foot) May 24, 1933.

Remarks.- Records excellent except estimated periods which are fair. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.0	3.3	1.25	1.0	6.0	0.69	1.2	3.1	1.4	*0.88	3.5	5.2
2	7.3	5.0	1.25	1.1	2.6	.69	1.25	1.8	1.4	.96	3.7	2.8
3	2.6	3.6	1.1	.96	1.3	.69	1.25	1.65	1.4	.81	3.0	8.3
4	5.0	4.0	1.5	1.1	1.25	1.3	1.1	1.65	1.25	.75	3.3	22
5	2.5	3.1	1.4	1.9	1.9	.69	1.1	1.55	1.25	.75	4.5	7.7
6	2.1	3.2	1.55	1.9	1.7	.63	1.0	1.5	1.2	1.25	8.7	6.6
7	1.7	2.4	1.2	2.2	1.25	.63	.96	1.4	1.2	1.85	7.4	4.6
8	1.9	2.1	8.2	1.65	.96	.63	1.0	2.2	2.1	1.8	*3.8	3.7
9	2.0	2.2	1.9	1.2	.96	.57	1.0	3.4	2.1	1.25	3.2	3.3
10	2.2	2.3	1.55	.96	.96	.88	1.0	1.55	1.1	.88	5.9	4.6
11	1.5	2.4	1.55	.88	.96	.75	1.25	1.4	1.0	1.4	8.6	3.6
12	1.5	2.0	1.5	.81	.96	21	1.3	.96	1.0	1.0	4.3	3.1
13	1.25	1.9	2.0	.81	.88	3.3	1.2	.81	.81	4.0	2.8	
14	1.65	1.7	1.3	.96	.96	1.4	1.2	1.3	2.3	9.7	3.2	
15	1.3	1.65	1.1	1.0	.96	1.65	3.3	1.0	1.0	5.7	5.1	
16	1.3	1.55	1.3	.96	.88	1.3	2.5	*2.6	2.0	4.9	3.9	
17	2.4	1.8	1.1	2.6	.88	1.25	1.3	*1.4	2.1	3.5	2.5	
18	2.0	1.55	1.5	1.3	.88	1.1	1.4	1.4	1.1	3.2	3.6	
19	1.55	1.7	1.3	.96	.96		15	1.0	.96	2.8	3.9	
20	2.1	2.0	1.1	.88	1.0	†1.0	3.2	.69	.81	3.2	3.3	
21	1.55	1.5	1.5	.88	.96		2.0	.75	.81	3.3	2.7	
22	1.55	1.4	2.1	.81	.81	†6	1.7	.81	1.0	2.7	2.6	
23	2.7	1.55	1.3	.81	.81	1.3	1.55	3.5	1.0	2.6	3.5	
24	3.5	1.5	1.0	.81	.81		1.8	1.35	17	2.4	9.4	
25	2.1	1.3	.75	.81	.96		1.8	1.0	19	2.5	6.0	
26	2.8	1.3	1.0	.88	.81	†1.4	2.5	1.5	.96	41	4.9	3.3
27	6.4	.69	1.0	.81	.75		2.0	1.4	.88	16.5	3.0	3.2
28	4.4	1.2	1.65	.81	.75		1.7	1.4	.85	7.0	3.5	3.1
29	2.7	1.25	1.2	1.1	.75	*1.2	1.55	-	.81	5.0	3.4	5.7
30	6.3	1.4	1.1	.88	.75	1.25	1.4	-	.81	4.0	2.6	3.8
31	3.0	1.25	-	.81	-	1.25	9.6	-	.81	-	2.4	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	7.3	1.25	2.67	4.13	82.8	254
August.....	5.0	.69	2.05	3.17	63.7	195
September.....	8.2	.75	1.58	2.44	47.2	145
October.....	2.6	.81	1.11	1.72	34.5	106
November.....	6.0	.75	1.21	1.87	36.4	112
December.....	21	.57	2.25	3.48	69.8	214
Calendar year 1933	48	.57	2.73	4.22	998	3,060
January.....	-	-	3.26	5.04	101	310
February.....	15	1.2	2.32	5.59	85.1	200
March.....	3.5	.69	1.26	1.95	39.1	120
April.....	41	.75	4.57	7.07	137	420
May.....	9.7	2.4	4.19	6.48	130	399
June.....	22	2.5	4.90	7.58	147	451
Fiscal year 1933-34	41	.57	2.61	4.04	954	2,930

*Partly estimated.

†Estimated.

Puu Ka Ele Ditch near Kilauea

Location.- Water-stage recorder 100 feet above Puu Ka Ele Reservoir and 2 miles south of Kilauea. Altitude, 430 feet.

Records available.- August 1932 to June 1934.

Extremes.- Maximum discharge during year, 32 million gallons a day (50 second-feet) June 4 (gage height, 2.05 feet); minimum, 0.96 million gallons a day (1.49 second-feet) Nov. 29, 30, Dec. 2, 3, 9.
1932-34: Maximum discharge, that of June 4, 1934; no flow occasionally, when water is shut out of ditch.

Remarks.- Records excellent. Regulated by wasteway 100 feet above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.8	5.4	2.0	1.7	5.7	1.0	1.9	4.3	1.8	1.3	5.2	5.2
2	8.3	6.2	2.0	1.7	4.0	1.0	1.9	3.1	1.8	1.5	5.9	3.8
3	4.2	5.7	1.9	1.7	1.95	1.0	2.6	2.6	1.7	1.4	4.4	8.4
4	6.2	4.8	2.4	2.1	1.7	1.5	1.9	2.5	1.7	1.3	4.4	13.5
5	4.2	5.4	2.1	2.4	2.7	1.1	1.8	2.4	1.65	1.25	5.6	11.5
6	4.0	4.5	2.2	2.3	3.0	1.0	1.7	2.3	1.65	1.5	9.0	9.9
7	3.0	3.6	1.9	2.4	2.0	1.0	1.55	2.2	1.65	2.6	7.3	7.2
8	3.4	3.7	5.5	2.2	1.65	1.0	1.55	2.6	2.5	2.5	5.0	5.9
9	3.5	3.6	2.5	1.8	1.65	.96	1.55	4.3	2.1	2.1	4.4	5.0
10	3.6	3.9	2.1	1.65	1.55	1.7	1.5	2.3	1.65	1.65	7.7	5.8
11	3.0	3.3	2.1	1.55	1.55	1.3	1.9	2.1	1.55	2.1	12.5	4.6
12	3.0	2.8	2.2	1.55	1.4	1.4	2.3	2.0	1.5	1.8	7.2	4.3
13	2.8	2.8	2.7	1.65	1.4	6.6	1.9	1.9	1.5	1.65	5.5	4.3
14	3.6	2.5	2.2	1.8	1.3	3.8	1.65	1.8	2.0	3.6	9.1	5.3
15	2.8	2.5	2.0	1.9	1.3	3.1	1.5	3.0	1.7	2.0	9.2	8.0
16	2.7	2.6	2.1	1.8	1.3	2.5	1.4	3.0	3.3	2.5	10.5	5.5
17	3.9	2.5	2.0	2.9	1.3	2.4	1.4	2.1	2.1	2.8	6.8	4.5
18	3.3	2.4	2.2	2.0	1.3	2.2	1.55	1.9	1.8	1.9	5.6	6.6
19	3.3	2.6	2.1	1.7	1.4	2.1	1.5	9.1	1.65	1.7	5.1	7.4
20	3.8	2.2	1.8	1.65	1.3	2.1	2.2	4.0	1.5	1.65	5.1	6.0
21	2.7	2.1	2.4	1.55	1.25	10.5	12	2.3	1.4	1.7	4.6	4.6
22	2.7	2.2	3.0	1.55	1.2	4.8	9.8	2.6	1.4	1.8	4.2	4.4
23	4.1	2.7	2.1	1.5	1.2	3.3	11	2.3	4.2	1.8	4.0	5.2
24	4.9	2.1	2.0	1.4	1.1	3.0	5.8	2.3	2.1	12.5	3.7	10.5
25	3.3	2.0	1.8	1.4	1.25	2.5	4.3	2.1	1.8	14.5	3.5	8.2
26	3.8	2.1	1.8	1.55	1.1	2.2	3.8	2.1	1.65	19.5	4.6	5.9
27	7.5	2.0	1.8	1.5	1.1	2.2	3.3	2.0	1.5	15	3.5	6.3
28	5.9	2.0	2.6	1.4	1.0	2.1	2.7	1.9	1.4	10	3.7	7.9
29	4.6	2.0	2.0	1.9	1.0	2.1	2.7	-	1.4	7.7	3.9	9.7
30	8.9	2.0	1.9	1.55	1.0	2.1	2.5	-	1.3	6.0	3.3	6.5
31	5.0	1.9	-	1.4	-	2.0	7.8	-	1.3	-	3.0	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	8.9	2.7	4.19	6.48	130	398
August.....	6.2	1.9	3.10	4.80	96.1	285
September.....	5.5	1.8	2.25	3.48	67.4	207
October.....	2.9	1.4	1.79	2.75	55.2	169
November.....	5.7	1.0	1.69	2.61	50.6	155
December.....	1.4	.96	2.84	4.39	88.2	271
Calendar year 1933	14	.10	3.16	4.89	1,130	3,460
January.....	12	1.4	3.24	5.01	100	308
February.....	9.1	1.8	2.77	4.29	77.6	238
March.....	4.2	1.3	1.81	2.80	56.2	173
April.....	19.5	1.25	4.31	6.67	129	397
May.....	12.5	3.0	5.73	8.87	178	545
June.....	13.5	3.8	6.73	10.4	202	620
Fiscal year 1933-34	19.5	.96	3.37	5.21	1,230	3,780

Hanalei River at elevation 625 feet, near Hanalei

Location.- Water-stage recorder 2 miles west of Kauai Electric Co.'s power line and about 10 miles above mouth of stream. Altitude, 625 feet, from topographic map.

Drainage area.- 7.4 square miles.

Records available.- January 1914 to June 1934.

Average discharge.- 16 years (1918-34), 52.2 million gallons a day (80.8 second-feet).

Extremes.- Maximum discharge during year, 2,240 million gallons a day (3,470 second-feet) Jan. 21 (gage height, 6.04 feet); minimum, 7.1 million gallons a day (11.0 second-feet) Mar. 27.

1914-34: Maximum discharge, 6,500 million gallons a day (10,100 second-feet) Jan. 16, 1921 (gage height, 7.50 feet); minimum, 5.8 million gallons a day (9.0 second-feet) Apr. 28, May 1-3, 1926.

Remarks.- Records good for ordinary stages, poor for extremely high and low stages and estimated periods. Hanalei tunnel diverts water from stream about 2 miles above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	40	37	12	16.5	58	8.1	12	16.5	7.9	7.4	24	24
2	62	38	14.5	17.5	13	30	15.5	11.5	7.9	13.5	31	27
3	30	46	12	12	10	17	20	11	7.8	13.5	19	79
4	64	34	14	12	15.5	65	14	11	7.8	10.5	22	191
5	37	38	18	*13	11	11	11	10	8.7	9.5	44	55
6	32	50	26		9.5	9.0	10.5	9.5	7.9	9.5	92	217
7	24	26	12.5	*18	9.0	8.6	10.5	9.5	7.6	81	103	53
8	36	23	45		8.4	8.4	10.5	10	7.6	41	42	*48
9	26	24	17	*11	13	8.3	10	12	7.5	16	29	}
10	50	26	14.5		14	16	9.7	9.2	7.4	49	36	
11	22	26	17	*11	11	10	12.5	8.8	7.4	66	48	39
12	20	19	15.5		9.3	342	13.5	8.6	7.2	17.5	27	39
13	18	17	23	*11	10	38	10.5	8.4	7.2	11.5	21	34
14	23	16.5	17.5		11	9.2	24	10	8.3	22	26	26
15	20	15	13	9.7	8.6	19	10	9.9	7.9	13.5	87	28
16	22	16.5	15.5	9.3	8.4	16.5	9.5	10.5	10	13.5	90	16
17	35	16	13.5	19	8.4	15.5	10	10	8.3	18	28	23
18	30	16	26	11.5	8.4	13.5	11	9.6	7.9	10.5	39	52
19	22	17.5	16	10	9.2	12.5	39	18	7.6	10	24	36
20	23	13.5	13	9.2	8.4	13	109	9.7	7.5	9.7	23	34
21	20	13	16	9.0	8.3	178	243	8.3	7.4	9.5	19	22
22	19	12.5	15	8.8	8.1	48	83	8.1	7.4	15	16	21
23	23	12.5	13.5	8.8	7.9	47	63	8.1	8.2	12	14.5	31
24	23	12	13.5	8.8	7.9	30	28	8.6	7.5	152	13.5	76
25	25	11.5	12.5	8.8	87	18.5	21	8.3	7.4	171	12.5	60
26	32	11.5	12.5	8.6	15.5	15.5	19	7.9	7.2	372	43	24
27	45	11.5	12	8.8	10.5	22	14.5	7.9	7.2	192	15	24
28	29	13.5	17.5	8.4	9.5	31	13	7.9	9.5	58	12	27
29	26	13	13	11	8.3	24	12	-	7.9	40	12	122
30	63	12.5	12.5	9.0	8.1	12.5	11	-	8.6	30	11.5	36
31	32	11.5	-	8.4	-	12	28	-	7.5	-	14	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	64	18	31.0	48.0	960	2,950
August.....	50	11.5	21.0	32.5	650	1,990
September.....	45	12	16.4	25.4	494	1,510
October.....	-	8.4	11.4	17.6	353	1,080
November.....	87	7.9	14.1	21.8	423	1,300
December.....	342	8.1	36.2	56.0	1,120	3,440
Calendar year 1933	642	7.9	37.4	57.9	13,650	41,880
January.....	243	9.5	28.8	44.6	894	2,740
February.....	19	7.9	9.90	15.3	277	850
March.....	10	7.2	7.84	12.1	243	746
April.....	372	7.4	49.8	77.1	1,490	4,590
May.....	103	11.5	33.5	51.8	1,040	3,190
June.....	217	16	51.9	80.3	1,560	4,780
Fiscal year 1933-34	372	7.2	26.0	40.2	9,500	29,170

*Estimated.

Lumahai River near Hanalei

Location.- Water-stage recorder 6 miles above mouth and $4\frac{1}{2}$ miles southwest of Hanalei.
Altitude, about 700 feet, from topographic map.

Drainage area.- 7.1 square miles.

Records available.- May 1914 to October 1917, July 1920 to October 1933 (discontinued).

Average discharge.- 13 years (1920-33), 72.6 million gallons a day (112 second-feet).

Extremes.- Maximum discharge during period, 245 million gallons a day (379 second-feet) July 30 (gage height, 2.40 feet); minimum, 19.6 million gallons a day (30.3 second-feet) Oct. 16.

1914-17, 1920-34: Maximum discharge (estimated), 5,000 million gallons a day (7,740 second-feet) Sept. 11, 1922 (gage height, 9.41 feet); minimum, 13.6 million gallons a day (21 second-feet) May 15, 17, 1926.

Remarks.- Records good. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	92	54	27	36								
2	132	45	36	31								
3	71	64	28	26								
4	112	43	35	27								
5	76	52	42	33								
6	62	60	54	32								
7	45	39	33	45								
8	52	34	35	37								
9	44	36	31	27								
10	62	41	38	23								
11	42	35	39	20								
12	40	30	38	21								
13	35	27	47	21								
14	47	26	42	22								
15	39	25	34	22								
16	46	27	43	-								
17	79	27	37	-								
18	54	25	61	-								
19	42	27	44	-								
20	42	24	34	-								
21	38	23	35	-								
22	51	22	40	-								
23	51	22	34	-								
24	43	21	33	-								
25	53	22	31	-								
26	71	22	29	-								
27	66	23	28	-								
28	46	29	34	-								
29	55	30	29	-								
30	93	32	30	-								
31	52	26	-	-								
Month		Million gallons a day			Second-foot (mean)	Total run-off						
		Maximum	Minimum	Mean		Million gallons	Acre-feet					
July.....		132	35	59.1	91.4	1,830	5,630					
August.....		64	21	32.9	50.9	1,020	3,130					
September.....		61	27	36.7	56.8	1,100	3,380					
October 1-15.....		45	20	28.2	43.6	423	1,300					
November.....												
December.....												
Calendar year												
January.....												
February.....												
March.....												
April.....												
May.....												
June.....												
The period						4,370	13,440					

Hanakapiai Stream near Hanalei

Location.- Water-stage recorder $1\frac{1}{2}$ miles above mouth of stream and 6 miles west of Hanalei. Altitude, 450 feet by barometer.

Drainage area.- 1.6 square miles.

Records available.- December 1931 to June 1934.

Extremes.- Maximum discharge during year, 1,480 million gallons a day (2,290 second-feet) June 4 (gage height, 6.59 feet); minimum, 2.5 million gallons a day (3.9 second-feet) Jan. 16-19, Mar. 12, 13, 21, 22.
1931-34: Maximum discharge, that of June 4, 1934; minimum, that of Jan. 16-19, Mar. 12, 13, 21, 22, 1934.

Remarks.- Records good for ordinary stages; poor for high stages. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14	5.3	3.8	2.9	27	3.2	2.9	10.5	2.7	4.0	5.6	17
2	24	4.7	5.2	3.0	6.0	3.1	2.9	4.5	2.6	10	12	16.5
3	9.9	6.3	3.8	2.9	4.7	3.0	2.8	3.5	2.6	15	7.0	29
4	15.5	5.8	4.1	2.9	15.5	3.1	2.8	3.2	2.6	15	21	132
5	7.8	13	4.9	3.9	11	2.9	2.7	2.9	2.7	10	34	13
6	8.1	8.6	6.1	5.8	7.1	2.9	2.7	2.8	2.7	9.6	77	7.0
7	5.0	5.3	3.8	6.3	4.3	3.0	2.7	2.7	2.6	45	63	5.5
8	4.8	4.4	3.4	5.7	3.6	3.5	2.6	18.5	4.1	23	16	4.7
9	5.2	4.4	3.2	4.1	6.2	3.2	2.6	19.5	3.3	14.5	11	4.3
10	6.8	4.8	3.2	3.5	5.2	4.1	2.6	5.6	2.7	21	18	4.0
11	6.0	4.1	4.0	3.2	4.0	3.5	2.7	4.0	2.6	39	21	3.9
12	5.4	3.9	3.9	3.0	3.4	43	2.9	3.4	2.6	9.4	9.1	3.8
13	4.5	3.6	4.2	3.0	3.4	7.7	2.7	3.2	2.5	7.2	6.3	3.7
14	6.2	3.5	3.7	3.2	3.2	4.2	2.7	3.0	2.7	34	5.5	3.6
15	4.4	3.5	3.4	3.4	3.0	3.6	2.6	12	2.9	12	5.1	4.0
16	6.2	3.8	7.4	3.1	2.9	3.3	2.6	7.4	3.7	12	4.8	3.5
17	16	4.1	5.0	2.9	2.9	3.2	2.6	4.2	3.4	11.5	4.6	16.5
18	12	3.5	8.7	2.9	2.9	3.0	2.5	3.9	3.0	5.9	4.4	16.5
19	7.0	4.3	5.5	2.8	2.8	2.9	3.1	23	2.7	7.3	4.2	14
20	5.3	4.0	3.9	2.7	2.8	3.3	3.8	6.5	2.6	7.8	4.0	13.5
21	5.0	3.4	3.6	2.7	2.8	43	6.7	4.2	2.6	6.5	3.9	6.2
22	12.5	3.3	4.4	2.7	2.8	12	4.8	3.5	2.6	5.0	3.7	14
23	11	3.3	3.8	2.7	2.7	9.0	10.5	3.2	44	7.7	3.6	22
24	8.7	3.2	3.4	2.7	2.7	28	4.8	3.0	5.8	109	3.5	31
25	7.8	3.2	3.2	2.6	71	5.1	3.3	2.9	8.0	131	3.4	28
26	10	3.4	3.1	2.6	7.3	4.1	3.2	2.8	5.5	185	6.3	8.6
27	9.9	3.2	2.9	2.6	4.8	3.7	3.4	2.7	5.3	45	4.9	6.8
28	6.5	4.3	3.1	2.6	4.2	3.3	2.8	2.7	19.5	10	3.8	6.5
29	11	5.5	3.2	2.6	3.6	3.2	2.7	-	7.4	7.2	3.5	8.6
30	9.5	4.7	3.0	2.7	3.3	3.0	2.6	-	4.5	6.2	3.6	6.0
31	5.6	4.6	-	2.6	-	2.9	62	-	4.5	-	4.3	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	24	4.4	8.73	13.5	271	830
August.....	13	3.2	4.60	7.12	142	437
September.....	8.7	2.9	4.16	6.44	125	383
October.....	6.3	2.6	3.24	5.01	100	308
November.....	71	2.7	7.57	11.7	227	697
December.....	43	2.9	7.32	11.3	227	697
Calendar year 1933	162	2.6	8.18	12.7	2,980	9,150
January.....	62	2.5	5.24	8.11	162	498
February.....	23	2.7	6.05	9.36	169	520
March.....	44	2.5	5.39	8.34	167	513
April.....	185	4.0	27.5	42.5	826	2,530
May.....	77	3.4	12.2	18.9	378	1,160
June.....	132	3.5	15.1	23.4	454	1,390
Fiscal year 1933-34	185	2.5	8.90	13.8	3,250	9,960

Hanakoa Stream near Hanalei

Location.- Water-stage recorder three-quarters of a mile above mouth of stream and 7½ miles west of Hanalei. Altitude, 470 feet by barometer.

Drainage area.- 1.1 square miles.

Records available.- December 1931 to June 1934.

Extremes.- Maximum discharge during year, 443 million gallons a day (685 second-feet) June 4 (gage height, 4.96 feet); minimum, 0.17 million gallons a day (0.26 second-foot) Mar. 21, 22, 1931-34: Maximum discharge, that of June 4, 1934; minimum, that of Mar. 21, 22, 1934.

Remarks.- Records good for ordinary stages; poor for high stages and estimated periods. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	} +3.3	1.1	0.59	0.31	4.8	*0.46	0.46	} +3.0	+0.3	0.81	1.9	2.7	
2		.81	1.0	.31	1.4	.46	.46		4.9	3.0	4.6		
3		1.0	.59	.31	.59	.40	.40		*.27	6.0	1.9	10.5	
4		.90	.66	.31	5.6	.46	.40		.27	6.5	5.4	55	
5		3.3	1.0	.59	3.0	.40	.40		.27	3.9	9.4	6.0	
6	} +1.1	2.4	1.4	1.2	1.8	.35	.40	} +1.5	.23	3.4	28	3.0	
7		1.1	.66	1.5	.81	.40	.35		.23	16	21	1.9	
8		.81	.46	1.3	.59	.81	.35		1.1	7.8	5.5	1.4	
9	} +1.5	.81	.46	.81	.52	.46	.31	} +4.3	.69	6.2	3.4	1.2	
10		.90	.40	.59	.90	.59	.31		.51	8.2	4.2	1.1	
11		.66	.59	.46	.46	.46	.35		.23	17.5	4.3	.90	
12	} +1.1	.59	.46	.35	.40	23	.35	} +1.7	.23	4.1	2.5	.90	
13		.52	.52	.35	.62	2.9	.31		.23	2.7	1.75	.81	
14		1.4	.46	.52	.40	.46	1.1		.27	.35	9.6	1.4	.81
15		.81	.46	.40	.52	.35	.81		.27	.31	4.4	1.2	.81
16		1.1	.59	2.0	.40	.31	.66		.27	.46	3.2	1.1	.66
17	4.4	.66	1.0	.35	.27	.59	.23	.40	3.0	1.0	5.1		
18	3.1	.46	2.3	.35	.27	.46	.23	} +1.8	.27	1.75	.90	4.9	
19	1.65	.59	1.3	.35	.23	.46	.38		.23	2.0	.81	4.4	
20	1.1	.52	.66	.31	.23	.95	*.52		+2.7	.20	2.4	.81	3.2
21	.90	.46	.59	.27	.23	24	*.68	} +1.2	.20	1.75	.81	1.65	
22	2.5	.46	.81	.27	} +2	4.7	.35		.20	1.3	.66	2.8	
23	2.5	.40	.66	.23		7.5	.35		21	1.85	.59	7.3	
24	1.5	.35	.46	.23		8.8	.35		1.65	37	.59	11	
25	1.65	.35	.46	.23	+35	1.65	.35		3.1	50	.59	12	
26	2.7	.40	.35	.23	} +1.5	1.3	.35	} +1.5	1.75	67	1.45	3.4	
27	1.65	.35	.35	.23		1.1	.35		1.5	13.5	.90	2.4	
28	1.1	.60	.35	.23		.81	.35		3.8	4.4	.59	1.9	
29	2.5	1.3	.40	.23	} +1.6	.66	.35		2.0	3.0	.46	2.2	
30	2.4	1.0	.31	.27		.59	.35		1.1	2.4	.46	1.5	
31	1.1	1.0	.27	.27		.52	*30	1.1	.52				
Month		Million gallons a day			Second-foot (mean)	Total run-off							
		Maximum	Minimum	Mean		Million gallons	Acre-feet						
July.....		-	-	1.94		3.00		60.2	185				
August.....		3.3	.35	.816		1.26		26.3	78				
September.....		2.3	.31	.724		1.12		21.7	67				
October.....		1.5	.23	.444		.687		13.8	42				
November.....		-	-	2.15		3.33		64.4	198				
December.....		24	.35	2.83		4.38		87.8	269				
Calendar year 1933		66	.20	2.27		3.51		830	2,550				
January.....		-	.23	1.43		2.21		44.3	136				
February.....		-	-	1.49		2.31		41.6	128				
March.....		21	.20	1.43		2.21		44.3	136				
April.....		67	.81	9.89		15.3		297	910				
May.....		20	.46	3.45		5.34		107	329				
June.....		55	.66	5.20		8.06		166	479				
Fiscal year 1933-34		67	.20	2.64		4.06		963	2,960				

*Partly estimated.

†Estimated.

Kalalau Stream near Hanalei

Location.- Water-stage recorder, 2 miles above mouth and 9 miles southwest of Hanalei.
 Altitude, 960 feet by barometer.

Drainage area.- 2.6 square miles.

Records available.- November 1931 to June 1934.

Extremes.- Maximum discharge during year, 83 million gallons a day (128 second-feet)
 June 4 (gage height, 3.26 feet); minimum, 1.9 million gallons a day (2.9 second-feet) Dec. 10, 11.

1931-34: Maximum discharge, that of June 4, 1934; minimum, that of Dec. 10, 11, 1933.

Remarks.- Records good for ordinary stages; poor for high stages and estimated periods.
 No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.1	2.8	2.5	2.4	2.7	2.2	2.3	3.4	2.1	2.2	3.9	} #4.8
2	3.1	2.7	2.5	2.4	2.4	2.1	2.2	2.4	2.1	4.1	4.1	
3	3.0	2.7	2.5	2.4	2.3	2.0	2.2	2.2	2.1	7.0	4.1	} #9
4	3.0	2.7	2.5	2.4	2.9	2.0	2.1	2.1	2.1	5.9	5.4	
5	2.9	2.9	2.5	2.4	3.0	2.0	2.1	2.1	2.1	4.9	5.8	} #3.0
6	2.9	2.9	2.5	2.4	2.4	2.0	2.1	2.0	2.1	4.1	4.1	
7	2.8	2.7	2.5	2.4	2.3	2.0	2.1	2.0	2.1	6.0	4.1	} #8
8	2.8	2.7	2.5	2.4	2.3	2.0	2.1	5.0	2.3	7.2	4.1	
9	2.7	2.7	2.5	2.4	2.3	2.0	2.1	7.6	2.2	6.5	4.1	} #3.4
10	2.9	2.7	2.5	2.4	2.3	1.9	2.1	3.7	2.1	8.1	4.1	
11	2.9	2.7	2.4	2.3	2.3	1.9	2.1	2.8	2.0	19.5	4.4	} #7.5
12	2.9	2.7	2.4	2.3	2.3	1.3	2.1	2.5	2.0	8.9	4.4	
13	2.8	2.7	2.4	2.3	2.2	4.9	2.1	2.4	2.0	5.2	2.6	} #4.2
14	2.9	2.7	2.4	2.3	2.2	2.7	2.1	2.3	2.0	6.3	2.6	
15	2.8	2.7	2.4	2.3	2.2	2.4	2.1	3.4	2.0	5.8	2.5	} #3.8
16	2.8	2.7	2.5	2.3	2.2	2.2	2.1	3.1	2.0	4.4	2.4	
17	3.1	2.7	2.5	2.3	2.2	2.2	2.1	2.7	2.0	3.5	2.6	} #2.5
18	3.0	2.7	2.5	2.3	2.2	2.1	2.0	2.6	2.0	3.1	2.6	
19	2.9	2.7	2.5	2.3	2.2	2.1	2.0	3.4	2.0	2.9	2.6	} #3.5
20	2.8	2.7	2.5	2.3	2.2	2.3	2.0	2.8	2.0	2.7	2.6	
21	2.8	2.7	2.4	2.3	2.1	1.9	2.0	2.5	2.0	2.6	2.6	} #2.5
22	2.8	2.7	2.4	2.3	2.1	1.0	2.0	2.4	2.1	2.5	2.6	
23	2.8	2.7	2.4	2.3	2.1	6.4	2.1	2.3	2.1	8.5	2.5	} #3.8
24	2.8	2.7	2.4	2.3	2.1	11.5	2.1	2.3	2.1	6.8	2.5	
25	2.8	2.7	2.4	2.3	7.7	4.5	2.0	2.2	3.0	1.3	2.5	} #3.8
26	2.8	2.7	2.4	2.3	3.3	3.3	2.1	2.2	2.6	2.1	2.5	
27	2.9	2.7	2.4	2.3	2.7	2.9	2.0	2.2	2.5	1.5	2.5	} #3.8
28	2.8	2.7	2.4	2.3	2.4	2.6	2.0	2.1	2.4	8.6	2.5	
29	2.8	2.6	2.4	2.3	2.3	2.4	2.0	-	2.3	6.5	2.5	} #3.8
30	2.8	2.6	2.4	2.3	2.2	2.3	2.0	-	2.3	5.6	2.5	
31	2.8	2.5	-	2.3	-	2.3	7.6	-	2.3	-	2.5	

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	3.1	2.7	2.87	4.44	89.0	273
August.....	2.9	2.5	2.70	4.18	83.8	267
September.....	2.5	2.4	2.45	3.79	73.5	226
October.....	2.4	2.3	2.33	3.61	72.3	222
November.....	7.7	2.1	2.64	3.93	76.1	234
December.....	1.9	1.9	3.97	6.14	123	378
Calendar year 1933	34	1.9	3.24	5.01	1,180	3,630
January.....	7.6	2.0	2.26	3.50	70.0	215
February.....	7.6	2.0	2.81	4.35	73.7	242
March.....	9.5	2.0	3.71	4.75	74.4	228
April.....	21	2.2	6.75	10.4	202	621
May.....	14	-	4.81	7.44	149	458
June.....	-	2.4	4.61	7.13	138	424
Fiscal year 1933-34	21	1.9	3.37	5.21	1,230	3,780

*Estimated.

MISCELLANEOUS DISCHARGE MEASUREMENTS

Measurements of streams and ditches on the island of Kauai at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on Kauai, 1933-34

Date	Stream	Tributary to-	Locality	Second-foot	Million gallons a day
Nov. 29	Storm Ditch	Waikoko Stream	At Stable Camp Road near Lihue.....	9.03	5.84

Right Branch of North Fork of Kaukonahua Stream near Wahiawa

Location.- Water-stage recorder 200 feet upstream from intake of Wahiawa Water Co.'s tunnel, which is just below confluence of right and left branches of North Fork of Kaukonahua Stream and 8 miles northeast of Wahiawa. Altitude, about 1,200 feet, from topographic map.

Drainage area.- 1.2 square miles.

Records available.- May 1913 to January 1933, February 1934 to June 1934.

Average discharge.- 15 years (1915-24, 1926-32), 7.95 million gallons a day (12.3 second-feet).

Extremes.- Maximum discharge during period, 363 million gallons a day (562 second-feet) May 11 (gage height, 5.96 feet); minimum, 0.22 million gallons a day (0.34 second-foot) Apr. 15-21.

1915-34: Maximum discharge, 1,160 million gallons a day (1,790 second-feet) Jan. 1, 1933 (gage height, 9.63 feet); minimum, 0.09 million gallons a day (0.15 second-foot) Mar. 22, 1926.

Remarks.- Records good for ordinary stages and poor for high stages. No diversions above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1									0.39	0.24	2.6	3.7
2									.39	.26	1.75	5.6
3									.39	.62	1.5	19.5
4									.44	.34	3.1	59
5									.88	.26	10.5	24
6									.75	.24	15	7.8
7									.52	.26	19	6.2
8									.44	1.8	8.8	4.5
9									.39	.59	5.0	4.7
10									.34	.28	3.4	7.0
11									.34	.28	74	4.2
12									.34	.26	6.7	9.2
13									.30	.24	4.2	3.7
14									.39	.24	15	39
15								*0.66	.34	.22	56	27
16								4.9	.30	.22	6.2	17.5
17								4.3	.28	.22	4.7	8.0
18								1.0	.28	.22	3.7	10
19								2.2	.28	.22	3.0	10.5
20								1.5	.26	.22	2.7	29
21								.80	.26	.60	2.3	6.2
22								.86	.26	8.6	2.4	6.9
23								.66	.26	.72	5.7	6.0
24								.66	.26	46	2.2	5.5
25								.57	.24	82	23	5.0
26								.52	.24	132	47	3.9
27								.48	.26	32	5.4	9.6
28								.44	.24	5.7	6.5	12
29								-	.85	3.3	4.5	44
30								-	.34	2.6	3.0	6.0
31								-	.26	-	4.9	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....						
August.....						
September.....						
October.....						
November.....						
December.....						
Calendar year						
January.....						
February 15-28.....	4.9	0.44	1.40	2.17	19.6	60
March.....	.88	.24	.371	.574	11.5	35
April.....	132	.22	10.7	16.6	321	984
May.....	74	1.5	11.4	17.6	354	1,090
June.....	59	3.7	13.5	20.9	405	1,240
The period					1,110	3,410

*Partly estimated.

Left Branch of North Fork of Kaukonahua Stream near Wahiawa

Location.- Water-stage recorder 100 feet upstream from intake of Wahiawa Water Co.'s tunnel, which is just below confluence of right and left branches of North Fork of Kaukonahua Stream and 8 miles northeast of Wahiawa. Altitude, about 1,200 feet, from topographic map.

Drainage area.- 1.5 square miles.

Records available.- May 1913 to June 1934.

Average discharge.- 17 years (1915-24, 1926-34), 11.6 million gallons a day (17.9 second-feet).

Extremes.- Maximum discharge during year, 514 million gallons a day (795 second-feet) Sept. 8 (gage height, 5.08 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Apr. 17.

1913-34: Maximum discharge, 5,400 million gallons a day (8,360 second-feet) Jan. 1, 1933 (gage height, determined from flood mark on well, 11.7 feet); minimum, less than 0.1 million gallons a day (0.2 second-foot) June 15, 1931.

Remarks.- Records good for ordinary stages, poor for high stages and estimated periods. No diversions above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	7.0	7.4	*4.5	} *3.8	2.1	0.4	0.4	5.4	0.8	} 0.2	6.9	5.7	
2	23	7.5	3.7		2.5	1.8	6.6	2.5	.7		*.6	4.0	6.7
3	2.9	10	12		.8	3.6	2.2	2.2	1.9			3.2	26
4	9.2	7.0	4.0		.5	7.0	.8	1.9	.7			5.2	58
5	6.1	6.5	3.4		2.1	1.0	.6	1.8	7.2			18.5	29
6	3.1	15.5	16.5	} *7.5	.9	.5	.8	1.8	2.3	} *3	22	9.7	
7	2.2		2.9		.6	.3	.8	1.5	1.3			28	9.0
8	14		69		.6	.2	.5	1.5	.8		1.9	12	8.6
9	3.2		15.0		.5	.2	.4	4.0	.8		.4	7.7	9.6
10	3.1		10.5		.6	.1	.4	2.0	.6		.1	30	8.4
11	2.7		8.8	} *1.1	†1.0	.1	6.3	1.3	.6	} *2		14	
12	3.1		17		1.4	.1	9.0	1.1	.5		.1		14.5
13	2.9		5.7		*2.5	.5	.1	2.5	.5		.1	7.4	8.5
14	3.1	*4.4	5.0		1.1	.4	.1	1.4	.6		.1	13.5	37
15	4.7		3.2		1.1	.4	.1	1.0	.6		.1	60	37
16	6.2		8.2	4.4	.4	.1	.9	*10	.5	} *1	15	15.5	
17	7.2	3.2	5.8	1.6	.3	.1	.8	7.8	.5		10.5	15	
18	7.2	11.5	3.6	1.0	.3	.1	.7	2.0	.5		6.7	19.5	
19	3.2	3.4	3.6	.8	.3	.1	17	6.2	.5		5.4	15	
20	11.5	2.7	3.1	.8	.2	.1	24	3.2	.4		5.0	40	
21	3.4	5.6		.7	.2	6.4	14.5	1.6	.4	} *6	4.2	9.7	
22	8.2	2.7		.6	.2	4.5	4.6	2.3	.3		4.2	15.5	
23	14	2.5	*3.5	.6	.2	39		1.4	.4		10	12	
24	24	2.3		.5	.2	7.9	*30	1.4	.2		4.4	13	
25	5.7	2.0		.7	4.7	1.9		1.3	.2		26	12.5	
26	4.4	2.3	*2.0	.6	1.5	1.1	} *14	.9	.2	} *100	40	9.8	
27	28	2.0		.5	.6	.8		.8	.2		.2	7.4	24
28	9.5	2.3		.4	.4	.7		.8	.2			14	33
29	9.9	4.2	*2.8	9.4	.4	.5		2.7	-		1.6	5.4	8.0
30	26	2.3		1.4	.4	.5		2.3	-		.5	5.2	5.4
31	8.4	*4.0	-	.8	-	.4	2.9	-	.2	-	7.1	-	

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	28	2.2	8.62	13.3	267	820
August.....	15.5	2.0	5.27	8.15	163	501
September.....	69	-	7.44	11.5	223	685
October.....	9.4	.4	2.12	3.28	65.7	202
November.....	4.7	.2	.84	1.30	25.2	77
December.....	39	.1	2.57	3.98	79.8	245
Calendar year 1933	-	.1	7.46	11.5	2,720	8,360
January.....	-	.4	7.62	11.8	236	725
February.....	-	-	2.48	3.84	69.4	213
March.....	7.2	.2	.82	1.27	25.4	78
April.....	-	.1	14.8	22.9	443	1,360
May.....	60	3.2	15.3	23.7	476	1,460
June.....	58	5.7	18.2	28.2	547	1,680
Fiscal year 1933-34	-	.1	7.18	11.1	2,620	8,060

*Estimated.

†Partly estimated.

Puhawai Stream at Lualualei, near Waianae

Location.- Duplex water-stage recorder in Lualualei Valley, 1 mile north of McCandless ranch house and 5 miles northeast of Waianae. Altitude, about 600 feet, from topographic map.

Drainage area.- 0.6 square mile.

Records available.- September 1930 to June 1934.

Extremes.- Maximum discharge during year, 57 million gallons a day (88 second-feet) Dec. 23 (gage height, 3.50 feet); minimum, 0.02 million gallons a day (0.03 second-foot) Jan. 15.
1930-34: Maximum discharge, 60 million gallons a day (93 second-feet) Feb. 21, 1932 (gage height, 3.58 feet); minimum, 0.01 million gallons a day (0.02 second-foot) Dec. 19-20, 1931, Jan. 11, 1932.

Remarks.- Records good for ordinary stages; poor for estimated periods and high stages. Continuous rainfall records are obtained at station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.12	0.09	0.08	0.10	0.12	0.08	} *0.16	0.54	0.19	0.12	0.13	0.10
2	.14	.09	.08	.09	.09	.08		.25	.19	.16	.13	.10
3	.13	.08	.07	.08	.08	.10		.17	.17	.18	.12	.17
4	.14	.08	.07	.08	.09		} †.12	.15	.17	.12	.13	.66
5	.13	.08	.09	.06	.12			.14	.17	.12	.14	.58
6	.12	.09	.07	.06	.09		} *.09	.12	.13	.17	.10	.14
7	.10	.08	.07	.06	.08			.10	.13	.16	.10	.14
8	.12	.08	.08	.07	.07			.06	.12	.17	.10	.12
9	.10	.08	.07	.07	.07			.04	1.7	.16	.10	.12
10	.12	.08	.06	.06	.06			.04	.90	.16	.12	.10
11	†.11	.08	.08	.08	.08		} †.08	.05	.41	.14	.10	.12
12	†.10	.08	.10	.08	.07			.06	.28	.12	.10	.12
13	.09	.08	.07	.07	.07			.05	.25	.12	.10	.10
14	.09	.08	.06	.06	.06			.05	.25	.12	.12	.10
15	.10	.08	.07	.06	.06			.04	.38	.12	.10	.16
16	.10	.09	.10	.10	.06	.07	.04	2.9	.12	.12	.10	.12
17	.16	.09	.10	.10	.07	.07	.04	3.8	.12	.10	.10	.12
18	.13	.09	.07	.09	.07	.06	.06	1.15	.12	.09	.10	.12
19	.12	.09	.06	.10	.07	.07	.12	1.6	.12	.10	.10	.10
20	.10	.08	.07	.09	.07	.07	.12	1.25	.12	.09	.10	.10
21	.10	.11	.07	.08	.07	.47	.13	.80	.12	.10	.10	.09
22	.12	.08	.07	.08	.06	1.8	.14	.49	.17	.10	.10	.10
23	.12	.09	.06	.07	.06	17	.23	.43	.20	.09	.10	.13
24	.12	.09	.06	.08	.07	2.2	.12	.39	.12	.10	.09	.10
25	.10	.10	.06	.12	.17		.12	.31	.12	.10	.12	.09
26	.10	.09	.07	.08	.10	} *.48	.23	.28	.12	2.0	.14	.09
27	.12	.08	.06	.07	.09		.66	.25	.14	.74	.10	.09
28	.09	.08	.07	.06	.06		.32	.22	.12	.29	.10	.08
29	.12	.09	.06	.07	.08	} *.15	.20	-	.12	.18	.13	.09
30	.10	.09	.06	.07	.08		.16	-	.12	.15	.12	.08
31	.10	.09	-	.07	-		.63	-	.12	-	.12	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	0.16	0.09	0.113	0.175	3.51	11
August.....	.11	.08	.086	.133	2.66	8
September.....	.10	.06	.072	.111	2.16	7
October.....	.12	.06	.078	.121	2.41	7
November.....	.17	.06	.090	.124	2.41	7
December.....	17	.06	.813	1.26	25.2	77
Calendar year 1933	17	.06	.256	.399	94.0	288
January.....	.66	.04	.150	.232	4.65	14
February.....	3.8	.12	.702	1.09	19.7	60
March.....	.20	.12	.142	.220	4.40	14
April.....	2.0	.09	.204	.316	6.13	19
May.....	.14	.09	.113	.175	3.49	11
June.....	.66	.06	.149	.231	4.46	14
Fiscal year 1933-34	17	.04	.222	.343	81.2	249

*Estimated.

†Partly estimated.

Pearl Harbor Springs at Waiawa, near Pearl City

Location.- Water-stage recorder on right bank of Waiawa Stream, at rear of Oahu Sugar Co.'s pumping plant no. 9, 1.7 miles from Pearl City and 13.2 miles northwest of Honolulu. Zero of gage is 0.66 foot below mean sea level.

Records available.- March 1931 to June 1934.

Extremes.- Not determined because extremes at gaging-station site are caused by changes in tidal backwater.

Remarks.- Records good. When needed for irrigation of sugarcane Oahu Sugar Co.'s pump no. 9 diverts about 3 million gallons a day. Surface run-off caused by flood not included in figures given below.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	11	9.6	8.7	13	13	12.5	14	14	13.5	14	12	13
2	12	8.7	8.7	13	13	12.5	14	14	14	14.5	12	13
3	11	8.7	*10.5	13	13	13	14	14	14	14	12	13
4	14	8.7	12.5	13	13	13	14	14	15	14	12	13
5	11	9.0	9.0	13	13.5	13	14	14	15	14	12.5	13
6	10.5	9.0	8.7	13	13.5	13	14.5	14	15	†14	12.5	13.5
7	*11	9.0	8.7	13	13.5	12.5	14.5	14	15		12.5	13.5
8	14	8.7	10	13	13	12.5	14	14	14.5		12.5	13
9	14	8.7	13	13	13	13	14	14	14	†13	12.5	13
10	14	8.7	13	13	13	13	14	14	14		12	13
11	11	8.7	13	13	13	13	14	14.5	14		12.5	13.5
12	9.6	8.7	13	13	13	13	14	14	14	†12.5	13	13
13	9.3	8.7	13	13	12.5	13	14	14	14		12.6	13
14	9.3	8.7	13	13	12	13	14	14	14		12.6	13
15	11	8.7	13	13	12	13	14	14	14	12.5	12.6	13
16	13.5	8.7	13	13	12	13	14	14	14	12	12	13
17	13.5	8.7	13	13	12	13	14	14	14	12	12.5	13
18	10	8.7	13	13	12	13	14.5	14	14.5	12	13	13
19	9.3	8.7	13	12.5	12	13	14	14	14	12	13	13
20	9.0	8.7	13	13	12	13	14	14.5	14	12	13	13
21	10.5	8.7	13	12.5	12	13.5	14	15	14	12	13	13
22	13	8.7	13	13	12	14	14	15	14	12	12.5	13
23	13.5	8.7	13	13	12	13.5	14	14	14	12	12.5	13
24	13.5	8.7	13	13	12	13	14	14	14	12	13	13
25	13.5	8.7	13.5	13	12	13.5	14.5	14	14	12	13	13
26	9.6	8.7	13	13	12.5	14	14	13.5	14	12.5	13	13
27	8.7	8.7	13	13	12.5	14	14	14	14	12.5	13	13
28	10	8.7	13	13	12	14	14.5	13	14	12	13	13
29	13	8.7	13	13	12	14	14.5	-	14	12	13	13
30	13	8.7	13	13	12.5	14	14.5	-	14	12	13	13
31	13.5	8.7	-	13	-	14	14	-	14	-	13	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	14	8.7	11.6	17.9	360	1,100
August.....	9.6	8.7	8.76	13.6	272	833
September.....	13.5	8.7	12.1	18.7	365	1,110
October.....	13	12.5	13.0	20.1	402	1,230
November.....	13.5	12	12.5	19.3	376	1,160
December.....	14	12.5	13.2	20.4	410	1,260
Calendar year 1933	17	8.7	13.3	20.6	4,840	14,840
January.....	14.5	14	14.1	21.8	438	1,340
February.....	15	13	14.1	21.8	394	1,210
March.....	15	13.5	14.1	21.8	438	1,350
April.....	14.5	12	12.8	19.8	384	1,180
May.....	13	12	12.6	19.5	391	1,200
June.....	13.5	13	13.0	20.1	392	1,200
Fiscal year 1933-34	15	8.7	12.6	19.5	4,620	14,160

*Partly estimated.

†Estimated.

Pearl Harbor Springs at Puukapu, near Pearl City

Location.- Water-stage recorder on left bank of stream near levee two-fifths of a mile from Pearl City and 1½ miles northwest of Honolulu. Zero of gage is 0.002 foot below mean sea level.

Records available.- July 1931 to June 1934.

Extremes.- Not determined because extremes at gaging-station are caused by changes in tidal backwater.

Remarks.- Records excellent. About a million gallons a day is occasionally diverted from stream. Surface run-off caused by flood not included in figures given below.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.7	5.0	4.8	4.2	3.9	4.6	}	5.3	}	4.1	}	4.1
2	4.8	4.8	4.4	4.2	3.9	4.7		5.2		4.1		4.1
3	4.9	4.8	4.7	4.2	3.9	4.7		5.3		4.2		4.2
4	5.0	4.9	4.9	4.2	4.0	4.7		5.4		3.9		4.3
5	5.0	4.8	4.9	4.2	4.2	4.6		5.4		4.2		4.4
6	4.6	5.0	4.8	4.2	4.2	4.6	}	5.4	}	4.2	}	4.5
7	4.9	5.0	4.8	4.2	4.1	4.6		5.4		4.2		4.6
8	4.7	4.7	4.8	4.3	4.1	4.7		4.7		4.0		4.5
9	4.7	5.0	4.7	4.3	4.2	4.8				4.7		4.5
10	4.8	4.9	4.7	4.0	4.2	4.6				4.6		3.9	4.4	4.5
11	5.0	5.0	4.7	3.9	4.2	4.7	}	}	4.5	4.0	4.7	4.5
12	5.0	4.7	4.3	4.1	4.6	4.7			4.5	4.0	4.5	4.4
13	4.7	4.9	4.1	4.1	*4.6	4.7			4.5	4.1	4.5	4.4
14	4.9	4.9	4.3	4.1	†4.6	4.7			4.4	4.1	4.6	4.2
15	4.8	4.6	4.4	4.2	4.6	4.7			4.3	4.1	4.5	4.5
16	5.0	4.9	4.5	4.1	4.5	4.7	}	}	4.3	3.9	4.3	4.5
17	5.0	4.8	4.5	4.0	4.4	4.7			4.3		4.4	4.5
18	4.9	4.8	4.5	4.1	4.3	4.8			4.4		4.5	4.4
19	4.7	4.8	4.2	4.0	4.4	4.8			4.5		4.6	4.4
20	5.0	4.7	4.4	3.9	4.4	4.8	5.2	4.4	4.5		4.3	
21	4.8	4.4	4.1	3.9	4.3	4.8	5.2	4.5	4.5	}	4.2	4.2
22	5.1	4.3	4.4	3.9	4.4	4.4	5.2	4.5	4.5		4.4	4.3
23	5.0	4.5	4.4	3.7	4.4	4.4	5.1	4.5	4.5		4.4	4.4
24	5.0	4.6	4.4	3.6	4.4	4.4	5.1	4.4	4.4		4.4	4.4
25	4.9	4.6	4.4	3.5	4.5	4.5	5.0	4.5	4.5		4.4	4.3
26	4.6	4.6	4.4	3.4	4.5	4.5	5.2	4.5	4.5	}	4.2	4.0
27	5.1	4.9	4.4	3.6	4.4	4.4	5.3	4.2	4.2		4.1	4.1
28	5.0	4.9	4.1	3.9	4.3	4.3	5.3	4.2	4.2		4.1	4.2
29	5.1	4.5	4.3	3.9	4.4	4.4	5.3	-	4.1		4.0	4.1
30	5.0	4.9	4.2	3.9	4.5	4.5	5.3	-	4.2		4.2	4.3
31	5.0	4.9	-	3.9	-	-	5.3	-	4.2	-	4.2	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	5.1	4.6	4.89	7.57	152	466
August.....	5.0	4.3	4.78	7.40	148	455
September.....	4.9	4.1	4.46	6.95	134	413
October.....	4.3	3.4	3.99	6.17	124	380
November.....	4.6	3.9	4.31	6.87	129	397
December.....	-	4.6	4.74	7.33	147	451
Calendar year 1933	6.0	3.4	4.97	7.69	1,820	5,670
January.....	5.3	-	5.08	7.66	158	483
February.....	-	-	5.37	8.51	150	462
March.....	-	4.1	4.50	6.96	140	428
April.....	-	-	4.03	6.24	121	371
May.....	4.7	4.0	4.35	6.73	135	414
June.....	4.6	4.0	4.34	6.71	130	399
Fiscal year 1933-34	-	3.4	4.57	7.07	1,670	5,120

*Estimated.

†Partly estimated.

Pearl Harbor Springs at Loko Kukona, near Pearl City

Location.- Water-stage recorder on left bank of stream near levee, half a mile from Pearl City and 11½ miles northwest of Honolulu. Zero of gage is 0.80 foot above mean sea level.

Records available.- June 1931 to June 1934.

Extremes.- Not determined because extremes at gaging-station site are caused by changes in tidal backwater.

Remarks.- Records excellent. No diversions. Surface run-off caused by floods not included in figures given below.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.0	2.9	2.9	2.6	2.6	2.6	2.9	2.9	3.1	2.9	2.7	2.5
2	3.1	2.9	2.9	2.7	2.6	2.6	3.0	2.9	3.0	2.9	2.7	2.6
3	3.0	2.9	2.9	2.6	2.5	2.7	3.0	2.9	2.9	2.9	2.6	2.6
4	3.1	2.9	2.9	2.6	2.5	2.7	2.9	3.0	2.7	2.8	2.6	2.7
5	3.1	2.9	2.8	2.6	2.7	2.6	2.9	3.0	2.8	2.7	2.7	2.6
6	3.1	2.8	2.9	2.6	2.6	2.6	3.0	3.0	2.8	2.7	2.6	2.7
7	3.1	2.7	2.8	2.7	2.6	2.6	2.9	3.0	2.7	2.5	2.7	2.7
8	3.1	2.6	2.9	2.6	2.5	2.6	2.9	3.0	2.7	2.5	2.6	2.7
9	3.0	2.5	2.9	2.5	2.5	2.6	2.9	3.0	2.7	2.5	2.6	2.7
10	3.1	2.5	2.9	2.5	2.5	2.7	2.9	2.9	2.7	2.5	2.7	2.7
11	3.1	2.5	2.9	2.5	2.5	2.7	2.9	2.9	2.8	2.5	2.7	2.8
12	3.1	2.5	2.8	2.6	2.5	2.5	2.8	2.8	2.7	2.3	2.7	2.7
13	3.0	2.5	2.8	2.7	2.5	2.8	2.8	2.9	2.7	2.5	2.9	2.7
14	2.9	2.5	2.8	2.6	2.5	2.7	2.8	3.0	2.9	2.5	2.9	2.7
15	2.8	2.7	2.6	2.6	2.5	2.7	2.8	3.0	2.9	2.5	2.9	2.6
16	2.9	2.7	2.9	2.7	2.5	2.7	2.8	3.0	3.0	2.5	2.6	2.6
17	2.9	2.7	2.9	2.7	2.5	2.8	2.8	3.0	3.0	2.5	2.7	2.6
18	2.8	2.6	2.9	2.7	2.6	2.8	2.8	3.0	3.0	2.5	2.6	2.6
19	2.8	2.8	2.9	2.7	2.6	2.9	2.8	3.0	3.0	2.5	2.5	2.6
20	2.9	2.8	2.9	2.7	2.6	3.0	3.0	3.0	3.0	2.5	2.5	2.5
21	2.9	2.9	2.8	2.7	2.6	3.0	3.0	3.0	3.0	2.5	2.5	2.5
22	3.0	2.9	2.6	2.7	2.6	3.0	3.0	3.0	2.9	2.5	2.5	2.5
23	3.0	2.9	2.6	2.7	2.6	3.0	3.0	3.0	2.9	2.5	2.5	2.6
24	3.0	3.0	2.6	2.7	2.6	3.0	3.0	3.0	2.8	2.4	2.5	2.6
25	3.0	3.0	2.6	2.7	2.7	3.0	3.0	3.0	2.8	2.5	2.5	2.6
26	3.0	3.0	2.7	2.7	2.6	3.0	3.0	3.0	2.8	2.7	2.6	2.6
27	3.0	3.0	2.7	2.7	2.6	2.9	3.0	3.1	2.9	2.7	2.6	2.6
28	2.9	3.0	2.7	2.6	2.6	3.0	3.0	3.1	2.8	2.6	2.6	2.6
29	2.9	3.0	2.7	2.7	2.6	3.0	3.0	-	2.8	2.6	2.5	2.6
30	2.9	2.9	2.6	2.7	2.6	3.0	3.0	-	2.9	2.7	2.5	2.6
31	2.9	2.9	-	2.6	-	3.0	2.9	-	2.9	-	2.5	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	3.1	2.8	2.96	4.61	92.3	285
August.....	3.0	2.6	2.79	4.32	86.4	265
September.....	2.9	2.6	2.80	4.33	84.0	253
October.....	2.7	2.5	2.65	4.10	82.0	252
November.....	2.7	2.5	2.57	3.98	77.0	236
December.....	3.0	2.6	2.81	4.35	87.1	267
Calendar year 1933	3.6	2.5	3.02	4.67	1,100	3,380
January.....	3.0	2.8	2.92	4.52	90.5	278
February.....	3.1	2.8	2.98	4.61	93.4	286
March.....	3.1	2.7	2.86	4.43	88.6	272
April.....	2.9	2.3	2.58	3.99	77.4	238
May.....	2.9	2.5	2.62	4.05	81.3	249
June.....	2.8	2.5	2.62	4.05	78.7	242
Fiscal year 1933-34	3.1	2.3	2.76	4.27	1,010	3,100

Pearl Harbor Springs at Kaluaooopu, near Pearl City

Location.— Water-stage recorder on left bank of stream, a fifth of a mile below Kamehameha Highway, 1 mile from Pearl City, and 11.3 miles northwest of Honolulu. Zero of gage is 0.90 foot above mean sea level.

Records available.— August 1931 to June 1934.

Extremes.— Not determined because extremes at gaging-station site are caused by changes in tidal backwater.

Remarks.— Records good. No diversions. Surface run-off caused by flood not included in figures given below.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	19	18.5	18	18	16.5	18	18.5	*18.5	19.5	18.5		16.5
2	19	18.5	18	17.5	16.5	18	18.5	*18.5	19.5	18.5		16.5
3	19	18.5	18	18	16.5	18	18.5	*18.5	19.5	18.5		16.5
4	19	18.5	18	18	16.5	18	19	*19	20	18		17
5	19	18.5	18	18	16.5	18	19.5	*19	19.5	18		17
6	19	18.5	18	18	16.5	18	19	19.5	19.5	18	}†19	17
7	19	18.5	18	18	16.5	18	19.5	20	20	18		17
8	18.5	18.5	18	18	17	18	20	19.5	19.5	18		17
9	18.5	18.5	18	17.5	17	18	20	19.5	19.5	18	*18.5	17.5
10	18.5	18.5	18	17.5	16.5	18	20	19	19.5	18	18.5	17.5
11	18.5	18.5	18	17.5	16.5	18.5	20	19	19.5	18	18.5	17.5
12	18.5	18.5	18	18	17	18	19.5	19.5	19.5	18	18.5	17.5
13	18.5	18.5	18	17.5		18	19.5	19	19.5	18	18	17
14	18.5	18.5	18	17.5	}†17	18	*19	19.5	19.5	18.5	18	17
15	18.5	18.5	18	18		17.5	*19	18.5	19.5	18.5	18	17
16	18.5	18.5	18	18	17.5	18	*19	18.5	19.5	18	18	17
17	19	18.5	18	17.5	17.5	18	*19	19	19.5	18	18	17
18	19	18.5	18	17.5	17.5	18	*19	17	19.5	18	18	18.5
19	18.5	18	18	17.5	18	18	19.5	19.5	19.5	18	18	18.5
20	18.5	18	18	17	18	18	19	19.5	19.5	18	18	16.5
21	18.5	18	18	17	18	18.5	19	19.5	18.5	18	18	16.5
22	18.5	18	18	17.5	18	18.5	18.5	19	18.5	18	18	16.5
23	19	18	18	17.5	18	18.5	18.5	19.5	18.5	17.5	18	16.5
24	19	18	18	17.5	18	19	18.5	19.5	18.5	17.5	17.5	16.5
25	19	18	18	17	18.5	18.5	18.5	19.5	18.5	18	17.5	16.5
26	19	18	18	17	18.5	18	18.5	20	18.5	18	17.5	16.5
27	18.5	18	18	17	18.5	18	18.5	20	18.5	18	17.5	16
28	18.5	18	17.5	17	18.5	18	19	19.5	18.5	18.5	17.5	16
29	18.5	18	17.5	17	18	18.5	19	-	18.5	*18.5	17	16
30	18.5	18	17.5	17	-	18.5	19	-	18.5	†18	17	16
31	18.5	18	-	17	-	18.5	*18.5	-	18.5	-	16.5	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	19	18.5	18.7	28.9	580	1,750
August.....	18.5	18	18.3	28.3	567	1,740
September.....	18	17.5	18.0	27.9	539	1,650
October.....	18	17	17.5	27.1	545	1,670
November.....	18.5	16.5	17.4	28.9	521	1,600
December.....	19	17.5	18.1	28.0	562	1,730
Calendar year 1933	22	16.5	19.3	29.9	7,040	21,630
January.....	20	18.5	19.0	29.4	590	1,810
February.....	20	17	19.2	29.7	536	1,650
March.....	20	18.5	19.2	29.7	594	1,820
April.....	18.5	17.5	18.1	28.0	542	1,660
May.....	16.5	16	16.7	28.0	562	1,720
June.....	17.5	16	16.7	28.8	502	1,540
Fiscal year 1933-34	20	16.5	18.2	28.2	6,640	20,370

*Partly estimated.

†Estimated.

Pearl Harbor Springs at Waiau, near Pearl City

Location.- Water-stage recorder on left bank of Waiau Stream, a fifth of a mile below Kamehameha Highway, 1.1 miles from Pearl City, and 11.2 miles northwest of Honolulu. Zero of gage is 0.74 foot above mean sea level.

Records available.- May 1931 to June 1934.

Extremes.- Not determined because extremes at gaging-station site are caused by changes in tidal backwater.

Remarks.- Records excellent except for estimated periods, which are fair. A small pumping plant diverts water above station for irrigation. Surface run-off caused by flood not included in figures given below.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.1	7.9	7.5	7.1	6.9	7.1	*8.5	8.5	8.7	7.3	7.3	6.4
2	8.3	7.9	7.5	7.1	6.9	6.9		8.5	8.7	7.3	7.3	6.4
3	8.3	7.9	7.5	7.1	6.7	6.7		8.8	8.5	7.3	7.3	6.5
4	8.5	7.9	7.7	6.9	6.9	6.9		8.8	8.7	7.1	7.1	7.7
5	8.5	7.9	7.5	7.1	7.3	7.3		8.7	8.7	6.9	7.1	8.1
6	8.5	7.9	7.5	6.9	7.1	7.1	*7.5	8.7	8.7	6.9	7.1	7.1
7	8.5	7.9	7.5	6.9	6.9	6.9		8.7	8.5	6.9	7.3	7.3
8	8.3	7.9	7.3	†7.1	6.9	6.9		8.7	8.5	6.7	7.3	7.3
9	8.5	7.9	7.3	6.9	6.9	6.9		8.7	8.5	6.7	6.9	7.3
10	8.5	7.9	7.5	6.9	6.9	6.9		8.7	8.3	6.7	6.7	7.3
11	8.3	7.9	7.3	*7	6.9	6.9	8.7	8.8	8.3	6.5	6.7	7.5
12	8.3	7.9	7.5		7.1	7.1	8.5	8.8	8.3	6.4	6.7	7.5
13	8.3	7.9	7.3		7.1	8.7	8.7	8.8	8.1	6.4	6.7	7.5
14	8.3	7.9	7.1		†6.9	8.7	8.7	8.8	7.9	6.4	6.7	7.1
15	8.1	7.7	7.1		†7.1	6.9	8.8	8.8	7.9	6.4	6.7	6.9
16	8.3	7.7	7.3	6.9	6.9	6.9	8.7	8.8	7.9	6.4	6.7	6.9
17	8.3	7.7	7.3	6.9	6.9	6.9	8.7	8.8	7.9	6.4	6.5	6.7
18	8.1	7.5	7.3	6.9	6.7	6.7	8.7	8.8	7.9	6.2	6.7	6.7
19	7.9	7.5	7.3	6.7	6.9	†7.1	8.5	8.8	7.9	6.2	6.7	6.5
20	8.1	7.5	7.3	6.7	6.9	6.9	8.5	8.8	7.9	6.0	6.9	6.5
21	7.9	7.5	7.3	6.7	6.9	7.3	9.3	8.8	7.9	6.0	6.7	6.4
22	8.1	7.5	7.1	6.9	6.9		9.5	8.7	7.7	6.2	6.7	6.4
23	8.1	7.5	7.1	6.9	6.9		8.5	8.7	7.7	6.4	6.5	6.4
24	7.9	7.7	7.1	6.9	6.9		8.5	8.7	7.5	6.2	6.5	6.4
25	7.9	7.7	7.1	6.9	6.9		8.3	8.8	7.7	6.0	6.5	6.4
26	7.9	7.5	7.1	6.7	7.1	*8	8.3	8.8	7.7	6.7	6.4	6.0
27	7.9	7.5	7.1	6.7	7.1		8.3	8.7	7.3	6.7	6.5	6.0
28	7.9	7.5	7.1	6.7	6.9		8.5	8.7	7.3	6.9	6.5	6.0
29	7.9	7.5	7.1	6.9	6.9		8.5	-	7.3	6.9	6.5	6.0
30	7.9	7.5	7.1	6.9	6.9		8.5	-	7.3	7.3	6.4	6.0
31	8.1	7.5	-	6.9	6.9	-	8.7	-	7.5	-	6.4	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	8.5	7.9	8.18	12.7	254	778
August.....	7.9	7.5	7.71	11.9	239	734
September.....	7.7	7.1	7.29	11.3	219	671
October.....	7.1	6.7	6.92	10.7	214	658
November.....	7.3	6.7	6.93	10.7	208	638
December.....	-	6.9	7.61	11.8	236	724
Calendar year 1933	10	6.7	8.37	13.0	3,050	9,370
January.....	9.5	8.3	8.63	13.4	268	821
February.....	8.8	8.5	8.73	13.5	244	750
March.....	8.7	7.3	8.04	12.4	249	764
April.....	7.3	6.0	6.61	10.2	198	609
May.....	7.3	6.4	6.77	10.5	210	644
June.....	8.1	6.0	6.77	10.5	203	623
Fiscal year 1933-34	9.5	6.0	7.51	11.6	2,740	8,410

*Estimated.

†Partly estimated.

Pearl Harbor Springs at Kalauao, near Aiea

Location.- Water-stage recorder on left bank of Kalauao Stream, a quarter of a mile below Honolulu Plantation pump no. 6, 1.1 miles from Aiea, and 9.7 miles northwest of Honolulu. Zero of gage is 1.10 feet above mean sea level.

Records available.- March 1931 to June 1934.

Extremes.- Not determined because extremes at gaging station are caused by changes in tidal backwater.

Remarks.- Records good. When needed for irrigation of sugarcane, Honolulu Plantation's pump no. 6 diverts about 7 million gallons a day when used as a high-lift pump or 9 million gallons a day as a low-lift pump. Surface run-off caused by flood not included in figures given below.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	18.5	12.5	11	16	11.5	12.5	22	18	15.5	18	19	12
2	18.5	12.5	13	10.5	11	19.5	22	14.5	15	13.5	19	13.5
3	14.5	12	18.5	10.5	13	19.5	22	15.5	17	13	20	19
4	18.5	12.5	11.5	10.5	19	15	22	20	18.5	13.5	17	19
5	12.5	17.5	10.5	10.5	17	11.5	22	14	15.5	14.5	19.5	18.5
6	12.5	17.5	10.5	10.5	11.5	12.5	22	14	20	14	19.5	18.5
7	12.5	12	10.5	15	11.5	12	20	13	20	14	19.5	18.5
8	15.5	11.5	12	18	11.5	12.5	15	13	20	18.5	16	18.5
9	15	11.5	15.5	10.5	11.5	18.5	15	18.5	17	12.5	18	18.5
10	12.5	11.5	16.5	10.5	13	18	14.5	21	17	11.5	12.5	19
11	12	11.5	10.5	10.5	18.5	12.5	14	21	19.5	14	14	18
12	12	14.5	10.5	12.5	17	12	14	21	15	12.5	14.5	12.5
13	12	17	11.5	14.5	11.5	15.5	17.5	21	16.5	11.5	18	12
14	12	11.5	11.5	15	11	15	18.5	16.5	13.5	15	14.5	10.5
15	15.5	11.5	12.5	16.5	11	12.5	14	17	15	16.5	12.5	12
16	14	11.5	15.5	11	11	14	16	17	18	12	14	15.5
17	12.5	11.5	16	11	10.5	18	15.5	20	17	13.5	13	17
18	12.5	11.5	11	10.5	13	14	13.5	20	18.5	11.5	12.5	11.5
19	12.5	14.5	11	10.5	17	15	14	17.5	15	12	15.5	11
20	12.5	17	11	10.5	11	14	17	17	13.5	11.5	18	11
21	12.5	11.5	11	13	11	17	18.5	15.5	13.5	15	12	12
22	15.5	11.5	12	18	10.5	20	14	16	12.5	18.5	14	11
23	18	11.5	15.5	10.5	11	20	18.5	17	14	12	11.5	12.5
24	12.5	11.5	16	10.5	13	20	20	16	15	11.5	10.5	18.5
25	12.5	11.5	10.5	10.5	18.5	20	20	20	20	15	12	12.5
26	12.5	14	11	10.5	17.5	21	20	16.5	15.5	18.5	13.5	12
27	12.5	17	10.5	11.5	11.5	21	21	16.5	15.5	19	19	12
28	12.5	11.5	10.5	15.5	12.5	21	21	17	15.5	19	14	10.5
29	15	11.5	12	18.5	15.5	21	21	-	15.5	19	12.5	10.5
30	17.5	11.5	15.5	18.5	17.5	21	21	-	19.5	19.5	12	13
31	12.5	11.5	-	17	-	22	18.5	-	17	-	11.5	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	18.5	12	13.9	21.5	432	1,320
August.....	17.5	11.5	12.8	19.8	398	1,220
September.....	18.5	10.5	12.4	19.2	375	1,140
October.....	18.5	10.5	12.7	19.6	394	1,210
November.....	19	10.5	13.4	20.7	400	1,230
December.....	22	11.5	16.6	25.7	516	1,580
Calendar year 1933	24	10.5	15.9	24.6	5,780	17,730
January.....	22	13.5	18.2	28.2	564	1,730
February.....	21	13	17.3	26.8	494	1,490
March.....	20	12.5	16.4	25.4	508	1,560
April.....	19.5	11.5	14.7	22.7	440	1,350
May.....	20	10.5	15.0	23.2	465	1,430
June.....	19	10.5	14.4	22.3	430	1,320
Fiscal year 1933-34	22	10.5	14.8	22.9	5,400	16,680

Moanalua Stream near Honolulu

Location.- Duplex water-stage recorder $4\frac{1}{2}$ miles from mouth of stream and $5\frac{1}{2}$ miles north of Honolulu post office. Altitude, about 275 feet, from topographic map.

Drainage area.- 3.2 square miles.

Records available.- June 1928 to June 1934.

Extremes.- Maximum discharge during year, 533 million gallons a day (825 second-feet) Apr. 28 (gage height, 6.18 feet); no flow for several months during year.

1928-34: Maximum discharge, 2,370 million gallons a day (3,870 second-feet) Nov. 18, 1930 (gage height, 11.58 feet); no flow during dry weather.

Remarks.- Records good for ordinary stages; poor for high stages. Water for domestic use diverted from stream 1 mile above station by means of a 2-inch pipe. Continuous records of rainfall are obtained at station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1						0	0	0.16	0.04	0	0.25	2.3
2						0	0	.13	.02	0	.09	5.1
3						0	0	.11	0	0	.06	13.5
4						0	0	.07	0	0	.04	16.5
5						0	0	.06	0	0	.03	7.6
6						0	0	.05	0	0	.03	3.8
7						0	0	.04	0	0	3.4	2.0
8						0	0	.03	0	0	2.6	1.3
9						0	0	.03	0	0	2.4	.84
10						0	0	.03	0	0	1.3	.56
11						0	0	0	0	0	7.1	.37
12						0	0	0	0	0	3.7	.29
13						0	0	0	0	0	1.3	.16
14						0	0	0	0	0	.59	.27
15						0	0	0	0	0	25	.29
16						0	0	4.5	0	0	2.7	.15
17						0	0	5.1	0	0	1.28	.16
18						0	0	.96	0	0	.72	.79
19						0	0	1.8	0	0	.44	.84
20						0	0	2.2	0	0	.24	2.2
21						0	0	.55	0	0	.15	1.35
22						0	.22	.22	0	0	.09	.70
23						27	4.4	.12	0	0	.08	.52
24						4.8	4.6	.08	0	0	.15	.56
25						.63	5.6	.07	0	18	1.65	1.1
26						.08	1.45	.06	0	130	11	.69
27						.04	5.6	.06	0	11.5	3.4	.40
28						.04	1.7	.05	0	3.7	5.5	.22
29						.05	.62	-	0	1.35	2.3	.27
30						.01	.30	-	0	.64	1.2	.24
31						0	.19	-	0	-	.89	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	0	0	0	0	0	0
August.....	0	0	0	0	0	0
September.....	0	0	0	0	0	0
October.....	0	0	0	0	0	0
November.....	0	0	0	0	0	0
December.....	27	0	1.05	1.62	32.6	100
Calendar year 1933	128	0	1.50	2.32	546	1,680
January.....	5.6	0	.796	1.23	24.7	76
February.....	5.1	0	.589	.911	16.5	51
March.....	.04	0	.002	.003	.08	0
April.....	130	0	5.51	5.53	165	507
May.....	25	.03	2.50	3.27	77.6	238
June.....	16.5	.15	2.17	3.36	65.1	200
Fiscal year 1933-34	130	0	1.05	1.62	382	1,170

Note.- No flow during months left blank.

Kalihi Stream near Honolulu

Location.- Water-stage recorder at Kioi Pool, three-eighths of a mile upstream from Catholic Orphanage and 5 miles north of Honolulu post office. Altitude, about 440 feet, from topographic map.

Drainage area.- 2.7 square miles.

Records available.- September 1913 to June 1934.

Average discharge.- 17 years (1916-20, 1921-34), 5.01 million gallons a day (7.75 second-foot).

Extremes.- Maximum discharge during year, 568 million gallons a day (879 second-foot) Apr. 26 (gage height, 7.87 feet); minimum, 0.06 million gallons a day (0.09 second-foot) Oct. 22.

1913-34: Maximum discharge, 2,730 million gallons a day (4,220 second-foot) Nov. 18, 1930 (gage height, 13.81 feet); minimum, that of Oct. 22, 1933.

Remarks.- Records good for ordinary stages; fair for high stages and estimated periods. Water for domestic use diverted from stream above station. Record Feb. 24 to Mar. 9, 12-16 based on gage heights read once or twice a day.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.1	1.2	0.6	0.4	0.8	0.3	1.0	4.0	1.5	0.9	4.1	8.5
2	1.7	1.1	.6	.4	.6	.4	1.6	2.8	1.5	1.0	3.5	11
3	1.4	1.0	.6	.4	.4	.8	1.2	2.3	1.5	1.3	3.4	} *38
4	3.1	1.0	.5	.4	.4	1.2	1.1	2.1	1.5	1.0	3.7	
5	2.0	.9	.6	.4	.4	.6	1.1	1.9	1.5	1.0	4.9	
6	1.5	1.0	.6	.6	.4	.4	1.0	1.8	1.7	.9	6.0	} *10
7	1.2	.8	.6	.6	.3	.4	.9	1.8	1.5	1.2	14	
8	1.6	.8	1.8	.4	.4	.4	.8	1.7	1.4	1.6	8.9	
9	1.2	.8	.7	.4	.3	.3	.7	2.5	1.4	1.1	7.4	5.8
10	1.1	.9	.6	.4	.4	.3	.7	1.8	*1.5	1.0	6.1	5.1
11	1.0	.9	.5	.4	.3	.3	1.6	1.7	*1.3	1.0	15.5	4.8
12	.9	.7	1.1	.4	.2	.4	1.5	1.6	1.2	1.0	9.8	4.3
13	.9	.7	.7	.4	.2	.4	1.1	1.5	1.2	1.0	6.5	4.0
14	.9	.9	.6	.4	.3	.4	1.0	1.5	1.2	1.0	5.6	5.4
15	.9	.7	.6	.4	.2	.4	1.0	2.2	1.1	.9	27	4.5
16	1.0	1.0	.9	.4	.2	.4	.9	9.3	1.0	1.0	8.9	3.8
17	1.2	.9	.7	.4	.2	.4	.8	6.8	*1.0	.9	6.8	3.4
18	1.1	1.0	.6	.4	.2	.3	.7	3.2	*1.0	.7	5.6	4.0
19	1.0	.7	.6	.4	.2	.3	1.4	5.7	1.0	.7	4.8	3.4
20	1.2	.7	.6	.4	.3	.3	3.8	†5.4	†1.0	.7	4.1	4.6
21	1.0	.9	.7	.4	.2	.9	5.4	†3.4	1.0	1.0	3.8	3.7
22	1.6	.7	.6	.4	.2	5.6	3.7	*2.6	1.0	1.5	3.5	3.6
23	3.0	.7	.6	.4	.3	30	5.6	*2.3	1.2	1.1	4.6	3.4
24	4.1	.6	.5	.3	.2	9.4	7.2	2.2	1.0	4.8	3.5	3.7
25	1.8	.7	.5	.4	.8	3.8	7.0	2.2	1.0	31	11.5	4.3
26	1.3	.6	.4	.3	.4	2.1	4.9	2.1	1.0	122	19	3.4
27	1.3	.5	.4	.3	.2	1.7	9.3	1.8	1.0	16	8.7	3.2
28	1.2	.6	.4	.5	.2	1.4	5.1	1.7	1.0	9.1	6.6	3.1
29	1.3	.6	.4	1.0	.2	1.2	3.7	-	1.3	6.1	5.6	4.5
30	1.7	.6	.4	.5	.2	1.1	3.0	-	1.0	4.8	4.8	3.4
31	1.3	.6	-	.4	-	1.0	4.3	-	1.0	-	11	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	4.1	0.9	1.47	2.87	45.6	140
August.....	1.2	.5	.80	1.24	24.7	76
September.....	1.8	.4	.63	.98	19.0	58
October.....	1.0	.3	.43	.66	13.3	41
November.....	.8	.2	.22	.50	9.6	29
December.....	30	.3	2.15	3.33	66.8	205
Calendar year 1933	†117	.2	3.19	4.94	1,160	3,570
January.....	9.3	.7	2.68	4.15	83.1	255
February.....	9.3	1.6	2.85	4.41	79.9	245
March.....	1.7	1.0	1.20	1.98	37.5	114
April.....	122	.7	7.24	11.2	217	667
May.....	27	3.4	7.71	11.9	239	733
June.....	-	3.1	8.31	12.9	249	765
Fiscal year 1933-34	122	.2	2.97	4.60	1,090	3,330

*Estimated.

†Partly estimated.

Nuuanu Stream below reservoir no. 2 wasteway, near Honolulu

Location.- Water-stage recorder on Pali road in upper Nuuanu Valley, a quarter of a mile below reservoir no. 2 wasteway and 5 miles from Honolulu post office.

Altitude, about 810 feet, from topographic map.

Drainage area.- 3.4 square miles.

Records available.- October 1913 to June 1934.

Average discharge.- 15 years (1917-20, 1922-34), 5.34 million gallons a day (8.26 second-feet).

Extremes.- Maximum discharge during year, 292 million gallons a day (452 second-feet) Apr. 26 (gage height, 4.50 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Dec. 21.

1913-34: Maximum discharge, 1,600 million gallons a day (2,480 second-feet) Jan. 16, 1921 (gage height, 8.74 feet, from flood marks); minimum, 0.06 million gallons a day (0.09 second-foot) Sept. 10, 11, 1925.

Remarks.- Records good for ordinary stages, poor for high stages and estimated periods. Reservoirs nos. 2, 3, 4 regulate flow, but diversion from them past station was discontinued in January 1928. The Board of Water Supply diverts ground water from tunnels in drainage area.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.4	1.1	0.9		1.0	0.4	1.6	3.7	2.0	1.6	4.6	9.9
2	1.9	1.0	.9		.9	.5	2.6	3.0	2.0	1.6	4.5	9.1
3	1.4	1.0	.8		.55	.55	1.7	2.3	1.9	2.0	4.5	15.5
4	2.4	.95	.8	*0.5	.55	1.4	1.3	2.8	2.0	1.6	4.5	13
5	1.4	.95	.8		.6	.65	1.2	2.8	2.2	1.5	4.7	11.5
6	1.2	1.4	.75		1.1	.55	1.2	2.6	2.0	1.6	5.7	9.9
7	1.1	1.0	.9		.7	1.1	.5	1.2	1.9	1.7	9.1	9.3
8	1.3	.9	4.5		.7	.6	.5	1.1	1.8	1.9	7.5	9.1
9	1.1	.9	1.1		.55	.4	.5	1.1	2.6	1.9	6.1	9.7
10	1.1	.95	.95		.55	.5	.5	1.1	2.0	1.8	5.5	8.8
11	1.0	1.0	.95		.55	.5	.45	1.4	1.8	1.8	6.5	8.8
12	1.0	.9	1.3		.55	.5	.4	1.3	1.8	1.8	6.1	8.6
13	.95	.9	.95		.55	.5	.5	1.2	1.7	1.8	5.9	8.6
14	.9	1.0	.9		.55	.5	.45	1.2	1.7	1.8	5.9	9.3
15	.95	.9	.95		.55	.55	.4	1.1	1.9	1.8	12	8.6
16	1.0	1.0	1.1		.55	.55	.4	1.1	3.7	1.7	1.4	6.7
17	2.0	.95	1.0		.55	.55	.4	1.1	3.0	1.7	1.4	8.5
18	1.1	1.3	.9		.55	.6	.4	1.1	2.3	1.9	1.3	8.5
19	.95	.95	.9		.55	.6	.4	1.9	3.5	1.7	1.4	6.1
20	1.1	.9	1.1		.55	.55	.55	4.8	2.9	1.6	1.4	6.1
21	.9	1.3	1.0		.55	.4	.3	5.5	2.4	1.6	1.5	6.3
22	1.1	.95	1.0		.55	.4	2.8	3.5	2.4	1.7	1.8	6.3
23	2.8	.9	.9		.55	.4	†3.4	6.1	2.3	1.8	1.5	6.5
24	2.2	.9	.8		.55	.4	7.5	5.0	2.2	1.7	3.4	6.1
25	1.2	.9	.8		.55	.55	2.9	5.2	2.2	1.7	8.1	9.8
26	.85	.85	.85		.55	.5	2.0	5.2	2.1	1.6	53	11
27	.75	.8	.8		.5	.4	1.7	8.7	2.1	1.8	8.5	9.1
28	.8	.85	.8		.5	.4	1.3	3.6	2.0	1.8	5.7	7.9
29	1.7	.9		*.8	.65	.4	1.3	3.4	-	1.8	5.1	7.4
30	2.0	.85			.8	.4	1.3	3.2	-	1.7	4.7	7.1
31	1.2	.9			.55	-	1.3	5.2	-	1.5	10.5	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	2.6	0.75	1.31	2.03	40.8	125
August.....	1.4	.3	.969	1.50	30.0	92
September.....	4.5	.75	1.03	1.59	31.0	95
October.....	-	.5	.623	.964	19.3	59
November.....	1.1	.4	.572	.885	17.2	53
December.....	-	.3	2.15	3.33	66.6	204
Calendar year 1933	181	.3	4.91	7.60	1,790	5,500
January.....	8.7	1.1	2.79	4.38	96.6	286
February.....	3.7	1.7	2.44	3.78	86.2	209
March.....	2.2	1.5	1.80	2.79	55.8	171
April.....	53	1.3	4.18	6.44	125	383
May.....	12	4.5	6.84	10.8	212	651
June.....	15.6	7.4	9.28	14.4	278	854
Fiscal year 1933-34	53	.3	2.82	4.36	1,030	3,180

*Estimated.

†Partly estimated.

West Branch of Manoa Stream near Honolulu

Location.- Water-stage recorder 75 feet above lower highway and 4 miles northeast of Honolulu post office. Altitude, about 290 feet, from topographic map.

Drainage area.- 1.1 square miles.

Records available.- May 1913 to January 1921, August 1925 to June 1934.

Average discharge.- 15 years (1913-20, 1926-34), 2.95 million gallons a day (4.56 second-feet).

Extremes.- Maximum discharge during year, 212 million gallons a day (328 second-feet) Apr. 26 (gage height, 3.19 feet); minimum, 0.10 million gallons a day (0.16 second-foot) Nov. 17-24, Dec. 9, 10.
1913-21, 1925-34: Maximum stage, 10.4 feet Jan. 18, 1921; from flood marks (discharge, estimated, 2,100 million gallons a day or 3,250 second-feet); minimum discharge, about 0.05 million gallons a day (0.08 second-foot) Mar. 16, 22, 1928.

Remarks.- Records good for ordinary stages and fair for high stages and estimated periods. No diversions above station. Staff readings once daily used Oct. 18-20, 23-24.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.4	1.5	0.8	0.4	0.66	0.15	0.31	1.65	0.37	0.12	1.0	4.2
2	4.7	1.1	.6	.4	.37	.32	.78	1.1	.34	.12	.91	4.3
3	3.6	1.0	.5	.4	.23	.36	.54	.91	.31	.26	.86	7.0
4	6.8	.9	.5	.4	.24	1.2	.42	.81	.34	.15	1.15	6.4
5	3.0	.8	.5	.4	.44	.28	.37	.77	.46	.14	1.5	5.5
6	2.0	1.2	.5	.8	.23	.23	.28	.65	.37	.14	2.7	3.4
7	1.5	.8	.7	.4	.26	.20	.28	.62	.28	.14	4.8	2.5
8	2.4	.8	2.8	.4	*.23	.20	.28	.58	.28	.42	3.0	2.2
9	1.6	.8	.8	.4	*.18	.15	.28	1.1	.28	.18	2.0	2.2
10	1.9	.9	.7	.3	.18	.12	.28	.65	.28	.15	1.5	2.1
11	1.5	.8	.8	*.2	.18	.14	.89	.54	.23	.15	5.2	2.2
12	1.2	.7	2.6	.15	.15	.14	.65	.50	.20	.15	3.9	1.75
13	1.1	.8	1.0	.14	.22	.42	.46	.20	.18	.21	1.7	
14	.9	1.2	.7	.12	.20	.37	.42	.18	.18	3.1	3.0	
15	1.2	.6	.6	†.3	.12	.18	.34	.53	.18	.15	13	2.1
16	1.4	1.2	1.2	.12	.18	.18	.34	2.2	.18	.15	3.6	1.6
17	1.8	.8	.8	.10	.15	.15	.31	.97	.18	.14	2.4	1.7
18	1.1	2.5	.6	.28	.10	.14	.31	.65	.20	.14	1.9	2.4
19	.9	1.0	.6	.26	.10	.14	1.2	2.6	.20	.15	1.7	1.75
20	1.5	.8	.8	.28	.10	.14	5.8	1.2	.18	.15	1.45	7.6
21	.9	1.4	.9	†.2	.10	.29	7.8	.77	.18	.23	1.35	2.7
22	1.6	.8	.8	.10	4.9	3.8	.65	.20	2.4	1.3	2.0	
23	4.4	.7	.6	.14	.10	12.5	5.9	.54	.20	.23	2.6	2.7
24	3.8	.7	.5	.14	.10	4.6	2.2	.50	.23	3.5	1.4	1.9
25	1.5	.8	.5	*.15	.38	1.5	1.45	.46	.18	12.5	7.6	2.2
26	1.1	.6	.4	.15	.20	.86	1.6	.42	.15	39	10.5	1.7
27	1.4	.5	.4	.14	.15	.62	6.4	.39	.15	5.6	3.6	1.75
28	1.1	.5	.5	.15	.46	.19	.37	.15	2.4	5.6	1.6	
29	2.4	.5	.5	2.2	.15	.39	1.35	-	.26	1.5	2.7	2.2
30	3.5	.5	.5	.31	.15	.37	1.05	-	.14	1.15	2.8	1.6
31	1.7	.6	-	.23	-	.34	2.5	-	.12	-	2.5	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	6.8	0.9	2.16	3.34	66.9	205
August.....	2.5	.5	.90	1.39	27.8	86
September.....	2.8	.4	.79	1.22	25.7	75
October.....	2.2	.14	.358	.564	11.1	34
November.....	.66	.10	.195	.302	5.66	18
December.....	12.5	.12	1.02	1.58	31.7	97
Calendar year 1933	37	.1	1.80	2.79	656	2,010
January.....	7.8	.28	1.63	2.52	50.4	155
February.....	2.6	.37	.922	1.37	23.0	71
March.....	.46	.12	.232	.359	7.20	22
April.....	39	.12	2.40	3.71	71.9	221
May.....	13	.86	3.25	5.03	101	309
June.....	7.6	1.6	2.82	4.36	84.8	260
Fiscal year 1933-34	39	.10	1.38	2.14	506	1,550

*Partly estimated.

†Estimated.

East Branch of Manoa Stream near Honolulu

Location.- Water-stage recorder just below highway bridge 400 feet upstream from confluence with West Branch of Manoa Stream and 4 miles northeast of Honolulu post office. Altitude, about 290 feet, from topographic map.

Drainage area.- 1.0 square mile.

Records available.- May 1913 to January 1921, August 1925 to June 1934.

Average discharge.- 15 years (1913-20, 1928-34), 3.00 million gallons a day (4.64 second-foot).

Extremes.- Maximum discharge during year, 234 million gallons a day (362 second-foot) Apr. 28 (gage height, 3.20 feet); minimum, 0.52 million gallons a day (0.80 second-foot) Nov. 19.

1913-21, 1925-34: Maximum gage height, 10.4 feet Jan. 18, 1921; determined from flood marks (discharge, estimated, 2,000 million gallons a day or 3,090 second-foot); minimum discharge, 0.4 million gallons a day (0.6 second-foot) June 7, 8, 1928.

Remarks.- Records good for ordinary stages; fair for high stages and estimated periods. Water is diverted from stream above station by East Manoa Ditch, and Board of Water Supply diverts water from tunnels in drainage area. Reading of gage once daily used Oct. 3-8, 9-13, 18-18.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.5	*1.4	1.2	0.9	2.4	0.73	0.86	*1.85	0.80	0.66	1.1	2.9
2	3.2		1.0	.9	1.2	.87	1.65	.73	.73	.80	1.05	3.8
3	2.3		1.0	.83	.73	1.05	.86	.73	1.2	1.1	6.5	5.5
4	3.7	1.25	1.0	.85	.78	1.3	.73	†1.6	.92	.86	1.7	3.4
5	1.6	1.25	1.0	.86	10	.80	.73		1.05	.80	1.95	4.4
6	1.5	1.35	1.0	.94	.73	.80	.80		.92	.86	2.9	2.9
7	1.4	1.25	1.2	†.9	.73	.73	.73	1.3	.86	1.05	5.1	2.4
8	1.8	1.25	2.6		.73	.86	.80	1.2	.80	1.5	2.7	2.3
9	1.4	1.25	1.0		.83	.73	.86	.80	.92	.92	1.9	2.1
10	1.5	1.25	1.0	.80	.73	.86	.80	1.3	.80	.92	1.6	1.8
11	1.2	1.25	1.1	.80	.73	.66	1.25	1.2	.80	.99	10	1.95
12	1.2	1.15	2.5	.86	.60	.66	1.05	1.2	.73	1.2	4.3	1.65
13	1.0	1.05	1.1	.88	.60	.79	.92	1.1	.86	.99	2.0	1.45
14	1.0	1.35	1.0	†.8	.60	.86	.99	1.1	.99	.92	2.4	2.1
15	1.2	1.15	1.0		.60	.60	.99	1.15	.92	.92	13.5	1.65
16	1.5	1.45	1.1	.78	.60	.60	.92	2.6	.99	.92	3.1	1.45
17	1.85	1.25	1.1	.71	.60	.60	.92	1.3	.99	.92	2.3	1.6
18	1.35	2.1	1.3	.71	.60	.60	.92	1.05	.92	.92	1.95	1.8
19	1.25	1.25	1.1	†.8	.60	.60	1.5	5.4	.86	.92	1.7	1.45
20	1.65	1.25	1.1	.92	.60	.60	8.4	1.4	.86	.92	1.6	3.2
21	1.25	1.9	1.2	.92	.60	.94	13	1.05	.86	1.1	1.4	1.6
22	1.6	1.25	1.0	.86	.60	9.6	4.4	.92	.86	2.0	1.25	1.55
23	3.8	1.25	1.0	.86	.66	14	5.2	.86	.99	.73	2.8	1.95
24	4.5	1.25	1.0	.80	.60	3.2	2.0	.86	.86	5.8	1.3	1.65
25	1.65	1.3	1.0	.73	1.2	1.5	1.6	.80	.86	16	3.9	1.7
26	1.45	1.0	.9	.73	.73	1.2	2.8	.86	.86	39	6.8	1.45
27	1.76	1.0	.9	.73	.60	1.05	8.5	.80	.99	4.8	2.2	1.55
28	1.55	1.1	.9	.73	.66	.99	2.3	.86	1.05	1.85	3.0	1.4
29	2.3	1.0	.9	1.8	.66	.92	2.7	-	1.2	1.4	2.3	1.65
30	*2.4	1.0	.9	.92	.66	.86	1.85	-	.92	1.2	1.95	1.35
31	†1.6	1.1	-	.80	-	.80	2.5	-	.86	-	1.7	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	4.5	1.0	1.84	2.65	57.0	175
August.....	2.1	1.0	1.27	1.96	39.4	121
September.....	2.6	.9	1.14	1.76	34.1	105
October.....	1.8	.71	.859	1.33	28.6	82
November.....	2.4	.60	.762	1.18	22.9	70
December.....	14	.60	1.60	2.48	49.6	152
Calendar year 1933	29	.6	1.91	2.96	699	2,140
January.....	13	.73	2.37	3.67	73.5	225
February.....	5.4	.80	1.42	2.20	39.9	122
March.....	1.2	.73	.895	1.38	27.8	85
April.....	39	.80	3.11	4.81	93.3	286
May.....	13.5	1.05	2.98	4.61	92.4	283
June.....	6.5	1.35	2.22	3.43	66.6	205
Fiscal year 1933-34	39	.60	1.71	2.65	623	1,910

*Partly estimated.

†Estimated.

East Manoa Ditch near Honolulu

Location.- Water-stage recorder 150 feet east of lower highway and gaging station on East Branch of Manoa Stream and 4 miles northwest of Honolulu post office.
Altitude, about 320 feet, from topographic map.

Records available.- May 1915 to December 1916, January 1918 to January 1921, August 1925 to June 1934.

Extremes.- Maximum discharge during year, 11.8 million gallons a day (18.3 second-feet) Apr. 26 (gage height, 1.70 feet); minimum, 0.10 million gallons a day (0.15 second-foot) Jan. 30.

1915-16, 1918-21, 1925-34: Maximum discharge, about 26 million gallons a day (40 second-feet) Jan. 16, 1921 (gage height, 2.27 feet); no flow Aug. 28, 1927.

Remarks.- Records good except those for estimated periods, which are fair. Water diverted from East Manoa Stream about a quarter of a mile above station by means of crude stone dam.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.05	1.1	*0.6	0.53	0.59	0.38	0.25	0.88	0.31	0.12	0.53	1.1
2	1.7	1.0		.53	.38	.38	.71	.53	.31	.12	.50	1.45
3	1.15	.68		.50	.45	.46	.38	.45	.29	.16	.50	1.7
4	1.96	.75	*0.5	.50	.44	.67	.39	.41	.31	.12	.92	1.35
5	1.1	.72		.53	.52	.41	.38	.43	.36	.14	1.5	1.55
6	.93	.76		.54	.41	.38	.38	.36	.31	.14	1.5	1.35
7	.88	.68	*1.1	.50	.41	.36	.36	.34	.29	.16	2.7	1.3
8	1.0	.64		.50	.38	.36	.36	.51	.27	.20	1.95	1.3
9	.88	.64		.50	.38	.36	.36	.36	.31	.16	1.3	1.25
10	.88	.64	.57	.50	.38	.36	.36	.36	.25	.14	.88	1.3
11	.80	.63	.68	.46	.36	.34	.50	.31	.25	.16	3.0	1.6
12	.80	.64	1.05	.50	.36	.34	.41	.34	.22	.18	1.75	1.35
13	.80	.64	.68	.50	.36	.40	.38	.31	.20	.16	1.3	1.2
14	.88	.68	.60	.46	.36	.36	.38	.29	.20	.16	1.25	1.6
15	.98	.60	.56	.45	.36	.34	.38	.35	.20	.16	2.4	1.3
16	1.05	.72	.68	.41	.34	.34	.36	1.25	.16	.16	1.3	1.1
17	1.4	.64	.48	.41	.34	.34	.36	.71	.12	.16	1.1	1.3
18	1.0	.94	.25	.41	.34	.31	.36	.38	.12	.16	1.0	1.3
19	.93	.64	.46	.43	.36	.31	.56	1.3	.14	.16	.93	1.1
20	1.2	.64	.64	.38	.38	.31	1.75	1.0	.14	.16	.68	1.9
21	.93	.96	.72	.36	.38	.44	2.8	.46	.14	.16	.72	1.2
22	1.15	.68	.68	.41	.38	2.4	2.2	.41	.14	.18	.72	1.1
23	1.7	.60	.57	.41	.38	3.2	2.1	.36	.14	.25	1.1	1.5
24	2.1	.60	.53	.41	.36	.96	1.2	.36	.16	1.95	.84	1.2
25	1.15	.89	.53	†.41	.81	.38	.97	.34	.18	4.2	1.3	1.15
26	1.05	.60	.50	*.41	.41	.31	1.05	.34	.18	4.6	1.6	1.05
27	1.1	.53	.50	†.36	.38	.27	2.4	.31	.18	2.5	1.05	1.0
28	1.1	.50	.50	.36	.36	.27	.88	.51	.16	1.25	1.2	.97
29	1.45	.50	.50	.90	.36	.27	.12	-	.18	.84	1.1	1.15
30	1.45	.50	.50	.46	.36	.25	.32	-	.14	.68	1.0	.93
31	1.15	-	-	.41	-	.25	1.05	-	.12	-	.93	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	2.1	0.80	1.15	1.78	35.7	110
August.....	1.1	.53	.705	1.09	21.8	67
September.....	-	.25	.613	.948	18.4	56
October.....	.90	.36	.466	.721	14.4	44
November.....	.81	.34	.402	.622	12.1	37
December.....	3.2	.25	.535	.825	16.5	51
Calendar year 1933	3.2	.25	.863	1.34	315	968
January.....	2.8	.12	.789	1.22	24.4	75
February.....	1.3	.29	.491	.760	13.6	42
March.....	.36	.12	.209	.523	6.48	20
April.....	4.6	.12	.656	1.01	19.7	60
May.....	3.0	.50	1.25	1.93	38.8	119
June.....	1.9	.93	1.29	2.00	38.6	119
Fiscal year 1933-34	4.6	.12	.714	1.10	261	800

*Estimated.

†Partly estimated.

Pukele Stream near Honolulu

Location.- Water-stage recorder 200 feet upstream from Palolo belt-road bridge, five-eighths of a mile above confluence of Pukele and Waimao Streams, and $4\frac{1}{2}$ miles east of Honolulu post office. Altitude, about 330 feet, from topographic map.

Drainage area.- 1.2 square miles.

Records available.- April 1912 to September 1913, June 1926 to June 1934.

Extremes.- Maximum discharge during year, 105 million gallons a day (162 second-feet) Apr. 26 (gage height, 3.55 feet); minimum, 0.09 million gallons a day (0.14 second-foot) Dec. 7-13, 20-21.

1912-13, 1926-34: Maximum discharge, 805 million gallons a day (1,250 second-feet) Apr. 11, 1930 (gage height, 7.75 feet, from flood marks); minimum, that of Dec. 7-13, 20-21, 1933.

Remarks.- Records fair for ordinary stages; poor for high stages and estimated periods. A 2-inch pipe diverts water from stream above station. Control was changed to Hofmann type, and the zero flow raised 0.78 foot on Apr. 10.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.24	0.29	0.15	0.15	} +0.15	0.13	0.37	1.2	0.49	0.22	0.85	1.1
2	.22	.29	*.14	.14		.13	.37	1.1	.47	.21	.80	1.7
3	.22	.29	*.14	.14		.12	.33	1.05	.47	.21	.80	9.5
4	.22	.29	*.14	.14		.12	.32	*.99	.47	.21	.70	2.3
5	.24	.29	.13	.13		.11	.30	*.94	.45	.21	.60	2.8
6	.25	.27	.13	.13	.12	.11	.30	*.84	.42	.19	1.15	1.9
7	.25	.27	.13	.13	.12	.09	.29	.77	.39	.19	5.9	1.65
8	.27	.27	.14	.12	.12	.09	.27	.68	.38	.19	5.6	1.6
9	.27	.26	.14	.12	.12	.09	.25	.65	.37	.19	1.5	1.5
10	.27	.24	.14	.12	.12	.09	.24	.57	.37	.16	1.4	1.4
11	.27	.22	.14	.12	.12	.09	.24	.49	.37	.16	8.3	1.3
12	.27	.22	.14	.12	.12	.09	.22	.47	.35	.14	3.2	1.25
13	.24	.21	.14	.12	.12	.11	.22	.44	.35	.14	1.75	1.15
14	.24	.21	.14	.12	.12	.11	.21	.42	.35	.14	1.6	1.15
15	.22	.21	.14	.12	.12	.11	.19	.40	.35	*.14	1.45	1.15
16	.21	.21	.15	.12	.12	.11	.19	.52	.35	*.12	2.1	1.15
17	.19	.19	.15	.12	.12	.11	.16	.65	.33	.14	1.6	1.1
18	.19	.19	.15	.12	.12	.11	.17	.44	.32	.14	1.5	1.05
19	.19	.19	.17	.12	.13	.11	.15	.96	.32	.14	1.45	1.0
20	.19	.19	.17	.12	.13	.11	2.2	.82	.32	.14	1.4	1.0
21	.18	.18	.17	.12	.13	.11	3.5	.66	.30	*.14	1.3	.95
22	.18	.17	.17	.12	.13	1.15	.98	.63	.30	*.14	1.25	.90
23	.18	.17	.15	.12	.13	.94	.25	.63	.29	*.14	1.15	.90
24	.39	*.17	.15	.11	.13	*1.1	.77	.63	.29	*1.35	1.1	.85
25	.25	*.15	.15	.11	.15	*.70	.75	.61	.29	4.7	1.55	.85
26	.24	*.15	.15	.11	.15	*.47	.67	.59	.29	22	5.4	.85
27	.24	.14	.15	.11	.14	.44	5.6	.56	.29	5.5	1.5	.65
28	.24	.14	.15	.11	.14	.45	1.2	.52	.27	*1.05	1.3	.80
29	.27	.15	.15	.12	.13	.44	1.1	-	.25	*.90	1.25	.80
30	.27	.15	.15	} +.15	.13	.42	1.05	-	.24	.90	1.1	.75
31	.27	.15	-		-	.40	1.2	-	.24	-	1.1	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	0.39	0.18	0.238	0.568	7.37	25
August.....	.29	.14	.210	.325	6.51	20
September.....	.17	.13	.147	.227	4.41	14
October.....	-	.11	.124	.192	3.85	12
November.....	-	.12	.129	.200	5.87	12
December.....	1.15	.09	.283	.438	8.76	27
Calendar year 1933.....	-	.09	.975	1.51	356	1,090
January.....	5.6	.15	.783	1.21	24.3	75
February.....	1.2	.40	.686	1.06	19.2	59
March.....	.49	.24	.346	.535	10.7	33
April.....	22	.12	1.27	1.96	38.2	117
May.....	8.3	.60	1.86	2.88	57.6	177
June.....	8.5	.75	1.48	2.29	44.2	136
Fiscal year 1933-34.....	22	.09	.628	.972	229	705

*Partly estimated.

†Estimated.

Waioiao Stream above Pukele Stream, near Honolulu

Location.- Water-stage recorder 300 feet west of road, 1 mile upstream from confluence of Waioiao and Pukele Stream, and 5 miles east of Honolulu post office. Altitude, about 370 feet, from topographic map.

Drainage area.- 1.0 square mile.

Records available.- April 1911 to December 1912, June 1926 to June 1934.

Extremes.- Maximum discharge during year, 114 million gallons a day (176 second-feet) Apr. 26 (gage height, 3.60 feet); no flow several days during October, November, and December.
1911-12, 1926-34: Maximum discharge, 461 million gallons a day (713 second-feet) Apr. 11, 1930 (gage height, 6.27 feet); no flow in extremely dry weather.

Remarks.- Records good for ordinary and medium stages; poor for very high stages and estimated periods. Board of Water Supply diverts water from tunnels in drainage area. Control was changed to the Hofmann type, and the zero flow raised 0.89 foot on Apr. 9.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.39	0.37	0.17	0.01	1.2	0.02	0.04	*0.4	0.11	0.02	0.43	*1.5
2	.63	.25	.06	.01		.02	2.8		.10	.02	.32	
3	.42	.20	.04	0		.03	.13		.09	.13	.32	
4	.79	.16	.03	.06	*0.05	.50	.06	*0.2	.09	.07	.55	
5	.41	.13		.06		.17	.08		.19	.23	.91	
6	.24	.16	*0.05	.12		.06	.09		.15	†0.02	1.65	
7	.14	.09		.08		.03	.06		.07	*0.02	7.5	1.3
8	.24	.07	.23	.11		.02	.03	.12	.05	*0.02	5.3	1.25
9	.13	.04	.04	.12	†0.02	.02	.03	.63	.17	†1.2	3.0	.98
10	.19	.07	.02	.03	.02	.01	.02	.42	.13	.09	1.7	.73
11	.12	.13	.14	.03	.02	.01	.07	.20	.05	.14	10	.82
12	.12	.06	.49	.02	.02	.01		.18	.03	.24	3.4	.68
13	.08	.03	.17	.02		.01		.12	.03	.26	1.55	.78
14	.08	.07	0	0	.01	.01	*0.06	.11	.03	.38		1.15
15	.11	.04	.07	0	0	.01		.12	.02	.16	*6.5	.68
16	.30	.11	.16	0	0	0		2.5	.02	.11		.46
17	.32	.08	.08	0	0	0		1.65	.01	.08	*1.2	.38
18	.24	.17	.05	0	0	0	.05	.64	.01	.06		.38
19	.12	.08	.04	0	0	0	.26	3.5	.01	.05		.32
20	.30	.04	.12	0	0	0	2.8	2.2	.01	.04		.58
21	.16	.15	.15	0	0	0	4.9	.96	.01	.04	*0.5	.35
22	.20	.06	.23	0	0	*.4	2.7	.80	.01	.06		.26
23	.86	.04	.08	0	0	16	4.0	.44	.01	.06		.63
24	1.8	.04	.06	0	0	8.7	.32	.02	.02	1.25		.46
25	.57	.05	.04	0	.27	5.0	*1.0	.24	.02	4.1	*1.4	.35
26	.32	.07	.05	0	.16	3.3		.20	.01	23		.32
27	.33	.03	.39	0	.05	1.7		.14	.01	5.3		.32
28	.33	.04	.07	0	.03	.75	*2.0	.12	.08	1.65		.24
29	.56	.04	.02	0	.02	.12		-	.18	.86	*0.6	.35
30	.71	.07	.01	0	.02	.08		-	.07	.55		.23
31	.52	.11	-	.11	-	.05		-	.04	-		-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	1.8	0.08	0.378	0.585	11.7	36
August.....	.37	.03	.098	.152	3.05	9
September.....	.49	.01	.106	.167	3.23	10
October.....	.12	0	.026	.040	.80	2
November.....	1.2	0	.074	.114	2.21	7
December.....	16	0	1.19	1.84	37.0	114
Calendar year 1933	27	0	.667	1.03	244	748
January.....	4.9	.02	.881	1.36	27.3	84
February.....	3.5	.11	.822	.982	17.4	53
March.....	.19	.01	.057	.088	1.78	5
April.....	23	.02	1.30	2.01	39.1	120
May.....	10	-	2.02	3.13	62.7	193
June.....	-	.23	.767	1.19	23.0	71
Fiscal year 1933-34	23	0	.628	.972	229	704

*Estimated.

†Partly estimated.

MISCELLANEOUS DISCHARGE MEASUREMENTS

Measurements of streams and ditches on the island of Oahu at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on Oahu, 1933-34

Date	Stream	Tributary to-	Locality	Second-feet	Million gallons a day
1933					
July 11	Pearl Harbor Springs	Pacific Ocean	At 27" culvert 300 feet west of Waiiau railway station.....	4.19	2.71
Aug. 7	....do.....	....do.....	....do.....	4.02	2.60
Oct. 5	....do.....	....do.....	....do.....	3.26	2.11
Nov. 14	....do.....	....do.....	....do.....	4.17	2.70
Dec. 14	....do.....	....do.....	....do.....	4.10	2.65
Dec. 18	....do.....	....do.....	....do.....	3.95	2.55
1934					
Apr. 23	....do.....	....do.....	....do.....	3.64	2.35
May 18	....do.....	....do.....	....do.....	3.96	2.56
June 16	....do.....	....do.....	....do.....	3.73	2.41
1933					
July 11	....do.....	....do.....	At wooden culvert 30 feet west of Waiiau railway station.....	.777	.502
Aug. 7	....do.....	....do.....	....do.....	.649	.419
Oct. 5	....do.....	....do.....	....do.....	.597	.386
Nov. 14	....do.....	....do.....	....do.....	.780	.504
Dec. 14	....do.....	....do.....	....do.....	.706	.456
1934					
Jan. 18	....do.....	....do.....	....do.....	.905	.585
Apr. 24	....do.....	....do.....	....do.....	.546	.353
May 18	....do.....	....do.....	....do.....	.876	.437
June 16	....do.....	....do.....	....do.....	.578	.374
1933					
July 10	....do.....	....do.....	At ditch levee 1,000 feet west of Puukapu gaging station.....	.045	.029
Aug. 9	....do.....	....do.....	....do.....	*.124	*.080
Sept. 12	....do.....	....do.....	....do.....	0	0
Oct. 5	....do.....	....do.....	....do.....	0	0
Nov. 14	....do.....	....do.....	....do.....	*.160	*.100
Dec. 19	....do.....	....do.....	....do.....	*.160	*.100
1934					
Apr. 24	....do.....	....do.....	....do.....	*.016	*.010
May 18	....do.....	....do.....	....do.....	.000	.000
June 16	....do.....	....do.....	....do.....	.000	.000
1933					
Sept. 29	Waiakeakua..	East Branch of Manoa Stream	Near Honolulu.....	.210	.136
Sept. 29	....do.....	....do.....	....do.....	.196	.127
Oct. 16	....do.....	....do.....	....do.....	.190	.123
Sept. 15	Waialae.....	....do.....	....do.....	.511	.330
Sept. 23	....do.....	....do.....	....do.....	.490	.310
Sept. 29	....do.....	....do.....	....do.....	.464	.300
Oct. 6	....do.....	....do.....	....do.....	.449	.290
Oct. 16	....do.....	....do.....	....do.....	.367	.250
Oct. 28	....do.....	....do.....	....do.....	.356	.230
Oct. 28	....do.....	....do.....	....do.....	.155	.100
Nov. 22	....do.....	....do.....	....do.....	.313	.202

*Estimated.

Honokahau Stream near Honokahau

Location.- Water-stage recorder 1,000 feet above intake of Honokahau Ditch and about 5 miles southeast of Honokahau. Altitude, about 950 feet by barometer.

Drainage area.- 4.2 square miles.

Records available.- March 1913 to September 1920, May 1922 to June 1934.

Average discharge.- 16 years (1916-20, 1922-34), 25.1 million gallons a day (38.8 second-feet).

Extremes.- Maximum discharge recorded during year, 792 million gallons a day (1,230 second-feet) Dec. 22 (gage height, 5.58 feet); minimum, 6.5 million gallons a day (10.1 second-feet) Nov. 12-19, 23-25, Dec. 20-21.
1913-20, 1922-34: Maximum discharge, 2,200 million gallons a day (3,400 second-feet) Feb. 13, 1924 (gage height, 7.92 feet); minimum, 6.2 million gallons a day (9.6 second-feet) June 30, 1928.

Remarks.- Records good except those for extremely high stages and estimated periods, which are poor. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	19	18	13	8.5	27	23	7.7	95		8.5	*10	45
2	75	24	14	8.3	18	11	37	12	*7.5	7.7		24
3	31	22	9.9	8.5	8.0	27	8.0	8.8		92		*80
4	17	26	9.0	9.3	7.5	10.5	8.3	9.9		26		
5	15	11	12.5	9.6	8.0	7.7	8.1	16.5	*11	*14	*150	*30
6	21	26	24	9.9	8.0	7.2	8.0	8.5				
7	11	11.5	12	13	7.5	7.0	7.6	7.7		*9.5		
8	41	11.5	9.6	12.5	7.2	7.1	7.5	7.5				
9	12	10.5	8.8	8.5	7.2	7.1	8.0	46				
10	12	19	9.3	8.0	7.0	7.0	35	16.5	*8	*32	*28	*17
11	17	11	13.5	8.0	6.7	7.0	44	8.5				
12	10	9.6	36	7.7	6.7	7.0	21	7.7			*16	
13	13.5	9.3	15	7.7	6.7	6.7	9.0	7.7				24
14	12	16.5	10	7.7	6.7	6.7	9.9	7.5		*12	*95	84
15	14.5	20	13.5	7.7	6.5	6.7	9.6	7.5				21
16	14	12.5	17	7.7	6.5	6.7	8.3				*22	15.5
17	13	11.5	20	7.7	6.5	7.2	8.0					21
18	9.6	19	9.6	7.7	6.5	6.7	7.7	*8	*7.5	*8.5		31
19	9.9	10	9.0	7.7	6.7	6.7	16			9.9		33
20	26	9.9	8.5	7.7	6.7	6.7	27				*10	55
21	10	9.3	9.4	7.5	6.7	6.7	11	*30		26		15
22	12	9.0	13	7.5	6.7	206	9.3			26		
23	39	9.0	9.3	7.5	6.5	139	8.8		*15	*32	*55	*18
24	36	8.8	8.8	7.5	6.5	55	12					
25	14	8.8	8.5	7.5	142	48	8.5	*8				
26	15.5	9.9	8.3	7.2	60	11	7.6			*200		
27	14	9.0	8.3	7.2	8.8	13.5	7.5		*8.5			*85
28	11	8.8	8.3	7.2	7.5	19	7.2					
29	81	9.0	8.5	11.5	7.2	9.3	7.2	-	23	*14	*18	
30	44	9.9	9.3	11	6.7	8.3	7.0	-	18			
31	13.5	9.9	-	8.8	-	8.0	29	-	16.5	-		-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	81	9.6	22.0	34.0	652	2,080
August.....	26	8.3	15.2	20.4	410	1,260
September.....	36	8.3	12.2	18.9	366	1,120
October.....	13	7.2	8.50	13.2	264	809
November.....	142	6.5	14.3	22.1	430	1,320
December.....	206	6.7	22.8	35.3	706	2,170
Calendar year 1933	255	6.5	18.6	28.8	6,780	20,610
January.....	44	7.0	13.2	20.4	410	1,260
February.....	95	-	14.8	22.9	414	1,270
March.....	-	-	9.68	14.8	297	911
April.....	-	-	38.3	59.3	1,150	3,520
May.....	-	-	51.0	78.9	1,680	4,850
June.....	-	-	41.2	63.7	1,230	3,790
Fiscal year 1933-34	-	6.5	21.8	33.7	7,940	24,370

*Estimated.

†Partly estimated.

Honokawai Ditch near Lahaina

Location.- Water-stage recorder just below intake on Honokawai Stream, 2½ miles above Pioneer Mill Co.'s power house, and 7½ miles northeast of Lahaina. Altitude, about 1,900 feet, from topographic map.

Records available.- July 1912 to June 1934.

Average discharge.- 15 years (1919-34), 6.10 million gallons a day (9.44 second-foot).

Extremes.- See Table of monthly discharge for maximum and minimum during year.

1912-34: Maximum discharge, 76 million gallons a day (118 second-foot) Aug. 11, 1929 (gage height, 2.17 feet); no flow occasionally, when water is shut out of ditch.

Remarks.- Record of daily discharge furnished by Pioneer Mill Co. Diverts water for irrigation from Honokawai Stream just above station. Regulated by head gates at intake.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June																																																																																																														
1	5.0	3.6	3.1	2.6	4.1	2.5	2.5	14.5	2.4	2.5	3.0	5.3																																																																																																														
2	17.5	4.1	3.3	2.6	3.6	2.5	5.5	2.9	2.4	2.4	2.6	11.5																																																																																																														
3	3.5	5.4	2.6	2.6	2.7	3.4	2.5	2.6	2.4	17.5	13	5.7																																																																																																														
4	3.9	6.2	2.6	2.6	2.6	2.6	2.5	2.5	2.4	4.6	17.5	19.5																																																																																																														
5	3.7	2.7	2.3	2.6	2.6	2.5	2.5	2.8	2.7	2.7	23	4.2																																																																																																														
6	4.7	4.7	4.5	2.8	2.5	2.5	2.5	2.6	2.5	2.5	11	2.8																																																																																																														
7	4.1	2.8	2.6	2.9	2.5	2.5	2.5	2.5	2.5	2.5	26	2.6																																																																																																														
8	9.8	2.8	2.6	2.7	2.5	2.5	2.6	2.4	2.5	7.7	16.5	2.5																																																																																																														
9	2.8	2.7	2.5	2.6	2.5	2.5	2.6	18.5	2.6	2.7	3.7	2.4																																																																																																														
10	2.7	4.1	2.6	2.6	2.5	2.5	7.0	3.6	2.5	2.6	3.6	2.4																																																																																																														
11	3.4	2.7	2.9	2.6	2.5	2.5	8.3	2.6	2.5	9.8	3.6	2.6																																																																																																														
12	2.6	2.7	7.7	2.6	2.5	2.5	3.6	2.5	2.5	2.9	3.3	2.5																																																																																																														
13	3.8	2.7	3.2	2.6	2.4	2.5	2.6	2.5	2.5	2.6	2.8	3.2																																																																																																														
14	2.9	3.0	2.5	2.6	2.4	2.5	2.6	2.5	2.5	2.6	12.5	15																																																																																																														
15	35	4.3	3.4	2.6	2.5	2.5	2.6	2.5	2.5	2.6	12.5	3.1																																																																																																														
16	3.2	2.7	3.1	2.6	2.5	2.5	2.5	2.5	2.5	2.5	4.0	2.6																																																																																																														
17	3.0	2.7	4.7	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	4.9																																																																																																														
18	2.8	3.5	2.5	2.6	2.5	2.6	2.5	2.5	2.5	2.5	2.6	4.4																																																																																																														
19	2.7	2.7	2.6	2.6	2.5	2.5	3.4	2.8	2.5	2.4	2.6	8.8																																																																																																														
20	2.8	2.6	2.6	2.6	2.5	2.5	6.7	8.7	2.5	6.2	2.5	13.5																																																																																																														
21	2.5	2.6	2.6	2.6	2.5	2.5	2.7	2.8	2.5	5.0	2.4	2.5																																																																																																														
22	2.7	2.5	2.8	2.6	2.5	2.5	2.5	2.6	2.6	2.8	2.4	3.0																																																																																																														
23	8.4	2.6	2.6	2.5	2.5	15	2.4	2.5	3.4	2.6	7.8	2.9																																																																																																														
24	4.4	2.6	2.6	2.5	2.5	12.5	2.6	2.4	2.7	7.7	9.8	2.8																																																																																																														
25	2.9	2.5	2.6	2.5	13	9.3	2.6	2.4	2.6	33	4.7	5.6																																																																																																														
26	3.2	2.5	2.5	2.5	11	2.9	2.5	2.4	2.5	16.5	3.8	23																																																																																																														
27	3.3	2.6	2.6	2.5	2.5	2.5	2.5	2.4	2.5	7.3	2.6	4.2																																																																																																														
28	2.7	2.6	2.6	2.5	2.5	2.9	2.5	2.4	3.2	2.9	5.2	14																																																																																																														
29	18	2.6	2.6	2.5	2.5	2.6	2.5	-	3.6	2.9	2.5	17.5																																																																																																														
30	8.9	2.6	2.5	2.6	2.5	2.5	2.5	-	3.4	2.7	2.5	3.8																																																																																																														
31	3.0	2.7	-	2.6	-	2.5	4.1	-	3.1	-	2.8	-																																																																																																														
<table><tr><th rowspan="2">Month</th><th colspan="3">Million gallons a day</th><th rowspan="2">Second-foot (mean)</th><th colspan="2">Total run-off</th></tr><tr><th>Maximum</th><th>Minimum</th><th>Mean</th><th>Million gallons</th><th>Acre-feet</th></tr><tr><td>July.....</td><td>18</td><td>2.5</td><td>4.95</td><td>7.66</td><td>153</td><td>471</td></tr><tr><td>August.....</td><td>6.2</td><td>2.5</td><td>3.13</td><td>4.94</td><td>97.1</td><td>299</td></tr><tr><td>September.....</td><td>7.7</td><td>2.3</td><td>2.99</td><td>4.83</td><td>89.8</td><td>276</td></tr><tr><td>October.....</td><td>2.9</td><td>2.5</td><td>2.59</td><td>4.01</td><td>80.4</td><td>247</td></tr><tr><td>November.....</td><td>13</td><td>2.4</td><td>3.24</td><td>5.01</td><td>97.1</td><td>298</td></tr><tr><td>December.....</td><td>22</td><td>2.5</td><td>4.14</td><td>6.41</td><td>128</td><td>393</td></tr><tr><td>Calendar year 1933</td><td>25</td><td>1.4</td><td>3.77</td><td>5.83</td><td>1,370</td><td>4,220</td></tr><tr><td>January.....</td><td>8.3</td><td>2.4</td><td>3.21</td><td>4.97</td><td>99.6</td><td>306</td></tr><tr><td>February.....</td><td>18.5</td><td>2.4</td><td>3.80</td><td>5.88</td><td>106</td><td>327</td></tr><tr><td>March.....</td><td>3.6</td><td>2.4</td><td>2.64</td><td>4.08</td><td>81.7</td><td>251</td></tr><tr><td>April.....</td><td>33</td><td>2.4</td><td>5.59</td><td>8.65</td><td>168</td><td>514</td></tr><tr><td>May.....</td><td>26</td><td>2.4</td><td>6.95</td><td>10.8</td><td>215</td><td>661</td></tr><tr><td>June.....</td><td>23</td><td>2.4</td><td>6.63</td><td>10.3</td><td>199</td><td>610</td></tr><tr><td>Fiscal year 1933-34</td><td>33</td><td>2.3</td><td>4.15</td><td>6.42</td><td>1,510</td><td>4,650</td></tr></table>													Month	Million gallons a day			Second-foot (mean)	Total run-off		Maximum	Minimum	Mean	Million gallons	Acre-feet	July.....	18	2.5	4.95	7.66	153	471	August.....	6.2	2.5	3.13	4.94	97.1	299	September.....	7.7	2.3	2.99	4.83	89.8	276	October.....	2.9	2.5	2.59	4.01	80.4	247	November.....	13	2.4	3.24	5.01	97.1	298	December.....	22	2.5	4.14	6.41	128	393	Calendar year 1933	25	1.4	3.77	5.83	1,370	4,220	January.....	8.3	2.4	3.21	4.97	99.6	306	February.....	18.5	2.4	3.80	5.88	106	327	March.....	3.6	2.4	2.64	4.08	81.7	251	April.....	33	2.4	5.59	8.65	168	514	May.....	26	2.4	6.95	10.8	215	661	June.....	23	2.4	6.63	10.3	199	610	Fiscal year 1933-34	33	2.3	4.15	6.42	1,510	4,650
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Olowalu Ditch near Olowalu

Location.- Water-stage recorders on East Branch 150 feet southeast of power house, on West Branch 300 feet northwest of power house, and a 90 degree weir just above West Branch station. Power house is 1 mile above Olowalu and 7 miles east of Lahaina.

Records available.- August 1911 to June 1934.

Average discharge.- 16 years (1917-20, 1921-34), 4.66 million gallons a day (7.21 second-feet).

Extremes.- See monthly discharge table for maximum and minimum during year.

1911-34: Maximum discharge, 18 million gallons a day (28 second-feet) Dec. 25, 1920 (gage height, 1.53 feet); no flow occasionally, when water is shut out of ditch.

Remarks.- Records furnished by Pioneer Mill Co. Intake in Olowalu Stream at elevation about 450 feet. Water used for power and irrigation. Regulated by head gates. Records are obtained by adding together the flows of East and West Branches and the water used daily for irrigation as measured by a 90 degree weir.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.0	3.9	2.5	1.7	1.8	1.8	3.8	5.5	3.2	2.5	4.2	6.6
2	7.2	5.1	2.3	1.7	2.0	1.8	4.7	4.2	3.1	2.4	3.8	5.2
3	5.7	4.2	2.0	1.7	1.8	1.9	3.7	3.1	3.0	6.5	6.6	7.9
4	4.5	4.6	2.0	1.7	1.6	1.8	3.4	2.8	5.3	5.6	8.0	8.0
5	4.2	3.6	2.1	1.7	1.7	1.7	3.2	3.1	4.0	3.9	8.2	7.9
6	4.8	3.7	2.2	1.2	1.7	1.7	3.0	2.7	3.4	3.2	8.2	6.9
7	3.7	3.4	2.2	1.0	1.6	1.7	2.9	2.6	3.1	2.9	8.0	5.9
8	6.9	3.1	2.1	2.1	1.6	1.8	2.8	2.6	3.0	3.2	8.0	5.2
9	4.5	3.0	2.0	1.8	1.6	1.9	2.7	5.6	3.2	2.8	7.8	4.7
10	3.7	3.7	1.9	1.8	1.6	1.7	4.0	2.2	2.9	2.7	7.7	4.4
11	3.6	2.9	2.1	1.7	1.6	1.7	5.1	4.2	2.7	2.8	7.4	4.2
12	3.2	2.8	3.5	1.7	1.6	1.7	5.8	5.2	2.6	2.6	7.1	4.0
13	3.4	2.6	2.6	1.6	1.5	1.7	4.0	5.0	2.6	2.6	7.0	4.0
14	3.4	3.0	2.2	1.6	1.5	1.7	3.6	4.7	2.5	2.4	7.5	5.2
15	3.3	3.6	2.1	1.6	1.5	1.6	3.2	4.2	2.5	2.4	7.5	6.1
16	3.3	3.2	2.5	1.6	1.5	1.6	3.1	6.1	2.5	2.4	7.4	4.6
17	3.4	2.6	2.7	1.6	1.5	1.6	2.8	4.8	2.5	2.2	7.1	4.4
18	3.1	3.4	2.2	1.7	1.5	1.6	2.7	4.2	2.4	2.2	7.0	4.5
19	2.7	2.8	1.9	1.7	1.5	1.6	3.0	4.5	2.4	2.3	6.2	4.4
20	4.1	2.6	1.9	1.6	1.4	1.6	3.5	7.9	2.4	1.7	5.6	6.2
21	3.2	2.8	2.0	1.6	1.5	1.7	3.4	7.5	2.3	3.5	5.0	5.1
22	2.9	2.4	2.0	1.6	1.6	6.3	3.1	5.8	2.3	3.3	4.6	4.4
23	4.2	2.1	1.8	1.6	1.5	5.2	2.9	5.0	5.8	2.7	5.7	4.0
24	5.7	2.4	1.8	1.6	1.4	3.3	2.7	4.4	3.8	2.8	6.3	3.8
25	4.5	2.9	2.0	1.6	3.0	4.3	2.7	4.1	3.0	6.1	6.7	4.7
26	4.2	2.4	1.8	1.6	7.2	4.2	2.6	3.8	2.7	6.9	5.3	7.0
27	3.7	2.3	1.6	1.7	3.1	5.3	2.9	3.6	2.5	4.4	4.7	7.0
28	3.5	2.0	1.5	1.6	2.2	6.6	2.8	3.5	2.5	2.7	5.1	6.6
29	4.8	5.0	1.5	1.8	2.0	5.5	2.6	-	2.4	2.0	5.0	8.9
30	7.4	2.5	.9	1.8	1.8	4.7	2.5	-	2.4	3.6	6.1	6.7
31	4.8	1.9	-	1.8	-	4.2	2.5	-	2.8	-	7.4	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	7.4	2.7	4.13	6.47	130	398
August.....	5.1	1.9	3.11	4.51	96.5	286
September.....	3.5	.9	2.05	3.19	61.9	190
October.....	2.1	1.0	1.65	2.55	51.1	157
November.....	7.2	1.4	1.90	2.94	57.1	175
December.....	6.6	1.6	2.76	4.27	85.5	262
Calendar year 1933	16.5	.9	3.56	5.51	1,300	3,990
January.....	5.8	2.5	3.28	5.07	102	312
February.....	7.9	2.2	4.39	6.79	123	377
March.....	5.8	2.3	2.96	4.58	91.8	282
April.....	8.1	1.7	3.32	5.14	99.5	305
May.....	8.2	3.8	6.51	10.1	202	620
June.....	8.9	3.8	6.72	8.85	172	526
Fiscal year 1933-34	8.9	.9	3.48	5.38	1,270	3,900

Oheo Stream below Diversion Dam, near Kipahulu

Location.- Water-stage recorder below old diversion dam at elevation 1,550 feet, 2 miles northwest of Kipahulu and $2\frac{1}{2}$ miles above mouth.

Drainage area.- 5.8 square miles.

Records available.- February 1927 to September 1929, December 1931 to June 1934. Prior to September 1929 at site 100 feet upstream at old diversion dam.

Extremes.- Maximum discharge during year, about 4,240 million gallons a day (6,560 second-feet) Dec. 22, 24; maximum gage height, 10.57 feet Apr. 25; no flow several days in March and April, when stream was dry.
1927-29, 1931-34: Maximum discharge, 6,190 million gallons a day (9,580 second-feet) Jan. 4, 1933 (gage height, 11.95 feet); no flow during dry periods.

Remarks.- Records good for ordinary stages; poor for estimated periods and high stages. No diversions. A new artificial control was installed on Feb. 27, 1934.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	45	0.44	0.04	0.03	0.02	12	0.19	1.6	0.10	0.01	4.6	30
2	53	2.3	.05	.03	.02	.23	160	} *8	.05	.01	.46	57
3	12.5	18	.06	.03	.01	98	44		.12	31	27	11.5
4	21	58	.06	.03	.01	5.6	4.8	.23	.65	5.9	179	
5	27	1.35	.04	.03	.01	.28	1.15	.15	.01	88	44	
6	20	11	.04	.03	.01	.18	.64	} *2	.07	.01	51	12.5
7	6.2	1.8	.05	.03	.01	2.5	.39		0	.01	.01	59	36
8	37	.40	26	.03	.01	.19	.28	} *06	.11	.27	5.8	
9	3.7	.72	.24	.03	.01	.15	.25		12	.24	14	2.0
10	7.2	5.2	.06	.03	.01	.03	7.3	1.15	0	2.2	1.7	
11	8.7	.19	.14	.02	.01	.32	51	.29	0	11.5	3.2	
12	.92	.19	.36	.02	.01	7.8	58	.11	0	23	.73	
13	.64	.12	48	.02	.01	.28	5.7	.03	0	6.4	.88	
14	2.2	.21	9.5	.02	.01	.18	.95	} *02	.01	172	18.5	
15	.36	.15	.14	.02	.02	.09	.54		0	0	140	5.2
16	.28	.08	.22	.02	.02	.03	.72	} *01	.01	0	19	26
17	.18	.06	12.5	.02	.02	.06	.39		.01	0	2.3	31
18	.12	.06	.07	.02	.02	.10	.28	*01	.01	0	12	73
19	.07	.03	.03	.02	.02	.02	75	*01	0	0	20	140
20	.07	.02	.03	.59	1.15	.02	128	†60	.01	0	1.4	172
21	.04	.02	.03	.03	.40	17.5	4.2	5.4	.02	16	.80	7.5
22	.03	.02	.04	.03	1.4	1,070	.70	†79	0	71	.46	39
23	3.2	.02	11.5	.11	.03	877	282	10	.02	29	.80	33
24	1.85	.02	1.25	.54	.02	420	156	1.0	.14	7.4	.61	42
25	.06	.02	.04	.03	187	8.8	191	.59	.26	526	2.2	72
26	.04	.02	.03	.02	150	2.7	58	.44	.01	55	23	120
27	.06	.02	.03	.02	1.8	1.0	4.0	.25	.01	32	3.4	55
28	.03	.02	.03	.02	.12	.64	1.25	.14	.01	23	4.5	49
29	12	.03	.03	.02	.04	.42	.72	-	.01	6.6	.84	154
30	18.5	.40	.03	.02	.02	.28	.68	-	5.4	9.4	3.3	17.5
31	3.2	.06	-	.02	-	.21	†1.15	-	.06	-	21	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	53	0.03	9.20	14.2	285	875
August.....	58	.02	3.26	5.04	101	310
September.....	48	.03	5.89	5.71	111	340
October.....	59	.02	.062	.096	1.93	6
November.....	187	.01	11.4	17.6	342	1,050
December.....	1,070	.02	75.2	116	2,330	7,150
Calendar year 1933	1,100	.01	47.0	72.7	17,170	52,720
January.....	262	.19	39.3	60.8	1,220	3,740
February.....	-	-	5.76	8.91	161	495
March.....	12	0	.655	1.01	20.3	62
April.....	526	0	26.9	41.6	807	2,480
May.....	172	.46	24.1	37.3	748	2,300
June.....	179	.73	48.0	74.3	1,440	4,420
Fiscal year 1933-34	1,070	0	20.7	32.0	7,570	23,230

*Estimated.

†Partly estimated.

Right Branch of Kahalawe Stream, near Kipahulu

Location.— Water-stage recorder at old ditch intake, elevation 1,100 feet, 2 miles north of Kipahulu.

Drainage area.— 0.1 square mile.

Records available.— February 1927 to June 1934.

Extremes.— Maximum discharge during year, 212 million gallons a day (328 second-feet) Dec. 24; maximum gage height, 10.17 feet Apr. 25; minimum recorded, 0.5 million gallons a day (0.8 second-foot) Apr. 17-20.
1927-34: Maximum discharge, 612 million gallons a day (947 second-feet) Feb. 5, 1932 (gage height, 11.20 feet); minimum, 0.15 million gallons a day (0.23 second-foot) Dec. 18, 1929.

Remarks.— Records good for ordinary stages; poor for high stages and estimated periods. No diversions. New artificial control was installed Feb. 17.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	4.6	2.6	} *1.2	0.9	0.7	} *3.5	1.4	2.6	0.8	0.9	1.3	4.8	
2	8.2	5.4		.9	1.2		9.6	2.2	.8	.8	1.1	7.5	
3	4.6	3.3		.8	.7		4.9	1.9	.6	3.3	4.9	2.9	
4	4.1	3.8		.8	.7		2.5	1.9	1.7	1.0	3.0	10.5	
5	5.1	2.1		.9	.6		1.8	2.3	1.3	.8	9.3	11	
6	3.9	4.0	} *1.7	.9	.7	1.6	1.9	.9	.8	5.6	3.6		
7	2.8	2.2		.7	.7	1.3	1.6	.7	.8	7.0	8.0		
8	6.7	2.6		.7	.7	1.3	1.6	.7	.8	6.2	2.4		
9	2.8	2.3		.7	.6	1.2	1.6	12	1.6	3.3	2.0		
10	3.8	2.3		.7	.6	4.3	1.5	2.0	.8	1.8	1.7		
11	2.8	1.9	} *1.0	1.0	.6	7.0	1.4	1.1	.7	14	2.8		
12	2.3	2.1		1.1	.6	5.2	1.3	1.0	.7	6.9	1.5		
13	2.2	1.8		1.2	.6	1.8	1.3	1.0	.7	4.0	2.1		
14	2.3	2.3		1.0	.6	2.1	1.3	1.0	.8	15.5	4.4		
15	2.3	2.3		.7	.6	1.8	1.2	.9	.7	5.9	1.8		
16	2.3	2.1	} *2.0	.6	} -6	.7	1.9	1.1	.9	.6	3.5	2.6	
17	2.2	1.6		1.9		.6	.8	1.4	.6	1.0	.6	2.2	2.6
18	1.8	1.8		1.1		1.2	1.7	1.3	.8	.9	.5	14.5	2.6
19	1.6	1.4		1.0		1.0	.9	2.9	.9	.9	.5	12.5	3.6
20	2.6	1.3		.9		2.4	.9	3.5	8.1	1.2	1.1	3.1	6.4
21	1.8	1.3	1.7	1.0	} *5	3.3	1.8	2.2	2.4	3.6	2.1	1.8	
22	1.5	1.3	1.4	.7		44	1.5	10	1.0	11.5	1.6	3.0	
23	4.9	1.3	1.3	3.7		17.5	6.8	2.3	1.9	5.1	3.3	2.4	
24	5.1	1.3	1.1	3.2		21	3.9	1.1	2.6	1.9	2.2	3.2	
25	1.8	1.3	1.0	.8		4.9	7.2	1.0	2.9	27	2.1	3.3	
26	2.1	1.3	1.3	.7	} *7	2.9	13	.9	1.1	5.0	4.4	6.2	
27	3.1	1.2	1.0	.7		2.3	3.5	.8	1.0	2.4	1.6	7.8	
28	1.9	1.1	.9	.7		2.1	2.3	.8	1.0	1.8	3.3	5.2	
29	6.2		.9	1.3		} *2.0	1.8	2.1	-	.9	1.3	1.5	7.3
30	5.5	} *1.1	.9	2.5			1.6	2.3	-	2.2	1.3	1.6	3.4
31	3.9		-	.9	1.6		4.4	-	1.0	-	7.0	-	

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	8.2	1.5	3.43	5.31	106	327
August.....	5.4	-	2.03	3.14	62.8	193
September.....	-	.9	1.29	2.00	38.8	119
October.....	3.7	.6	1.13	1.76	55.0	107
November.....	-	-	1.39	2.15	41.8	128
December.....	44	-	4.30	6.65	133	409
Calendar year 1933	-	-	4.92	7.81	1,800	5,510
January.....	13	1.2	3.47	5.37	108	330
February.....	10	.8	2.01	3.11	56.3	173
March.....	12	.7	1.60	2.48	49.6	152
April.....	27	.5	2.65	4.10	79.4	244
May.....	15.5	1.1	5.06	7.81	156	480
June.....	11	1.5	4.28	6.62	128	394
Fiscal year 1933-34	44	-	2.73	4.22	995	3,060

*Estimated.

Hanawi Stream near Nahiku

Location.- Water-stage recorder 200 feet above Koolau Ditch intake and trail, 1½ miles southeast of Nahiku, and 4¼ miles southeast of Keanae.

Drainage area.- 0.8 square mile.

Records available.- January 1914 to January 1916, November 1921 to June 1934.

Average discharge.- 12 years (1922-34), 11.7 million gallons a day (18.1 second-feet).

Extremes.- Maximum discharge during year, 534 million gallons a day (826 second-feet) Apr. 25 (gage height, 6.97 feet); minimum unknown, owing to faulty gage-height record.

1914-16, 1921-34: Maximum stage from flood marks, about 20 feet during flood of Jan. 18, 1916 (discharge not determined); minimum, 1.4 million gallons a day (2.2 second-feet) July 5, 8, 1926.

Remarks.- Records good for ordinary stages, poor for extremely high and low stages and estimated periods. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	6.1	3.1	1.7	1.5	*5	37	*1.2	52	1.5	5.2	9.0	40	
2	13.5	3.5	1.8	1.4		3.8	3.5	5.5	1.4	5.0	9.0	52	
3	6.9	4.4	1.7	1.4		4.2	1.7	2.8	1.4	5.9	34	11.5	
4	5.4	10.5	1.6	1.4		1.3	2.8	2.4	1.8	19.5	40	37	
5	6.4	4.2	1.8	1.4		1.5	2.3	2.4	1.8	7.1	89	9.3	
6	8.1	5.5	2.3	1.4	1.4	*1.3	*1.3	2.0	1.4	4.5	70	7.2	
7	5.2	4.1	1.9	*1.6	2.2			1.8	1.4	3.8	75	6.2	
8	5.2	3.6	1.6		1.7			1.4	4.0	100	5.5		
9	4.6	3.6	1.5		2.0			1.4	7.1	95	5.0		
10	4.6	3.7	1.5	*1.6	*1.6			5.6	1.7	2.0	4.6	62	4.7
11	5.2	3.1	1.5			*1.3	*1.3	5.7	1.6	1.5	26	39	4.5
12	3.6	2.8	2.0					2.9	1.5	1.4	10.5	44	4.5
13	3.7	2.6	6.0					1.9	1.5	1.4	6.6	18.5	11
14	3.8	2.5	3.5					1.8	1.4	1.4	14.5	18	7.2
15	3.3	2.5	2.1	1.6	1.4			1.4	14.5	24	5.1		
16	3.5	2.5	2.4	*1.1	*1.1	*1.2	1.9	1.3	1.4	5.9	19.5	6.0	
17	3.2	2.3	3.2				1.6	1.3	1.5	4.6	14.5	11	
18	2.8	2.3	2.2				1.7	1.2	1.5	4.4	13	21	
19	2.6	2.2	1.9				6.1	9.8	1.4	5.8	11.5	26	
20	2.6	2.1	1.8				14.5	83	1.4	34	10.5	48	
21	2.5	2.0	1.8	*1.1	118	*1.5	4.2	7.1	1.3	27	9.7	8.7	
22	2.4	1.9	†1.8				2.8	2.6	1.3	15.5	8.6	9.3	
23	2.8	1.8	2.3				†1.0	10	2.2	1.8	8.4	9.4	12
24	2.9	1.8	2.1				2.7	16	2.0	2.1	39	9.0	12
25	2.5	1.8	1.8				5.0	1.8	1.6	333	7.7	30	
26	3.0	1.7	1.7	*1.2	89	2.5	3.1	1.7	1.5	38	7.2	53	
27	3.1	1.7	1.6				2.5	1.7	3.6	13.5	6.8	18	
28	2.6	1.7	1.6				2.2	1.5	1.3	10	9.1	15	
29	5.1	1.7	1.5				2.0	-	14.5	16	9.6	17.5	
30	5.6	1.7	1.5				1.8	-	38	11	19.5	9.6	
31	3.3	1.7	-	-	-	-	43	-	8.9	-	33	-	

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	13.5	2.4	4.49	6.95	139	487
August.....	10.5	1.7	2.92	4.52	90.6	278
September.....	6.0	1.5	2.08	3.19	61.7	189
October.....	-	-	1.25	1.93	38.7	119
November.....	118	-	8.55	13.2	256	787
December.....	37	-	2.82	4.36	87.4	268
Calendar year 1933	247	-	7.35	11.4	2,680	8,240
January.....	43	-	4.90	7.58	152	466
February.....	83	1.2	7.10	11.0	199	610
March.....	38	1.3	3.79	5.86	117	360
April.....	333	5.8	26.5	41.0	794	2,440
May.....	100	6.8	29.8	46.1	924	2,840
June.....	53	4.5	16.9	26.1	508	1,640
Fiscal year 1933-34	333	-	9.23	14.3	3,370	10,340

*Estimated.

†Partly estimated.

Kapaula Stream near Nahiku

Location.- Water-stage recorder 40 feet above intake to Koolau Ditch, 300 feet above ditch trail, 1½ miles southwest of Nahiku, and 4 miles southeast of Keanae.

Drainage area.- 0.2 square mile.

Records available.- November 1921 to June 1934.

Average discharge.- 12 years (1922-34), 10.2 million gallons a day (15.8 second-feet).

Extremes.- Maximum discharge during year, 823 million gallons a day (1,270 second-feet) Nov. 25 (gage height, 5.72 feet); minimum, 0.2 million gallons a day (0.3 second-foot) Nov. 23-25.

1921-34: Maximum discharge, 1,400 million gallons a day (2,170 second-feet) Dec. 18, 1929 (gage height, 7.39 feet); minimum, that of Nov. 23-25, 1933.

Remarks.- Records good for ordinary stages; poor for extremely high and low stages and estimated periods. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	6.2	2.0	0.9	0.7	7.3	36	0.2	45	} *0.5	5.7	6.1	40	
2	13.5	2.3	1.0	.7	13.5	2.1	3.0	5.1		4.5	5.1	43	
3	5.9	3.1	1.0	.7	1.3	3.1	1.4	1.8		59	27	9.8	
4	4.0	9.3	.9	.7	.8	1.2	.5	1.4	} *.8	17.5	34	34	
5	5.8	3.1	1.2	.7	1.2	.8	.4	1.3		7.6	71	7.8	
6	7.6	4.4	1.6	.7	1.0	.6	.3	1.1		} *.5	3.6	55	5.0
7	3.8	2.8	1.5	.7	1.8	.5	.3	1.0	3.2		58	3.9	
8	7.8	2.3	1.0	.8	1.3	.4	.3	.8	43		82	3.4	
9	3.2	2.2	.9	.7	.8	.4	.3	1.0	.5	6.4	80	3.1	
10	3.4	2.5	.9	.6	.7	.4	5.7	.8	1.1	3.1	53	2.9	
11	4.2	2.0	.9	.5	.6	.4	6.1	.7	.6	24	26	2.9	
12	2.5	1.9	1.2	.8	.5	.3	2.5	.6	.5	11.5	33	2.6	
13	2.7	1.6	5.6	.6	.5	.3	1.2	.5	.5	6.1	13	8.9	
14	2.8	1.6	2.6	.6	.5	.3	1.0	.5	.5	17.5	12.5	7.0	
15	2.5	1.6	1.4	.6	.4	.3	.8	.5	.4	16.5	19	3.3	
16	2.5	1.5	1.5	.5	.4	.3	.8	.4	.4	5.7	13.5	3.8	
17	2.3	1.5	2.6	.5	.3	.3	.8	.4	.4	3.6	9.9	9.2	
18	1.9	1.5	1.5	.5	.3	.3	.6	.4	.6	3.4	8.2	21	
19	1.8	1.3	1.1	.5	.3	.3	6.8	.4	.5	5.6	7.4	24	
20	2.0	1.2	1.0	.4	.3	.3	15.5	} *38	.4	31	6.6	40	
21	1.7	1.1	1.1	.4	.3	.3	3.6		.4	.4	31	6.1	6.4
22	1.6	1.1	1.1	.4	.2	.3	1.7		.4	13.5	5.3	6.8	
23	1.9	1.1	1.7	.4	.2	.3	8.4	.8	.7	5.8	6.8	9.7	
24	2.1	1.1	1.3	.4	.2	.3	11.5	} *1.4	1.3	36	6.8	12	
25	1.8	1.0	1.0	.3	106	.3	4.2		.9	323	5.0	27	
26	2.0	1.0	.9	.3	112	.2	2.1		} *.8	.7	16.5	4.6	45
27	2.2	1.0	.8	.3	1.9	.5	1.3	4.3		8.2	4.2	15.5	
28	1.8	.9	.8	.3	.7	1.1	1.0	13.5		7.0	8.2	14.5	
29	5.1	.9	.8	.4	.4	.4	.9	-	17	11	7.8	14.5	
30	4.7	.9	.8	.4	.4	.3	.8	-	39	8.8	14.5	7.4	
31	2.2	.9	-	.4	-	.2	53	-	11.5	-	33	-	

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	13.5	1.6	3.66	5.66	114	349
August.....	9.5	.9	1.96	3.03	80.7	199
September.....	5.6	.8	1.35	2.09	40.6	125
October.....	.8	.3	.53	.82	16.5	51
November.....	112	.2	8.54	13.2	256	786
December.....	36	.2	1.70	2.63	52.8	162
Calendar year 1933	198	.2	5.84	9.04	2,130	6,540
January.....	53	.2	4.42	6.84	137	420
February.....	-	.4	5.83	9.02	163	501
March.....	39	-	3.25	5.03	101	309
April.....	323	3.1	24.7	38.2	741	2,270
May.....	82	4.2	23.2	35.9	721	2,210
June.....	45	2.6	14.5	22.4	434	1,330
Fiscal year 1933-34	323	.2	7.77	12.0	2,840	8,700

*Estimated.

Koolau Ditch at Nahiku Weir, near Nahiku

Location.- Water-stage recorder between Kapaula and Waiohuae Streams, $3\frac{1}{2}$ miles southwest of Nahiku and 4 miles southeast of Keanae.

Records available.- February 1919 to June 1934.

Average discharge.- 15 years (1919-34), 19.0 million gallons a day (29.4 second-feet).

Extremes.- Maximum discharge during year, 61 million gallons a day (94 second-feet) May 3 (gage height, 1.68 feet); minimum, 0.8 million gallons a day (1.2 second-feet) Apr. 26.

1919-34: Maximum discharge, that of May 3, 1934; no flow occasionally, when intake gates are closed.

Remarks.- Records excellent except those for extremely low stages, which are good. Regulated by spillways and gates. Koolau Ditch diverts water at elevation 1,200 feet from all streams from Makapipi to Alo.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	24	13	6.8	6.1	12.5	39	5.1	50	8.4	21	37	52
2	42	14.5	7.3	6.1	28	22	18	27	7.9	18.5	34	52
3	28	18.5	6.8	5.9	7.6	26	9.8	13	7.6	35	50	47
4	22	32	6.8	5.9	6.3	16.5	6.8	18	9.3	42	52	52
5	25	18	7.4	5.9	7.8	13.5	6.3	14.5	9.0	30	52	47
6	28	22	8.1	5.9	7.1	12	5.9	12.5	7.6	22	54	37
7	22	17	7.9	6.1	9.0	10.5	5.6	11.5	7.3	20	54	30
8	30	15.5	6.6	6.3	7.6	10	5.4	10.5	7.1	47	50	27
9	20	15	6.3	5.6	6.3	9.3	5.6	11.5	7.3	32	50	24
10	20	15	6.3	5.6	5.9	8.7	18	10	9.3	22	47	22
11	20	13	6.3	5.6	5.4	8.1	24	9.5	7.3	40	50	22
12	16	12.5	7.3	6.4	5.4	7.9	14	9.0	7.1	42	47	21
13	16	11.5	17	5.6	5.1	7.3	10	8.7	6.8	30	50	31
14	15.5	10.5	11.5	5.6	4.9	7.1	9.5	8.1	6.8	42	54	30
15	14.5	10.5	8.1	5.6	4.7	6.6	9.4	7.9	6.6	40	52	23
16	15	10	8.7	5.6	4.7	6.6	8.4	7.3	6.6	28	54	24
17	14	9.5	11	5.4	4.7	6.6	7.6	7.3	6.8	24	57	35
18	12.5	9.3	8.7	5.1	4.5	6.3	7.9	6.8	6.8	22	52	50
19	12.5	9.0	7.6	5.1	4.5	6.3	22	13.5	6.6	24	47	54
20	13	8.7	7.3	5.1	4.5	5.9	40	32	6.1	42	42	54
21	11.5	8.4	7.6	5.1	4.5	5.6	22	22	6.1	44	40	42
22	11.5	8.1	7.6	4.9	4.3	6.1	15.5	14.5	6.1	42	37	42
23	12.5	8.1	8.4	4.9	4.1	5.6	21	11.5	7.3	37	37	47
24	12.5	7.9	7.6	4.9	4.1	7.2	35	10.5	8.1	37	37	44
25	11.5	7.6	7.1	4.7	19.5	5.6	28	10	6.8	42	32	50
26	12.5	7.3	6.8	4.7	44	5.1	18.5	9.5	6.3	40	30	57
27	12.5	7.1	6.6	4.5	12.5	6.5	15.5	9.3	13.5	44	28	54
28	11.5	6.8	6.3	4.5	8.4	7.1	13.5	8.7	32	50	37	54
29	22	6.9	6.3	4.7	7.6	5.6	12.5	-	37	52	34	54
30	21	6.8	6.3	4.9	7.6	5.1	11	-	40	44	42	47
31	14.5	6.9	-	4.5	-	4.9	23	-	30	-	44	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	42	11.5	19.1	28.0	582	1,720
August.....	32	6.9	11.9	18.3	365	1,120
September.....	17	6.3	7.81	12.1	234	719
October.....	6.4	4.5	5.38	8.32	167	512
November.....	44	4.1	8.77	13.6	263	807
December.....	39	4.9	9.70	15.0	301	923
Calendar year 1933	48	4.1	17.1	26.5	6,240	19,150
January.....	40	5.1	14.5	22.4	450	1,380
February.....	50	6.8	13.8	21.4	388	1,190
March.....	40	6.1	11.0	17.0	342	1,050
April.....	52	18.5	35.2	54.5	1,060	3,240
May.....	57	28	44.6	69.0	1,380	4,240
June.....	57	21	40.8	63.1	1,220	3,760
Fiscal year 1933-34	57	4.1	18.4	28.5	6,730	20,660

Waiohū Stream near Nahiku

Location.- Water-stage recorder 200 feet above intake to Koolau Ditch, 300 feet above ditch trail, 2½ miles southwest of Nahiku, and 3¼ miles southeast of Keanae.

Drainage area.- 1.5 square miles.

Records available.- October 1921 to June 1934.

Average discharge.- 12 years (1922-34), 8.05 million gallons a day (12.5 second-feet).

Extremes.- Maximum discharge during year, 382 million gallons a day (560 second-feet) Apr. 25 (gage height, 4.51 feet); minimum, 1.4 million gallons a day (2.2 second-feet) Nov. 25.

1921-34: Maximum discharge, 576 million gallons a day (891 second-feet) Dec. 18, 1929 (gage height, 5.94 feet); minimum, that of Nov. 25, 1933.

Remarks.- Records good for ordinary stages, poor for extremely high and low stages. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.3	3.4	2.1	2.0	7.8	32	1.6	23	2.1	3.2	*8.0	20
2	6.1	3.7	2.3	2.0	7.2	2.6	4.1	3.6	2.0	3.0	*8.0	21
3	4.6	4.1	2.1	2.0	1.9	4.3	2.2	2.7	2.0	32	*17	7.6
4	4.2	6.0	2.1	2.0	1.6	2.4	1.7	2.7	2.5	8.3	20	23
5	5.0	3.7	2.4	2.0	2.2	2.1	1.7	2.7	2.6	4.5	35	6.8
6	5.4	5.0	2.6	2.0	2.0	2.0	1.6	2.6	2.1	3.5	29	5.6
7	4.6	3.6	2.5	2.0	2.6	2.0	1.6	2.5	2.1	4.2	30	5.1
8	7.3	3.4	2.1	2.0	2.1	2.0	1.6	2.4	2.0	29	39	4.6
9	4.6	3.4	2.1	2.0	1.9	1.8	1.6	2.6	2.0	5.1	53	4.6
10	4.6	3.3	2.1	1.9	2.0	1.8	4.2	2.5	2.5	4.1	36	4.5
11	4.6	3.1	2.1	1.9	1.9	1.8	5.4	2.4	2.1	16.5	23	4.5
12	4.0	3.0	2.4	2.0	1.8	1.8	2.9	2.4	2.0	8.3	24	4.4
13	4.5	2.8	3.7	1.8	1.7	1.7	2.2	2.3	2.0	5.4	12	8.3
14	4.1	2.8	2.6	1.8	1.7	1.7	2.1	2.3	2.0	14	14	6.1
15	4.0	2.8	2.3	1.8	1.7	1.7	2.0	2.3	1.9	9.4	15	4.6
16	4.1	2.7	2.4	1.6	1.7	1.7	2.0	2.2	1.9	5.4	11	4.6
17	4.0	2.7	2.7	1.8	1.6	1.7	2.0	2.2	2.0	5.0	6.1	7.6
18	3.7	2.7	2.3	1.8	1.6	1.7	1.9	2.1	2.1	5.0	7.0	11.5
19	3.6	2.6	2.2	1.7	1.5	1.7	4.8	7.1	1.9	5.9	6.2	16
20	3.9	2.6	2.1	1.7	1.5	1.7	12	33	1.8	20	5.8	19.5
21	3.5	2.5	2.2	1.7	1.5	1.7	3.4	48	1.8	26	5.4	5.0
22	3.4	2.5	2.3	1.7	1.5	1.7	2.6	2.7	1.7	9.6	5.0	6.2
23	3.6	2.4	2.3	1.7	1.5	1.7	5.7	2.5	2.2	7.8	5.6	7.4
24	3.8	2.4	2.2	1.7	1.4	1.7	6.0	2.4	2.4	25	6.2	8.7
25	3.4	2.4	2.1	1.6	48	1.7	3.4	2.3	2.0	171	4.8	16
26	3.6	2.3	2.1	1.6	45	1.6	2.7	2.2	1.9	13	4.7	24
27	3.6	2.3	2.1	1.6	2.0	1.6	2.4	2.1	4.3	10	4.6	11
28	3.3	2.2	2.1	1.6	1.7	1.9	2.3	2.1	6.0	6.5	6.7	13
29	6.2	2.2	2.0	1.6	1.6	1.7	2.3	-	8.6	10	5.3	12.5
30	5.1	2.2	2.0	1.7	1.7	1.6	2.3	-	14.5	8.6	7.2	7.7
31	3.7	2.1	-	1.6	-	1.6	26	-	4.6	-	17	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	8.1	3.3	4.43	6.85	137	422
August.....	6.0	2.1	3.00	4.64	92.9	285
September.....	3.7	2.0	2.29	3.54	68.6	211
October.....	2.0	1.6	1.81	2.80	56.1	172
November.....	48	1.4	5.14	7.95	154	473
December.....	32	1.6	2.87	4.44	89.1	273
Calendar year 1933.....	88	1.4	5.15	7.97	1,880	5,780
January.....	26	1.5	3.81	5.89	118	363
February.....	48	2.1	6.07	9.39	170	521
March.....	14.6	1.7	2.96	4.58	91.8	282
April.....	171	3.0	16.0	24.8	482	1,480
May.....	53	4.6	15.3	23.7	474	1,450
June.....	24	4.4	10.0	15.5	300	922
Fiscal year 1933-34.....	171	1.4	6.12	9.47	2,230	6,850

*Estimated.

West Kopiliula Stream near Keanae

Location.- Water-stage recorder 600 feet above Koolau Ditch crossing and highway bridge and 3 miles southeast of Keanae post office.

Drainage area.- 3.9 square miles.

Records available.- January 1914 to September 1917, October 1921 to June 1934.

Average discharge.- 12 years (1922-34), 18.3 million gallons a day (28.3 second-feet).

Extremes.- Maximum discharge during year, 2,070 million gallons a day (3,200 second-feet) Apr. 25 (gage height, 8.01 feet); minimum, 0.7 million gallons a day (1.1 second-feet) Oct. 26.

1914-17, 1921-34: Maximum discharge, that of Apr. 25, 1934; minimum, 0.6 million gallons a day (0.9 second-foot) Sept. 15-17, 1917.

Remarks.- Records good for ordinary stages; poor for high stages and estimated periods. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.3	2.6	1.7	1.2	9.2	58	1.1	*90	3.6	20	*9.5	81
2	20	2.8	2.1	1.1	16.5	3.1	4.7	*10	3.4	16.5		134
3	8.2	5.1	1.6	1.2	1.5	4.2	1.9		3.4	171	*44	18.5
4	6.2	11.5	1.6	1.3	1.1	2.0	1.2		5.6	68		64
5	8.4	3.2	2.3	1.3	1.5	1.6	1.1	*3.1	4.4	25		11.5
6	9.5	5.3	2.6	1.2	1.6	1.4	1.1		3.1	13.5	*170	8.7
7	5.8	3.0	2.1	1.4	2.5	1.3	1.1		3.4	11.5		7.4
8	10.5	2.4	2.0	1.5	1.8	1.2	1.0		3.2	76		6.3
9	4.4	2.6	2.0	1.1	1.4	1.2	1.1		2.9	20		5.6
10	5.6	2.6	1.9	1.1	2.2	1.2	9.8	*2.2	3.5	11		5.8
11	6.2	2.1	1.9	1.0	1.1	1.2	7.5		3.2	50	*44	5.8
12	4.0	2.0	2.1	1.1	1.0	1.0	2.8		2.8	26		5.8
13	5.6	1.8	8.0	1.0	1.0	1.0	1.7		2.8	16		20
14	4.4	2.0	2.5	1.0	1.0	1.0	1.7		2.8	37	*24	9.2
15	5.8	2.1	1.7	1.0	.9	1.0	1.4	*1.8	2.6	44		6.1
16	4.0	2.0	2.2	1.0	.9	1.0	1.8		2.8	17		7.4
17	3.4	1.8	3.4	1.0	.9	.9	1.3		3.2	13	*12	16
18	3.0	1.9	1.7	1.0	.8	.9	1.5		3.2	12		31
19	3.0	1.8	1.5	.9	.8	1.0	9.2	*130	2.9	14.5		34
20	3.4	1.8	1.4	.9	.8	1.0	15		2.5	67		85
21	2.6	1.7	1.5	.8	.9	1.0	4.1	23	2.6	56	7.9	11
22	2.5	1.7	1.9	1.0	.8	1.2	2.2	9.6	2.4	25	7.4	12
23	3.2	1.7	2.7	.9	.8	1.5	6.7	6.8	2.7	22	9.7	16
24	3.2	1.6	1.6	.9	.8	1.2	10	5.4	7.8	51	8.9	19
25	2.4	1.6	1.3	.8	253	1.2	5.0	4.8	3.9		6.6	58
26	3.4	1.6	1.2	.8	311	1.0	3.6	4.2	3.0		6.6	108
27	2.8	1.5	1.2	.8	7.6	2.4	2.6	4.0	4.0		6.3	27
28	2.3	1.4	1.2	.8	3.2	2.5	2.3	3.6	30		11	21
29	7.9	1.5	1.2	1.0	2.1	1.1	*2.0	-	38		8.4	18.5
30	5.0	1.6	1.2	1.2	1.8	1.0	1.0	-	130		25	11
31	2.6	1.7	-	.9	-	1.0	*80	-	3e	-	80	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	20	2.3	5.34	8.26	166	508
August.....	11.5	1.4	2.52	3.90	78.0	239
September.....	8.0	1.2	2.04	3.16	61.3	188
October.....	1.5	.8	1.04	1.61	32.2	99
November.....	311	.8	21.0	32.5	650	1,980
December.....	58	.9	3.24	5.01	100	308
Calendar year 1933	600	.8	11.8	18.3	4,290	13,180
January.....	-	1.0	6.08	9.41	188	578
February.....	-	-	16.6	25.7	466	1,430
March.....	130	2.4	10.6	16.4	328	1,010
April.....	-	11	75.9	117	2,280	6,980
May.....	-	6.3	49.1	76.0	1,520	4,670
June.....	134	5.6	28.8	44.6	863	2,650
Fiscal year 1933-34	-	.8	16.4	28.5	6,710	20,600

*Estimated.

East Wailuaiki Stream near Keanae

Location.- Water-stage recorder 1,000 feet above Koolau Ditch crossing and trail and 3 miles southeast of Keanae post office.

Drainage area.- 3.7 square miles.

Records available.- December 1913 to October 1917, July 1922 to June 1934.

Average discharge.- 12 years (1922-34), 18.9 million gallons a day (29.2 second-feet).

Extremes.- Maximum discharge during year, 1,740 million gallons a day (2,690 second-feet) Apr. 25 (gage height, 8.23 feet); minimum, 1.1 million gallons a day (1.7 second-feet) Nov. 24-25.

1913-17, 1922-34: Maximum discharge, 1,900 million gallons a day (2,940 second-feet) Jan. 18, 1916 (gage height, 8.35 feet); minimum, 1.0 million gallons a day (1.6 second-feet) Oct. 22, 23, 1917, Aug. 1-2, 1922.

Flood of Dec. 24, 1921, may have reached a higher stage, but owing to destruction of station no data are available for this peak.

Remarks.- Records good for ordinary stages; poor for high stages. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.0	3.6	2.3	1.9	17.5	64	1.3	94	1.8	13	10.5	71
2	21	3.9	2.7	1.8	24	5.2	4.4	21	1.8	10	9.7	106
3	7.9	5.3	2.3	1.8	2.4	5.5	2.2	5.4	1.6	144	44	22
4	6.3	14.5	2.2	2.0	1.8	3.0	1.4	4.0	3.3	41	57	57
5	8.8	4.5	2.7	2.0	1.9	2.4	1.3	3.7	2.6	17	163	14
6	9.9	7.3	3.6	1.8	1.9	2.2	1.3	2.9	1.8	8.4	119	10
7	6.7	4.4	2.6	2.1	2.7	2.2	1.2	2.6	1.8	7.1	126	8.8
8	11	4.1	2.1	1.9	2.1	1.9	1.2	2.4	1.8	71	178	7.7
9	5.5	4.1	2.1	1.7	1.6	1.9	1.3	2.8	1.7	14	189	7.0
10	6.2	4.1	2.0	1.6	1.6	2.1	13	2.4	2.0	7.0	117	7.1
11	6.4	3.4	1.9	1.6	1.4	1.9	9.3	2.2	1.6	51	42	6.9
12	4.8	3.2	2.7	1.6	1.4	1.8	4.3	2.1	1.5	21	21	7.0
13	6.4	3.1	10	1.6	1.4	1.9	2.4	2.0	1.4	12	22	24
14	5.3	3.0	3.8	1.6	1.4	1.6	2.4	1.9	1.5	41	20	11
15	4.6	3.1	2.6	1.5	1.4	1.6	1.9	1.8	1.4	30	23	6.9
16	4.7	2.9	3.2	1.4	1.4	1.5	2.5	1.8	1.5	11.5	20	7.8
17	4.2	2.8	4.8	1.4	1.3	1.5	1.9	1.8	1.6	8.1	13	17.5
18	3.8	2.8	2.6	1.4	1.2	1.4	2.2	1.9	1.7	13	32	16
19	3.7	2.6	2.3	1.4	1.2	1.4	11.5	49	1.5	9.0	11	35
20	4.0	2.6	2.2	1.4	1.2	1.4	23	178	1.4	60	9.8	71
21	3.4	2.4	2.4	1.4	1.3	1.4	5.6	17.5	1.5	51	8.7	12.5
22	3.3	2.4	2.6	1.4	1.2	1.6	3.1	5.4	1.4	22	8.1	12
23	3.7	2.3	3.4	1.4	1.2	1.6	8.5	5.5	3.0	15.5	10.5	16
24	3.8	2.2	2.4	1.4	1.1	1.4	9.9	2.8	5.1	75	10	19
25	3.2	2.2	2.1	1.3	199	1.6	5.0	2.5	2.4	698	7.8	44
26	4.2	2.2	2.1	1.3	243	1.4	3.4	2.2	1.8	53	7.5	92
27	3.7	2.1	2.0	1.3	9.0	2.8	2.8	2.0	7.5	20	7.4	29
28	3.1	2.0	2.0	1.3	3.8	3.5	2.4	1.9	29	14	13.5	25
29	9.4	2.1	1.9	1.4	2.6	1.5	2.2	-	36	20	8.7	21
30	6.6	2.3	1.9	1.6	2.2	1.4	2.1	-	92	15	18.5	13
31	3.8	2.4	-	1.4	-	1.3	83	-	25	-	63	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	21	3.1	6.08	9.41	188	578
August.....	14.5	2.0	3.55	5.49	110	337
September.....	10	1.9	2.78	4.30	83.5	256
October.....	2.1	1.3	1.57	2.43	48.7	149
November.....	245	1.1	17.8	27.5	535	1,640
December.....	64	1.3	4.06	6.28	126	386
Calendar year 1933	473	1.1	11.2	17.3	4,090	12,560
January.....	83	1.2	7.03	10.9	218	668
February.....	178	1.7	15.0	25.2	421	1,290
March.....	92	1.4	7.75	12.0	240	737
April.....	698	7.0	51.9	80.3	1,560	4,780
May.....	189	7.4	44.2	68.4	1,370	4,210
June.....	106	6.9	27.1	41.9	813	2,500
Fiscal year 1933-34	698	1.1	15.7	24.3	5,710	17,530

West Wailuaiki Stream near Keanae

Location.- Water-stage recorder 500 feet above Koolau Ditch crossing and trail bridge and $2\frac{1}{4}$ miles south of Keanae post office.

Drainage area.- 3.6 square miles.

Records available.- January 1914 to October 1917, November 1921 to June 1934.

Average discharge.- 12 years (1922-34), 24.8 million gallons a day (38.4 second-feet).

Extremes.- Maximum discharge during year, 2,820 million gallons a day (4,360 second-feet) Apr. 25 (gage height, 11.09 feet); minimum not determined owing to faulty gage-height record.
1914-17, 1921-34: Maximum discharge (estimated), 4,500 million gallons a day (6,960 second-feet) Jan. 14, 1923 (gage height from flood marks, about 13.5 feet); minimum, 0.3 million gallons a day (0.5 second-foot) July 26, 1922.

Remarks.- Records good for ordinary stages, poor for extremely high stages. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June																																																																																																														
1	10.5	3.4	2.0	1.6	13	49	1.5	102	2.5	18	12.5	70																																																																																																														
2	22	3.6	2.3	1.6	30	7.2	3.8	18	2.4	15	11.5	100																																																																																																														
3	10.5	4.6	1.9	1.6	3.0	6.2	2.1	7.9	2.2	168	44	22																																																																																																														
4	7.9	13	1.9	1.7	1.8	4.0	1.6	5.7	3.9	44	59	54																																																																																																														
5	9.4	4.7	2.3	1.6	1.8	3.3	1.4	5.0	2.9	22	176	17																																																																																																														
6	11.5	6.9	3.0	1.6	1.7	2.9	1.4	4.1	2.3	12.5	126	12.5																																																																																																														
7	7.5	4.5	2.3	1.6	2.3	2.7	1.3	3.5	2.2	10.5	136	9.9																																																																																																														
8	11.5	4.1	1.8	1.8	2.2	2.5	1.3	3.2	2.1	75	187	8.3																																																																																																														
9	6.3	4.0	1.8	1.5	1.6	2.4	1.5	3.2	2.1	18	179	7.3																																																																																																														
10	7.1	4.2	1.7	1.5	1.6	2.5	10.5	2.9	2.4	10	123	7.3																																																																																																														
11	9.1	3.3	1.6	1.5	1.4	2.4	8.3	2.7	2.1	52	46	7.1																																																																																																														
12	5.6	3.0	2.2	1.5	1.3	2.2	4.4	2.5	1.9	25	68	7.4																																																																																																														
13	6.7	2.8	5.8	1.5	1.2	2.0	2.8	2.4	1.8	19	27	24																																																																																																														
14	5.6	2.7	3.7	1.5	*1.2	1.9	2.6	2.4	1.8	41	23	12																																																																																																														
15	4.9	2.9	2.5	1.4	1.2	1.8	2.1	2.2	1.8	38	24	7.3																																																																																																														
16	4.9	2.6	3.0	1.4	1.2	1.8	2.6	2.1	1.8	16	22	8.1																																																																																																														
17	4.3	2.4	4.9	1.4	1.1	1.7	2.0	2.1	2.1	11.5	15.5	17.5																																																																																																														
18	3.7	2.4	2.7	1.4	1.1	1.6	2.6	2.0	2.1	10.5	18	34																																																																																																														
19	3.6	2.2	2.2	1.4	1.1	1.6	11	70	1.8	13	14.5	33																																																																																																														
20	3.8	2.3	2.0	1.3	1.0	1.6	19	211	1.9	63	12	70																																																																																																														
21	3.2	2.1	2.2	1.3	1.0	1.5	6.4	21	2.7	55	10.5	15.5																																																																																																														
22	3.1	2.0	2.5	1.3	1.0	2.0	4.0	8.1	2.0	26	9.3	13.5																																																																																																														
23	3.4	1.9	3.2	1.6	1.0	2.2	7.1	5.5	4.2	18.5	11	17.5																																																																																																														
24	3.4	1.8	2.2	1.4	.9	2.2	11	4.3	8.5	66	10	20																																																																																																														
25	3.0	1.8	2.0	*1.3	328	2.1	5.9	3.7	4.5	1,170	7.7	54																																																																																																														
26	4.0	1.6	1.8	1.2	319	1.8	4.4	3.2	3.2	64	7.3	97																																																																																																														
27	3.4	1.7	1.7	1.2	12	3.0	3.5	2.9	10	24	7.0	32																																																																																																														
28	2.8	1.6	1.7	1.1	5.6	4.9	3.1	2.7	34	17	13.5	27																																																																																																														
29	7.5	1.8	1.6	1.1	4.0	2.1	2.8	-	44	22	9.4	22																																																																																																														
30	6.5	2.0	1.6	1.2	3.2	1.8	2.5	-	110	17	23	14.5																																																																																																														
31	3.7	2.0	-	1.0	-	1.5	92	-	33	-	55	-																																																																																																														
<table><tr><th rowspan="2">Month</th><th colspan="3">Million gallons a day</th><th rowspan="2">Second-foot (mean)</th><th colspan="2">Total run-off</th></tr><tr><th>Maximum</th><th>Minimum</th><th>Mean</th><th>Million gallons</th><th>Acre-feet</th></tr><tr><td>July.....</td><td>22</td><td>2.8</td><td>6.43</td><td>9.95</td><td>199</td><td>612</td></tr><tr><td>August.....</td><td>13</td><td>1.6</td><td>3.23</td><td>5.00</td><td>100</td><td>307</td></tr><tr><td>September.....</td><td>6.8</td><td>1.6</td><td>2.50</td><td>3.87</td><td>75.1</td><td>230</td></tr><tr><td>October.....</td><td>1.8</td><td>1.0</td><td>1.44</td><td>2.23</td><td>44.5</td><td>137</td></tr><tr><td>November.....</td><td>328</td><td>.9</td><td>24.9</td><td>38.5</td><td>747</td><td>2,290</td></tr><tr><td>December.....</td><td>49</td><td>1.5</td><td>4.08</td><td>6.31</td><td>126</td><td>388</td></tr><tr><td>Calendar year 1933</td><td>631</td><td>.7</td><td>12.7</td><td>19.6</td><td>4,640</td><td>14,250</td></tr><tr><td>January.....</td><td>92</td><td>1.3</td><td>7.31</td><td>11.3</td><td>226</td><td>695</td></tr><tr><td>February.....</td><td>211</td><td>2.0</td><td>18.1</td><td>28.0</td><td>506</td><td>1,550</td></tr><tr><td>March.....</td><td>110</td><td>1.8</td><td>9.68</td><td>15.0</td><td>300</td><td>921</td></tr><tr><td>April.....</td><td>1,170</td><td>10.5</td><td>72.0</td><td>111</td><td>2,160</td><td>6,630</td></tr><tr><td>May.....</td><td>187</td><td>7.0</td><td>48.0</td><td>74.3</td><td>1,490</td><td>4,570</td></tr><tr><td>June.....</td><td>100</td><td>7.1</td><td>28.1</td><td>43.5</td><td>842</td><td>2,580</td></tr><tr><td>Fiscal year 1933-34</td><td>1,170</td><td>.9</td><td>18.7</td><td>28.9</td><td>6,820</td><td>20,910</td></tr></table>													Month	Million gallons a day			Second-foot (mean)	Total run-off		Maximum	Minimum	Mean	Million gallons	Acre-feet	July.....	22	2.8	6.43	9.95	199	612	August.....	13	1.6	3.23	5.00	100	307	September.....	6.8	1.6	2.50	3.87	75.1	230	October.....	1.8	1.0	1.44	2.23	44.5	137	November.....	328	.9	24.9	38.5	747	2,290	December.....	49	1.5	4.08	6.31	126	388	Calendar year 1933	631	.7	12.7	19.6	4,640	14,250	January.....	92	1.3	7.31	11.3	226	695	February.....	211	2.0	18.1	28.0	506	1,550	March.....	110	1.8	9.68	15.0	300	921	April.....	1,170	10.5	72.0	111	2,160	6,630	May.....	187	7.0	48.0	74.3	1,490	4,570	June.....	100	7.1	28.1	43.5	842	2,580	Fiscal year 1933-34	1,170	.9	18.7	28.9	6,820	20,910
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*Estimated.

East Wailuanui Stream near Keanae

Location.- Water-stage recorder 125 feet above Koolau Ditch intake, 250 feet above trail, and 2½ miles south of Keanae post office.

Drainage area.- 0.6 square mile.

Records available.- January 1914 to October 1917, November 1921 to June 1934.

Average discharge.- 12 years (1922-34), 5.62 million gallons a day (8.70 second-feet).

Extremes.- Maximum discharge during year, 519 million gallons a day (803 second-feet) Apr. 25 (gage height, 4.32 feet); minimum, 0.5 million gallons a day (0.8 second-foot) Oct. 19, 20, 25, 26, 27.

1914-17, 1921-34: Maximum discharge, 1,050 million gallons a day (1,820 second-feet) Feb. 12, 1925 (gage height, 6.96 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Apr. 11, 1926.

Remarks.- Records good for ordinary stages; poor for high stages and estimated periods. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.4	1.5	0.9	0.7	11.5	46	*1.4	24	*0.9	2.8	3.8	*44
2	8.8	1.6	1.0	.7	7.2	3.3		3.2		2.5	3.4	
3	3.5	2.7	.8	.7	1.0	3.7		2.1		28	12	
4	3.6	6.4	.9	.8	.9	2.2		1.8		8.1	19	
5	4.4	1.8	1.2	.8	1.0	1.8	*1.5	1.7	*1.5	4.1	28	*11
6	4.4	3.4	1.4	.7	.9	1.6		1.4		2.7	17.5	
7	3.6	1.8	1.0	.9	1.4	1.4				.8	2.4	
8	5.2	1.7	.8	.9	1.1	1.2				.8	33	
9	3.2	1.7	.8	.7	.9	1.2	*1.2		*1.2	.8	4.0	*2.1
10	3.3	1.7	.8	.6	.9	1.2				1.9	2.7	
11	3.0	1.3	.7	.6	.8	1.0						
12	1.8	1.3	1.0	.7	.7	1.0				20	17	
13	3.2	1.3	4.8	.6	.7	.9	*4.5		*4.5	6.3	20	*2.1
14	2.6	1.2	1.5	.6	.7	.9				3.6	7.1	
15	1.8	1.3	1.0	.6	.7	.8				12	6.6	
16	2.0	1.2	1.4	.6	.7	.8				6.5	10.5	
17	1.7	1.0	2.3	.6	.7	.8	*1.3		*1.3	3.4	7.4	*2.7
18	1.5	1.0	1.1	.6	.7					2.8	4.7	
19	1.4	1.0	1.0	.5	.6					2.5	5.5	
20	1.6	1.0	.9	.5	.6					3.2	3.8	
21	1.3						*7		*30	21	3.0	*19
22	1.3	1.0	.7	.5	.6							
23	1.4	.9	1.1	.6	.6					29	2.7	
24	1.5	.9	1.0	.6	.6					10.5	2.5	
25	1.3	.9	.9	.5	58		*5.1		*2.2	4.1	3.4	*5.2
26	1.8	.8	.9	.5	29					33	4.0	
27	1.4	.8	.9	.5	2.0					181		
28	1.3	.8	.8	.5	1.4							
29	5.4	.8	.9	.6	1.2	*1.4	*2.7		*1.6			*4.0
30	3.2	.9	.7	.7	1.2	*.6						
31	1.7	.9	-	.6	-							
							20		5.4			

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	8.8	1.3	2.79	4.32	86.6	266
August.....	6.4	.8	1.47	2.27	45.5	140
September.....	4.8	.7	1.15	1.78	34.4	106
October.....	.9	.6	.63	.98	19.6	60
November.....	58	.6	4.30	6.65	129	396
December.....	46	-	2.63	4.07	81.4	250
Calendar year 1933	-	.5	4.22	6.53	1,540	4,730
January.....	20	-	2.82	4.36	87.3	268
February.....	-	-	5.29	8.18	148	455
March.....	9.3	-	1.91	2.96	59.2	182
April.....	181	2.4	15.3	23.7	460	1,410
May.....	54	-	13.2	20.4	409	1,260
June.....	-	2.1	9.66	14.9	290	889
Fiscal year 1933-34	181	.5	5.07	7.84	1,850	5,680

*Estimated.

†Partly estimated.

West Wailuanui Stream near Keanae

Location.- Water-stage recorder 150 feet above Koolau Ditch crossing and intake and 2½ miles south of Keanae post office.

Drainage area.- 0.7 square mile.

Records available.- December 1913 to October 1917, July 1922 to June 1934.

Average discharge.- 12 years (1922-34), 9.21 million gallons a day (14.2 second-feet).

Extremes.- Maximum discharge during year undetermined, owing to missing gage-height record; minimum, 0.4 million gallons a day (0.6 second-foot) Nov. 1, 1913-17, 1922-34: Maximum discharge, 1,220 million gallons a day (1,890 second-foot) Jan. 14, 1923 (gage height, 7.70 feet); minimum, 0.2 million gallons a day (0.3 second-foot) July 18-21, 1922.

Remarks.- Records fair for ordinary stages, poor for extremely high stages and estimated periods. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.1	1.8	1.0	0.8	1.1	4.2	0.6	4.4	1.3	7.8	*5.5	*50
2	9.5	1.9	1.1	.7	8.8	3.7	2.8	8.1	1.2	5.9		
3	4.1	2.6	.9	.7	1.2	4.1	1.2	3.6	1.1	62		
4	3.2	6.4	.9	.8	2.2	.7	3.0	2.3	23			*14
5	4.3	2.2	1.0	.8	1.1	1.9	.7	2.6	1.8	10.5	*22	
6		3.6	1.8	.7	1.0	1.7	.6	2.0	†1.2	5.7		5.5
7		2.2	.8	1.1	1.6	.8	1.9	†1.2	4.8			4.5
8		2.0	.8	1.0	1.3	.8	1.7	†1.2	4.1		*44	3.6
9		1.9	.8	.7	.8	1.3	.7	1.8	†1.1	8.4		3.2
10	*5.6	1.9	.8	.6	.8	1.3	6.5	1.6	1.6	5.1		3.2
11		1.6	.7	.6	.7	1.2	5.4	1.5	1.3	21		3.2
12		1.5	1.2	.7	.7	1.1	2.4	1.3	1.2	11.5		3.2
13		1.4	4.5	.6	.7	1.0	1.5	1.3	1.2	8.6		12
14		1.3	1.6	.6	.7	.9	1.7	1.2	1.1	16	*14	5.5
15		1.4	1.2	.6	.6	.8	1.2	1.2	1.1	16		3.3
16		1.3	1.4	.6	.6	.8	1.6	1.2	1.1	8.0		3.8
17		1.2	2.4	.6	.6	.8	1.2	1.1	1.2	5.9		0.4
18		1.2	1.2	.6	.6	.8	1.2	1.1	1.4	5.5	*7	11
19		1.1	1.0	.5	.6	.7	5.0	24	1.1	6.4		14.5
20		1.1	1.0	.5	.6	.7	11.5	90	1.2	25		22
21	*1.7	1.0	1.1	.5	.6	.7	4.3	12	1.1			6.4
22		.9	1.2	.6	.6	.8	2.2	4.0	1.0	*18		6.4
23		.9	1.5	.6	.6	.8	5.2	2.7	2.2			7.5
24		.8	1.1	.5	.5	.7	5.0	2.1	2.6	*140	*4.2	8.0
25		.8	1.0	.5	77	.7	3.2	1.8	1.3			15
26		.8	.9	.5	117	.6	2.4	1.6	1.0			32
27		.7	.8	.5	6.1	1.3	2.1	1.4	4.7			14.5
28		.7	.6	.6	2.4	2.1	1.9	1.3	11	*9		14.5
29	5.1	.7	.8	.6	1.6	1.3	1.8	-	14.5			11.5
30	3.4	.9	.8	.7	1.4	.6	1.7	-	40		*28	6.8
31	1.9	.9	-	.6	-	.6	24	-	14.5	-		-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	9.5	-	2.96	4.58	91.8	282
August.....	6.4	0.7	1.57	2.45	48.7	149
September.....	4.5	.7	1.22	1.89	36.5	112
October.....	1.0	.5	.64	.99	19.7	60
November.....	117	.5	8.08	12.5	242	744
December.....	42	.6	2.58	3.99	80.1	246
Calendar year 1933	247	.5	5.31	8.22	1,940	5,950
January.....	24	.6	3.27	5.06	102	311
February.....	90	1.1	7.90	12.2	221	679
March.....	40	1.0	3.86	5.97	120	368
April.....	-	4.8	22.6	35.0	679	2,080
May.....	-	-	15.4	25.8	478	1,470
June.....	-	5.2	12.4	19.2	371	1,140
Fiscal year 1933-34	-	.5	6.82	10.6	2,490	7,640

*Estimated.

†Partly estimated.

Koolau Ditch near Keanae

Location.- Water-stage recorder on west side of Keanae Valley and 2½ miles southwest of Keanae post office.

Records available.- January 1910 to December 1912, November 1917 to June 1934.

Average discharge.- 16 years (1918-34), 60.8 million gallons a day (94.1 second-feet).

Extremes.- Maximum discharge during year, 159 million gallons a day (246 second-feet) Apr. 25 (gage height, 5.77 feet); no flow Apr. 15, when water was shut out of ditch. 1910-12, 1917-34: Maximum discharge, 175 million gallons a day (271 second-feet) Jan. 4, 1922 (gage height, 6.36 feet); no flow occasionally, when water is shut out of ditch.

Remarks.- Records good. Regulated by gates and spillways. Koolau Ditch diverts water at 1,200 feet elevation from all streams from Makapipi to Aio. No diversions from ditch above station except from several spillways.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	86	38	19.5	15.5	33	117	13	148	23	101	100	145
2	138	44	23	15.5	103	69	59	107	22	89	86	148
3	90	54	19.5	15.5	24	81	29	59	20	108	145	130
4	72	111	18.5	16.5	17.5	44	16.5	47	35	141	152	146
5	91	50	23	16.5	22	36	14.5	47	30	128	152	123
6	107	76	33	15.5	22	30	14.5	36	20	63	152	93
7	69	48	26	17.5	30	28	14	32	19.5	69	152	76
8	111	44	18.5	19	27	25	13	30	19.5	137	152	66
9	66	44	17.5	14.5	17.5	23	14.5	34	18.5	120	128	56
10	69	47	17.5	14	18.5	23	98	30	26	76	146	56
11	72	36	16.5	14	14.5	21	95	26	19.5	134	148	56
12	53	34	24	16	14	19.5	48	25	17.5	145	145	53
13	66	31	30	14.5	14	18.5	29	24	16.5	115	141	86
14	56	30	36	14	13	17.5	29	23	17.5	127	141	95
15	50	31	23	13	12	17.5	23	22	16.5	1.2	141	59
16	50	29	29	13	12	16.5	28	20	16.5	90	138	66
17	44	26	44	13	12	16.5	22	19.5	19.5	72	126	106
18	41	26	24	12	11	15.5	23	18.5	20	66	126	138
19	38	25	20	12	11	14.5	86	44	16.5	*61	105	138
20	44	24	18.5	12	11	14.5	130	148	15.5	141	97	141
21	35	23	22	12	11	14.5	70	121	17.5	145	63	108
22	34	22	24	14	11	17.5	41	56	15.5	130	76	111
23	38	20	30	13	10.5	17.5	55	41	28	115	93	126
24	41	20	22	12	10.5	17.5	103	34	47	107	93	130
25	34	19.5	18.5	11	51	18.5	71	30	25	124	69	130
26	44	19.5	17.5	11	132	14	47	26	19.5	88	62	145
27	41	18.5	16.5	11	53	25	38	25	45	141	62	141
28	32	17.5	16.5	11	35	36	34	24	145	133	112	141
29	72	18.5	16.5	12	28	15.5	30	-	148	134	63	141
30	76	19.5	16.5	14.5	24	14	26	-	152	130	110	123
31	41	19.5	-	12	-	13	63	-	141	-	123	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	138	32	61.3	94.8	1,900	5,830
August.....	111	17.5	34.4	55.2	1,070	3,280
September.....	80	16.5	24.4	37.6	751	2,240
October.....	19	11	13.8	21.4	427	1,310
November.....	132	10.5	26.8	41.5	805	2,470
December.....	117	13	27.3	42.2	846	2,600
Calendar year 1933	148	2.0	47.4	73.3	16,100	49,410
January.....	130	13	44.5	69.9	1,360	4,230
February.....	148	18.5	46.4	71.8	1,300	3,990
March.....	152	15.5	36.5	59.6	1,190	3,660
April.....	145	1.2	109	169	3,270	10,050
May.....	152	62	118	183	3,640	11,180
June.....	146	53	109	169	3,270	10,040
Fiscal year 1933-34	152	1.2	54.3	84.0	19,830	60,880

*Partly estimated.

Honomanu Stream at Haiku-uka boundary, near Kaili1111

Location.- Water-stage recorder at end of Haiku-uka boundary trail and 4½ miles south-east of Kaili1111.

Drainage area.- 2.4 square miles.

Records available.- October 1919 to February 1927, July 1932 to June 1934.

Extremes.- Maximum discharge during year, 701 million gallons a day (1,080 second-foot) Apr. 25 (gage height, 6.95 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Oct. 22, Nov. 25.
1919-27, 1932-34: Maximum discharge, 1,290 million gallons a day (2,000 second-foot) Jan. 14, 1923 (gage height, 9.93 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Oct. 7, 1932, Oct. 22, Nov. 25, 1933.

Remarks.- Records good for ordinary stages; poor for high stages and estimated periods.
No diversions above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	*6	0.7	0.3	0.3	9.5	71	0.3	56	0.4	6.0	2.0	29
2		.6	.4	.2	12	4.8	.5	5.2	.4	3.7	1.6	40
3		.7	.5	.2	.9	1.6	.5	1.6	.3	80	16.5	5.6
4		2.7	.3	.2	.5	1.4	.5	1.2	.8	24	22	19
5		1.0	.4	.2	.4	1.0	.4	1.7	.7	11.5	101	4.0
6	*2.4	1.2	1.0	.2	.4	.8	.3	1.1	.4	3.5	81	3.0
7		1.2	1.2	.5	.4	.6	.3	.8	.3	2.9	74	1.6
8		.6	.8	1.4	†1.0	.5	.3	.6	.3	30	87	1.2
9		.5	.3	.4	.9	.4	.3	.5	.3	5.3	50	1.0
10		1.0	.2	.2	.4	.4	1.9	.5	.4	2.2	44	.8
11	2.2	.6	.3	.2	.3	1.2	3.0	.5	.5	29	13.5	1.9
12	1.3	.5	.7	.2	.2	.7	1.6	.5	.5	12.5	24	1.2
13	1.1	.7	3.7	.2	.2	.4	.7	.7	.3	5.9	8.2	11.5
14	1.1	.8	1.8	.2	.2	.4	2.3	.5	.3	15.5	15.5	4.6
15	.9	.7	.6	.2	.2	.3	2.3	.4	.3	18.5	14	1.6
16	.8	.6	.6	.7	.2	.4	1.0	.7	.3	4.7	7.1	1.2
17	.7	.5	1.5	1.0	.1	.8	.6	1.1	1.5	2.6	3.4	5.9
18	.6	1.0	.5	.8	.1	.7	.5	.5	1.0	2.8	2.2	18
19	.5	.6	.3	.2	.1	.4	2.5	39	.8	4.8	3.4	7.9
20	.9	.8	.2	.2	.1	.3	3.6	90	.4	26	2.8	38
21	.8	.3	.2	.1	.1	.3	2.6	6.8	.3	19	1.6	3.4
22	.6	.3	.4	.3	.1	2.7	1.7	2.7	.3	23	1.2	1.9
23	.6	.2	.8	.4	.1	2.5	19	1.3	.9	5.1	2.8	6.2
24	.6	.2	.3	.2	.1	2.1	5.3	1.0	2.6	7.2	5.3	9.1
25	.4	.2	.2	.2	94	1.5	2.2	.8	1.4	358	3.1	25
26	1.0	.6	.2	.1	108	.7	1.7	.6	.6	37	1.7	60
27	.9	.3	.2	.1	3.4	1.7	1.2	.5	4.2	9.7	1.4	11.5
28	.5	.2	.2	.2	1.2	2.2	.8	.5	19.5	5.0	5.0	5.1
29	2.0	.2	.2	.1	.8	.8	.7	-	12.5	7.8	3.2	4.6
30	3.3	.2	.1	.6	.5	.6	.6	-	37	4.1	2.4	3.0
31	1.3	.2	-	.1	-	.4	32	-	26	-	34	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	-	0.4	1.84	2.85	56.9	175
August.....	2.7	.2	.64	.99	19.9	61
September.....	3.7	.2	.62	.96	18.5	57
October.....	1.4	.1	.31	.48	9.5	29
November.....	108	.1	7.88	12.2	236	726
December.....	71	.3	3.34	5.17	104	318
Calendar year 1933	294	.1	4.60	7.12	1,680	5,160
January.....	32	.3	2.94	4.55	91.2	280
February.....	90	.4	7.76	12.0	217	667
March.....	37	.5	3.73	5.77	116	354
April.....	358	2.2	25.6	39.6	767	2,350
May.....	101	1.2	20.4	31.6	634	1,950
June.....	60	.8	10.9	16.9	327	1,000
Fiscal year 1933-34	358	.1	7.11	11.0	2,600	7,970

*Estimated.

†Partly estimated.

Honomanu Stream near Keanae

Location.- Water-stage recorder 500 feet above Spreckels Ditch intake and trail bridge and 3 miles by trail northwest of Upper Keanae.

Drainage area.- 3.3 square miles.

Records available.- November 1913 to June 1934.

Average discharge.- 18 years (1916-34), 15.8 million gallons a day (24.4 second-feet).

Extremes.- Maximum discharge during year, 912 million gallons a day (1,410 second-feet) Apr. 25 (gage height, 7.44 feet); minimum, 0.3 million gallons a day (0.5 second-foot) several days in October and November.

1913-34: Maximum discharge, 1,270 million gallons a day (1,960 second-feet) Dec. 18, 1929 (gage height, 9.25 feet); minimum, 0.08 million gallons a day (0.12 second-foot) Mar. 24, 1928.

Remarks.- Records good for ordinary stages, poor for high stages and estimated periods. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.6	2.1	0.8	0.5	*22	103	0.6	73	0.8	9.6	5.7	48
2	24	2.0	.9	.4		9.4	1.4	9.8	.8	6.6	5.1	54
3	7.3	3.0	1.0	.4	*1.1	3.9	1.1	3.4	.7	95	33	11
4	5.1	9.9	.9	.5		2.6	.9	2.6	3.0	36	42	40
5	5.6	3.1	1.2	.6	*8	2.0	.7	3.0	1.6	17.5	108	8.5
6	7.7	3.4	2.5	.4		1.6	.5	2.1	1.0	4.0	89	6.6
7	4.3	3.2	2.2	.7	*5	1.4	.5	1.7	.8	4.8	96	4.6
8	8.0	2.0	2.0	2.4		1.2	.4	1.5	.7	54	113	3.8
9	4.6	1.9	1.0	.8	*1.0	1.0	.6	1.3	.6	9.2	88	3.3
10	5.0	2.8	.7	.5		1.0	6.5	1.4	1.5	4.3	82	4.1
11	6.1	1.8	.7	.4	*3	1.5	6.5	1.2	1.0	47	25	4.7
12	3.4	1.5	1.5	.3		1.2	3.1	1.2	1.1	19.5	40	3.6
13	5.1	1.7	9.6	.3	*1.0	.9	1.4	1.4	.7	9.8	14	21
14	3.9	1.7	3.8	.3		.8	2.5	1.2	.6	28	18.5	9.6
15	3.0	1.6	1.5	.3	*6	.7	4.0	1.0	.5	25	22	4.6
16	2.7	1.5	2.0	.3		.3	.7	2.6	1.2	.6	7.8	15	4.3
17	2.4	1.2	4.2	1.2	*1.0	.3	1.0	1.4	1.3	1.7	4.8	8.3
18	2.0	1.7	1.6	.3		1.3	1.2	1.1	1.5	4.8	7.1	29
19	1.9	1.4	1.0	.3	*1.0	.8	5.8	39	1.2	7.8	5.7	21
20	2.5	1.6	.8	.3		.6	9.1	112	.7	48	5.9	57
21	2.2	1.1	.9	.3	*1.0	.6	6.1	14	.5	39	4.3	7.9
22	1.8	.9	1.1	.3		2.6	3.2	5.0	.4	32	3.7	6.1
23	1.9	.8	1.9	.3	*1.0	3.7	24	2.6	1.9	8.8	6.8	14
24	1.9	.8	1.0	.3		2.0	10	1.9	4.3	33	8.1	13.5
25	1.7	.8	.7	123	*6	2.0	4.0	1.6	2.0	496	5.8	42
26	3.0	.9	.6	148		1.0	3.2	1.3	1.0	74	4.0	80
27	2.7	.8	.5	6.8	*6	6.5	2.2	1.1	8.4	17	3.8	22
28	1.7	.6	.5	2.9		5.4	1.8	1.0	51	9.6	11.5	18
29	6.8	.6	.5	2.0	*6	1.3	1.5	-	22	16.5	7.1	15.5
30	8.0	.6	.5	1.6		.8	1.2	-	44	9.2	8.9	8.4
31	3.0	.8	-	-		.7	42	-	37	-	43	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	24	1.7	4.70	7.27	146	447
August.....	9.9	.6	1.86	2.88	57.8	177
September.....	9.6	.5	1.60	2.48	48.1	148
October.....	2.4	.3	.65	1.01	20.3	62
November.....	148	.3	11.3	17.5	340	1,040
December.....	103	.6	5.26	8.14	163	501
Calendar year 1933	330	.3	7.44	11.5	2,720	8,320
January.....	42	.4	4.84	7.49	150	460
February.....	112	1.0	10.3	15.9	289	888
March.....	44	.4	5.60	8.66	174	533
April.....	496	4.0	39.3	60.8	1,160	3,620
May.....	113	3.7	30.0	46.4	930	2,850
June.....	80	3.3	19.3	29.9	580	1,780
Fiscal year 1933-34	496	.3	11.2	17.3	4,080	12,510

*Estimated.

Haipuaena Stream at Haiku-uka boundary, near Kailiili

Location.- Water-stage recorder 50 feet upstream from Haiku-uka boundary trail and 4½ miles southeast of Kailiili.

Drainage area.- 0.4 square mile.

Records available.- May 1919 to January 1927, July 1932 to June 1934.

Extremes.- Maximum discharge during year, 128 million gallons a day (198 second-feet) Apr. 25 (gage height, 4.65 feet); minimum uncertain, owing to faulty gage-height record.

1919-27, 1932-34: Maximum discharge, 162 million gallons a day (251 second-feet) Oct. 16, 1924 (gage height, 3.02 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Sept. 19, 1924, between June 16 and 30, 1933.

Remarks.- Records good for ordinary stages, poor for high stages and estimated periods. Practically all low flow diverted into Kula pipe line above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June				
1	*5	*0.6	0.28	*2	*4	*8	0.32	*3.1	0.49	2.6	1.55	11				
2			.34				.44			1.85	1.35	13.5				
3			.40				.40			.42	22	6.7	2.5			
4			.24				.40			.91	3.6	9.0	7.8			
5			.32				.30			1.0	4.5	27	2.2			
6	*1.5	*6	.71	*6	*6	*8	.26	.76	*4	1.75	21	1.75				
7			.67				.23			.69	1.6	24	1.35			
8			.54				.20			.62	11	22	1.2			
9			.28				.20			.62	2.3	14.5	1.1			
10			.37				.95			.62	1.3	13.5	1.15			
11	.91	.48	*3	*2	.29	*5	1.2	.58	12	4.4	4.4	1.45				
12							.22			.62	4.4	8.0	1.2			
13							.19			.35	.58	2.5	3.2	6.0		
14							.16			.97	.51	.30	6.6	5.2	2.5	
15							.13			.85	.46	.26	6.4	5.3	1.5	
16	.69	.53	*4	*6	.13	*3	.51	.56	.36	2.1	3.4	1.25				
17							.40			.58	.78	1.5	2.2	4.2		
18							.37			.46	1.55	1.95	7.2			
19							.49			9.8	4.9	2.6	2.0	4.5		
20							.53			.09	.34	22	.32	11.5	1.95	14.5
21	*6	.34	*3	*3	.08	.30	*1.0	2.4	.28	7.4	1.45	2.0				
22							1.75			1.3	.23		8.6	1.25		
23							1.15			.88	.69		2.4	1.95		
24							1.4			*3.0	1.2		6.1	2.3		
25							.82			.65	.65		69	1.7		
26	*1.3	.52	.17	*15	*9.5	.44	*6	.58	.44	8.8	1.45	*15				
27										.24	.15		.58	2.7	2.9	1.2
28							.19				1.25		7.8	2.0	2.7	
29							.18				.51		-	5.6	3.6	2.2
30							.20				.40		-	12	2.1	1.6
31							.24			-	.34		*20	-	9.9	-	10	-
Month				Million gallons a day			Second-foot (mean)	Total run-off								
				Maximum	Minimum	Mean		Million gallons	Acre-feet							
July.....				-	-	1.36	2.10	42.2	130							
August.....				-	.18	.490	.758	15.2	47							
September.....				-	.15	.393	.593	11.5	36							
October.....				-	-	.277	.429	8.60	26							
November.....				-	.08	1.52	2.35	45.6	140							
December.....				-	-	1.13	1.75	35.1	108							
Calendar year 1933				-	.08	1.78	2.75	651	2,000							
January.....				-	.20	1.45	2.24	45.0	138							
February.....				-	.46	3.04	4.70	85.2	262							
March.....				12	.23	1.63	2.52	50.5	155							
April.....				69	1.3	7.22	11.2	217	665							
May.....				27	1.2	6.65	10.3	206	632							
June.....				-	1.1	5.24	8.11	157	482							
Fiscal year 1933-34				69	.08	2.52	3.90	919	2,820							

*Estimated.

Haipuaena Stream near Huelo

Location.- Water-stage recorder 200 feet above inflow of Spreckels Ditch and $3\frac{1}{4}$ miles southeast of Kailua.

Drainage area.- 1.1 square miles.

Records available.- October 1913 to June 1934.

Average discharge.- 18 years (1916-34), 10.2 million gallons a day (15.8 second-feet).

Extremes.- Maximum discharge during year, 370 million gallons a day (572 second-feet) Apr. 25 (gage height, 4.88 feet); minimum, 0.3 million gallons a day (0.5 second-foot) Oct. 27-29.

1913-34: Maximum discharge, 582 million gallons a day (900 second-feet) Feb. 17, 1929 (gage height, 6.25 feet); minimum, 0.3 million gallons a day (0.5 second-foot) frequently during December 1919, and Oct. 27-29, 1933.

Remarks.- Records good for ordinary stages, poor for estimated periods and extremely high stages. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	*10	2.5	1.1	0.8	*18	*30	0.6	47	1.2	7.0	5.9	*28	
2		2.6	1.2	.8			2.6	8.0	1.2	5.3	5.3		
3		3.8	1.1	.8			1.4	3.8	1.1	54	22		
4		10	1.1	.8			.9	3.0	4.0	21	27		
5		3.6	1.5	1.0			2.4	3.2	2.3	11	56		
6	*6	4.5	2.8	.8	*1.0	2.0	.7	2.4	1.4	5.0	40	*4.6	
7		3.5	2.2	.8		1.7	.6	2.0	1.1	4.6	52		
8		2.5	1.8	2.1		1.6	.6	1.8	1.1	36	64		
9		2.5	1.2	1.1		1.3	.6	1.6	1.0	7.5	52		
10		3.1	1.0	.8		1.2	†7.2	1.7	1.9	4.5	42		
11	*6	2.1	1.0	.7	*6	1.4	6.6	1.6	1.3	29	17	*12	
12		1.9	1.9	.7		1.2	3.4	1.5	1.3	13	24		
13		1.8	8.3	.6		1.0	1.9	1.8	1.0	7.0	9.3		
14		1.8	3.6	.6		.9	2.9	1.3	1.0	19			
15		1.9	1.8	.5		.8	3.5	1.2	.9	16			
16	*2.9	1.7	2.4	.5	*4	.7	2.9	1.2	1.0	6.5	*11	*4.8	
17		1.5	4.0	.9		.8	1.9	1.5	1.8	4.7			
18		1.8	1.8	.9		.8	1.7	1.1	1.6	4.4			
19		1.5	1.4	.7		.6	6.4	19	1.2	5.3			
20		1.6	1.2	.4		.5	11	61	1.0	33			
21	*2.1	1.2	1.3	.4	*75	.4	7.1	10	.8	30	*4.3	*30	
22		1.1	1.7	.6		†1.6	3.8	4.0	.8	22			
23		2.4	1.0	2.1		2.1	16.5	2.6	2.4	7.4			
24		2.4	1.0	1.4		1.6	8.8	2.1	3.9	28			
25		2.0	1.0	1.1		.4	1.2	4.2	1.9	2.1			239
26	3.4	1.1	1.0	.3	*4.0	.7	3.4	1.6	1.3	25	*8	*12	
27	2.9	1.0	.9	.3		1.8	2.5	1.5	6.4	11			
28	2.1	.8	.9	.4		3.8	2.1	1.3	21	7.6			
29	8.1	.8	.9	.3		.9	1.8	-	16	11			
30	8.4	.9	.9	*.3		.6	1.6	-	20	8.1			
31	3.4	1.0	-	-	-	.6	30	-	20	-	*30	-	
Month		Million gallons a day			Second-foot (mean)	Total run-off							
		Maximum	Minimum	Mean		Million gallons	Acre-feet						
July.....		-	2.0	5.50	8.51	170	523						
August.....		10	.8	2.16	3.34	67.1	206						
September.....		8.3	.9	1.82	2.82	54.6	168						
October.....		2.1	-	.68	1.05	21.2	65						
November.....		-	-	7.23	11.2	217	656						
December.....		-	.4	3.30	5.11	102	314						
Calendar year 1933		162	-	5.28	8.17	1,920	5,910						
January.....		30	.6	4.52	6.99	140	430						
February.....		61	1.1	6.81	10.5	191	585						
March.....		21	.8	3.97	6.14	123	378						
April.....		239	4.4	22.8	35.3	683	2,100						
May.....		64	-	18.2	28.2	554	1,730						
June.....		-	-	14.0	21.7	421	1,290						
Fiscal year 1933-34		239	-	7.55	11.7	2,750	8,480						

*Estimated.

†Partly estimated.

Spreckels Ditch at Haipuaena, near Huelo.

Location.- Water-stage recorder between Haipuaena and Puohokamoa Streams on Spreckels Ditch trail and $3\frac{1}{2}$ miles southeast of Kailua.

Records available.- February 1930 to June 1934.

Extremes.- Maximum discharge during year ending June 30, 1932, 80 million gallons a day (124 second-feet) Feb. 27; maximum gage height, 4.65 feet Sept. 29; minimum, 5.6 million gallons a day (8.7 second-feet) Dec. 15.
Maximum discharge during year ending June 30, 1933, 139 million gallons a day (215 second-feet) Mar. 5 (gage height, 5.03 feet); no flow Feb. 10.
Maximum discharge during year ending June 30, 1934, 100 million gallons a day (155 second-feet) Apr. 3 (gage height, 4.54 feet); no flow Apr. 25, 26, when water was shut out of ditch.
1930-34: Maximum discharge, that of Mar. 5, 1933; no flow when water is turned out of ditch.

Remarks.- Records good. Regulated by gates and spillways. Spreckels Ditch diverts from all streams between Maaailua and Kailua above Koolau Ditch east of Puohokamoa and below Koolau Ditch west of Puohokamoa. All data from Jan. 1, 1932, to June 30, 1933, have been revised in this report.

Discharge, in million gallons, fiscal year July 1931 to June 1932

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.6	12.5	18	32	18	7.2	20	29	20	52	56	38
2	7.1	19.5	18	26	17	6.9	19.5	52	17	36	27	25
3	6.2		22	27	42	11	18	48	15	30	32	18
4	6.4	16	18	26	37	17	15	44	12	19.5	22	20
5	26	24	25	16	26	9.4	13.5	42	14	25	22	24
6	28	26		27	20	18	11	46	19.5	34	25	18
7	26	26	21	24	18	12.5	9.6	42	11.5	22	19.5	17
8	18	22	17	28	11	8.7	32	15	19.5	18		*12.5
9	20	21	28	16	29	8.7	8.5	42	18	42	36	
10	25	30	27	19	24	7.4	8.1	50	11	40	30	†15
11	29	25	32	18	33	7.2	7.8	46	10.5	50	25	
12	27	24	24	17	39	6.6	8.3	42	11	52	42	
13	26	22	22	10	24	6.4	16	46	11	48	36	
14	25	24	24	8.7	21	6.2	12	38	9.6	36	34	†19
15	19	27	26	6.1	33	23	14	29	8.5	40	46	
16	15	22	29	7.4	22	28	13.5	24	8.1	34	32	
17	11.5	20	24	11.5	30	27	9.2	18	11	24	27	
18	24	36	25	16	24	30	16	16	17	17	24	
19	21	26	21	9.0	18	39	18	14	20	15	17	
20	33	20	19	8.7	15	26	18	12.5	20	15	16	†12
21	37	19	18	30	22	24	15	11.5	19	12.5	13	
22	21	22	22	39	36	21	12.5	12.5	15	14	13	
23	21	25	17	22	22	21	24	12	10.5	27	11.5	
24	18	19	26	29	16	21	26	9.0	9.0	38	15	†8
25	24	17	42	39	13	19	27	10	11	38	11.5	
26	22	16	39	25	12.5	16	25	36	9.8	46	13	
27	21	13	42	18	11	13	27	46	12	36	20	†24
28	17	15	39	15	10.5	12	29	20	17	34	12.5	
29	27	22	48	14	8.9	11	24	25	13	44	17	†16
30	21	26	45	12	8.1	13.5	25	-	24	46	27	
31	15	24	-	17	-	21	19.5	-	40	-	22	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	37	6.2	20.8	32.2	645	1,980
August.....	36	12.5	22.0	34.0	651	2,090
September.....	48	16	27.0	41.8	811	2,490
October.....	39	7.4	19.4	30.0	600	1,840
November.....	42	8.1	22.5	34.8	676	2,070
December.....	39	6.2	16.4	25.4	508	1,560
Calendar year 1931	48	2.4	17.2	26.6	6,290	19,320
January.....	29	7.8	16.6	25.7	518	1,580
February.....	52	9.0	30.8	47.7	894	2,760
March.....	40	8.1	14.8	22.9	450	1,410
April.....	52	12.5	32.9	50.9	986	3,030
May.....	46	11.5	23.9	37.0	742	2,280
June.....	38	-	16.8	26.0	502	1,540
Fiscal year 1931-32	52	6.2	21.9	33.9	8,020	24,620

*Partly estimated.

†Estimated.

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Spreckels Ditch at Haipuaena, near Huelo

(Continued)

Discharge, in million gallons, fiscal year July 1932 to June 1933

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	†15	27	†9	5.2	3.7	25	29	15	11	24	15	8.6
2		25		4.5	3.3	14	20	11	7.8	38	10.5	15
3		22		4.2	4.5	12	20	9.2	6.9	25	14	12.5
4		19.5		4.0	4.4	10.5	20	23	6.7	19.5	7.4	7.1
5	†16	32	†16	4.2	3.3	8.5	15	11.5	19	12	7.2	7.1
6		15		4.0	3.0	7.6	11.5	8.3	25	10	10.5	6.1
7		11		3.7	2.8	6.7	9.6	7.6	25	8.7	10.5	5.0
8		16		3.3	2.7	6.2	8.3	6.4	13	7.6	6.7	4.7
9	†9	46	†9	3.5	2.7	5.9	7.6	21	19.5	7.1	6.2	4.4
10		20		3.2	2.7	5.6	7.6	11.5	40	9.2	6.4	5.0
11		14		3.2	4.2	6.4	7.8	7.8	24	7.6	5.6	4.5
12		11		3.2	6.9	23	7.8	12	17	6.4	5.0	3.8
13	†18	15	†13	3.0	4.0	27	7.1	11	22	5.9	4.7	3.3
14		15		2.8	3.0	12	6.1	30	20	5.4	7.3	3.0
15		12.5		2.8	2.7	27	34	16	14	6.7	17	3.0
16		8.3		3.3	8.3	12	40	16	11.5	6.1	11	3.2
17	†32	7.9	†10	3.7	5.2	11.5	32	12.5	10	14	10	3.2
18		10		3.5	3.5	10.5	28	14	8.7	13	10.5	2.6
19		10.5		6.8	3.0	10	16	29	7.8	6.7	6.4	2.4
20		7.9		5.7	2.7	7.2	14	32	7.1	5.7	27	2.0
21	†8	6.6	†8	4.2	2.6	6.4	19.5	40	8.2	5.2	33	3.3
22		7.4		8.1	2.6	6.1	32	24	20	5.2	12	11.5
23		10.5		7.2	2.7	5.7	30	14	27	5.4	12	22
24		38		6.1	5.0	47	18.5	29	12.5	30	6.4	12
25	†12	34	†12	6.9	3.8	30	27	25	15	14	4.7	7.9
26		30		7.4	3.3	18	13	25	10	36	4.7	6.4
27		25		4.7	3.2	32	11	27	8.3	14	5.7	6.7
28		25		5.0	3.0	46	25	29	9.2	9.4	26	6.1
29	†7	36	†7	11	3.2	37	30	22	-	6.7	22	6.1
30		40		11	4.7	40	15	15	-	7.4	22	7.1
31		40		-	3.8	-	39	16	-	11.5	-	-
31		40		-	3.8	-	39	16	-	11.5	-	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	40	-	25.5	39.5	790	2,420
August.....	27	-	12.5	19.3	368	1,190
September.....	46	4.7	13.0	20.1	369	1,190
October.....	8.1	2.8	4.11	6.36	127	391
November.....	47	2.6	11.2	17.3	334	1,030
December.....	39	5.6	14.4	22.3	445	1,370
Calendar year 1932	52	2.6	18.0	27.9	6,570	20,180
January.....	40	6.1	19.6	30.3	609	1,870
February.....	40	6.4	15.6	24.1	438	1,340
March.....	40	6.7	16.2	25.1	502	1,540
April.....	38	4.7	11.5	17.8	345	1,060
May.....	33	4.7	10.1	15.6	313	960
June.....	44	2.0	9.34	14.5	280	860
Fiscal year 1932-33	47	2.0	13.6	21.0	4,960	15,220

*Estimated.

Spreckels Ditch at Haipuaena, near Huelo

(Continued)

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	22	9.2	4.0	3.2	9.7	19.5	2.8	27	4.2	25	20	50
2	40	10.5	4.7	2.8	22	17	16	23	3.8	19	18	61
3	24	15.5	4.2	2.8	7.2	21	7.0	12	3.5	19	40	32
4	16	30	4.0	3.2	4.5	10.5	4.4	9.9	15.5	31	46	44
5	20	12.5	6.9	3.7	6.4	7.8	3.5	11.5	9.4	32	36	25
6	25	17.5	11.5	3.0	5.6	6.4	3.2	7.9	4.5	17	40	19.5
7	15	12	9.5	4.4	4.5	5.7	3.0	6.2	3.7	15.5	29	16
8	27	9.2	6.6	7.9	5.6	5.2	2.7	5.6	3.5	34	19	13.5
9	15	9.4	4.0	3.8	6.1	4.9	4.2	5.2	3.2	26	16	12
10	15	11.5	3.7	3.0	6.2	4.7	27	5.6	8.6	15	22	14.5
11	17	7.2	3.5	2.7	3.8	6.1	25	4.9	4.4	36	31	16
12	10.5	6.2	7.9	2.7	3.2	4.9	14	4.9	4.4	38	22	12
13	17.5	6.4	26	2.6	2.8	4.2	7.2	5.6	3.3	27	30	26
14	13.5	6.4	12	2.4	2.7	3.8	12.5	4.4	3.3	42	32	30
15	10.5	6.7	5.9	2.2	2.4	3.5	11.5	3.8	2.8	36	34	16
16	11	5.9	9.0	2.3	2.4	3.5	11	4.7	3.5	22	32	17
17	9.4	5.2	15.5	4.5	2.2	4.2	6.4	5.9	6.6	16	24	32
18	7.4	6.4	6.2	4.2	2.1	4.5	5.9	4.5	5.9	15	22	42
19	7.2	5.4	4.9	2.6	2.1	3.5	23	11	4.7	20	24	42
20	10.5	6.1	4.2	2.1	2.1	3.2	32	30	3.5	51	19.5	46
21	7.4	4.5	4.9	2.7	2.0	2.8	23	25	3.0	46	15	24
22	7.1	4.0	6.7	2.8	2.0	7.2	12.5	14	3.0	42	14	24
23	9.0	3.7	7.6	3.7	2.0	9.2	8.0	9.4	10	24	26	32
24	9.4	3.5	5.0	2.7	2.0	6.4	24	7.2	15	21	25	36
25	6.7	3.5	4.0	2.1	11	6.7	16	6.4	7.2	3.3	17.5	48
26	13.5	3.8	3.7	2.0	23	3.8	12	5.7	4.5	35	14	50
27	10.5	3.5	3.3	2.0	16	10.5	9.0	4.9	13	30	13	36
28	6.7	3.0	3.3	2.4	8.5	14.5	7.2	4.5	30	27	27	42
29	23	3.0	3.3	2.4	6.2	4.9	6.2	-	40	27	22	40
30	23	3.3	3.2	3.5	5.4	3.7	5.7	-	44	29	23	27
31	11	3.5	-	2.6	-	3.2	13	-	44	-	25	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	40	6.7	14.9	23.1	461	1,410
August.....	30	3.0	7.69	11.9	238	732
September.....	26	3.2	6.64	10.3	199	611
October.....	7.9	2.0	3.06	4.73	95.0	292
November.....	23	2.0	6.06	9.38	182	558
December.....	21	2.8	7.00	*10.8	217	666
Calendar year 1933	44	2.0	10.6	16.4	3,880	11,900
January.....	32	2.7	11.6	17.9	359	1,100
February.....	30	3.8	9.87	15.0	271	831
March.....	44	2.8	10.2	15.8	316	970
April.....	51	3.3	27.4	42.4	821	2,520
May.....	46	13	25.1	38.8	778	2,390
June.....	61	12	30.8	47.7	926	2,840
Fiscal year 1933-34.....	61	2.0	13.3	20.6	4,860	14,920

Puohokamoa Stream near Huelo

Location.- Water-stage recorder just above Spreckels Ditch inflow and trail crossing and 3 miles southeast of Kailua.

Drainage area.- 2.6 square miles.

Records available.- December 1910 to June 1934.

Average discharge.- 17 years (1917-34), 20.8 million gallons a day (32.2 second-feet).

Extremes.- Maximum discharge recorded during year, 742 million gallons a day (1,150 second-feet) Nov. 25 (gage height, 6.34 feet); minimum recorded, 1.0 million gallons a day (1.6 second-feet) Nov. 25.

1910-34: Maximum discharge, 1,100 million gallons a day (1,700 second-feet) Jan. 14, 1923, Nov. 18, 1930 (gage height, 7.88 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Nov. 17, 1929.

Remarks.- Records good for ordinary stages, poor for high stages and estimated periods. KULA pipe line diverts small amount of water above station at elevation 4,300 feet.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13	5.2	2.3	*1.7	25	133	1.8	86	3.1	}12	}10	56
2	33	5.6	2.6	*1.5	28	13.5	5.9	15.5	2.9			74
3	13.5	6.8	2.4	*1.4	3.6	12.5	3.6	7.6	2.8	105	}44	22
4	9.5	20	2.3	*1.5	2.4	6.6	2.6	6.6	7.7	40		78
5	10.5	7.1	2.8	*1.9	2.4	5.2	2.0	6.6	4.5	21	21	
6	15.5	8.6	5.2	*1.6	2.5	4.5	1.8	4.5	3.1	11	15	
7	8.8	6.6	3.8	*1.6	2.1	3.8	1.7	4.5	2.8	9.2	*100	11.5
8	15	4.8	3.2	2.9	2.1	3.6	1.6	4.2	2.6	82	10.5	
9	8.8	4.8	2.3	*1.9	2.1	3.6	1.7	3.9	2.4	16.5	9.7	
10	9.8	6.4	2.1	}	2.0	3.2	13.5	3.8	3.6	10	9.8	
11	10	4.5	2.0		1.8	3.6	12	3.6	3.0	*28	11.5	
12	6.6	3.4	}	*1.3	1.6	3.0	5.9	3.3	2.9	*27	8.2	
13	10.5	3.6		14.5	1.4	2.8	3.5	4.5	2.3	*15.5	21	
14	7.6	3.6	6.6	}	1.4	2.6	4.8	3.2	}1.9	*22	*34	23
15	6.1	3.8	3.3		1.3	2.4	6.0	2.9		*28	11	
16	6.1	3.6	4.3	}	*1.5	1.3	2.4	5.0	2.9	*14.5	10.5	
17	5.2	3.2	7.0		1.2	2.7	3.3	3.2	2.7	*10	28	
18	4.5	3.6	}	*1.8	1.2	2.6	3.1	2.7	*3.3	*8.8	*14	42
19	4.5	3.2		*1.4	1.2	2.2	12	25	2.2	*9.5	42	
20	5.2	3.3	*2.5	1.2	1.2	2.1	17.5	106	2.2	77	94	
21	4.5	2.8	}	1.1	1.2	1.9	11	20	1.9	*48	20	
22	4.2	2.5		1.5	1.2	3.6	6.1	6.2	1.8	*47	*11	17
23	4.8	2.3	3.6	1.9	1.2	4.4	30	5.6	4.2	*16	27	
24	4.8	2.3	2.6	1.6	1.1	3.6	18	4.6	7.2	*12	*15	30
25	4.2	2.2	2.1	1.3	148	3.6	8.2	4.2	3.8	*500	*12.5	60
26	6.5	2.2	1.9	1.1	122	2.3	6.1	3.8	2.6	*48	*9.5	112
27	5.6	2.1	1.8	1.1	8.9	3.9	4.6	3.6	12	*18.5	*10	38
28	4.2	1.9	*1.8	1.3	5.2	8.1	4.2	3.2	34		*13.5	43
29	16	1.9	*1.8	1.3	4.2	2.6	3.6	-	30	*18	*12	36
30	17	2.0	*1.8	1.5	3.6	2.1	3.3	-				20
31	7.1	2.1	-	1.4	-	1.8	59	-	*48	-	*30	-
Month		Million gallons a day			Second-feet (mean)	Total run-off						
		Maximum	Minimum	Mean		Million gallons	Acre-feet					
July.....		33	4.2	9.08	14.0	282	864					
August.....		20	1.9	4.40	6.81	136	419					
September.....		14.5	1.8	3.53	5.15	100	307					
October.....		2.9	-	1.49	2.31	46.3	142					
November.....		148	1.1	12.7	19.6	382	1,170					
December.....		133	1.8	8.19	12.7	254	779					
Calendar year 1933.....		-	-	11.3	17.5	4,100	12,600					
January.....		59	1.6	8.44	13.1	262	803					
February.....		106	2.7	12.6	19.5	354	1,090					
March.....		-	-	8.23	12.7	255	783					
April.....		-	6.8	43.4	67.1	1,300	4,000					
May.....		-	-	36.6	56.6	1,130	3,480					
June.....		112	8.2	33.4	51.7	1,000	3,070					
Fiscal year 1933-34.....		-	-	15.1	23.4	5,500	16,910					

*Estimated.

†Partly estimated.

West Branch of Puohokamoa Stream at Haiku-uka boundary, near Kailiili

Location.— Water-stage recorder at trail crossing 500 feet above Haiku-uka boundary and $\frac{3}{4}$ miles southeast of Kailiili.

Drainage area.— 0.5 square mile.

Records available.— March 1919 to July 1928, July 1932 to June 1934.

Average discharge.— 11 years (1919-28, 1932-34), 3.60 million gallons a day (5.57 second-feet).

Extremes.— Maximum discharge recorded during year, 184 million gallons a day (285 second-feet) May 31 (gage height, 6.77 feet); minimum unknown, owing to faulty gage-height record.

1919-28, 1932-34: Maximum discharge (estimated), 250 million gallons a day (387 second-feet) Mar. 22, 1920 (gage height, 8 feet, estimated from faulty recorder graph); minimum, 0.08 million gallons a day (0.12 second-foot) Dec. 22, 23, 1919.

Remarks.— Records good for ordinary stages, poor for high stages and estimated periods. Small amount of water diverted above station by Kula pipe line.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June						
1	1.7	0.70	*0.4	*0.2	*5	*35	*0.4	*18	*0.5	2.9	*2.0	14.5						
2	6.9	.70										1.9	1.85	.24				
3	2.2	.75						.60		*1.1		31	12	5.4				
4	1.55	2.3						.51				9.2	17	14.5				
5	1.4	.85						.33				5.1	40	4.2				
6	2.2	.95	*1.7	*1.4		.33	*.5	*0.4		1.95	32	2.8						
7	1.3	.90									1.35	32	2.8					
8	2.3	.70								*.2	15.5	42	2.6					
9	1.3	.70					*.3		*.3		2.9	22	2.4					
10	1.95	.90									1.3	21	2.2					
11	1.85	.65	*1.7	*1.2	*1.2	*1.2	*1.2	*1.2	*1.2	14.5	6.1	2.8						
12	1.05	.58													4.6	8.6	2.1	
13	1.2	.58													2.4	3.2	5.1	
14	1.15	.61													.27	7.5	3.8	
15	.95	.70										*.2			.27	6.4	6.2	
16	.90	.70	*1.5	*1.4	*1.4	*1.4	*1.4	*1.4	*1.4									
17	.85	.70													.37	2.2	4.6	2.4
18	.70											.37			.70	1.3	1.45	3.1
19	.70											.18			.55	1.05	1.08	12
20	.80														.51	2.0	1.65	7.9
21	.75		*1.7	*1.5	*1.5	*1.5	*1.5	*1.5	*1.5	12.5	1.45	26						
22	.70														.33	7.2	.54	4.8
23	.70														.30		.31	2.9
24	.70														.79	*6	1.75	*8.5
25	.65														1.25	.96		
26	1.05		*1.7	*1.5	*1.5	*1.5	*1.5	*1.5	*1.5									
27	.85														.60	*100	1.15	
28	.65														.40		.65	*19
29	2.3														2.7	*7	.54	
30	2.5														8.3		1.2	
31	.90		*1.7	*1.5	*1.5	*1.5	*1.5	*1.5	*1.5									
															6.4	*2.8	.80	*3.5
															10.5		.50	
															9.7		15.5	
Month		Million gallons a day			Second-foot (mean)	Total run-off												
		Maximum	Minimum	Mean		Million gallons	Acre-feet											
July.....		6.9	0.65	1.44	2.23	44.7	137											
August.....		2.3	-	.654	1.01	20.3	62											
September.....		-	.21	.422	.653	12.6	39											
October.....		-	-	.224	.547	6.95	21											
November.....		-	-	4.67	7.23	140	430											
December.....		-	-	1.65	2.55	51.2	157											
Calendar year 1933		-	-	2.53	3.91	922	2,830											
January.....		-	-	1.44	2.23	44.7	137											
February.....		-	-	3.74	5.79	105	321											
March.....		10.5	.27	1.62	2.51	50.1	154											
April.....		-	1.05	9.17	14.2	275	844											
May.....		42	.31	9.16	14.2	284	871											
June.....		26	-	7.99	12.4	240	736											
Fiscal year 1933-34		-	-	3.49	5.40	1,270	3,910											

*Estimated.

Middle Branch of Puohokamoa Stream at Haiku-uka boundary, near Kailiili

Location.- Water-stage recorder at trail crossing 200 feet above Haiku-uka boundary and 4.1 miles southeast of Kailiili.

Drainage area.- 0.6 square mile.

Records available.- March 1919 to February 1927, July 1932 to June 1934.

Extremes.- Maximum discharge recorded during year, 94 million gallons a day (145 second-foot) Dec. 1 (gage height, 6.95 feet); minimum, 0.17 million gallons a day (0.28 second-foot) Oct. 26, 27, Nov. 1, 18, 21, 22.

1919-27, 1932-34: Maximum discharge recorded, 207 million gallons a day (320 second-foot) Mar. 22, 1920 (gage height, 8.47 feet); minimum, 0.06 million gallons a day (0.09 second-foot) July 14, 1920.

Remarks.- Records good for ordinary stages, poor for high stages and estimated periods. No diversions above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		0.69		0.33	3.1	*40	0.24	*30	0.40	*2.5	1.85	*12
2	*4.7	.62		.28	5.1		.30	1.65	.43		1.65	
3		.65	*0.4	.24	.69	*1.0	.30	.69	.38	*12	6.2	*5
4		1.55		.28	.45		.28	.65	.50		6.4	
5		.78		.28	.43		.26	.65	.47		22	
6		.78		.24	.38	*.6	.24	.53	.40	*2.5	17.5	
7	*1.5	.88	*.6	.33	.38		.22	.47	.40		17.5	
8		.62		.65	.45		.20	.45	.35		21	*1.4
9		.59		.40	.59		.22	.43	.35	*5.5	14	
10		.78	*.3	.33	.45		.53	.43	.43		12.5	
11	2.2			.28	.35	*.4	.78	.43	.43	*7.5	4.9	
12	1.3	*.5		.24	.28		.53	.45	.35		7.0	
13	1.1		*1.0	.24	.26		.35	.50	.26		3.4	
14	1.0	.53		.24	.24		.60	.45			4.0	*3.8
15	.78	.59		.24	.22		.71	.38		*4.5	4.8	
16	.73	.59	*.5	.75	.20	*.3	.40	.43			3.3	*2.2
17	.69	.59		.73	.20		.30	.45		*1.8	2.2	
18	.65	.65		.56	.20		.30	.40	*.5		1.9	*8
19	.62	.59		.35	.19		.63	6.4				
20	.73	.56	*.3	.26	.20	.28	1.0	14.5				
21	.69	.45		.22	.17	.26	.78	2.0	*.3	*6.5		*3.3
22	.62			.35		1.2	.50	1.1				
23	.59	*.3	*.4	.40	*.17	.90	4.7	.69				
24	.62			.30		1.15	1.75	.59	*.6	*120	*1.7	*12
25	.56			.22	*44	.78	.65	.53				
26	.83	*.4	.28	.20		.35	.53	.47				
27	.78		.19	.19		.79	.43	.45	*5.5	*3.5		*3.3
28	.56		.28	.20	*.7	.68	.38	.45				
29	1.4	*.3	.33	.20		.35	.35	-				
30	2.5		.53	.20		.28	.30	-	*9.5			
31	1.05		-	.19	-	.26	*15	-		-	*10	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	-	0.56	1.44	2.23	44.6	137
August.....	1.55	-	.555	.859	17.2	53
September.....	-	-	.446	.690	13.4	41
October.....	.75	.19	.320	.495	9.92	30
November.....	-	.17	.353	5.46	106	325
December.....	-	-	1.83	2.83	56.6	174
Calendar year 1933	-	.17	1.74	2.69	636	1,950
January.....	-	.20	1.09	1.69	33.7	103
February.....	-	.38	2.38	3.68	66.6	204
March.....	-	-	1.49	2.31	46.0	141
April.....	-	-	8.71	13.5	261	802
May.....	22	-	8.65	9.21	184	566
June.....	-	-	4.75	7.35	142	437
Fiscal year 1933-34	-	.17	2.69	4.16	981	3,010

*Estimated.

Manuel Luis Ditch west of Puohokamoa Stream, near Huelo

Location.- Water-stage recorder 500 feet below intake in Puohokamoa Stream at lower portal of intake tunnel and 3 miles southeast of Kailua.

Records available.- February 1930 to June 1934.

Extremes.- Maximum discharge during year, 58 million gallons a day (90 second-feet) Apr. 25 (gage height, 4.17 feet); minimum, 0.2 million gallons a day (0.3 second-foot) Oct. 27.

1930-34: Maximum discharge, 62 million gallons a day (127 second-feet) Nov. 18, 1930 (gage height, 5.80 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Feb. 13, 1931.

Remarks.- Records fair except those for high and low stages and estimated periods, which are poor. Manuel Luis Ditch is an extension of Center Ditch and picks up water at elevation of 500 feet between Kolea and Waikamoi Streams. Regulated by gates.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	0.9	0.6	0.4	0.3	5.0	27	0.3	34	0.7	2.3	1.9	29	
2	13	.9	.4	.3	16	10.5	1.1	4.8	.6	.9	1.5	28	
3	.9	.7	.3	.3	.5	3.5	.6	1.6	.6	} *10	18.5	6.3	
4	1.0	6.1	.3	.3	.3	1.4	.4	1.4	.8		25	24	
5	1.1	.8	.3	.3	.4	1.1	.3	1.3	.8		156	3.3	
6	1.2	1.2	.5	.3	.6	.9	.3	1.1	.6	} *3.5	} *36	2.2	
7	.8	.8	.5	.3	.4	.8	.3	1.0	.6			1.4	1.8
8	2.1	.7	.3	.3	.5	.8	.3	.9	.6			} *40	1.5
9	.9	.8	.3	.3	.4	.7	.2	.9	.6	1.5			
10	.9	.9	.3	.3	.3	.6	.7	.8	.6	*10	41		1.3
11	.8	.7	.3	.3	.3	.8	2.5	.8	.5	} *3.2	32	} 1.2	
12	.7	.6	.6	.3	.3	.6	.9	.7	.4		36		
13	.8	.6	.9	.3	.3	.5	.6	.8	.4		*7		10
14	.6	.6	.6	.3	.2	.5	.8	.6	.4	} *1.4	9.8	} *2.8	
15	.6	.7	.4	.3	.2	.5	.6	.6	.4		19.5		
16	.6	.6	.5	.2	.2	.5	.5	.7	.4		7.5		
17	.6	.5	.5	.2	.2	.5	.5	.6	.4	} *1.4	2.6	} *22	
18	.5	.6	.5	.2	.2	.4	.4	.5	.4		4.8		
19	.5	.6	.3	.2	.2	.4	2.3	6.7	.3		2.2		
20	.6	.4	.3	.2	.2	.3	6.5	35	.3	*24	1.5		
21	.4	.4	.5	.2	.2	.3	1.2	10		} *4	1.4	} *6.5	
22	.4	.4	.5	.3	.2	.4	.9	1.1					
23	.7	.4	.6	.3	.2	.4	9.5	.9					
24	.7	.4	.5	.2	.2	.3	6.7	.8			*7		1.7
25	.5	.4	.3	.2	11	.3	2.8	.8					1.2
26	.5	.3	.3	.2	27	.3	1.6	.8		*12	1.1	*30	
27	.5	.3	.3	.2	.6	.5	1.4	.7		} *15	1.0	} *8.5	
28	.4	.3	.3	.2	.3	.7	1.2	.7			3.6		
29	7.7	.3	.3	.2	.3	.3	1.0	-			9.5		1.2
30	3.4	.3	.3	.3	.3	.3	.9	-			4.1		6.5
31	.7	.3	-	.2	-	.3	11	-	16.5		-		17.5	2.4
Month				Million gallons a day			Second-foot (mean)	Total run-off					
				Maximum	Minimum	Mean		Million gallons	Acre-feet				
July.....				13	0.4	1.45	2.24	45.0	138				
August.....				6.1	.3	.75	1.16	23.1	71				
September.....				.9	.3	.41	.63	12.2	37				
October.....				.3	.2	.26	.40	8.0	25				
November.....				27	.2	2.23	3.45	67.0	206				
December.....				27	.3	1.82	2.82	56.4	173				
Calendar year 1933				41	.2	2.80	4.33	1,020	3,140				
January.....				11	.2	1.88	2.91	58.3	179				
February.....				35	.5	3.95	6.11	111	339				
March.....				-	.3	2.88	4.46	89.4	274				
April.....				-	.9	7.35	11.3	220	675				
May.....				-	1.0	14.2	22.0	439	1,350				
June.....				-	-	10.5	16.2	316	970				
Fiscal year 1933-34				-	.2	3.96	6.13	1,450	4,440				

*Estimated.

†Partly estimated.

Spreckels Ditch at Wahinepee, near Huelo

Location.- Water-stage recorder between Puohokamoa and Alo Streams 700 feet below intake at Puohokamoa Gulch, 2½ miles west of Keanae, and 3½ miles southeast of Kailua.

Records available.- May to June 1934. August 1928 to May 1934 at station 300 feet below.

Extremes.- Maximum discharge during year, 66 million gallons a day (102 second-feet) June 20; maximum gage height, 3.78 feet Apr. 25; no flow at times, owing to regulation.

1928-34: Maximum discharge, 69 million gallons a day (107 second-feet) Dec. 7, 1929 (gage height, 5.05 feet); no flow at times, owing to regulation.

Remarks.- Records good except those for estimated periods, which are poor. Intake is on Puohokamoa Stream just below intake of Koolau Ditch and for normal flow takes all water that passes Koolau Ditch intake.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.5	0.1	0		5.5	19.5	0	35	0.1	15	*0.1	*5
2	15.5				9.2	6.8	0.2	2.7		.7		
3	.2	.1	0.1		0	.5	0	.1	0	18.5		
4	.2	7.3	0		0	.1	0	.1	.1	28	*22	*3.2
5	.3	.1	0		.1	.1	0	.1	.1	6.3		
6	.4	.2	.1		.1	.1	0	.1	4.9	.1	*28	
7	.2	.1	.1		.1	.1	0	.1	4.2	.1		
8	2.3	.1	0		.1	.1	0	.1	0	30		
9	.2	.1	0		.1	0	0	.1	0	.9		*.1
10	.1	.1	0		.1	0	.3	.1	.1	.1	*0	
11	.1	0	0		.1	0	4.6	.1	0	24		
12	.1	0	.1		0	0	.1	.1	0	11.5		
13	.2	0	1.7		0	0	.1	.1	0	.1	*7	*.8
14	.1	0	0		0	0	.1	0	0	22		
15	.1	0	0		0	0	.1	0	0	3.8		*.1
16	0	0	0		0	0	0	0	0	.1	*2.8	†.1
17	0	0	.1		0	0	0	0	0	.1		10
18	0	0	0		0	0	0	0	0	.1		23
19	0	0	0		0	0	3.8	8.9	0	.1		19.5
20		0	0		0	0	10	32	0	34		38
21	*.1	0	.1		0	0	.1	7.1	0	34		.7
22	.1	0	.1		0	0	.1	.1	0	24		.7
23	.1	0	.1		0	0	10	.1	.1	.4		5.0
24	.1	0	.1		0	0	5.0	.1	.1	7.2	*.1	6.6
25	.1	0	.9		9.5	0	.2	.1	0	37.2		28
26	.1	0	0		17	0	.1	.1	0	22		40
27	4.9	0	0		.1	.1	.1	.1	6.2			10.5
28	.1	0	0		.1	.1	.1	.1	22	*6		9.4
29	6.6	0	0		0	0	.1	-	22			18.5
30	4.8	0	0		0	0	.1	-	28		*2.2	2.2
31	.1	0	-		-	0	12	-	26	-		-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July 1-15, 20-31.....	15.5	0.1	1.40	2.17	37.7	116
August 1-10.....	7.3	.1	.83	1.28	8.3	25
September 2,6-7,12-13,17,21-25.....	1.7	.1	.32	.50	3.5	11
October.....	0	0	0	0	0	0
November 1-2, 5-11, 25-27.....	17	.1	3.50	5.42	42.0	129
December 1-8, 27-28.....	19.5	.1	2.75	4.25	27.5	84
Calendar year 1933	32	.1	2.63	4.07	612	1,880
January 2, 10-15, 19-31.....	12	.1	2.36	3.65	47.2	145
February 1-13, 19-28.....	35	.1	3.80	5.88	87.5	269
March 1, 4-7, 10, 23-24, 27-31.....	28	.1	8.76	13.6	114	350
April.....	37	.1	11.5	17.8	344	1,060
May 1-8, 12-31.....	-	-	7.08	11.0	198	608
June.....	40	.1	7.71	11.9	231	710
Fiscal year 1933-34 (214 days)	40	.1	5.33	8.25	1,140	3,510

*Estimated.

†Partly estimated.

Note.- No flow during October.

Waikamoi Stream above Wailoa Ditch, near Huelo

Location.- Water-stage recorder 500 feet above intake of Wailoa Ditch, a quarter of a mile above Spreckels Ditch trail, and $2\frac{1}{4}$ miles southeast of Kailua.

Drainage area.- 4.4 square miles.

Records available.- January 1922 to June 1934.

Average discharge.- 12 years (1922-34), 14.9 million gallons a day (23.1 second-feet).

Extremes.- Maximum discharge during year, 1,760 million gallons a day (2,720 second-feet) Apr. 25 (gage height, 7.55 feet); minimum recorded, 0.5 million gallons a day (0.8 second-foot) Nov. 1.

1922-34: Maximum discharge, 4,660 million gallons a day (7,210 second-feet) Oct. 16, 1924 (gage height, 10.45 feet); minimum, 0.4 million gallons a day (0.6 second-foot) Nov. 16, 1929.

Remarks.- Records good for ordinary stages and poor for high stages and estimated periods. Haleakala ranch and Kula pipe lines divert small amounts of water above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.5	2.9		0.9	6.8	*60	0.9	74	1.5	14.5	7.6	34
2	27	2.9		.8	11	11	3.0	14	1.4	8.6	6.4	57
3	9.2	*10	*1.1	.8	*4.2	6.9	1.9	5.2	1.3	88	31	14.6
4	6.2			.8		3.4	1.4	3.5	3.4	44	40	45
5	5.9			1.0	*1.7	2.6	1.1	4.3	2.5	23	104	12.5
6	8.6	*8	3.0	.9		2.2	.9	3.0	1.6	10.5	86	8.4
7	5.1		2.3	.8		1.8	.9	2.3	1.4	7.0	94	6.2
8	9.2		1.7	1.7		1.6	.8	1.9	1.3	61	104	4.0
9	5.3		1.2	1.3		1.6	.8	1.8	1.2	16	75	4.2
10	5.8	*3.2	1.1	.9	*1.2	1.4	6.1	1.9	1.6	6.8	65	4.2
11	6.9		1.0	.8		1.8	7.6	1.6	1.6	52	22	5.6
12	3.8		1.8	.8		1.6	3.9	1.6	1.4	21	28	4.2
13	5.2		8.8	.8		1.3	2.2	2.9	1.2	11.5	14.5	14.5
14	4.3	*2.3	4.4	.7		1.2	2.5	1.8	1.1	28	19.5	14
15	3.5		1.9	.7		1.1	3.8	1.4	1.0	30	28	6.6
16	3.2		2.1	.6		1.1	2.5	1.4	1.2	13	16	5.3
17	2.7		4.1	1.2		1.3	1.9	1.4	1.8	7.1	9.2	13.5
18	2.3		1.9	1.4		1.2	1.7	1.3	1.7	5.6	7.6	33
19	2.2	*1.6	1.3	.9	*.7	1.1	5.8	14	1.5	6.4	11.5	26
20	2.8		1.1	.7		1.0	9.6	90	1.2	49	11.5	70
21	2.2		1.3	.6		.9	5.2	14.5	1.0	37	6.2	12
22	2.1		1.6	.8		2.4	3.2	6.2	1.0	36	5.0	9.0
23	2.5		1.9	1.6		4.0	17	3.4	1.8	13	9.2	15
24	2.4		1.4	1.1		3.5	11	2.4	5.8	25	7.6	22
25	2.0	*1.1	1.1	.8		3.8	5.3	2.1	3.0	603	8.3	44
26	3.1		1.0	.6		1.5	3.5	1.8	1.6	58	5.8	94
27	2.9		.9	.6		1.8	2.5	1.7	4.8	21	4.6	25
28	1.9		.8	.6		4.3	2.1	1.6	28	12	†7.3	22
29	8.4	*.8	.9	.6	*2.2	1.5	1.9	-	21	15	7.3	20
30	15		1.0	.6		1.1	1.7	-	39	13	6.2	11.5
31	3.7		-	.6	-	1.0	34	-	36	-	36	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	27	1.9	5.60	8.66	174	533
August.....	-	-	2.77	4.29	85.9	264
September.....	8.8	-	1.84	2.35	55.1	169
October.....	1.7	.5	.87	1.35	26.9	83
November.....	-	-	2.96	4.58	88.7	272
December.....	-	.9	4.22	6.53	131	401
Calendar year 1933	352	-	7.30	11.3	2,660	8,170
January.....	34	.8	4.73	7.32	147	450
February.....	90	1.3	9.39	14.5	263	807
March.....	39	1.0	5.61	8.66	174	534
April.....	603	5.6	44.5	68.9	1,340	4,100
May.....	104	4.6	28.4	43.9	880	2,700
June.....	94	4.2	21.9	33.9	658	2,020
Fiscal year 1933-34	603	.5	11.0	17.0	4,020	12,330

*Estimated.

†Partly estimated.

West Branch of Waikamoi Stream at Haiku-uka boundary, near Kailiili

Location.- Water-stage recorder at Haiku-uka boundary trail and $3\frac{1}{4}$ miles southeast of Kailiili. Elevation 3,000 feet.

Drainage area.- 3.5 square miles.

Records available.- May 1918 to June 1928, July 1932 to June 1934.

Average discharge.- 10 years (1920-28, 1932-34), 8.15 million gallons a day (12.6 second-feet).

Extremes.- Maximum discharge recorded during year, 347 million gallons a day (537 second-feet) Dec. 1 (gage height, 3.73 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Nov. 18-25.

1918-28, 1932-34: Maximum discharge, about 2,020 million gallons a day (3,130 second-feet) Dec. 8, 1918 (gage height, 3.85 feet); minimum, that of Nov. 18-25, 1933.

Remarks.- Records good for ordinary stages, poor for high stages and estimated periods. At 5,300-foot elevation Haleakala ranch diverts a small amount of water.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	*8	0.8	0.4	0.4	5.9	61	0.2	47	0.4	6.9	*2.5	21
2		.7	.5	.3	8.5	4.3	.4	6.6	.4	†4.0	2.2	38
3		.8	.4	.2	.6	1.2	.3	2.0	.4		14	8.3
4		1.8	.4	.2	.4	1.0	.2	1.3	.6	*34	21	21
5	*3.3	1.0	.6	.3	.4	.7	.2	1.8	.6		81	6.3
6		1.0		.2	.4	.6	.2	1.2	.4	*4.2	67	4.0
7		1.0	*1.2	.3	.4	.5	.2	.7	.4		73	2.6
8		.7		.8	.4	.4	.2	.6	.3	*20	68	1.8
9	*2.3	.7		.5	.3	.4	*2	.6	.2		36	1.5
10		1.0	*.4	.3	.2	.5	*2.0	.6	.4	*4.5	34	1.5
11	2.4	.6		.2	.2	.6	2.4	.6	.4	*15	9.8	2.5
12	1.3	.6		.2	.2	.6	1.0	.6	.4		14	6.4
13	1.3	.6	*1.9	.2	.2	.4	.6	1.0	.2		7.0	8.2
14	1.2	.6		.2	.2	.4	.8	.6	.3	*10	9.7	2.8
15	1.1	.6		.2	.2	.3	1.1	.4	.2		14.5	1.9
16	1.0	.6	*.8	.2	.2	.3	.6	.4	.4		7.6	5.0
17	.9	.6		.8	.2	.4	.5	.4	.6	*4.6	3.8	
18	.8	.6		.6	.2	.4	.4	.6	.6		2.8	
19	.7	.6		.3	.2	.3	1.0	15	.5		9.2	*10
20	.9	.5	*.3	.2	.2	.2	1.5	59	.4		7.3	
21	.8	.4		.2	.2	.2	1.2	5	.2	*18	3.0	*22
22	.7	.3		.5	.1	2.0	.7	2.6	.2		2.0	
23	.7	.2	*.5	.6	.1	1.7	7.7	1.1	.7	*8	3.5	*3.5
24	.7	.2		.4	.1	3.0	3.8	.7	1.8		2.4	
25	.7	.2		.2	48	1.8	1.5	.6	1.8		5.4	*18
26	1.0	.2	†.3	.2	101	.6	.8	.6	.6	*140	2.6	
27	.9	.2	.2	.2	3.4	.6	.6	.5	3.2		2.2	
28	.6	.2	.2	.2	1.0	1.2	.6	.4	12	*7	2.3	*5
29	2.4	.2	.4	.2	.6	.6	.6	-	9.1		3.6	
30	3.2	.3	.4	.2	.6	.4	.4	-	31		2.8	
31	1.1	.3	-	.2	-	.3	22	-	25	-	22	-
Month							Million gallons a day			Second-feet (mean)	Total run-off	
							Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....				-		0.6	2.18	3.37	67.5		207	
August.....				-	1.8	.2	.58	.90	18.1		56	
September.....				-		.2	.65	1.01	19.6		60	
October.....					.8	.2	.51	.48	9.7		30	
November.....				101		.1	5.82	9.00	175		536	
December.....				61		.2	2.80	4.33	86.9		287	
Calendar year 1933				-		.1	3.90	6.03	1,430		4,380	
January.....				22		.2	1.74	2.69	53.9		165	
February.....				59		.4	5.44	8.42	152		467	
March.....				31		.2	3.02	4.67	93.7		288	
April.....				-		-	20.2	31.3	607		1,860	
May.....				81		2.0	17.3	26.8	536		1,650	
June.....				38		1.5	9.59	14.8	288		883	
Fiscal year 1933-34				-		.1	5.77	8.93	2,110		6,470	

*Estimated.

†Partly estimated.

Alo Stream near Huelo

Location.- Water-stage recorder just above Spreckels Ditch inflow and trail crossing and 2½ miles southeast of Kailua.

Drainage area.- 0.2 square mile.

Records available.- December 1910 to June 1934.

Average discharge.- 23 years (1911-34), 5.05 million gallons a day (7.81 second-feet).

Extremes.- Maximum discharge during year, 322 million gallons a day (498 second-feet) Apr. 25 (gage height, 3.57 feet); minimum not determined, owing to missing gage-height record.

1910-34: Maximum discharge, 1,600 million gallons a day (2,480 second-feet) Nov. 18, 1930 (gage height, 6.90 feet); minimum, 0.2 million gallons a day (0.3 second-foot) Nov. 22-23, 1932.

Remarks.- Records good for ordinary stages, fair for estimated periods, and poor for high stages. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.8	1.7	0.6	0.5	*7	*30	0.4	15.5	0.6	2.5	3.5	8.3
2	7.6	2.4	.6	.5		3.1	4.8	3.0	.6	1.9	2.5	7.3
3	3.0	2.6	.5	.5		7.0	1.7	1.9	.5	21	8.6	5.8
4	2.4	6.8	.4	.6	*8	2.1	.8	1.6	2.2	6.8	8.4	18.5
5	3.6	2.1	.9	.6		1.4	.6	1.7	1.7	3.5	14.5	4.4
6	4.7	3.8	2.0	.5		1.1	.5	1.2	.7	2.2	8.4	2.8
7	2.4	2.0	1.5	.6	*5	1.0	.5	1.0	.6	2.0	19	2.3
8	5.2	1.7	.6	.6		.8	.4	1.0	.5	18.5	21	1.9
9	2.4	1.9	.5	.5		.8	.4	.8	.5	3.5	34	1.6
10	2.3	2.4	.5	.5	*4	.7	5.5	1.0	.8	2.2	26	1.6
11	2.2	1.4	.5	.4		.8	5.9	.8	.6	9.2	9.6	1.7
12	1.5	1.2	1.6	.5		.6	2.8	1.0	.5	5.8	11	1.5
13	2.2	1.0	4.2	.5	*3	.6	1.4	.9	.5	2.9	4.7	4.0
14	1.9	1.0	1.3	.4		.5	2.7	.6	.5	12	7.2	4.7
15	1.6	1.4	.8	.4		.5	1.4	.6	.4	6.0	9.4	2.0
16	1.6	.9	1.4	.4	*2	.5	1.4	.6	.5	3.1	4.0	2.1
17	1.5	.8	2.1	.4		.5	1.1	.6	.5	2.3	3.0	4.9
18	1.1	1.1	.8	.4		.5	1.1	.5	.5	1.9		6.2
19	1.2	.8	.7	.4	*5	.4	6.3	1.2	.5	2.2	*3.3	8.6
20	2.0	.7	.4	.4		.4	8.0	14	.4	13		9.8
21	1.0	.6	.8	.4		.4	4.1	4.2	.4	20	*1.8	3.0
22	1.0	.6	1.4	.5	*2	.6	2.2	1.4	.4	11		4.3
23	2.0	.6	1.4	.4		.5	7.9	1.0	1.5	3.6	*4.8	3.1
24	1.8	.6	1.0	.4		.4	4.1	.9	1.6	18		3.0
25	1.0	.5	.7		*16	.4	3.5	.8	.6	85		5.1
26	1.8	.5	.6			.4	2.3	.8	.5	10	*1.9	14
27	1.4	.5	.6			1.4	1.7	.7	5.1	6.3		5.0
28	1.0	.4	.6		*7	1.5	1.4	.7	6.7	4.7	*4.0	7.2
29	7.2	.4	.6			.5	1.2	-	8.3	4.0	2.0	6.3
30	4.0	.5	.6			.4	1.1	-	3.1	4.0	3.0	3.4
31	1.8	.5	-		*5	.4	7.3	-	3.9	-	7.1	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	7.6	1.0	2.52	3.90	78.2	240
August.....	6.8	.4	1.41	2.18	45.6	134
September.....	4.2	.4	1.01	1.56	30.4	93
October.....	-	-	.46	.71	14.4	44
November.....	-	-	1.94	3.00	58.2	179
December.....	-	.4	1.94	3.00	60.2	185
Calendar year 1933.....	25	-	2.07	3.20	757	2,320
January.....	8.0	.4	2.73	4.22	84.5	259
February.....	16.5	.5	2.14	3.31	60.0	184
March.....	8.3	.4	1.47	2.27	45.7	140
April.....	85	1.9	9.64	14.9	289	887
May.....	34	-	7.73	12.0	240	736
June.....	18.5	1.5	5.15	7.97	154	474
Fiscal year 1933-34.....	65	-	3.17	4.90	1,160	3,560

*Estimated.

Kaaiea Stream near Huelo

Location.- Water-stage recorder 700 feet above Hamakua Ditch trail crossing, 2 miles southeast of Kailua, and $3\frac{1}{4}$ miles southeast of Huelo.

Drainage area.- 0.5 square mile.

Records available.- December 1921 to June 1934.

Average discharge.- 12 years (1922-34), 4.78 million gallons a day (7.40 second-feet).

Extremes.- Maximum discharge during year, 340 million gallons a day (526 second-feet) Apr. 25 (gage height, 3.50 feet); minimum, 0.3 million gallons a day (0.5 second-foot) Oct. 26.

1921-34: Maximum discharge, 2,300 million gallons a day (3,560 second-feet) Nov. 18, 1930 (gage height, 7.93 feet); minimum, 0.3 million gallons a day (0.5 second-foot) July 17, 1922, Mar. 22, 1927, Nov. 16, 1929, Oct. 26, 1933.

Remarks.- Records good for ordinary stages, poor for high stages. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.4	1.9	0.8	1.0	8.3	32	0.5	19	0.8	2.2	3.7	8.6
2	9.5	2.4	.9	.9	6.8	3.0	4.9	3.5	.8	1.9	2.8	9.4
3	5.5	3.4	.8	.9	1.0	6.8	2.4	2.1	.7	2.3	11	6.2
4	2.6	9.5	.7	.9	.8	2.1	1.2	1.8	2.9	7.3	11	23
5	3.9	2.4	1.2	1.0	.8	1.4	.8	1.8	1.9	3.9	18	5.0
6	5.3	4.2	2.8	.8	.9	1.2	.7	1.3	1.0	2.2	11	3.2
7	2.6	2.4	1.7	.8	.7	1.0	.6	1.1	.8	1.9	24	2.4
8	6.0	1.9	.9	.9	.7	.9	.6	1.0	.8	22	27	2.1
9	2.6	2.1	.7	.6	.6	.9	.6	.9	.8	4.2	34	1.8
10	2.6	2.9	.7	.5	.6	.8	6.9	.9	1.1	2.4	27	1.8
11	2.6	1.6	.8	.5	.6	.9	6.3	.8	.9	11	8.9	2.1
12	1.9	1.5	1.8	.5	.5	.8	2.8	.8	.8	6.5	11	1.9
13	3.1	1.3	5.9	.5	.4	.8	1.5	1.1	.7	3.0	4.8	4.3
14	2.4	1.3	1.9	.5	.4	.8	2.2	.7	.7	15	7.7	5.1
15	1.9	1.6	1.2	.4	.4	.7	1.5	.6	.6	6.2	*9.9	2.4
16	1.9	1.2	1.9	.4	.4	.8	1.6	.7	.8	3.0	4.5	2.3
17	1.8	1.1	3.3	.4	.4	.8	1.2	.6	.8	2.1	3.2	6.6
18	1.4	1.3	1.3	.4	.4	.6	1.1	.6	.8	1.9	3.0	8.6
19	1.4	1.0	1.1	.3	.3	.5	6.3	1.2	.7	2.1	4.9	11.5
20	1.9	.9	.9	*.4	.4	.5	8.2	16	.6	17.5	2.8	15
21	1.3	.9	1.2	.4	.4	.5	3.0	4.3	.5	20	2.1	3.9
22	1.2	.8	1.7	.3	.3	.7	1.9	1.4	.5	11.5	1.9	5.2
23	1.9	.8	1.9	.4	.3	.7	6.9	1.0	1.6	3.9	5.0	4.5
24	1.8	.8	1.4	.4	.3	.6	4.3	.8	2.1	30	4.8	4.2
25	1.3	.7	1.2	.4	17.5	.6	3.7	.8	.9	105	2.4	7.5
26	1.9	.7	1.1	.3	18	.8	2.2	.8	.7	10.5	2.1	19
27	1.6	.6	1.0	.4	1.2	1.1	1.8	.8	5.7	6.5	1.8	6.2
28	1.2	.6	1.0	.4	.8	2.0	1.5	.8	8.0	4.6	4.1	11.5
29	8.9	.6	1.0	.5	.7	.7	1.4	-	7.6	4.7	2.1	8.5
30	4.9	.7	1.0	.7	.7	.5	1.2	-	3.0	4.5	2.4	4.5
31	2.1	.7	-	.6	-	.5	10.5	-	5.0	-	7.1	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	9.5	1.2	2.94	4.55	91.1	280
August.....	9.5	.6	1.73	2.69	53.7	165
September.....	5.9	.7	1.46	2.26	43.8	134
October.....	1.0	.3	.57	.88	17.6	54
November.....	18	.3	2.19	3.39	65.6	201
December.....	32	.5	2.13	3.30	66.0	203
Calendar year 1933	41	.3	2.46	3.81	898	2,760
January.....	10.5	.5	2.91	4.50	90.3	277
February.....	19	.6	2.40	3.71	67.2	206
March.....	8.0	.5	1.76	2.72	54.6	168
April.....	105	1.9	11.3	17.5	338	1,040
May.....	34	1.8	8.58	13.3	266	816
June.....	25	1.8	6.61	10.2	199	609
Fiscal year 1933-34	105	.3	3.71	5.74	1,350	4,150

*Partly estimated.

†Estimated.

Oopuola Stream near Huelo

Location.- Water-stage recorder between Kaaiea and Naillilihaale Streams, 100 feet above Wailoa Ditch intake, 300 feet above ditch trail, and 4 miles southeast of Huelo.

Drainage area.- 0.2 square mile.

Records available.- August 1930 to June 1934.

Extremes.- Maximum discharge during year unknown but above limit of rating table Apr. 25 (gage height, 4.28 feet); minimum, 0.12 million gallons a day (0.19 second-foot) Oct. 27-28, 1930-34: Maximum discharge unknown but above limit of rating table Jan. 18, 1932 (gage height, 5.12 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Mar. 28, 29, 1931.

Remarks.- Records good. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.2	0.56	0.23	0.18	2.5	12	0.17	6.3	0.20	0.74	1.05	2.6
2	2.8	.97	.26	.18	2.5	1.05	.26	.98	.20	.56	.86	*1.85
3	.98	.77	.20	.18	.29	3.8	.69	.63	.20	9.9	2.5	†.98
4	.80	2.2	.20	.18	.23	.74	.35	.62	.73	2.3	2.8	†7.6
5	1.25	.62	.28	.18	.23	.47	.26	.56	.56	1.1	6.4	†1.8
6	1.5	1.45	.68	.17	.26	.38	.20	.47	.29	.68	3.7	†1.05
7	.77	.68	.63	.20	.20	*.35	.20	.41	.23	.50	8.9	*.74
8	2.1	.50	.32	.23	.20	.32	.18	.35	.20	7.9	10	.62
9	.80	.57	.23	.18	.18	.29	.23	.36	.20	1.25	17.5	.56
10	.74	.29	.23	.18	.20	.26	2.2	.29	.23	.74	11.5	.50
11	.68	.47	.23	.17	.20	.29	2.5	.26	.18	2.5	3.7	.50
12	.47	.44	.79	.18	.18	.23	.98	.26	.18	1.9	4.0	.62
13	.56	.41	1.7	.17	.17	.20	.50	.26	.17	.86	1.45	1.35
14	.50	.38	.56	.17	.17	.20	.80	.23	.17	6.9	7.9	*1.45
15	.44	.65	.32	.17	.17	.20	.50	.20	.18	2.3	3.7	.68
16	.41	.41	.50	.17	.16	.20	.41	.23	.20	.98	1.1	.68
17	.41	.32	.77	.16	.14	.20	.38	.20	.17	.68	.86	1.5
18	.35	.44	.35	.16	.14	.18	.35	.20	.18	.62	.80	2.0
19	.32	.32	.26	.18	.14	.18	2.0	.25	.17	.68	1.45	3.7
20	.62	.29	.23	.14	.14	.17	2.7	5.2	.18	5.0	.74	3.4
21	.32	.29	.38	.14	.14	.17	.80	1.5	.14	10.5	.56	.98
22	.29	.26	.50	.18	.14	.23	.47	.44	.14	5.5	.47	1.85
23	.74	.26	.58	.17	.14	.20	2.9	.35	.77	1.45	1.4	.92
24	.62	.23	.54	.16	.12	.18	1.45	.29	.64	7.5	1.75	.80
25	.38	.20	.32	.14	2.4	.18	1.45	.29	.26	40	.74	1.85
26	.41	.20	.29	.14	3.2	.17	.74	.26	.18	4.6	.62	6.4
27	.44	.20	.26	.12	.32	.49	.50	.23	3.3	1.9	.56	*1.9
28	.32	.20	.23	.14	.23	.50	.44	.20	2.6	1.35	1.9	*2.0
29	3.9	.18	.20	.16	.20	.20	.41	-	3.2	1.05	.68	2.2
30	1.55	.18	.20	.20	.17	.17	.38	-	1.05	1.1	.93	.98
31	.56	.20	-	.17	-	.17	2.6	-	1.8	-	2.3	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	3.9	0.29	0.878	1.36	27.2	84
August.....	2.2	.18	.508	.786	15.7	48
September.....	1.7	.20	.416	.644	12.5	38
October.....	.23	.12	.169	.261	5.23	16
November.....	3.2	.12	.515	.797	15.5	47
December.....	12	.17	.786	1.22	24.4	75
Calendar year 1933	12	.12	.774	1.20	283	868
January.....	2.9	.17	.903	1.40	28.0	86
February.....	6.3	.20	.777	1.20	21.8	67
March.....	3.3	.14	.608	.941	18.9	58
April.....	40	.50	4.10	6.34	123	378
May.....	17.5	.47	3.31	5.12	103	315
June.....	7.6	.50	1.80	2.79	54.1	166
Fiscal year 1933-34	40	.12	1.23	1.90	449	1,380

*Partly estimated.

†Estimated.

Naililihaele Stream near Huelo

Location.- Water-stage recorder 200 feet above Wailoa Ditch intake, 700 feet above New Hamakua Ditch trail, and $1\frac{1}{2}$ miles south of Kailua.

Drainage area.- 2.8 square miles.

Records available.- October 1913 to June 1918, August 1919 to June 1934.

Average discharge.- 13 years (1920-24, 1925-34), 19.8 million gallons a day (30.6 second-feet).

Extremes.- Maximum discharge during year, 560 million gallons a day (866 second-feet) Apr. 25 (gage height, 6.45 feet); minimum, 1.4 million gallons a day (2.2 second-feet) Nov. 25.

1913-18, 1919-34: Maximum discharge, 1,800 million gallons a day (2,790 second-feet) May 1, 1916; maximum gage height, 10.74 feet Nov. 18, 1930; minimum, 0.45 million gallons a day (0.70 second-foot) July 14, 1920.

Remarks.- Records good for ordinary stages, poor for high stages and estimated periods. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	19	8.4	3.1	2.3	29	100	2.7	67	4.9	12.5	17	35
2	32	9.2	3.0	2.2	23	12	14	15.5	4.7	10	15	46
3	15.5	11	2.8	2.1	4.7	18	7.8	10.5	4.7	77	44	22
4	12.5	29	2.7	2.2	3.1	8.0	4.9	9.4	11.5	35	49	78
5	15.5	10.5	3.6	2.5	3.1		3.8	9.8	8.8	19	70	21
6	20	14.5	8.7	2.3	3.2		3.5	7.8	5.3	12	50	16
7	12	9.8	5.7	2.3	2.8		3.3	7.2	4.7	11	81	13.5
8	21	8.2	3.4	2.8	2.7	*4.6	3.1	6.7	4.2	84	106	12
9	12	8.7	2.8	2.2	2.5		3.1	6.2	4.0	19	115	11
10	12	11	2.6	2.0	2.8		25	6.5	5.1	12	88	11
11	12	7.2	2.5	2.0	2.6		24	6.0	4.4	46	34	11.5
12	9.0	6.5	5.0	2.0	2.3		11	5.8	3.8	26	38	10
13	14	5.9	19	1.9	2.2		6.7	6.7	3.5	14.5	22	15
14	11.5	5.7	8.0	1.9	2.2		8.3	5.3	3.5	51	30	20
15	9.2	7.0	3.9	1.9	2.0	*3.2	7.8	4.9	3.3	26	36	11.5
16	9.2	5.5	6.3	1.8	2.0		8.0	4.9	3.8	15.5	24	11
17	8.4	4.9	11	1.8	1.9		6.5	4.7	4.2	13	17	25
18	7.2	5.5	4.4	1.8	1.8		6.0	4.4	4.2	11.5	15.5	36
19	7.0	4.8	3.4	1.8	1.8		21	13.5	3.8	12	21	41
20	9.2	4.6	3.1	1.7	1.8	2.9	29	72	3.3	68	15	65
21	6.5	4.0	3.9	1.7	1.6	2.9	12.5	19	3.1	62	12.5	17.5
22	6.3	3.7	4.7	2.7	1.6	4.0	8.8	8.8	3.1	45	11	20
23	9.0	3.6	5.8	2.2	1.6	4.0	23	7.2	7.6	19.5	19.5	22
24	8.4	3.3	4.0	1.9	1.5	3.3	17.5	6.5	10	86	19.5	22
25	6.3	3.2	3.0	1.8	90	3.3	13	6.0	5.5	304	13	37
26	9.5	3.1	2.8	1.6	65	2.9	9.8	5.8	4.0	41	11.5	71
27	8.2	3.0	2.6	1.6	6.7	4.2	8.3	5.3	26	28	10.5	28
28	6.1	2.9	2.5	1.8	4.4	9.4	7.5	5.1	34	21	17.5	40
29	27	2.9	2.4	1.8	3.6	3.8	7.0	-	33	25	12.5	36
30	19.5	3.1	2.4	2.1	3.1	3.1	6.5	-	17	20	11	20
31	9.5	3.0	-	1.9	-	2.9	56	-	26	-	30	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	32	6.1	12.4	19.2	394	1,180
August.....	29	2.9	6.89	10.7	214	655
September.....	19	2.4	4.64	7.18	139	427
October.....	2.8	1.6	2.02	3.13	62.6	192
November.....	90	1.5	9.22	14.3	277	849
December.....	100	2.9	7.82	12.1	242	744
Calendar year 1933	149	1.5	10.4	16.1	3,790	11,620
January.....	56	2.7	11.9	18.4	369	1,130
February.....	72	4.4	12.1	18.7	338	1,040
March.....	34	3.1	8.55	13.2	265	813
April.....	304	10	40.8	63.1	1,230	3,760
May.....	115	10.5	34.1	52.8	1,060	3,240
June.....	78	10	27.5	42.5	825	2,530
Fiscal year 1933-34	304	1.5	14.8	22.9	5,410	16,560

*Estimated.

Kailua Stream at Haiku-uka boundary, near Kailiili

Location.- Water-stage recorder at trail crossing, 100 feet above Haiku-uka boundary, and 2½ miles east of Kailiili.

Drainage area.- 0.8 square mile.

Records available.- July 1918 to June 1928, July 1932 to June 1934.

Average discharge.- 11 years (1919-28, 1932-34), 3.96 million gallons a day (6.13 second-foot).

Extremes.- Maximum discharge during year, 257 million gallons a day (398 second-foot) Dec. 1 (gage height, 5.69 feet); minimum, 0.01 million gallons a day (0.02 second-foot) Oct. 13.

1919-28, 1932-34: Maximum discharge, 386 million gallons a day (597 second-foot) Oct. 16, 1924 (gage height, 7.83 feet); minimum, 0.01 million gallons a day (0.02 second-foot) Nov. 21, 22, 23, 1932, Oct. 13, 1933.

Remarks.- Records fair for ordinary stages, poor for high stages and estimated periods. No diversions above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	*3.7	*0.05	0.05	0.04	3.7	43	0.06	27	0.05	3.5	0.78	7.9
2			.05	.02	4.5	2.9	.06	3.1	.05	1.15	.35	26
3			.05	.02	.13	.35	.06	.35	.04	37	.73	3.4
4			.05	.02	.06	.19	.05	.19	.06	15.5	13.5	15.5
5	*1.4	*0.08	.05	.02	.05	.13	.05	.25	.06	7.3	43	2.5
6			.05	.02	.05	.08	.05	.10	.05	2.0	38	.95
7			.05	.02	.04	.08	.05	.08	.05	.95	37	.60
8			.04	.04	.04	.06	.05	.05	.04	25	42	.35
9	.95	*0.07	.04	.04	.04	.06	.05	.05	.04	4.0	24	.35
10	.78		.03	.02	.04	.05	.08	.05	.04	.95	18	.25
11	.78		.04	.02	.04	.05	.05	.05	.04			
12	1.15		.03	.02	.04	.05	.13	.05	.05	23	3.7	.25
13	.60	*0.06	.04	.02	.04	.05	.08	.06	.04	5.1	3.5	.19
14	.45		1.3	.01	.04	.05	.05	.13	.04	1.8	2.0	.19
15	.45		.10	.01	.04	.05	.05	.10	.03	6.6	2.9	2.3
16	.35		.05	.02	.03	.04	.05	.06	.03	9.6	5.6	.60
17	.25	.05	.05	.05	.03	.04	.05	.05	.03	2.7	3.8	.25
18	.25	.05	.05	.05	.05	.05	.05	.05	.04	1.15	1.8	.53
19	.19	.05	.05	.05	.02	.04	.04	.04	.04	.78	1.35	8.3
20	.13	.05	.04	.05	.02	.04	.06	4.6	.04	.95	3.4	5.3
21	.13	.04	.04	.05	.02	.04	.10	32	.03	12.5	2.9	32
22	*0.06	.04	.04	.03	.02	.04	.08	3.2	.02	6.3	.95	3.2
23		.03	.04	.04	.03	.72	.06	.45	.02	7.8	.60	.78
24		.02	.04	.04	.04	1.15	.68	.13	.05	2.5	.95	1.9
25		.02	.04	.04	.02	4.2	.95	.08	.25	10	.78	6.0
26	*0.04	.02	.03	.03	39	2.0	.19	.06	.13	145	.95	14.5
27		.02	.03	.01	48	.35	.08	.05	.06	21	.45	36
28		.02	.03	.01	1.6	.19	.06	.06	1.25	5.2	.35	10
29		.02	.02	.02	.55	.35	.05	.05	6.8	2.0	.35	3.2
30	*0.6	.03	.04	.02	.13	.13	.05	-	4.0	3.0	.35	3.5
31		.04	.05	.02	.08	.10	.05	-	16	1.6	.35	1.25
32		.05	-	.02	-	.08	13	-	16	-	11.5	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	-	-	0.819	1.27	25.4	78
August.....	-	0.02	.063	.098	1.95	6
September.....	1.3	.02	.087	.135	2.61	8
October.....	.05	.01	.028	.043	.66	3
November.....	48	.02	3.27	5.06	98.2	301
December.....	43	.04	1.83	2.83	56.6	174
Calendar year 1933	118	.01	2.07	3.20	757	2,320
January.....	13	.04	.532	.823	16.5	51
February.....	32	.04	2.59	4.01	72.4	222
March.....	16	.02	1.47	2.27	45.4	139
April.....	145	.78	12.2	18.9	366	1,120
May.....	43	.35	8.58	13.3	266	816
June.....	36	.19	6.27	9.70	188	577
Fiscal year 1933-34	145	.01	3.12	4.83	1,140	3,500

*Estimated.

Kailua Stream near Huelo

Location.- Water-stage recorder above Wailoa Ditch intake, $1\frac{1}{4}$ miles southwest of Kailua, and $2\frac{1}{4}$ miles south of Huelo.

Drainage area.- 3.0 square miles.

Records available.- December 1910 to June 1918, July 1919 to June 1934.

Average discharge.- 15 years (1919-34), 17.4 million gallons a day (26.9 second-feet).

Extremes.- Maximum discharge during year, 2,170 million gallons a day (3,360 second-feet) Apr. 25 (gage height, 7.60 feet); minimum recorded, 1.1 million gallons a day (1.7 second-feet) Jan. 9, Mar. 22.

1910-18, 1919-34: Maximum discharge, 3,390 million gallons a day (5,250 second-feet) Nov. 18, 1930 (gage height, 8.61 feet); minimum, 0.07 million gallons a day (0.11 second-foot) June 27, 1921.

Remarks.- Records good for ordinary stages, poor for high stages and estimated periods. No diversions above station.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12	3.3	*1.2	*1.0	*30	190	1.5	78	2.3	13	7.0	24
2	30	3.2			25	19.5	4.2	15.5	2.1	7.4	5.7	53
3	11.5	3.6			3.0	10.5	2.4	6.6	2.0	104	30	14
4	8.0	12				5.7	1.9	5.2	4.2	46	43	53
5	7.3	4.5			*2.0	4.5	1.6	5.3	3.6	24	95	12.5
6	12.5	5.0	2.6	*1.1	*1.4	3.5	1.4	4.3	2.3	11	72	9.8
7	6.8	4.0				3.0	1.3	3.6	2.1	7.8	104	8.6
8	12.5	3.1				2.8	1.2	3.2	1.9	82	108	7.2
9	6.8	3.1				2.4	1.2	3.0	1.8	20	86	6.3
10	6.3	4.4				2.3	7.8	3.0	2.0	9.8	69	5.9
11	8.0	2.9	*1.6	*1.1	*1.4	2.2	8.3	2.8	1.9	59	18.5	6.1
12	4.9	2.5				2.1	4.6	2.4	1.6	26	18	5.3
13	6.6	2.3				2.0	2.9	3.2	1.5	12.5	11	6.6
14	6.8	2.3				1.9	3.0	2.8	1.4	36	13.5	11
15	4.6	2.5				1.8	3.0	2.2	1.3	32	22	
16	4.3	2.2	*2.3	*1.0	*1.1	1.6	2.9	2.2	1.5	14	13.5	*6
17	3.8		5.6			1.6	2.6	2.1	1.6	9.3	8.3	
18	3.1		*2.3			1.5	2.3	1.9	1.8	7.6	7.0	
19	2.9	*2.2				1.4	7.3	11	1.6	7.6	10.5	
20	3.3					1.3	12.5	82	1.3	54	8.9	
21	2.7	*1.7	*1.9	*1.0	*1.1	1.2	5.0	17	1.2	39	5.5	*14
22	2.5					2.2	3.5	6.1	1.1	42	5.2	
23	3.0					4.0	8.6	4.6	2.9	16.5	7.4	
24	2.9					4.9	10	3.8	5.5	43	6.8	
25	2.4					6.0	5.0	3.4	3.0	765	5.7	
26	3.3	*1.2	*1.2	*1.0	*1.1	193	2.8	3.8	3.0	60	5.0	*26
27	3.0					10.5	2.5	3.0	2.6	14	20	
28	2.3					4.3	5.8	2.6	2.6	32	11	
29	13					3.0	2.6	2.4	-	23	14	
30	14					3.0	2.0	2.3	-	28	10	
31	4.2					-	1.6	38	-	39	-	27
Month		Million gallons a day			Second-feet (mean)		Total run-off					
		Maximum	Minimum	Mean			Million gallons	Acres-feet				
July		30		2.3		6.95	10.8	215		661		
August		12		-		2.80	4.33	86.9		267		
September		9.6		-		2.10	3.25	53.0		193		
October		-		-		.99	1.53	30.6		94		
November		193		-		15.3	23.7	459		1,410		
December		190		1.2		9.59	14.8	297		912		
Calendar year 1933		380		-		10.3	15.9	3,770		11,540		
January		38		1.2		5.10	7.89	158		485		
February		82		1.9		10.1	15.6	283		870		
March		30		1.1		6.18	9.56	192		588		
April		765		7.4		53.4	82.6	1,600		4,820		
May		108		4.8		26.9	41.6	834		2,560		
June		-		-		18.9	29.2	567		1,740		
Fiscal year 1933-34		765		-		13.1	20.3	4,790		14,700		

*Estimated.

†Partly estimated.

Hoolawaliili Stream near Huelo

Location.- Water-stage recorder just above New Hamakua Ditch crossing, 2 miles west of Kailua, and 2 miles southwest of Huelo.

Drainage area.- Not determined.

Records available.- April 1911 to June 1934.

Average discharge.- 22 years (1911-15, 1916-34), 5.18 million gallons a day (8.01 second-feet).

Extremes.- Maximum discharge during year, 168 million gallons a day (260 second-feet) Apr. 25 (gage height, 3.98 feet); minimum, 0.5 million gallons a day (0.8 second-foot) Nov. 19-24.
1911-34: Maximum discharge, 657 million gallons a day (1,020 second-feet) Nov. 18, 1930 (gage height, 6.74 feet); minimum, 0.2 million gallons a day (0.3 second-foot) June 8, 1926.

Remarks.- Records good for ordinary stages, fair for estimated periods, and poor for high stages. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.3	2.3	1.3	0.8	*1.8	18	1.3	10.5	1.7	2.4	4.6	9.3
2	3.1	2.3	1.3	.8		3.7	2.5	4.0	1.7	2.2	4.0	8.7
3	2.3	2.3	1.1	.8	*1.2	5.1	1.9	3.3	1.6	11.5	5.4	4.4
4	2.1	3.4	1.1	.8		3.2	1.6	3.2	2.2	5.4	6.7	13.5
5	2.1	2.3	1.3	.8		2.7	1.5	3.0	2.1	4.2	12	5.8
6	2.5	2.5	1.5	.8	*1.9	2.4	1.4	2.7	1.7	3.6	9.8	4.0
7	2.3	2.1	1.3	.8		2.4	1.3	2.6	1.7	3.6	18	3.6
8	2.7	1.9	1.2	.9		2.4	1.3	2.4	1.7	14.5	24	3.3
9	2.3	2.1	1.1	.9		2.2	1.3	2.4	1.7	5.6	33	3.0
10	2.3	2.1	1.1	.8	.7	2.1	2.4	2.4	1.7	4.8	26	2.7
11	2.3	1.9	1.1	.9	.6	2.1	2.7	2.2	1.6	5.6	11	2.6
12	2.1	1.7	1.5	.9	.6	2.0	2.4	2.2	1.5	5.0	9.5	2.4
13	2.1	1.7	1.9	.8	.6	1.9	2.0	2.0	1.4	3.9	7.0	2.7
14	2.1	1.7	1.9	.8	.6	1.9	2.1	2.0	1.3	9.7	7.1	2.4
15	2.1	1.7	1.7	.6	.6	1.7	1.9	1.9	1.3	6.6	10	2.1
16	1.9	1.7	1.7	.8	.6	1.7	1.7	2.0	1.4	5.0	6.0	2.7
17	1.9	1.7	1.9	.8	.5	1.7	1.6	1.9	1.3	4.2	5.2	1.3
18	1.9	1.7	1.7	.8	.5	1.6	1.5	1.9	1.2	3.9	4.4	4.2
19	1.7	1.5	1.5	.8	.5	1.5	2.7	1.9	1.2	3.8	4.2	6.6
20	1.9	1.5	1.3	.7	.5	1.5	4.6	5.3	1.2	7.8	3.8	7.8
21	1.7	1.7	1.5	.7	.5	1.4	3.0	3.4	1.2	9.6	3.4	4.2
22	1.9	1.7	1.3	.7	.5	1.7	2.4	1.2	1.2	12	3.2	4.6
23	2.1	1.5	1.5	.7	.5	1.4	2.2	2.1	2.0	7.0	3.4	4.2
24	1.9	1.5	1.3	.7	.5	1.5	3.0	2.0	2.0	12	3.9	4.0
25	1.9	1.5	1.1	.7	2.6	1.4	3.0	2.0	1.5	68	3.2	4.8
26	2.1	1.3	.9	.7	4.2	1.4	2.6	1.9	1.3	17.5	3.0	10.5
27	2.1	1.5	.9	.7	1.4	1.6	2.4	1.9	2.2	9.8	2.8	5.8
28	2.1	1.1	.9	.7	1.2	1.6	2.4	1.7	3.0	7.4	3.0	6.3
29	3.4	1.1	.8	.8	1.2	1.4	2.4	-	3.7	6.0	2.7	7.0
30	3.6	1.1	.8	.7	1.2	1.3	2.2	-	2.4	5.4	3.0	5.0
31	2.5	1.1	-	.6	-	1.3	4.0	-	3.0	-	3.5	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	3.6	1.7	2.24	3.47	69.5	213
August.....	3.4	1.1	1.77	2.74	55.0	169
September.....	1.9	.8	1.32	2.04	39.5	121
October.....	.9	.6	.77	1.19	24.0	74
November.....	4.2	.5	1.03	1.59	31.0	95
December.....	18	1.3	2.81	3.88	77.8	239
Calendar year 1933	28	.5	2.32	3.59	846	2,600
January.....	4.6	1.3	2.26	3.50	70.2	215
February.....	10.5	1.7	2.76	4.27	77.2	237
March.....	3.7	1.2	1.76	2.72	54.7	166
April.....	68	2.2	8.95	13.8	268	824
May.....	33	2.7	7.96	12.3	247	757
June.....	13.5	2.1	5.05	7.81	152	465
Fiscal year 1933-34	68	.5	3.19	4.94	1,170	3,580

*Estimated.

†Partly estimated.

Hoolawanui Stream near Huelo

Location.- Water-stage recorder just above intake of Wailoa Ditch, 2 miles southwest of Kallua, and 2 miles southwest of Huelo. Altitude, 1,240 feet.

Drainage area.- Not determined.

Records available.- December 1910 to June 1934.

Average discharge.- 22 years (1911-15, 1916-34), 7.86 million gallons a day (12.2 second-feet).

Extremes.- Maximum discharge during year, 563 million gallons a day (871 second-feet) Apr. 25 (gauge height, 3.26 feet); minimum, 0.3 million gallons a day (0.5 second-foot) Nov. 19-24.

1910-34: Maximum discharge, 584 million gallons a day (904 second-feet) Nov. 18, 1930 (gauge height, 9.37 feet); minimum, 0.15 million gallons a day (0.23 second-foot) Oct. 25, 1917.

Remarks.- Records good for ordinary stages, fair for estimated periods, and poor for high stages. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.0	1.7	1.1	0.4	1.0	67	1.0	25	1.6	3.1	8.1	10
2	5.8	1.7	1.1	.4	2.8	6.0	2.5	7.6	1.4	2.4	6.9	16
3	2.8	1.7	1.0	.4	.6	5.8	1.6	3.2	1.3	25	12.5	9.0
4	2.3	4.2	.9	.4	.5	3.4	1.1	3.0	2.2	9.8	18	29
5	2.2	2.1	1.1	.4	1.2	2.6	1.0	3.0	1.9	6.9	33	11.5
6	3.4	2.5	1.6	.4	.8	2.4	1.0	2.5	1.6	5.1	26	9.4
7	2.5	2.1	1.1	.4	.6	2.2	.9	2.2	1.3	4.2	48	8.1
8	3.9	1.8	.7	.4	.5	2.0	.8	1.9	1.2	29	66	7.5
9	2.6	1.9	.7	.4	.4	1.9	*1.6	1.8	1.2	9.4	70	6.9
10	2.4	2.1	.7	.4	.4	1.8		1.2	1.3	6.9	57	6.6
11	2.5	1.7	.7	.4	.4	1.7	*2.5	1.7	1.2	14	22	6.3
12	2.1	1.7	.9	.4	.4	1.4		1.6	1.0	10	17	6.0
13	2.2	1.6	1.6	.4	.4	1.4	1.6	1.0	1.0	7.2	12.5	6.3
14	2.4	1.6	1.1	.4	.3	1.4	1.4	1.0	1.0	15.5	12.5	6.6
15	2.0	1.7	.8	.4	.3	1.2	*1.4	1.6	1.0	11	15.5	5.8
16	1.9	1.6	.9	.4	.3	1.3		1.6	1.1	6.1	10.5	5.5
17	1.8	1.5	1.2	.4	.3	1.2	1.2	1.4	1.1	6.6	9.0	6.9
18	1.7	1.5	.9	.4	.3	1.2	1.2	1.4	1.2	5.8	8.1	11.5
19	1.7	1.4	.7	.4	.3	1.2	2.4	1.6	1.1	5.1	8.1	14.5
20	1.7	1.4			.3	1.1	5.8	13	2.0	17	7.2	28
21	1.5	1.3	.9	*.4	.3	1.1	2.6	4.8	1.0	13.5	6.0	9.4
22	1.4	1.3	.9		.3	1.7	2.4	3.1	1.0	17	5.5	8.4
23	1.7	1.3	.9		.3	1.2	2.8	2.4	2.5	9.4	6.6	8.1
24	1.6	1.1	.7		.3	1.2	3.2	2.2	2.2	24	6.3	7.8
25	1.3	1.0	.6		39	1.0	3.1	2.0	1.2	248	5.1	11.5
26	1.3	1.0	.4	.4	32	.9	2.8	1.9	1.0	43	4.8	*30
27	1.3	1.0	.4	.4	1.7	1.1	2.6	1.6	3.6	22	4.4	
28	1.1	1.0	.5	.4	1.0	1.4	2.5	1.6	6.5	13.5	4.4	*12
29	3.4	1.0	.5	.4	.9	1.2	2.5	-	5.8	11.5	4.2	
30	4.2	1.0	.4	.4	.8	1.0	2.4	-	3.2	9.7	5.4	
31	1.9	1.0	-	.4	-	1.0	10	-	5.4	-	11	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	5.8	1.1	2.31	3.57	71.5	219
August.....	4.2	1.0	1.60	2.48	49.5	152
September.....	1.6	.4	.86	1.33	25.7	79
October.....	-	-	.40	.62	12.4	38
November.....	39	.3	2.96	4.58	88.7	272
December.....	67	.9	3.90	6.03	121	371
Calendar year 1933	90	.3	3.52	5.45	1,280	3,940
January.....	10	-	2.30	3.56	71.4	219
February.....	25	1.4	3.52	5.45	98.5	302
March.....	6.5	1.0	1.91	2.96	59.1	181
April.....	248	2.4	20.5	31.7	614	1,880
May.....	70	4.2	17.1	26.5	532	1,630
June.....	-	5.5	11.2	17.3	335	1,030
Fiscal year 1933-34	248	.3	5.69	8.80	2,080	6,370

*Estimated.

Honopou Stream near Huelo

Location.- Water-stage recorder just above Wailoa Ditch crossing, $2\frac{1}{2}$ miles southwest of Kailua, and $2\frac{1}{2}$ miles southwest of Huelo. Altitude, about 1,250 feet.

Drainage area.- 1.0 square mile.

Records available.- December 1910 to June 1934.

Average discharge.- 21 years (1911-14, 1916-34), 3.12 million gallons a day (4.83 second-feet).

Extremes.- Maximum discharge recorded during year, 140 million gallons a day (217 second-feet) Apr. 25 (gage height, 3.09 feet); minimum, 0.01 million gallons a day (0.02 second-foot) Oct. 22, 23, 25, 26.
1910-34: Maximum discharge, 1,220 million gallons a day (1,890 second-feet) Nov. 18, 1930 (gage height, 7.28 feet); minimum, that of Oct. 22, 23, 25, 26, 1933.

Remarks.- Records good for ordinary stages, fair for estimated periods, and poor for high stages. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.4	0.6	0.4	0.2	*2.2	18.5	0.6	6.6	0.7	1.1	4.3	3.6
2	1.2	.6	.4	.2		2.9	1.6	1.8	.7	.8	3.7	3.2
3	.7	.7	.4	.2	}	3.4	.8	1.6	.7	9.2	4.3	2.6
4	.8	1.4	.4	.2		1.8	.6	1.3	1.1	3.2	5.7	7.0
5	1.0	.8	.4	.2	*4.8	1.5	.6	1.3	.9	2.3	9.3	3.5
6	1.0	.9	.6	.2		1.3	.5	1.2	.8	1.8	8.4	3.0
7	.8	.7	.4	.2	}	1.2	.5	1.2	.8	1.7	16	2.6
8	1.3	.5	.4	.2		1.1	.5	1.1	.7	11	23	2.4
9	.9	.6	.3	.2	}	1.1	.5	1.1	.7	3.5	35	2.2
10	.8	.8	.3	.2		.9	1.2	1.1	.7	2.9	28	2.1
11	.8	.6	.3	.2	*4.5	.9	1.2	.9	.7	3.7	13	2.0
12	.7	.5	.4	.1		.8	.8	.9	.7	3.1	10	1.7
13	.6	.5	1.0	.1	}	.8	.7	.9	.7	2.8	7.2	1.8
14	.7	.5	.6	.1		.8	.6	.8	.7	6.6	18.5	1.8
15	.6	.6	.4	.1	}	.8	.6	.8	.7	4.2	8.1	1.6
16	.5	.5	.5	.1		.8	.5	.8	.7	3.2	5.5	1.4
17	.6	.5	.5	.1	}	.8	.4	.8	.7	3.0	4.5	1.8
18	.5	.5	.4	.1		.8	.4	.8	.7	2.8	3.8	2.4
19	.5	.5	.4	.1	}	.7	1.0	.8	.6	2.5	3.5	4.0
20	.6	.5	.4	.1		.6	2.6	3.1	.5	5.4	2.9	4.8
21	.5	.5	.4	.1	}	.6	1.0	1.6	.5	5.6	2.8	2.5
22	.8	.5	.4	.1		.8	.8	1.0	.5	6.6	2.5	2.8
23	.8	.4	.5	.1	}	.7	.9	.9	1.3	4.0	2.5	2.5
24	.7	.4	.4	.1		.8	1.2	.9	1.6	8.8	2.8	2.4
25	.6	.4	.2	.1	*7	.7	.9	.9	.8	61	2.2	3.3
26	.5	.4	.2	.1		.6	.8	.9	.6	19	2.0	6.9
27	.5	.4	.2	.1	*9	.7	.7	.7	1.2	10	1.8	4.1
28	.5	.4	.2	.1		.8	.6	.7	1.6	7.6	1.7	4.5
29	1.8	.4	.2	.1	}	.7	.7	-	2.2	6.0	1.6	5.1
30	1.6	.4	.2	.1		.6	.6	-	1.1	5.2	4.6	3.5
31	.7	.4	-	*1.1	-	.6	1.4	-	1.6	-	3.2	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	1.8	0.4	0.76	1.18	23.7	73
August.....	1.4	.4	.56	.87	17.4	53
September.....	1.0	.2	.59	.60	11.8	36
October.....	.2	.1	.14	.22	4.2	13
November.....	-	-	1.03	1.59	31.0	95
December.....	18.5	.6	1.68	2.44	49.1	151
Calendar year 1933	-	0.1	1.42	2.20	519	1,590
January.....	2.6	.4	.83	1.28	25.8	79
February.....	6.6	.7	1.50	2.01	36.5	112
March.....	3.2	.5	.98	1.36	27.4	84
April.....	61	.8	6.95	10.8	209	640
May.....	35	1.6	7.82	12.1	242	744
June.....	7.0	1.4	3.10	4.80	93.1	286
Fiscal year 1933-34	61	.1	2.11	3.26	771	2,360

*Estimated.

Honopou Stream at Lowrie Ditch Siphon, near Huelo

Location.- Water-stage recorder half a mile above Government road and 1.7 miles west of Huelo.

Drainage area.- 2.0 square miles.

Records available.- July 1932 to June 1934.

Extremes.- Maximum discharge during year ending June 30, 1933, 730 million gallons a day (1.130 second-foot) Dec. 31 (gage height, 3.83 feet); minimum, 0.07 million gallons a day (0.11 second-foot) June 21.

Maximum discharge during year ending June 30, 1934, 328 million gallons a day (507 second-foot) Apr. 25 (gage height, 2.97 feet); minimum, 0.04 million gallons a day (0.06 second-foot) Oct. 31.

Remarks.- Records good for ordinary stages, fair for estimated periods, poor for high stages. Station measures all Water not taken by Wailoa and New Hamakua Ditches and all inflow between New Hamakua Ditch and station.

Discharge, in million gallons, fiscal year July 1932 to June 1933

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.15	0.26	0.13	0.15	0.13	0.15	10.5	0.60	0.18	0.20	0.15	0.13
2	.15	.26	.13	.15	.13	.15	1.3	.54	.18	.23	.15	.13
3	.18	.25	.13	.15	.13	.15	.94	.54	.18	12.5	.15	.13
4	.18	.23	.20	.15	.15	.15	.80	.54	.18	.20	.13	.13
5	.20	.23	.48	.15	.15	.13	.72	.54	1.9	.20	.13	.11
6	.20	.23	.20	.15	.15	.11	.60	.44	27	.20	.13	.11
7	.20	.20	.15	.15	.13	.11	.54	.44	25	.20	.13	.11
8	.20	.20	.15	.15	.11	.11	.54	.44	19.5	.20	.13	.09
9	.20	.18	9.7	.15	.11	.13	.48	1.8	1.35	.20	.13	.09
10	.20	.18	.18	.15	.11	.13	.44	2.2	4.5	.20	.13	.11
11	.18	.20	.15	.13	.13	.11	.44	.66	.32	.18	.13	.11
12	.15	.20	.15	.13	.13	.18	.44	.60	.29	.18	.13	.11
13	3.2	.20	.15	.13	.13	.65	.48	.60	.26	.18	.13	.11
14	.20	.20	.15	.13	.15	.23	.44	1.3		.20	.13	.11
15	8.1	.20	.15	.13	.13	2.7	.48	.87	†.26	.20	.13	.11
16	.20	.20	.15	.13	.13	.26	.66	.80		.20	.13	.11
17	.20	.18	.15	.13	.15	.26	.60	.72		.18	.13	.11
18	.20	.18	.15	.11	.15	.23	1.6	.48	†.23	.15	.13	.11
19	.68	.18	.15	.11	.15	.20	.54	1.1		.15	.13	.11
20	.92	.23	.15	.11	.15	.20	*.44	.94		.15	.13	.11
21	.23	.20	.15	.13	.13	.20	†.48	2.1	†.20	.15	.13	.11
22	15.5	.15	.15	.13	.11	.20	†.66	1.4		.15	.13	.11
23	7.2	.13	.18	.13	.11	.20	*.87	1.1		.15	.13	.11
24	10	.13	.18	.13	.13	.18	.80	1.0		.15	.13	.11
25	1.6	.13	.18	.13	.18	.18	.66	.94	†.18	.15	.11	.11
26	.23	.13	.15	.13	.15	.20	.66	.87		.15	.11	.11
27	.23	.13	.15	.13	.15	.18	.60	.80	.18	.15	.11	.11
28	.23	.13	.15	.13	.20	.15	.87	.50	.18	.15	.13	.11
29	.26	.13	.15	.13	.20	.20	.72	-	.15	.15	.13	.11
30	3.0	.13	.15	.15	.15	.18	.60	-	.15	.15	.13	.13
31	6.3	.13	-	.13	-	59	.60	-	.15	-	.13	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	15.5	0.15	1.98	3.03	60.7	186
August.....	.23	.13	.184	.265	5.89	17
September.....	9.7	.13	.484	.749	14.5	45
October.....	.15	.11	.135	.209	4.19	13
November.....	.20	.11	.140	.217	4.21	13
December.....	59	.11	2.17	3.36	67.2	206
Calendar year						
January.....	10.5	.44	.984	1.52	30.5	94
February.....	2.2	.44	.888	1.37	24.9	76
March.....	27	.15	2.72	4.21	84.5	259
April.....	12.5	.15	.587	.908	17.6	54
May.....	.15	.11	.130	.201	4.03	12
June.....	.13	.09	.173		3.56	10
Fiscal year 1932-33	59	.09	.280	1.36	321	985

*Partly estimated.

†Estimated.

Honopou Stream at Lowrie Ditch Siphon, near Huelo

(Continued)

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.15	0.15	0.11	0.06	0.06	18.5	0.06	4.8	0.09	*0.09	0.26	0.23
2	.18	.15	.11	.07	.07	.13	.07	.20	.09	*.09	.23	.29
3	.15	.13	.11	.06	.06	.13	.06	.15	*.09	5.0	.26	.20
4	.13	.15	.09	.06	.06	.09	.06	.15	†.11	†.4	.26	4.3
5	.13	.15	.09	.06	.06	.09	.06	.13	*.11	†.3	6.9	.20
6	.13	.13	.09	.06	.07	.09	.06	.13	.11	†.2	1.3	.20
7	.13	.15	.09	.06	.06	.09	.06	.13	.09	†.2	16.5	.18
8	.13	.13	.09	.06	.06	.09	.06	.13	.09	†10	28	.15
9	.13	.13	.09	.07	.06	.09	.06	.13	.09	*.26	38	.15
10		.15	.09	.06	.06	.09	.06	.13	.07	.20	33	.15
11	†.15	.15	.09	.06	.06	.09	.09	.13	.07	.20	8.6	.15
12		.15	.09	.07	.06	.09	.11	.09	.09	.23	3.8	.18
13		.15	.09	.07	.06	.09	.09	.07	.07	.20	.80	.15
14		.13	.09	.07	.05	.09	.07	.09	.07	†1.5	.57	.15
15		.13	.09	.07	.06	.09	.07	.09	.07	†.3	4.3	.15
16		.13	.09	.06	.06	.07	.07	.09	.07	*.20	.36	.15
17	*.18	.13	.09	.05	.06	.07	.07	.09	.07	.20	.32	.15
18	.18	.13	.09	.05	.06	.07	.07	.09	*.06	.18	.32	.20
19	.18	.13	.07	.06	.06	.06	.07	.09	*.07	.18	.29	.34
20	.18	.13	.06	.05	.06	.06	.07	.15	.06	*.44	.23	.63
21	.18	.13	.06	.05	.06	.06	.07	.15	.06	†1.0	.23	.26
22	.18	.13	.06	.06	.06	.07	.07	.11	.06	†5.0	.23	.26
23	.20	.13	.06	.06	.06	.09	.07	.11	.07	*.40	.20	.26
24	.18	.13	.07	.06	.06	.09	.09	.09	†.07	3.6	.20	.20
25	.15	.13	.07	.06	.07	.09	.09	*.09	†.07	99	.20	.20
26	.15	.11	.06	.06	1.3	.07	.09	*.09	*.09	19.5	.18	2.4
27	.15	.11	.06	.06	.09	.06	.09	.09	.07	3.2	.18	.28
28	.15	.11	.06	.06	.07	.06	.07	.09	.06	.36	.20	.20
29	.18	.11	.06	.06	.07	.07	.07	-	.09	.26	.18	.40
30	.23	.11	.06	.06	.06	.07	.07	-	.09	.26	.18	.23
31	.18	.11	-	.06	-	.07	.09	-	.09	-	.18	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	0.23	0.13	0.160	0.248	4.96	15
August.....	.15	.11	.132	.204	4.09	13
September.....	.11	.06	.081	.125	2.43	7
October.....	.07	.05	.060	.093	1.86	6
November.....	1.3	.05	.104	.161	3.11	10
December.....	.18.5	.06	.676	1.05	21.0	64
Calendar year 1933	27	.05	.554	.857	202	620
January.....	.11	.06	.073	.113	2.26	7
February.....	4.8	.07	.281	.435	7.88	24
March.....	.11	.06	.079	.122	2.46	8
April.....	99	.09	5.10	7.89	153	469
May.....	38	.18	4.72	7.30	146	449
June.....	4.3	.15	.433	.670	13.0	40
Fiscal year 1933-34	99	.05	.993	1.54	362	1,110

*Partly estimated.

†Estimated.

Honopou Stream above Haiku Ditch, near Huelo

Location.— Water-stage recorder 150 feet below government road and $1\frac{1}{2}$ miles west of Huelo.

Drainage area.— 2.2 square miles.

Records available.— July 1932 to June 1934.

Extremes.— Maximum discharge during year ending June 30, 1933, 186 million gallons a day (288 second-foot) Mar. 6 (gauge height, 2.48 feet); minimum, 0.13 million gallons a day (0.20 second-foot) June 14.

Maximum discharge during year ending June 30, 1934, 133 million gallons a day (206 second-foot) Apr. 25 (gauge height, 2.19 feet); minimum, 0.08 million gallons a day (0.12 second-foot) Dec. 1-2.

Remarks.— Records good for ordinary stages, fair for estimated periods, and poor for high stages. Station measures all low water not taken by Wailoa and New Hamakua Ditches, and all low-water inflow below New Hamakua Ditch. Flood waters bypass the station.

Discharge, in million gallons, fiscal year July 1932 to June 1933

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.40	0.64	0.32	0.32	0.20	0.59	*2.7	0.88	0.49	0.49	0.29	0.23
2	.36	.59	.32	.26	.20	.44	1.8	.75	.44	.54	.29	.26
3	.36	.59	.41	.29	.20	.36	1.5	.69	.44	10	.29	.26
4	.36	.54	.49	.26	.20	.32	1.3	.69	.49	.59	.29	.26
5	.32	.49	.79	.26	.20	.26	1.1	.69	*2.0	.49	.29	.23
6	.32	.49	.40	.26	.20	.26	.95	.64	*25	.49	.29	.23
7	.32	.44	.40	.26	.20	.26	.81	.64	20	.40	.29	.20
8	.32	.49	.40	.26	.20	.23	.75	.59	19.5	.40	.26	.20
9	.36	.49	9.7	.26	.20	.23	.69	2.1	2.6	.40	.26	.20
10	.36	.54	.49	.26	.20	.23	.69	2.6	5.2	.40	.26	.23
11	.36	.54	.40	.26	.26	.23	.69	.95	.95	.40	.26	.20
12	.36	.49	.36	.26	.23	.36	.69	.88	.81	.40	.26	.20
13	3.9	.49	.36	.26	†.20	.96	.64	.98	.75	.36	.26	.20
14	4.44	.49	.36	.26	†.23	.49	.59	1.7	.75	.36	.26	.20
15	6.6	.49	.36	.26	.20	3.1	.75	1.2	.69	.36	.26	.17
16	.49	.40	.32	.29	.23	.59	.95	1.05	.64	.36	.29	.17
17	.40	.40	.32	.29	.23	.54	1.05	.95	.64	.32	.29	.17
18	.49	.49	.32	.29	.23	.49	2.2	1.05	.59	.32	.29	.15
19	1.15	.49	.32	.32	.23	.40	1.05	1.3	.59	.29	.29	.17
20	1.35	.54	.29	.29	.23	.36	.95	1.4	.54	.29	.32	.17
21	.59	.40	.29	.29	.20	.32	.81	2.8	.49	.29	.26	.23
22	*1.5	.32	.29	.36	.20	.32	1.1	1.9	.49	.29	.23	.23
23	6.5	.36	.29	.36	.23	.29	1.1	1.5	.49	.29	.23	.20
24	7.3	.36	.26	.26	.36	.32	1.05	1.4	.49	.29	.23	.20
25	1.8	.32	.26	.20	.49	.29	.95	1.3	.49	.29	.20	.20
26	.75	.32	.29	.20	.44	*.29	.95	1.3	.49	.29	.23	.20
27	.69	.32	.26	.20	.49	.29	.88	1.1	.49	.29	.20	.20
28	.69	.36	.26	.20	.54	.29	1.1	.81	.49	.32	.26	.20
29	.69	.32	.29	.23	.54	.36	.95	—	.49	.32	.26	.23
30	3.3	.32	.32	.23	.59	.36	.88	—	.44	.32	.23	.32
31	5.4	.32	—	.23	—	11	.88	—	.44	—	.23	—

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	7.3	0.32	1.56	2.41	45.4	149
August.....	.64	.32	.446	.690	13.8	42
September.....	9.7	.26	.665	1.03	19.9	61
October.....	.36	.20	.265	.410	8.23	25
November.....	.59	.20	.278	.450	8.34	26
December.....	11	.23	.801	1.24	24.8	76
Calendar year						
January.....	—	.59	1.05	1.62	32.5	100
February.....	2.8	.59	1.20	1.86	33.7	104
March.....	—	.44	2.85	4.41	85.4	271
April.....	10	.29	.688	1.05	20.6	63
May.....	.32	.20	.263	.407	8.15	25
June.....	.32	.15	.210	.325	6.31	19
Fiscal year 1932-33	11	.15	.859	1.33	313	961

*Estimated.

†Partly estimated.

Honopou Stream above Haiku Ditch, near Huelo

(Continued)

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.32	0.26	0.17	0.13	0.10	0.13	0.10	4.8	0.17	0.36	0.75	0.81
2	.40	.26	.17	.11	*.2	†12.5	.15	.44	.17	.29	.75	1.1
3	.40	*3	.15	.10	*.15	*.3	.13	.36	.17	5.2	.75	.69
4	.36		.15	.10	*.13	†.23	.10	.32	.20	.91	.75	5.6
5	.32		.15	.10	*.13	.20	.10	.29	.20	.54	7.5	1.05
6	.32		.20	.11	†.13	.17	.10	.26	.17	.40	2.6	.69
7	.29		.17	.11	.13	.17	.10	.26	.17	.36	17	.64
8	.29	.26	.15	.11	.13	.15	.10	.26	.17	9.7	26	.59
9	.26	.23	.15	.11	.13	*.14	.09	.23	.17	.75	33	.49
10	.26	.26	.15	.10	.13	*.13	.10	.23	.17	.54	30	.49
11	.26	.23	.15	.10	.13	†.13	.17	.20	*15	.64	9.8	.44
12	.26	.20	.17	.11	.11	.13	.15	.17		.75	5.6	.40
13	.26	.20	.20	.11	.10	.13	.11	.17		.59	2.4	.44
14	.26	.23	.17	.11	.10	.13	.11	.15		1.6	1.9	.49
15	.26	.23	.17	.10	.10	.13	.11	.17		1.05	4.7	.40
16	.26	.23	.17	.10	.10	.13	.11	.20		.59	1.6	.40
17	.26	.23	.17	.10	.10	.11	.11	.15		.59	1.1	.44
18	.26	.23	.15	.10	.10	.11	.11	.15	*15	.49	.88	.59
19	.26	.20	.15	.10	.10	.11	.13	.17		.49	.61	.88
20	.26	.20	.15	.10	.10	.11	.17	.54		.86	.75	1.5
21	.26	.20	.15	.10	.10	.11	.17	.44			1.35	.69	1.1
22	.26	.20	.17	.11	.10	.11	.15	.29		5.5	.64	.75
23	†.26	.17	.15	.11	.10	.11	.20	.26		1.6	.59	.64
24	†.20	.17	.17	.10	.10	.13	.20	.23		3.4	.59	.69
25	.23	.20	.15	.10	.17	.10	.26	.20		69	.49	.75
26	.23	.20	.15	.10	1.4	.10	.20	.20	.15	21	.44	3.3
27		.20	.15	.10	.15	.10	.17	.17	.15	5.1	.44	1.2
28		.20	.15	.10	.15	.10	.15	.17	.20	1.5	.49	.95
29	*3	.20	.13	.10	.13	.10	.13	-	.36	.95	.44	1.3
30		.20	.13	.10	.13	.10	.13	-	.36	.88	.44	.88
31		.17	-	.10	-	.10	.20	-	.40	-	.49	-
Month		Million gallons a day						Second-feet (mean)	Total run-off			
		Maximum	Minimum	Mean			Million gallons		Acres-feet			
July.....		0.40	0.20	0.283			0.438		8.76	27		
August.....		-	.17	.228			.353		7.06	22		
September.....		.20	.13	.159			.246		4.76	15		
October.....		.13	.10	.104			.161		3.23	10		
November.....		1.4	.10	.164			.254		4.93	15		
December.....		-	.10	.532			.823		16.5	51		
Calendar year 1933		-	.10	.644			.996		235	722		
January.....		.26	.09	.139			.215		4.31	13		
February.....		4.8	.15	.410			.634		11.5	35		
March.....		.40	-	.182			.282		5.63	17		
April.....		69	.29	4.57			7.07		137	420		
May.....		33	.44	4.98			7.71		154	473		
June.....		5.6	.40	.990			1.53		29.7	91		
Fiscal year 1933-34		69	.09	1.06			1.64		387	1,190		

*Estimated.

†Partly estimated.

Honopou Stream below Haiku Ditch, near Huelo

Location.- Water-stage recorder an eighth of a mile below government road and $1\frac{1}{8}$ miles west of Huelo.

Drainage area.- 2.3 square miles.

Records available.- July 1932 to June 1934.

Extremes.- Maximum discharge during year ending June 30, 1933, 345 million gallons a day (534 second-foot) Dec. 31 (gage height, 3.43 feet); minimum, 0.04 million gallons a day (0.06 second-foot) June 30.

Maximum discharge during year ending June 30, 1934, 238 million gallons a day (368 second-foot) Apr. 25 (gage height, 3.15 feet); minimum, 0.02 million gallons a day (0.03 second-foot) Nov. 27.

Remarks.- Records good for ordinary stages, fair for estimated periods, and poor for high stages. Station measures all water not taken by Wailoa, New Hanakua, and Haiku Ditches and all inflow between Haiku Ditch and station.

Discharge, in million gallons, fiscal year July 1932 to June 1933

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.42	0.58	0.69	0.62	0.62	0.62	30	0.69	0.62	*0.8	0.56	0.69
2	.62	.90	.69	.62	.62	.29	.18	.69	.75	*.9	.56	.75
3	.75	.82	.82	.62	.62	.46	.07	.62	.75	*1.5	.52	.62
4	.62	.75	7.3	.62	.62	.62	.53	.62	.75	.56	.52	.56
5	.62	.75	.55	.62	.62	.62	.82	.56	†6.5	.82	.52	.62
6	.62	.75	.12	.62	.62	.62	.75	.56	†56	.82	.56	.56
7	.62	.69	.47	.56	.56	.62	.75	.69	74	.90	.56	.52
8	.62	.69	.82	.56	.56	.62	.69	.69	61	.97	.62	.56
9	.62	.69	47	.56	.56	.62	.82	3.6	†2.9	.90	.69	.52
10	.62	.56	.44	.56	.56	.62	.82	6.4	18.5	.90	.75	.56
11	.62	.56	.56	.56	.56	.62	.69	.62	1.1	.90	.75	.52
12	.62	.56	.56	.56	.62	.62	.69	.56	.90	.82	.62	.52
13	24	.62	.52	.56	.62	7.6	.69	.69	.90	.82	.62	.52
14	.57	.56	.46	.56	.62	.42	.69	.62	.97	.82	.62	.46
15	28	.56	.46	.56	.62	10	3.4	.75	.97	.82	.62	.52
16	.67	.62	.52	.62	.62	.16	8.4	.75	.97	.82	.62	.52
17	.07	.62	.52	.62	.62	.16	2.1	.69	.97	.75	.62	.46
18	*.5	.62	.52	.62	.56	.28	7.6	.69	†.97	.75	.62	.42
19	*5.0	.62	.52	.62	.56	.69	.97	.75	*.82	.82	.62	.56
20	*10	.62	.46	.62	.56	.62	.90	.82	.90	.90	.62	.62
21	*.2	.52	.56	.62	.56	.62	.90	5.3	.82	.82	.69	.69
22	47	.59	.69	.62	.56	.62	17.5	.56	.82	.75	.42	.69
23	32	.75	.89	.56	.56	.62	.97	.42	1.25	.75	.56	.42
24	38	.75	.69	.56	3.0	.62	1.8	.42	6.2	.75	.56	.25
25	12.5	.62	.62	.56	.86	1.0	.75	.42	*5.0	.69	.52	.62
26	.62	.56	.52	.56	.69	.52	.90	.42	*.9	.69	.52	.69
27	.90	.62	.56	.56	.97	.52	.69	.42	†.75	.69	.62	.69
28	.62	.62	.62	.52	5.1	.54	5.8	.42	.75	.97	.69	.69
29	3.1	.69	.82	.62	.67	5.4	.75	-	.75	.62	.75	.69
30	19.5	.69	.62	.56	1.3	.37	.75	-	.75	.62	.75	2.6
31	26	.69	-	.56	-	64	.75	-	.75	-	.69	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	47	0.07	8.28	12.8	257	788
August.....	.90	.52	.655	1.01	20.2	62
September.....	47	.12	2.34	3.62	70.2	215
October.....	.62	.52	.583	.902	18.1	55
November.....	5.1	.56	.873	1.35	26.2	80
December.....	64	.16	3.28	5.07	102	312
Calendar year						
January.....	30	.07	3.00	4.64	93.1	286
February.....	6.4	.42	1.10	1.70	30.8	94
March.....	74	.62	8.06	12.5	250	767
April.....	-	.56	1.27	1.96	38.0	117
May.....	.89	.42	.618	.956	19.2	59
June.....	2.8	.25	.644	.996	19.3	59
Fiscal year 1932-33	74	.07	2.56	3.99	944	2,890

*Estimated.

†Partly estimated.

Honopou Stream below Haiku Ditch, near Huelo

(Continued)

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.20	0.62	0.46	0.37	0.36	.47	†0.37	.28	0.56	0.44	0.90	12.5
2	3.5	.56	.46	.37	1.2	1.0	†.56	1.1	.56	.69	.82	17.5
3	.69	.56	.46	.37	.36	.69	.52	.56	.56	17	8.2	.89
4	.69	.84	.46	.42	.46	.52	.46	.52	.56	7.7	16.5	27
5	.62	.52	.46	.42	.42	.56	.42	.52	.69	.27	40	.24
6	.62	.62	.52	.37	.52	.56	†.33	.56	.69	.46	31	.44
7	.62	.62	.46	.37	.46	.56	†.33	.56	.69	.62	51	.69
8	.69	.62	.46	.37	.46	.56	†.33	.52	.69	35	60	.62
9	.62	.62	.46	.37	.42	.56	.33	.52	.62	2.1	71	.62
10	.62	.62	.42	.37	.37	.56	.37	.46	.56	.46	62	.69
11	.62	.56	.46	.37	.69	.56	.52	.46	.56	10	44	.69
12	.62	.56	.46	.37	.69	.52	.42	.52	.56	3.2	40	.69
13	.62	.56	.46	.37	.62	.52	.42	.46	.56	.75	.83	.75
14	.62	.56	.46	.37	.69	.52	.42	.46	.56	23	4.3	1.0
15	.62	.56	.46	.37	.69	.42	.46	.52	.56	12.5	29	.75
16	.62	.52	.46	.37	.56	.42	.52	.46	.56	.46	2.0	.75
17	.62	.52	.46	.37	.52	.42	.62	.46	.56	.42	.69	.79
18	.62	.52	.46	.37	.52	.42	.62	.42	.52	.52	.62	5.2
19	.52	.52	.46	.33	.46	.42	.62	.37	.52	.69	.69	12
20	.56	.52	.42	.29	.46	.42	.97	10.5	.52	16.5	.62	22
21	.56	.52	.42	.29	.46	.42	.22	2.5	.52	28	.56	.51
22	.56	.52	.46	.33	.46	.42	.38	.62	.52	45	.69	.82
23	.56	.52	.46	.37	.46	.37	.72	.62	.62	3.9	.75	.82
24	.56	.52	.46	.37	.42	.37	1.15	.62	.62	7.4	.75	1.06
25	.56	.46	.46	.33	7.3	.37	.75	.62	.62	151	.75	5.8
26	.56	.46	.46	.33	19	.37	.69	.56	.56	58	.75	35
27	.56	.46	.42	.29	.30	.42	.69	.56	.70	16	.75	6.8
28	.56	.46	.42	.29	.56	.46	.75	.56	3.2	1.85	.75	5.4
29	1.6	.46	.42	.29	.52	.42	.69	-	2.8	3.0	.75	13.5
30	2.3	.46	.37	.29	.46	.37	.69	-	.69	1.4	.75	.97
31	.54	.46	-	.29	-	.37	2.8	-	1.65	-	2.2	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	3.5	0.20	0.778	1.20	24.1	74
August.....	.84	.46	.545	.843	16.9	52
September.....	.52	.37	.451	.698	13.5	42
October.....	.42	.29	.350	.542	10.8	33
November.....	19	.30	1.36	2.10	40.9	126
December.....	47	.37	1.99	3.08	61.6	189
Calendar year 1933	74	.07	1.69	2.61	618	1,900
January.....	2.8	.22	.617	.855	19.1	59
February.....	28	.37	1.95	3.02	54.6	168
March.....	3.2	.52	1.779	1.21	24.2	74
April.....	151	.27	14.9	23.1	448	1,380
May.....	71	.56	15.3	23.7	474	1,450
June.....	35	.24	5.88	9.10	176	542
Fiscal year 1933-34	151	.20	3.74	5.79	1,364	4,190

*Estimated.

†Partly estimated.

Wailoa Ditch at Honopou, near Huelo

Location.- Water-stage recorder 100 feet below intake at Honopou Stream, half a mile west of Lupi, and 2½ miles west of Kailua.

Records available.- November 1922 to June 1934.

Average discharge.- 11 years (1923-34), 109 million gallons a day (169 second-feet).

Extremes.- Maximum discharge during year, 171 million gallons a day (265 second-feet) Apr. 11 (gage height, 5.62 feet); minimum, 17.5 million gallons a day (27.1 second-feet) Nov. 24.

1922-34: Maximum discharge, 173 million gallons a day (268 second-feet) Nov. 23, 1930 (gage height, 5.77 feet); minimum, 11 million gallons a day (17 second-feet) Feb. 12, 1932.

Remarks.- Records good except those estimated, which are fair. Wailoa Ditch receives the water from Koolau Ditch at Alo and from all streams west of Alo to Halehaku at elevation of about 1,200 feet.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	146	79	38	30	43	146	28	166	47	154	162	166
2	162	90	41	29	146	150	112	158	44	142	162	166
3	158	102	36	28	57	154	74	122	41	154	166	162
4	134	158	35	29	36	102	41	98	96	166	166	166
5	142	106	41	32	45	75	34	102	75	166	166	166
6	158	126	83	29	44	64	30	79	47	154	166	162
7	126	102	61	29	43	57	29	68	41	134	166	158
8	162	83	44	41	47	54	28	61	41	170	166	142
9	130	83	34	29	34	50	28	61	38	170	166	126
10	126	102	32	26	36	47	151	61	54	154	166	122
11	138	72	32	25	29	47	150	54	41	162	166	134
12	98	64	54	28	26	44	110	50	41	170	166	114
13	118	61	126	25	25	41	64	57	36	166	166	138
14	114	57	90	25	24	36	75	47	35	170	166	162
15	94	64	50	24	22	35	68	44	34	166	166	138
16	94	*57	61	22	22	35	64	44	36	166	166	138
17	87	50	106	25	21	36	50	44	44	158	162	162
18	72	57	54	25	21	35	47	41	44	146	162	166
19	72	50	41	22	20	32	126	61	38	150	162	166
20	87	50	38	21	20	30	162	166	34	170	162	166
21	68	44	44	20	20	29	142	162	34	170	158	166
22	64	41	50	26	20	41	90	114	30	170	150	166
23	79	41	64	20	20	50	98	83	63	166	162	166
24	83	38	47	} *22	18.5	44	154	68	110	166	166	166
25	64	38	36		61	47	138	61	57	170	154	166
26	87	36	35	20	162	32	98	54	41	166	142	170
27	83	35	32	20	114	52	79	50	82	166	130	166
28	61	34	32	22	72	92	68	47	162	166	166	166
29	110	34	32	22	54	38	61	-	162	166	154	166
30	142	35	30	26	47	30	54	-	162	166	154	166
31	90	35	-	24	-	29	85	-	162	-	162	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	162	61	108	167	3,350	10,280
August.....	158	34	65.3	101	2,020	6,210
September.....	126	30	50.0	77.4	1,500	4,600
October.....	41	20	25.5	39.5	790	2,420
November.....	162	18.5	45.0	69.6	1,350	4,140
December.....	154	29	56.6	87.6	1,750	5,380
Calendar year 1933	162	18.5	80.4	124	29,330	90,010
January.....	162	28	81.9	127	2,540	7,790
February.....	166	41	79.4	123	2,220	6,820
March.....	162	30	63.6	98.4	1,970	6,050
April.....	170	154	162	251	4,660	14,910
May.....	166	130	161	249	4,990	15,300
June.....	170	114	156	241	4,680	14,370
Fiscal year 1933-34	170	18.5	87.7	136	32,020	98,270

*Estimated.

New Hamakua Ditch at Honopou, near Huelo

Location.- Water-stage recorder 600 feet below Honopou Stream crossing, 15 feet above tunnel portal, and 2½ miles west of Kailua.

Records available.- January 1918 to June 1934.

Average discharge.- 16 years, 27.0 million gallons a day (41.8 second-feet).

Extremes.- Maximum discharge during year, 120 million gallons a day (186 second-feet) Apr. 25 (gage height, 5.35 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Oct. 21.

1918-34: Maximum discharge, 143 million gallons a day (221 second-feet) Feb. 27, 1932 (gage height, 5.90 feet); no flow when water is shut out of ditch.

Remarks.- Records good except those for estimated periods, which are poor. New Hamakua Ditch diverts water from streams between Waikamoi and Halehaku above Center and Lowrie Ditches. Regulated by gates and spillways.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	22	0.7	0.4	0.3	9.9	74	0.3	89	0.5	38	54	89
2	84	1.1	.4	.2	52	16	47	.5	15.5	19.5	89	89
3	29	1.0	.4	.2	.6	42	1.6	1.8	.5	52	88	82
4	6.3	.56	.3	.3	.4	1.4	.5	1.5	2.3	87	97	97
5	9.1	1.5	.3	.3	.8	.9	.4	1.6	1.0	76	105	81
6	54	15	1.5	.2	.8	.3	1.4	.7	15	102	32	
7	2.4	1.6	.8	.2	.4	.7	.2	1.2	.6	1.5	108	9.6
8	51	.8	.5	.2	.3	.6	.2	1.1	.5	92	110	2.3
9	3.6	.8	.3	.2	.3	.6	.2	1.0	.4	70	110	2.0
10	1.7	1.3	.3	.3	.3	.6	44	1.0	.3	7.5	110	2.4
11	5.2	.7	.3	.3	.3	.6	39	.9	.3	61	108	4.1
12	.7	.7	.7	.2	.3	.5	1.7	.8	.4	87	105	1.7
13	9.2	.6	38	.3	.3	.5	.7	.8	.3	51	97	14
14	2.0	.6	3.4	.2	.2	.5	.7	.8	.3	89	95	60
15	.7	.7	.5	.2	.2	.5	.7	.7	.3	54	100	4.2
16	.7	.7	.5	.2	.2	.5	.6	.8	.3	37	94	1.7
17	.6	.6	1.4	.2	.2	.5	.6	.8	.3	7.0	79	47
18	.5	.6	.5	.2	.2	.4	.5	.6	.3	2.6	61	84
19	.5	.6	.3	.1	.2	.4	24	9.7	.3	11.5	63	90
20	.6	.5	.3	.2	.2	.3	73	89	.2	85	46	95
21	.5	.5	.3	.1	.2	.3	16	56	.2	92	12	63
22	.5	.5	.5	.2	.2	.4	1.1	1.3	.2	98	2.6	62
23	.7	.4	.6	.3	.2	.4	14.5	.7	1.9	72	44	69
24	.9	.4	.7	.2	.2	.3	35	.6	3.1	50	45	84
25	.6	.3	.4	.2	26	.3	8.6	.6	.6	113	11.5	80
26	.5	.3	.3	.2	88	.3	1.4	.6	.3	110	2.0	102
27	.5	.3	.3	.5	5.2	.4	1.1	.6	20	105	1.7	89
28	.4	.3	.3	.2	.5	8.7	1.1	.6	84	100	46	81
29	27	.3	.3	.2	.4	.4	1.0	-	83	87	17.5	91
30	41	.4	.3	.4	.4	.4	.9	-	82	89	31	77
31	.8	.4	-	1.0	-	.3	23	-	84	-	50	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	84	0.4	11.5	17.8	357	1,100
August.....	56	.3	2.91	4.50	90.2	277
September.....	38	.3	1.84	2.95	55.1	169
October.....	1.0	.1	.23	.36	7.1	22
November.....	82	.2	6.31	9.76	189	561
December.....	74	.3	5.31	8.22	164	505
Calendar year 1933	101	.1	10.6	16.4	3,860	11,870
January.....	73	.2	9.96	15.4	309	948
February.....	89	.8	11.2	17.3	312	958
March.....	84	.2	11.9	18.4	370	1,130
April.....	113	1.5	61.9	95.8	1,860	5,690
May.....	110	1.7	65.0	101	2,010	6,180
June.....	102	1.7	56.5	87.4	1,700	5,200
Fiscal year 1933-34	113	.1	20.3	31.4	7,420	22,760

*Estimated.

Lowrie Ditch at Honopou Gulch, near Huelo

Location.- Water-stage recorder a quarter of a mile below siphon across Honopou Stream and $1\frac{1}{2}$ miles northwest of Kailua.

Records available.- February 1930 to June 1934.

Extremes.- Maximum discharge during year, 71 million gallons a day (110 second-feet) Apr. 25 (gage height, 4.74 feet); minimum, 0.3 million gallons a day (0.5 second-foot) Jan. 31, Mar. 8.

1930-34: Maximum discharge, 86 million gallons a day (133 second-feet) Nov. 18, 1930 (gage height, 5.45 feet); no flow at times.

Remarks.- Records good. Lowrie Ditch diverts water at elevation of 500 feet from all streams between Kailua and Halehaku Stream. Regulated by gates.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	30	4.9	3.6	2.7	4.7	35	2.4	58	6.0	26	52	58
2	45	6.3	3.6	2.6	45	44	8.9	54	5.8	33	35	58
3	25	4.9	3.1	2.6	24	41	4.8	30	5.5	33	52	55
4	7.2	30	2.9	2.7	2.9	15	3.1	12.5	7.4	55	61	61
5	4.6	12.5	3.2	2.9	3.0	5.8	2.7	12.5	4.1	55	64	58
6	22	9.9	5.4	2.7	4.0	4.8	2.5	6.4	2.6	39	61	47
7	4.9	7.0	4.4	2.7	2.6	4.4	2.4	5.0	2.5	11.5	64	16.5
8	23	5.0	3.3	2.9	2.8	4.1	2.3	7.1	2.4	51	64	15
9	7.7	4.9	2.8	2.6	2.4	3.9	2.3	7.4	2.3	55	67	13
10	6.1	7.3	2.6	2.4	2.1	3.6	13.5	7.4	4.6	45	64	12.5
11	5.7	4.9	2.8	2.4	.5	4.8	27	6.5	4.1	39	64	12.5
12	4.8	4.5	4.3	3.2	.8	3.6	7.0	4.1	3.6	55	64	13
13	5.2	4.3	18	2.5	.8	3.4	3.7	4.1	3.5	49	61	17
14	6.3	4.7	7.3	2.3	1.2	3.4	4.1	3.3	3.5	56	61	52
15	5.2	5.1	3.4	2.2	1.8	3.2	2.6	3.0	3.0	51	64	14.5
16	4.8	4.5	3.4	2.2	2.0	3.2	2.4	8.0	3.4	48	61	11.5
17	4.7	4.3	3.8	2.2	1.9	3.5	2.2	5.8	3.2	35	44	18.5
18	4.2	4.7	3.1	2.1	1.8	3.2	2.0	5.3	3.4	18.5	49	58
19	4.2	4.1	2.8	2.1	1.8	3.0	9.0	5.9	2.8	17.5	55	58
20	5.3	4.0	2.6	2.0	1.9	2.9	46	55	2.4	48	34	58
21	4.2	3.8	3.3	1.9	1.8	2.9	17	51	2.3	58	21	55
22	4.2	3.6	3.4	2.2	1.8	3.5	5.3	19	2.2	61	18.5	47
23	5.1	3.6	3.5	2.4	1.7	3.1	9.8	18.5	5.9	58	30	32
24	5.4	3.5	4.9	2.1	1.7	2.9	43	7.4	7.6	55	26	58
25	4.6	3.4	3.3	1.9	5.5	2.7	24	6.9	4.6	63	18.5	55
26	4.3	3.4	2.9	1.8	52	2.6	8.4	6.5	3.0	50	16.5	61
27	4.3	3.2	2.8	1.8	25	3.2	6.9	6.5	12.5	61	13	58
28	4.0	3.1	2.8	1.8	13	4.0	6.1	6.1	55	61	26	58
29	12.5	3.0	2.8	2.0	2.5	2.9	3.5	-	55	49	17.5	61
30	40	3.2	2.9	2.1	2.2	2.5	4.2	-	55	52	21	55
31	12.5	3.1	-	2.1	-	2.4	14	-	54	-	30	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	45	4.0	10.5	16.2	327	1,000
August.....	30	3.0	5.84	8.73	175	536
September.....	18	2.6	3.97	6.14	119	365
October.....	3.2	1.8	2.33	3.61	72.1	221
November.....	52	.8	7.28	11.3	218	671
December.....	44	2.4	7.37	11.4	228	701
Calendar year 1933	58	.8	12.0	18.6	4,390	13,470
January.....	46	2.0	9.45	14.6	293	599
February.....	58	3.0	15.1	23.4	423	1,300
March.....	55	2.2	10.7	16.6	333	1,020
April.....	63	11.5	46.2	71.5	1,390	4,260
May.....	67	13	44.5	68.9	1,380	4,230
June.....	61	11.5	41.6	64.4	1,250	3,830
Fiscal year 1933-34	67	.8	17.0	26.3	6,210	19,030

Haiku Ditch at Kapalalaea Gulch, near Huelo

Location.- Water-stage recorder in open section of ditch just below tunnel between Honopou and Kapalalaea Gulches, $1\frac{1}{4}$ miles northwest of Kailua.

Records available.- February 1930 to June 1934.

Extremes.- Maximum discharge during year, 124 million gallons a day (192 second-feet) Apr. 25 (gage height, 5.66 feet); no flow Nov. 10, 16-25, and Dec. 1.
1930-34: Maximum discharge, that of Apr. 25, 1934; no flow occasionally.

Remarks.- Records good. Haiku Ditch diverts water at elevation of 250 feet from all streams between Kailua Stream and Maliko Gulch. Regulated by gates.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.4	0.5	0.3	0.2	1.3	46	0.2	88	0.5	4.5	6.4	78
2	42	.5	.3	.2	41	21	.5	28	.5	.6	4.3	88
3	1.5	.5	.3	.2	.6	18.5	.2	2.0	.5	36	57	21
4	.6	20	.5	.2	.2	1.0	.2	1.5	.7	78	83	79
5	1.8	.9	.5	.2	.3	.5	.2	1.4	2.3	36	102	26
6	.5	.6	.4	.2	.4	.4	.2	4.1	2.5	1.5	102	3.1
7	1.9	.6	.3	.2	.2	.3	.2	4.3	2.2	1.1	102	2.5
8	.9	.4	.2	.2	.3	.2	.2	1.7	2.1	74	116	2.1
9	.5	.5	.2	.2	.2	.3	.2	1.0	2.1	30	116	1.9
10	.4	.6	.2	.2	.1	.2	.2	1.0	.7	2.3	116	1.8
11	.3	.5	.2	.2	1.3	.5	3.2	.9	.5	48	102	1.7
12	.3	.5	.4	.2	1.3	.3	.6	3.1	.5	58	102	1.7
13	.3	.4	.5	.2	1.4	.2	.3	3.1	.5	4.1	67	3.6
14	.3	.5	.3	.2	.8	.2	.3	5.3	.4	7.2	42	17.5
15	4.3	.5	.3	.2	.1	.2	1.2	3.1	.3	43	86	1.8
16	1.3	.5	.3	.2	0	.2	1.6	1.7	.3	7.0	37	1.6
17		.4	.3	.2	0	.2	1.1	1.0	.3	3.1	5.6	4.2
18		.4	.3	.2	0	.2	1.3	.9	.3	2.3	6.3	67
19		.4	.2	0	0	.2	2.2	.6	.3	1.9	8.9	68
20		.4	.2	.2	0	.2	26	76	.3	59	5.4	61
21		.4	.2	.2	0	.2	1.9	44	.3	86	4.1	13
22		.3	.4	.2	0	.3	.8	1.3	.3	88	3.7	5.3
23		.5	.3	.2	0	.2	5.8	.8	.4	49	3.9	7.1
24		.5	.3	.2	0	.2	26	.7	.4	22	3.6	17
25		.4	.3	.2	8.5	.2	1.2	.6	.3	116	3.4	49
26		.4	.3	.2	.2	61	.2	.7	.2	102	3.6	88
27		.4	.3	.2	.2	2.1	.2	.6	.5	7.4	88	3.1
28		.4	.3	.2	.2	.3	.2	.5	.5	48	43	3.6
29	9.0	.3	.2	.2	.2	.2	2.7	-	49	22	2.7	78
30	29	.3	.2	.2	.2	.2	3.0	-	34	27	2.3	13
31	.9	.3	-	.2	.2	.2	17	-	43	-	23	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	42	-	3.11	4.81	96.5	296
August.....	20	0.3	1.06	1.64	32.9	101
September.....	.5	.2	.28	.43	8.3	25
October.....	.2	.2	.20	.31	6.2	19
November.....	61	0	4.06	6.28	122	373
December.....	46	.2	3.01	4.66	93.2	286
Calendar year 1933	78	0	4.68	7.24	1,710	5,250
January.....	26	.2	3.24	5.01	100	308
February.....	88	.5	9.92	15.3	278	853
March.....	49	.2	6.49	10.0	201	617
April.....	116	.6	38.1	58.9	1,140	3,510
May.....	116	2.3	42.7	66.1	1,320	4,080
June.....	88	1.6	31.7	49.0	950	2,920
Fiscal year 1933-34	116	0	11.9	18.4	4,350	13,370

*Partly estimated.

†Estimated.

Waiakea Stream at middle flume house, near Mountain View

Location.- Water-stage recorder at middle flume house 800 feet above Olaa Sugar Co.'s main flume and 7½ miles northwest of Mountain View.

Drainage area.- Large part of flow comes from three tunnels.

Records available.- September 1930 to June 1934.

Extremes.- Maximum discharge during year, 31 million gallons a day (48 second-feet)

Feb. 21 (gage height, 3.51 feet); no flow several days in December and January.

1930-34: Maximum discharge, 149 million gallons a day (231 second-feet) July 21, 1931 (gage height, 4.70 feet); no flow when tunnels and stream dry up.

Remarks.- Records excellent for ordinary stages, poor for high stages and estimated periods. No diversions.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.3	1.0	0.56	1.9		0.49	0.01	9.2	8.0	0.18	9.8	3.7
2	3.7	.97	.62	1.8		.38	.01	7.4	6.6	.13	9.2	3.4
3	3.2	1.8	.77	*1.6		.42	.01	6.8	6.0	.11	9.2	4.1
4	2.8	2.1	.50			.31	.01	6.5	5.2	.12	9.2	4.0
5	3.0	1.65	.52			.24	.01	6.0	4.4	.10	9.2	4.0
6	3.2	1.55	.58			.21	.01	5.4	4.2	.09	9.4	4.2
7	2.8	1.35	1.6			.19	.01	5.0	3.7	.08	9.2	4.2
8	2.7	2.2	.94			.18	.01	4.7	3.4	.05	9.2	4.2
9	2.5	2.1	.82			.16	.01	4.4	3.0	.03	8.6	4.2
10	2.4	2.1	.92			.13	5.2	4.2	2.6	.03	15	4.2
11	2.2	2.2	.82			.18	6.6	3.7	2.4	.02	11	4.2
12	2.1	2.3	.95			.16	5.0	3.4	2.2	.02	15	4.0
13	2.1	2.1	2.8			.09	3.7	3.2	1.95	4.8	13	4.2
14	2.1	2.1	4.2			.10	.06	4.0	2.8	1.8	2.3	16
15	1.95	1.95	3.2			.07	.02	3.7	2.6	1.55	1.65	16
16	1.9	1.9	3.2			.03	.02	3.9	2.4	1.4	1.35	19
17	1.9	1.8	2.6			.01	.02	3.4	2.2	1.35	1.25	16
18	1.8	1.75	2.4			.01	.02	6.0	2.0	1.15	1.2	15.5
19	1.7	1.6	2.2			.01	.02	6.0	1.8	1.0	1.3	11
20	1.65	1.55	2.1			.01	.01	6.0	2.4	.91	1.9	10.5
21	1.5	1.5	2.0			.01	.01	5.7	15	.77	3.2	10
22	1.35	1.4	2.0			.01	.01	7.0	9.8	.66	12.5	9.8
23	1.25	1.3	2.0			.01	.01	6.6	10	.58	9.2	9.2
24	1.15	1.15	2.1			.01	0	8.1	10.5	.50	8.6	8.6
25	1.1	1.1	2.0			.01	0	9.2	10	.47	8.6	7.1
26	1.15	1.0	2.1			6.4	.01	8.6	10.5	.42	9.2	6.6
27	1.05	.94	1.9			1.4	0	8.6	10	.34	9.2	5.4
28	.92	.87	1.8			.87	.07	8.6	9.2	.32	9.2	4.7
29	.94	.77	2.0			.66	.02	8.0	-	.38	9.2	4.4
30	1.05	.70	2.0			.54	.02	7.4	-	.25	9.8	4.0
31	1.0	.62	-			-	.01	6.8	-	.21	-	3.7

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	3.7	0.92	1.95	3.02	60.5	186
August.....	2.3	.62	1.55	2.37	47.4	146
September.....	4.2	.50	1.74	2.69	52.2	160
October.....	-	-	1.27	1.86	39.3	121
November.....	6.4	.01	.602	.931	18.1	55
December.....	.49	0	.112	.173	3.47	11
Calendar year 1933	18.5	0	3.61	5.59	1,320	4,040
January.....	9.2	.01	4.46	6.90	138	424
February.....	15	1.8	6.10	9.44	171	524
March.....	8.0	.21	2.18	3.37	87.7	268
April.....	12.5	.02	3.51	5.43	105	323
May.....	19	3.7	10.1	15.6	312	959
June.....	11	3.4	4.91	7.60	147	452
Fiscal year 1933-34	19	0	3.19	4.94	1,160	3,570

*Partly estimated.

†Estimated.

Note.- Estimated average of 4 million gallons a day bypassed station from May 17 to June 30.

Wailuku River at Pukamaui, near Hilo

Location.— Water-stage recorder at Pukamaui, three-quarters of a mile above Hilo Boarding School Ditch intake and $4\frac{1}{4}$ miles west of Hilo.

Drainage area.— 97.2 square miles.

Records available.— April 1923 to June 1928, July 1929 to June 1934.

Extremes.— Maximum discharge during period ending June 30, 1930, 5,620 million gallons a day (8,700 second-feet) Nov. 18 (gage height, 10.50 feet); no flow when all the water was diverted.

Maximum discharge during year ending June 30, 1931, unknown, owing to missing gage record; no flow when all water was diverted.

Maximum discharge during year ending June 30, 1932, 17,800 million gallons a day (27,500 second-feet) July 21 (gage height, 14.95 feet); no flow when all water was diverted.

Maximum discharge during year ending June 30, 1933, 14,100 million gallons a day (21,800 second-feet) Dec. 2 (gage height, 13.90 feet); no flow Oct. 12–18, 30–31, Nov. 1–5, owing to diversion.

Maximum discharge during year ending June 30, 1934, 3,480 million gallons a day (5,380 second-feet) Jan. 23 (gage height, 9.18 feet); no flow when all water was diverted.

1923–28, 1929–34: Maximum discharge, that of July 21, 1931; no flow when all water is diverted.

Remarks.— Records good for ordinary stages except those estimated, which are poor. High stage records poor. Hilo waterworks diverts water for domestic use from pool at control. Regulated by this diversion. All records from July 28, 1929, to June 30, 1933, have been revised in this report.

Discharge, in million gallons, fiscal year July 1929 to June 1930

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		2.3	6.3	0	0.05	12.5	37	2.1	50	1.7	468	*22
2		1.5	6.7	0	0	9.3	25	1.5	141	1.1	87	*24
3		1.5	4.0	1.4	0	7.4	31	1.3	173	.3	95	176
4		5.0	3.2	.9	10	6.5	23	1.1	87	.1	57	302
5		5.6	2.6	.4	4.2	5.8	19	.5	103	0	326	131
6		7.1	2.1	.2	1.7	5.4	15	.7	134	1.2	376	72
7		4.8	2.3	.1	.7	5.6	12	.7	73	50	236	51
8		2.8	3.4	.1	.3	4.8	9.8	.5	49	119	103	39
9		2.1	2.4	.3	.1	3.4	9.0	.5	45	*697	121	27
10		68	1.9	6.9	0	1.3	8.6	.2	29		64	21
11		49	1.3	4.8	0	1.0	6.9	0	19.5	} *170	47	17.5
12		13	1.0	2.3	0	3.0	6.5	.1	12.5		35	48
13		8.8	.8	1.3	0	1.5	6.1	.6	11	} †420	33	51
14		6.8	.5	.9	0	2.1	5.4	5.0	170		50	23
15		7.4	.4	.4	0	1.7	5.0	4.4	309	*86	70	19
16		8.4	.2	.2	0	1.4	4.6	1.6	121	49	32	15
17		21	0	.1	.7	3.2	4.0	.7	72	37	28	12.5
18		7.4	.5	0	958	36	4.2	.2	40	28	59	11.5
19		8.9	.7	0	*94	78	3.6	0	54	23	66	10.5
20		12.5	0	0	28	53	3.8	0	53	20	43	9.5
21		10.5	0	2.7	16.5	18	7.6	0	53	33	37	9.3
22		12	0	5.0	12	18	6.5	0	29	61	37	9.3
23		7.2	0	1.0	10.5	30	8.6	0	20	103	37	30
24		6.3	0	0	63	16	5.6	0	14.5	51	26	262
25		5.0	0	0	117	11	6.1	0	10.5	37	20	151
26		4.4	.4	0	432	7.4	5.6	4.4	7.8	30	17.5	79
27		3.8	1.3	0	73	15	4.4	124	6.1	24	14.5	*53
28	4.6	5.2	1.4	0	37	16	3.8	471	4.8	33	12.5	63
29	3.6	2.8	1.5	.2	24	37	3.2		4.2	47	10.5	697
30	3.0	2.6	1.1	.8	17	402	2.6		3.0	226	11	362
31	2.6	3.8	—	.8	—	82	2.4	—	2.1	—	12	—

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acres-feet
July.....	68	1.5	9.86	15.3	306	936
August.....	6.7	0	1.53	2.37	46.0	141
September.....	6.9	0	.99	1.53	30.8	95
October.....	958	0	63.3	97.9	1,900	5,830
November.....	402	1.0	28.9	44.7	895	2,750
December.....						
Calendar year.....						
January.....	37	2.4	9.55	14.8	296	908
February.....	471	0	22.2	34.3	621	1,910
March.....	309	2.1	61.3	94.8	1,900	5,830
April.....	697	0	112	173	3,360	10,310
May.....	468	10.5	84.9	131	2,630	8,070
June.....	697	9.3	93.9	145	2,820	8,650
The period.....						45,430

*Partly estimated.

†Estimated.

Wailuku River at Pukamaui, near Hilo

(Continued)

Discharge, in million gallons, fiscal year July 1930 to June 1931

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	193	62	36	52	5.4	8.3	4.6	0	22	0	3.4	3.4
2	298	29	77	224	5.4	7.8	3.8	0	13.5	0	2.1	2.1
3	80	23	35	766	5.2	7.8	3.4	0	11.5	.2	1.5	1.4
4	52	17.5	28	1,200	6.5	7.2	3.4	0	12	.4	1.3	1.3
5	37	836	23	131	6.5	6.5	3.2	0	8.6	.7	1.0	1.0
6	194	912	22	249	4.8	5.8	4.0	0	6.3	4.4	.7	1.0
7	80	112	21	112	3.8	5.4	5.6	0	5.4	3.2	.4	.7
8	42	58	19.5	112	8.9	5.2	4.8	0	5.2	1.9	.3	.2
9	30	449	19	*72	11	4.8	5.0	0	5.6	.9	.3	0
10	22	5,800	220	147	5.6	5.0	4.0	0	5.8	.2	.2	0
11	17	†4,740	184	41	5.0	4.6	6.1	0	8.1	0	.2	0
12	15	84	300	37	3.8	4.0	0	0	6.1	0	1.3	0
13	14	*632	88	124	19.5	3.2	3.0	0	5.2	0	.7	0
14	15	560	52	51	19.5	3.4	2.4	0	4.4	0	0	0
15	12.5	432	41	34	16	3.2	2.1	0	4.0	.2	.1	0
16	11	769	437	26	206	7.2	1.5	0	3.6	3.4	.2	4.2
17	10	864	2,490	21	367	14	1.3	0	3.6	5.0	.8	3.8
18	9.8	*616	498	17.5	80	12	1.3	0	3.4	11	12	3.6
19	9.0	349	244	15	36	8.8	1.3	0	2.3	5.8	10	2.1
20	118	141	236	12.5	40	6.7	1.0	.5	1.5	3.6	4.6	1.9
21	172	152	258	12	29	10.5	.8	.5	1.3	2.6	2.8	3.0
22	70	152	141	12	31	12.5	.7	2.6	1.1	2.9	1.7	5.0
23	33	87	121	14	24	9.0	.5	3.8	1.0	28	1.1	5.6
24	33	72	1,110	19.5	42	6.9	.3	3.4	.9	19	.8	4.4
25	20	112	613	16	17.5	6.5	.2	597	.8	7.2	.5	3.6
26	136	84	184	18	14	35	.2	439	.8	5.4	.5	3.4
27	67	70	112	12	12	12.5	.4	275	.8	4.4	1.0	2.6
28	84	54	95	10	10.5	9.0	.1	53	.5	4.0	.4	1.9
29	107	49	77	8.8	9.5	7.2	0	-	.2	5.0	.9	1.7
30	59	39	58	8.1	9.5	6.7	0	-	0	4.2	†5.5	1.1
31	46	36	-	6.9	-	5.6	0	-	0	-	-	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	298	9.0	67.3	104	2,090	6,400
August.....	5,800	17.5	740	1,145	22,950	70,430
September.....	2,490	19	254	393	7,620	23,400
October.....	1,200	6.9	121	187	3,740	11,490
November.....	367	3.8	36.3	56.2	1,090	3,340
December.....	35	3.2	8.13	12.6	252	774
Calendar year 1930	5,800	0	135	209	49,370	151,500
January.....	6.1	0	2.23	3.45	69.0	212
February.....	597	0	49.1	76.0	1,370	4,220
March.....	22	0	4.69	7.25	146	447
April.....	28	0	4.13	6.39	124	380
May.....	12	0	1.99	3.08	61.8	190
June.....	5.6	0	1.97	3.05	59.0	181
Fiscal year 1930-31	5,800	0	108	167	39,670	121,500

*Partly estimated.

†Estimated.

Wailuku River at Pukamaui, near Hilo

(Continued)

Discharge, in million gallons, fiscal year July 1931 to June 1932

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.7	8.1	12.5	394	19.5	8.1	50	95	487	12.5	64	109
2	.4	8.3	10.5	162	15	8.1	29	68	187	21	39	84
3	.1	9.5	9.3	103	12.5	8.1	16	49	84	16.5	84	47
4	0	9.5	9.5	103	82	7.8	12.5	38	57	10.5	37	38
5	1.0	11	9.0	66	44	7.6	10.5	32	37	17	28	41
6	4.8	28	9.0	52	24	7.4	9.5	248	29	19.5	66	36
7	3.2	12.5	21	47	25	6.7	8.3	343	22	24	69	24
8	1.7	14	60	35	66	6.1	9.3	173	17.5	14	52	19
9	2.3	10.5	23	30	229	5.8	9.5	148	16.5	18	133	15.5
10	2.6	13	15	26	290	5.8	14.5	564	14	*15.5	52	14
11	4.7	24	322	120	203	5.6	22	334	12	*72	35	17
12	4.2	13	560	626	190	5.2	16.5	353	10.5	121	27	12.5
13	3.2	11	†60	70	164	5.0	31	374	9.3	698	73	29
14	2.6	10.5	40	40	160	4.0	45	121	7.8	217	56	64
15	4.8	9.5	*30	27	656	3.8	35	81	7.4	95	43	49
16	3.0	11.5	58	23	175	3.6	26	59	7.2	93	37	30
17	2.8	12.5	93	51	172	3.4	17	50	6.3	*64	39	21
18	3.0	803	690	53	128	3.4	536	37	5.8	*32	38	22
19	3.4	673	121	37	73	15	840	30	6.1	*24	21	19.5
20	6.9	104	61	23	50	95	1,030	23	6.5	30	15	16.5
21	2,900	44	50	42	32	37	162	19.5	6.1	20	13	13
22	348	33	35	34	28	23	95	16.5	5.6	17	18	11
23	102	23	30	26	25	17.5	84	14.5	5.0	30	17	10
24	39	16	26	22	16	14.5	87	12.5	4.8	92	50	9.3
25	23	14.5	87	19	14.5	14.5	508	11	4.4	163	26	9.5
26	16	21	129	16	12.5	12	346	10	5.2	42	25	10.5
27	13	13.5	131	90	11	9.8	625	122	7.4	28	50	11.5
28	11.5	12	95	30	10.5	9.0	3,460	432	8.1	20	83	9.8
29	10.5	19.5	460	24	9.3	8.6	1,190	1,000	8.5	20	72	8.6
30	9.0	21	5,420	32	8.6	8.8	394	-	20	108	58	7.2
31	8.6	18	-	41	-	19.5	152	-	9.5	-	70	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	2,900	0	114	176	3,540	10,850
August.....	673	8.1	59.1	91.4	1,830	5,620
September.....	5,420	9.0	290	449	8,700	26,690
October.....	626	16	79.5	123	2,460	7,560
November.....	656	8.6	97.9	151	2,940	9,010
December.....	95	3.4	12.6	19.5	390	1,200
Calendar year 1931	5,420	0	59.4	91.9	21,690	66,560
January.....	3,460	8.3	318	492	9,870	30,290
February.....	1,000	10	168	260	4,860	14,810
March.....	487	4.4	36.0	55.7	1,120	3,430
April.....	698	10.5	71.5	111	2,140	6,560
May.....	133	13	47.7	73.8	1,480	4,540
June.....	109	7.2	26.9	41.6	808	2,480
Fiscal year 1931-32	5,420	0	110	170	40,140	123,200

*Partly estimated.

†Estimated.

Wailuku River at Pukamaui, near Hilo

(Continued)

Discharge, in million gallons, fiscal year July 1932 to June 1933

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.7	11	3.2	2.7	0	120	122	443	68	9.6	} †170	} †44
2	6.5	9.6	2.9	2.4	0	4,970	73	152	60	9.9		
3	25	9.3	2.9	2.2	0	696	60	95	36	10.5	} †95	53
4	9.5	8.6	5.3	2.1	0	173	53	65	30	14.5		
5	7.4	7.9	6.2	2.0	} †20	84	335	46	50	9.9	} †95	58
6	6.7	7.7	5.8	4.0		51	681	34	60	8.4		58
7	6.3	8.8	4.7	3.2	32	95	28	88	7.9	48	24	
8	6.3	9.1	4.3	2.2	5.8	26	53	23	394	7.3	61	19
9	6.5	7.7	10	2.0	4.0	20	34	19.5	221	7.0	47	17
10	5.8	7.7	13.5	1.5	3.4	14.5	26	18.5	95	11	54	14
11	8.3	12.5	25	1.1	4.7	12.5	26	18.5	59	31	31	12.5
12	25	9.3	9.3	.4	8.8	11	28	14.5	37	13	25	11
13	58	8.1	7.3	0	6.0	9.6	33	14.5	28	12.5	} †32	9.9
14	33	7.5	22	0	4.1	9.6	21	12	23	26		9.3
15	26	7.3	12.5	0	3.6	9.6	64	10.5	19.5	76	} †29	8.8
16	49	6.8	8.1	0	19.5	9.3	234	28	16	43		49	8.1
17	27	17.5	6.4	0	16.5	12	1,060	27	14	33	39	8.1
18	19	14.5	5.8	.2	7.3	13	498	16	12.5	49	45	7.9
19	17.5	11	5.1	2.8	6.6	16.5	141	16	11	21	26	7.3
20	15.5	8.6	5.1	7.0	15.5	9.9	103	53	10.5	14	†29	6.6
21	14	6.6	4.3	5.1	9.1	8.6	83	64	9.1	12	} †180	6.6
22	13.5	6.0	4.7	3.4	6.6	8.4	64	44	11.5	10.5		8.6
23	37	5.8	6.4	2.9	5.6	7.7	64	28	12	13	} †48	14
24	18	5.6	4.5	2.6	15	12.5	259	30	17	17.5		11.5
25	19.5	5.1	4.0	2.1	84	172	189	123	13.5	19.5	} †26	14
26	14	4.7	4.0	1.5	42	39	299	92	73	36		} †7.5
27	13.5	4.3	3.8	1.5	23	37	112	108	18.5	} †220	} †50		6.8
28	14	3.8	3.6	1.4	29	84	280	131	12.5			
29	12.5	3.8	3.1	1.0	31	38	196	-	10.5	} †220	} †50	30
30	11.5	3.2	2.9	.3	46	23	*780	-	9.6			
31	12.5	3.2	-	0	-	21	*1,410	-	9.3	-	-	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	58	5.8	17.6	27.2	545	1,670
August.....	17.5	3.2	7.83	12.1	243	745
September.....	25	2.9	6.89	10.7	207	634
October.....	7.0	0	1.86	2.88	57.6	177
November.....	84	0	15.2	23.5	457	1,400
December.....	4,970	7.7	218	337	6,750	20,720
Calendar year 1932	4,970	0	78.0	121	28,540	87,580
January.....	1,410	21	241	373	7,480	22,940
February.....	445	10.5	62.6	96.9	1,750	5,380
March.....	394	9.1	49.3	76.3	1,530	4,690
April.....	-	7.0	46.8	72.4	1,400	4,310
May.....	-	-	62.7	97.0	1,940	5,960
June.....	-	-	18.5	28.6	556	1,700
Fiscal year 1932-33	4,970	0	62.8	97.2	22,920	70,330

*Partly estimated.

†Estimated.

Wailuku River at Pukamaui, near Hilo

(Continued)

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	14.5	6.8	1.5	4.2	4.0	1.5	0	16	6.1	1.0	13.5	12.5
2	45	7.0	3.0	3.2	2.6	1.3	0	20	5.8	.7	11	11
3	*21	16	7.2	2.6	1.7	2.1	0	11.5	5.4	.1	11	27
4	†14	30	4.0	2.4	1.3	3.8	0	9.5	5.0	0	12	35
5		11	5.0	2.4	1.3	2.6	0	8.8	4.6	0	11	31
6	*14	9.3	9.3	2.1	.9	1.7	0	8.1	4.2	0	19	29
7	11	9.3	9.5	1.5	.9	1.3	0	7.2	4.0	0	17.5	30
8	10	15.5	6.9	1.3	1.1	1.1	0	6.7	3.8	0	11	21
9	9.9	17	6.1	.8	1.5	1.0	0	6.3	3.6	0	12	16
10	†8	12	6.1	.5	1.6	.9	109	5.6	3.0	0	119	14
11		9.5	5.2	.7	4.0	2.4	169	5.4	3.0	0	57	12.5
12		12	4.8	1.3	2.8	2.8	64	4.8	2.8	0	172	10.5
13		9.5	14	1.3	1.3	1.5	22	4.2	2.3	0	63	9.0
14		8.3	44	.9	1.0	.9	22	4.0	2.3	.7	140	8.6
15		7.4	15.5	.3	.5	.7	17.5	3.4	2.6	1.3	286	14
16	†5.5	6.7	14	.2	.2	.5	12.5	3.0	2.4	.3	180	38
17		5.6	10.5	.2	0	.5	11.5	3.2	2.4	0	70	36
18		4.6	8.6	2.1	0	.3	40	3.0	2.4	0	50	47
19		4.4	7.4	1.5	0	.2	41	2.8	2.3	0	102	49
20	†3.8	4.0	6.5	.8	0	.1	24	6.9	1.9	.6	83	114
21		3.8	6.1	.2	.1	0	17	550	1.9	10.5	42	66
22		3.4	5.6	6.2	.2	0	24	97	2.3	404	26	37
23		3.2	6.3	22	.1	0	395	28	1.9	138	19.5	30
24		3.0	6.1	22	0	0	286	15.5	1.7	26	18	18
25		2.9	3.2	5.4	8.6	0	131	12	1.5	74	16.5	32
26	4.3	3.8	6.9	6.1	36	0	60	9.8	1.9	48	14.5	57
27	5.3	3.0	6.1	5.4	8.3	0	36	9.3	2.1	28	24	70
28	4.9	3.4	5.4	5.2	5.2	.1	19.5	7.2	2.1	25	12.5	61
29	5.6	3.2	5.0	4.2	2.9	0	13.5	-	2.1	21	10.5	77
30	8.1	2.4	4.8	4.8	1.7	0	11	-	1.9	19	9.3	84
31	7.3	1.7	-	5.8	-	0	9.5	-	1.3	-	10	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	45	2.9	8.92	13.8	277	849
August.....	30	1.7	7.74	12.0	240	737
September.....	44	1.5	8.23	12.7	247	757
October.....	22	.2	3.90	6.05	121	371
November.....	36	0	2.70	4.15	81.1	249
December.....	3.8	0	.88	1.36	27.3	84
Calendar year 1933	1,410	0	42.9	66.4	15,650	48,030
January.....	395	0	48.9	75.7	1,520	4,650
February.....	550	2.8	31.0	48.0	969	2,670
March.....	404	1.3	2.92	4.52	90.6	268
April.....	286	0	26.6	41.2	798	2,450
May.....	114	9.3	52.3	80.9	1,620	4,980
June.....	550	8.6	36.6	56.6	1,100	3,370
Fiscal year 1933-34	550	0	19.1	29.6	6,990	21,440

*Partly estimated.

†Estimated.

Wailuku River above Hilo Boarding School Ditch intake, near Hilo

Location.- Water-stage recorder 1,000 feet above Hilo Boarding School Ditch intake, three-quarters of a mile west of Reservoir no. 1, and 4 miles west of Hilo.

Drainage area.- 124.5 square miles.

Records available.- July 1928 to June 1934.

Extremes.- Maximum discharge during year, 9,000 million gallons a day (13,900 second-feet) Jan. 23 (gage height, 15.50 feet); minimum, 1.1 million gallons a day (1.7 second-feet) Jan. 9.

1928-34: Maximum discharge, estimated as 21,000 million gallons a day (32,500 second-feet) July 21, 1931; minimum, that of Jan. 9, 1934.

Remarks.- Records good for ordinary stages; poor for high stages. Hilo waterworks diverts about 1 million gallons a day from pool at Pukamaui, three-quarters of a mile upstream.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June			
1	40	14	6.4	10	11.5	6.2	1.3	56	16.5	3.6	40	46			
2	117	15.5	8.9	8.9	9.1	6.4	1.5	70	15	3.2	31	38			
3	60	42	21	8.9	7.5	11.5	1.6	33	13.5	2.5	33	54			
4	43	96	10.5	6.4	6.7	15	1.3	27	12.5	2.2	36	84			
5	46	31	12	8.2	5.8	8.0	1.2	23	11.5	1.9	31	81			
6	46	27	33	7.8	5.3	6.9	1.2	19	11.5	1.9	64	85			
7	36	27	31	7.5	5.3	7.1	1.2	16.5	10.5	1.9	54	89			
8	31	34	19.5	7.3	5.5	6.4	1.2	15.5	12.5	1.9	33	70			
9	29	58	15	6.7	6.4	5.3	1.2	14	9.5	1.8	37	57			
10	27	36	15.5	5.8	6.7	4.7	350	13	8.0	1.8	379	51			
11	23	27	12.5	5.2	13.5	9.3	469	12	8.0	1.8	182	46			
12	19.5	38	11.5	5.0	8.6	10.5	186	13.5	7.1	1.8	585	36			
13	19	27	64	5.8	6.7	6.7	74	17	5.8	2.0	212	29			
14	21	23	154	6.4	5.8	4.9	74	14	5.7	3.0	411	27			
15	17	20	57	5.7	5.3	3.9	64	11.5	6.0	4.5	755	50			
16	15	18.5	51	4.9	5.2	3.4	46	9.7	5.7	2.5	526	89			
17	13.5	15.5	35	4.5	4.5	2.7	40	8.6	6.2	1.8	235	93			
18	13	13.5	27	16	3.8	2.5	136	8.0	6.0	1.6	181	*81			
19	12.5	12	21	8.2	3.4	2.3	118	5.3	5.3	1.6	321	103			
20	12.5	11	18	6.6	3.1	2.2	85	306	4.9	3.2	224	286			
21	11.5	11	16.5	6.0	2.3	2.1	55	1,750	4.9	32	132	188			
22	10	10	15.5	37	2.6	1.7	54	293	6.0	831	89	118			
23	9.1	8.9	19	104	2.4	1.8	1,010	132	4.9	309	70	101			
24	8.9	8.2	17.5	74	2.0	1.6	879	70	4.3	74	64	67			
25	8.6	8.5	15.5	25	2.0	1.5	337	46	4.2	164	57	93			
26	10	10	21	16.5	172	1.5	181	33	4.7	109	48	181			
27	10.5	8.6	18	14	28	1.4	118	27	5.0	78	81	} †240			
28	10	9.1	16	14	14.5	1.9	70	21	5.2	67	43				
29	11.5	8.9	14.5	11.5	10	1.6	48	-	5.3	60	36				
30	18.5	7.5	12	12.5	7.3	1.4	38	-	5.0	54	31				
31	16	6.7	-	17	-	1.3	29	-	4.3	-	38		-		
Million gallons a day													Second-foot (mean)	Total run-off	
Month		Maximum	Minimum	Mean	Million gallons	Acres-feet									
July		117	8.6	24.7	38.2	766	2,350								
August		96	6.7	22.0	34.0	683	2,100								
September		154	6.4	26.3	40.7	790	2,430								
October		104	4.5	15.5	24.0	479	1,470								
November		172	2.0	12.4	19.2	373	1,140								
December		15	1.3	4.64	7.18	144	441								
Calendar year 1933		2,940	1.3	122	189	44,500	136,400								
January		1,010	1.2	137	212	4,250	13,050								
February		1,750	5.3	109	169	3,060	9,400								
March		16.5	4.2	7.60	11.8	236	723								
April		631	1.6	60.8	94.1	1,820	5,600								
May		755	31	163	282	5,060	15,530								
June		-	27	107	166	3,200	9,830								
Fiscal year 1933-34		1,750	1.2	57.2	88.5	20,860	64,060								

*Partly estimated.

†Estimated.

Hilo Boarding School Ditch at intake, near Hilo

Location.- Water-stage recorder on Hilo Boarding School Ditch, 200 feet below intake diversion dam on Wailuku River and $3\frac{1}{4}$ miles northwest of Hilo.

Records available.- October 1931 to June 1934.

Extremes.- Maximum gage height during year, 3.63 feet (discharge greater than 21 million gallons a day or 32 second-feet Jan. 23; no flow when water was shut out of ditch Nov. 23, 24.

1931-34: Maximum discharge is beyond the measuring capacity of this station; minimum, that of Nov. 23, 24, 1933.

Remarks.- Records excellent up to maximum capacity of Parshall flume control, which is 21 million gallons a day at gage height 2.5 feet. Above this stage the control is drowned by overflow from Wailuku River.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.2	9.7	6.4	7.3	7.3	6.4	1.45	9.2	8.2	3.6	8.7	8.2
2	10	9.7	8.2	7.8	6.9	6.0	1.45	9.7	8.2	3.1	8.7	8.2
3	9.2	10	9.7	8.2	6.4	7.3	1.85	9.2	7.8	2.5	8.7	8.7
4	9.2	10	8.2	7.8	6.0	8.2	1.45	8.7	7.8	2.1	6.7	8.7
5	9.2	9.2	7.8	7.8	5.7	6.9	1.35	8.7	7.8	1.95	8.2	8.7
6	9.2	9.2	9.7	7.8	5.2	6.4	1.4	8.7	7.8	1.85	8.7	8.7
7	8.7	9.2	9.7	6.9	5.2	6.9	1.35	8.2	7.3	1.95	8.7	8.7
8	8.7	9.2	9.2	6.4	5.3	6.9	1.3	8.2	7.8	1.85	8.2	8.7
9	8.7	9.7	8.7	5.7	6.0	5.5	1.3	7.8	7.3	1.75	8.2	8.7
10	8.7	9.2	8.7	5.4	6.0	4.9	12	7.8	6.9	1.75	10	8.7
11	8.2	8.7	8.2	5.6	7.8	7.8	12	7.8	6.9	1.8	9.7	8.7
12	8.2	9.7	8.2	6.9	6.9	8.7	10.5	7.8	6.9	1.8	10.5	8.2
13	8.2	9.2	10	6.4	5.8	6.9	9.7	8.2	6.4	2.0	10	8.2
14	8.2	8.7	10.5	5.8	5.5	5.1	9.7	7.8	6.0	2.7	10	8.2
15	7.8	8.7	9.7	4.8	4.8	4.1	9.7	7.3	6.0	4.3	11	8.2
16	7.8	8.2	9.7	4.2	4.5	3.6	9.2	6.9	6.0	2.6	10.5	9.2
17	7.8	8.2	9.2	4.2	3.7	3.3	9.2	6.9	6.0	1.85	10	9.2
18	7.3	7.8	8.7	9.2	3.1	3.0	9.7	6.4	6.0	1.75	9.7	9.2
19	7.3	7.8	8.7	6.9	2.7	2.8	10	6.0	5.8	1.7	10	9.2
20	7.3	7.8	8.2	5.7	2.4	2.6	10	7.3	5.2	3.1	10	9.7
21	7.3	7.8	8.2	4.9	1.65	2.3	9.7	13.5	5.1	8.2	9.7	9.7
22	6.9	7.3	8.2	6.0	1.95	2.2	9.7	10.5	5.8	11.5	9.2	9.2
23	6.9	7.3	8.2	9.7	.54	1.85	9.3	10	5.2	10	9.2	9.2
24	6.4	6.9	8.2	9.7	.75	1.7	12	9.7	4.5	9.2	8.7	8.7
25	7.3	7.8	8.2	8.7	2.0	1.65	11	9.2	4.4	9.7	8.7	8.7
26	8.7	9.2	8.2	8.2	9.8	1.6	10.5	8.7	4.8	9.7	8.7	9.2
27	8.7	8.7	8.2	7.8	9.2	1.6	10	8.7	5.2	9.2	8.7	9.2
28	8.7	8.7	8.2	7.8	8.2	2.0	9.7	8.2	5.4	9.2	8.7	9.7
29	8.7	8.7	7.8	7.3	7.3	1.7	9.2	-	5.3	9.2	8.2	9.7
30	10	7.3	7.8	7.8	6.9	1.55	9.2	-	4.8	8.7	8.2	9.7
31	9.7	6.4	-	8.2	-	1.5	8.7	-	4.2	-	8.2	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	10	6.4	8.35	12.9	259	794
August.....	10	6.4	8.58	13.3	266	816
September.....	10.5	6.4	8.62	13.3	259	794
October.....	9.7	4.2	7.00	10.8	217	666
November.....	9.8	.54	5.18	8.01	155	477
December.....	8.7	1.5	4.29	6.64	133	408
Calendar year 1933	17.5	.54	6.57	13.3	3,130	9,600
January.....	12	1.3	7.54	11.7	234	717
February.....	13.5	6.0	8.47	13.1	237	728
March.....	8.2	4.2	6.21	9.61	193	591
April.....	11.5	1.7	4.69	7.25	141	431
May.....	11	8.2	9.17	14.2	284	873
June.....	9.7	8.2	8.90	13.8	267	819
Fiscal year 1933-34	13.5	.54	7.24	11.2	2,640	8,110

Note.- Control was drowned by overflow from Wailuku River 6.15 p.m. to 8.15 p.m. Jan. 23. Discharge Dec. 30 to Jan. 14 obtained from gage heights read once daily by observer.

Kapehu Stream at Piihonua, near Hilo

Location.- Water-stage recorder at Piihonua, a quarter of a mile above confluence with Wailuku River and 3 miles west of Hilo.

Drainage area.- 4.9 square miles.

Records available.- November 1928 to June 1934.

Extremes.- Maximum discharge during year, 852 million gallons a day (1,320 second-feet) Jan. 23 (gage height, 6.42 feet); minimum, 1.3 million gallons a day (2.0 second-feet) Apr. 11-13.

1928-34: Maximum discharge, 3,640 million gallons a day (5,630 second-feet) Aug. 12, 1930 (gage height, 9.98 feet); minimum, 1.2 million gallons a day (1.9 second-feet) Feb. 17, 1931.

Remarks.- Records good for low and medium stages, poor for extremely high stages. Small diversion above station for fluming sugarcane.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	15.5	9.5	6.5	8.0	7.0	5.7	2.5	31	6.0	2.0	8.5	16
2	39	9.9	8.9	7.5	6.5	5.8	2.8	30	7.6	1.9	6.8	14
3	19	19	14	7.6	6.2	8.0	3.2	18	7.3	1.9	8.0	12
4	16.5	37	7.6	7.3	6.1	7.5	2.6	15.5	7.1	1.9	8.3	21
5	18	14	10	7.3	6.1	5.2	2.6	14	7.3	1.6	8.2	22
6	18	14	17	7.1	6.0	5.0	2.5	11.5	7.1	1.6	5.2	22
7	15	13.5	17	6.8	5.7	5.1	2.4	10	6.7	1.6	5.0	24
8	14.5	17.5	12	6.8	5.8	5.0	2.2	9.5	7.0	1.4	9.7	18
9	14	22	10.5	7.0	5.8	4.6	2.1	8.9	6.4	1.4	12	16
10	13	16.5	10	7.5	6.1	4.6	73	6.3	6.1	1.4	98	15
11	12.5	13.5	9.5	7.5	7.1	8.3	80	8.5	6.2	1.4	55	15
12	11	17.5	9.5	8.2	5.7	7.6	34	9.5	5.7	1.4	148	12
13	11	13.5	40	7.0	5.5	5.2	15	8.7	5.4	1.4	58	11
14	11	12.5	66	7.0	5.5	4.6	19	8.2	5.0	1.4	101	11.5
15	10	12	27	6.5	5.3	4.6	16.5	7.6	4.4	1.4	96	11
16	9.5	11	24	6.4	5.1	4.5	15	7.3	3.8	1.4	127	14
17	8.9	10.5	16.5	5.8	4.8	4.5	14	7.0	3.8	1.4	61	17
18	8.5	9.9	16	8.5	4.0	4.5	41	6.7	4.1	1.5	58	26
19	8.5	9.5	15	6.2	3.9	4.2	31	6.4	3.5	1.4	81	25
20	8.9	9.1	13.5	6.0	3.8	4.0	25	22	3.1	1.8	62	58
21	8.5	9.1	12.5	5.7	4.2	3.9	18	238	2.8	7.5	36	30
22	8.2	8.7	12	14.5	5.8	3.9	15.5	37	3.2	103	28	22
23	7.6	8.2	14.5	28	4.6	3.7	83	18	2.6	40	23	21
24	7.6	7.8	12.5	22	4.2	3.7	83	15	2.4	12	22	17.5
25	7.6	8.3	10	10	4.2	3.5	64	13	3.0	12.5	19	28
26	8.3	8.7	13	8.0	78	3.4	38	10	2.8	13	18.5	48
27	8.0	8.2	10.5	7.6	12	3.4	28	9.5	3.1	12	24	47
28	7.3	8.3	10	7.6	8.0	4.0	21	8.5	2.7	12	15	41
29	8.2	7.8	9.3	7.0	6.7	3.0	17.5	-	3.2	12.5	13	66
30	10.5	6.7	8.3	8.5	6.1	2.8	15.5	-	2.2	11	12	65
31	9.1	6.4	-	8.9	-	2.7	14	-	2.1	-	16.5	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	39	7.3	12.0	18.6	372	1,140
August.....	37	6.4	12.3	19.0	390	1,170
September.....	66	6.5	15.5	24.0	465	1,430
October.....	28	5.7	8.70	13.5	270	828
November.....	78	3.8	8.19	12.7	246	754
December.....	8.3	2.7	4.73	7.32	147	450
Calendar year 1933	-	2.7	31.0	48.0	11,310	34,700
January.....	83	2.1	25.3	39.1	784	2,410
February.....	238	6.4	21.3	33.0	598	1,830
March.....	8.0	2.1	4.70	7.27	146	447
April.....	103	1.4	8.89	13.6	267	818
May.....	148	5.0	40.1	62.0	1,240	3,820
June.....	66	11	26.5	39.5	766	2,350
Fiscal year 1933-34	238	1.4	15.6	24.1	5,680	17,450

Awini Ditch at East Honokaneiki Gulch, near Niulii

Location.— Water-stage recorder on Awini Ditch at flume across East Honokaneiki Gulch, $4\frac{1}{2}$ miles southeast of Niulii.

Records available.— October 1927 to June 1934.

Extremes.— Maximum discharge during year, 28 million gallons a day (43 second-foot) Apr. 3, 20 (gage height, 3.55 feet); minimum, 0.05 million gallons a day (0.08 second-foot) Feb. 16.

1927-34: Maximum discharge, 32 million gallons a day (50 second-foot) Dec. 28, 1927, Sept. 10, 1928 (gage height, 3.51 feet); no flow when ditch is dry or water is turned out.

Remarks.— Records fair. Estimated periods poor. Awini Ditch diverts water at about elevation 2,000 feet from all streams between Waikaloea and Honokane. Regulated by head gates and spillways.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.6	22	3.5	5.6	5.2	24	2.4	14	0.24	18	13.5	21
2	21	21	12	4.5	20	17.5	2.0	11.5	.18	17.5	12	22
3	19	21	10.5	4.0	12	13	1.7	5.6	.09	19	23	19
4	11.5	24	6.0	3.9	8.0	9.2	1.55	1.65	.09	24	21	19
5	15	23	11.5	11.5	5.6	6.5	1.4	.71	.18	23	24	22
6	20	21	22	8.6	4.3	5.4	1.1	.45	.18	17.5	25	20
7	15	21	19.5	5.8	3.5	4.7	.94	.54	.40	13	19.5	18
8	19.5	22	12	11	3.0	4.1	3.0	.37	.37	19	22	13
9	18	21	12	6.3	2.5	3.4	17.5	.20	.21	21	19.5	10.5
10	13.5	19	19	4.6	2.2	3.2	17	.11	.21	13	19	9.7
11	14.5	15	16	3.8	2.1	3.3	16	.10	.68	23	9.2	15
12	11	13	16	3.2	1.75	3.3	14	.10		24	7.0	9.7
13	9.7	12	23	2.8	1.45	3.0	8.6	.09	*1.3	22	12	7.5
14	11.5	11.5	23	2.3	1.2	2.5	15.5	.07		24	22	8.0
15	10.5	19.5	17	2.3	1.05	2.3	16	.06		24	22	7.0
16	13	17.5	21	2.0	.85	2.2	11.5	.05	*8	20	19	7.0
17	10.5	13	19	1.85	.74	2.4	13.5	.92		14.5	15.5	6.5
18	7.0	16	14	1.7	.68	2.3	17.5	1.1		13	8.8	7.5
19	6.0	12	10.5	1.45	1.6	1.9	14.5	1.2		17	8.0	6.5
20	15	9.2	8.0	1.3	4.5	1.7	10.5	11.5	3.9	27	13.5	12
21	14.5	9.7	7.0	1.1	4.5	1.6	7.0	10.5	2.9	25	12	13.5
22	9.2	9.7	6.0	1.05	3.8	2.1	5.2	7.5	2.3	24	11	15
23	17	7.0	6.2	1.55	3.2	3.2	4.4	4.5	3.6	23	10.5	14
24	15	6.2	8.4	1.45	2.7	2.5	3.9	2.4	11	19	14.5	10.5
25	18	5.9	6.0	1.15	2.3	1.9	3.6	1.75	8.0	21	13	16
26	22	5.1	8.0	.90	21	1.65	3.3	.90	4.4	24	9.7	24
27	19	4.7	7.5	1.5	13.5	3.5	2.8	.74	4.3	21	16	19
28	17	4.7	8.0	5.7	11	18	2.5	.68	23	19	14	15
29	17.5	4.8	9.2	6.3	7.5	9.2	2.4	-	24	18	14	17.5
30	23	4.1	8.0	14.5	6.5	4.5	2.3	-	22	18	17	11.5
31	22	3.9	-	11	-	3.1	2.9	-	24	-	16	-

Month	Million gallons a day			Second-foot (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	23	6.0	15.0	23.2	464	1,420
August.....	24	3.9	13.5	20.9	420	1,290
September.....	23	3.5	12.3	19.0	368	1,130
October.....	14.5	.90	4.35	6.73	135	413
November.....	21	.68	5.27	8.15	158	486
December.....	24	1.6	5.39	8.34	187	513
Calendar year 1933	24	.68	11.1	17.2	4,040	12,390
January.....	17.5	.94	7.30	11.3	226	695
February.....	14	.05	2.83	4.38	79.3	243
March.....	24	.09	5.81	6.99	180	553
April.....	27	13	20.2	31.3	606	1,860
May.....	25	7.0	15.6	24.1	483	1,480
June.....	24	6.5	13.9	21.5	417	1,280
Fiscal year 1933-34	27	.05	10.1	15.6	3,700	11,360

*Estimated.

East Honokaneiki intake to Awini Ditch at East Honokaneiki Gulch, near Niulii

Location.- Water-stage recorder on intake tunnel delivering water from East Honokaneiki Gulch to Awini Ditch on west side of gulch, $4\frac{1}{4}$ miles southeast of Niulii.

Records available.- October 1927 to June 1934.

Extremes.- Maximum discharge during year, 7.9 million gallons a day (12.2 second-feet) Apr. 11 (gage height, 1.47 feet); no flow several days during October and November. 1927-34: Maximum discharge, 10.8 million gallons a day (16.7 second-feet) Mar. 27, Apr. 2, 1930 (gage height, 1.35 feet); no flow occasionally.

Remarks.- Records fair. Diverts water from East Honokaneiki Gulch to Awini Ditch.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.51	2.5	0.04	0.18	0.25	1.9	0.08	1.25	0.20	3.5	0.79	2.6
2	3.8	2.2	.25	.14	3.1	1.25	.08	1.75	.18	1.7	.55	2.0
3	2.6	2.6	.35	.12	.69	.87	.04	.84	.16	2.9	3.5	1.25
4	.68	4.0	.18	.12	.32	.51	.02	.35	.14	3.9	2.2	.87
5	.83	3.1	1.25	.38	.20	.35	.02	.32	.14	2.9	4.4	1.4
6	3.0	1.8	2.5	.38	.14	.28	.02	.32	.10	1.15	3.2	1.55
7	1.05	1.5	1.75	.22	.10	.22	.02	.32	.10	.75	2.3	1.55
8	3.3	2.5	.55	.97	.08	.18	.01	.32	.10	3.5	2.3	.51
9	1.4	2.2	.66	.26	.08	.14	.31	.32	.10	2.5	3.3	.26
10	.61	1.5	1.75	.16	.05	.14	1.35	.26	.87	4.1	.20	
11	.91	.83	.91	.12	.04	.14	.82	.16	*1	5.2	1.05	.16
12	.51	.61	1.15	.10	.04	.14	1.6	.12		3.6	.22	.20
13	.38	.55	3.4	.06	.04	.12	.72	.08		2.0	.74	.20
14	.51	.51	2.3	.02	.02	.10	1.9	.08		4.1	2.5	.20
15	.58	1.8	1.5	.02	.02	.06	1.4	.10		4.5	2.6	.20
16	.75	1.45	2.2	.01	.01	.06	1.2	.08	.55	1.7	3.3	.16
17	.48	.61	1.55	.01	0	.05	.96	.08	.68	.95	1.1	.12
18	.24	.72	.83	.01	0	.05	2.7	.04	.51	.68	.61	.12
19	.20	.44	.51	.01	0	.05	1.5	.04		1.7	.51	.10
20	.79	.32	.38	0	.06	.04	.68	2.2		6.0	.65	.77
21	.87	.32	.29	0	.06	.02	.44	2.5	*2	4.2	.51	1.05
22	.38	.29	.26	0	.05	.02	.32	1.8		3.5	.44	1.5
23	1.6	.22	.24	0	.05	.04	.24	1.05		2.0	.58	.99
24	.91	.18	.22	0	.02	.02	.20	.65	.79	1.2	1.25	.51
25	2.1	.16	.22	0	.20	.02	.16	.48	.48	3.9	.61	1.95
26	4.0	.12	.22	0	1.35	.02	.14	.35	.20	3.4	.55	4.0
27	2.5	.12	.22	0	1.05	.26	.10	.29	.23	1.3	.83	2.1
28	1.35	.10	.22	0	.68	1.3	.10	.22	3.2	.99	.51	.83
29	2.2	.10	.22	0	.41	.41	.10	-	3.2	2.3	.51	1.8
30	3.1	.10	.20	1.25	.28	.18	.10	-	*4.2	1.4	1.05	.51
31	2.5	.08	-	.62	-	.10	.33	-		-	1.95	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	4.0	0.20	1.44	2.23	44.6	137
August.....	4.0	.08	1.08	1.67	33.5	103
September.....	3.4	.04	.871	1.35	26.1	80
October.....	1.25	0	.166	.257	5.16	16
November.....	3.1	0	.512	.483	9.37	29
December.....	1.9	.02	.291	.450	9.02	28
Calendar year 1933	4.0	0	.924	1.43	337	1,040
January.....	2.7	.01	.568	.879	17.6	54
February.....	2.5	.04	.585	.905	16.4	50
March.....	-	-	.679	1.05	21.1	65
April.....	6.0	.68	2.62	4.05	78.5	241
May.....	4.4	.22	1.67	2.43	48.7	149
June.....	4.0	.10	.989	1.53	29.7	91
Fiscal year 1933-34	6.0	0	.931	1.44	340	1,040

*Estimated.

Kohala Ditch at Pololu, near Niulii

Location.- Water-stage recorder on open section of ditch in Pololu Valley just below boundary between Bishop Estate land of Honokane and Territorial land of Pololu, 2½ miles above mouth of Pololu Stream and 4 miles south of Niulii.

Records available.- August 1927 to June 1934.

Extremes.- Maximum discharge during year, 71 million gallons a day (110 second-feet) Feb. 1 (gage height, 4.30 feet); no flow Feb. 3-4, Apr. 29, May 12, 13.
1927-34: Maximum discharge, 76 million gallons a day (118 second-feet) Dec. 2, 1932 (gage height, 4.33 feet); no flow occasionally, when water was shut out of ditch.

Remarks.- Records good. Regulated by head gates. Kohala Ditch receives the flow of Awini Ditch and diverts at about elevation 1,200 feet from all streams west of Honokane.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
1	23	48	12	15	14	49	13	52	13	31	}*22	44	
2	49	41	18.5	13	42	36	12	39	13	29		38	
3	42	39	17.5	13	27	28	11.5	10.5	12	34		50	32
4	27	54	15	12	20	23	11	15.5	12	52		43	30
5	28	45	25	18.5	16	19	11	21	12	41		50	32
6	44	37	43	18.5	15.5	17	11	18.5	11.5	31	57	33	
7	32	35	33	15.5	14.5	16	11	16.5	11	25	48	32	
8	39	35	23	21	13.5	15.5	11	15.5	11	35	39	24	
9	36	37	23	15.5	12.5	15.5	13.5	15	10.5	37	43	22	
10	28	41	31	14	12	15.5	61	14	11.5	25	45	20	
11	31	31	27	13	12	14.5	47	14	12	45	24	27	
12	26	25	29	12	11.5	14.5	36	13	11.5	50	3.8	22	
13	24	24	54	11.5	11.5	13.5	25	12	11	39	11	19	
14	28	23	50	11	10.5	13	32	12	12	43	38	19	
15	26	29	31	10.5	10	12.5	31	11.5	14	48	40	18	
16	29	31	42	10	10.5	12.5	28	11	21	35	44	17	
17	25	24	*36	9.9	10.5	12.5	29	11	23	27	29	16	
18	20	27	27	10	10.5	12.5	44	10.5	17.5	24	20	17	
19	19	23	22	9.4	11	12	37	11.5	14	29	19	17	
20	27	20	18.5	8.2	15.5	11.5	26	40	12	54	26	32	
21	}	27	20	17.5	8.0	12.5	11.5	21	57	11	50	24	30
22		18.5	16.5	8.0	11	12.5	19	37	10.5	43	22	30	
23		16.5	15.5	8.3	11	13.5	18	27	11.5	37	17	29	
24		15	15.5	8.2	10.5	12.5	16	21	18.5	31	20	23	
25		*34	14	15	8.0	13	12	15.5	17.5	15.5	37	16	40
26	}	14	16.5	7.7	54	12	14.5	15.5	12	39	14.5	54	
27		13	16.5	8.0	34	12.5	14.5	15	12	35	15.5	38	
28		13	17.5	11.5	26	33	13.5	14	35	31	14.5	29	
29	39	13	17.5	13	21	22	13	-	45	15.5	18.5	32	
30	54	13	16.5	21	19	16	12.5	-	48	*30	28	24	
31	50	12	-	20	-	13.5	23	-	43	-	36	-	

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	-	19	32.6	50.4	1,010	3,100
August.....	54	12	26.8	41.5	831	2,650
September.....	54	12	24.7	36.2	742	2,280
October.....	21	7.7	12.4	19.2	333	1,180
November.....	54	10	17.1	26.5	512	1,570
December.....	49	11.5	17.2	26.6	534	1,640
Calendar year 1933	58	7.7	25.4	39.3	9,280	28,510
January.....	61	11	22.0	34.0	664	2,100
February.....	57	10.5	20.3	31.4	568	1,740
March.....	48	10.5	17.0	26.3	528	1,620
April.....	54	15.5	36.1	55.9	1,080	3,320
May.....	57	3.8	29.0	44.9	900	2,760
June.....	54	16	28.0	43.3	640	2,580
Fiscal year 1933-34	61	3.8	23.6	36.5	8,610	26,440

*Estimated.

Kehena Ditch near Kohala

Location.- Water-stage recorder at old Honokane weir, near head of West Branch of Honokanenui Gulch and $\frac{5}{8}$ miles southeast of Kohala.

Records available.- December 1917 to November 1919, April 1928 to June 1934.

Extremes.- Maximum discharge during year, 48 million gallons a day (74 second-feet)

Feb. 1 (gage height, 1.21 feet); no flow during dry periods.

1917-19, 1928-34: Maximum discharge, 68 million gallons a day (133 second-feet)

Jan. 27, 1918 (gage height, 2.16 feet); no flow during dry periods.

Remarks.- Records good. Regulated by several gates above station. Intake on Honokanenui Stream 2 miles above station, at elevation of about 4,200 feet.

Discharge, in million gallons, fiscal year July 1933 to June 1934

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.4	26	0	0.5	0.92	11	0.25	45	0.15	5.3	4.2	16.5
2	28	14	3.9	.3	20	3.0	.15	21	.10	2.8	2.6	13.5
3	21	9.8	1.8	.2	4.2	1.45	.04	5.3	.10	12	26	4.5
4	8.4	29	.7	.2	1.45	.92	0	2.6	.10	26	24	2.6
5	11.5	13.5	5.1	3.1	.70	.60	0	1.3	.15	9.9	34	7.0
6	28	4.0	26	3.3	.40	.50	0	.92	.15	4.2	40	6.7
7	13	6.3	10	1.7	.25	.31	0	.70	.15	2.0	27	6.2
8	23	6.8	3.3	3.6	.20	.25	0	.40	.15	5.6	10.5	2.4
9	11.5	12.5	1.9	1.1	.15	.20	.76	.31	.10	5.3	15.5	1.05
10	9.1	16	10.5	.7	.10	.20	32	.25	.10	2.0	33	.80
11	14	3.0	6.1	.5	.10	.20	30	.25	.25	30	8.9	1.2
12	5.0	1.5	16	.3	.10	.20	15	.20	.15	18.5	7.9	.80
13	4.7	.9	38	.2	.04	.20	3.8	.20	.10	7.6	4.0	.60
14	9.8	.7	30	.2	0	.20	7.0	.15	.40	11	9.6	.50
15	7.5	3.8	6.9	.2	0	0	6.2	.10	1.2	14.5	13.5	1.05
16	13	7.8	25	.2	0	0	6.2	.04	4.0	4.0	27	1.6
17	6.9	2.0	18.5	.1	0	0	5.3	.04	4.8	2.0	6.2	1.2
18	2.8	1.7	7.3	.1	0	0	20	.04	2.0	1.2	3.3	1.6
19	2.2	1.1	3.5	.1	0	0	9.1	.04	.92	2.8	1.8	1.8
20	3.3	.5	2.0	0	0	0	3.7	14.5	.50	34	1.3	24
21	4.2	.4	1.3	0	0	0	1.8	37	.31	23	.92	9.9
22	3.0	.3	1.1	0	0	1.05	3.4	9.5	.20	17.5	.70	14
23	6.9	.2	2.4	0	0	2.8	3.3	2.6	.10	6.0	1.0	7.4
24	6.4	.1	1.8	0	0	2.0	1.3	1.05	.10	2.2	15.5	3.5
25	8.4	.1	1.5	0	1.75	4.4	.92	.60	.10	5.1	7.1	25
26	33	0	2.0	0	40	4.2	.60	.40	.04	8.3	2.4	31
27	19	0	2.0	0	9.7	1.9	.40	.25	0	5.6	4.8	15
28	8.8	0	3.0	.02	2.6	13.5	.25	.20	4.3	6.2	1.6	9.9
29	15.5	0	2.6	.25	1.2	2.2	.25	-	17	17	1.2	8.0
30	28	0	1.1	8.2	.60	.80	.20	-	20	7.9	1.05	3.3
31	24	0	-	3.8	-	.40	7.0	-	11.5	-	17	-

Month	Million gallons a day			Second-feet (mean)	Total run-off	
	Maximum	Minimum	Mean		Million gallons	Acre-feet
July.....	33	2.2	12.5	19.3	386	1,190
August.....	29	0	5.23	8.09	162	497
September.....	38	0	7.84	12.1	235	722
October.....	8.2	0	.931	1.44	28.9	89
November.....	40	0	2.82	4.36	84.5	259
December.....	13.5	0	1.69	2.61	52.5	161
Calendar year 1933	42	0	6.89	10.7	2,520	7,720
January.....	32	0	5.16	7.98	160	491
February.....	45	.04	5.18	8.01	145	445
March.....	20	0	2.23	3.45	69.2	212
April.....	34	1.2	9.98	15.4	300	919
May.....	40	.70	11.4	17.6	354	1,090
June.....	31	.50	7.35	11.4	221	677
Fiscal year 1933-34	45	0	6.02	9.31	2,200	6,750

MISCELLANEOUS DISCHARGE MEASUREMENTS

Measurements of streams and ditches on the island of Hawaii at other than regular gaging stations are listed below:

Miscellaneous discharge measurements on Hawaii, 1933-34

Date	Stream	Tributary to-	Locality	Second-feet	Million gallons a day
July 11	Awini Ditch..	Kohala Ditch	Honokane weir near Niuli1.....	23.5	15.2
Mar. 16do.....do.....do.....	5.39	3.48

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