UNITED STATES DEPARTMENT OF THE INTERIOR
RAY LYMAN WILBUR, Secretary

GEOLOGICAL SURVEY
———— Director

Water-Supply Paper 675

SURFACE WATER SUPPLY of HAWAII

JULY 1, 1927, to JUNE 30, 1928

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Prepared in cooperation with the
TERRITORY OF HAWAII

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1932

For sale by the Superintendent of Documents, Washington, D. C. - Price 20 cents (Paper cover)

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AUTHORITY FOR INVESTIGATIONS

This volume contains results of measurements of the flow of streams and ditches in the Territory of Hawaii made during the year ending June 30, 1928. The investigations leading to the report were made by the United States Geological Survey in cooperation with the Territory of Hawaii, under the general sanction of the organic law of the Geological Survey (20 Stat. L., p. 394), which contains the following paragraph:

> *Provided*, That this officer [the Director] shall have the direction of the Geological Survey and the classification of public lands and examination of the geological structure, mineral resources, and products of the national domain.

As water is the most abundant and most valuable of the minerals, the investigation of water resources is authorized under the provision for examining mineral resources. The work was supported during the fiscal years ending June 30, 1895 to 1928, by successive appropriation bills passed by Congress under the following item:

> For gaging the streams and determining the water supply of the United States, and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources.

The Legislature of the Territory of Hawaii approved on March 22, 1909, "An act to promote the conservation and development of the natural resources of the Territory," which provided in substance as follows: A special tax of 2 per cent shall be levied, assessed, and collected annually on all incomes in excess of $4,000; and all amounts so collected shall constitute a special fund to be expended only for the encouragement of immigration and the conservation of natural resources in the proportion of three-fourths for immigration and one-fourth for conservation. The conservation fund shall be used for the development, conservation, improvement, and utilization of the natural resources, and shall be available for expenditure at such times and in such manner as a board of three persons appointed in accordance with section 80 of the organic act shall, with the approval of the governor, determine.

An act of April 26, 1911, amended the original act so as to extend it until December 31, 1913.

On April 4, 1913, the Governor of the Territory of Hawaii approved Act 56 for the creation and maintenance of a division of hydrography

under the board of agriculture and forestry, and Act 57 appropriating the revenues from water licenses for the use of the board of commissioners of agriculture and forestry toward forest protection and hydrographic surveying.

Since June 30, 1915, the funds for the use of the division of hydrography have been supplied by successive appropriations from the general revenues of the Territory.

On March 23, 1917, the following act (Act 27) by the Legislature of the Territory of Hawaii was approved:

SECTION 1. The division of hydrography, authorized by and created pursuant to section 483 of the Revised Laws of Hawaii, 1915, is hereby transferred, together with all the materials, equipment, and supplies now under the control of the division or of the board of commissioners of agriculture and forestry for the division, to the commissioner of public lands.

SEC. 2. The commissioner of public lands shall have and exercise the same powers, duties, and jurisdiction with respect to said division as are now exercised by the board of commissioners of agriculture and forestry.

SEC. 3. All unexpended balances of appropriations heretofore made for said division, the expenditure of which is now by law vested in the board of commissioners of agriculture and forestry, are hereby transferred to the commissioner of public lands and the expenditure thereof vested in said commissioner.

SEC. 4. This act shall take effect upon its approval.

COOPERATION

COOPERATION WITH THE TERRITORY OF HAWAII

Under the authority conferred by the Federal and Territorial legislation, the Director of the United States Geological Survey and the Governor of the Territory of Hawaii entered into a cooperative agreement, dating from July 1, 1910, for "the gaging of streams and the determination of the water supply of the Territory of Hawaii."[1]

The principal features of this agreement are:

1. The United States Geological Survey assumes the responsibility of gathering, analyzing, and publishing the data.

2. During the progress of the work all notes, maps, and data gathered as a result of field studies are at all times open to inspection by the representative of the Territory, and if they are not satisfactory the agreement can be terminated.

3. Accounts for payment of salaries, travel, and subsistence, supplies, or other expenses necessary to the completion of the work shall be rendered in the manner required by the laws and regulations of the contracting parties, and vouchers shall be proffered to either party for payment according as it may be convenient or according to the balance remaining in the respective allotments.

4. The cost of publication is borne entirely by the Geological Survey.

[1] The U. S. Geol. Survey also cooperated with the Territory of Hawaii in mapping the eight largest islands.

Until June 30, 1913, the Territory of Hawaii was represented in cooperation by the board of conservation; from July 1, 1913, to March 23, 1917, by the board of commissioners of agriculture and forestry; and since this date by the commissioner of public lands.

OTHER COOPERATION

Some of the data in this paper have been obtained in cooperation with the City and County of Honolulu, the city of Hilo, and private persons and corporations, under one of the plans indicated in the following paragraphs:

1. Expense of work, equipment, or installation paid entirely or in part by the cooperating party.
2. Records collected by employees of a cooperating party but under supervision of and by methods of the Geological Survey.
3. Assistance given in the collection of records, such as furnishing transportation, subsistence, or equipment.
4. Records furnished by a cooperating party, collected by his methods and under his supervision.

Cooperation in the collection of records for whose accuracy responsibility has not rested with the Geological Survey has been acknowledged in the descriptions of the stations. Special acknowledgment is due to the following organizations cooperating under plans 1, 2, and 3: Island of Kauai—Kekaha Sugar Co., McBryde Sugar Co., East Kauai Water Co., and B. P. Bishop Estate Island of Oahu—Wahiawa Water Co., B. P. Bishop Estate, and Honolulu Sewer and Water Commission; Island of Maui—Pioneer Mill Co. and East Maui Irrigation Co.; Island of Hawaii—Kohala Ditch Co. and Hilo waterworks.

SCOPE OF WORK

Since the beginning of stream-gaging work in Hawaii in 1910, records of flow of streams and ditches have been obtained at about 400 stations for periods ranging from a few months to 18 years. In addition to this, hundreds of miscellaneous measurements have been made, and a rather extensive study of ground water has been made in Kau, Hawaii, and in Honolulu, Oahu.

In this volume are given the records of daily flow that were obtained at the 83 stations that were operated during the year ending June 30, 1928, and the results of miscellaneous stream-flow measurements 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 volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated more or less definitely with a certain class of work. These terms may be divided into two groups: (1) Those which represent a rate of flow, as "second-feet," "gallons a minute," "gallons a day," "miner's inches," and "run-off in second-feet a square mile"; and (2) those which represent the actual quantity of water, as "run-off in inches," "million gallons," and "acre-feet." Those used in this report may be defined as follows:

"Second-foot" is an abbreviation for cubic foot a second and is the unit for the rate of discharge of water flowing in a stream 1 square foot in cross section at a rate of 1 foot a second. It is generally adopted as the fundamental unit in the measurement of flowing water and is the "natural" unit, as the foot and the second are the units used in making the physical determinations.

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; and 1 second-foot equals approximately two-thirds of 1,000,000 gallons a day.

The following terms not in common use are here defined:

"Stage-discharge relation," an abbreviation for the term "relation of gage height to discharge."

"Control," a term used to designate the section or sections of the stream channel below the gage which determine the stage-discharge relation at the gage. It should be noted that the control may not be the same section or sections at all stages.

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 used in computing discharges in this paper 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. Occasionally discharge is determined from a weir using weir formulas.

From the discharge measurements rating tables are prepared that give the discharge for any stage. The application of the daily gage heights to these rating tables gives the discharge from which the daily, monthly, and yearly discharges are determined.

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, records available, discharge corresponding to maximum and minimum recorded stages, and under remarks is given 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 in million gallons a day corresponding to the mean daily gage heights. At stations on streams subject to sudden or rapid diurnal fluctuation the discharge obtained from the rating table by applying the mean daily gage height may not be the true mean discharge for the day. At such stations, the mean daily discharge may be obatined by averaging discharge for intervals during the day or by use of the discharge integrator, an instrument operating on the principle of the plainimeter and containing as an essential element the rating curve of the station.

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 under the heading "Extremes," and the corresponding stage is always taken from 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 "Total in acre-feet" is computed from the mean monthly discharge in million gallons a day.

Owing to the volcanic formation of the Hawaiian Islands there is so wide a diversity in the character and porosity of the rocks of the drainage basins that a general relation between rainfall and run-off can not be determined. For this reason information concerning drainage areas has been omitted in the station descriptions.

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.

Permanence of the stage-discharge relation will be affected by any change in gage datum.

Observations of stage are from water-stage recorder graphs with scale of gage heights so chosen as to give less than 2 per cent error. However, this accuracy may be interfered with by unsatisfactory operation of water-stage recorder or by plugged or sluggish intakes to stilling well.

In general, measurements of flow by current meter give less than 5 per cent error except where it is impossible to find suitable measuring conditions. Rating curves are usually well defined, except for extremely low or high stages, by current-meter measurements and are extended by use of area and velocity curves, slope measurements, weir tables, logarithmic curves, comparison with previous curves, knowledge of station, or any combination of these methods.

Unless otherwise noted daily discharges are ascertained by applying to rating table mean daily gage heights obtained from recorder graph by inspection or, for days of considerable fluctuation in stage, by averaging discharges for intervals of the day. All computations are carried to three significant figures except where this would require the use of more than two decimal places. The discharges thus obtained are plotted, usually on semilogarithmic paper, for comparison with the flow of comparable streams, and any inconsistencies that appear are verified or corrected.

A general statement under "Remarks" gives the accuracy of records, based on the above information, the terms excellent, good, fair, or poor, indicating that the record is probably accurate within 5, 10, 15, and 20 per cent or more, 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.

DIVISION OF WORK

The data were collected and prepared for publication under the direction of M. H. Carson, district engineer, Honolulu, Hawaii, J. L. Lamson and W. E. Armstrong, office engineers, K. N. Vaksvik, J. H. Hofmann, K. M. Kelley, Sam Wong, G. T. Hirashima, John Kaheaku, P. P. T. Goo, and Miss M. A. Davison. The manuscript has been prepared by W. E. Armstrong and reviewed by M. H. Carson.

PUBLICATIONS

The following table gives by years the serial numbers of the papers on the surface-water supply of Hawaii published from 1903 to 1928, 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.

Numbers of water-supply papers containing data on the surface water supply of Hawaii, 1903–1928

Year	Number	Year	Number	Year	Number
1903	[a] 77	1916–17	465	1922–23	575
1909–1911 [b]	318	1917–18	485	1923–24	595
1912 [b]	336	1918–19	515	1924–25	615
1913 [b]	373	1919–20	516	1925–26	635
1913–1915	430	1920–21	535	1926–27	655
1915–16	445	1921–22	555	1927–28	675

[a] Water resources of Molokai, by Waldemar Lindgren.
[b] Calendar years; papers subsequent to Water-Supply Paper 373 cover the year beginning July 1 and ending June 30.

GAGING-STATION RECORDS

ISLAND OF KAUAI

WAIMEA RIVER BELOW KEKAHA DITCH INTAKE, NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder in Waimea Canyon, 500 feet below Kekaha ditch intake and 8 miles by trail north of Waimea.

RECORDS AVAILABLE.—July, 1921, to June, 1928.

EXTREMES.—Maximum discharge during year, 2,770 million gallons a day (4,290 second-feet) Dec. 24 (gage height, 20.40 feet); minimum 0.07 million gallons a day (0.11 second-feet) Dec. 9, 10, and 11 (gage height, 4.22 feet; affected by backwater).

1921–1928: Maximum discharge, that of Dec. 24, 1928; no flow for several days July to November, 1926.

REMARKS.—Records good for medium stages except those estimated (June 16–30); all estimated and extremely high and low stage records poor. Kokee ditch and Kekaha ditch divert above station, taking practically all the water at low and medium stages for irrigation near Waimea.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.6	0.6	0.6	0.4	0.3	0.1	53	115	0.8	51	100	0.6
2	.6	1.5	.5	.4	.3	.1	51	19.0	.9	20	18.3	.6
3	.6	1.1	28	.3	.3	.1	49	15.7	.9	107	11.0	.6
4	.6	.6	5.5	.4	.2	.1	44	15.7	.8	37	47	.6
5	.6	.5	.5	.3	2.3	.1	41	12.6	.7	10.6	183	.6
6	.6	.5	.6	.4	31	.1	40	2.4	.7	10.5	46	.7
7	8.8	.5	52	.4	14.5	8.6	34	.7	.7	27	33	.7
8	135	41	244	.4	1.6	6.8	27	.6	.7	18.2	22	.7
9	183	27	16.7	6.5	.3	.1	18.4	94	.7	42	1.8	.7
10	200	1.1	1.0	1.9	.3	.1	9.6	205	.7	29	.9	.7
11	69	.6	1.0	.4	.3	56	2.2	31	.7	26	162	.7
12	164	26	.7	.4	.3	112	1.2	20	.6	22	28	4.8
13	46	1.3	.5	.4	.2	218	96	15.7	.7	23	3.0	3.4
14	6.7	.6	3.8	.4	.3	33	274	3.2	.9	10.0	.9	.7
15	.9	.6	1.1	.4	.3	15.8	53	.8	.8	1.0	5.2	.7
16	.5	.6	.5	.4	.3	15.4	184	.7	.8	2.1	1.0	2.0
17	.5	.6	.5	.4	.4	9.4	42	51	.8	14.2	3.2	
18	.5	.6	.4	.4	.4	7.9	21	20	.8	6.7	.9	
19	5.9	.6	.4	.3	2.8	10.2	49	16.3	.7	4.4	.8	
20	10.6	.6	.4	.4	151	9.6	81	1.0	.7	.9	.8	
21	.6	.6	.4	.4	35	99	48	.8	.6	.8	.7	.6
22	.5	59	.4	28	69	185	9.3	.8	.8	95	.7	
23	.5	12.0	.4	19.1	4.0	206	7.2	.8	121	44	.7	
24	9.4	34	.3	42	3.7	1,060	1.3	.8	232	5.1	.7	
25	1.3	2.3	.4	1.0	91	465	1.0	.9	359	94	.7	
26	21	2.9	.4	.5	23	203	1.0	.8	174	6.8	22	
27	5.0	5.5	.4	.3	124	126	48	.8	86	.9	10.7	31
28	14.5	.6	.4	.3	26	132	4.3	.8	68	3.3	.7	
29	7.1	.5	2.9	.3	2.6	97	1.0	.8	91	174	.6	1.0
30	.6	.6	3.2	.3	.2	72	19.5	-------	148	172	.6	
31	.7	.5	-------	.3	-------	58	81	-------	68	-------	.6	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	200	0.5	28.9	44.7	896	2,750
August	59	.5	7.26	11.2	225	691
September	244	.3	12.3	19.0	368	1,130
October	42	.3	3.48	5.38	108	331
November	151	.2	19.5	30.2	586	1,800
December	1,060	.1	103	159	3,210	9,800
January	274	1.0	44.9	69.5	1,390	4,270
February	205	.6	22.3	34.5	648	1,980
March	359	.6	44.0	68.1	1,360	4,190
April	174	.8	35.3	54.6	1,060	3,250
May	183	.6	22.8	35.3	708	2,170
June	----------	----------	1.23	1.90	36.9	113
The year	1,060	0.1	28.9	44.7	10,600	32,500

KAWAIKOI STREAM NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder 14 miles N. 18° E. from Waimea.
RECORDS AVAILABLE.—April, 1909, to July, 1917, and July, 1919, to June, 1928.
EXTREMES.—Maximum discharge during year, 1,220 million gallons a day (1,890 second-feet) Dec. 24 (gage height, 9.85 feet); minimum, 2.3 million gallons a day (3.6 second-feet) several hours June 18–22 (gage height, 1.37 feet).

1909–1928: Maximum discharge, 1,670 million gallons a day (2,580 second-feet) Dec. 13, 1924 (gage height, 12.11 feet); minimum, 1.3 million gallons a day (2.0 second-feet) Sept. 15, 1921 (gage height, 1.28 feet).

Highest known flood, 15.2 feet Dec. 18, 1916 (discharge not determined).
REMARKS.—Records good for ordinary stages, fair for estimated period (July 28 to Aug. 1), and poor for high stages. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.6	6	21	3.5	2.9	5.6	8.8	49	5.4	19.9	32	4.8
2	5.0	8.0	10.6	2.9	5.3	14.1	8.8	30	5.2	11.8	14.9	4.5
3	4.5	6.7	9.3	2.7	3.2	7.1	8.2	35	4.8	29	13.8	4.5
4	4.4	5.5	9.2	3.5	2.8	5.3	7.1	33	4.5	18.2	87	4.8
5	4.5	10.5	4.8	2.7	4.0	4.5	6.3	17.4	4.3	11.3	117	4.3
6	23	5.6	9.1	2.4	15.2	4.0	5.9	12.3	4.2	52	31	4.0
7	29	25	51	9.4	40	46	5.5	9.5	4.0	29	58	4.0
8	123	32	66	5.1	24	15.6	5.5	8.4	4.0	13.2	21	3.9
9	144	136	12.8	10.9	7.6	6.7	7.5	132	3.7	10.5	17.2	3.4
10	155	6.7	7.0	5.6	12.7	5.3	5.5	105	3.6	8.2	16.5	3.2
11	77	6.9	16.0	4.0	9.6	17.9	4.8	30	3.4	6.9	132	5.2
12	199	25	12.6	3.2	5.6	31	28	28	3.3	6.3	24	15.7
13	47	8.0	6.7	2.8	3.8	72	87	18.4	3.3	5.5	17.1	6.2
14	24	5.1	6.2	5.6	28	14.3	114	12.6	3.2	5.2	14.0	3.6
15	16.7	9.1	7.6	4.1	8.8	14.7	22	10.3	3.0	5.2	11.8	3.0
16	13.7	8.4	5.6	2.7	27	14.2	103	41	2.9	24	11.3	2.6
17	11.5	17.3	7.1	2.3	18.7	8.3	19.7	69	2.6	13.0	10.0	2.5
18	9.8	6.7	4.8	2.1	19.7	7.8	17.4	22	2.6	7.1	8.8	2.4
19	27	21	4.1	12.5	41	8.8	20	16.4	3.0	8.6	7.9	2.3
20	28	8.6	3.7	21	131	7.6	30	14.2	3.6	6.3	7.3	2.3
21	12.4	15.2	3.4	28	49	11.1	26	10.0	2.7	7.1	6.7	2.4
22	13.2	41	3.2	40	44	51	10.8	8.6	3.0	128	6.7	2.4
23	15.8	34	3.0	8.6	12.6	31	8.6	7.7	34	51	6.1	2.4
24	21	25	3.0	15.0	14.2	305	7.7	24	66	71	5.5	2.5
25	10.0	10.3	2.9	7.6	39	74	6.7	12.8	136	64	19.3	35
26	40	19.8	2.8	5.6	14.9	29	32	7.5	51	15.8	50	67
27	27	17.3	2.9	4.0	44	18.4	37	6.5	48	10.8	15.0	18.1
28	35	7.3	5.4	3.2	15.5	25	10.0	6.3	68	40	8.8	10.0
29	18	5.5	7.1	2.8	8.8	17.7	14.8	5.7	22	95	6.9	7.7
30	10	5.6	6.0	2.6	6.7	12.6	48	-------	32	63	5.9	7.7
31	7	8.7	-------	2.4	-------	10.0	90	-------	39	-------	5.3	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	199	4.4	37.5	58.0	1,160	3,570
August	136	5.1	17.7	27.4	548	1,680
September	66	2.8	10.5	16.2	315	967
October	40	2.1	7.38	11.4	229	702
November	131	2.8	22.0	34.0	660	2,030
December	305	4.0	28.9	44.7	896	2,750
January	114	4.8	26.0	40.2	807	2,470
February	132	5.7	27.0	41.8	783	2,400
March	136	2.6	18.6	28.8	576	1,770
April	128	5.2	27.9	43.2	837	2,570
May	132	5.3	25.4	39.3	789	2,420
June	67	2.3	8.08	12.5	242	744
The year	305	2.1	21.4	33.1	7,840	24,100

KOKEE DITCH NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder about 1,000 feet west of road and 10½ miles north of Waimea.

RECORDS AVAILABLE.—September, 1926, to June, 1928.

EXTREMES.—Maximum discharge during year, 68 million gallons a day (105 second-feet) Dec. 24 (gage height, 2.70 feet); no flow for short time on Jan. 6, Feb. 23, 26, Mar. 7, June 7, and 21.

1926–1928: Maximum discharge, that of Dec. 24, 1927; no flow occasionally when water is turned out of ditch just above weir.

REMARKS.—Records excellent except those from July 1 to Oct. 22 and from Mar. 7 to Apr. 16, which are good. Kokee ditch, at elevation 3,400 feet, diverts water from all streams tributary to Waimea River, east of and including Mohihi Stream, for irrigation near Kekaha. Regulated by head gates.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.6	9.2	11.4	6.9	4.7	9.5	15.4	42	8.6	14.9	43	10.8
2	8.1	10.3	15.1	5.8	8.3	16.5	15.4	31	8.4	10.5	26	10.5
3	7.7	9.3	12.8	5.6	6.0	11.2	14.2	34	7.9	18.9	21	10.1
4	7.4	8.3	15.4	6.3	5.2	8.8	11.6	32	7.4	18.6	47	10.2
5	7.6	12.0	9.7	5.7	6.6	7.6	10.0	22	7.3	12.6	56	9.7
6	22	8.6	9.8	5.2	17.6	6.9	9.0	15.1	7.3	24	41	9.5
7	27	14.4	38	9.8	30	19.4	9.9	12.4	7.1	36	43	9.2
8	50	30	47	7.9	28	22	9.7	11.2	6.6	22	32	9.3
9	53	15.4	22	12.2	12.6	11.4	11.0	23	6.5	19.8	24	8.8
10	56	9.3	13.7	9.9	13.9	9.2	9.5	49	6.3	16.1	24	8.4
11	53	8.3	18.6	7.3	12.9	21	8.8	30	6.3	14.7	46	10.5
12	53	22	18.7	6.3	9.7	41	17.1	46	6.2	13.5	40	14.4
13	40	10.3	11.8	5.7	7.1	46	30	23	6.0	12.9	30	13.3
14	26	7.9	10.5	6.8	24	25	45	15.9	5.8	12.2	26	9.5
15	18.7	10.2	12.0	7.4	15.4	20	25	14.2	5.7	11.6	22	8.8
16	15.6	11.2	10.5	5.6	23	23	47	18.0	5.6	24	20	8.4
17	13.7	19.3	11.2	4.8	22	14.7	25	49	5.4	22	17.4	8.1
18	12.4	10.8	9.3	4.5	22	13.1	18.5	28	5.2	13.7	15.6	7.7
19	27	21	8.1	9.6	29	13.7	24	18.6	5.6	14.4	14.9	7.4
20	26	12.6	7.4	9.9	46	12.6	28	18.4	6.0	12.4	14.2	7.3
21	14.2	14.5	6.9	21	41	12.0	22	13.3	5.2	12.4	14.2	6.8
22	14.4	36	6.6	35	42	37	13.9	12.0	5.8	47	14.4	6.9
23	18.1	34	6.2	15.2	19.8	33	11.8	9.7	13.1	47	13.5	6.9
24	19.8	30	6.2	19.6	15.7	47	10.6	23	35	30	12.9	6.8
25	11.8	16.1	6.0	12.6	36	25	9.9	17.7	39	47	21	22
26	31	19.3	5.8	10.1	23	18.7	15.2	10.1	36	22	39	53
27	25	23	5.8	7.3	36	11.4	37	9.9	34	14.4	23	24
28	29	12.6	7.2	6.0	24	9.5	13.7	8.7	37	23	16.1	15.2
29	14.9	9.7	10.5	5.4	14.2	12.7	12.8	9.0	18.7	56	13.5	11.8
30	11.2	6.6	10.5	5.0	11.2	17.4	36	-------	24	53	12.2	11.2
31	9.9	11.6	-------	4.8	-------	17.4	36	-------	27	-------	11.1	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	56	7.4	23.6	36.5	732	2,250
August	36	6.6	15.3	23.7	474	1,460
September	47	5.8	12.8	19.8	385	1,180
October	35	4.5	9.20	14.2	285	875
November	46	4.7	20.2	31.3	607	1,860
December	47	6.9	19.2	29.7	594	1,830
January	47	8.8	19.5	30.2	603	1,860
February	49	8.7	22.3	34.5	646	1,980
March	39	5.2	13.1	20.3	406	1,250
April	56	10.5	23.2	35.9	697	2,140
May	56	11.1	25.6	39.6	794	2,440
June	53	6.8	11.9	18.4	356	1,100
The year	56	4.5	18.0	27.9	6,580	20,200

WAIAHULU STREAM NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder in Waimea Canyon, half a mile above confluence with Koaie Stream and 8¾ miles north of Waimea.

RECORDS AVAILABLE.—February to October, 1916; October, 1917, to June, 1918; and May, 1925, to June, 1928.

EXTREMES.—Maximum discharge during year, 2,550 million gallons a day (3,950 second-feet) Dec. 24 (gage height, 9.92 feet); minimum, 5.2 million gallons a day (8.0 second-feet) Nov. 4 (gage height, 0.63 feet).

1915–1918, 1925–1928: Maximum discharge, that of Dec. 24, 1927; minimum, that of Nov. 4, 1927.

REMARKS.—Records good for ordinary stages; poor for estimated periods (July 1–31 and Dec. 24 to Apr. 19) and for all high-stage records. Kokee ditch diverts water for irrigation above station. Discharge partly estimated Feb. 1.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		10.0	6.0	6.5	5.6	7.4		120			28	9.8
2		10.0	6.1	6.5	5.6	7.4	11				13.8	9.5
3		10.3	6.3	6.5	5.6	7.4					11.7	9.5
4		10.0	8.7	6.7	5.4	7.2					43	9.8
5	9	10.0	6.5	6.7	6.7	6.9				15	144	9.5
6		10.0	6.1	6.7	14.2	6.9		13			22	9.5
7		11.7	15.8	6.7	10.5	31					33	10.0
8		19.6	110	6.7	11.7	18.5	8				15.1	9.8
9		16.7	11.9	6.9	6.5	6.8					11.9	9.5
10	85	11.9	8.3	6.7	5.8	6.5					11.4	9.5
11		10.3	7.4	6.7	5.4	29		55	7.5	12	191	9.5
12		11.9	6.9	6.7	5.4	40					22	9.5
13		12.8	6.7	6.7	5.4	146					13.5	11.1
14		10.5	6.7	6.9	7.1	17.4					11.9	9.8
15		9.5	6.5	6.9	7.2	11.3	44				11.7	9.8
16		8.5	6.3	6.9	6.0	9.7				18	11.9	9.8
17		8.3	6.7	6.9	6.1	8.3		28			13.2	9.8
18		8.0	6.7	6.7	6.3	7.4				13	11.9	9.5
19	8.5	7.8	6.3	6.7	10.9	6.9					11.4	9.5
20		7.6	6.3	6.7	150	6.7	16			9.5	11.1	9.5
21		6.3	6.3	6.5	34	7.4				9.3	10.6	9.5
22		16.8	6.3	24	21	57				123	9.8	9.5
23		11.3	6.3	8.5	8.5	21				34	9.8	9.5
24		11.6	6.3	8.5	6.7	150				23	9.8	9.5
25		8.3	6.3	7.4	8.0			9	55	97	9.8	9.8
26		6.5	6.3	6.3	10.9		14			13.5	24	29
27	12	6.0	6.1	6.1	15.0					11.9	14.1	16.3
28		6.0	6.3	6.0	11.8	11				27	10.8	11.1
29		5.8	6.5	5.8	8.0				26	99	10.0	10.6
30		7.6	6.5	5.6	7.4					78	9.8	10.3
31		6.1	------	5.6	------			------		------	9.8	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	----------	----------	24.4	37.8	758	2,320
August	19.6	5.8	9.93	15.4	308	945
September	110	6.0	10.5	16.2	315	967
October	24	5.6	7.25	11.2	225	690
November	150	5.4	14.0	21.7	419	1,290
December	----------	6.5	27.1	41.9	840	2,580
January	----------	----------	18.3	28.3	567	1,740
February	----------	----------	25.8	39.9	748	2,300
March	----------	----------	17.5	27.1	544	1,660
April	123	----------	26.4	40.8	791	2,430
May	191	9.8	24.9	38.5	772	2,370
June	29	9.5	10.6	16.4	319	976
The year	----------	----------	18.0	27.9	6,610	20,300

KOAIE STREAM AT ELEVATION 3,700 FEET, NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder at elevation 3,700 feet, 12 miles N. 30° E. from Waimea.

RECORDS AVAILABLE.—July, 1919, to June, 1928.

EXTREMES.—Maximum discharge during year, 1,950 million gallons a day (3,020 second-feet) Dec. 24 (gage height, 4.05 feet); minimum, 1.1 million gallons a day (1.7 second-feet) Mar. 10 and 11 (gage height, 0.42 foot).

1919–1928: Maximum discharge, about 3,750 million gallons a day (5,800 second-feet) Jan. 16, 1921 (gage height, 6.70 feet); minimum, 1.0 million gallons a day (1.6 second-feet) Mar. 14, 1926 (gage height, 0.41 foot; somewhat questionable owing to intake trouble).

REMARKS.—Records good except those for high stages, which are poor. No diversion.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.1	3.9	6.1	3.4	4.2	5.3	7.5	26	3.3	16.9	32	2.6
2	5.3	12.1	8.6	2.8	5.3	5.3	7.0	10.3	2.6	22	8.1	2.4
3	5.3	5.7	35	2.6	3.6	5.3	6.3	12.2	2.2	70	6.5	2.2
4	5.3	3.0	8.6	2.6	3.6	4.9	5.5	12.9	1.7	11.5	23	2.0
5	5.9	2.8	4.9	2.6	11.0	4.2	5.3	7.5	1.5	8.6	72	1.8
6	17.7	2.7	9.5	2.6	20	4.2	4.5	4.5	1.5	8.6	14.5	1.9
7	16.9	5.5	51	2.6	10.3	11.0	3.9	3.6	1.5	13.7	19.4	2.2
8	88	43	100	5.9	9.1	8.1	4.4	3.3	1.3	21	9.7	2.4
9	65	19.2	10.3	22	4.9	4.9	4.2	50	1.3	10.9	6.1	2.4
10	73	5.7	5.7	6.5	8.1	4.2	3.9	53	1.3	7.0	7.7	2.4
11	40	5.5	9.7	4.5	10.3	26	3.9	12.2	1.2	5.3	52	2.6
12	68	30	6.5	3.6	4.9	43	8.8	10.0	1.3	4.9	10.9	17.8
13	22	8.6	6.8	3.3	3.9	46	45	9.7	1.8	3.9	7.0	6.1
14	14.5	4.9	14.6	3.3	4.9	8.1	96	5.3	1.8	3.9	11.2	3.6
15	10.3	7.5	9.7	3.0	4.5	7.0	20	4.5	1.3	3.9	9.1	9.4
16	10.9	7.0	6.1	3.0	8.6	7.0	74	6.2	1.3	17.3	7.0	6.5
17	10.3	9.1	7.5	2.8	14.5	5.7	12.9	16.9	1.3	10.6	8.6	4.2
18	8.1	6.1	4.9	2.8	9.7	7.0	13.3	10.9	1.2	6.6	5.3	3.0
19	22	7.5	3.6	3.0	23	11.6	27	7.5	1.3	10.3	4.2	2.8
20	16.1	8.1	3.0	4.5	74	12.4	58	5.9	1.3	5.7	3.9	2.4
21	9.1	24	2.9	15.0	26	106	26	5.3	1.2	4.2	3.6	2.2
22	7.5	44	2.8	26	46	75	10.9	4.9	2.0	37	3.3	2.2
23	15.7	23	2.8	34	10.9	129	6.5	4.5	42	16.9	2.9	2.2
24	17.8	37	2.8	38	21	383	4.9	6.1	33	11.5	2.8	2.2
25	10.3	9.7	2.6	12.2	63	69	3.9	5.5	163	29	6.4	5.3
26	31	9.7	2.6	7.0	36	16.9	8.5	4.9	29	6.5	23	60
27	18.2	14.2	2.6	4.2	77	11.2	16.4	3.9	16.1	4.9	8.6	10.0
28	25	6.5	5.4	3.6	22	16.1	5.3	4.2	16.9	9.8	7.5	4.7
29	12.9	7.0	15.8	9.2	9.1	11.5	5.3	3.6	12.2	82	5.3	3.6
30	7.5	11.5	8.1	4.5	6.1	10.3	14.5	-------	98	84	3.9	3.6
31	4.9	9.7	-------	3.3	-------	9.1	47	-------	27	-------	3.0	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	88	4.9	21.6	33.4	671	2,050
August	44	2.7	12.7	19.6	394	1,210
September	100	2.6	12.0	18.6	360	1,100
October	38	2.6	7.88	12.2	244	750
November	77	3.6	18.5	28.6	556	1,700
December	383	4.2	34.5	53.4	1,070	3,280
January	96	3.9	18.1	28.0	561	1,720
February	53	3.3	10.9	16.9	315	970
March	163	1.2	15.2	23.5	472	1,450
April	84	3.9	18.3	28.3	548	1,680
May	72	2.8	12.5	19.3	388	1,190
June	60	1.8	5.85	9.11	177	542
The year	383	1.2	15.3	24.3	5,760	17,600

WAIALAE RIVER AT ELEVATION 3,700 FEET, NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder at elevation 3,700 feet, 10½ miles N. 30° E. from Waimea.

RECORDS AVAILABLE.—January, 1920, to June, 1928. August, 1910, to January, 1916, at site 2 miles downstream.

EXTREMES.—Maximum discharge during year, 2,070 million gallons a day (3,200 second-feet) Dec. 24 (gage height, 5.34 feet); minimum, 1.3 million gallons a day (2.0 second-feet) Mar. 21–22 (gage height, 0.89 foot; affected by scour).

1920–1928: Maximum discharge (estimated), 4,500 million gallons a day (6,960 second-feet) Jan. 16, 1921 (gage height, 8.44 feet); minimum, 0.7 million gallons a day (1.1 second-feet) Mar. 18–20, 1925 (gage height, 0.80 foot).

REMARKS.—Records good for ordinary stages; extremely low and high stage records poor. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.5	3.5	4.6	3.5	3.6	4.8	4.1	17.8	2.2	11.0	24	1.9
2	2.4	9.4	5.3	2.8	4.6	4.6	3.8	7.0	2.1	17.1	7.6	1.7
3	2.4	4.6	26	2.5	3.0	4.3	3.6	7.3	2.1	47	5.9	1.7
4	2.2	3.2	62	2.5	4.5	3.9	3.1	7.6	2.1	8.0	26	1.7
5	2.2	2.8	3.9	2.5	12.6	3.5	2.9	5.6	1.9	5.4	60	1.6
6	9.5	2.6	10.1	2.5	31	3.0	2.8	3.8	1.7	4.6	12.9	1.6
7	8.0	6.2	44	2.5	8.2	6.8	2.8	2.9	1.7	6.3	15.3	1.6
8	49	36	94	3.9	5.6	5.7	2.6	2.6	1.6	17.3	8.0	1.4
9	51	17.0	9.0	14.8	3.9	4.3	2.6	27	1.6	7.4	5.4	1.4
10	39	4.8	5.3	4.8	6.4	4.1	2.6	35	1.6	4.6	7.8	1.4
11	25	5.1	8.5	3.5	8.2	37	2.6	8.7	1.6	3.8	32	1.4
12	50	23	5.6	2.8	4.3	60	2.8	7.4	1.7	3.1	8.0	9.0
13	11.6	5.3	6.8	2.5	3.2	42	40	7.0	1.7	2.8	5.1	3.8
14	5.6	3.5	13.6	2.4	3.2	7.1	102	4.6	1.6	2.6	7.0	2.6
15	4.3	5.4	6.5	2.4	3.2	5.9	17.8	3.6	1.4	2.6	6.3	6.5
16	4.1	4.6	6.6	2.4	3.4	5.9	56	3.6	1.4	9.3	5.9	4.6
17	3.7	5.6	7.2	2.4	7.1	4.8	9.5	8.0	1.4	6.9	5.9	2.6
18	3.8	4.6	5.3	2.4	5.0	5.0	12.0	5.9	1.4	5.9	4.1	1.9
19	12.0	4.9	3.7	2.4	6.8	8.6	29	4.4	1.4	7.6	3.6	1.7
20	8.8	4.3	3.0	2.4	53	10.6	44	3.4	1.4	4.4	3.4	1.6
21	4.2	19.9	2.8	3.7	21	95	23	2.9	1.4	2.9	3.1	1.4
22	3.5	29	2.6	18.5	49	68	10.4	2.9	5.2	19.9	2.9	1.4
23	10.0	17.0	2.5	24	9.5	148	7.0	2.8	87	11.0	2.8	1.4
24	10.0	24	2.5	33	22	509	5.1	2.9	54	6.0	2.8	1.4
25	4.6	6.5	2.5	7.0	64	80	4.4	2.9	139	19.1	4.7	2.4
26	21	6.8	2.5	4.8	32	19.8	9.8	2.4	26	4.8	17.6	42
27	9.5	17.3	2.5	3.0	78	10.0	14.4	2.4	12.4	3.4	6.6	5.8
28	18.4	5.0	4.4	2.8	18.5	15.5	5.1	2.6	13.2	19.4	5.4	2.8
29	7.7	4.6	15.4	5.7	7.7	8.3	4.4	2.4	8.3	62	3.6	2.1
30	4.6	6.8	6.4	3.7	5.6	5.9	7.8	-------	101	65	2.2	1.7
31	3.5	6.5	-------	2.6	-------	4.8	33	-------	20	-------	1.9	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	51	2.2	12.7	19.6	394	1,210
August	36	2.6	9.67	15.0	300	920
September	94	2.5	12.5	19.3	375	1,150
October	33	2.4	5.70	8.82	177	542
November	78	3.0	16.3	25.2	488	1,500
December	509	3.0	38.6	59.7	1,200	3,670
January	102	2.6	15.2	23.5	471	1,450
February	35	2.4	6.81	10.5	197	606
March	139	1.4	16.2	25.1	501	1,540
April	65	2.6	13.0	20.1	391	1,200
May	60	1.9	9.93	15.4	308	945
June	42	1.4	3.80	5.88	114	350
The year	509	1.4	13.4	20.7	4,920	15,100

KEKAHA DITCH AT CAMP NO. 1, NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder in Waimea Canyon, 6¼ miles N. 16° E. from Waimea.

RECORDS AVAILABLE.—November, 1907, to June, 1915; March, 1916, to June, 1928.

EXTREMES.—Maximum discharge during year, 71 million gallons a day (110 second-feet) Apr. 25 (gage height, 4.33 feet); no flow several days during December, January, and April; intake dam washed out Dec. 24.

1907–1928: Maximum discharge, that of Apr. 25, 1928; no flow occasionally when water is shut out of ditch.

REMARKS.—Records good for ordinary stages except those estimated, which are fair; extremely low-stage records poor. Records estimated Jan. 8–18 and Mar. 23 to Apr. 18. Intake on Waimea River 8 miles north of Waimea. Water used for irrigation of sugarcane around Kekaha. Regulated by head gates.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	34	33	36	30	30	35	0	47	32	31	37	30
2	33	38	36	27	36	34	0	50	30	48	46	29
3	30	40	40	26	29	33	0	50	30	47	37	28
4	30	33	44	26	27	32	0	50	30	47	30	29
5	30	32	33	25	43	29	0	50	29	47	47	28
6	30	29	37	24	45	28	0	44	29	47	47	28
7	42	28	36	25	46	34	0	41	28	47	47	29
8	49	49	31	26	45	47	8	39	28	45	47	28
9	46	49	43	46	34	34	22	42	28	2	47	26
10	46	42	41	34	33	33	27	46	26	0	44	25
11	46	34	41	29	41	28	32	47	26	0	47	26
12	46	44	39	27	35	25	32	47	26	0	50	33
13	46	44	35	26	29	20	37	47	28	0	50	43
14	46	34	43	25	30	22	36	47	28	20	45	32
15	46	33	42	24	31	28	36	44	26	34	50	35
16	41	38	35	24	29	27	39	41	25	34	47	39
17	39	36	41	24	42	26	39	47	25	28	47	32
18	36	34	34	24	38	26	43	44	25	41	42	28
19	36	34	30	24	44	28	[a] 50	34	27	[a] 43	39	26
20	46	33	28	25	47	27	50	44	29	41	36	25
21	46	34	27	29	48	31	49	39	26	36	33	25
22	41	49	26	49	49	24	50	36	33	44	33	24
23	35	49	26	49	49	26	50	36	43	47	32	24
24	42	49	26	49	46	16.0	47	36	30	50	30	24
25	46	44	26	42	49	1.6	44	39	29	50	31	24
26	40	42	26	[a] 38	49	0	41	36	44	47	47	44
27	48	46	25	29	46	0	48	33	49	41	44	46
28	46	38	26	27	49	0	48	38	47	40	39	36
29	49	32	41	31	46	0	44	33	46	37	36	30
30	[a] 49	40	41	32	39	0	43	-------	46	23	32	28
31	[a] 34	36	-------	27	-------	0	43	-------	49	-------	30	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	49	30	41.1	63.6	1,270	3,910
August	49	28	38.6	59.7	1,200	3,670
September	44	25	34.5	53.4	1,040	3,180
October	49	24	30.4	47.0	943	2,890
November	49	27	40.1	62.0	1,200	3,690
December (25 days)	47	0	27.8	43.0	695	2,130
January (24 days)	50	0	39.9	61.7	958	2,940
February	50	33	42.3	65.4	1,230	3,760
March	49	25	32.2	49.8	997	3,060
April (26 days)	50	0	39.1	60.5	1,020	3,120
May	50	30	40.9	63.3	1,270	3,890
June	46	24	30.1	46.6	904	2,770
The year (349 days)	50	0	36.4	56.3	12,700	39,000

[a] Partly estimated.

KEKAHA DITCH BELOW TUNNEL NO. 12, NEAR WAIMEA, KAUAI

LOCATION.—Water-stage recorder 1 mile north of Waimea and just above diversion for Waimea domestic supply.

RECORDS AVAILABLE.—April, 1908, to November, 1914, and July, 1916, to June, 1928.

EXTREMES.—Maximum discharge during year, 70 million gallons a day (108 second-feet) Dec. 24 (gage height, 5.17 feet); no flow several days during December, January, and April.

1908–1928: Maximum discharge, that of Dec. 24, 1927; no flow occasionally when water was shut out of ditch.

REMARKS.—Records good except those for which shifting-control method was used, which are fair. Intake on Waimea River 8 miles north of Waimea. Water used for irrigation of sugarcane near Kekaha. Regulated by head gates.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	29	27	32	27	22	30	0	41	29	21	29	25
2	27	29	32	22	32	29	0	41	27	41	37	25
3	25	36	34	21	24	29	0	41	27	41	36	23
4	24	27	41	21	22	27	0	41	27	41	22	24
5	24	25	30	21	34	25	0	43	27	41	39	24
6	26	23	30	20	37	23	0	39	27	41	37	23
7	39	22	36	20	41	27	0	36	26	41	39	24
8	43	37	24	21	39	41	[a] 4.3	32	25	41	37	26
9	41	41	39	34	30	32	17.5	32	25	[a] 6.7	37	24
10	39	37	37	34	27	29	22	41	24	0	36	23
11	39	30	34	26	36	27	29	41	24	0	37	22
12	39	36	34	22	30	23	29	41	23	0	39	26
13	39	39	30	21	24	19.2	32	41	25	0	37	37
14	39	32	36	20	24	20	30	39	24	[a] 12.8	36	29
15	39	27	37	19.2	27	24	30	37	24	29	39	29
16	34	34	30	19.2	24	24	32	36	22	30	37	36
17	34	30	34	18.3	34	22	32	37	22	23	37	29
18	31	30	30	18.3	34	22	37	41	22	37	36	24
19	36	30	27	18.3	36	25	39	26	22	39	32	23
20	41	30	24	19.2	41	23	39	36	25	37	30	22
21	37	29	23	22	43	27	37	34	23	32	29	22
22	32	41	22	38	43	22	39	32	26	37	27	21
23	30	44	21	43	41	23	39	30	37	41	26	21
24	41	44	21	43	37	32	37	30	27	41	24	21
25	37	41	21	37	41	[a] 15.2	36	34	27	41	24	20
26	37	37	21	36	41	0	34	32	39	39	37	35
27	41	43	20	27	39	0	39	30	43	36	39	41
28	43	37	21	22	39	0	39	30	41	34	34	30
29	41	29	30	23	39	0	36	32	41	36	32	25
30	37	34	39	29	34	0	37	------	41	18.3	29	23
31	30	34	------	22	------	0	36	------	43	------	26	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	43	24	35.3	54.6	1,090	3,360
August	44	22	33.4	51.7	1,040	3,180
September	41	20	29.7	46.0	890	2,730
October	43	18.3	25.3	39.1	784	2,410
November	43	22	33.8	52.3	1,020	3,110
December (25 days)	41	0	25.6	39.6	640	1,960
January (24 days)	39	0	32.6	50.4	782	2,400
February	43	26	36.1	55.9	1,050	3,210
March	43	22	28.5	44.1	885	2,710
April (26 days)	41	0	33.8	52.3	878	2,700
May	39	22	33.4	51.7	1,040	3,180
June	41	20	25.9	40.1	777	2,380
The year (349 days)	44	0	31.1	48.1	10,900	33,300

[a] Partly estimated.

HANAPEPE RIVER AT KOULA, NEAR ELEELE, KAUAI

LOCATION.—Water-stage recorder just below junction with Manuahi Stream, 500 feet below siphon at Koula, and 4 miles northeast of Eleele.

RECORDS AVAILABLE.—August, 1910, to January, 1921; December, 1926, to June, 1928.

EXTREMES.—Maximum discharge during year, 2,450 million gallons a day (3,790 second-feet) Dec. 24 (gage height, 8.70 feet); minimum, 9.5 million gallons a day (14.7 second-feet) several hours Mar. 8–10, 14–19, and 21–22 (gage height, 0.32 foot).

1910–1921, 1926–1928: 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 and 31, 1913 (gage height, 0.95 foot).

REMARKS.—Records fair for ordinary stages; extremely high-stage records poor. Hanapepe ditch diverts water from river 3 miles above station for irrigation.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	18.8	35	34	20	31	37	44	34	11.3	67	134	13.4
2	21	58	52	18.4	28	39	43	21	11.0	124	66	12.9
3	17.5	30	82	16.6	19.7	33	37	22	11.0	234	50	13.5
4	20	22	43	15.5	19.2	24	38	27	10.2	71	79	14.0
5	22	28	32	14.8	34	22	38	33	10.2	95	134	12.9
6	29	19.2	46	14.1	62	20	36	16.9	10.2	70	67	17.3
7	37	42	143	14.4	49	21	36	15.4	9.9	48	81	16.1
8	92	66	347	24	33	19.7	31	13.4	9.5	123	48	16.3
9	63	62	108	60	22	18.4	36	25	9.9	50	36	29
10	87	39	56	74	50	21	38	53	9.9	34	69	14.4
11	71	33	62	26	31	77	39	39	10.2	26	56	13.9
12	92	73	46	19.2	22	152	34	80	23	21	34	60
13	50	52	52	16.6	18.4	151	47	47	11.4	16.4	28	22
14	31	28	65	15.9	17.0	63	95	25	9.5	15.4	68	14.4
15	36	39	56	14.1	15.5	62	58	17.4	9.5	29	35	46
16	56	30	40	13.4	15.5	58	116	14.4	9.5	53	31	34
17	27	40	38	13.4	15.5	47	54	39	9.5	32	28	19.4
18	28	31	29	14.1	32	42	47	23	9.5	156	22	13.4
19	51	33	24	15.9	39	59	94	53	11.7	98	21	11.7
20	36	36	22	15.2	76	88	225	32	10.2	44	18.7	11.0
21	26	93	19.7	14.7	49	185	143	19.4	9.5	29	16.9	10.6
22	21	86	18.8	37	116	214	77	14.9	19.4	47	15.9	11.0
23	64	69	17.5	76	46	348	52	13.9	89	41	13.4	11.0
24	78	76	17.0	105	52	736	39	14.9	79	27	12.0	10.2
25	38	51	18.8	49	118	331	34	12.0	43	34	44	15.0
26	73	51	16.6	27	88	134	47	11.0	30	18.7	49	73
27	51	50	16.2	19.7	188	90	49	11.7	15.9	15.9	24	22
28	55	31	35	20	164	85	29	16.4	16.9	72	28	12.0
29	55	62	62	112	78	66	26	12.4	18.7	265	26	10.2
30	41	48	34	30	48	57	26	-------	167	224	15.9	11.8
31	28	44	-------	22	-------	51	37	-------	85	-------	13.9	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	92	17.5	45.7	70.7	1,420	4,350
August	93	19.2	47.0	72.7	1,460	4,470
September	347	16.2	54.4	84.2	1,630	5,010
October	112	13.4	30.6	47.3	948	2,910
November	188	15.5	52.6	81.4	1,580	4,840
December	736	18.4	108	167	3,350	10,300
January	225	26	56.3	87.1	1,740	5,360
February	80	11.0	26.1	40.4	757	2,320
March	167	9.5	25.5	39.5	790	2,430
April	265	15.4	72.7	112	2,180	6,690
May	134	12.0	44.0	68.1	1,360	4,190
June	73	10.2	19.7	30.5	592	1,810
The year	736	9.5	48.7	75.4	17,800	54,700

HANAPEPE DITCH AT KOULA, NEAR ELEELE, KAUAI

LOCATION.—Water-stage recorder at first flume below siphon at Koula, 4 miles below intake, and 4 miles north of Eleele.

RECORDS AVAILABLE.—January, 1910, to June, 1921; March, 1927, to June, 1928.

EXTREMES.—Maximum discharge for period Mar. 17, 1927, to June 30, 1928, 34 million gallons a day (53 second-feet) Apr. 18, 1928 (gage height, 3.08 feet); no flow for several hours for a few days in December, January, and April.

1910–1921, 1927–28: Maximum discharge, 36 million gallons a day (56 second-feet) Apr. 10, 1918 (gage height, 3.18 feet); ditch occasionally dry for few hours owing to closing of head gates.

REMARKS.—Records fair. Diverts water for irrigation from Hanapepe River 3 miles above station. Discharge partly estimated Sept. 4, 1927, and Apr. 15, 1928. Braced figures give estimated mean discharge for period indicated. Regulated by head gates and spillways.

Daily and monthly discharge in million gallons a day, 1926–1928

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1926–27												
1										0.4	31	29
2										.4	29	29
3										5.8	29	31
4										24	31	31
5										21	29	31
6										24	27	31
7										24	27	31
8										24	29	31
9										25	29	31
10										26	27	31
11										24	27	
12										24	27	
13										27	27	
14										29	29	
15										29	29	
16										27	29	
17										29	29	
18									29	29	29	
19									31	27	29	
20									31	27	29	
21									29	27	29	30
22									26	29	29	
23									19.2	27	29	
24									14.6	27	29	
25									.5	25	29	
26									.4	25	29	
27									.4	27	29	
28									.4	31	29	
29									.4	29	29	
30									.4	31	29	
31									.4		31	

Daily and monthly discharge of Hanapepe ditch at Koula, near Eleele, Kauai, in million gallons a day, 1926–1928—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1927–28												
1		31	29	29	32	29	10.9	25	29	32	29	29
2		31	30	29	29	29	10.9	25	29	32	29	29
3	29	29	31	29	29	32	13.5	27	29	29	29	29
4		29	24	31	29	32	10.1	23	27	28	32	29
5	29	22		31	29	29	9.1	12.3	27		25	29
6	31	29	30	31	29	29	8.5	24	27		29	27
7	25	29	31	31	29	29	8.8	25	27		29	29
8	29	29	31	31	29	29	13.9	25	27		29	29
9	29	29	31	31	29	29	9.4	27	27		32	27
10	23	29	29	31	29	29	4.3	29	27	29	32	25
11	24	29	29	31	29	32	4.4	32	25		29	27
12	31	31	29	31	29	26	12.9	32	27		29	29
13	31	29	29	31	27	20	12.3	32	25		29	27
14	31	29	29	31	27	8.6	14.9	32	25		29	27
15	31	29	29	29	27	4.7	13.4	32	25	19	29	29
16	31	29	29	29	27	0	15.6	32	24	32	29	29
17	29	29	29	29	29	9.4	13.4	32	25	32	29	27
18	30	29	29	27	29	25	21	32	24	32	29	27
19	31	29	29	27	29	16.9	27	32	26	29	29	27
20	31	29	29	27	32	12.9	29	32	25	29	29	25
21	31	31	31	29	29	13.9	29	29	24	29	29	25
22	31	31	31	32	32	13.4	27	29	25	29	29	25
23	31	29	31	29	32	13.5	25	32	28	29	29	25
24	29	29	31	29	32	9.3	25	29	29	29	29	27
25	29	29	31	27	29	3.4	25	29	29	29	28	32
26	29	29	31	29	32	2.0	25	29	32	29	27	29
27	29	29	31	29	32	2.1	25	32	29	29	29	29
28	29	29	31	29	29	1.7	25	29	29	32	29	27
29	31	29	31	31	32	1.1	24	27	29	32	29	27
30	29	29	31	29	29	2.5	24	-------	29	32	29	27
31	31	29	-------	29	-------	6.7	25	-------	31	-------	29	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
1926–27						
March (14 days)	31	0.4	13.0	20.1	183	559
April	31	.4	24.2	37.4	725	2,230
May	31	27	28.8	44.6	893	2,740
June	31	----------	30.2	46.7	906	2,780
The period	31	.4	25.8	39.9	2,710	8,310
1927–28						
July	31	23	29.4	45.5	911	2,800
August	31	22	29.1	45.0	902	2,770
September	31	----------	29.9	46.3	896	2,750
October	32	27	29.6	45.8	918	2,820
November	32	27	29.5	45.6	886	2,720
December (30 days)	32	0	17.4	26.9	521	1,600
January	29	4.3	17.5	27.1	542	1,660
February	32	12.3	28.5	44.1	827	2,540
March	32	24	27.1	41.9	841	2,580
April	32	----------	29.4	45.5	883	2,710
May	32	25	29.1	45.0	901	2,770
June	32	25	27.6	42.7	829	2,540
The year (365 days)	32	0	27.0	41.8	9,860	30,300

SOUTH FORK OF WAILUA RIVER NEAR LIHUE, KAUAI

LOCATION.—Water-stage recorder one-third of a mile above Wailua Falls and 5 miles northeast of Lihue. Prior to Nov. 18, 1918, station was one-third of a mile farther upstream.

RECORDS AVAILABLE.—December, 1911, to June, 1928.

EXTREMES.—Maximum discharge during year, 22,800 million gallons a day (35,300 second-feet) Dec. 24 (gage height, 10.30 feet); minimum, 3.0 million gallons a day (4.6 second-feet) June 24 (gage height, 0.59 foot).

1911–1928: Maximum discharge, 28,000 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, 1926 (gage height, 1.17 feet).

REMARKS.—Records good except those estimated (Oct. 14–21 and Oct. 30 to Nov. 8), which are fair. Lihue ditch and Hanamaulu ditch divert above station at elevations of 600 feet and 500 feet, respectively, for irrigation.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.2	28	38	9.0		83	80	28	5.5	34	312	4.3
2	14.2	56	93	4.7	5	84	77	7.7	4.3	37	162	5.2
3	19.2	59	156	4.7		75	67	6.9	4.3	496	120	4.1
4	19.6	34	43	4.4		56	63	25	12.8	639	172	4.7
5	19.6	24	26	4.1		51	63	36	10.1	325	230	5.4
6	29	15.2	52	4.3	30	42	63	26	4.8	217	124	6.6
7	25	66	224	4.1		103	64	16.2	4.2	151	180	5.6
8	103	104	463	4.6		73	68	7.8	4.1	433	110	4.5
9	44	62	129	12.9	25	55	68	9.1	4.2	142	87	4.7
10	65	35	46	39	50	58	52	69	4.0	90	168	4.1
11	64	26	89	9.4	24	351	26	58	4.0	71	152	4.6
12	73	93	74	6.3	23	582	21	111	4.1	62	88	34
13	38	93	105	4.3	17.6	569	23	62	6.6	52	70	6.7
14	21	29	131		22	167	55	26	4.0	43	186	4.3
15	19.6	39	100		19.6	164	28	14.2	3.3	36	93	5.4
16	72	27	98		44	126	139	9.4	3.2	60	81	6.3
17	30	33	80		49	100	37	74	3.3	42	78	5.9
18	15.6	25	38	3.6	81	116	44	69	3.2	239	48	5.4
19	34	24	23		115	131	101	104	3.1	300	38	5.4
20	25	28	14.9		128	159	443	54	3.6	74	51	4.7
21	13.5	113	7.2		88	256	208	15.4	3.3	29	44	3.3
22	10.0	150	6.5	13.6	175	354	108	5.6	3.2	76	38	3.2
23	61	68	21	16.5	97	757	65	9.7	34	68	10.6	3.2
24	137	108	20	38	87	4,310	43	22	79	14.9	6.0	3.1
25	34	46	7.6	8.8	129	825	32	18.4	71	72	17.6	3.2
26	57	49	6.1	5.7	102	302	35	22	50	34	40	4.1
27	42	59	10.9	4.3	243	188	61	22	14.1	35	38	4.7
28	80	28	12.9	3.9	344	151	31	22	4.1	147	31	3.4
29	76	75	63	50	156	120	32	19.0	3.6	746	12.8	3.4
30	65	85	28	4.4	100	96	27	-------	81	518	5.2	4.8
31	49	57	-------		-------	88	21	-------	31	-------	4.5	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	137	9.2	44.0	68.1	1,360	4,190
August	150	15.2	56.1	86.8	1,740	5,340
September	463	6.1	73.5	114	2,210	6,770
October	50	-------	9.36	14.5	290	890
November	344	-------	76.1	118	2,280	7,010
December	4,310	42	342	529	10,600	32,500
January	443	21	72.4	112	2,240	6,890
February	111	5.6	33.4	51.7	969	2,970
March	81	3.1	15.2	23.5	471	1,450
April	746	14.9	176	272	5,280	16,200
May	312	4.5	90.2	140	2,800	8,580
June	34	3.1	5.61	8.68	168	516
The year	4,310	3.1	83.1	129	30,400	93,300

NORTH FORK OF WAILUA RIVER AT ELEVATION 650 FEET, NEAR LIHUE, KAUAI

LOCATION.—Water-stage recorder about 1½ miles above intake of Kanaka ditch and 7¾ miles northwest of Lihue.

RECORDS AVAILABLE.—August 10, 1910, to June, 1928.

EXTREMES.—Maximum discharge during year, 3,410 million gallons a day (5,280 second-feet) Dec. 24 (gage height, 8.46 feet); minimum discharge, 19.5 million gallons a day (30.2 second-feet) Mar. 21 (gage height, 0.35 foot).

1910–1928: Maximum discharge, that of Dec. 24, 1927; minimum discharge, about 7.7 million gallons a day (11.9 second-feet) Apr. 27, 1926 (gage height, 0.06 foot).

REMARKS.—Records good for ordinary stages; estimated (Mar. 28 to Apr. 13) and high-stage records poor. Hanalei Tunnel discharges water into stream, and North Wailua ditch diverts from stream above station for irrigation. Discharge partly estimated Apr. 14.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	32	54	64	37	45	60	56	56	26	42	120	29
2	30	72	138	40	34	66	52	46	25		88	29
3	28	57	154	37	34	55	52	53	26		72	34
4	30	46	86	34	57	46	49	54	25		86	27
5	37	46	80	31	53	43	49	46	24		103	27
6	50	43	69	28	52	43	49	40	23	160	72	38
7	42	66	154	34	40	96	46	40	23		91	74
8	88	108	296	63	37	57	56	34	22		59	53
9	67	83	132	99	32	49	54	66	23		48	43
10	71	62	76	140	52	49	43	81	23		67	32
11	72	68	91	50	38	125	46	70	22	48	86	39
12	83	117	68	37	32	270	63	90	34		52	83
13	56	80	71	32	30	175	71	58	22		49	34
14	43	50	100	31	32	79	87	46	22	38	87	36
15	68	63	74	28	29	94	64	43	21	38	52	54
16	69	50	98	28	79	62	99	54	20	73	56	39
17	43	46	72	28	62	62	59	73	22	50	46	36
18	48	50	54	26	88	67	60	52	22	105	43	28
19	53	53	46	32	143	85	72	66	22	79	42	26
20	44	53	43	31	144	102	168	51	20	49	37	26
21	40	88	40	44	94	192	125	43	20	46	37	28
22	34	98	37	51	108	225	78	37	23	78	34	25
23	82	77	37	99	77	392	63	37	35	71	32	25
24	107	78	34	81	83	855	56	40	46	66	29	26
25	48	58	42	75	102	238	52	34	105	77	48	38
26	68	64	34	40	86	121	69	32	54	52	43	72
27	76	54	34	34	150	95	66	32	37	54	32	36
28	88	43	45	44	175	85	52	29	38	114	47	28
29	88	97	104	100	94	72	52	26		274	43	27
30	76	78	49	34	67	63	52	-------	64	188	34	27
31	50	60	-------	32	-------	59	64	-------		-------	30	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	107	28	58.4	90.4	1,810	5,560
August	117	43	66.5	103	2,060	6,330
September	296	34	80.7	125	2,420	7,430
October	140	26	48.4	74.9	1,500	4,600
November	175	29	71.6	111	2,150	6,590
December	855	43	132	204	4,080	12,600
January	168	43	65.3	101	2,020	6,210
February	90	26	49.3	76.3	1,430	4,390
March	105	20	32.0	49.5	991	3,040
April	-------	38	94.9	147	2,850	8,740
May	120	29	56.9	88.0	1,760	5,410
June	83	25	37.3	57.7	1,120	3,430
The year	855	20	66.1	102	24,200	74,300

KANAHA DITCH NEAR LIHUE, KAUAI

LOCATION.—Water-stage recorder about a quarter of a mile below point where Kauai Electric Co.'s power line crosses ditch and 6¾ miles northwest of Lihue.

RECORDS AVAILABLE.—August, 1910, to June, 1928.

EXTREMES.—Maximum discharge during year, 45 million gallons a day (70 second-feet) Dec. 24 (gage height, 3.22 feet); minimum, 0.2 million gallons a day (0.3 second-foot) Nov. 8 (gage height, 0.25 foot).

1910–1928: Maximum discharge, that of Dec. 24, 1927; no flow occasionally when water was shut out of ditch.

REMARKS.—Records fair. Intake 8½ miles above mouth of river at elevation of about 600 feet. Water used for irrigation of sugarcane. Regulated by head gates and spillways.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.3	0.4	0.2	0.3	7.0	2.5	0.4	0.3	0.3	1.0	1.0	4.2
2	5.2	.4	.4	.3	6.8	2.2	.3	.3	.2	.6	.8	5.6
3	.6	.4	.4	.2	7.1	1.5	.3	.3	.2	.4	.7	5.8
4	.5	.4	.3	.3	3.3	.8	.3	.3	.3	1.4	.7	6.1
5	.4	.4	.3	3.2	1.8	.8	.4	.4	.4	.6	.7	7.6
6	.4	.4	.3	6.8	1.9	.9	.4	.3	.3	.5	.7	8.3
7	.4	.4	.4	7.0	1.4	.8	.4	.3	.3	.5	.7	8.3
8	.4	.5	.5	7.2	.2	.8	.4	.3	5.9	.6	.8	8.2
9	.4	.6	.4	5.8	.2	.8	.4	.4	8.9	.6	.8	7.5
10	.4	.6	.3	.5	.2	.7	.4	.4	8.9	.4	.7	7.9
11	.3	.6	.3	.4	.2	.9	.4	.3	8.9	.4	.7	8.3
12	.5	.6	.3	.4	.2	1.0	.3	.4	8.9	.7	.6	8.3
13	.5	.6	.3	.4	.2	1.8	.4	.3	8.3	.6	.7	8.3
14	.4	.5	.4	.3	.2	.6	.4	.3	8.9	.5	.6	8.9
15	.3	.5	.3	.4	.2	.5	.4	.2	8.9	.6	.7	8.9
16	.4	.4	.4	.3	.2	.4	.4	.3	8.9	.5	.8	8.9
17	.3	.4	.3	.3	.2	.4	.3	.4	8.9	.5	.7	8.9
18	.4	.4	.2	4.5	.2	.3	.3	.3	8.9	.6	.6	9.5
19	.6	.4	.2	8.8	.2	.3	.3	.2	8.9	.9	.7	9.5
20	.5	.4	.2	9.5	.2	.4	.4	.3	8.9	.6	.6	9.5
21	.4	.6	.2	12.2	.2	.4	.4	.4	8.9	.7	.6	9.5
22	.4	.7	.2	13.5	.2	.5	.4	.3	8.9	.8	.6	8.9
23	.6	.6	.3	14.2	.2	2.1	.3	.2	8.9	.7	.6	8.9
24	.6	.5	.3	9.9	.2	11.3	.3	.2	8.9	.8	.7	8.9
25	.5	.4	.3	2.4	.2	1.8	.2	.3	5.6	.8	.6	8.9
26	.5	.4	.3	5.5	.4	.7	.3	.3	.4	.7	.6	9.5
27	.5	.4	.3	7.2	.4	.6	.3	.2	.6	.8	.6	8.9
28	.5	.3	.4	8.9	.9	.6	.3	.2	1.4	.8	.6	8.9
29	.5	.3	.4	7.5	2.7	.5	.3	.2	1.2	1.4	.5	8.9
30	.5	.2	.3	7.2	2.6	.4	.3	------	1.2	1.1	.6	8.9
31	.4	.3	------	7.3	------	.4	.3	------	1.2	------	.7	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	8.3	0.3	0.86	1.33	26.6	82
August	.7	.2	.45	.70	14.0	43
September	.5	.2	.31	.48	9.4	28
October	14.2	.2	4.93	7.63	153.	469
November	7.1	.2	1.33	2.06	39.9	122
December	11.3	.3	1.22	1.89	37.7	116
January	.4	.2	.35	.54	10.7	33
February	.4	.2	.30	.46	8.6	27
March	8.9	.2	5.20	8.05	161	495
April	1.4	.4	.70	1.08	21.1	64
May	1.0	.5	.68	1.05	21.0	65
June	9.5	4.2	8.29	12.8	249	763
The year	14.2	.2	2.05	3.17	752	2,310

EAST BRANCH OF NORTH FORK OF WAILUA RIVER NEAR LIHUE, KAUAI

LOCATION.—Water-stage recorder about 1,200 feet above confluence with North Fork and 7¼ miles northwest of Lihue.

RECORDS AVAILABLE.—July, 1912, to June, 1928.

EXTREMES.—Maximum discharge during year, 3,340 million gallons a day (5,170 second-feet) Dec. 24 (gage height, 10.57 feet); minimum, 12.1 million gallons a day (18.7 second-feet) June 24 (gage height, 1.08 feet).

1912–1928: Maximum discharge, that of Dec. 24, 1927; minimum, 4.4 million gallons a day (6.8 second-feet) July 8 and 13, 1926 (gage height, 1.68 feet).

REMARKS.—Records good for ordinary stages and fair for high and low stages. Records partly estimated Feb. 19 and 20. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	15.1	24	26	16.6	20	26	33	22	16.5	26	64	15.5
2	14.0	26	44	16.6	17.7	27	28	17.2	16.2	21	42	15.0
3	13.5	43	81	16.1	16.1	23	26	19.2	16.0	33	35	15.0
4	13.5	25	35	15.1	19.7	21	22	22	15.8	321	45	14.5
5	16.1	22	32	15.1	23	18.9	21	17.5	16.2	89	50	14.0
6	22	21	28	14.6	17.7	19.6	21	16.2	15.5	58	35	17.1
7	16.1	27	43	15.1	22	57	19.2	15.8	15.2	40	67	21
8	32	38	111	18.2	22	26	19.2	15.0	14.8	79	54	15.0
9	24	31	50	34	17.7	22	19.2	39	15.2	37	40	14.0
10	25	28	36	44	24	19.6	17.5	48	14.9	28	68	13.5
11	24	32	49	22	20	73	17.0	35	14.8	26	66	15.0
12	31	52	31	18.2	17.7	103	17.5	36	16.8	22	33	26
13	26	36	30	17.2	16.6	121	21	28	15.2	21	30	15.8
14	19.6	28	64	16.1	23	43	21	24	14.8	20	39	14.2
15	21	30	35	15.1	17.2	67	18.1	22	17.2	21	32	14.8
16	26	27	46	14.6	97	36	32	27	14.5	33	26	15.0
17	17.7	26	37	14.0	34	32	17.5	40	15.2	30	24	14.5
18	17.7	26	28	13.5	49	31	17.5	28	15.2	67	22	13.5
19	19.6	26	26	14.6	71	38	19.2	26	15.5	47	21	13.0
20	17.7	25	24	15.2	89	35	47	24	15.2	30	19.2	13.0
21	16.1	39	22	18.5	59	32	31	22	14.2	48	19.2	13.0
22	15.6	42	21	25	54	85	24	22	14.2	42	17.5	12.5
23	25	42	19.6	28	35	259	21	21	14.8	36	17.2	12.5
24	37	43	18.9	48	31	974	19.2	24	14.8	35	16.8	12.5
25	21	30	18.9	37	33	335	17.5	19.2	43	40	21	15.3
26	27	40	17.7	21	28	88	26	17.5	25	24	21	28
27	31	31	16.6	17.7	56	56	25	17.5	19.2	22	17.5	16.8
28	43	24	17.7	21	53	48	17.5	17.2	21	47	19.2	15.0
29	38	40	29	20	36	48	17.2	16.8	19.2	189	19.2	14.0
30	31	34	20	16.1	29	42	17.0	-------	36	114	16.2	13.8
31	25	30	-------	15.1	-------	35	25	-------	30	-------	15.5	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	43	13.5	23.3	36.1	721	2,220
August	52	21	31.9	49.4	988	3,030
September	111	16.6	35.2	54.5	1,060	3,240
October	48	13.5	20.4	31.6	633	1,940
November	97	16.1	34.9	54.0	1,050	3,210
December	974	18.9	91.6	142	2,840	8,710
January	47	17.0	22.4	34.7	694	2,130
February	48	15.0	24.1	37.3	699	2,140
March	43	14.2	18.1	28.0	562	1,720
April	321	20	54.9	84.9	1,650	5,050
May	68	15.5	32.7	50.6	1,010	3,110
June	28	12.5	15.4	23.8	463	1,420
The year	974	12.5	33.8	52.3	12,400	37,900

KAPAHI DITCH NEAR KEALIA, KAUAI

LOCATION.—Water-stage recorder about 500 feet below intake, 4 miles N. 88° W. from Kealia.

RECORDS AVAILABLE.—April, 1909, to May, 1914, and May, 1915, to June, 1928.

EXTREMES.—Maximum discharge during year, 153 million gallons a day (237 second-feet) Dec. 7 (gage height, 2.35 feet); no flow Oct. 2 and Dec. 8–13; water shut out of ditch.

1909–1914, 1915–1928: Maximum discharge, 233 million gallons a day (361 second-feet) Mar. 31, 1923 (gage height, about 3.15 feet); no flow occasionally when water is shut out of ditch.

REMARKS.—Records good except those for extremely low stages, which are poor. Diverts water from Kapaa River at elevation of about 400 feet. Water used for irrigation; regulated by head gates.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9.4	8.3	5.9	2.9	5.9		0.08	2.9	7.2	3.9	0.4	4.3
2	9.4	7.6	9.0	1.3	4.9	[a]0.4	.08	4.3	7.2	7.8	.3	3.2
3	3.4	3.9	7.6	3.2	4.6		.08	5.9	6.2	9.4	.3	2.9
4	.9	5.4	1.4	2.9	5.5		.08	5.3	.9	4.4	.3	3.2
5	7.1	5.2	6.0	3.2	6.5	[b]3.7	.08	.4	6.4	2.4	.3	3.2
6	8.2	5.5	8.0	3.4	2.1	7.6	.08	7.6	6.8	.55	.08	5.1
7	5.2	7.9	7.2	3.7	5.1	18.3	.08	11.4	4.9	1.5	3.1	9.5
8	9.1	14.0	7.6	6.7	3.6	.02	.08	10.3	2.6	.15	.08	6.2
9	5.6	12.3	7.2	7.4	.15	.00	.08	6.9	4.3	1.1	.08	6.5
10	1.3	13.1	6.2	9.0	.08	.00	.08	1.7	7.2	4.8	.08	6.2
11	5.0	15.4	7.6	5.9	.08	.00	.08	1.7	6.8	11.1	.08	6.5
12	9.4	12.0	7.4	4.3	.08	.00	.08	1.7	9.4	[b]9.8	.08	12.5
13	10.1	8.0	5.9	4.6	1.0	.7	.08	1.7	4.0	[a]9.5	3.4	4.9
14	5.5	4.9	12.6	4.9	1.4	.55	.7	4.0	3.4	[b]9.0	14.5	4.0
15	5.6	8.2	6.5	4.0	.08	.7	.02	4.3	6.2	8.9	14.9	4.0
16	6.4	6.8	4.9	1.9	.3	.9	.08	4.6	5.9	11.1	8.0	4.3
17	5.8	8.3	6.6	4.0	.02	.55	7.6	5.5	5.9	14.0	9.0	1.7
18	6.8	7.8	4.9	3.7	.02	.55	8.3	4.8	2.2	15.4	8.7	3.7
19	6.8	8.3	2.5	4.6	.02	.55	4.0	.4	6.1	14.5	3.0	3.7
20	6.2	7.2	2.4	4.6	.02	.4	2.1	3.1	6.8	9.5	2.9	3.7
21	4.9	8.8	3.2	5.5	.02	.4	2.4	2.9	4.6	7.7	9.7	3.4
22	4.6	7.8	3.2	6.1	.08	.4	2.4	3.0	3.2	.55	10.3	3.4
23	4.7	10.2	2.9	.4	.08	.7	10.1	4.6	3.2	13.0	6.8	3.7
24	1.0	10.7	2.9	6.6	.08	3.7	11.1	6.8	5.6	9.2	5.9	1.5
25	6.2	7.2	2.6	4.5	.08	.4	10.7	11.1	2.6	5.5	8.8	5.7
26	11.5	7.6	3.6	3.2	2.7	.3	7.1	10.3	4.9	5.2	8.3	15.1
27	11.2	6.2	3.4	4.0	.08	.3	6.4	9.4	3.7	6.8	2.8	6.5
28	8.3	1.9	3.4	5.1	1.9	.15	8.3	9.0	4.9	4.4	8.0	5.9
29	9.8	4.0	10.2	4.6	[b]1.9	.15	9.8	8.3	3.4	.7	8.3	4.3
30	8.8	7.0	3.2	1.3	[a].4	.15	11.4	-------	3.4	.55	7.2	4.9
31	1.1	7.6	-------	1.7	-------	.15	7.6	-------	3.2	-------	6.0	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	11.5	0.9	6.43	9.95	199	612
August	15.4	1.9	8.04	12.4	249	765
September	12.6	1.4	5.53	8.56	166	509
October	9.0	.4	4.17	6.45	129	397
November	6.5	.02	1.63	2.52	48.8	150
December (27 days)	18.3	.00	1.59	2.46	42.9	132
January	11.4	.02	3.59	5.55	111	342
February	11.4	.4	5.31	8.22	154	473
March	9.4	.9	4.94	7.64	153	470
April	15.4	.15	6.75	10.4	202	621
May	14.9	.08	4.89	7.57	152	465
June	15.1	1.5	5.12	7.92	154	471
The year (362 days)	18.3	.00	4.87	7.54	1,760	5,400

[a] Estimated mean. [b] Partly estimated.

ANAHOLA RIVER NEAR KEALIA, KAUAI

LOCATION.—Water-stage recorder a quarter of a mile above dam at Kiokala and 4½ miles northwest of Kealia.

RECORDS AVAILABLE.—August to November, 1910, and December, 1912, to June, 1928.

EXTREMES.—Maximum discharge during year, 1,530 million gallons a day (2,370 second-feet) Dec. 24 (gage height, 9.38 feet); minimum, 3.0 million gallons a day (4.6 second-feet) June 18, 19, 22, and 24 (gage height, 1.99 feet).

1910, 1912–1928: Maximum discharge, that of Dec. 24, 1927; minimum, 1.4 million gallons a day (2.2 second-feet) Sept. 12–13, 1923 (gage height, 1.83 feet).

REMARKS.—Records good for ordinary stages except those estimated (Feb. 18 to Mar. 1), which are poor; high-stage records poor. Anahola ditch diverts water 3 miles above station for irrigation and domestic supply.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5.1	7.0	5.0	3.9	3.2	11.2	14.2	8.1	5.5	6.0	28	4.4
2	4.7	5.6	7.1	3.7	3.7	14.0	13.4	5.7	5.2	4.2	14.2	4.4
3	4.6	13.0	10.1	4.6	3.4	11.2	11.7	7.0	5.2	9.1	11.4	4.2
4	4.7	6.4	5.6	3.7	4.5	10.0	8.8	23	8.4	124	14.4	4.2
5	4.9	8.5	4.6	3.5	4.6	8.1	8.4	6.8	6.5	84	19.5	4.2
6	7.4	5.8	4.4	3.4	4.0	12.1	8.1	5.7	5.2	76	9.7	4.0
7	5.6	9.4	16.1	3.9	46	129	7.8	6.5	4.8	21	29	7.7
8	6.4	10.3	43	3.9	27	29	10.7	5.5	4.6	39	10.4	4.6
9	5.3	6.7	8.4	7.8	8.1	17.1	8.8	17.0	4.8	9.7	9.4	4.0
10	7.0	5.8	5.6	8.9	9.4	14.4	7.5	25	4.6	10.9	9.3	3.8
11	4.7	5.8	5.6	4.2	6.9	52	7.0	19.1	4.4	9.1	32	4.2
12	6.0	18.8	4.9	3.9	4.7	67	7.5	11.4	5.2	6.8	8.8	7.8
13	8.6	9.3	4.9	4.0	4.2	62	7.8	9.1	4.8	6.2	7.8	3.8
14	5.3	5.6	11.8	3.7	14.5	28	7.0	7.8	4.6	5.6	18.1	3.6
15	5.3	7.0	9.2	3.5	24	47	7.0	7.0	4.4	5.5	17.0	3.8
16	6.2	5.8	6.7	3.4	221	19.6	21	9.3	4.4	19.6	7.3	3.0
17	4.7	6.4	6.7	3.5	28	16.5	7.0	22	4.4	8.2	6.8	3.4
18	4.6	6.3	4.7	3.4	67	14.1	7.3		4.4	25	6.8	3.0
19	4.7	5.3	4.7	5.9	77	17.4	9.7		4.6	11.0	6.2	3.2
20	4.7	5.1	4.6	5.1	74	17.9	27		4.6	12.9	5.7	3.4
21	4.6	5.8	4.4	4.4	38	13.7	8.1	7	4.2	6.2	5.5	3.4
22	4.4	16.9	4.2	10.7	34	40	6.5		4.2	24	5.5	3.2
23	11.3	8.2	4.2	4.9	17.7	112	5.7		4.0	19.2	5.2	3.2
24	8.4	13.3	4.0	14.3	16.9	453	5.5		4.2	24	5.0	3.2
25	5.1	6.0	4.2	4.2	17.4	116	5.5		4.8	26	7.0	3.4
26	6.8	5.6	4.0	3.5	12.7	47	21	5.5	4.6	7.5	7.3	9.5
27	13.0	5.3	4.0	3.4	27	32	16.3		4.0	7.0	5.2	4.4
28	17.7	4.9	4.7	3.4	23	26	7.0		5.2	11.0	5.0	4.0
29	9.5	5.0	5.3	3.2	11.5	21	6.2		4.8	115	4.8	3.4
30	6.0	7.5	4.7	3.2	10.9	17.7	6.0	-------	26	61	4.4	3.4
31	5.3	5.3	-------	3.1	-------	15.9	10.5	-------	9.6	-------	4.2	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	17.7	4.4	6.54	10.1	203	622
August	18.8	4.9	7.67	11.9	238	730
September	43	4.0	7.25	11.2	217	667
October	14.3	3.1	4.72	7.30	146	449
November	221	3.2	28.1	43.5	844	2,590
December	453	8.1	48.1	74.4	1,490	4,580
January	97	5.5	9.87	15.3	306	939
February	25	----------	9.40	14.5	272	837
March	26	4.0	5.68	8.79	176	540
April	124	4.2	26.5	41.0	795	2,440
May	32	4.2	10.7	16.6	331	1,020
June	9.5	3.0	4.21	6.51	126	388
The year	453	3.0	14.1	21.8	5,140	15,800

• Estimated.

ANAHOLA DITCH ABOVE KANEHA RESERVOIR, NEAR KEALIA, KAUAI

LOCATION.—Water-stage recorder at upper end of second tunnel above Kaneha Reservoir, 5 miles northwest of Kealia.

RECORDS AVAILABLE.—May, 1915, to June, 1928.

EXTREMES.—Maximum discharge during year, 26 million gallons a day (40 second-feet) Nov. 7 (gage height, 2.77 feet); no flow several days in November, December, January, February, April, and May when water was shut out of ditch.

1915–1928: Maximum discharge recorded, 130 million gallons a day (201 second-feet) Jan. 16, 1921 (gage height, 6.25 feet); no flow occasionally when water is shut out of ditch.

REMARKS.—Records fair. This station measures water diverted from Anahola River to Kaneha Reservoir, where it is stored for irrigation. Regulated by head gates and spillways.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.8	6.7	3.2	2.0	2.8	0	0	6.0	2.4	5.5	0	2.1
2	2.4	5.0	6.1	2.0	4.7	0	0	3.6	2.2	3.3	0	2.0
3	2.2	9.4	8.1	2.0	2.3	0	1.2	6.6	2.4	5.7	0	2.1
4	2.2	5.8	3.5	1.7	4.2	0	3.0	7.5	3.3	2.0	0	1.9
5	2.2	7.8	3.0	1.6	8.8	0	2.8	4.5	2.6	0	0	2.0
6	7.1	4.5	4.1	1.7	2.9	0	2.7	3.3	1.9	0	0	2.3
7	3.5	6.5	9.2	3.2	10.9	0	2.5	3.4	1.8	0	0	8.4
8	6.7	6.2	8.5	3.4	5.3	0	.8	2.8	1.7	0	0	3.1
9	4.2	4.8	5.8	11.3	3.0	0	2.1	7.5	2.0	0	0	2.0
10	7.2	3.9	5.3	8.7	5.0	0	2.7	2.5	1.7	0	0	1.8
11	3.0	4.2	5.4	3.2	4.3	0	2.6	0	1.6	0	0	3.5
12	7.7	4.6	4.4	3.0	3.2	0	5.9	0	2.7	0	0	6.8
13	7.3	3.4	4.5	3.6	2.7	0	5.5	0	1.8	0	0	2.5
14	3.4	3.1	6.1	2.3	3.7	0	1.5	0	1.5	0	0	2.5
15	5.0	5.6	3.1	1.9	1.0	0	1.6	0	1.4	0	0	4.4
16	7.6	4.8	4.9	1.8	0	0	4.0	0	1.4	0	0	2.5
17	3.1	5.5	4.6	1.8	0	0	4.1	0	1.6	0	0	1.8
18	2.9	5.2	3.5	1.7	0	0	6.6	0	1.7	0	0	1.7
19	3.7	3.7	2.5	5.4	0	0	3.8	0	3.5	0	0	1.6
20	3.6	3.0	2.5	4.0	0	0	0	0	2.0	0	0	1.6
21	3.0	6.3	2.5	5.2	0	0	0	0	1.4	0	0	1.8
22	2.4	8.0	2.5	10.2	0	0	0	0	1.4	0	0	1.7
23	7.9	8.3	2.4	6.9	0	0	0	0	1.3	0	1.9	1.8
24	9.0	7.6	2.2	8.5	0	.3	2.0	0	1.6	0	2.4	1.9
25	3.6	4.3	2.2	4.0	0	0	2.9	0	3.6	0	6.2	5.4
26	6.3	4.9	2.1	3.0	0	0	7.2	0	2.4	0	6.1	13.5
27	9.0	3.4	2.0	2.6	0	0	8.5	0	1.8	0	2.4	4.0
28	10.7	2.6	3.3	2.8	0	0	3.8	0	5.0	0	3.6	3.7
29	9.3	3.9	6.0	2.4	0	0	3.3	1.8	4.0	0	3.9	2.3
30	6.7	4.4	3.1	2.1	0	0	3.3	-------	8.8	0	2.6	2.4
31	4.4	4.2	-------	1.9	-------	0	5.7	-------	8.3	-------	2.3	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	10.7	2.2	5.16	7.98	160	491
August	9.4	2.6	5.21	8.06	162	496
September	9.2	2.0	4.22	6.53	127	389
October	11.3	1.6	3.74	5.79	116	356
November (15 days)	10.9	0	4.32	6.68	64.8	199
December (1 day)	.3	0	.30	.46	.3	1
January (25 days)	8.5	0	3.60	5.57	90.1	276
February (11 days)	7.5	0	4.50	6.96	49.5	152
March	8.8	1.3	2.61	4.04	80.8	248
April (4 days)	5.7	0	4.12	6.37	16.5	51
May (9 days)	6.2	0	3.49	5.40	31.4	96
June	13.5	1.6	3.17	4.90	95.1	292
The year (249 days)	13.5	0	3.99	6.17	994	3,050

HANALEI RIVER AT ELEVATION 625 FEET, NEAR HANALEI, KANAI

LOCATION.—Water-stage recorder about 2 miles west of Kauai Electric Co.'s power line and about 10 miles above mouth of stream.

RECORDS AVAILABLE.—January, 1914, to June, 1928.

EXTREMES.—Maximum discharge during year, 6,260 million gallons a day (9,690 second-feet) Dec. 24 (gage height, 8.62 feet); minimum, 10.5 million gallons a day (16.2 second-feet) Mar. 21 (gage height, 0.66 foot).

1914–1928: 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 and May 1–3, 1926 (gage height, 0.50 foot).

REMARKS.—Records good for ordinary stages except those estimated (Feb. 16–29), which are poor; extremely high and low stage records poor. Hanalei Tunnel diverts water from stream about 2 miles above station. Discharge partly estimated Feb. 15. Braced figures give mean discharge for periods indicated.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	12.7	22	28	13.7	23	24	19.2	28	14.1	26	92	12.4
2	11.7	25	59	14.4	17.3	24	18.1	19.6	13.7	24	45	11.7
3	11.1	23	116	13.7	16.2	20	17.3	23	14.1	108	32	12.7
4	11.7	19.6	32	13.1	24	18.8	17.0	25	13.1	85	56	12.0
5	16.4	18.8	30	12.4	23	17.3	16.2	20	12.7	36	73	11.4
6	20	17.7	28	12.4	18.1	18.1	15.8	18.1	12.4	104	34	14.1
7	15.3	26	82	12.7	27	76	15.8	17.3	12.0	91	67	26
8	50	82	209	16.2	25	27	17.3	16.2	11.7	301	34	13.7
9	32	33	60	42	18.1	21	17.0	55	12.4	59	28	12.0
10	36	26	32	96	22	19.2	16.7	67	11.7	29	81	11.7
11	26	30	40	19.6	19.2	64	15.5	40	11.4	23	131	13.1
12	36	67	26	16.2	16.6	174	23	44	16.3	19.6	49	59
13	25	33	26	14.8	15.5	75	24	27	11.4	20	37	14.4
14	18.8	23	51	14.1	23	36	48	22	11.1	21	76	12.7
15	21	24	29	12.7	16.2	47	20	18	11.1	32	35	18.2
16	22	21	30	12.0	92	29	57	} 60	11.1	84	31	13.1
17	16.6	20	27	11.7	36	28	19.2		11.7	42	26	13.7
18	16.8	19.6	21	11.1	79	28	21		11.7	112	23	12.0
19	19.2	22	19.6	14.8	137	43	29		11.1	85	22	11.7
20	17.0	21	18.1	13.7	229	40	131		10.8	44	20	11.7
21	15.5	41	17.3	19.2	82	88	70	} 20	10.8	34	19.6	11.7
22	14.4	42	16.2	14.0	66	209	29		10.8	81	18.4	11.1
23	23	34	15.5	53	35	400	22		12.6	42	17.0	11.4
24	39	43	14.8	68	32	1290	19.2	} 32	15.3	88	15.5	11.1
25	18.4	26	15.1	44	43	176	18.1		78	70	27	15.8
26	25	53	14.1	20	33	76	34	} 15	18.4	31	30	63
27	45	30	13.7	17.7	86	45	27		15.5	26	19.2	18.1
28	49	23	16.6	19.6	102	35	18.1		18.8	110	30	14.4
29	36	43	40	52	36	28	17.7		14.8	322	21	13.4
30	26	30	17.4	15.8	27	24	18.4	-------	60	171	13.7	13.1
31	21	24	-------	14.8	-------	21	42	-------	38	-------	13.1	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	50	11.1	24.1	37.3	748	2,290
August	82	17.7	31.1	48.1	964	2,960
September	209	13.7	38.1	58.9	1,140	3,510
October	96	11.1	23.4	36.2	725	2,230
November	229	15.5	47.3	73.2	1,420	4,350
December	1,290	17.3	104	161	3,220	9,890
January	131	15.5	28.2	43.6	874	2,680
February	67	-------	31.1	48.1	901	2,770
March	78	10.8	17.4	26.9	539	1,660
April	322	19.6	77.4	120	2,320	7,130
May	131	13.1	39.2	60.7	1,220	3,730
June	63	11.1	16.7	25.8	500	1,540
The year	1,290	10.8	39.8	61.6	14,600	44,700

WAIOLI STREAM NEAR HANALEI, KAUAI

LOCATION.—Water-stage recorder about 2½ miles south of Hanalei and 3 miles above mouth of stream.

RECORDS AVAILABLE.—July, 1914, to June, 1928.

EXTREMES.—Maximum discharge during year, 552 million gallons a day (854 second-feet) May 10 (gage height, 4.87 feet); minimum, 7.7 million gallons a day (11.9 second-feet) Mar. 23 (gage height, 1.31 feet; affected by backwater).

1914–1928: Maximum discharge, 955 million gallons a day (1,480 second-feet) Dec. 19, 1916 (gage height, 6.15 feet); minimum, 2.0 million gallons a day (3.1 second-feet) July 22, 1914 (gage height, 0.6 foot).

REMARKS.—Records good for ordinary stages except those estimated (July 20–22), which are fair; extremely high and low stage records poor. No diversions. Discharge partly estimated July 19.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	13.6	18.4	13.6	10.7	13.3	14.1	11.2	24	8.5	23	26	9.7
2	12.7	21	13.6	10.0	11.9	17.8	10.7	17.3	8.5	19.0	17.0	9.5
3	12.5	15.7	30	10.0	10.9	14.4	10.5	23	8.5	22	18.5	9.7
4	12.7	27	14.7	9.7	10.2	12.5	10.2	24	8.3	16.8	42	9.7
5	15.0	24	13.9	9.5	9.7	11.7	10.0	16.0	8.3	16.5	56	9.5
6	33	15.0	37	9.5	9.7	14.2	9.7	12.7	8.3	96	22	10.9
7	24	30	57	16.6	39	75	9.5	11.9	8.3	31	67	10.7
8	57	43	79	17.3	26	21	15.4	11.2	8.1	48	21	9.5
9	51	24	22	29	15.8	14.7	12.2	46	8.1	16.0	19.6	9.3
10	44	17.7	15.7	32	27	12.2	10.2	46	8.1	12.7	55	9.3
11	37	24	18.4	16.0	17.7	16.6	10.0	38	8.3	12.0	84	11.7
12	57	34	16.7	13.6	14.4	21	19.8	31	11.0	11.4	21	24
13	32	20	14.4	13.6	11.9	16.7	22	20	8.5	10.5	18.4	11.7
14	24	14.7	22	13.3	36	16.0	33	14.7	8.3	10.0	32	13.8
15	19.8	18.7	17.7	11.7	19.3	15.7	30	12.5	8.3	17.0	16.7	15.0
16	25	18.0	14.7	10.7	70	13.0	43	21	8.1	37	13.6	12.2
17	18.0	19.5	13.0	10.7	29	14.7	18.4	70	8.3	22	13.0	10.5
18	18.0	18.1	11.7	10.7	88	14.4	20	26	8.5	18.9	11.9	9.7
19	22	18.4	10.7	18.8	85	19.9	22	17.0	10.0	20	10.9	9.5
20		17.7	10.5	17.7	130	23	56	14.1	9.1	15.7	10.5	10.9
21	16	29	10.2	23	46	45	31	12.2	8.3	13.4	11.4	11.4
22		30	10.2	27	41	79	17.7	11.7	7.9	63	10.9	10.2
23	27	30	10.0	24	22	71	14.1	10.9	8.1	48	9.7	11.4
24	26	26	9.7	29	28	157	12.5	50	10.7	53	9.5	13.0
25	18.0	22	10.2	20	30	38	11.7	13.6	26	37	18.2	40
26	28	24	10.2	13.6	23	21	34	10.7	12.5	18.0	36	67
27	35	20	10.9	11.9	42	16.0	25	9.7	17.7	15.0	15.7	22
28	40	14.7	16.9	12.2	26	14.7	13.9	9.1	26	26	15.2	16.0
29	26	18.2	20	11.2	17.3	13.0	14.4	8.7	14.6	80	12.7	14.7
30	18.8	16.8	12.5	10.5	14.1	12.2	17.8	------	55	71	10.9	15.7
31	15.0	17.0	------	10.2	------	11.7	38	------	32	------	10.0	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	57	12.5	26.1	40.4	810	2,480
August	43	14.7	22.1	34.2	687	2,100
September	79	9.7	18.9	29.2	567	1,740
October	32	9.5	15.6	24.1	484	1,480
November	130	9.7	32.1	49.7	964	2,960
December	157	11.7	27.7	42.9	857	2,640
January	56	9.5	19.8	30.6	614	1,880
February	70	8.7	21.8	33.7	633	1,940
March	55	7.9	12.6	19.5	390	1,200
April	96	10.0	30.0	46.4	900	2,760
May	84	9.5	23.8	36.8	736	2,260
June	67	9.3	14.9	23.1	448	1,370
The year	157	8.7	22.1	34.2	8,090	24,800

LUMAHAI RIVER NEAR HANALEI, KAUAI

LOCATION.—Water-stage recorder 6 miles above mouth, 4¼ miles N. 20° W. from Hanalei.

RECORDS AVAILABLE.—May, 1914, to October, 1917; and July, 1920, to June, 1928.

EXTREMES.—Maximum discharge during year, 2,780 million gallons a day (4,300 second-feet) Dec. 24 (gage height, 6.42 feet); minimum, 19.9 million gallons a day (30.8 second-feet) Mar. 21 (gage height, 0.88 foot).

1914–1917, 1920–1928: 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 and 17, 1926 (gage height, 0.75 foot).

REMARKS.—Records good for ordinary stages; estimated period fair; extremely high-stage records poor. No diversions. Discharge partly estimated Dec. 19 and 20.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	30	46	47	32	36	43	32	115	30	66	120	27
2	29	54	51	30	32	45	30	65	29	47	60	27
3	30	40	131	30	30	38	29	84	28	84	55	27
4	30	51	52	29	30	35	29	82	27	42	141	27
5	34	44	42	28	30	34	27	55	27	40	202	25
6	81	35	75	29	31	36	27	43	27	150	80	25
7	61	88	167	36	52	150	27	40	26	80	182	25
8	164	119	344	42	48	56	34	36	24	186	69	25
9	210	70	84	63	38	42	30	293	24	48	57	23
10	232	49	57	89	53	36	27	221	24	37	70	23
11	149	61	62	39	47	52	27	106	24	32	234	27
12	222	102	51	33	35	73	60	88	27	29	67	79
13	94	52	48	32	32	55	86	62	24	27	53	31
14	56	40	74	31	59	40	147	47	23	27	83	28
15	50	50	58	28	42	40	91	41	23	39	48	31
16	50	43	50	27	140	34	211	97	22	113	42	27
17	39	46	43	27	85	37	64	154	22	54	38	24
18	44	44	38	27	191	39	60	72	22	50	34	24
19	56	48	34	45	325	56	71	71	23	52	32	23
20	46	45	34	44	430	72	196	50	22	42	30	23
21	41	92	33	80	170	148	100	41	21	39	30	24
22	36	117	31	88	134	343	58	38	21	284	29	22
23	69	98	31	88	67	310	45	35	22	151	27	23
24	63	106	30	119	82	728	40	79	27	157	26	25
25	46	63	30	68	86	174	36	38	133	152	60	101
26	85	59	29	44	78	73	102	34	52	58	111	253
27	122	52	30	37	180	54	76	32	50	46	45	64
28	119	41	48	36	104	48	43	30	71	83	40	40
29	70	55	63	42	60	41	48	30	44	359	34	34
30	52	51	38	33	46	37	65	-------	150	293	32	34
31	42	47	-------	30	-------	34	194	-------	99	-------	29	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	232	29	79.1	122	2,450	7,530
August	119	35	61.5	95.2	1,910	5,850
September	344	29	63.5	98.2	1,900	5,850
October	119	27	45.4	70.2	1,410	4,320
November	430	30	92.4	143	2,770	8,510
December	728	34	96.9	150	3,000	9,220
January	211	27	68.1	105	2,110	6,480
February	293	30	75.1	116	2,180	6,680
March	150	21	38.3	59.3	1,190	3,640
April	359	27	95.6	148	2,870	8,800
May	234	26	69.7	108	2,160	6,630
June	253	22	39.7	614	1,190	3,660
The year	728	21	68.7	106	25,100	77,200

MISCELLANEOUS DISCHARGE MEASUREMENTS

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

Miscellaneous discharge measurements on Kauai, 1927–28

Date	Stream	Tributary to—	Locality	Second-feet	Million gallons a day
July 14	Hanakapiai	Pacific Ocean	Napali coast near Haena	28.2	18.2
15	Kalalau	do	Kalalau near Haena	17.9	11.6
16	Hanakoa	do	Napali coast near Haena	7.52	4.86
29	Lumahai River	do	Naunaulu near Lumahai, elevation 1,300 feet.	27.8	18.0
Feb. 28	do	do	Elevation 1,200 feet near Hanalei	9.85	6.37
May 30	do	do	Falls near Hanalei, elevation 1,200 feet.	9.55	6.17
Feb. 28	Tributary of Lumahai River.	Lumahai River	Elevation 1,200 feet near Hanalei	.751	.485
28	Right Branch of Lumahai River.	do	Falls near Hanalei, elevation 1,200 feet.	.725	.469
June 5	Waimea ditch		Waimea	3.78	2.44
5	Hulu ditch	Diverts from Waimea River.	do	1.53	.989
5	Waimea River	Pacific Ocean	do	2.07	1.34

ISLAND OF OAHU

RIGHT BRANCH OF NORTH FORK OF KAUKONAHUA STREAM NEAR WAHIAWA, OAHU

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.

RECORDS AVAILABLE.—May, 1913, to June, 1928.

EXTREMES.—Maximum discharge during year, 840 million gallons a day (1,300 second-feet) Dec. 12 (gage height, 7.90 feet); minimum, 0.4 million gallons a day (0.6 second-foot) Mar. 23 and 24 (gage height, 1.14 feet).

1913–1928: Maximum discharge, about 985 million gallons a day (1,520 second-feet) Mar. 26, 1920 (gage height, 9.0 feet, determined from floodmarks and comparison with record of Left Branch of North Fork of Kaukonahua Stream); minimum, 0.09 million gallons a day (0.15 second-foot) Mar. 22, 1926 (gage height, 0.71 foot).

REMARKS.—Records good for ordinary stages but poor for high stages. No diversions.

Daily and monthly discharge, in million gallons a day, of Right Branch of North Fork of Kaukonahua Stream near Wahiawa, Oahu, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.0	3.7	4.0	2.5	8.0	6.5	5.2	6.1	0.8	2.4	9.2	1.7
2	3.3	7.4	4.9	5.0	5.8	5.9	4.8	2.5	.8	49	6.7	1.7
3	2.6	3.8	3.7	2.5	3.6	8.7	4.4	2.3	.8	94	8.2	2.8
4	2.4	3.6	3.3	2.3	2.8	4.9	4.0	2.2	.7	15.4	6.1	1.8
5	2.2	2.5	3.6	3.0	2.4	4.1	3.6	2.1	.7	9.1	7.9	1.9
6	2.1	2.2	13.3	2.6	2.1	5.6	3.4	1.9	.6	8.1	4.9	4.2
7	2.1	3.6	56	4.9	1.9	46	3.1	2.1	.6	11.7	4.3	8.6
8	5.0	53	43	12.7	4.2	29	2.9	1.8	.6	16.2	3.8	2.2
9	3.0	9.1	9.0	17.5	12.2	8.3	2.8	1.7	2.7	4.4	3.5	1.8
10	4.9	5.5	7.0	5.2	6.5	5.8	2.6	1.6	.9	3.4	3.7	1.6
11	5.0	4.8	6.5	3.5	4.0	9.2	9.5	1.6	.9	3.0	3.7	1.9
12	2.8	7.8	4.8	3.8	2.5	66	3.3	9.5	4.1	2.6	3.2	5.0
13	2.5	9.1	5.5	3.4	2.1	29	3.3	2.4	1.0	2.4	4.1	1.7
14	2.1	3.6	4.4	5.3	3.1	9.8	3.2	2.8	.7	2.6	9.7	1.5
15	8.8	3.7	4.0	2.8	17.7	12.3	10.6	1.8	.5	3.0	3.1	14.8
16	3.0	3.5	8.2	2.6	74	9.8	16.5	1.6	.5	3.9	2.7	2.7
17	2.1	2.9	3.4	2.4	29	6.5	3.1	1.5	.5	24	2.5	3.4
18	6.7	3.4	3.2	2.3	60	6.0	5.7	3.6	.4	81	2.5	3.2
19	5.6	3.9	2.9	2.1	68	29	11.1	2.1	.4	13.3	2.6	3.0
20	2.5	10.8	2.8	2.1	28	18.5	18.1	1.8	.4	6.5	2.3	2.2
21	2.2	7.5	2.5	2.0	16.1	21	19.6	1.3	.4	4.8	3.7	2.1
22	2.9	5.0	2.4	3.7	14.3	65	5.2	1.1	.4	9.2	2.3	1.7
23	11.1	4.4	2.2	10.8	7.6	55	3.7	1.0	.4	4.6	2.0	1.6
24	5.8	4.7	2.1	4.2	15.0	17.0	3.3	1.1	.7	3.6	1.8	1.6
25	3.0	13.2	18.6	7.8	8.6	48	3.0	1.3	1.2	3.5	3.6	5.3
26	12.5	80	3.6	2.5	12.9	18.9	3.1	.9	1.5	37	6.0	23
27	9.7	10.7	2.9	2.2	22	11.1	3.9	.8	.9	21	3.2	10.8
28	6.6	6.1	7.5	5.0	15.4	9.8	2.5	.8	1.9	24	9.5	3.5
29	8.8	12.2	4.3	5.7	11.6	7.7	4.2	.8	2.6	16.0	2.5	3.6
30	5.0	5.2	2.8	2.5	7.0	6.7	2.5	-------	13.4	29	2.1	4.1
31	3.3	4.6	-------	2.1	-------	5.9	3.0	-------	3.0	-------	1.8	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	12.5	2.1	4.60	7.12	143	438
August	80	2.2	9.73	15.1	302	926
September	56	2.1	8.08	12.5	242	744
October	17.5	2.0	4.42	6.84	137	420
November	74	1.9	15.6	24.1	468	1,440
December	66	4.1	18.9	29.2	587	1,800
January	19.6	2.5	5.65	8.74	175	538
February	9.5	.8	2.14	3.31	62.1	190
March	13.4	.4	1.45	2.24	45.0	138
April	94	2.4	17.0	26.3	509	1,570
May	9.7	1.8	4.30	6.65	133	409
June	23	1.5	4.17	6.45	125	384
The year	94	.4	8.00	12.4	2,930	9,000

LEFT BRANCH OF NORTH FORK OF KAUKONAHUA STREAM NEAR WAHIAWA, OAHU

LOCATION.—Water-stage recorder about 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.

RECORDS AVAILABLE.—May, 1913, to June, 1928.

EXTREMES.—Maximum discharge during year, 2,580 million gallons a day (3,990 second-feet) Dec. 12 (gage height, 8.82 feet); minimum, 1.0 million gallons a day (1.6 second-feet) Mar. 15–18, 21, 22, 23, and 24 (gage height, 0.95 foot).

1913–1928: Maximum discharge, about 4,080 million gallons a day (6,310 second-feet) Jan. 14, 1923 (gage height, 10.3 feet); minimum, 0.1 million gallons a day (0.16 second-foot) Feb. 18 and Mar. 5, 1920.

REMARKS.—Records fair for ordinary stages, except those for estimated periods (July 1–26 and Nov. 18–30), which are poor. High-stage records probably poor. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		7.0	6.6	3.5	8.4	10.5	5.6	8.0	1.4	5.4	13.6	2.8
2		14.5	9.5	5.2	8.8	11.4	5.3	2.8	1.6	32	10.2	2.7
3		9.5	5.4	5.8	4.4	15.5	4.7	2.8	1.6	62	14.6	6.0
4		6.8	4.8	3.0	3.5	7.2	4.5	2.8	1.5	21	11.9	2.9
5		4.9	6.4	8.8	2.7	5.8	4.2	2.3	1.3	17.6	17.0	6.6
6		4.5	21	4.6	2.5	9.6	3.9	2.2	1.3	14.6	9.9	14.2
7		7.0	60	7.4	2.1	39	3.4	2.3	1.3	19.1	8.8	15.1
8		63	41	21	6.6	37	3.4	2.0	1.2	23	7.3	3.7
9		13.7	10.3	17.1	14.3	10.0	3.3	1.9	7.3	7.6	5.8	2.9
10		9.0	12.1	7.2	9.8	6.9	3.1	2.0	1.5	5.6	5.8	2.4
11		10.4	8.2	6.0	8.3	10.6	12.2	1.8	1.2	4.6	5.6	3.1
12		12.5	6.8	6.9	3.0	109	4.1	16.9	4.3	4.1	5.1	8.5
13		14.0	11.0	6.0	2.6	37	5.7	4.8	1.4	3.6	9.2	2.9
14	7.5	6.4	8.6	7.0	6.0	13.6	4.4	6.9	1.2	3.8	14.8	2.3
15		8.5	6.6	4.0	38	15.4	17.9	3.2	1.0	4.6	4.7	24
16		6.2	11.6	3.5	115	13.6	25	2.7	1.0	7.2	4.1	4.4
17		5.3	5.0	3.4	32	9.2	4.4	3.2	1.0	28	3.6	3.1
18		5.6	4.2	3.0		8.6	13.0	7.9	1.4	73	3.4	13.3
19		8.2	3.6	3.0	55	42	23	3.8	1.2	18.2	4.9	5.8
20		32	3.5	3.2		35	29	2.8	1.1	7.8	3.3	3.4
21		21	3.4	2.5		18.5	24	2.4	1.1	5.6	7.5	3.0
22		10.6	2.9	8.3		53	7.1	2.1	1.0	9.8	3.3	2.4
23		11.9	2.6	13.0		50	5.5	2.0	1.0	5.6	2.8	2.7
24		12.2	2.5	7.3		19.4	4.5	2.3	1.3	4.4	2.6	2.6
25		25	39	21	20	54	4.1	2.3	1.9	5.0	5.4	8.0
26		152	5.8	3.5		21	4.1	1.8	2.6	56	9.4	42
27	14.5	19.5	5.4	2.7		11.3	4.7	1.7	1.6	29	11.4	17.8
28	11.6	10.6	12.4	3.0		9.9	3.1	1.7	5.0	31	9.1	5.6
29	25	27	9.4	11.7		8.0	5.5	1.6	5.8	18.6	4.9	10.5
30	9.0	9.7	4.2	2.9		6.8	4.1	-------	17.5	46	3.3	5.9
31	6.4	10.0	-------	2.5	-------	6.2	3.4	-------	23	-------	3.0	------

Month	Discharge			Total run-off		
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	----------	----------	8.44	13.1	262	803
August	152	4.5	18.0	27.9	558	1,710
September	60	2.5	11.1	17.2	334	1,020
October	21	2.5	6.71	10.4	208	638
November	----------	2.1	21.1	32.6	633	1,940
December	109	5.8	22.7	35.1	705	2,160
January	29	3.1	8.07	12.5	250	768
February	16.9	1.6	3.48	5.38	101	310
March	23	1.0	3.12	4.83	96.6	297
April	73	3.6	19.1	29.6	574	1,760
May	17.0	2.6	7.30	11.3	226	694
June	42	2.3	7.69	11.9	231	708
The year	----------	1.0	11.4	17.6	4,180	12,800

MOANALUA STREAM NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder about 4¼ miles from mouth of stream and about 5¼ miles north of Honolulu post office.

RECORDS AVAILABLE.—June, 1926, to June, 1928.

EXTREMES.—Maximum discharge during year, 1,120 million gallons a day (1,730 second-feet) Nov. 19 (gage height, 8.48 feet); no flow several periods during year.

1926–1928: Maximum discharge, 1,120 million gallons a day (1,730 second-feet) Mar. 16 and Nov. 19, 1927 (gage height, 8.48 feet); no flow occasionally.

REMARKS.—Records poor. Dishcarge partly estimated Sept. 14–22, Jan. 4–8, and Apr. 3–19. Braced figures give estimated mean discharge for periods indicated. A 2-inch pipe line diverts water for ranch supply about 2 miles above station.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0	0.2	0.1	0	0	0.3		0.08	0	0	4.8	0
2	0	.05	.1	0	0	.4	1.2	.06	0	0	2.1	0
3	0	0	.1	0	0	.2		.04	0	6.8	1.45	0
4	0	0	.1	0	2.8	0	.4	.04	0	1.8	1.2	0
5	0	.05	.1	0	1.05	0	.4	.04	0	1.05	1.25	0
6	0	.05	.1	0	.45	1.5	.4	.04	0	7.2	1.1	0
7	0	0	3.7	0	0	12.8	.6	.03	0	9.8	.9	0
8	0	3.6	16.0	0	0	45	.3	.02	0	26	.65	0
9	0	1.7	2.3	0	0	8.0	.2	.02	0	4.2	.7	0
10	1.8	.6	.85	0	0	2.6	.1	.02	0	1.8	.3	0
11	3.1	.2	.3	0	0	2.4	2.9	.02	0	.9	1.6	0
12	1.05	.1	.1	0	0	56	1.6	.02	0	.6	1.45	0
13	4	.1	.1	0	0	86	.7	.01	0	.5	1.45	0
14	3	.05	.2	0	0	30	.6	.01	0	.3	2.6	0
15	1	0	.3	0	6.3	5.0	.35	.0	0	.2	1.15	0
16	.05	0	.2	0	163	1.4	4.3	0	0	.2	.7	0
17	.05	0	.2	0	16.2	.6	1.3	0	0	.15	.25	0
18	.05	0	.2	0	107	.1	.9	1.6	0	37	.15	0
19	.05	0	.2	0	107	4.3	1.0	.4	0	4.8	.1	0
20	.05	.05	.1	0	11.0	3.2	6.8	.03	0	1.1	.08	0
21	.05	.05	.05	0	7.0	5.0	6.9	.02	0	.6	.06	0
22	.1	.05	0	0	7.0	40	2.6	.02	0	.35	.03	0
23	.05	.05	0	0	2.8	26	1.2	.02	0	.15	.02	0
24	0	.05	0	0	3.5	9.0	.65	.02	0	.08	.01	0
25	0	.1	0	0	1.9	75	.4	.01	0	.03	.02	0
26	.1	7.6	0	0	3.7	15.3	.2	0	0	7.3	.9	4.7
27	4.0	1.05	0	0	6.2		.2	0	0	3.7	.9	1.0
28	1.05	.2	0	0	3.2		.07	0	0	2.8	.2	.06
29	.4	.1	0	0	1.2	4.5	.07	0	0	9.8	.03	0
30	.3	.1	0	0	.2		.15	-------	0	11.2	.01	0
31	.2	.1	-------	0	-------		.08	-------	0	-------	.01	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	4.0	0	0.427	0.661	13.2	41
August	7.6	0	.523	.809	16.2	50
September	16.0	0	.847	1.31	25.4	78
October	0	0	0	0	0	0
November	163	0	15.0	23.2	451	1,380
December	86	0	14.6	22.6	453	1,390
January	6.9	.07	1.26	1.95	39.0	120
February	1.6	0	.089	.138	2.57	8
March	0	0	0	0	0	0
April	37	0	4.68	7.24	140	431
May	4.8	.01	.844	1.31	26.2	80
June	4.7	0	.192	.297	5.76	18
The year	163	0	3.20	4.95	1,170	3,600

KALIHI STREAM NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder at Kioi Pool, three-eighths of a mile upstream from Catholic orphanage and 5 miles north of Honolulu post office.

RECORDS AVAILABLE.—September, 1913, to June, 1928.

EXTREMES.—Maximum discharge during year, 1,190 million gallons a day (1,840 second-feet) Nov. 18 (gage height, 11.84 feet); minimum, 1.0 million gallons a day (1.6 second-feet) several hours Mar. 14–27 (gage height, 0.85 foot).

1913–1928: Maximum discharge (estimated), 1,250 million gallons a day (1,930 second-feet) Jan. 16, 1921 (gage height, 14.0 feet; determined from floodmarks); minimum, 0.1 million gallons a day (0.15 second-foot) Apr. 3, 1924 (gage height, 0.80 foot), and May 12–25, 1926 (gage height, 0.69 foot).

REMARKS.—Records good. Small amount of water for domestic use is diverted from stream above station.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.9	1.6	2.0	1.6	2.1	6.9	5.9	3.2	1.5	1.3	10.2	2.4
2	2.2	2.9	2.0	1.9	2.2	7.1	5.5	2.7	1.6	1.6	7.3	2.3
3	1.9	2.1	1.6	1.8	2.0	6.6	5.0	2.5	1.4	27	6.9	2.2
4	1.8	3.1	1.6	1.5	14.0	5.5	4.8	2.5	1.3	7.1	6.2	2.2
5	1.9	2.0	1.5	1.6	2.7	4.9	4.4	2.4	1.3	7.4	7.6	2.2
6	1.7	1.9	8.5	1.4	1.9	9.4	4.3	2.3	1.3	26	6.7	2.2
7	2.1	3.8	16.4	2.4	1.8	38	4.0	2.2	1.3	20	6.0	2.3
8	3.7	8.9	19.9	2.0	4.3	73	3.7	2.2	1.3	29	5.2	1.9
9	2.8	4.6	5.5	3.6	2.8	10.0	3.6	2.2	1.3	8.2	4.6	1.8
10	5.8	3.8	3.8	2.3	2.5	7.6	3.4	2.3	1.2	5.5	3.8	1.8
11	4.9	4.0	3.4	1.9	3.3	21	13.1	2.0	1.3	4.6	6.1	1.8
12	3.7	3.7	2.9	1.8	2.2	70	5.4	2.3	1.3	3.8	4.3	2.0
13	2.7	2.8	2.9	1.8	1.9	96	29	2.0	1.2	3.4	6.0	1.7
14	2.2	2.3	2.9	1.6	3.5	25	4.6	2.0	1.2	3.3	7.6	1.6
15	2.7	2.7	2.7	1.6	30	12.1	4.8	1.9	1.1	3.2	4.9	1.7
16	2.0	2.2	2.8	1.5	172	9.8	9.6	1.8	1.1	2.9	4.2	1.6
17	1.8	2.0	2.3	1.3	21	8.3	4.0	1.7	1.1	6.2	3.7	1.5
18	2.4	2.2	2.1	1.3	167	7.6	3.8	7.2	1.2	35	3.4	1.6
19	2.1	4.1	2.0	1.3	101	10.7	6.0	2.4	1.2	6.6	3.2	1.5
20	1.8	6.7	2.0	1.5	22	9.6	8.8	1.9	1.2	4.6	3.2	1.5
21	1.7	3.2	2.0	1.4	17.0	9.3	14.1	1.7	1.2	3.8	3.3	1.5
22	1.6	2.4	1.9	1.8	13.6	31	5.2	1.6	1.2	4.0	2.8	1.5
23	3.0	2.4	1.8	1.6	9.6	32	4.2	1.6	1.2	3.3	2.7	1.4
24	2.0	2.3	1.7	1.4	10.2	13.4	3.7	2.5	1.3	3.2	2.5	1.6
25	1.8	2.5	4.7	3.0	8.3	72	3.3	1.9	1.3	3.0	3.0	2.7
26	3.2	7.3	2.3	1.6	10.4	18.8	3.2	1.6	1.4	14.6	12.3	7.1
27	6.0	2.5	2.2	1.4	12.2	12.5	3.3	1.5	1.2	6.7	4.6	2.9
28	3.0	2.1	2.0	1.5	9.3	10.8	2.9	1.5	1.7	11.1	3.7	2.1
29	2.4	2.3	1.8	1.3	8.0	8.3	3.3	1.5	1.5	16.7	3.0	2.1
30	2.1	2.0	1.7	1.2	7.1	7.3	3.0	------	1.9	22	2.8	2.3
31	1.7	2.1	------	1.1	------	6.6	2.8	------	1.4	------	2.5	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	6.0	1.6	2.60	4.02	80.6	247
August	7.3	1.6	3.18	4.92	98.5	303
September	19.9	1.5	3.70	5.72	111	341
October	3.6	1.1	1.71	2.65	53.0	163
November	172	1.8	22.2	34.3	666	2,040
December	96	4.9	21.3	33.0	661	2,030
January	29	2.8	5.89	9.11	183	560
February	7.2	1.5	2.24	3.47	65.1	199
March	1.9	1.1	1.31	2.03	40.7	125
April	35	1.3	9.84	15.2	295	906
May	10.2	2.5	4.98	7.71	154	474
June	7.1	1.4	2.10	3.25	63.0	194
The year	172	1.1	6.75	10.4	2,470	7,580

NUUANU STREAM BELOW RESERVOIR NO. 2 WASTEWAY, NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder on Pali road in upper Nuuanu Valley, 1 mile above end of car line and 5 miles from Honolulu post office.

RECORDS AVAILABLE.—October, 1913, to June, 1928.

EXTREMES.—Maximum discharge during year, 744 million gallons a day (1,150 second-feet) Nov. 19 (gage height, 6.07 feet); minimum, 1.2 million gallons a day (1.9 second-feet) Nov. 3 (gage height, 0.46 foot).

1913–1928: Maximum discharge, 1,600 million gallons a day (2,480 second-feet) Jan. 16, 1921 (gage height, 8.74 feet; from floodmarks); minimum, 0.06 million gallons a day (0.09 second-foot) Sept. 10 and 11, 1925 (gage height, 0.09 foot).

REMARKS.—Records fair for medium stages until Apr. 26 when new intake was installed; subsequent records good; high-stage records poor. Braced figures give estimated mean discharge for periods indicated. Nuuanu Reservoirs No. 2, 3, and 4 regulate and divert water above station for domestic use.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.1	3.4	2.3	1.7	2.2	14.0	14.5	8.1	3.6	1.3	6.3	2.2
2	7.2	3.0	2.2		1.5	12.2	13.7	7.9	3.7	3.4	5.3	2.2
3	7.1	3.0	2.0		1.4	13.0	13.3	7.6	3.4	15.1	5.3	2.2
4	6.9	3.0	2.0		6.5	11.3	13.0	7.4	3.3	4.0	4.9	2.1
5	7.1	2.6	1.9		1.9	11.0	12.6	7.1	3.3	2.8	5.9	2.0
6	6.5	2.6	2.9		1.5	13.9	12.2	6.9	3.2	8.1	4.6	2.2
7	6.5	3.5	7.6		1.5	37	11.9	6.9	3.0	7.6	4.2	2.1
8	7.4	10.1	9.4		2.3	55	11.6	6.7	3.0	6.1	3.9	1.8
9	6.5	5.0	3.5	2.3	1.6	14.5	11.3	6.7	3.0	3.6	3.6	1.7
10	7.6	3.7	3.0		1.5	11.9	11.3	6.3	2.8	3.2	3.5	1.7
11	7.1	3.7	3.4		1.8	26	15.0	6.1	2.7	3.0	3.8	1.8
12	6.1	3.3	2.8		1.5	81	11.6	6.7	2.6	2.8	3.4	1.6
13	5.1	2.9	2.7		1.3	108	11.9	5.9	2.4	3.1	4.0	1.5
14	4.7	2.7	2.9		2.1	63	11.0	5.7	2.3	2.6	4.1	1.5
15	5.7	2.6	2.9		5.1	26	10.8	5.7	2.3	2.6	3.4	1.6
16	4.9	2.5	3.9		97	18.0	15.9	5.9	2.1	2.6	3.2	1.5
17	4.3	2.4	2.8		12.0	15.6	10.5	5.8	2.1	6.9	3.0	1.4
18	4.9	2.7	3.4		101	16.8	10.5	6.3	2.2	27	3.0	1.4
19	4.9	3.8	3.0		97	22	12.7	5.7	1.9	5.9	2.8	1.4
20	4.1	3.6	2.4		18.0	21	14.7	5.1	1.8	3.7	3.0	2.0
21	3.9	2.8	2.3	1.9	17.2	20	23	4.9	1.7	3.4	3.0	1.8
22	3.8	2.4	2.2		13.7	37	11.6	4.7	1.6	3.4	2.7	1.5
23	4.5	2.4	2.0		11.9	30	10.8	4.5	1.6	3.0	2.6	1.5
24	3.8	2.4	2.0		11.9	22	10.2	5.5	1.9	3.0	2.5	1.5
25	3.4	2.6	4.3		11.6	109	9.3	4.2	1.9	3.1	2.8	4.9
26	4.5	3.3	2.6	1.7	15.8	38	9.6	3.9	1.8	8.0	4.8	11.2
27	7.3	2.8	2.4	1.6	17.6	24	9.3	3.7	1.5	4.5	3.0	5.9
28	3.8	2.4	2.3	1.7	13.7	20	9.1	3.7	1.8	9.3	2.6	2.8
29	3.9	2.4	2.2	1.5	11.6	18.0	9.6	3.7	1.6	15.0	2.4	3.1
30	3.4	2.6	2.0	1.4	11.0	16.4	9.1	-------	2.1	13.2	2.4	2.9
31	3.1	2.2	-------	1.3	-------	14.9	8.1	-------	1.6	-------	2.3	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	7.6	3.1	5.39	8.34	167	513
August	10.1	2.2	3.17	4.90	98.4	302
September	9.4	1.9	3.43	5.31	91.3	316
October	-------	-------	2.00	3.09	62.1	190
November	101	1.3	16.5	25.5	495	1,520
December	109	11.0	30.3	46.9	940	2,880
January	23	8.1	11.9	18.4	370	1,140
February	8.1	3.7	5.84	9.04	169	520
March	3.7	1.5	2.38	3.68	73.8	226
April	27	1.3	6.04	9.35	181	556
May	6.3	2.3	3.62	5.60	112	344
June	11.2	1.4	2.43	3.76	73.0	224
The year	109	-------	7.74	12.0	2,830	8,720

WEST BRANCH OF MANOA STREAM NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder 75 feet above highway bridge and 4 miles northeast of Honolulu post office.

RECORDS AVAILABLE.—May, 1913, to January, 1921, and August, 1925, to June, 1928.

EXTREMES.—Maximum discharge during year, about 1,290 million gallons a day (2,000 second-feet) Nov. 18 (gage height, 9.32 feet); minimum, about 0.25 million gallons a day (0.4 second-foot) Mar. 15 (gage height, 3.53 feet).

1913–1921, 1926–1928: Maximum stage, 10.4 feet Jan. 16, 1921; determined from floodmarks (discharge estimated 2,100 million gallons a day, 3,250 second-feet). Minimum discharge, about 0.05 million gallons a day (0.08 second-foot) Mar. 16 and 22, 1926 (gage height, 3.45 feet).

REMARKS.—Records good for medium stages; records poor for periods of shifting control, high and low stages, and estimated periods. No diversions. Discharge partly estimated Aug. 26, Dec. 14–16, 25–27, and Apr. 30. Braced figures give estimated mean discharge for periods indicated.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.7	1.1	1.2	1.1	1.2	14.2	2.6	3.7	0.6	0.8	}	1.0
2	1.9	1.1	1.9	3.3	2.1	4.9	2.4	2.8	.9	4.1	4.6	1.0
3	1.0	1.1	1.6	4.3	1.3	3.6	2.2	2.4	.7	12.3	}	1.0
4	1.0	1.8	1.45	1.3	7.4	2.2	2.0	2.4	.6	3.1		1.0
5	1.1	1.0	1.2	1.45	1.45	1.7	2.1	2.0	.6	2.2	12.5	1.0
6	.8	1.1	5.0	1.2	1.1	2.6	2.0	2.0	.55	10.7	7.6	1.3
7	.65	4.4	10.5	2.3	1.1	28	2.0	2.0	.5	7.3	3.7	1.3
8	3.1	9.7	11.9	2.4	1.7	48	1.8	1.6	.5	7.8	3.1	1.0
9	2.1	3.6	3.1	2.8	1.45	7.2	1.8	1.5	.55	2.4	2.6	.9
10	5.2	2.5	3.1	1.8	1.2	5.3	1.8	1.5	.4	1.8	2.2	.9
11	4.1	3.4	2.7	1.6	2.7	22	8.1	1.3	.35	1.5	2.3	.9
12	4.6	2.5	1.9	2.5	1.1	47	2.4	1.6	.5	1.2	1.8	.9
13	2.3	1.8	1.9	1.6	1.0	61	3.3	1.2	.35	1.2	2.4	.8
14	1.6	1.45	1.9	2.2	1.2	32	2.2	1.3	.3	1.2	3.8	.8
15	3.3	1.6	2.3	1.3	6.4	5.8	2.0	1.1	.3	1.3	1.8	1.1
16	1.6	1.45	4.0	1.2	113	5.3	10.9	1.1	}	1.5	1.5	.9
17	1.2	1.45	1.6	1.1	7.7	4.4	2.8	1.1	}	1.5	1.3	.7
18	3.4	1.8	1.3	1.0	164	3.6	2.6	1.5	.4	12.4	1.2	.6
19	1.9	6.5	2.1	1.0	64	51	6.6	1.5	}	5.3	1.1	.6
20	1.3	7.4	1.45	.9	12.9	30	9.4	1.2	}	2.6	1.1	.8
21	1.3	2.1	1.2	.9	9.1	27	26	1.1	}	2.2	1.3	.8
22	1.2	1.45	1.1	1.9	7.6	48	8.1	.9	.3	2.2	1.0	.7
23	2.5	1.3	.9	1.3	4.9	36	}	.9	.25	1.8	.9	.7
24	1.1	1.1	.8	1.2	4.4	23	}	1.6	.3	1.8	.9	1.3
25	.9	2.3	7.4	2.7	4.7	104	2.7	.9	.35	4.2	1.0	6.2
26	3.0	2.9	2.1	1.1	8.1	30	}	.6	.5	11.7	20	14.9
27	9.6	1.9	1.3	.9	8.5	5.8	}	.6	.4	4.9	3.7	2.8
28	2.3	1.45	1.2	1.0	6.7	5.3	2.4	.6	2.1	25	2.4	1.5
29	2.3	1.8	1.3	.9	4.9	2.9	7.8	.6	.9	28	1.5	4.4
30	1.8	1.3	1.1	.8	3.9	2.8	5.8	-------	2.5	35	1.2	2.4
31	1.3	1.1	-------	.8	-------	2.8	3.7	-------	1.0	-------	1.1	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	9.6	0.65	2.26	3.50	70.2	215
August	9.7	1.0	2.43	3.76	75.4	231
September	11.9	.8	2.68	4.15	80.5	247
October	4.3	.8	1.61	2.49	49.8	153
November	164	1.0	15.2	23.5	457	1,400
December	104	1.7	21.5	33.3	667	2,050
January	26	1.8	4.46	6.90	138	424
February	3.7	.6	1.47	2.27	42.6	131
March	2.5	----------	.597	.924	18.5	57
April	35	.8	6.63	10.3	199	610
May	20	.9	3.34	5.17	103	318
June	14.9	.6	1.81	2.80	54.2	167
The year	164	----------	5.34	8.26	1,960	6,000

EAST BRANCH OF MANOA STREAM NEAR HONOLULU, OAHU

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.

RECORDS AVAILABLE.—May, 1913, to January, 1921, and August, 1925, to June, 1928.

EXTREMES.—Maximum discharge during year, 368 million gallons a day (569 second-feet) Nov. 19 (gage height, 7.34 feet); minimum discharge, 1.0 million gallons a day (1.6 second-feet) July 14–15 (gage height, 4.00 feet).

1913–1921, 1926–1928: Maximum stage recorded, 10.4 feet, Jan. 16, 1921, determined from floodmarks (discharge, estimated, 2,000 million gallons a day, 3,090 second-feet). Minimum discharge, 0.4 million gallons a day (0.6 second-feet) June 7–8, 1926 (gage height, 3.01 feet).

REMARKS.—Records good for ordinary stages, except those for estimated periods (July 8 to Aug. 5, Aug. 13–24, Oct. 26–28, Dec. 9, and Jan. 4–6), which are fair; high-stage records probably fair. Water is diverted from stream above station by East Manoa ditch for irrigation and by city of Honolulu for domestic use.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.0	1.9	2.8	2.4	2.4	6.9	4.4	3.7	2.8	1.6	5.1	2.8
2	2.5		2.8	3.8	3.1	6.0	4.1	3.4	4.1	2.0	4.4	2.8
3	2.2		2.8	4.0	2.2	5.7	3.7	3.4	3.1	6.1	4.8	2.8
4	2.0		3.1	2.6	5.6	5.0	3.4	3.4	3.1	4.4	5.4	2.8
5	1.9		2.8	3.1	2.6	4.5	3.4	3.4	3.1	5.8	6.5	2.8
6	1.6	3.3	7.8	2.6	2.2	4.7	3.4	3.4	3.1	11.3	5.1	3.1
7	1.5	6.3	12.7	3.6	11.3	18.3	3.4	3.4	3.1	11.8	5.1	2.7
8		9.9	6.4	3.1	3.6	15.6	3.4	3.4	3.1	9.9	4.8	2.8
9		5.5	3.5	4.0	3.9	8.2	3.1	3.1	2.8	5.5	3.4	3.1
10		4.7	3.8	3.1	2.8	7.1	3.1	3.1	2.8	4.8	3.1	3.1
11		5.6	3.5	2.8	3.6	10.1	10.8	3.1	2.8	4.4	3.7	3.4
12		3.0	3.5	3.7	2.4	20	5.1	3.4	2.8	3.4	3.1	3.1
13			3.1	2.6	2.2	21	5.1	3.4	2.8	3.1	4.8	3.1
14			3.5	2.6	3.4	10.4	4.1	3.7	2.5	2.8	5.5	3.1
15		2.8	3.5	2.4	12.5	5.7	4.4	2.8	2.5	3.1	3.7	3.1
16			4.6	2.4	87	5.0	7.5	2.8	2.2	3.1	3.4	2.8
17			3.1	2.4	9.6	4.2	4.4	2.8	2.2	3.4	3.1	2.2
18			2.8	2.4	80	4.0	4.1	3.4	2.0	5.5	3.1	2.8
19	4.0	6.5	2.8	2.4	48	7.3	4.8	4.4	1.8	3.7	2.8	2.8
20			2.8	2.4	13.5	5.0	5.5	2.8	1.8	2.8	3.1	3.1
21			2.8	2.2	9.9	4.7	7.1	2.5	2.0	2.5	3.4	3.1
22		2.7	2.8	2.6	7.4	6.0	4.1	2.5	2.0	2.8	2.8	2.8
23			2.8	2.2	4.5	6.0	4.1	2.2	2.0	2.5	2.8	3.1
24			2.6	2.2	3.1	5.0	3.7	3.9	2.2	2.2	2.8	3.7
25		4.5	7.9	3.0	3.3	18.0	3.4	2.8	2.2	2.7	3.4	8.6
26		4.6	3.5		5.2	6.5	4.4	2.5	2.0	10.8	7.2	8.5
27		3.1	2.8	2.3	5.2	5.6	4.4	2.5	2.0	5.1	4.1	5.1
28		2.8	2.8		4.2	7.0	3.1	2.8	3.4	10.1	3.7	3.1
29		3.1	2.8	2.1	3.5	5.8	4.8	2.8	2.5	10.3	3.7	4.1
30		2.6	2.4	2.2	3.1	5.5	4.1	-------	3.4	8.9	3.4	4.1
31		2.6	-------	2.2	-------	5.1	4.1	-------	2.2	-------	3.4	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	----------	----------	3.54	5.48	110	337
August	----------	----------	3.72	5.76	115	354
September	12.7	2.4	3.83	5.93	115	353
October	4.0	----------	2.71	4.19	84.0	258
November	87	2.2	11.7	18.1	351	1,080
December	21	4.0	8.06	12.5	250	767
January	10.8	3.1	4.47	6.92	138	425
February	4.4	2.2	3.13	4.84	90.8	279
March	4.1	1.8	2.59	4.01	80.4	246
April	11.8	1.6	5.21	8.06	156	480
May	7.2	2.8	4.02	6.22	125	382
June	8.6	2.2	3.48	5.38	104	320
The year	87	----------	4.70	7.27	1,720	5,280

EAST MANOA DITCH NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder about 150 feet east of highway and gaging station on East Branch of Manoa Stream and 4 miles northeast of Honolulu post office.

RECORDS AVAILABLE.—May, 1915, to December, 1916, January, 1918, to January, 1921, and August, 1925, to June, 1928.

EXTREMES.—Maximum discharge during year, 15.6 million gallons a day (24.1 second-feet) Dec. 13 (gage height, 2.53 feet); no flow, Aug. 26 (gage height, 0.02 foot).

1915–1917, 1918–1921, 1926–1928: Maximum discharge, about 26 million gallons a day (40 second-feet) Jan. 16, 1921 (gage height, 2.27 feet); minimum, that of Aug. 26, 1927.

REMARKS.—Records good except those for periods affected by backwater from obstructed weir basin or plugged intake, which are poor. Discharge estimated Dec. 8 and Jan. 28. Water diverted for irrigation from East Manoa Stream about one-fourth mile above station by means of crude stone dam.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.4	0.3	0.35	0.35	0.3	0.95	0.95	0.8	0.5	0.45	0.45	0.55
2	.45	.3	.3	.35	.3	.65	.9	.75	.6	.5	.45	.5
3	.4	.25	.3	.35	.3	.6	.9	.75	.6	.65	.45	.55
4	.45	.3	.3	.35	.35	.6	.9	.75	.55	.45	.45	.5
5	.45	.2	.3	.35	.25	.5	.85	.75	.55	.55	.45	.45
6	.4	.2	.5	.3	.25	.65	.85	.75	.55	.6	.35	.5
7	.35	.35	.6	.3	.25	1.4	.85	.75	.55	.65	.3	.45
8	.65	.8	.6	.3	.25	.6	.85	.65	.55	.65	.35	.4
9	.6	.45	.35	.3	.25	.4	.85	.65	.5	.45	.65	.4
10	.75	.3	.35	.3	.25	.5	.85	.65	.5	.35	.7	.4
11	.7	.35	.3	.25	.25	.8	1.2	.65	.5	.3	.8	.45
12	.65	.3	.3	.3	.25	1.4	.75	.65	.45	.45	.65	.55
13	.6	.3	.3	.35	.3	1.7	.7	.65	.35	.55	.85	.5
14	.45	.25	.35	.4	.3	.45	.8	.6	.3	.6	.9	.5
15	.55	.2	.3	.4	.6	.05	.75	.5	.3	.65	.75	.5
16	.45	.25	.3	.35	2.5	.2	.95	.5	.55	.65	.75	.5
17	.45	.35	.25	.35	.35	.45	.75	.5	.6	.65	.7	.5
18	.55	.4	.25	.35	2.8	.45	.75	.6	.55	.8	.7	.3
19	.45	.4	.2	.35	2.2	.95	.85	.7	.55	.7	.65	.3
20	.35	.45	.2	.35	.8	.65	.95	.4	.45	.5	.65	.4
21	.3	.2	.2	.35	.2	.6	1.1	.5	.4	.5	.75	.4
22	.3	.25	.2	.35	.1	.7	.85	.65	.45	.6	.65	.35
23	.55	.4	.2	.35	.1	.75	.85	.65	.4	.6	.6	.3
24	.35	.4	.3	.35	.55	.7	.8	.6	.5	.55	.6	.35
25	.35	.5	.45	.35	.65	1.2	.8	.5	.5	.55	.65	.5
26	.55	.25	.35	.35	.85	.35	.85	.45	.45	.7	1.1	.45
27	.85	.45	.35	.35	.85	.35	.85	.5	.4	.45	.75	.35
28	.45	.4	.35	.35	.8	.55	.85	.5	.5	.9	.7	.3
29	.45	.35	.3	.35	.7	.5	.95	.5	.5	.9	.6	.3
30	.35	.35	.35	.3	.65	.45	.85	-------	.55	.65	.6	.35
31	.35	.35	-------	.3	-------	.6	.8	-------	.5	-------	.55	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	0.85	0.3	0.482	0.746	15.0	46
August	.8	.2	.342	.529	10.6	32
September	.6	.2	.325	.503	9.75	30
October	.4	.25	.337	.521	10.4	32
November	2.8	.1	.618	.956	18.6	57
December	1.7	.05	.668	1.03	20.7	64
January	1.2	.7	.863	1.34	26.8	82
February	.8	.4	.616	.953	17.8	55
March	.6	.3	.490	.758	15.2	47
April	.9	.3	.585	.905	17.6	54
May	1.1	.3	.631	.976	19.6	60
June	.55	.3	.428	.662	12.8	39
The year	2.8	.05	.532	.823	195	598

PUKELE STREAM NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder about 200 feet upstream from Palolo belt road bridge, five-eighths of a mile above confluence of Pukele and Waiomao streams, and 4¾ miles east of Honolulu post office.

RECORDS AVAILABLE.—April, 1912, to September, 1913, and June, 1926, to June, 1928.

EXTREMES.—Maximum discharge during year, 311 million gallons a day (481 second-feet) Nov. 19 (gage height, 7.66 feet from floodmarks); minimum, 0.25 million gallons a day (0.4 second-foot) Oct. 31 to Nov. 4 (gage height, 0.25 foot).

1912–1913, 1926–1928: Maximum discharge, 360 million gallons a day (557 second-feet), May 16, 1927 (gage height, 6.13 feet); minimum, 0.15 million gallons a day (0.25 second-feet) June 8, 1926 (gage height, 0.15 foot).

REMARKS.—Records good for ordinary stages except those for estimated and backwater periods, which are fair. High-stage records poor. 2-inch pipe diverts water from stream above station for irrigation.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.6	1.05	0.75	0.35	0.25	3.2		1.05	0.6	0.3	1.7	0.95
2	.6	1.05	.75	.35	.25	2.1		.95	.6	.3	1.4	.95
3	.55	1.0	.7	.35	.25	1.8		.9	.6	.5	1.35	.85
4	.55	.95	.65	.4	.5	1.6		.9	.6	.4	1.3	.85
5	.55	.9	.65	.4	.35	1.5	[a] 1.4	.85	.6	.8	1.8	.8
6	.5	.85		.4	.3	1.6		.8	.55	7.8	1.4	.7
7	.5	1.4		.4	.3	6.4		.75	.55	3.2	1.35	.65
8	.8	10.7		.4	.35	8.9	1.2	.7	.55	2.1	1.3	.65
9	.5	2.8		.4	.65	5.2	1.2	.7	.5	1.05	1.3	.6
10	1.3	1.15	[a] 1.9	.4	.4	3.9	1.2	.65	.45	1.05	1.25	.6
11	1.25	1.6		.35	.4	6.0	1.5	.65	.45	1.05	1.25	.55
12	1.0	1.5		.35	.4	13.9	1.2	.65	.4	1.0	1.2	.55
13	.9	1.5		.4	.4	17.9	1.2	.6	.4	.95	1.2	.5
14	.95	1.4	.65	.4	.6	10.6	1.2	.6	.4	.9	1.2	.5
15	1.0	1.4	.65	.4	6.4	4.5	1.2	.6	.4	.8	1.15	.5
16	.95	1.15	.6	.4	60	3.5	2.8	.6	.4	.65	1.15	.45
17	.9	1.1	.55	.4	13.8	3.1	3.9	.55	.35	.7	1.15	.45
18	.9	1.05	.5	.4	55	2.9	1.4	.55	.35	.6	1.1	.45
19	.85	1.05	.45	.4		3.4	1.35	2.1	.35	.6	1.0	.45
20	.8	2.4	.45	.4	[a] 16	2.8	2.0	.6	.35	.6	.95	.45
21	.75	1.0	.4	.4		2.9	2.7	.6	.35	.6	.9	.45
22	.7	1.0	.35	.35	5.6	3.3	1.5	.6	.35	.6	.85	.45
23	.9	1.0	.35	.35	4.4	3.2	1.4	.6	.35	.55	.8	.4
24	.65	1.1	.35	.35	3.1	4.8	1.4	.9	.35	.55	.7	.4
25	.65	1.4	.55	.35	2.3	18.1	1.35	.65	.35	2.0	.7	.8
26	.7	1.7	.35	.35	2.5	5.8	1.35	.65	.35	5.7	3.6	.8
27	4.2	.9	.35	.35	3.4	2.9	1.3	.65	.35	1.05	1.1	.55
28	1.05	.9	.35	.35	2.7	3.0	1.2	.65	.35	10.8	1.0	.6
29	1.05	.85	.35	.35	1.7		1.2	.65	.3	14.5	.95	.7
30	1.05	.75	.35	.3	1.7	[a] 1.7	1.15	-------	.35	5.6	1.0	.7
31	1.1	.8	-------	.3	-------		1.1	-------	.3	-------	1.0	------

Month	Discharge			Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	4.2	0.5	0.927	1.43	28.8	88
August	10.7	.75	1.53	2.37	47.4	146
September	----------	.35	.877	1.36	26.3	81
October	.4	.3	.373	.577	11.6	36
November	60	.25	7.20	11.1	216	663
December	18.1	----------	4.97	7.69	154	473
January	3.9	----------	1.51	2.34	46.8	144
February	2.1	.55	.748	1.16	21.7	67
March	.6	.3	.426	.659	13.2	40
April	14.5	.3	2.24	3.47	67.3	206
May	3.6	.7	1.23	1.90	38.1	117
June	.95	.4	.610	.944	18.3	56
The year	60	.25	1.88	2.91	690	2,120

[a] Estimated mean.

WAIOMAO STREAM ABOVE PUKELE STREAM, NEAR HONOLULU, OAHU

LOCATION.—Water-stage recorder about 200 feet west of road, 1 mile upstream from confluence of Waiomao and Pukele Streams, and 5 miles east of Honolulu post office.

RECORDS AVAILABLE.—April, 1911, to December, 1912, and June, 1926, to June, 1928.

EXTREMES.—Maximum discharge during year, 184 million gallons a day (285 second-feet) Nov. 19 (gage height, 5.90 feet); minimum, 0.15 million gallons a day (0.25 second-feet) June 24 (gage height, 0.18 foot).

1911–1912, 1926–1928: Maximum discharge, at least 440 million gallons a day (681 second-feet) May 16, 1927 (gage height, at least 5.52 feet, from floodmarks); no flow July 27 to Aug. 5, 1926 (gage height below 0.00 foot).

REMARKS.—Records good for ordinary stages, except those for estimated and backwater periods, which are fair. High-stage records poor. City of Honolulu diverts water from tunnels in drainage area above station. Discharge estimated Nov. 8–15, Jan. 1–8, 13–16, Mar. 4–12, Apr. 6–11, 28–30, and May 1–3.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.5	0.7	0.7	0.35	0.2	1.6		0.75	0.35	0.5	2.0	0.45
2	.55	.65	.7	.45	.3	3.7		.7	.45	.35	1.2	.4
3	.65	.65	.5	.4	.3	2.7		.65	.35	1.4	1.1	.4
4	.65	1.3	.5	.35	1.9	1.6		.6		.65	1.0	.35
5	.7	.85	.5	.45	.5	.7	.8	.6		1.7	1.6	.35
6	.6	.7	1.0	.35	.4	1.2		.55		10.7	1.2	.35
7	.55	1.7	2.9	.65	.3	7.9		.5		10.9	1.0	.4
8	1.4	5.4	4.8	.45		11.2		.5	.4	8.3	.9	.25
9	1.2	2.8	1.6	.95		4.0	.5	.5		2.3	.75	.25
10	1.6	1.7	1.0	.55		1.0	.5	.5		1.2	.65	.2
11	1.8	2.1	.7	.4	.9	3.1	2.9	.55		.85	1.0	.3
12	1.7	2.0	.6	.55		17.0	1.7	.55		.7	.75	.25
13	1.2	1.4	.65	.5		24		.5	.35	.65	.85	.2
14	1.0	1.0	.65	.4		9.1		.6	.35	.55	1.1	.2
15	1.3	.9	.65	.35	8.4	4.1	2.3	.5	.3	.55	.7	.25
16	1.0	.65	.65	.4	87	2.9		.45	[illegible]	.55	.65	.25
17	.85	.6	.5	.35	23	2.0	1.2	.45	.25	.6	.5	.2
18	1.2	.9	.5	.3	61	1.6	1.1	1.0	.25	1.2	.45	.2
19	.85	1.0	.45	.35	37	2.2	1.1	2.0	.25	.85	.4	.2
20	.65	2.5	.5	.4	10.0	1.7	1.7	.6	.25	.6	.4	.2
21	.7	1.2	.45	.3	7.0	1.7	2.3	.4	.2	.5	.65	.25
22	.65	.7	.4	.35	4.3	2.5	1.1	.35	.2	.85	.45	.2
23	1.6	.75	.5	.35	2.3	2.9	.9	.3	.2	.55	.35	.2
24	.75	1.3	.4	.3	1.8	4.6	.7	1.0	.25	.5	.35	.3
25	.7	1.0	2.4	.6	1.6	17.2	.7	.5	.3	.7	.45	10.3
26	1.3	2.5	1.0	.35	1.7	5.3	.65	.4	.35	4.9	4.2	13.9
27	3.3	1.2	.6	.25	2.0	2.7	.7	.35	.3	.9	2.1	.85
28	1.2	.75	.5	.25	1.7	2.7	.65	.35	.5	7.0	1.3	.55
29	.9	.65	.45	.2	1.7		.9	.35	.5	11.1	.75	.55
30	.9	.6	.4	.2	1.1	1.4	1.3	------	.7	5.5	.6	.55
31	.85	.6	------	.2	------		.85	------	.65	------	.5	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	3.3	0.5	1.06	1.64	32.8	101
August	5.4	.6	1.31	2.03	40.8	125
September	4.8	.4	.905	1.40	27.2	83
October	.95	.2	.397	.614	12.3	38
November	87	.2	8.72	13.5	262	803
December	24	.7	4.75	7.35	147	452
January	2.9	.5	1.05	1.62	32.6	100
February	2.0	.3	.588	.910	17.0	52
March	.7	.2	.361	.559	11.2	34
April	11.1	.35	2.59	4.01	77.6	238
May	4.2	.35	.965	1.49	29.9	92
June	13.9	.2	1.11	1.72	33.3	102
The year	87	.2	1.98	3.06	724	2,220

MISCELLANEOUS DISCHARGE MEASUREMENTS

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

Miscellaneous discharge measurements on Oahu, 1927–28

Date	Stream	Tributary to—	Locality	Gage height	Discharge
				Sec.-ft.	*Million gallons a day*
Nov. 18	Moanalua	Pacific Ocean	Moanalua Gardens near Honolulu	301	195
Feb. 20	Manoa	do	At mouth near Honolulu	7.06	4.56
20	Kumalae Springs	do	Waikiki near Honolulu	3.74	2.42

NOTE.—In addition to the measurements given above there were 1,602 measurements made by J. F. Kunesh or under his supervision. These measurements are published in a supplement to the report of the Honolulu Sewer and Water Commission to the Legislature of the Territory of Hawaii, fifteenth regular session, under the title "Surface water supply of the island of Oahu, 1909–1928."

ISLAND OF MOLOKAI

HALAWA STREAM NEAR HALAWA, MOLOKAI

LOCATION.—Water-stage recorder about 750 feet below confluence of two main branches and 2 miles above mouth of stream and Halawa school house.

RECORDS AVAILABLE.—August, 1917, to June, 1928.

EXTREMES.—Maximum discharge during year, 1,160 million gallons a day (1,790 second-feet) Dec. 25 (gage height, 12.00 feet, from floodmarks); minimum, 3.4 million gallons a day (5.3 second-feet) July 7–8 (gage height, 0.79 foot).

1918–1928: Maximum discharge, about 1,550 million gallons a day (2,400 second-feet) Mar. 31, 1923 (gage height, 11.65 feet); minimum, 0.8 million gallons a day (1.2 second-feet) Oct. 13–15 and 19, 1917 (gage height, 0.35 foot).

REMARKS.—Records fair for ordinary stages except those estimated, which are poor. Extremely high and low stage records poor. 1-inch pipe line diverts water one-fourth mile above station for domestic use.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		5.8	9.6	6.1					6.9	10.2	15.9	7.6
2		8.2	10.7	28	[a] 32				9.9	11.8	11.3	8.4
3		28	8.4	7.1					7.6	13.4	39	11.0
4		25	7.6	6.0		[a] 24			6.5	28	25	9.1
5	[a] 4.0	8.2	7.8	18.1			[a] 15		6.1	30	17.3	9.1
6		6.7	42	8.4	[a] 7				6.0	95	13.4	43
7		34	52	12.2		[a] 120		[a] 12	5.8	142	15.5	14.4
8	7.8	67	66	18.0			[b] 8.9		5.4	75	12.1	9.4
9	19.1	47	12.8	17.0			8.4		6.7	18.9	12.8	7.8
10	25	30	10.2	9.1	[a] 20	[a] 17	9.1		5.6	13.1	69	6.9
11	30	31	15.3	7.8			40		8.2	11.0	66	8.4
12	9.9	22	11.5	22		[a] 65	24		9.6	11.8	46	15.6
13	7.1	25	8.9	9.4	[a] 6.5		26		6.0	9.1	150	7.3
14	6.9	14.1	8.2	13.9			[b] 17	[a] 36	5.0	13.8	54	6.5
15	21	18.4	11.1	8.0			[b] 69		5.2	11.8	19.7	32
16	8.4	13.1	8.4	6.7		[a] 14	34		5.0	11.0	16.6	10.7
17	6.0	12.8	6.5	6.0	[a] 120				4.4	23	12.1	7.3
18	6.5	36	6.1	5.4				[a] 12	4.1	17.0	10.4	21
19	6.9	23	7.1	8.0					3.8	17.4	9.1	19.6
20	5.8	30	5.6	10.6			[a] 30		41	11.8	13.4	11.3
21	6.5	14.8	8.5	6.7		[a] 40		[b] 9.4	21	8.7	19.7	10.7
22	6.7	11.8	7.3	7.1				8.7	6.9	7.6	8.9	8.2
23	13.6	17.3	6.5	5.8	[a] 30			7.8	5.6	7.1	7.8	8.0
24	11.0	37	6.6	6.1		[a] 26		36	26	7.6	7.1	9.4
25	18.2	33	63	10.7				12.7	14.6	7.3	9.1	30
26	48	36	16.6	6.0		[a] 85	[a] 15	8.2	15.1	8.4	52	91
27	42	16.6	14.2	4.8	[b] 21			7.6	12.9	20	31	39
28	10.4	12.5	8.2	5.7	31			7.1	14.1	54	21	19.3
29	13.1	17.0	6.9	9.4	16.6	[a] 22		6.9	9.4	17.2	10.4	66
30	7.8	11.5	6.3	6.0	[b] 13.4			-------	13.3	95	9.1	30
31	6.5	9.9	-------	5.2	-------			-------	24	-------	8.0	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	48	----------	12.0	18.6	372	1,140
August	67	5.8	22.7	35.1	703	2,160
September	66	5.6	15.3	23.7	460	1,410
October	28	4.8	9.72	15.0	301	925
November	----------	----------	37.6	58.2	1,130	3,460
December	----------	----------	38.4	59.4	1,190	3,650
January	----------	----------	21.2	32.8	656	2,020
February	----------	6.9	14.4	22.3	416	1,280
March	41	3.8	10.4	16.1	322	989
April	142	7.1	26.9	41.6	808	2,480
May	150	7.1	26.2	40.5	813	2,490
June	91	6.5	19.3	29.9	578	1,780
The year	----------	3.8	21.2	32.8	7,750	00,823

[a] Estimated mean. [b] Partly estimated.

PAPALAUA STREAM NEAR WAILAU, MOLOKAI

LOCATION.—Water-stage recorder a quarter of a mile above mouth, 2 miles east of Wailau landing, and 6½ miles due north of Pukoo village.

RECORDS AVAILABLE.—September, 1919, to June, 1928.

EXTREMES.—Maximum discharge during year, 1,020 million gallons a day (1,580 second-feet) Dec. 25 (gage height about 8.00 feet); minimum, 1.7 million gallons a day (2.6 second-feet) July 5 (gage height, 0.90 foot).

1920–1928: Maximum discharge about 1,140 million gallons a day (1,760 second-feet) Dec. 24, 1920 (gage height, 8.58 feet); minimum, 0.9 million gallons a day (1.4 second-feet) July 1, 5, and 6, 1926 (gage height, 0.73 foot).

REMARKS.—Records fair for ordinary stages except those estimated, which are poor. Extremely high stage records poor. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.8	2.7	4.8	7.3	20	30	5.8		[b]4.6	5.1	7.5	4.4
2	1.9	5.0	5.0	13.9	55	22	5.4	[a]14	5.2	8.6	5.1	3.9
3	1.8	24	4.0	4.4	13.0	19.4	5.2		4.6	12.0	29	6.6
4	1.8	12.3	3.8	3.4	5.4	10.6	28			25	14.0	6.5
5	1.9	3.9	4.4	11.2	4.4	6.5	15.5			18.0	9.8	7.4
6	1.9	3.1	46	5.0	3.8	23	5.6		[a]3.9	89	6.7	29
7	1.8	16.4	47	8.0	3.4	89	5.2	[a]5.5		117	9.2	11.2
8	4.5	29	67	21	11.3	138	5.1			53	6.8	6.5
9	14.2		8.3	13.6	19.5	15.5	5.1		5.0	8.5	6.0	4.5
10	18.8	[a]16	7.1	5.8	27	8.0	5.6		4.8	5.6	22	3.8
11	13.7		11.8	5.1	16.8	6.5	37		[b]7.4	4.8	40	5.7
12	5.2		7.5	15.6	5.4	73	19.6		5.6	4.6	36	15.1
13	3.5		7.1	5.8	4.6	29	21	[a]24	4.6	4.5	144	4.4
14	3.3		7.4	7.8	3.9	9.2	6.7			10.8	36	3.7
15	16.7	[a]8	7.9	4.6	146	9.0	51			5.8	8.7	25
16	4.0		5.8	3.9	109	10.4	32		[a]3.7	6.0	9.0	6.2
17	2.5		4.4	3.3	71	6.5	14.7	[a]9		18.1	5.8	3.8
18	4.2		3.9	3.1	168	6.5	27			14.2	5.0	19.8
19	3.9		3.8	7.2	98	55	30			8.0	4.5	13.0
20	2.9	[a]12	3.4	7.5	29	26	26		[b]17.6	7.2	10.5	8.2
21	4.3		4.8	4.2	28	10.4	38	[a]4.5	8.5	4.6	12.4	7.1
22	3.7		3.8	5.0	11.4	43	7.8		4.6	4.4	4.5	5.1
23	12.4		3.5	4.4	7.8	22			4.5	4.4	3.5	4.6
24	6.5		6.2	5.0	15.5	23		[b]34	29	4.5	3.2	8.9
25	12.0	[a]24	49	9.6	23	136	[a]7	6.2	7.4	4.5	6.1	22
26	41		10.2	4.2	31	19.0		4.5	9.0	6.0	46	68
27	24	10.2	10.8	3.3	15.3	60			8.5	16.3	21	26
28	5.6	6.9	5.1	3.4	22	29	[a]12	42	9.0	47	21	14.1
29	10.3	11.7	4.2	5.6	12.4	9.2			5.1	15.9	7.3	53
30	4.0	6.4	3.5	3.8	9.8	6.9	[a]7	-------	10.5	93	6.2	21
31	3.2	5.4	-------	3.3	-------	6.4		-------	18.0	-------	5.0	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	41	1.8	7.65	11.8	237	728
August	----------	2.7	12.5	19.3	389	1,190
September	67	3.4	12.0	18.6	362	1,100
October	21	3.1	6.75	10.4	209	642
November	168	3.4	33.0	51.1	991	3,040
December	138	6.4	30.9	47.8	958	2,940
January	51	----------	15.3	23.7	475	1,460
February	----------	----------	14.0	21.7	407	1,250
March	29	----------	6.94	10.7	215	660
April	117	4.4	20.9	32.3	626	1,920
May	144	3.2	17.8	27.5	552	1,690
June	68	3.7	14.0	21.7	418	1,290
The year	168	1.8	16.0	24.8	5,840	17,900

[a] Estimated mean. [b] Partly estimated.

WAIAKEAKUA STREAM NEAR WAILAU, MOLOKAI

LOCATION.—Water-stage recorder half a mile above confluence with Pulena Stream, 3 miles south of Wailau landing, and 4 miles northwest of Pukoo village.

RECORDS AVAILABLE.—October, 1919, to June, 1928.

EXTREMES.—Maximum discharge during year, 271 million gallons a day (419 second-feet) Nov. 19 (gage height, 4.68 feet); minimum, 2.6 million gallons a day (4.0 second-feet) July 20 and Mar. 23 (gage height, 1.25 feet).

1920–1928: Maximum discharge, about 710 million gallons a day (1,100 second-feet) Mar. 31, 1923 (gage height, 7.15 feet); minimum, 1.3 million gallons a day (2.0 second-feet) Mar. 7, 1920 (gage height, 0.92 foot).

REMARKS.—Records good for ordinary stages; poor for estimated periods (July 1–6 and Nov. 25–29) and extremely high stages. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		3.9	3.5	4.7	8.3	19.2	8.2	5.7	3.8	3.7	9.1	3.9
2		4.2	3.2	5.8	18.1	16.8	7.6	10.0	4.2	4.2	6.6	3.7
3		11.6	3.0	3.4	7.4	14.8	7.0	8.2	3.7	4.9	18.7	3.7
4	3.0	7.6	2.8	3.7	4.1	10.1	6.8	6.6	3.5	12.7	10.5	3.7
5		3.9	3.1	6.5	3.5	8.2	8.4	5.7	3.5	10.2	8.6	3.8
6		3.5	17.8	4.5	3.2	8.3	6.0	5.2	3.5	22	7.0	6.8
7	3.0	8.0	17.5	5.5	2.9	23	5.9	5.2	3.4	28	7.7	4.4
8	6.2	16.9	23	5.9	3.4	42	5.7	4.8	3.5	21	5.5	3.6
9	12.5	16.4	8.4	8.2	3.5	14.3	5.4	5.2	3.7	8.6	6.4	3.2
10	20	12.1	7.0	4.7	6.7	9.9	5.4	4.8	3.2	6.2	6.7	3.2
11	21	9.4	7.8	5.0	8.4	8.4	15.4	4.7	3.8	5.0	19.3	4.1
12	7.6	7.0	5.7	13.2	4.1	17.4	11.8	7.6	3.7	4.7	15.2	6.2
13	5.4	6.8	5.7	6.4	3.7	14.4	10.4	12.8	3.2	4.1	36	3.6
14	4.5	5.2	5.5	7.3	3.5	8.7	7.0	22	3.0	9.1	15.9	3.4
15	9.3	6.2	5.0	5.0	12.8	8.2	6.6	8.8	3.1	5.0	9.4	9.4
16	4.1	4.8	4.8	4.5	11.2	9.0	37	6.4	3.0	4.3	7.9	3.9
17	3.2	5.2	4.1	4.1	17.0	7.2	13.3	5.9	2.9	5.4	6.2	3.5
18	3.1	12.3	3.8	4.1	47	6.8	15.3	9.1	2.8	5.7	5.2	10.2
19	3.2	6.0	3.5	4.3	45	22	19.4	6.0	2.8	8.4	4.7	7.6
20	2.7	6.5	3.5	4.5	20	17.5	15.8	5.2	4.8	4.3	6.0	5.6
21	3.2	5.0	3.7	4.1	19.6	11.2	23	4.8	4.3	3.6	5.7	4.2
22	3.2	4.5	7.4	4.1	12.9	25	10.6	4.7	2.8	3.2	4.2	3.7
23	6.1	7.4	4.1	3.9	9.4	16.7	8.7	4.5	2.7	3.1	3.9	3.7
24	3.7	12.4	5.8	3.8	9.6	15.2	7.8	5.2	5.7	2.9	3.8	6.3
25	8.6	10.4	21	5.0		66	7.0	4.5	4.3	2.7	5.9	10.3
26	25	11.8	7.7	3.8		20	6.6	4.1	6.6	2.9	22	30
27	20	6.4	6.8	3.5	14	38	8.8	4.1	5.5	5.8	11.8	19.7
28	8.4	4.8	4.7	3.5		25	6.2	3.9	5.1	13.2	8.9	11.0
29	7.6	6.7	4.1	4.4		12.7	10.4	3.8	3.1	5.9	5.3	23
30	5.4	4.2	3.5	3.7	8.4	10.1	7.4	-------	3.8	37	4.6	15.1
31	4.7	3.8	-------	3.5	-------	9.2	6.8	-------	6.8	-------	4.1	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	25	----------	7.09	11.0	220	675
August	16.9	3.5	7.58	11.7	235	721
September	23	2.8	6.92	10.7	208	637
October	13.2	3.4	4.99	7.72	155	475
November	47	2.9	12.1	18.7	364	1,110
December	66	6.8	17.3	26.8	535	1,650
January	37	5.4	10.4	16.1	322	989
February	22	3.8	6.53	10.1	190	581
March	6.8	2.7	3.86	5.97	120	367
April	37	2.7	8.59	13.3	258	791
May	36	3.8	9.45	14.6	293	899
June	30	3.2	7.48	11.6	224	689
The year	66	2.7	8.53	13.2	3,120	9,580

PULENA STREAM NEAR WAILAU, MOLOKAI

LOCATION.—Water-stage recorder half a mile above confluence with Waiakea-keakua Stream, 3 miles south of Wailau landing, and 4 miles northwest of Pukoo village.

RECORDS AVAILABLE.—October, 1919, to June, 1928.

EXTREMES.—Maximum discharge during year, 647 million gallons a day (1,000 second-feet) Nov. 19 (gage height, 6.27 feet); minimum unknown, owing to uncertain records during low-water period.

1920–1928: Maximum discharge, about 1,400 million gallons a day (2,170 second-feet) Dec. 24, 1920 (gage height, 11.5 feet); minimum, 3.0 million gallons a day (4.6 second-feet) June 28 and July 14, 1920 (gage height, 0.89 foot).

REMARKS.—Records poor. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		13.9	18.1	9.6	19.8	47		19.8				8.2
2		12.6	16.6	10.2	28	46		24				7.5
3		15.6	15.2	7.2	14.4	46	a18	26		a12		7.7
4	a 6	14.6	14.2	6.5	8.9	30		23				7.2
5		12.3	15.2	11.0	7.5	24		16.0		17.2		8.0
6		12.3	55	7.7	6.8	24		13.8		57	a19	12.7
7	6.1	15.9	47	10.8	6.3	64		13.2				7.7
8	20	27	47	12.9	9.3	105	a11	11.9		a38		6.3
9	30	25	18.8	18.3	10.1	61		11.6				5.6
10	49	26	15.6	10.0	11.0	38		9.6				5.6
11	53	24	18.6	12.7	21		a50	7.6			38	7.0
12	21	22	16.3	22	9.2	a 38	42	13.8	a 8		58	8.0
13	15.6	22	16.6	15.3	7.5		41	17.6				5.5
14	14.6	17.4	17.0	16.4	7.8		25	34				5.6
15	16.5	18.6	15.6	11.4	31		18.3	22			a24	10.7
16	13.9	18.1	13.9	9.5	32	a 24	91	14.9		a16		5.9
17	12.0	19.4	10.5	7.9	39		30	11.6				5.5
18	12.6	26	8.7	7.0	64		35	18.1			12.8	11.0
19	12.3	19.0	7.9	10.0	105		47	13.2			11.9	8.4
20	10.3	23	8.4	12.8	37		41				11.2	8.3
21	10.0	19.8	13.4	8.2	45		49	a11			11.9	7.0
22	8.7	19.4	14.6	9.6	38		28				8.7	5.9
23	18.7	23	8.2	12.4	27		18.8				7.7	5.8
24	13.9	32	10.3	13.9			13.8	a19		a11	7.2	a 9
25	16.3	30	17.2	10.3		a 44	11.9				15.2	
26	44	29	12.6	6.8	a34		11.3				66	
27	50	24	16.1	6.1			25	a 9.5	a 11		29	a30
28	21	20	12.3	6.6			15.3			a24	18.8	
29	22	23	10.3	6.1			34				12.8	
30	16.6	19.8	9.5	6.1	26		26	-------		48	10.6	
31	15.6	19.0	-------	5.6	-------		24	-------		-------	9.0	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	53	----------	18.1	28.0	560	1,720
August	32	12.3	20.8	32.2	644	1,980
September	55	7.9	17.4	26.9	521	1,600
October	22	5.6	10.4	16.1	321	989
November	105	6.3	27.2	42.1	816	2,500
December	----------	----------	41.6	64.4	1,290	3,960
January	91	----------	26.5	41.0	822	2,520
February	34	----------	15.2	23.5	442	1,350
March	----------	----------	8.77	13.6	272	834
April	----------	----------	20.7	32.0	620	1,910
May	66	7.2	20.6	31.9	639	1,960
June	----------	5.5	12.0	18.6	360	1,100
The year	----------	----------	20.0	30.9	7,310	22,400

a Estimated mean.

PELEKUNU STREAM NEAR PELEKUNU, MOLOKAI

LOCATION.—Water-stage recorder half a mile above confluence with Lanipuni Stream, 2 miles south of Pelekunu landing, and 6 miles north of Kamalo village.

RECORDS AVAILABLE.—December, 1919, to June, 1928.

EXTREMES.—Maximum discharge during year, 570 million gallons a day (882 second-feet) Nov. 19 (gage height, 8.50 feet); minimum, 2.0 million gallons a day (3.1 second-feet) Mar. 23 (gage height, 2.32 feet).

1920–1928: Maximum discharge, about 1,020 million gallons a day (1,580 second-feet) Dec. 24, 1920 (gage height, 8.35 feet); minimum, 1.8 million gallons a day (2.8 second-feet) Mar. 7 and July 13, 1920 (gage height, 1.65 feet).

REMARKS.—Records fair for ordinary stages except those estimated, which are poor. Extremely high stage records poor. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.5	4.6	3.2	4.1	8.3	14.5	12.2	8.6	4.3	11.3	9.2	5.1
2	2.4	4.1	2.8	4.5	5.3	14.0	10.4	12.2	4.3	10.4	7.2	4.8
3	2.4	5.2	2.7	3.7	4.0	14.0	9.4	12.2	4.1	9.4	13.5	4.6
4	2.3	4.4	2.6	3.6	3.6	8.8	9.6	9.4	3.7	7.8	14.4	4.3
5	3.1	3.3	3.0	4.0	3.4	6.8	9.2	7.3	3.6	8.6	17.1	4.6
6	2.4	3.3	24	3.9	3.3	6.2	7.5	6.5	3.7	25	14.4	6.1
7	3.1	4.4	42	4.6	3.2	16.9	6.3	6.2	3.6	32	10.9	4.4
8	18.7	7.9	34	5.6	4.6	41	6.0	5.7	3.3	22	9.0	3.7
9	19.0	11.1	13.6	6.6	4.1	22	5.6	5.8	4.2	14.4	7.8	3.4
10	29	9.6	10.3	4.2	4.1	12.2	5.4	5.2	3.2	10.7	7.3	3.4
11	36	11.3	9.4	4.5	6.2	9.4	11.2	4.8	6.0	8.8	36	3.8
12	15.5	10.0	7.8	6.0	4.2	38	12.9	5.8	5.7	7.7	34	4.0
13	9.0	10.8	6.9	4.9	[a] 4.0	30	15.5	8.2	3.5	7.0	30	3.3
14	6.6	6.2	6.9	5.4	[b] 4.0	19.0	10.7	11.8	3.2	7.7	24	3.4
15	7.6	6.8	6.0	4.1		14.4	9.3	6.0	3.0	6.5	14.4	6.2
16	5.5	7.4	5.3	3.8		13.3	40	5.2	2.9	7.3	11.3	3.6
17	4.1	7.2	4.9	3.7	[b] 5.8	10.9	17.8	4.8	2.7	6.9	9.0	3.0
18	6.2	8.2	4.6	3.6		10.9	21	9.9	2.6	7.6	7.8	4.1
19	6.1	5.3	4.4	4.3		17.3	32	7.8	2.5	6.8	6.8	4.3
20	4.1	7.7	4.2	5.5		16.6	27	6.0	2.5	5.1	6.6	3.6
21	3.8	5.7	6.3	3.9		14.4	25	5.4	2.5	4.4	6.6	3.7
22	3.3	5.0	7.6	4.0		38	15.5	5.0	2.4	4.1	5.4	3.4
23	9.8	7.0	4.8	5.4		30	12.2	4.6	2.2	4.0	5.0	3.3
24	5.2	9.9	4.5	5.5		19.0	10.2	13.3	15.6	3.8	4.6	5.9
25	6.6	8.5	6.9	4.5	[b] 15	76	8.6	8.0	13.1	3.6	9.0	10.4
26	19.4	7.0	5.3	3.6		38	7.8	6.0	35	3.6	25	20
27	26	5.3	9.3	3.2		43	10.0	5.2	36	6.2	13.3	10.4
28	10.6	4.4	6.3	3.6		42	7.3	4.8	19.0	9.1	9.0	6.6
29	10.2	5.3	5.0	3.2		24	13.4	4.7	12.2	6.2	7.2	12.2
30	6.2	4.1	4.2	3.3		17.8	10.4	-------	15.5	24	6.3	11.8
31	5.2	3.8	-------	3.0	-------	14.4	10.2	-------	16.6	-------	5.6	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	36	2.3	9.42	14.6	292	896
August	11.3	3.3	6.61	10.2	205	629
September	42	2.6	8.63	13.4	259	795
October	6.6	3.0	4.32	6.68	134	411
November	----------	3.2	18.7	28.9	560	1,720
December	76	6.2	22.3	34.5	693	2,120
January	40	5.4	13.2	20.4	410	1,260
February	13.3	4.6	7.12	11.0	206	634
March	36	2.2	7.83	12.1	243	745
April	32	3.6	9.73	15.1	292	896
May	36	4.6	12.5	19.3	388	1,190
June	20	3.0	5.71	8.83	171	526
The year	76	2.2	10.5	16.2	3,850	11,800

[a] Partly estimated. [b] Estimated mean.

LANIPUNI STREAM NEAR PELEKUNU, MOLOKAI

LOCATION.—Water-stage recorder half a mile above junction with Pelekunu Stream, 2 miles south of Pelekunu landing, and 6 miles north of Kamalo village.

RECORDS AVAILABLE.—December, 1919, to June, 1928.

EXTREMES.—Maximum discharge during year, 713 million gallons a day (1,100 second-feet) Nov. 19 (gage height, 4.45 feet); minimum, 3.3 million gallons a day (5.1 second-feet) Mar. 22 and 23–24 (gage height, 0.66 foot).

1920–1928: Maximum discharge about 1,250 million gallons a day (1,930 second-feet) Dec. 24, 1920 (gage height, 5.90 feet); minimum, 1.8 million gallons a day (2.8 second-feet) Nov. 10 and 11, 1926 (gage height, 0.43 foot).

REMARKS.—Records fair for ordinary stages; poor for estimated period (Nov. 27–30) and extremely high stages. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.3	5.0	4.7	4.4	7.0	14.5	7.2	6.8	4.6	6.8	7.4	5.9
2	4.3	5.0	4.5	4.5	6.8	12.3	7.0	13.2	4.6	6.4	5.9	5.5
3	4.2	8.2	4.3	4.0	4.8	11.0	6.6	10.6	4.2	5.7	16.5	5.5
4	4.2	5.9	4.3	4.0	4.3	6.6	7.9	8.2	4.1	5.0	12.1	5.5
5	5.2	4.8	4.8	4.3	4.2	5.5	8.1	6.2	4.1	4.8	14.8	6.8
6	4.2	4.7	52	4.0	4.0	8.5	6.2	5.7	4.2	40	10.8	8.9
7	4.5	7.0	45	4.8	3.9	42	5.6	5.3	4.1	29	8.2	5.5
8	10.8	12.8	23	7.7	5.2	41	5.0	5.0	4.1	12.8	6.4	4.8
9	14.6	12.9	9.3	7.6	5.3	12.0	4.8	5.2	4.2	7.4	5.9	4.7
10	21	9.3	7.9	5.4	5.4	7.2	4.8	4.7	3.8	6.1	5.3	4.6
11	25	14.7	8.7	5.5	7.5	6.1	14.0	4.6	6.1	5.3	47	5.2
12	11.0	10.8	6.6	7.5	4.5	24	16.3	5.2	5.0	4.8	50	6.5
13	6.8	9.6	5.9	5.5	4.2	13.1	16.5	8.9	4.1	4.7	51	4.4
14	5.5	6.8	7.2	5.7	6.0	7.5	8.7	11.8	3.7	9.8	24	4.8
15	7.6	7.0	6.1	5.0	37	6.1	8.2	5.3	3.7	5.3	10.5	6.9
16	5.4	7.6	5.4	4.8	27	5.7	52	4.8	3.7	5.9	7.7	4.6
17	4.7	8.7	5.0	4.7	97	5.2	11.8	4.6	3.6	5.5	6.6	4.1
18	5.9	8.4	4.7	4.5	48	5.5	14.5	13.6	3.6	5.5	5.9	6.1
19	5.4	6.8	4.5	9.3	117	11.6	24	6.2	3.6	6.3	5.5	5.2
20	5.4	8.4	4.3	6.1	15.2	9.1	16.5	5.2	3.6	4.7	5.7	5.4
21	5.0	6.6	4.5	5.4	14.2	7.4	16.5	4.8	3.6	4.2	5.7	5.2
22	4.5	5.7	4.5	5.0	9.9	31	8.2	4.7	3.4	4.1	5.2	4.7
23	11.4	8.0	4.2	6.7	7.0	12.8	6.8	4.6	3.4	4.1	5.2	4.6
24	6.1	12.8	5.4	5.5	15.5	7.5	5.9	24	4.8	4.0	5.2	10.7
25	9.0	11.6	7.2	5.4	15.0	77	5.3	6.8	6.9	3.8	10.5	15.1
26	37	7.7	5.6	4.7	28	15.2	5.3	5.5	14.0	4.1	39	26
27	27	6.1	7.8	4.5	15	26	10.2	5.0	16.1	5.0	14.8	10.6
28	9.6	5.5	5.5	4.5		22	7.0	4.8	11.4	9.6	9.4	6.1
29	9.3	6.8	4.8	4.2	6	10.5	14.5	4.7	6.4	5.5	7.4	16.7
30	6.1	5.2	4.3	4.2		9.0	9.2	-------	13.0	29	6.6	14.5
31	5.5	5.0	-------	4.2	-------	8.2	8.4	-------	11.5	-------	6.2	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	37	4.2	9.37	14.5	290	891
August	14.7	4.7	7.92	12.3	245	753
September	52	4.2	9.07	14.0	272	835
October	9.3	4.0	5.28	8.17	164	502
November	117	3.9	18.2	28.2	546	1,680
December	77	5.2	15.5	24.0	481	1,470
January	52	4.8	11.1	17.2	343	1,060
February	24	4.6	7.10	11.0	206	632
March	16.1	3.4	5.72	8.85	177	544
April	40	3.8	8.51	13.2	255	783
May	51	5.2	13.6	21.0	422	1,290
June	26	4.1	7.50	11.6	225	690
The year	117	3.4	9.91	15.3	3,630	11,100

WAIKOLU STREAM AT PIPE-LINE CROSSING NEAR KALAUPAPA, MOLOKAI

LOCATION.—Water-stage recorder at 300-foot elevation, 1 mile above mouth of stream and 4 miles southeast of Kalaupapa.

RECORDS AVAILABLE.—June, 1919, to June, 1928.

EXTREMES.—Maximum discharge during year, 476 million gallons a day (736 second-feet) Nov. 19 (gage height, 7.47 feet); minimum, 3.8 million gallons a day (5.9 second-feet), Nov. 7 to 8 (gage height, 4.20 feet).

1919–1928: Maximum discharge 1,270 million gallons a day (1,960 second-feet) Dec. 24, 1920 (gage height, 10.20 feet); minimum, 1.3 million gallons a day (2.0 second-feet) Nov. 1–2, 1925, and June 5, 1926 (gage height, 4.17 feet).

Remarks.—Records fair for ordinary stages; poor for estimated periods and extremely high stages. Kalaupapa water-supply system diverts 2.5 million gallons a day above station for domestic use.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		6.8	6.2	4.7	5.9	7.6	8.0	9.3	6.8	8.0	8.0	5.9
2		6.8	5.9	4.4	5.0	10.9	7.6	17.6	6.8	7.2	7.2	5.9
3		7.6	5.9	4.7	4.7	10.9	7.6	14.9	6.8	6.8	11.7	5.6
4	[a]7	8.4	5.9	4.4	4.4	7.6	10.5	10.9	6.8	6.5	12.4	5.6
5		7.2	5.9	4.7	4.1	6.5	9.7	8.0	6 8	[b]6.5	12.9	6.5
6		6.8	41	4.8	4.1	6.5	7.6	7.2	7,2	18.3	10.1	7.2
7		7.6	32	4.7	4.1	33	7.2	6.8	7.6	28	8.4	6.2
8	[a]12	9.2	15.2	4.7	4.4	55	6.5	7.9	7.2	14.5	7.2	5.9
9		10.3	6.8	5.0	4.7	15.3	6.2	8.0	6.8	8.4	6.8	5.6
10	17.1	11.2	5.9	4.7	4.4	8.8	6.2	6.8	6.5	7.6	7.7	5.6
11	28	11.8	6.2	4.4	5.3	8.0	7.6	6.5	6.5	7.2	33	5.6
12	10.9	10.1	6.5	5.0	5.0	36	15.3	6.5	8.0	6.8	15.8	5.6
13	8.8	10.1	5.9	4.7	4.4	29	20	13.0	6.8	6.8	39	5.6
14	7.6	7.6	5.6	4.4	4.4	10.5	13.6	15.6	6.5	8.4	15.2	5.6
15	7.6	7.6	5.6	4.4	38	8.0	7.6	7.6	6.5	8.0	8.0	5.9
16	8.0	8 0	5.3	4.1	35	7.2	42	9.0	6.5	7.6	7.2	6.2
17	7.6	8.8	5.3	4.1	84	6.8	9.7	8.1	6.5	7.2	6.8	5.9
18	8.4	8.4	5.3	4.1	48	7.2	13.2	11.5	6.5	8.0	6.5	5.6
19	9.7	7.2	5.3	4.7	89	9.3	19.5	9.7	6.2	7.2	6.2	5.9
20	8.4	7.2	5.0	7.2	13.4	10.9	20	7.6	6.2	7.2	6.5	5.9
21	8 0	6.8	5.0	5.6	8.8	8.0	17.4	6.8	6.2	6.8	6.5	5.9
22	7.6	6.5	8.3	5.6	8.4	29	8.8	6.8	6.2	6.8	6.5	5.9
23	8.8	6.8	6.2	5.0	[b]7.5	16.0	7.6	6.8	5.9	6.8	6.2	5.9
24	8.8	10.1	5.3	5.0	[a]15	9.3	7.2	33	16.0	6.5	5.9	7.6
25	10.1	8.8	7.2	5.0		79	6.8	11.4	15.6	6.5	9.8	13.2
26	26	7.2	6.5	4.7	24	14.1	6.8	7.6	36	6.5	32	23
27	26	6.8	9.3	4.7	19.5	27	17.4	6.8	34	6.5	13.0	10.4
28	8.4	6.5	5.9	4.7	11.9	31	8.8	6.8	15.8	6.8	8.0	6.8
29	7.6	6.5	5.0	4.4	7.6	10.9	18.4	6.8	8.4	7.6	6.5	9.8
30	7.6	6.5	4.7	4.4	6.8	9.3	12.3	-------	11.2	15.9	6.2	8.0
31	7.2	6.2	-------	4.4	-------	8.4	10.5	-------	11.8	-------	6.2	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	28	----------	10.4	16.1	321	989
August	11.8	6.2	7.98	12.3	247	759
September	41	4.7	8.34	12.9	250	768
October	7.2	4.1	4.75	7.35	147	452
November	89	4.1	16.6	25.7	497	1,530
December	79	6.5	17.3	26.8	537	1,650
January	42	6.2	11.9	18.4	368	1,130
February	33	6.5	9.84	15.2	285	876
March	36	5.9	9.76	15.1	303	929
April	28	6.5	8.76	13.6	263	807
May	39	5.9	11.1	17.2	343	1,060
June	23	5.6	7.14	11.0	214	657
The year	89	4.1	10.3	15.9	3,780	11,600

[b] Partly estimated. [a] Estimated mean.

ISLAND OF MAUI

HONOKAHAU STREAM NEAR HONOKAHAU, MAUI

LOCATION.—Water-stage recorder about 1,000 feet above intake of Honokahau ditch and about 6 miles southeast of Honokahau; elevation 910 feet.

RECORDS AVAILABLE.—March, 1913, to September, 1920, and May, 1922, to June, 1928.

EXTREMES.—Maximum discharge during year, 1,100 million gallons a day (1,700 second-feet) Feb. 18 (gage height, 6.24 feet); minimum, 8.5 million gallons a day (13.2 second-feet) Nov. 6, 7, 10, and 14 (gage height, 2.04 feet).

1913–1920; 1922–1928: 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, 1926 (gage height, 0.92 foot).

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

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		13.4	13.1	22	10.6	39	12.4	28	10.9	19.4	34	13.4
2		33	12.4	28	9.3	28	12.0	60	11.6	31	28	13.1
3		26	11.6	12.7	9.0	35	12.0	33	12.0	27	72	12.7
4		24	12.4	13.0	8.8	14.6	12.4	19.6	11.6	16.2	26	12.7
5	[a]11	12.0	11.6	19.6	8.8	11.6	14.3	15.7	11.6	13.1	40	23
6		11.6	114	13.1	8.5	10.9	12.0	13.8	11.3	72	29	34
7		51	108	16.6	8.8	126	12.0	13.1	11.3	109	14.7	34
8		142	60	41	9.3	107	12.0	13.1	12.0	38	13.4	19.1
9		51	15.2	28	8.8	25	12.0	41	12.4	13.1	16.6	13.8
10		22	22	12.7	9.6	13.4	12.0	16.2	11.3	11.6	15.2	13.4
11	[a]32	64	36	11.6	19.0	12.0	30	13.4	50	10.9	49	25
12		37	13.8	34	10.2	62	53	31	19.2	10.6	66	21
13		21	17.6	12.0	9.3	24	46	29	11.6	14.0	308	13.4
14	[b]13.8	15.9	60	11.6	9.0	15.2	26	79	10.9	105	45	15.2
15	17.4	14.3	17.1	10.9	99	12.7	17.0	16.6	10.9	17.6	16.6	21
16	13.4	21	12.7	11.3	34	21	216	13.4	10.6	13.8	14.3	13.8
17	10.9	17.1	21	10.2	133	12.7	27	12.7	10.6	83	13.8	17.0
18	15.3	20	15.2	9.9	159	21	30	73	10.6	63	13.4	60
19	11.6	34	12.4	10.2	42	47	39	16.6	10.6	25	13.1	18.5
20	12.0	58	12.0	14.7	26	59	27	12.7	10.9	16.2	25	14.3
21	18.6	16.6	11.6	14.3	20	25	46	12.0	10.6	12.4	17.1	15.7
22	14.3	12.7	13.1	13.1	12.0	74	14.7	12.0	10.6	11.6	13.4	13.8
23	34	21	12.0	13.1	10.6	16.2	15.7	11.6	10.2	22	12.7	13.4
24	17.3	41	53	11.6	12.7	12.7	13.8	21	18.0	22	12.7	31
25	18.2	71	48	15.2	25	188	12.4	14.3	19.0	13.4	40	34
26	113	36	30	10.2	42	35	12.0	11.6	81	11.6	66	44
27	52	18.5	27	10.6	26	19.0	54	11.6	47	33	40	31
28	26	14.7	13.8	10.6	13.8	57	28	11.3	35	64	40	27
29	36	30	12.4	9.6	11.3	18.5	43	11.3	13.4	16.6	16.6	36
30	13.1	13.4	12.0	9.6	10.6	13.8	22	-------	18.9	141	13.8	46
31	10.9	12.4	-------	9.6	-------	12.7	18.5	-------	33	-------	13.4	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	113	----------	23.1	35.7	717	2,200
August	142	11.6	31.5	48.7	976	3,000
September	114	11.6	27.7	42.9	831	2,550
October	41	9.6	15.2	23.5	471	1,450
November	159	8.5	27.2	42.1	816	2,500
December	188	10.9	37.7	58.3	1,170	3,590
January	216	12.0	29.5	45.6	914	2,810
February	79	11.3	23.0	35.6	668	2,050
March	81	10.2	18.3	28.3	569	1,740
April	141	10.6	35.2	54.5	1,060	3,240
May	308	12.7	36.7	56.8	1,140	3,490
June	60	12.7	23.3	36.1	700	2,150
The year	308	8.5	27.4	42.4	10,000	30,800

[a] Estimated mean. [b] Partly estimated.

HONOKAWAI DITCH NEAR LAHAINA, MAUI

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.

RECORDS AVAILABLE.—July, 1912, to June, 1928.

EXTREMES.—Maximum discharge during year, 58 million gallons a day (90 second-feet) Dec. 7 (gage height, 2.28 feet); minimum, 1.8 millions gallons a day (2.8 second-feet) July 1–5, 15, and 20 (gage height, 0.14 foot).

1912–1928: Maximum discharge, 69 million gallons a day (107 second-feet) Sept. 10, 1922 (gage height, 2.71 feet); no flow occasionally when water is shut out of ditch.

REMARKS.—Records fair. Diverts water for irrigation from Honokawai Stream just above station. Regulated by head gates at intake.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.9	4.2	4.1	3.8	3.1	14.0	4.2	8.0	3.5	5.6	11.4	3.0
2	1.8	6.2	4.0	4.5	3.1	10.1	4.1	14.0	3.5	7.5	8.6	3.1
3	1.8	6.0	3.4	3.8	3.1	11.1	4.1	7.6	3.5	7.4	23	3.1
4	1.8	4.8	3.5	3.5	3.1	4.1	4.1	4.9	3.6	4.1	6.6	3.1
5	2.7	3.8	3.5	4.3	3.2	3.6	4.1	3.9	3.6	3.6	13.0	4.2
6	2.0	3.5	33	3.6	3.8	3.6	4.1	3.7	3.6	11.5	10.7	7.7
7	1.8	16.9	33	3.5	3.3	23	4.0	3.6	3.6	9.6	4.6	7.6
8	5.7	21	14.0	16.1	3.1	24	4.0	3.6	3.6	14.0	3.8	4.8
9	8.3	12.9	4.2	7.6	3.1	6.7	4.0	6.8	3.6	4.2	3.6	3.3
10	18.5	7.4	5.7	3.5	3.1	3.6	4.0	4.0	3.6	3.6	3.6	3.3
11	7.2	24	10.5	3.3	4.7	3.4	12.1	3.6	9.3	3.3	5.2	8.0
12	10.1	16.8	3.9	10.6	3.3	12.5	18.9	7.0	5.3	3.3	12.5	5.1
13	2.1	7.4	3.6	3.5	3.2	7.6	18.6	5.3	3.6	3.3	28	3.4
14	2.0	3.9	23	3.3	3.1	4.2	9.2	10.2	3.5	12.1	11.3	3.9
15	1.9	3.9	5.1	3.3	9.2	3.6	6.9	3.9	3.3	5.1	4.6	4.4
16	2.1	5.8	3.6	3.4	4.0	7.1	25	3.6	3.3	4.2	4.1	3.6
17	1.9	4.6	3.8	3.4	26	3.8	8.6	3.6	3.2	15.7	3.6	6.1
18	2.5	4.8	4.2	3.3	39	5.7	10.2	11.5	3.2	13.3	3.5	11.0
19	2.0	7.5	3.5	3.3	8.4	9.7	17.3	5.7	3.2	5.4	3.4	4.0
20	1.8	13.7	3.4	3.3	5.1	18.0	8.1	3.6	3.2	3.4	4.0	3.5
21	2.2	4.5	3.3	3.8	6.7	6.9	15.4	3.6	3.3	3.1	4.2	3.7
22	2.2	3.9	3.2	4.1	3.5	18.4	4.2	3.6	3.3	3.1	3.6	3.4
23	6.2	6.9	3.2	5.0	3.3	4.9	4.4	3.5	3.3	3.8	3.6	3.4
24	3.0	10.5	6.4	4.1	3.9	4.1	3.8	4.9	4.7	3.9	3.5	8.0
25	3.0	13.5	10.5	5.4	11.7	23	3.6	3.8	5.2	3.4	10.8	10.9
26	33	7.2	6.8	3.9	23	8.9	3.5	3.5	26	3.1	21	15.0
27	11.1	4.6	7.0	3.4	10.9	5.4	13.9	3.5	14.2	9.7	8.0	7.2
28	8.0	4.4	3.9	3.3	4.4	12.8	6.2	3.5	9.7	13.3	5.8	5.6
29	6.8	6.5	3.5	3.3	4.0	4.6	12.5	3.5	4.3	4.7	3.5	9.1
30	4.1	4.5	3.3	3.4	3.9	4.2	5.8	-------	6.0	23	3.1	10.2
31	3.8	4.1	-------	3.3	-------	4.4	5.3	-------	8.2	-------	3.0	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	33	1.8	5.27	8.15	163	501
August	24	3.5	8.05	12.5	250	766
September	33	3.2	7.47	11.6	224	688
October	16.1	3.3	4.45	6.89	138	423
November	39	3.1	7.11	11.0	213	655
December	24	3.4	8.94	13.8	277	851
January	25	3.5	8.20	12.7	254	780
February	14.0	3.5	5.22	8.08	152	465
March	26	3.2	5.32	8.23	165	506
April	23	3.1	7.04	10.9	211	648
May	28	3.0	7.72	11.9	239	734
June	15.0	3.0	5.76	8.91	173	530
The year	39	1.8	6.72	10.4	2,460	7,550

KANAHA STREAM ABOVE PIPE-LINE INTAKE NEAR LAHAINA, MAUI

LOCATION.—Water-stage recorder 200 feet above intake of pipe line for Lahaina and Lahainaluna School and 2¼ miles northeast of Lahaina.

RECORDS AVAILABLE.—February, 1916, to June, 1928.

EXTREMES.—Maximum discharge during year, 131 million gallons a day (203 second-feet) Feb. 18 (gage height, 3.26 feet); minimum, 1.6 million gallons a day (2.5 second-feet) Dec. 23–25 (gage height, 0.48 foot).

1916–1928: Maximum discharge, 314 million gallons a day (486 second-feet) Nov. 26, 1918 (gage height, 3.79 feet); minimum, that of Dec. 23–25, 1927.

REMARKS.—Records good for ordinary stages and poor for high stages. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.6	4.9	3.1	3.1	3.1	6.4	2.2	12.5	3.1	5.2	5.1	3.1
2	2.6	5.3	3.1	3.1	3.1	5.4	2.0	8.6	3.1	5.4	4.0	3.1
3	2.6	6.0	3.1	3.1	3.1	4.3	2.0	6.8	3.1	3.7	9.4	3.1
4	2.4	5.2	3.1	2.9	3.1	2.4	2.0	4.6	3.1	3.5	7.4	3.1
5	3.7	4.9	3.1	2.9	3.1	2.2	2.0	4.0	3.1	3.5	10.0	3.3
6	2.8	5.2	14.9	2.8	3.1	2.0	2.0	3.7	3.3	4.2	6.5	4.5
7	2.6	16.2	12.4	2.9	3.1	5.6	2.0	4.0	3.1	8.0	3.3	3.3
8	10.6	15.6	6.0	8.2	3.1	9.6	2.0	4.0	3.3	5.4	3.1	3.1
9	12.4	9.4	3.7	4.2	3.1	3.4	2.0	5.4	3.1	3.5	2.9	2.9
10	19.5	7.0	5.7	2.8	3.1	2.0	2.2	5.2	3.1	3.5	2.9	2.9
11	7.6	14.9	7.8	3.0	5.1	1.8	6.1	4.9	3.3	3.3	2.9	5.2
12	7.3	9.3	4.3	6.7	3.3	6.2	12.1	6.3	4.6	3.3	4.7	3.5
13	3.1	5.0	4.0	2.9	3.1	3.1	12.7	8.8	3.3	3.3	11.7	3.1
14	2.8	3.5	8.7	2.9	2.9	2.2	5.0	10.6	3.1	11.0	5.3	4.4
15	2.8	3.1	5.2	2.9	2.9	1.8	2.8	5.7	3.1	4.6	2.9	3.7
16	2.8	3.9	4.0	2.9	3.1	3.0	38	5.4	3.1	4.3	2.9	3.1
17	3.3	[a] 3.3	4.0	2.9	5.6	1.9	5.0	5.4	3.1	4.9	2.8	4.9
18	4.4		4.0	2.9	10.6	3.2	[a] 6.5	16.2	3.1	6.3	2.8	6.4
19	3.1	[b] 6.5	3.7	2.9	4.3	2.8	[a] 11.9	6.0	3.1	4.3	2.8	3.3
20	3.1		4.0	2.9	3.9	3.6	7.0	4.9	3.1	3.3	2.8	4.0
21	3.6		3.7	3.5	4.9	3.0	9.0	4.3	3.1	3.3	2.8	3.7
22	3.8	[b] 3.8	5.7	3.1	2.9	2.2	3.5	4.0	3.1	3.1	2.8	3.1
23	7.0		3.7	4.4	2.8	1.7	3.7	3.7	3.1	3.1	2.8	3.1
24	3.7	[a] 4.3	4.2	3.5	3.5	1.6	3.7	4.6	6.6	3.1	2.6	5.4
25	6.5	4.4	6.3	4.4	6.2	28	3.7	3.7	4.1	3.1	9.0	8.5
26	40	5.3	6.6	3.3	10.0	5.4	4.3	3.5	17.5	3.1	21	12.8
27	12.9	4.0	6.6	3.1	5.8	2.8	13.7	3.3	13.1	5.4	5.5	5.8
28	7.9	3.3	4.0	3.1	[a] 2.8	8.2	6.4	3.1	11.4	4.4	3.4	4.3
29	6.3	3.8	3.3	3.1	2.4	2.6	17.3	3.1	4.6	3.5	3.3	4.9
30	4.3	3.3	3.3	3.3	2.4	2.2	10.6	-------	8.6	12.4	3.1	7.1
31	4.3	3.1	-------	3.1	-------	2.2	8.3	-------	9.3	-------	3.1	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	40	2.4	6.53	10.1	202	621
August	16.2	----------	5.97	9.24	185	568
September	14.9	3.1	5.18	8.01	155	477
October	8.2	2.8	3.45	5.34	107	328
November	10.6	2.4	3.98	6.16	120	366
December	28	1.6	4.28	6.62	133	407
January	38	2.0	6.83	10.6	212	650
February	16.2	3.1	5.73	8.87	166	510
March	17.5	3.1	4.80	7.43	149	457
April	12.4	3.1	4.63	7.16	139	426
May	21	2.6	5.02	7.77	156	478
June	12.8	2.9	4.42	6.84	133	407
The year	40	1.6	5.07	7.84	1,860	5,690

[a] Partly estimated. [b] Estimated mean.

OLOWALU DITCH NEAR OLOWALU, MAUI

LOCATION.—Water-stage recorder 425 feet above intake to penstock of hydroelectric power station, 1 mile above Olowalu, and 7 miles east of Lahaina.

RECORDS AVAILABLE.—August, 1911, to June, 1928.

EXTREMES.—Maximum discharge during year, 12.2 million gallons a day (18.9 second-feet) Dec. 28 (gage height, 1.55 feet); minimum unknown, owing to plugged intake.

1912–1928: 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 fair except those for estimated periods, which are poor. Intake in Olowalu Stream at about 450-foot elevation. Water used for power and irrigation. Regulated by head gates.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	[a] 2.5	4.4	3.9	5.2	3.3	4.8	8.7	8.7	4.3	6.6	8.7	5.2
2	2.5	4.7	3.8	4.9	3.3	4.3	7.6	8.7	4.3	6.2	8.4	4.9
3	2.5	5.0	3.5	4.3		6.6	7.3	9.1	4.3	5.9	8.7	4.9
4	2.5	5.3	3.4	4.3		4.6	6.6	8.7	4.0	5.2	8.7	4.6
5	2.6	4.1	3.4	4.3		3.8	7.0	8.4	4.3	5.6	8.7	4.6
6	2.5	3.8	7.5	3.8		3.6	6.2	7.6	4.3	6.2	8.7	5.6
7	2.5	6.1	8.4	3.7		4.6	5.9	7.0	4.0	8.7	8.0	4.6
8	3.3	7.6	8.4	4.6	[a] 3.4	8.7	5.6	6.6	4.0	8.7	7.0	4.3
9	4.2	7.6	8.0	4.6		8.4	5.2	8.0	4.0	8.7	6.2	3.9
10	6.6	7.6	7.3	3.8		7.6	5.2	6.6	4.0	8.0	7.0	3.8
11	6.2	7.6	8.0	3.6		5.6	5.6	5.9	4.3	6.6	8.0	4.6
12	6.6	7.6	8.4	5.2		7.6	7.0	6.6	4.3	5.9	8.7	4.6
13	5.6	7.6	5.9	3.7		9.1	8.7	6.2	4.0	5.9	8.7	3.8
14	4.4	7.3	6.2	3.5		8.4	7.6	9.1	4.0	8.7	9.1	3.8
15	3.8	6.2	5.6	3.4		5.9	6.6	8.4	4.0	[b] 8.7	8.7	4.3
16	3.3	6.6	4.9	3.4		5.2	9.1	7.3	3.9	[b] 8.4	8.0	3.9
17	3.1	6.2	4.6	3.4		4.6	9.1	6.6	3.9	7.3	7.0	3.8
18	3.2	5.9	4.3	3.4	[a] 6	4.3	9.1	7.0	3.9	7.6	7.3	5.7
19	2.8	5.6	4.0	3.3		5.9	8.4	9.1	3.9	7.6	7.0	5.9
20	2.8	4.2	4.3	3.3		5.9	8.0	9.1	3.9	6.2	7.0	4.0
21	2.9	3.4	4.9	3.3		6.2	8.0	7.6	3.9	5.6	6.6	3.9
22	2.9	3.8	6.6	3.3		5.6	7.3	6.6	3.9	5.2	5.9	3.6
23	3.2	4.6	6.6	3.3	[a] 4.4	5.2	7.0	6.2	3.9	5.2	5.6	3.4
24	3.1	6.2	6.6	3.3		4.6	7.0	6.6	6.3	5.2	5.2	3.8
25	3.5	6.2	8.4	3.3		7.0	7.0	5.6	5.2	4.9	7.6	6.2
26	7.3	7.0	8.4	3.3		6.2	6.6	5.2	9.1	4.6	8.0	4.9
27	7.3	5.9	8.4	3.3	[a] 6.5	6.4	8.7	4.9	8.7	5.2	8.0	7.6
28	7.0	4.9	7.6	3.3		8.4	8.4	4.9	8.7	5.9	8.0	6.2
29	7.0	5.6	6.2	3.3	3.6	7.3	8.7	4.3	8.7	5.6	7.6	6.2
30	5.9	4.9	5.6	3.3	3.5	9.1	8.7	------	7.3	8.7	6.6	6.6
31	4.7	4.3	------	3.3	------	8.7	8.4	------	7.6	------	5.9	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	7.3	2.5	4.14	6.41	128	394
August	7.6	3.4	5.74	8.88	178	546
September	8.4	3.4	6.10	9.44	183	562
October	5.2	3.3	3.74	5.79	116	356
November	------	------	4.45	6.89	134	410
December	9.1	3.6	6.26	9.69	194	596
January	9.1	5.2	7.43	11.5	230	707
February	9.1	4.3	7.12	11.0	207	634
March	9.1	3.9	5.00	7.74	155	476
April	8.7	4.6	6.63	10.3	199	610
May	9.1	5.2	7.57	11.7	235	720
June	7.6	3.4	4.77	7.38	143	439
The year	9.1	2.5	5.74	8.88	2,100	6,450

[a] Estimated mean. [b] Partly estimated.

OHEO STREAM AT ELEVATION 1,550 FEET, NEAR KIPAHULU, MAUI

LOCATION.—Water-stage recorder at old diversion dam, about 2¼ miles above mouth and about 3 miles northwest of Kipahulu.

RECORDS AVAILABLE.—February, 1927, to June, 1928.

EXTREMES.—Maximum discharge during period, 1,780 million gallons a day (2,750 second-feet) Nov. 18 (gage height, 12.84 feet); dry several days during period.

REMARKS.—Records good for ordinary stages; high-stage records poor. No diversions. Discharge partly estimated Feb. 19, 1927.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	Feb.	Mar.	Apr.	May	June	Day	Feb.	Mar.	Apr.	May	June
1926-27						1926-27					
1	-------	44	0.86	0.64	137	16	-------	114	1.4	119	0.37
2	-------	15.9	.58	.42	74	17	-------	70	.8	38	.42
3	-------	161	.42	.37	40	18	-------	22	39	23	.42
4	-------	324	.29	42	8.2	19	0.37	7.1	30	10.2	.22
5	-------	79	.45	13.2	4.7	20	.24	6.9	36	4.0	.17
6	-------	459	.27	24	5.5	21	.22	1.9	1.7	2.8	.08
7	-------	139	.16	157	24	22	.13	.87	5.6	77	0
8	-------	177	.08	87	3.7	23	.08	.71	1.4	47	0
9	-------	59	.75	36	24	24	.17	13.9	.58	70	0
10	-------	62	8.3	63	5.6	25	38	.84	.42	31	0
11	-------	21	115	7.1	2.0	26	85	7.0	17.7	11.1	0
12	-------	13.2	117	4.3	.74	27	17.2	71	41	12.0	0
13	-------	2.0	31	11.7	.55	28	11.1	9.0	2.0	38	0
14	-------	6.2	4.1	3.6	.48	29	-------	1.6	8.8	39	0
15	-------	1.2	2.6	16.8	.51	30	-------	.97	5.8	34	1.8
						31	-------	.74	-------	116	------

Daily and monthly discharge, in million gallons a day, of Oheo Stream at elevation 1,550 feet, near Kipahulu, Maui, 1927–28—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1927–28												
1	0	2.5	1.3	25	233	76	2.3	30	0.10	28	37	0.58
2	0	9.8	.74	38	88	49	1.5	6.1	.09	38	41	.88
3	0	8.6	.64	6.1	19.3	35	1.0	7.6	.03	83	82	4.9
4	0	8.2	3.1	3.1	4.3	9.5	.84	2.4	0	28	30	.78
5	13.6	2.2	5.8	8.8	1.6	3.1	.84	1.1	0	78	44	.48
6	2.8	1.1	142	2.8	.87	14.6	.61	.42	0	25	37	1.9
7	13.3	.58	552	1.3	.64	260	.48	.24	0	36	14.8	.27
8	170	131	332	76	.51	419	.40	.22	0	22	8.2	.17
9	126	15.5	16.4	108	.93	25	.32	.19	0	3.2	3.2	.07
10	244	16.8	15.4	13.8	1.1	11.6	.29	.29	.06	1.5	265	0
11	81	96	60	6.8	17.8	189	7.4	.14	17.2	1.3	12.3	0
12	38	69	11.1	22	11.3	307	24	14.2	26	1.3	62	0
13	7.1	18.8	7.1	4.0	2.9	139	163	21	2.6	1.5	85	0
14	6.2	6.2	14.3	3.2	.71	251	62	124	.11	52	50	0
15	17.1	4.3	9.0	1.0	.48	236	34	5.8	0	18.0	5.0	9.9
16	19.5	14.0	1.8	.58	.56	140	325	2.4	0	7.6	10.7	14.1
17	4.7	16.0	.84	.45	.48	36	34	.71	0	79	1.9	.02
18	9.2	2.1	.72	.37	216	83	63	86	0	72	.84	12.7
19	13.0	7.1	6.5	.32	92	236	110	13.2	0	44	.77	3.4
20	7.6	134	25	.22	14.4	127	116	3.0	0	7.1	2.8	.21
21	5.8	24	78	.22	18.2	292	177	1.4	0	2.2	4.5	.19
22	2.3	10.2	88	.35	50	731	21	.87	0	.80	.58	.01
23	27	35	8.2	47	35	442	21	.71	0	.51	.29	0
24	7.6	96	9.4	18.1	45	325	13.8	1.0	0	.37	.17	0
25	2.5	30	33	56	131	440	3.2	.74	.31	.27	6.2	25
26	101	178	14.8	3.7	201	97	1.4	.35	308	.17	81	208
27	69	22	42	.58	133	263	8.5	.24	185	11.5	66	39
28	30	6.6	48	10.8	92	279	2.2	.19	10.2	52	28	48
29	29	26	11.1	79	26	14.0	16.9	.16	51	34	7.6	26
30	6.2	9.4	3.2	8.8	18.0	5.8	9.8	-------	178	244	2.7	116
31	2.5	3.7	-------	2.6	-------	4.0	11.6	-------	45	-------	.8	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
1926–27						
February (10 days)	85	0.08	15.3	23.7	153	470
March	459	.71	61.0	94.4	1,890	5,800
April	117	.08	15.8	24.4	474	1,450
May	157	.37	36.7	56.8	1,140	3,490
June	137	0	11.1	17.2	334	1,020
The period (132 days)	459	0	30.2	46.7	3,990	12,200
1927–28						
July	244	0	34.1	52.8	1,060	3,240
August	178	.58	32.4	50.1	1,000	3,080
September	552	.64	51.4	79.5	1,540	4,730
October	108	.22	17.7	27.4	549	1,680
November	233	.48	48.5	75.0	1,460	4,470
December	731	3.1	179	277	5,540	17,000
January	325	.29	39.8	61.6	1,230	3,790
February	124	.14	11.2	17.3	325	997
March	308	0	26.6	41.2	824	2,530
April	244	.17	32.4	50.1	972	2,980
May	265	.17	32.0	49.5	991	3,040
June	208	0	17.1	26.5	513	1,570
The year	731	0	43.7	67.6	16,000	49,100

RIGHT BRANCH OF KAHALAWE STREAM NEAR KIPAHULU, MAUI

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

RECORDS AVAILABLE.—February, 1927, to June, 1928.

EXTREMES.—Maximum discharge during year, 260 million gallons a day (402 second-feet) Feb. 18 (gage height, 9.65 feet); minimum, 0.2 million gallons a day (0.3 second-foot) Mar. 23 and 24 (gage height, 7.48 feet).

1927–28: Maximum discharge, that of Feb. 18, 1928; minimum, that of Mar. 23 and 24, 1928.

REMARKS.—Records good for ordinary stages; poor for estimated periods and high stages. Braced figures give estimated mean discharge for periods indicated. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.1		2.1	3.9		6		2.0	0.6	1.1	3.4	1.4
2	1.0		2.0	9.5	5.5			2.3	.7	1.4	2.8	2.3
3	.8		1.9	2.1				1.5	.6	4.0	12.0	2.8
4	.9	2.2	2.4	1.9				1.0	.6	5.9	3.0	1.4
5	2.0		2.4	3.8		3.2	1.8	1.0	.5	24	5.5	1.6
6	1.1		11.0	2.0				.8	.5	7.1	2.7	2.0
7	1.1		14.3	1.6	1.8			.7	.5	4.5	2.7	1.2
8	5.2		23	8.5		14		.7	.5	3.8	2.0	1.1
9	6.1		3.6	12.2				.8	1.0	2.3	3.4	1.0
10	8.5		4.8	2.4		2.4		.9	.9	5.5	8.4	.9
11	3.6	5.5	9.3	2.1		3.5		.7	.9	3.4	3.7	.9
12	2.4		3.0	4.1	5	14.1	3.0	3.6	1.0	2.7	3.1	1.5
13	1.6		3.0			16.9	7.8	6.7	.7	1.9	13.8	.9
14	1.8		3.5			7.7	1.9	5.1	.5	9.8	3.0	.9
15	2.9		2.7		1.5	8.8	2.3	1.3	.4	3.2	3.8	4.3
16	2.1	3.5	2.1			6.4	19.2	.9	.4	2.0	5.1	1.0
17	1.6		2.0	1.7		2.7	3.4	.8	.4	5.1	2.1	.9
18	2.1		1.9			4.5	3.4	13.1	.3	24	2.0	5.8
19	1.9		2.1			28	4.5	1.9	.3	7.9	2.1	2.0
20	1.6		9.3		6	9.4	6.7	1.1	.3	3.6	4.1	1.5
21	1.8	3.0	17.8			6.9	8.3	.9	.3	2.3	2.1	1.4
22	1.8	2.3	13.1			21	2.0	.9	.3	1.9	1.6	1.0
23		5.2	2.7			32	1.9	.9	.3	1.8	1.4	.9
24	3.4	9.4	3.7	6	3.5	19.4	1.8	2.0	.5	1.6	1.2	1.9
25		3.7	8.1			31	1.5	.9	2.1	1.4	3.8	4.5
26		6.9	5.5		9.5	10.9	1.2	.8	13.4	1.2	8.3	15.8
27	6.5	3.0	4.0	2.1		28	2.2	.7	5.9	4.1	4.7	6.2
28		2.3	3.8			21	1.4	.7	1.8	7.9	4.1	8.1
29		6.4	2.3	6	3.2	5.2	2.4	.7	1.7	4.3	2.1	6.8
30	2.9	2.7	2.0			3.2	1.1	-------	5.0	15.5	1.9	4.0
31		2.3	-------	2.7	-------		.9	-------	3.6	-------	1.5	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July		0.8	2.95	4.56	91.4	281
August			3.87	5.99	120	368
September	23	1.9	5.65	8.74	169	520
October	12.2		3.57	5.52	111	340
November			4.06	6.28	122	374
December	32		11.4	17.6	353	1,080
January	19.2		3.16	4.89	97.9	301
February	13.1	.7	1.91	2.96	55.4	170
March	13.4	.3	1.50	2.32	46.5	143
April	24	1.1	5.51	8.53	165	507
May	13.8	1.2	3.92	6.07	121	373
June	15.8	.9	2.87	4.44	86.0	264
The year		.3	4.20	6.50	1,540	4,720

HANAWI STREAM NEAR NAHIKU, MAUI

LOCATION.—Water-stage recorder about 200 feet above Koolau ditch intake and trail, 1¾ miles southeast of Nahiku, and 4½ miles southeast of Keanae.

RECORDS AVAILABLE.—January, 1914, to January, 1916, and November, 1921, to June, 1928.

EXTREMES.—Maximum discharge during year, 426 million gallons a day (659 second-feet) Dec. 8 (gage height, 6.20 feet); minimum, 2.0 million gallons a day (3.1 second-feet) Mar. 23–25 (gage height, 0.30 foot).

1914–1916, 1921–1928: Maximum stage from floodmarks about 20 feet (discharge not determined); minimum discharge, 1.4 million gallons a day (2.2 second-feet) July 5 and 8, 1926 (gage height, 0.17 foot).

REMARKS.—Records good for ordinary stages; fair for estimated periods; poor for extremely high and low stages. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		7.1	5.8	4.7	3.1	5.5	7.8	30	3.4	5.7	[a] 5.5	4.4
2		8.3	5.5	4.6	2.7	5.9	7.8	17.7	3.2	5.4		4.2
3		7.3	5.1	4.3	2.7	8.9	8.0	12.7	3.1	3.2		3.9
4		6.3	4.9	4.2	2.5	5.2	8.0	8.8	3.0	2.9		3.9
5	[a] 2.5	5.3	4.9	4.1	2.5	4.7	8.0	7.5	2.9	2.7	[a] 12	4.2
6		5.1	40	3.8	2.4	7.6	7.7	6.7	2.8	52		5.7
7		5.3	58	3.7	2.4	36	7.3	6.3	2.7			3.7
8	[a] 13	18.4	39	6.3	3.2	127	7.0	6.2	2.7	[a] 22		3.5
9	22	11.2	8.7	6.2	2.4	15.3	6.6	6.1	2.7		[a] 6	3.2
10	52	9.6	8.2	4.2	2.7	8.4	5.9	6.2	2.6			3.2
11	21	42	12.0	3.9	3.4	49	6.2	6.1	2.7	[a] 2.6		3.5
12	16.2	14.6	8.2	5.0	2.9	21	11.5	7.0	3.0		[a] 75	3.6
13	7.2	9.2	6.7	4.0	2.4	13.5	53	19.3	2.5			3.0
14	5.8	7.8	11.3	3.8	2.4	8.1	33	45	2.4	[a] 24	[a] 16	3.0
15	4.4	6.8	8.4	3.6	2.4	7.2	8.4	7.2	2.3			3.5
16	3.9	8.4	6.3	3.4	2.3	7.5	92	6.4	2.2			3.0
17	3.8	7.2	5.8	3.2	92	7.1	12.2	5.8	2.2			2.9
18	3.7	8.7	5.5	3.1	104	8.8	13.6	5.6	2.2			5.9
19	3.5	8.4	5.2	3.2	14.6	19.5	13.7	5.2	2.1	[a] 4.5		3.8
20	3.8	25	5.2	5.6	6.7	19.9	12.3	4.8	2.1		[a] 4.0	3.3
21	5.1	8.0	5.1	3.9	6.6	16.1	17.4	4.6	2.1			3.2
22	5.4	6.6	5.0	4.4	8.2	125	8.4	4.4	2.1			3.2
23	7.3	7.0	4.9	3.8	7.4	21	9.8	4.3	2.0			3.0
24	5.1	20	6.3	4.2	6.8	11.2	7.3	5.4	2.1			4.7
25	4.9	8.8	6.1	7.4	16.9	85	6.1	5.1	2.1		[b] 6.6	8.1
26	24	7.7	5.5	4.3	29	19.4	5.7	3.9	121	[a] 28	17.6	21
27	12.8	8.2	7.7	3.6	13.3	43	12.8	3.8	56		10.5	9.0
28	8.4	7.2	7.4	3.4	7.2	77	8.2	3.6	5.2		6.3	11.7
29	9.5	9.9	5.6	3.2	5.5	10.3	12.6	3.5	2.7		5.7	10.2
30	6.4	7.6	5.0	3.0	4.7	8.6	12.5	-------	7.4		5.1	40
31	5.8	6.6	-------	2.9	-------	8.1	12.3	-------	7.3	-------	4.7	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	52	----------	8.79	13.6	272	836
August	42	5.1	10.3	15.9	320	980
September	58	4.9	10.4	16.1	313	957
October	7.4	2.9	4.16	6.44	129	396
November	104	2.3	12.2	18.9	365	1,120
December	127	4.7	26.2	40.5	811	2,490
January	92	5.7	14.3	22.1	443	1,360
February	45	3.5	8.94	13.8	259	796
March	121	2.0	8.48	13.1	263	807
April	----------	----------	15.2	23.5	456	1,400
May	----------	----------	14.0	21.7	432	1,330
June	40	2.9	6.32	9.78	190	582
The year	----------	2.0	11.6	17.9	4,250	13,700

[a] Estimated mean. [b] Partly estimated.

KAPAULA STREAM NEAR NAHIKU, MAUI

LOCATION.—Water-stage recorder 150 feet above intake to Koolau ditch, 300 feet above ditch trail, 1¾ miles southwest of Nahiku, and 4 miles southeast of Keanae.

RECORDS AVAILABLE.—November, 1921, to June, 1928.

EXTREMES.—Maximum discharge during year, 462 million gallons a day (715 second-feet) Dec. 8 (gage height, 5.27 feet); minimum, 1.1 million gallons a day (1.7 second-feet) Mar. 23 (gage height, 0.49 foot).

1922–1928: Maximum discharge, 868 million gallons a day (1,340 second-feet) Dec. 13, 1921 (gage height, 8.45 feet); minimum, 0.6 million gallons a day (0.9 second-foot) July 5, 1926 (gage height, 0.39 foot).

REMARKS.—Records good for ordinary stages, fair for estimated periods (Sept. 25 to Nov. 20), and poor for high stages. Control was changed during April by new diversion dam just below station.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.6	4.5	3.4	2.4		3.5	4.4	39	1.8	5.6	4.0	1.9
2	1.6	6.3	2.8	2.2		4.2	4.1	23	1.7	5.0	2.9	1.8
3	1.5	5.1	2.6			8.3	3.8	13.8	1.8	2.6	8.9	1.8
4	1.4	4.0	2.3			3.4	3.8	7.3	1.7	1.8	9.9	1.8
5	1.6	3.0	2.2	2.0		2.7	3.9	5.6	1.7	1.6	11.1	1.9
6	1.8	2.7	57			7.9	3.4	4.7	1.7	71	13.1	3.5
7	1.7	3.1	63			46	3.2	4.1	1.6	55	4.4	2.3
8	31	21	34			121	3.1	3.8	1.6	7.3	3.2	1.8
9	36	15.8	4.9		1.6	10.8	3.1	3.6	1.6	2.7	2.4	1.7
10	71	7.3	4.9	2.9		4.1	2.9	3.4	1.6	2.0	6.0	1.7
11	25	60	16.7			40	3.2	3.0	1.8	1.8	55	1.8
12	23	12.8	6.8			18.8	19.5	3.6	1.9	1.6	109	2.1
13	5.9	6.3	4.4			10.6	71	19.8	1.6	1.7	156	1.8
14	4.7	5.2	11.6			4.7	31	42	1.5	43	19.0	1.6
15	3.6	4.6	8.4			3.8	7.6	4.1	1.4	6.2	4.3	2.0
16	3.2	9.3	4.0	1.8		4.4	96	3.5	1.4	2.7	3.2	1.8
17	2.9	5.9	3.4			4.4	11.6	3.0	1.4	2.7	2.8	1.6
18	3.0	8.0	3.1		118	6.7	14.4	3.0	1.4	2.3	2.4	4.4
19	2.8	8.8	2.8			22	15.8	3.0	1.4	2.9	2.3	3.0
20	2.8	35	2.6		9	20	12.1	2.7	1.2	4.3	2.2	1.9
21	4.0	5.8	2.6									
22	4.3	4.0	2.4	2.3	4.6	14.9	21	2.4	1.2	3.0	2.0	1.8
23	6.4	4.9	2.8		6.9	109	7.1	2.2	1.2	2.0	1.8	1.8
24	3.9	29	2.9		6.0	14.6	17.0	2.2	1.2	1.8	1.8	1.7
25	3.1	7.6			5.2	7.7	6.5	4.0	1.2	1.6	1.7	2.2
26	45	5.4		3.2	22	100	4.4	3.4	1.4	1.5	4.3	6.9
27	12.9	6.3	3.2		39	12.6	3.8	2.3	89	1.4	19.8	21
28	6.4	4.7			11.6	32	16.8	2.0	50	1.6	9.4	8.0
29	8.2	9.5			4.6	74	7.9	1.9	5.1	1.5	3.8	9.1
30	4.0	5.4		1.9	3.1	7.3	14.6	1.8	2.3	1.4	2.9	8.8
31	3.4	3.9			2.7	5.4	19.8	------	8.6	24	2.3	31
					------	4.9	15.1	------	10.5	------	2.0	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	71	1.4	10.6	16.4	328	1,010
August	60	2.7	10.2	15.8	315	970
September	63	------	9.03	14.0	271	831
October	------	------	2.24	3.47	69.5	213
November	------	------	12.8	19.8	385	1,180
December	121	2.7	23.5	36.4	730	2,240
January	96	2.9	14.6	22.6	452	1,390
February	42	1.8	7.52	11.6	218	669
March	89	1.2	6.56	10.1	204	624
April	71	1.4	8.79	13.6	264	809
May	156	1.7	15.3	23.7	474	1,460
June	31	1.6	4.48	6.93	134	412
The year	156	------	10.5	16.2	3,840	11,800

KOOLAU DITCH AT NAHIKU WEIR, NEAR NAHIKU, MAUI

LOCATION.—Water-stage recorder between Kapaula and Waiohue Streams, 2 miles southwest of Nahiku, and 4 miles southeast of Keanae.

RECORDS AVAILABLE.—February, 1919, to June, 1928.

EXTREMES.—Maximum discharge during year, uncertain owing to missing record; no flow Aug. 20, Dec. 10 to Jan. 28 (water shut out of ditch).

1919–1928: Maximum discharge, 47.8 million gallons a day (74.0 second-feet) Sept. 3, 1919 (gage height, 1.48 feet); occasionally no flow when intake gates are closed.

REMARKS.—Records excellent except those for extremely low stages, which are good; estimated records (Aug. 18–19, Sept. 3 to Oct. 3, and June 1–30) poor. Regulated by spillways and gates. Diverts at elevation of 1,200 feet from all streams between Makapipi and Alo Streams.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	7.3	21	22		11.0	24	0	34	12.6	19.9	22	
2	7.3	26	19.9	16	9.8	24	0	32	12.0	19.2	19.2	
3	7.1	24			9.3	30	0	34	11.3	13.2	32	
4	6.8	22	17	13.9	8.7	23	0	30	11.0	10.7	34	
5	7.1	19.2		13.6	8.4	20	0	30	10.7	9.8	34	
6	7.3	17.8		12.9	7.9	21	0	28	10.4	15.5	34	
7	6.8	17.8		12.3	7.9	38	0	24	10.1	36	26	
8	26	30		19.4	10.9	21	0	23	9.5	32	23	
9	34	24		19.9	8.4	2.0	0	22	9.3	23	19.6	
10	36	30	32	15.6	8.1	.5	0	21	8.7	18.5	28	16
11	32	34		13.9	10.1	1.3	0	21	9.0	16.0	28	
12	34	34		16.4	9.3	.2	0	23	10.1	13.6	40	
13	23	32		13.9	8.4	0	0	23	8.4	12.6	42	
14	21	30		12.9	7.6	0	0	32	8.4	32	40	
15	17.4	26		12.3	7.6	0	0	24	7.9	24	40	
16	16.0	28		11.6	7.6	0	0	24	7.6	19.6	36	
17	15.0	24	22	11.0	26	0	0	22	7.3	18.5	30	
18	14.6	23		10.7	38	0	0	21	7.1	17.1	26	24
19	13.6			10.7	34	0	0	20	6.8	19.9	23	
20	13.6	31		16.0	26	0	0	18.9	6.6	26	21	
21	16.4	32	15	12.9	24	0	0	17.8	6.3	21	20	15
22	17.4	26		13.9	26	0	0	16.4	6.3	17.1	19.2	
23	23	26		13.6	26	0	0	16.4	6.1	15.3	18.1	
24	18.5	36		14.6	26	0	0	20	5.9	13.9	17.4	
25	16.7	32		22	34	0	0	19.9	5.9	12.9	18.9	
26	34	30	24	16.4	38	0	0	16.0	29	12.3	30	
27	32	32		13.6	36	0	0	14.6	30	12.0	32	32
28	28	28		12.3	28	0	10.0	14.2	16.2	11.6	24	
29	32	32		11.6	23	0	30	13.2	9.3	13.2	21	
30	24	28		11.0	21	0	34	-------	20	36	19.6	
31	21	24	-------	10.7	-------	0	34	-------	24	-------	17.8	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	36	6.8	19.6	30.3	609	1,860
August	36	17.8	27.2	42.1	843	2,590
September	-------	-------	24.0	37.1	719	2,210
October	22	10.7	14.1	21.8	438	1,340
November	38	7.6	18.2	28.2	547	1,680
December (12 days)	38	0	17.1	26.5	205	630
January (4 days)	34	0	27.0	41.8	108	331
February	34	13.2	22.6	35.0	655	2,010
March	30	5.9	11.1	17.2	344	1,060
April	36	9.8	18.7	28.9	562	1,720
May	42	17.4	27.0	41.8	836	2,570
June	-------	-------	19.6	30.3	587	1,800
The year (320 days)	-------	0	20.2	31.3	6,450	19,800

WAIOHUE STREAM NEAR NAHIKU, MAUI

LOCATION.—Water-stage recorder about 200 feet above intake to Koolau ditch, 300 feet above ditch trail, 2¼ miles southeast of Nahiku and 3½ miles southeast of Keanae.

RECORDS AVAILABLE.—October, 1921, to June, 1928.

EXTREMES.—Maximum discharge during year, 465 million gallons a day (719 second-feet) Dec. 9 (gage height, 5.10 feet); minimum, 2.4 million gallons a day (3.7 second-feet) Mar. 25 (gage height, 0.63 foot).

1922–1928: Maximum discharge, 544 million gallons a day (842 second-feet) Apr. 17, 1927 (gage height, 5.63 feet); minimum, 1.7 million gallons a day (2.6 second-feet) Apr. 11, 1926 (gage height, 0.52 foot).

REMARKS.—Records good for ordinary stages, fair for estimated periods, and poor for extremely high and low stages. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1				[a] 4.7		6.0	7.0	17.9	3.5	4.5	4.7	4.0
2				[b] 4.6		6.1	6.6	17.3	3.5	4.7	4.7	3.9
3			[a] 5.5	4.2		8.5	6.1	11.4	3.4	3.6	10.2	3.8
4				4.2		5.6	5.9	8.7	3.3	3.4	8.1	3.7
5	[a] 3.7	[a] 6.5		4.2		5.0	5.6	7.6	3.2	3.4	7.8	3.8
6				4.0		4.6	6.1	7.0	3.2	47	7.0	5.7
7			[a] 36	3.9		16.0	5.1	6.6	3.2	37	5.6	3.9
8				7.8		53	4.8	6.2	3.1	7.5	4.8	3.6
9				5.7	[a] 3.2	37	4.7	5.9	3.1	4.7	4.6	3.5
10	[a] 13	[a] 15		4.4		6.4	4.6	5.8	3.0	4.4	7.1	3.3
11			[a] 11	4.0		27	4.8	5.3	3.2	4.2	53	3.6
12				5.2		7.4	9.5	6.1	3.4	4.0	47	4.0
13				4.2		13.9	26	18.7	2.9	4.4	79	3.3
14				4.0		7.6	11.4	17.2	2.8	28	11.4	3.3
15				3.8		6.2	5.8	5.4	2.8	6.2	6.8	3.9
16		[a] 9		3.7		6.4	42	5.0	2.7	5.0	6.2	3.4
17				3.6	[a] 55	6.4	8.7	4.7	2.7	4.8	5.9	3.2
18				3.5		8.4	10.2	4.6	2.7	4.7	5.8	8.2
19	[a] 6			3.5	[a] 9.5	7.4	12.4	4.6	2.6	5.7	5.4	4.2
20		19.1	[a] 5.5	5.1		19.4	9.8	4.5	2.6	6.8	5.3	3.6
21		6.8		4.0	5.1	12.5	15.7	4.2	2.6	5.3	4.8	3.5
22		[a] 7.5			4.8	21	7.8	4.1	2.5	4.4	4.6	3.5
23					5.1	42	10.0	4.0	2.5	4.4	4.4	3.2
24		[a] 16			5.6	11.8	7.2	5.8	2.5	4.0	4.1	4.0
25					10.9	8.9	6.4	4.4	2.6	3.9	5.2	5.9
26			[a] 6.5	[a] 4.4	16.7	51	6.1	3.9	21	3.8	12.7	12.8
27	[a] 14				10.9	10.0	11.8	3.8	15.0	4.0	8.0	6.9
28		[a] 8.5			6.6	19.3	8.2	3.7	4.2	3.6	5.0	6.8
29					5.8	34	10.1	3.6	3.2	3.8	4.5	7.0
30	[a] 7.5				5.4	8.9	11.1	-------	6.3	17.2	4.1	17.5
31			-------		-------	7.6	9.4	-------	5.5	-------	4.1	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July			7.75	12.0	240	737
August			9.92	15.3	307	944
September			10.1	15.6	302	930
October			4.40	6.81	136	419
November			8.57	13.3	257	789
December	53	4.6	15.7	24.3	485	1,490
January	42	4.6	9.71	15.0	301	924
February	18.7	3.6	7.17	11.1	208	638
March	21	2.5	4.15	6.42	129	395
April	47	3.4	8.28	12.8	248	762
May	79	4.1	11.4	17.6	352	1,080
June	17.5	3.2	5.03	7.78	151	463
The year			8.52	13.2	3,120	9,570

[a] Estimated mean. [b] Partly estimated.

WEST KOPILIULA STREAM NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder about 600 feet above Koolau ditch crossing and highway bridge and 3 miles southeast of Keanae post office.

RECORDS AVAILABLE.—January, 1914, to September, 1917, and October, 1921, to June, 1928.

EXTREMES.—Maximum discharge during year, 939 million gallons a day (1,450 second-feet) Apr. 6 (gage height, 5.96 feet); minimum, 2.2 million gallons a day (3.4 second-feet) Mar. 23–24 (gage height, 1.18 feet).

1914–1917, 1921–1928: Maximum discharge, about 2,000 million gallons a day (3,090 second-feet) Jan. 18, 1916 (gage height, 9.25 feet); minimum discharge, 0.6 million gallons a day (0.9 second-foot) Sept. 15–17, 1917 (gage height, 0.6 foot).

REMARKS.—Records fair for ordinary stages; poor for estimated periods and high stages. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1			7.8	6.1	4.2	8.7	8.2	[a] 50	3.6	11.2	4.8	4.0
2			7.0	6.0	3.8	8.9	7.6		3.5	8.4	4.2	3.9
3			6.8	5.4	3.5	13.3	6.8		3.4	5.1	12.1	3.8
4			6.4	5.4	3.5	7.2	7.0	[a] 17	3.3	4.2	11.4	3.7
5	[a] 3.8	[a] 8.5	7.0	5.1	3.5	6.2	8.8		3.1	3.9	14.8	
6			73	4.8	3.2	13.4	6.1		3.1	131	13.8	
7			81	4.7	2.9	35	6.0		3.0	84	6.7	
8			55	10.2	5.7	155	5.6		3.0	13.9	5.4	
9	[a] 10		13.3	6.7	3.2	26	5.5	[a] 7	2.9	6.4	4.9	
10		[a] 25	11.3	4.8	3.6	11.3	5.1		2.9	4.9	6.6	
11	[a] 60		26	4.6	6.6	27	5.9		3.2	4.3	103	[a] 3.9
12			14.7	7.0	4.3	25	18.0		3.5	4.0	172	
13	[a] 20		11.4	4.8	3.3	20	101	[a] 36	2.8	4.2	183	
14			18.9	4.8	3.0	12.8	81		2.8	47	33	
15			13.4	4.5	3.0	9.5	15.3		2.7	10.0	10.1	
16			9.8	4.2	3.1	9.0	169		2.5	5.8	7.1	
17		[a] 16	8.2	4.1	163	8.7	24		2.5	5.0	6.0	
18	[a] 7		7.6	4.0	150	10.2	21	[a] 6.5	2.5	4.4	5.6	[a] 10
19			7.0	4.9	23	21	19.4		2.5	4.9	5.2	
20			7.2	8.2	10.9	23	16.1		2.5	6.4	5.2	
21			6.6	5.5	9.5	16.8	23		2.4	4.9	4.8	[a] 3.7
22		9.9	6.6	6.1	11.2	108			2.3	4.1	4.6	
23	9.8	11.9	6.2	5.4	10.0	23		5.0	2.3	4.0	4.3	
24	6.8	38	9.5	6.0	9.4	15.1		7.5	2.4	3.8	4.2	[a] 8
25	14.4	15.0	7.6	10.2	24	180	[a] 16	5.6	3.0	3.7	9.2	
26	61	12.1	7.1	5.4	51	34		4.7	199	3.6	32	
27	19.2	12.2	10.6	4.7	18.8	62		4.5	106	3.9	17.5	
28	15.8	10.2	10.3	4.5	11.1	143		4.3	14.8	3.4	6.4	[a] 22
29	12.4	15.8	7.0	4.2	8.0	17.9		4.0	6.7	3.8	5.2	
30	[a] 8	10.5	6.1	4.1	6.8	11.9	[a] 33	-------	12.5	27	4.6	
31		8.8	-------	4.0	-------	9.5		-------	14.5	-------	4.1	-------

Month	Discharge			Total run-off		
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	----------	----------	13.7	21.2	425	1,300
August	----------	----------	15.3	23.7	473	1,460
September	81	6.1	15.7	24.3	470	1,450
October	10.2	4.0	5.50	8.51	170	523
November	163	2.9	18.9	29.2	567	1,740
December	180	6.2	34.6	53.5	1,070	3,290
January	169	5.1	24.9	38.5	771	2,370
February	----------	----------	12.4	19.2	360	1,100
March	199	2.3	13.7	21.2	425	1,300
April	131	3.4	14.4	22.3	431	1,330
May	183	4.1	23.0	35.6	712	2,190
June	----------	----------	7.35	11.4	221	677
The year	----------	----------	16.7	25.8	6,100	18,700

[a] Estimated mean.

EAST WAILUAIKI STREAM NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder about 1,000 feet above Koolau ditch crossing and trail and 3 miles southeast of Keanae post office.

RECORDS AVAILABLE.—December, 1913, to October, 1917, and July, 1922, to June, 1928.

EXTREMES.—Maximum discharge during year, 857 million gallons a day (1,330 second-feet) Apr. 6 (gage height, 6.92 feet); minimum, 2.6 million gallons a day (4.0 second-feet) Mar. 23–24 (gage height, 0.46 foot).

1913–1917, 1922–1928: 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 and 23, 1917 (gage height, 0.50 foot), and Aug. 1 and 2, 1922 (gage height, 0.37 foot).

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 fair to good for ordinary stages, fair for estimated periods, and poor for high stages. No diversions.

Daily and monthly discharge, in million gallons a day, 1927-28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		9.3	6.9	5.1	3.6	7.0	7.4	57	4.0	11.5	6.5	4.2
2		9.8	6.2	5.0	3.3	7.7	6.7	29	3.9	7.9	4.9	3.9
3	[a]3.8	8.5	6.0	4.6	3.2	12.0	6.2	19.0	3.8	4.7	18.2	3.9
4		7.5	5.4	4.7	3.0	5.9	6.2	11.8	3.7	4.0	18.1	3.8
5		6.4	6.0	4.4	3.0	5.2	6.4	9.8	3.5	3.6	22	4.3
6	[a]5	6.4	82	4.2	3.0	17.0	5.4	8.5	3.4	103	20	8.2
7		6.8	68	4.0	2.9	33	5.1	7.8	3.3	120	7.9	3.9
8		27	52	10.7	4.2	158	5.0	7.2	3.2	21	6.3	3.6
9	[a]12	18.9	10.4	6.6	2.9	21	4.7	7.0	3.2	7.8	6.3	3.5
10		15.2	9.1	4.3	3.3	9.2	4.6	6.8	3.2	5.8	7.1	3.5
11	[a]44	70	22	4.2	7.3	18.3	5.6	6.2	3.3	4.7	100	4.1
12		21	11.1	6.7	4.2	15.1	24	7.8	3.6	4.2	157	4.9
13		11.4	8.5	4.4	3.0	14.2	99	17.8	3.0	4.8	219	3.5
14		9.8	15.0	4.3	2.9	9.4	67	70	2.9	76	35	3.5
15	[a]9	8.5	11.1	4.0	2.8	7.5	12.9	8.6	2.9	15.7	12.0	4.2
16		11.8	7.5	3.8	2.8	7.2	154	6.7	2.8	7.2	8.6	3.4
17	[b]5.6	9.0	6.6	3.7	183	7.8	20	6.2	2.8	5.9	7.2	3.3
18	5.9	11.8	6.1	3.5	154	9.1	18.4	5.8	2.8	4.9	6.3	12.3
19	5.7	11.8	5.8	4.3	19.1	17.3	17.1	5.6	2.8	5.4	5.7	4.9
20	5.7	42	5.8	8.5	9.1	23	13.9	5.3	2.7	8.9	5.5	3.9
21	8.2	9.8	5.4	5.0	8.1	14.6	20	5.0	2.7	5.7	4.9	3.8
22	7.4	8.0	5.4	5.5	9.6	90	10.8	4.9	2.6	4.4	4.6	3.9
23	10.2	10.1	5.2	4.6	8.5	16.6	19.9	4.8	2.6	4.2	4.3	3.5
24	6.7	35	8.4	5.2	8.0	12.3	10.8	7.1	2.7	3.9	4.1	9.2
25	6.5	11.8	6.8	9.8	22	151	8.5	6.0	3.2	3.8	18.5	14.9
26	56	9.5	6.1	4.9	38	27	7.7	4.7	188	3.6	43	42
27	26	10.3	9.9	4.2	14.0	51	21	4.4	102	4.0	22	18.9
28	12.0	8.9	8.8	3.9	8.4	117	13.7	4.3	14.1	3.5	7.4	17.8
29	12.1	13.9	6.3	3.7	6.5	14.9	20	4.2	5.5	3.8	5.8	17.1
30	7.9	9.4	5.4	3.5	5.6	9.8	33	-------	10.8	37	4.9	51
31	7.2	7.9	-------	3.5	-------	8.5	25	-------	15.4	-------	4.5	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	-------	-------	13.1	20.3	405	1,250
August	70	6.4	14.8	22.9	458	1,410
September	82	5.2	14.0	21.7	419	1,290
October	10.7	3.5	4.99	7.72	155	475
November	183	2.8	18.3	28.3	549	1,680
December	158	5.2	29.6	45.8	918	2,820
January	154	4.6	21.9	33.9	680	2,080
February	70	4.2	12.0	18.6	349	1,070
March	188	2.6	13.4	20.7	414	1,270
April	120	3.5	16.7	25.8	501	1,540
May	219	4.1	25.7	39.8	798	2,440
June	51	3.3	9.10	14.1	273	838
The year	219	2.6	16.2	25.1	5,920	18,200

[a] Estimated mean. [b] Partly estimated.

WEST WAILUAIKI STREAM NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder 500 feet above Koolau ditch crossing and trail bridge and 2¾ miles south of Keanae post office.

RECORDS AVAILABLE.—January, 1914, to October, 1917, and November, 1921, to June, 1928.

EXTREMES.—Maximum and minimum discharge during year uncertain owing to plugged intake.

1914–1917, 1921–1928: 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 (0.45 second-foot) July 26, 1922 (gage height, 0.44 foot).

REMARKS.—Records good for ordinary stages except from July 1 to Jan. 10 when intake was partly plugged and they were poor; extremely high-stage records poor. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1				a 5.6	5.0	8.7	8.7	76	3.2	17.2	7.8	4.3
2				5.0	4.2	8.5	7.5	38	3.0	10.8	5.6	3.9
3			a 7.5	4.0		14.2	6.7	29	2.8	6.5	18.3	3.6
4				4.0		6.5	6.6	18.0	2.6	5.3	20	3.5
5	a 3.1	a 9.5		3.9	a 3.2	5.3	6.9	12.8	2.5	4.6	28	4.2
6				3.7		16.3	5.4	10.5	2.2	245	23	8.5
7			a 90	4.6		38	5.1	8.9	2.1	156	10.1	4.0
8				10.7	7.6	245	4.9	8.1	2.0	29	15.7	3.2
9	a 14	a 24		8.8	3.3	30	4.4	7.1	1.9	11.3	9.9	2.8
10	136			7.0	3.9	10.9	4.1	7.0	1.8	7.9	8.6	2.9
11		80		6.8	13.8	17.5	5.1	6.0	2.0	6.2	219	3.8
12	a 36	a 25	a 17	9.2	7.1	16.2	31	8.3	2.2	5.3	214	4.1
13				5.0	4.7	23	148	115	1.6	5.4	322	2.8
14					4.2	18.0	92	109	1.4	79	46	2.8
15					5.7	12.4	19.0	10.5	1.4	21	15.8	3.5
16		a 14		a 3.7	8.1	10.1	236	7.9	1.4	9.5	10.7	2.6
17					330	9.2	29	6.3	1.2	7.1	8.3	2.4
18					284	12.0	28	6.2	1.2	6.0	7.0	11.3
19	a 8			12.4	46	21	22	6.3	1.1	6.5	6.0	5.4
20		a 55	a 8	12.3	17.2	32	19.0	5.3	1.2	8.0	5.7	3.9
21				6.0	13.1	17.7	26	4.9	1.4	6.0	5.0	3.9
22		a 12		8.1	13.8	93	15.0	4.6	1.1	4.7	4.6	3.9
23				6.2	11.7	23	30	4.6	1.0	4.2	4.2	3.2
24		a 50		7.0	10.5	17.0	15.0	7.7	1.3	3.9	3.9	10.1
25				11.9	29	232	10.7	7.2	2.2	3.3	18.6	17.0
26	107			6.2	54	44	9.3	4.6	327	3.0	53	49
27	a 22	a 14	a 8.5	5.6	22	71	29	4.0	138	3.7	24	25
28				5.1	12.2	163	19.0	3.6	22	2.8	9.3	21
29				4.6	8.5	21	30	3.3	8.1	3.2	6.7	20
30	a 9.5			4.3	6.7	13.3	49	-------	13.4	35	5.4	65
31			-------	3.9	-------	10.5	38	-------	22	-------	4.9	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	136	----------	18.4	28.5	569	1,750
August	80	----------	18.7	28.9	580	1,780
September	----------	----------	18.3	28.3	550	1,680
October	12.4	----------	6.14	9.50	190	584
November	330	----------	31.4	48.6	942	2,890
December	245	5.3	40.7	63.0	1,260	3,870
January	236	4.1	31.0	48.0	960	2,950
February	115	3.3	18.6	28.8	541	1,660
March	327	1.0	18.6	28.8	576	1,770
April	245	2.8	23.9	37.0	717	2,200
May	322	3.9	36.8	56.9	1,140	3,500
June	65	2.4	10.1	15.6	302	930
The year	330	----------	22.8	35.3	8,330	25,600

a Estimated mean.

EAST WAILUANUI STREAM NEAR KEANAE, MAUI

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

RECORDS AVAILABLE.—January, 1914, to October, 1917, and November, 1921, to June, 1928.

EXTREMES.—Maximum discharge during year, 661 million gallons a day (1,020 second-feet) Dec. 8 (gage height, 5.03 feet, affected by scour); minimum, 0.2 million gallons a day (0.3 second-foot) Mar. 22–25 (gage height, 0.30 foot).

1914–1917, 1921–1928: Maximum discharge, 1,050 million gallons a day (1,620 second-feet) Feb. 12, 1925 (gage height, 6.96 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Apr. 11, 1926 (gage height, 0.28 foot).

REMARKS.—Records good for ordinary stages; poor for estimated periods and high stages. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.8	3.0	2.4	1.6		3.8	2.8	7.5	0.9	3.7	2.1	1.2
2	.8	4.2	2.0	1.7		4.1	2.3	10.8	.8	3.0	1.9	1.1
3	.8	3.6	1.9	1.3		7.7	2.0	6.1	.8	1.7	7.9	1.1
4	.8	2.6	1.8	1.3		3.1	2.1	3.6	.8	1.4	6.5	1.1
5	1.0	2.0	1.9	1.2		2.8	[a] 2.1	2.8	.7	1.2	7.5	1.3
6	1.1	2.2	30	1.1		9.4	[b] 1.9	2.4	.7	40	4.8	4.0
7	.9	2.7	21	1.1		10.6	[a] 1.8	2.1	.7	35	2.8	1.3
8	7.2	16.6	15.6	5.4		80	1.7	2.0	.6	5.6	2.1	1.0
9	7.6	8.1	3.6	2.6	[b] 0.7	6.7	[b] 1.8	1.9	.7	2.3	1.8	.9
10	9.5	5.0	3.3	1.4		3.8	[a] 1.4	1.8	.7	1.8	2.4	.9
11	8.7	19.8	4.0	1.4		6.3	2.0	1.7	.7	1.7	51	1.3
12	9.9	6.9	2.6	2.6		5.4	6.9	2.1	.8	1.3	28	1.8
13	3.8	4.7	2.3	1.4		5.1	13.1	6.6	.5	1.6	77	1.0
14	2.8	4.0	5.7	1.3		3.5	8.2	10.6	.5	42	8.2	1.1
15	2.0	3.1	3.2	1.2		3.0	3.5	1.9	.5	3.6	3.3	1.4
16	1.9	3.8	2.1	1.1		3.1	31	1.7	.5	2.3	2.3	1.0
17	1.8	3.0	1.9	1.1	[b] 80	3.8	5.4	1.6	.4	1.9	2.0	.9
18	1.8	5.8	1.8	[a] 1.0		4.8	6.3	1.6	.4	1.7	1.9	7.2
19	1.7	6.7	1.6			11.5	7.2	1.6	.4	1.7	1.7	1.9
20	1.8	19.0	1.6		[b] 5.5	15.1	5.8	1.3	.3	2.8	1.7	1.6
21	3.1	4.0	1.4			7.7	10.3	1.1	.3	2.1	1.4	1.4
22	2.4	3.0	1.3			40	4.2	1.1	.3	1.6	1.3	1.4
23	4.0	4.7	1.3		4.5	7.5	4.7	1.1	.2	1.4	1.2	1.2
24	2.1	19.6	3.8		4.5	5.1	3.5	3.3	.4	1.3	1.1	4.3
25	2.1	4.9	2.4	[b] 1.0	11.5	30	2.6	1.6	.9	1.2	4.5	4.5
26	15.6	4.0	2.0		18.9	6.6	2.4	1.1	9.1	1.1	10.5	12.3
27	6.4	4.8	4.1		7.9	16.3	8.3	1.0	6.4	1.3	5.2	5.4
28	5.4	3.8	2.8		4.5	21	4.7	1.0	2.0	1.0	2.1	[b] 5.5
29	6.4	8.4	1.9		3.3	4.9	6.6	.9	1.1	1.2	1.8	
30	3.1	4.5	1.7		3.0	3.5	5.6	-------	4.7	16.8	1.6	[b] 14
31	2.4	3.3	-------		-------	3.0	3.8	-------	5.1	-------	1.4	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	15.6	0.8	3.86	5.97	120	367
August	19.8	2.0	6.19	9.58	192	589
September	30	1.3	4.43	6.85	133	408
October	5.4	----------	1.38	2.14	42.8	131
November	----------	----------	8.38	13.0	251	772
December	80	2.8	10.9	16.9	339	1,040
January	31	1.4	5.35	8.28	166	509
February	10.8	.9	2.89	4.47	83.9	257
March	9.1	.2	1.38	2.14	42.9	131
April	42	1.0	6.18	9.56	185	569
May	77	1.1	8.03	12.4	249	764
June	----------	.9	2.95	4.56	88.6	272
The year	----------	.2	5.17	8.00	1,890	5,810

[a] Partly estimated. [b] Estimated mean.

WEST WAILUANUI STREAM NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder 150 feet above Koolau ditch crossing and intake and 2¼ miles south of Keanae post office.

RECORDS AVAILABLE.—December, 1913, to October, 1917, and July, 1922, to June, 1928.

EXTREMES.—Maximum discharge during year, 348 million gallons a day (538 second-feet) Nov. 17 (gage height, 3.93 feet); minimum, 0.4 million gallons a day (0.6 second-foot) Mar. 23 (gage height, 0.51 foot).

1914–1917, 1923–1928: Maximum discharge, 1,220 million gallons a day (1,890 second-feet) Jan. 14, 1923 (gage height, 7.70 feet); minimum, 0.2 million gallons a day (0.3 second-foot) July 16–21, 1922 (gage height, 0.50 foot).

REMARKS.—Records good for ordinary stages, fair for estimated periods, and poor for extremely high stages. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.6	4.6		[a]2.1		4.4	3.4	27	1.3	6.8	3.1	
2	.6	6.0				6.8	3.1	17.8	1.3	4.6	2.2	[a]1.8
3	.6	5.2	[a]3.0	1.8		5.7	2.5	10.2	1.2	2.5	10.7	
4	.6	4.0		1.8		3.2	2.6	6.8	1.2	1.9	9.5	
5	.8	3.4		1.6		2.8	2.6	4.8	1.1	1.7	11.0	
6	1.0	4.6	[a]50	1.4		12.0	1.8	4.0	1.0	61	8.6	[a]3.7
7	.7	6.2	3.8	1.3		23	1.8	3.2	.9	68	4.6	
8	[a]9.5	14.8	38	7.0		79	1.7	3.2	.8	14.8	6.7	
9		12.1	9.1	2.1	[a]0.8	17.9	1.6	2.8	.8	5.7	4.2	
10	56	7.3	6.8	1.4		6.0	1.4	2.6	.8	3.6	4.9	
11	23	36	15.7	1.5		6.3	1.9	2.1	.8	3.1	57	
12	16.6	11.9	7.0	2.8		7.6	12.9	3.2	1.0	2.2	78	[a]1.7
13	6.5	6.5	5.5	1.4		7.8	57	8.1	.6	2.4	112	
14	4.0	6.8	11.1	1.3		4.8	28	33	.6	42	28	
15	3.1	5.0	6.2	1.0		3.4	7.7	4.2	.6	9.0	9.8	
16	2.1	6.5		.9		3.2	88	3.4	.6	3.8	5.7	
17	2.2	5.4	[a]3.8	.9		4.2	15.1	2.6	.6	3.1	4.4	
18	2.5				100	4.2	10.1	2.8	.6	2.6	3.4	[a]6
19	2.5					11.9	9.8	2.4	.6	2.6	2.9	
20	2.8				8	15.1	6.7	2.2	.6	3.6	2.8	
21	4.1	[a]10	[a]2.4		[b]6.2	9.7	11.7	2.1	.6	2.8	2.2	[a]2.3
22	2.5				5.0	33	5.0	2.1	.6	1.8	1.9	
23	4.0				5.0	9.1	7.8	1.9	.6	1.8	1.8	
24	2.2	[a]18		[a]1.2	4.6	6.5	4.8	5.1	.6	1.7	1.7	[a]6.5
25	3.8				14.6	95	3.4	2.5	1.0	1.6	6.7	
26	23				18.9	20	2.9	1.8	117	1.4	19.1	
27	10.2		[a]4.8		7.8	41	10.3	1.5	57	1.7		
28	8.5	[a]6.5			5.0	70	6.8	1.4	11.8	1.3	[a]6	[a]16
29	7.4				4.0	11.5	9.7	1.3	3.6	1.4		
30	4.2				3.2	6.2	13.9	------	7.3	18.4	[a]2.6	
31	4.0		------		------	4.6	10.9	------	8.8	------		------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	56	0.6	7.07	10.9	219	673
August	36	----------	9.07	14.0	281	863
September	----------	----------	7.51	11.6	225	691
October	7.0	----------	1.59	2.46	49.2	151
November	----------	----------	10.1	15.6	303	930
December	95	2.8	17.3	26.8	536	1,650
January	88	1.4	11.2	17.3	347	1,070
February	33	1.3	5.73	8.87	166	510
March	117	.6	7.29	11.3	226	694
April	68	1.3	9.30	14.4	279	856
May	112	1.7	13.6	21.0	423	1,290
June	----------	----------	4.98	7.71	150	458
The year	----------	----------	8.75	13.5	3,200	9,840

[a] Estimated mean. [b] Partly estimated.

KOOLAU DITCH NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder on west side of Keanae Valley and 3 miles southwest of Keanae post office.

RECORDS AVAILABLE.—January, 1910, to December, 1912, and November, 1917, to June, 1928.

EXTREMES.—Maximum discharge during year, 155 million gallons a day (240 second-feet) some time in May (gage height, 5.37 feet); minimum, 13.8 million gallons a day (21.4 second-feet) Mar. 23 and 24 (gage height, 1.11 feet).

1910–1912, 1917–1928: 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 excellent for ordinary stages and fair for high stages. Braced figures give estimated mean discharge for periods indicated. Regulated by gates and spillways. Diverts at 1,200-foot elevation from all streams between Makapipi and Alo Streams.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1			76	50	34	79		125	32	99	60	44
2			70	50	28	83		125	30	78		41
3		100	63	44	27	92		122	28	47		41
4			57	44	26	57	36	111	27	38		38
5	24		60	41	24	47		97	26	34	100	44
6		80	128	38	22	59		83	24	68		85
7			136	36	22	113	27	76	24			44
8			131	73	40	105	26	70	22	110		36
9			114	70	26	82	24	63	21		70	33
10	120		107	44	27	47	21	63	21	60		33
11			122	41	58	63	28	57	24	50		36
12	111	120	111	65	35	76	69	73	30	44		48
13	107		93	44	26	77	125	73	19.8	44		33
14	89		118	41	22	44	122	111	18.5	132		32
15	66		107	36	24	33	81	76	18.5	104	110	42
16	60		83	34	26	31	127	66	17.2	71		33
17	57		73	33	104	33	104	60	17.2	63		28
18	57	109	66	32	142	44	108	57	16.0	54		95
19	54	108	60	34		82	107	57	16.0	63		53
20	54	133	60	77	90	90	92	50	16.0	82		38
21	70	112	57	47		67	110	47	14.8	82	60	38
22	67	93	54	56		122	72	44	14.8	47		38
23	95	106	50	44	90	82	102	42	13.6	44		34
24	66	136	73	54	88	61	72	59	14.8	38		54
25	60	122	74	87	122	103	54	58	21	36	90	107
26	126	109	66	50	136		50	41	133	34		140
27	124	114	97	41	120		101	36	136	38	118	130
28		100	92	36	95	85	95	35	94	33	76	125
29	100	120	65	35	73		114	33	47	35	63	125
30		108	54	33	63		118	------	90	133	54	125
31		90	------	32	------		118	------	115	------	50	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	----------	----------	74.5	115	2,310	7,090
August	----------	----------	110	170	3,400	10,500
September	136	50	83.9	130	2,520	7,720
October	87	32	46.5	71.9	1,440	4,420
November	142	22	62.0	95.9	1,860	5,710
December	----------	31	73.6	114	2,280	7,000
January	127	21	73.6	114	2,280	7,000
February	125	33	69.3	107	2,010	6,170
March	136	13.6	36.8	56.9	1,140	3,500
April	----------	33	65.4	101	1,960	6,020
May	----------	----------	80.4	124	2,490	7,650
June	140	28	59.8	92.5	1,790	5,510
The year	----------	13.6	69.7	108	25,500	78,300

HONOMANU STREAM NEAR KEANAE, MAUI

LOCATION.—Water-stage recorder about 500 feet above Spreckels ditch intake and trail bridge and 2¼ miles by trail northwest of Upper Keanae.

RECORDS AVAILABLE.—November, 1913, to June, 1928.

EXTREMES.—Maximum discharge during year (estimated), 658 million gallons a day (1,020 second-feet) about Nov. 17 (gage height, 6.17 feet); minimum, 0.08 million gallons a day (0.12 second-foot) Mar. 24 (gage height, 0.24 foot).

1913–1928: Maximum discharge, 1,180 million gallons a day (1,830 second-feet) Oct. 16, 1924 (gage height, 8.76 feet); minimum, 0.08 million gallons a day (0.12 second-foot) Mar. 24, 1928 (gage height, 0.24 foot).

REMARKS.—Records good; estimated records (July 1 to Aug. 18 and Sept. 3 to Jan. 13) fair. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1			4.9					50	1.5	12.0	5.4	2.4
2			4.3					26	1.9	6.8	3.1	2.2
3								16.0	2.2	3.7	22	2.1
4	1.6	6.5	3.1	3.2	2.4	12		8.2	1.4	3.0	22	2.0
5								6.1	1.3	3.2	24	3.4
6							3.4	4.8	1.3	76	15.6	12.2
7			75					4.2	1.1	104	5.6	3.7
8						65		3.7	1.1	22	4.8	2.3
9								3.4	1.1	5.6	3.7	1.9
10	55	30		5.5				3.3	1.0	3.7	5.2	2.1
11								2.8	.9	3.1	70	2.9
12			12		3.6			5.1	1.0	2.4	110	3.5
13							60	45	.8	2.5	194	2.2
14						6	64	52	1.5	70	42	2.0
15		8.5		2.7			10.3	6.1	1.5	13.1	7.8	2.7
16							157	3.8	.9	4.9	5.0	2.1
17							15.8	3.4	.6	3.6	4.0	1.6
18					130		17.8	3.1	.5	3.2	3.3	15.2
19	4.1	11.9	4.5				11.6	2.9	.4	5.6	3.1	6.0
20		44					9.8	2.7	.4	3.7	5.0	3.0
21		8.6					15.8	3.0	.6	3.6	5.3	3.4
22		6.4					7.8	3.4	.4	2.4	2.9	2.8
23		9.2		5.5			18.4	2.4	.3	2.1	2.4	2.3
24		45				34	7.1	6.8	.4	2.1	2.1	16.8
25		15.8			12		4.6	6.1	13.6	1.8	25	14.8
26	48	13.2	10				4.1	2.4	182	1.4	50	37
27		11.8					25	1.9	95	1.9	19.4	17.0
28		7.6					15.3	1.7	12.6	1.4	6.3	13.8
29	6.5	16.3		2.4			24	1.6	3.7	2.1	4.6	10.5
30		8.2				7	32	------	11.8	45	3.3	30
31		6.1	------		------		19.1	------	19.4	------	2.9	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July			16.5	25.5	512	1,570
August			14.5	22.4	451	1,380
September			14.4	22.3	434	1,330
October			3.94	6.10	122	375
November			19.0	29.4	571	1,750
December			22.0	34.0	682	2,090
January	157		19.9	30.8	617	1,890
February	52	1.6	9.72	15.0	282	865
March	182	.3	11.7	18.1	362	1,110
April	104	1.4	13.9	21.5	416	1,280
May	194	2.1	21.9	33.9	680	2,080
June	37	1.6	7.46	11.5	224	687
The year	194	.3	14.6	22.6	5,350	16,400

HAIPUAENA STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder 200 feet above inflow of Spreckels ditch and 3¼ miles southeast of Kailua.

RECORDS AVAILABLE.—October, 1913, to June, 1928.

EXTREMES.—Maximum discharge during year, 366 million gallons a day (566 second-feet) Nov. 17 (gage height, 4.65 feet); minimum unknown, owing to plugged intake to stilling well.

1913–1928: Maximum discharge, 530 million gallons a day (820 second-feet) Jan. 16, 1921 (gage height, 5.67 feet); minimum, 0.3 million gallons a day (0.5 second-foot) frequently during December, 1919 (gage height, 0.20 foot).

REMARKS.—Records fair for ordinary stages except those estimated, which are poor; extremely high-stage records poor. No diversions. Intake plugged often during year.

Daily and monthly dishcarge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.7	5.5	4.0	3.7	2.6	7.2	4.6	35	2.2	10.8	6.6	[a] 2.4
2	1.7	8.8	3.6	3.9	2.4	7.5	4.2	23	[a] 2.2	6.8	4.3	2.3
3	[a] 1.6	7.1	[b] 4.0	3.4	2.4	15.8	3.8	16.7	[b] 2.4	4.0	24	2.1
4	1.4	6.2	2.6	3.1	2.2	5.9	3.9	9.2	[b] 1.9	3.3	23	2.1
5	2.0	4.4	2.7	3.2	1.9	4.5	5.0	6.8	[b] 1.8	3.9	19.1	2.6
6	[a] 2.0	3.8	74	2.9	1.9	14.1	3.4	5.4	[a] 1.7	50	15.7	8.4
7	1.6	5.8	53	2.8	1.9	35	3.1	4.6	1.7	86	6.4	3.1
8	40	21	40	10.4	5.4	82	2.9	4.2	1.8	20	5.0	2.3
9	43	22	7.8	6.7	2.5	13.6	2.9	3.9	[b] 1.8	6.2	4.2	[a] 2.0
10	66	12.7	7.8	3.6	3.0	6.7	2.7	3.7	[a] 1.5	4.4	6.6	2.1
11	35	53	22	3.2	9.7	5.4	3.6	3.2	1.5	3.6	42	3.2
12	32	15.8	7.3	7.7	4.0	7.0	29	4.8	1.8	3.1	81	[b] 3.8
13	9.6	9.1	5.2	3.7	2.9	9.9	70	12.3	[a] 1.5	3.2	159	[b] 1.9
14	7.2	7.6	13.4	3.4	2.5	6.6	45	49	[a] 1.4	64	27	[b] 2.6
15	4.5	5.8	9.4	3.0	2.9	4.6	9.4	5.0	1.9	12.8	6.6	2.9
16	3.7	9.9	5.0	2.7	3.3	6.0	103	3.8	1.4	5.6	4.5	2.1
17	3.3	5.8	4.8	2.6	131	5.1	14.9	3.3	1.4	4.2	3.6	1.9
18	3.3	9.9	5.4	2.4	128	7.7	16.6	3.2	1.3	4.2	3.1	13.8
19	3.1	10.0	6.0	2.8	22	15.2	12.8	3.0	1.3	5.9	2.8	5.4
20	3.4	41	[b] 5.6	8.1	8.6	24	11.2	2.9	1.3	3.8	3.0	3.0
21	3.9	7.2	[b] 3.5	4.9	7.5	10.4	18.3	2.6	1.4	3.4	3.9	3.3
22	3.8	5.1	[a] 5.7	5.0	7.0	36	9.0	3.1	1.2	2.8	2.5	3.2
23	6.5	7.3	3.6	4.3	6.2	11.6	15.7	2.6	1.2	2.6	2.2	[a] 2.9
24	3.8	42	15.4	4.8	6.5	8.5	8.0	5.3	1.7	2.6	2.0	11.1
25	3.5	10.8	10.1	9.4	21	69	5.6	6.4	9.7	2.5	15.7	12.7
26	64	10.0	5.8	[a] 4.5	34	14.8	4.8	2.7	108	2.4	40	27
27	25	8.9	14.4	[a] 3.5	13.7	54	20	2.5	57	2.9	15.0	23
28	10.8	6.2	8.6	[b] 2.9	7.2	66	17.0	2.3	9.6	2.6	5.4	11.8
29	11.1	15.0	4.8	[b] 2.6	5.4	10.5	19.0	[a] 2.2	3.9	3.2	4.1	9.7
30	5.4	6.8	4.0	2.6	4.5	6.8	22	-------	10.2	41	3.0	30
31	5.1	5.0	-------	2.4	-------	5.4	17.0	-------	15.7	-------	2.7	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	66	1.4	13.2	20.4	409	1,260
August	53	3.8	12.6	19.5	390	1,200
September	74	2.6	12.0	18.6	360	1,100
October	10.4	2.4	4.20	6.50	130	400
November	131	1.9	15.1	23.4	454	1,390
December	82	4.5	18.6	28.8	577	1,770
January	103	2.7	16.4	25.4	508	1,560
February	49	2.2	8.02	12.4	233	714
March	108	1.2	8.17	12.6	253	777
April	86	2.4	12.4	19.2	372	1,140
May	159	2.0	17.5	27.1	544	1,660
June	30	1.9	6.82	10.6	205	628
The year	159	1.2	12.1	18.7	4,430	13,600

[a] Partly estimated. [b] Estimated.

SPRECKELS DITCH AT HAIPUAENA WEIR, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder between Haipuaena and Puohokamoa Streams on Spreckels ditch trail, 3 miles southeast of Kailua.

RECORDS AVAILABLE.—April, 1922, to June, 1928.

EXTREMES.—Maximum discharge during year, 77 million gallons a day (119 second-feet) Jan. 16 (gage height, 277 feet); minimum, 1.8 million gallons a day (2.9 second-feet) Feb. 8 (gage height, 0.27 foot).

1922–1928: Maximum discharge, that of Jan. 16, 1928; no flow nearly entire time Apr. 9–23, 1925, when water was shut out of ditch.

REMARKS.—Record excellent except those estimated, which are fair. Regulated by gates and spillways. Since May, 1928, East Maui Irrigation Co.'s power plant has diverted continuously about 4 million gallons a day just above station. Ditch diverts from all streams between Nuaailua and Kailua Streams; east of Puohokamoa Stream it diverts above Koolau ditch and west of Puohokamoa Stream it diverts below.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		16.3	14.7	9.7	6.4	16.4	12.5	22	5.5	19.6	15.4	
2		19.3	12.7	10.6	5.8	18.2	11.0	20	5.8	16.7	12.1	
3		18.0	11.5	8.5	5.8	21	9.7	18.9	6.4	11.5	27	[a]7
4	[a]6	17.2	10.4	8.1	5.2	14.2	10.4	16.7	4.9	9.2	26	
5		14.5	11.1	8.3	4.9	11.1	11.7	15.9	4.6	9.9	27	
6		12.9	31	7.3	4.6	14.5	9.4	14.7	4.3	19.0	23	[a]14
7		16.7	28	7.2	4.5	26	8.3	12.9	4.1	30	16.9	
8		23	25	13.6	12.0	35	7.8	10.7	3.8	19.6	13.6	
9		21	17.2	15.1	6.4	22	7.3	11.0	3.8	14.7	11.5	
10	[a]28	20	18.0	10.1	8.0	16.1	6.7	10.6	3.7	12.1	17.1	
11		28	22	8.8	18.2	14.0	8.3	9.4	3.7	10.1	27	
12	26	22	16.9	16.2	10.8	17.2	23	15.0	4.5	7.8	33	[a]8
13	20	18.9	14.7	10.2	6.8	20	36	18.6	3.3	8.8	46	
14	18.2	18.2	19.3	9.2	5.6	15.3	32	27	3.9	27	22	
15	14.2	16.9	17.4	8.0	7.8	11.9	20	14.9	5.0	17.6	17.4	
16	12.1	18.7	13.8	7.1	8.3	15.1	35	11.3	3.4	14.2	14.7	
17	11.0	16.5	12.5	6.7	42	13.3	19.3	9.9	3.1	11.7	12.3	
18	11.3	18.8	12.5	6.2	36	18.0	19.8	10.1	2.8	11.3	10.6	[a]16
19	10.6	18.9	11.0	7.4	22	22	19.3	9.4	2.7	13.6	10.2	
20	11.3	26	10.2	17.4	16.5	24	18.2	8.8	2.6	10.8	11.3	
21	13.4	17.4	9.0	13.4	16.3	20	20	8.1	3.1	9.4	12.2	[a]8
22	13.4	16.1	12.2	14.2	15.9	28	17.2	9.5	2.7	8.0	8.5	
23	18.2	18.5	10.4	11.9	14.9	20	18.9	7.8	2.5	7.3	7.5	
24	13.4	26	14.6	13.1	15.1	19.1	16.5	12.0	3.4	6.7	[a]7	
25	13.1	20	18.0	17.6	24	30	13.2	12.3	10.4	6.2		
26	30	19.3	16.3	11.3	28	22	11.7	8.0	36	5.6		[a]20
27	23	19.3	20	8.8	20	29	20	6.8	30	5.2		
28	19.8	17.6	17.8	7.8	15.5	30	18.5	6.2	18.7	5.5	[a]15	
29	20	21	13.6	7.2	13.4	20	19.6	5.8	11.0	6.9		
30	15.9	18.2	11.0	6.7	11.1	16.9	20	------	16.9	32		
31	15.1	16.7	------	6.2	------	14.5	19.1	------	22	------		------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	------	------	15.6	24.1	484	1,480
August	28	12.9	19.1	29.6	592	1,820
September	31	9.0	15.8	24.4	473	1,450
October	17.6	6.2	10.1	15.6	314	961
November	42	4.5	13.7	21.2	412	1,260
December	35	11.1	19.8	30.6	615	1,880
January	36	6.7	16.8	26.0	520	1,600
February	27	5.8	12.6	19.5	364	1,120
March	36	2.5	7.70	11.9	239	733
April	32	5.2	12.9	20.0	388	1,190
May	46	------	17.2	26.6	534	1,640
June	------	------	11.6	17.9	347	1,070
The year	46	2.5	14.4	22.3	5,280	16,200

[a] Estimated mean.

PUOHOKAMOA STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder just above Spreckels ditch inflow and trail crossing and 3 miles southeast of Kailua.

RECORDS AVAILABLE.—December, 1910, to June, 1928.

EXTREMES.—Maximum discharge during year uncertain owing to missing record; minimum, 1.0 million gallons a day (1.6 second-feet) Mar. 17–24 (gage height, 0.55 foot).

1910–1928: Maximum discharge, 1,100 million gallons a day (1,700 second-feet) Jan. 14, 1923 (gage height, 7.85 feet); minimum, 0.4 million gallons a day (0.6 second-foot) Oct. 26, 1917 (gage height, 0.25 foot).

REMARKS.—Records poor. Kula pipe line diverts small amounts of water above station at elevation 4,300 feet.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	3.3	13.9						42	3.6	21	12.9	6.6
2	2.8	18.6				[a] 20		34	3.8	14.0	8.2	5.6
3	3.0	17.2	[a] 8					25	3.8	7.6	40	5.2
4	2.7	14.9		[a] 6.5	[a] 4			15.4	3.3	6.1	34	4.8
5	4.2	11.1				[a] 11		12.3	3.0	6.1	44	6.1
6	3.2	8.9					[a] 7	9.7	2.8	93	[b] 26	18.6
7	2.0	13.6	[a] 85					8.3	2.8	173	12.9	7.0
8	73	47				[a] 80		7.3	2.6	40	10.4	5.2
9	79	26						6.7	2.5	14.9	[b] 7.6	[b] 4.5
10	116	40		[a] 10				6.1	2.2	10.4	[b] 10.4	[b] 4.5
11	71	96						5.2	2.6	8.9	[b] 48	[b] 5.4
12	77	39			[a] 7.5			8.5	3.0	7.0	[b] 165	[b] 8.4
13	24	24	[a] 19					24	1.8	7.1	[b] 314	[b] 4.5
14	17.2	18.6				[a] 13	[a] 95	76	1.6	132	56	4.7
15	11.1	14.9						12.0	2.8	[b] 26	18.6	6.6
16	8.9	21		[a] 5.5				8.9	1.6	[b] 12.0	13.9	[b] 4.8
17	7.6	13.9			[a]200			7.6	1.0	[b] 8.9	11.1	[b] 4.2
18	7.6	[a] 22					[a] 26	7.7	1.0	[b] 9.3	[b] 9.6	26
19	7.0						23	6.6	1.0	[b] 10.4	[b] 8.9	[b] 9.8
20	7.6	[a] 60					19.5	5.6	1.0	[b] 8.9	9.6	[b] 6.1
21	9.0		[a] 8		[a] 16	[a] 36	30	5.2	1.0	[b] 8.9	9.6	[b] 6.1
22	9.8	[a] 16					15.4	5.6	1.0	[b] 7.6	[b] 7.0	[b] 5.6
23	15.1			[a] 11			25	5.2	1.0	7.0	[b] 6.6	4.5
24	9.6						14.3	11.3	2.0	5.6	5.6	24
25	7.6						10.5	10.8	18.7	4.8	[b] 26	23
26	101		[a] 14		[a] 36	[a] 90	8.8	5.2	158	4.5	[b] 68	52
27	62						30	4.5	83	4.8	32	24
28	28	[a] 20					19.5	4.2	17.5	4.5	12.9	21
29	26			[a] 5.5	[a] 11		28	3.8	7.6	4.5	[b] 10.4	18.6
30	13.9					[a] 17	31	-------	22	73	[b] 8.2	53
31	11.1		-------		-------		24	-------	31	-------	[b] 7.0	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	116	2.0	26.5	41.0	821	2,520
August	96	----------	24.1	37.3	747	2,290
September	----------	----------	20.0	30.9	601	1,840
October	----------	----------	7.84	12.1	243	746
November	----------	----------	24.4	37.8	732	2,250
December	----------	----------	34.7	53.7	1,080	3,300
January	----------	----------	28.5	44.1	883	2,710
February	76	3.8	13.3	20.6	385	1,180
March	158	1.0	12.6	19.5	391	1,200
April	173	4.5	24.7	38.2	742	2,270
May	314	5.6	34.0	52.6	1,050	3,230
June	53	4.2	12.7	19.6	380	1,170
The year	----------	1.0	22.0	34.0	8,060	24,700

[a] Estimated mean. [b] Partly estimated.

WEST BRANCH OF PUOHOKAMOA STREAM AT HAIKU-UKA BOUNDARY, NEAR KAILIILI, MAUI

LOCATION.—Water-stage recorder at trail crossing 500 feet above Haiju-uka boundary and 3½ miles east of Kailiili.

RECORDS AVAILABLE.—March, 1919, to July, 1928.

EXTREMES.—Maximum discharge during period, 135 million gallons a day (209 second-feet) Nov. 17 (gage height, 6.27 feet); minimum, 0.3 million gallons a day (0.5 second-foot) Mar. 23 to 24 (gage height, 3.44 feet).

1919–1928: 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 and 23 (gage height, 3.48 feet).

REMARKS.—Records fair for ordinary stages, poor for high stages. Small amount of water diverted above station by Kula pipe line. Station discontinued July 16, 1928.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	0.6	2.6	1.2	1.0	0.6	2.2	1.5	12.4	0.6	3.0	1.6	1.0	13.8
2	.6	3.0	1.1	1.0	.6	2.3	1.4	6.1	.8	1.8	1.0	1.0	2.6
3	.6	2.6	1.0	.9	.6	3.8	1.2	4.4	.8	1.2	6.0	.9	2.3
4	.5	2.5	1.0	.8	.5	1.5	1.3	3.0	.6	1.0	5.8	.9	1.9
5	.7	1.8	1.2	.8	.4	1.2	1.4	2.2	.6	1.0	6.5	1.4	1.5
6	.7	1.4	25	.8	.4	4.2	1.1	1.8	.6	17.6	2.8	3.2	1.2
7	.6	1.8	14.7	.8	.4	9.6	1.0	1.5	.6	20	1.8	1.2	5.1
8	19.3	4.0	12.0	2.1	.5	18.2	1.0	1.4	.6	4.6	1.5	1.0	5.5
9	15.7	7.2	2.4	1.7	.4	3.5	.9	1.3	.6	2.0	1.2	.8	2.4
10	25	3.7	2.2	.9	.6	2.0	.8	1.2	.5	1.5	1.9	.9	2.3
11	10.0	17.1	7.9	.8	2.3	1.7	1.2	1.1	.5	1.2	14.4	1.0	2.2
12	11.1	4.4	2.4	2.0	.8	1.9	10.6	1.8	.5	1.0	24	1.2	1.7
13	3.3	3.0	1.8	1.0	.6	6.5	24	6.7	.4	1.0	47	1.1	3.0
14	2.5	2.5	4.8	.8	.5	1.9	16.0	11.9	.6	13.9	6.4	.8	5.7
15	1.6	2.2	3.0	.8	.6	1.3	3.2	1.7	.6	3.0	2.5	.8	2.8
16	1.4	4.1	1.7	.7	.6	1.5	32	1.4	.4	1.5	1.8	.8	14.8
17	1.2	2.2	1.5	.6	43	1.3	4.7	1.2	.4	1.2	1.5	.7	------
18	1.2	2.6	1.4	.6	25	2.0	4.8	1.2	.3	1.3	1.2	3.3	------
19	1.0	2.7	1.3	.9	4.0	2.7	3.6	1.1	.3	1.7	1.1	1.7	------
20	1.0	11.6	1.2	2.6	2.0	5.6	3.2	1.0	.4	1.1	1.5	1.0	------
21	1.4	2.4	1.0	1.4	1.7	2.7	4.6	1.0	.4	1.0	1.4	1.0	----
22	1.3	1.8	3.5	1.5	1.9	6.5	2.7	1.0	.3	.8	1.0	.8	------
23	2.5	2.2	1.4	1.0	1.6	3.1	5.6	1.0	.3	.8	.8	.8	------
24	1.2	11.4	5.8	1.0	1.5	2.4	2.6	2.3	.6	.7	.8	4.8	------
25	1.3	3.3	2.9	2.3	6.0	22	1.9	1.9	4.0	.7	6.3	4.4	------
26	26	3.2	2.0	1.0	7.6	4.3	1.7	1.0	41	.6	13.1	7.6	------
27	7.7	2.8	4.8	.8	3.1	16.9	6.7	.8	19.6	.7	3.7	3.7	------
28	2.5	1.8	2.6	.7	1.8	21	4.2	.7	3.0	.6	1.6	3.3	------
29	2.1	3.5	1.5	.6	1.5	3.4	6.2	.7	1.4	.8	1.2	2.9	------
30	1.6	1.9	1.2	.6	1.3	2.3	8.6	------	2.9	11.6	1.1	8.8	------
31	2.0	1.4	------	.6	------	1.8	5.3	------	4.6	------	1.1	------	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
1927–28						
July	26	0.5	4.78	7.40	148	455
August	17.1	1.4	3.83	5.93	119	364
September	25	1.0	3.85	5.96	116	354
October	2.6	.6	1.07	1.66	33.1	102
November	43	.4	3.75	5.80	112	345
December	22	1.2	5.20	8.05	161	495
January	32	.8	5.32	8.23	165	506
February	12.4	.7	2.58	3.99	74.8	230
March	41	.3	2.86	4.43	88.8	272
April	20	.6	3.30	5.11	98.9	304
May	47	.8	5.28	8.17	164	502
June	8.8	.7	2.09	3.23	62.8	192
The year	47	.3	3.67	5.68	1,340	4,120
1928						
July (16 days)	14.8	1.2	4.30	6.65	68.8	211

PUOHOKAMOA INTAKE OF KOOLAU DITCH NEAR HUELO, MAUI

LOCATION.—Water-stage recorder about 20 feet below intake on short feeder ditch from Puohokamoa Stream to Koolau ditch and 3 miles southeast of Kailua.

RECORDS AVAILABLE.—March, 1922, to June, 1928.

EXTREMES.—Maximum discharge during period, 54 million gallons a day (84 second-feet) Nov. 17 (gage height, 2.37 feet); minimum, 0.3 million gallons a day (0.5 second-foot) June 6 (gage height 0.05 foot).

1922–1928: Maximum discharge, 88 million gallons a day (136 second-feet) Oct. 22, 1922 (gage height, 3.04 feet); a higher discharge may have occurred during period of no record Sept. 4–15, 1923. Minimum discharge, that of June 6, 1928.

REMARKS.—Records excellent for ordinary stages, good for high stages, and fair for estimated periods (Feb. 1–25, Mar. 6–26, and Apr. 24–29). Diverts water from Puohokamoa Stream into Koolau ditch. Regulated by gates.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	8.3	26	25	17.8	9.7	24	22		9.0	-------	-------	11.0
2	7.6	30	23	18.9	8.7	28	18.9		8.7	-------	-------	9.7
3	8.5	26	20	14.7	8.8	31	16.6		9.7	-------	-------	.4
4	7.2	28	18.9	13.9	7.9	25	16.6	30	8.5	-------	-------	.4
5	12.5	25	18.9	14.3	7.2	20	22		7.2	-------	-------	.4
6	10.6	22	34	12.3	6.8	18.9	15.4			-------	-------	6.7
7	8.5	26	34	11.9	6.6	32	13.4			-------	-------	9.7
8	31	32	33	20	16.6	36	12.5			1.8	-------	9.4
9	33	30	30	25	9.4	31	11.9			1.6	-------	9.2
10	34	31	30	16.6	11.0	26	10.8	17		8.0	-------	9.4
11	32	33	31	14.3	25	24	13.1		6	7.4	7.9	9.7
12	33	32	28	26	16.6	25	28			4.8	20	9.9
13	30	31	26	16.6	10.3	28	34			5.3	23	9.4
14	28	30	30	14.7	8.5	26	33			5.7	17.8	8.3
15	25	28	30	12.8	10.3	20	30	28		5.1	16.6	6.8
16	22	30	25	11.0	11.4	25	36			10.0	16.6	8.0
17	18.9	28	22	10.5	33	20	31			12.3	18.9	4.2
18	20	30	22	9.6	39	28	31			12.3	16.6	11.7
19	17.8	30	18.9	10.4	32	31	-------			12.8	12.3	14.1
20	18.9	33	17.8	28	28	32	-------			12.3	8.5	9.3
21	22	28	15.4	22	28	30	-------	15	4.0	12.0	8.5	6.8
22	23	26	20	23	26	33	-------			11.6	12.5	8.8
23	28	30	17.8	18.9	25	30	-------			11.2	10.5	8.3
24	23	34	20	22	26	28	-------				7.8	8.7
25	22	31	30	28	31	33	-------				8.7	16.6
26	33	30	26	18.9	33	31	-------	10.7	30	10	9.6	22
27	32	30	31	13.9	31	32	-------	10.3	-------		9.0	22
28	30	28	28	11.9	26	34	-------	9.9	-------		8.5	22
29	30	31	24	10.8	24	30	-------	9.4	-------		8.2	22
30	26	30	18.9	9.9	20	28	-------	-------	-------	35	8.0	14.7
31	25	28	-------	9.2	-------	25	-------	-------	-------	-------	7.9	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	34	7.2	22.6	35.0	701	2,150
August	34	22	29.3	45.3	907	2,790
September	34	15.4	25.0	38.7	749	2,300
October	28	9.2	16.4	25.4	508	1,560
November	39	6.6	19.2	29.7	577	1,770
December	36	18.9	27.9	43.2	865	2,650
February	-------	-------	19.6	30.3	569	1,740
June	22	.4	10.3	15.9	310	948

MANUEL LUIS DITCH AT PUOHOKAMOA GULCH, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder in Puohokamoa Gulch at lower portal of tunnel between Haipuaena and Puohokamoa Streams and 3 miles southeast of Kailua.

RECORDS AVAILABLE.—December, 1917, to June, 1928.

EXTREMES.—Maximum discharge during year, 99 million gallons a day (153 second-feet), Jan. 16 (gage height, 3.98 feet); minimum uncertain, owing to missing record.

1917–1928: Maximum discharge, 116 million gallons a day (179 second-feet) Jan. 14, 1923 (gage height, 4.93 feet); minimum, 0.05 million gallons a day (0.08 second-foot) Mar. 3, 1920 (gage height, 0.03 foot).

REMARKS.—Records good for low stages and fair above; estimated records (Aug. 14 to Sept. 30, Oct. 25 to Nov. 19, and Jan. 12–14) poor. Ditch is extension of Center ditch and picks up water at 500-foot elevation between Kolea and Waikamoi Streams. Regulated by gates.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.5	4.7		1.2		7.6	1.6	33	0.6	14.0	2.8	0.8
2	.5	16.1	3.1	2.0		5.5	1.3	31	.6	3.8	1.4	.8
3	.5	9.3		1.2		17.8	1.2	30	.5	.8	21	.7
4	.5	4.0	1.0	1.1	0.8	1.8	1.2	22	.5	.7	22	.7
5	1.2	1.1		1.1		1.5	1.6	13.1	.5	.7	23	.7
6	.6	1.0		1.0		6.6	1.0	4.4	.5	16.0	17.8	8.2
7	.5	5.4	44	1.0	5	31	.8	1.6	.5	44	2.6	.8
8	25	30		11.0		47	.8	1.3	.4	26	2.4	.6
9	32	13.0		8.2		20	.9	1.0	.4	3.7	1.5	.5
10	38	24	17	1.2		3.0	.7	1.0	.4	2.0	5.1	.5
11	30	33		1.0		6.1	1.2	.8	.5	1.5	15.8	.6
12	32	29		7.2		12.9		3.0	.5	1.3	39	1.2
13	17.4	22		1.2	1.6	14.3	17	11.1	.4	1.2	58	.5
14	9.0			1.1		2.2		28	.4	37	31	.5
15	1.5		8.5	1.0		1.6	10.2	2.1	.3	16.9	20	.8
16	1.3			1.0		1.9	43	1.0	.3	1.7	9.2	.5
17	1.1	17		.9		2.2	25	.8	.3	1.3	2.8	.4
18	1.2			.9	28	2.3	28	2.6	.3	1.2	1.5	17.8
19	.9			.8		20	27	1.0	.3	1.4	1.3	2.4
20	.8		1.8	9.7	10.4	24	18.7	.8	.3	2.3	1.2	.7
21	3.0			1.2	9.3	8.9	28	.7	.3	2.3	1.0	.8
22	2.8	6.6		1.1	11.0	36	7.9	.7	.3	.8	.8	.8
23	9.6			.5	6.4	18.0	24	.7	.3	.7	.8	.6
24	1.1	24		.4	9.1	6.7	7.2	7.5	.4	.7	.7	6.1
25	.9		10	6.5	27	31	1.7	4.5	1.4	.6	7.7	16.0
26	33				36	21	1.4	.8	44	.5	28	31
27	27				25	34	24	.7	36	.7	21	26
28	18.6	12			11.1	39	19.4	.6	12.7	.6	3.2	23
29	22		1.9	.9	2.6	12.6	30	.6	.8	.6	1.5	21
30	3.3				1.9	2.6	32	-------	9.9	30	1.1	25
31	1.3		-------		-------	1.9	28	-------	20	-------	1.0	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	38	0.5	10.2	15.8	317	970
August	----------	1.0	15.5	24.0	479	1,470
September	----------	----------	10.3	15.9	310	948
October	----------	----------	2.40	3.71	74.5	228
November	----------	----------	8.71	13.5	261	802
December	47	1.5	14.2	22.0	441	1,350
January	43	.7	13.5	20.9	419	1,280
February	33	.6	7.12	11.0	206	634
March	44	.3	4.34	6.71	135	413
April	44	.5	7.17	11.1	215	660
May	58	.7	11.2	17.3	346	1,070
June	31	.4	6.33	9.79	190	583
The year	----------	----------	9.27	14.3	3,390	10,400

KOOLAU DITCH AT WAHINEPE, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder between Puohokamoa and Waikamoi Streams, one-half mile below Puohokamoa intake, and 2½ miles southeast of Kailua.

RECORDS AVAILABLE.—March, 1922, to June, 1928.

EXTREMES.—Maximum discharge during year, 123 million gallons a day (190 second-feet) Dec. 8 (gage height, 5.62 feet); minimum, 17.0 million gallons a day (26.3 second-feet) Mar. 24 (gage height, 1.42 feet).

1922–1928: Maximum discharge, that of Dec. 8, 1927; minimum, 3.6 million gallons a day (5.6 second-feet) Apr. 1, 1925 (gage height, 0.34 foot).

REMARKS.—Records good except those estimated (Dec. 21 to Jan. 17), which are fair. Completely regulated by gates and spillways. Diverts water at 1,200-foot elevation from all streams between Makapipi and Alo Streams.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	32	99	96	64	42	92		113	39	99	72	54
2	30	107	83	67	36	101		113	39	86	64	49
3	31	107	77	56	36	107		113	39	54	93	37
4	30	101	72	54	35	85		110	36	44	99	35
5	39	85	70	54	31	70		110	32	42	99	38
6	42	79	116	49	27	72	50	104	27	57	99	88
7	32	93	119	49	27	110		96	28	107	83	49
8	103	116	119	76	55	116		88	27	101	75	44
9	110	110	113	90	32	107		83	27	80	64	39
10	113	116	113	59	36	85		80	26	67	83	39
11	113	119	116	52	81	88		72	28	56	77	44
12	113	119	113	87	48	95		91	34	47	113	58
13	110	116	104	56	31	107		85	26	49	116	39
14	107	113	110	52	27	80		113	25	104	110	38
15	91	110	113	47	33	59	110	96	24	99	107	47
16	80	113	101	42	34	67		85	23	83	101	38
17	72	110	88	39	92	61		75	22	75	93	31
18	75	113	83	37	116	84	113	62	21	64	83	89
19	67	113	77	42	110	102	110	64	20	75	72	68
20	70	116	72	94	104	110	110	64	20	85	64	47
21	80	116	67	67	104		113	59	20	72	59	44
22	87	110	75	76	104		104	59	18.4	56	59	47
23	104	113	64	62	104		110	54	17.5	54	54	42
24	85	119	76	70	99		101	64	18.7	49	49	59
25	78	116	101	99	110		83	74	29	44	75	99
26	110	116	88	64	113	100	72	52	104	39	104	110
27	110	116	110	52	110		107	49	104	47	101	110
28	110	113	107	47	104		110	44	91	39	83	110
29	110	116	88	44	91		113	42	52	38	67	107
30	107	113	70	42	77		113	------	81	104	59	107
31	99	107	------	39	------		113	------	99	------	54	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	113	30	81.9	127	2,540	7,790
August	119	79	110	170	3,410	10,500
September	119	64	93.4	145	2,800	8,600
October	99	37	59.0	91.3	1,830	5,610
November	116	27	68.3	106	2,050	6,290
December	------	59	93.5	145	2,900	8,900
January	------	------	86.5	134	2,680	8,230
February	113	42	79.8	123	2,310	7,100
March	104	17.5	38.6	59.7	1,200	3,670
April	107	38	67.2	104	2,020	6,190
May	116	49	81.6	126	2,530	7,760
June	110	31	60.2	93.1	1,810	5,540
The year	------	17.5	76.7	119	28,100	86,200

WAIKAMOI STREAM ABOVE WAILOA DITCH, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder about 500 feet above intake of Wailoa ditch, one-fourth mile above Spreckels ditch trail, and 2½ miles southeast of Kailua.

RECORDS AVAILABLE.—January, 1922, to June, 1928.

EXTREMES.—Maximum discharge during year, 519 million gallons a day (803 second-feet) Nov. 17 (gage height, 5.98 feet); minimum, 1.0 million gallons a day (1.6 second-feet) Mar. 24 (gage height, 0.65 foot).

1922–1928: Maximum discharge, 1,360 million gallons a day (2,100 second-feet) Oct. 16, 1924 (gage height, 10.45 feet); minimum, 0.5 million gallons a day (0.8 second-foot) Mar. 21 and 22, 1926 (gage height, 0.64 foot).

REMARKS.—Records good for ordinary stages; poor for high stages. Haleakala ranch and Kula pipe lines divert small amounts of water above station.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.0	8.1	5.7	4.5	2.4	8.3	6.3	46	2.3	14.4	9.8	3.6
2	1.7	12.5	4.8	4.6	2.1	9.5	5.4	26	2.3	8.5	5.4	3.3
3	2.0	11.5	4.4	3.8	2.2	18.4	4.8	24	2.5	5.3	26	3.0
4	1.8	10.1	4.0	3.5	2.0	7.2	4.5	12.3	2.1	4.0	26	2.8
5	2.7	7.8	4.2	3.6	1.8	5.4	5.4	8.7	1.9	3.9	28	3.1
6	2.6	5.7	96	3.1	1.7	9.3	3.9	6.7	1.8	57	22	10.9
7	2.1	8.3	77	3.0	1.6	45	3.4	5.8	1.8	94	7.9	4.5
8	65	24	68	9.5	3.8	96	3.3	5.1	1.7	28	6.1	3.1
9	70	23	12.5	8.4	2.3	21	3.0	4.6	1.8	8.5	4.8	2.6
10	104	26	10.1	4.3	2.1	9.1	2.8	4.3	1.7	6.1	7.9	2.6
11	54	68	34	3.4	9.4	6.9	3.4	3.8	1.7	4.8	47	3.6
12	50	26	11.8	8.8	3.9	8.3	33	6.0	1.9	3.9	101	4.9
13	16.6	15.5	7.9	4.6	2.6	13.2	90	15.5	1.5	3.9	173	2.8
14	12.5	10.3	21	3.7	2.1	9.7	77	63	1.4	59	38	2.8
15	7.6	9.1	16.9	3.1	2.1	6.1	15.3	7.9	2.0	20	11.1	3.7
16	5.8	13.5	8.5	2.8	2.3	8.3	149	5.6	1.5	7.2	7.8	3.0
17	5.0	10.1	6.6	2.6	135	6.7	24	4.6	1.4	5.1	6.0	2.4
18	4.9	11.8	7.1	2.3	116	8.7	26	4.2	1.3	4.6	5.0	13.2
19	4.3	12.5	5.6	2.6	26	14.5	16.9	5.4	1.3	9.6	4.5	8.0
20	4.3	51	4.9	9.5	10.6	24	14.7	4.0	1.2	5.6	4.6	4.0
21	4.9	11.8	4.8	5.8	8.3	12.3	21	3.3	1.3	4.4	6.3	4.2
22	5.6	7.8	9.9	5.7	8.5	34	12.3	3.7	1.2	3.4	4.4	3.6
23	9.2	9.4	7.1	4.9	7.4	15.3	23	3.2	1.1	3.0	3.4	3.0
24	5.7	55	22	5.1	7.8	9.7	11.1	7.8	1.7	2.8	2.9	9.1
25	4.9	17.2	18.9	10.3	27	103	7.2	11.6	10.9	2.7	21	22
26	90	18.0	10.6	5.0	43	29	5.8	4.3	170	2.3	57	34
27	44	15.6	25	3.4	17.6	81	26	3.0	98	2.8	28	19.0
28	13.6	9.5	14.7	2.9	9.1	134	17.5	2.6	16.9	2.3	9.3	13.1
29	13.1	18.1	7.8	2.6	6.4	19.6	26	2.4	6.3	2.5	7.1	11.8
30	7.2	10.3	5.1	2.4	5.3	10.3	36	-------	11.7	54	5.3	29
31	6.3	7.4	-------	2.2	-------	7.6	28	-------	21	-------	4.3	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	104	1.7	20.1	31.1	623	1,910
August	68	5.7	17.7	27.4	548	1,680
September	96	4.0	17.9	27.7	537	1,650
October	10.3	2.2	4.58	7.09	142	436
November	135	1.6	15.7	24.3	472	1,450
December	134	5.4	25.5	39.5	791	2,430
January	149	2.8	22.8	35.3	706	2,170
February	63	2.4	10.5	16.2	305	934
March	170	1.1	12.1	18.7	375	1,150
April	94	2.3	14.5	22.4	434	1,330
May	173	2.9	22.3	34.5	691	2,120
June	34	2.4	7.89	12.2	237	726
The year	173	1.1	16.0	24.8	5,860	18,000

EAST BRANCH OF WAIKAMOI STREAM AT HAIKU-UKA BOUNDARY, NEAR KAILIILI, MAUI

LOCATION.—Water-stage recorder about 200 feet above Haiku-uka boundary trail, at elevation 3,020 feet, and 3¾ miles east of Kailiili.

RECORDS AVAILABLE.—May, 1918, to June, 1928.

EXTREMES.—Maximum discharge during year, 94 million gallons a day (145 second-feet), Nov. 17 (gage height, 6.30 feet); minimum, 0.2 million gallons a day (0.3 second-foot) Dec. 16–17 and Feb. 23 (gage height, 3.92 feet).

1918–1928: Maximum discharge 230 million gallons a day (356 second-feet) Mar. 22, 1920 (gage height, 7.92 feet); minimum, 0.07 million gallons a day (0.11 second-foot) Apr. 15, 1919 (gage height, 3.77 feet).

REMARKS.—Record good for ordinary stages; poor for extremely high stages. A little water is diverted above station by Kula pipe line.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.5	2.5	1.2	0.9	0.4	2.0	1.0	7.6	0.4	2.4	1.3	0.6
2	.5	2.8	1.0	.9	.5	2.0	.9	5.6	.4	1.6	.8	.6
3	.5	2.4	1.0	.8	.5	3.6	.8	3.6	.4	.9	6.4	.5
4	.5	2.3	1.0	.7	.4	1.4	.9	2.4	.4	.7	5.5	.5
5	.6	1.6	1.4	.7	.4	.9	.9	1.7	.4	.9	6.7	.9
6	.6	1.2	21	.6	.4	4.4	.7	1.3	.4	14.0	3.5	2.9
7	.6	1.7	11.2	.6	.4	6.4	.6	1.1	.4	16.1	1.3	.9
8	14.4	4.2	8.9	2.0	.4	13.2	.6	1.0	.4	3.2	1.1	.6
9	11.6	5.4	1.9	1.6	.4	2.4	.5	9	.4	1.3	.9	.5
10	17.3	2.9	1.8	.8	.7	1.4	.5	.9	.3	1.0	1.5	.5
11	7.2	13.8	6.3	.6	2.4	1.2	1.0	.8	.4	.8	10.8	.8
12	10.9	3.7	2.1	2.1	.8	1.6	10.0	1.5	.3	.7	18.4	.6
13	2.5	2.4	1.6	.9	.5	2.4	21	5.2	.3	.6	36	.5
14	2.2	2.2	5.1	.7	.4	1.5	9.2	8.9	.4	12.8	4.6	.4
15	1.4	1.9	2.5	.6	.5	1.0	2.4	1.4	.4	2.3	1.7	.5
16	1.2	3.8	1.5	.5	.5	1.4	25	.9	.3	1.0	1.2	.5
17	1.0	1.9	1.2	.5	33	1.1	3.8	.8	.3	.8	1.0	.4
18	1.0	2.4	1.3	.4	17.7	1.9	3.8	.8	.3	1.0	.9	3.0
19	.9	2.6	1.1	.8	2.6	2.5	3.0	.7	.3	1.5	.8	1.3
20	.8	9.9	1.0	2.6	1.5	4.3	2.6	.7	.3	.9	1.2	.6
21	1.2	2.0	.9	1.3	1.3	1.8	4.4	.6	.3	.7	1.3	.9
22	1.2	1.5	3.7	1.6	1.5	5.0	2.2	.9	.3	.5	.7	.6
23	2.5	2.2	1.2	1.0	1.2	1.9	5.3	.6	.2	.5	.6	.6
24	1.2	10.9	5.3	1.2	1.2	1.6	2.0	2.2	.6	.5	.5	5.8
25	1.1	2.7	2.5	2.6	6.2	15.6	1.3	1.6	4.7	.4	5.3	2.9
26	19.7	2.6	2.0	.9	7.2	2.3	1.2	.7	25	.4	11.2	6.7
27	6.6	2.5	4.7	.6	2.6	12.0	6.2	.5	12.6	.4	3.1	2.7
28	2.0	1.6	2.4	.5	1.4	14.0	3.8	.4	2.4	.4	1.4	2.8
29	1.7	3.4	1.4	.5	1.1	2.2	5.6	.4	1.1	.6	1.2	2.6
30	1.3	1.7	1.0	.5	.9	1.6	8.0	------	2.9	11.2	.9	9.3
31	1.6	1.3	------	.4	------	1.2	4.3	------	4.7	------	.7	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	19.7	0.5	3.75	5.80	116	357
August	13.8	1.2	3.35	5.18	104	319
September	21	.9	3.31	5.12	99.2	305
October	2.6	.4	.98	1.52	30.4	93
November	33	.4	2.97	4.60	89.0	273
December	15.6	.9	3.74	5.79	116	356
January	25	.5	4.31	6.67	134	410
February	8.9	.4	1.92	2.97	55.7	171
March	25	.2	2.00	3.09	62.0	190
April	16.1	.4	2.67	4.13	80.1	246
May	36	.5	4.27	6.61	132	406
June	9.3	.4	1.73	2.68	52.0	159
The year	36	.2	2.92	4.52	1,070	3,280

WEST BRANCH OF WAIKAMOI STREAM AT HAIKU-UKA BOUNDARY, NEAR KAILIILI, MAUI

LOCATION.—Water-stage recorder at Haiku-uka boundary trail, elevation 3,000 feet, and 3¾ miles by trail southeast of Kailiili.

RECORDS AVAILABLE. May, 1918, to June, 1928.

EXTREMES.—Maximum discharge during year, 384 million gallons a day (594 second-feet) Nov. 17 (gage height, 3.92 feet); minimum, 0.3 million gallons a day (0.5 second-foot) probably about Mar. 23 (gage height, 0.41 foot).

1918–1928: Maximum discharge, about 2,020 million gallons a day (3,130 second-feet) Dec. 6, 1918 (gage height, 9.85 feet); minimum, 0.2 million gallons a day (0.3 second-foot) Mar. 21–22 and Dec. 17, 1926 (gage height, 0.40 foot).

REMARKS.—Records good for ordinary stages; poor for estimated periods and extremely high stages. At 5,300 feet Haleakala ranch diverts a small amount of water from stream.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.6	2.6	1.6			2.3	2.0	35	0.7			1.1
2	.6	3.9	1.4			2.5	1.6	11.8	.7		[a]4.5	1.0
3	.7	4.2	1.3			5.6	1.4	9.5	.7	[a]1.8		.9
4	.6	4.2	1.2			2.0	1.3	4.2	.7		13.0	.8
5	.7	2.7	1.3	[a]1.0		1.4	1.3	2.8	.7		13.4	1.0
6	.7	1.6	67		0.6	4.2	1.1	2.0	.6	[a]30	6.0	[b]3.2
7	.7	2.1	44			24	.9	1.7	.6			[b]1.3
8	50	6.6	49			56	.8	1.4	.6		[a]2.0	
9	47	14.6	5.0			9.0	.8		.6			
10	82	11.6	2.8			2.7	.9	[a]1.7		[a]2.4		
11	27	45	21	[a]1.5	[a]1.8	2.1	1.1				[a]44	
12	22	10.8				2.3	21					[a]1.0
13	6.0	5.4				6.4	70	[a]20		[a]20		
14	4.5	3.0	[a]3.5			3.8	49					
15	2.3	2.8			[a].7	1.8	5.7			[a]3.5		
16	1.7	7.7		[a].8		3.2	106		[a].5			
17	1.4	3.8			[a]55	2.1	10.8			1.3		
18	1.3	3.3				2.7	10.9			1.7		
19	1.2	3.3	[a]1.5			3.6	[b]5.5			4.5	[a]1.6	[a]3.2
20	1.1	27				8.8	[b]4.0			2.0		
21	1.2	3.8			[a]3.3	3.5	7.8	[a]1.4		1.3		[a]1.0
22	1.3	2.3		[a]1.8		11.6	4.2			1.0		
23	2.6	3.1				5.2	10.9			.8		
24	1.4	26				3.0	3.8			.8	[b].9	
25	1.3	7.3	[a]4.0		[a]8	89	2.1			[b].8	15.7	
26	68	9.1				14.5	1.7		[a]36		39	
27	21	5.6			4.6	69	13.4			[a].8	10.0	[a]6
28	3.3	3.0		[a].8	2.5	104	8.2				3.2	
29	2.3	5.3	[a]1.6		1.5	9.3	13.6	.7			2.7	
30	1.7	3.2			1.2	3.8	22		[a]3.8	[b]20	1.7	
31	1.6	2.0				2.5	12.5				1.4	

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	82	0.6	11.5	17.8	358	1,090
August	45	1.6	7.64	11.8	237	727
September	67		8.39	13.0	252	772
October			1.17	1.81	36.4	111
November			5.60	8.66	168	516
December	104	1.4	14.9	23.1	462	1,420
January	106	.8	12.8	19.8	396	1,220
February			4.67	7.23	136	416
March			6.59	10.2	204	627
April			4.93	7.63	148	454
May			10.3	15.9	319	980
June			2.39	3.70	71.7	220
The year			7.62	11.8	2,790	8,550

[a] Estimated mean. [b] Partly estimated.

ALO STREAM NEAR HUELO, MAUI

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

RECORDS AVAILABLE.—December, 1910, to June, 1928.

EXTREMES.—Maximum discharge and minimum discharge during year are not known owing to missing record.

1910–1928: Maximum discharge, 638 million gallons a day (987 second-feet), Dec. 9, 1916 (gage height, 4.35 feet); minimum discharge, 0.4 million gallons a day (0.6 second-foot), Sept. 19, 1924 (gage height, 0.4 foot), and Mar. 13–16, 1926 (gage height, 0.47 foot).

REMARKS.—Records poor. No diversions. Braced figures give estimated mean discharge for periods indicated.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1						3.8	2.0		0.8	3.6	2.4	1.2
2						4.4		26	.8	3.1	2.2	1.2
3			1.8			7.9			.7	1.8	12.4	1.0
4	0.8	3.9		2.0		2.4			.7	1.5	6.9	1.0
5					0.7	2.0			.6	1.4	6.0	1.0
6						10.5	1.5		.6	32	4.7	2.5
7			42			17.2			.5	55	2.6	1.1
8				5.5		68		3.8	.5	8.5	1.9	.9
9						7.5			.5	3.0	1.6	.8
10	32	12				3.9			.5	2.3	7.0	.8
11				2.1	3.2	3.5			.5	1.8	21	1.8
12						6.4			.7	1.6	18.6	2.9
13			4.1			5.8			.5	3.5	106	.9
14						3.1	55	15	.5	25	8.5	1.4
15					.9	2.6			.5	3.9	3.4	2.8
16						3.7			.4	2.5	2.6	1.2
17				.8		3.8			.4	2.0	2.0	1.0
18					55	5.6			.4	1.9	1.7	16.3
19	3.2	7				21			.4	1.8	1.5	2.4
20						17.0	17	2.5	.4	1.5	1.6	1.6
21			1.5			8.4			.4	1.3	1.3	1.6
22					4.1	37			.4	1.2	1.2	1.8
23				3.2		6.8			.4	1.0	1.0	1.3
24						3.9			1.2	1.0	1.0	2.6
25						35	4.5		6.4	.8	3.0	4.2
26	24		10		20	6.3		1.2	11.5	.8	13.9	17.9
27		6				26		1.0	6.2	.9	9.5	7.7
28						28		.9	3.5	.8	4.5	4.4
29	4.8			1.1	3.7	4.5	22	.9	1.8	.9	2.1	6.2
30						2.9		-------	8.3	22	1.6	13.9
31			-------		-------	2.4		-------	6.6	-------	1.4	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July			9.78	15.1	303	930
August			7.04	10.9	218	670
September			8.36	12.9	251	770
October			2.17	3.36	67.4	206
November			9.12	14.1	274	840
December	68	2.0	11.7	18.1	361	1,110
January			17.2	26.6	534	1,640
February		.9	6.42	9.93	186	571
March	11.5	.4	1.86	2.88	57.6	177
April	55	.8	6.28	9.72	188	578
May	106	1.0	8.23	12.7	255	783
June	17.9	.8	3.51	5.43	105	323
The year			7.66	11.9	2,800	8,600

KAAIEA STREAM NEAR KAILUA, MAUI

LOCATION.—Water-stage recorder about 700 feet above Hamakua ditch trail crossing and 1½ miles (about 3½ miles by road and trail) southeast of Kailua.

RECORDS AVAILABLE.—December, 1921, to June, 1928, published in this paper.

EXTREMES.—Maximum discharge during year ending June 30, 1928, 502 million gallons a day (777 second-feet) Dec. 8 (gage height, 3.51 feet); minimum not determined.

1921–1928: Maximum discharge, 900 million gallons a day (1,390 second-feet) Jan. 31, 1922 (gage height, 4.92 feet); minimum, 0.3 million gallons a day (0.5 second-foot) July 17, 1922, and Mar. 22, 1926 (gage height, 0.39 foot).

REMARKS.—Records good for ordinary stages; estimated and high stage records poor. No diversion. Braced figures give estimated mean discharge for periods indicated.

Daily discharge, in million gallons a day, 1922–1928

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1922												
1							2.4	93	6.5	0.7	1.5	1.3
2							1.8	20	3.7	1.0	1.4	1.1
3							1.6	12.0	18.8	1.5	1.9	1.0
4							14.6	6.3	22	1.5	3.2	.9
5							5.7	4.8	93	14.3	3.7	.8
6							4.7	3.5	42	3.9	2.1	.7
7							2.6	3.0	35	3.3	2.1	.7
8							3.2	2.6	48	2.4	5.9	.8
9							2.6	7.3	27	1.9	2.1	.9
10							1.9	8.5	51	3.6	2.2	.8
11							1.6	5.3	30	5.0	1.8	.7
12							1.6	5.7	12.4	6.2	1.4	1.6
13							4.5	3.5	7.7	9.8	1.2	1.6
14							2.5	2.6	4.8	4.8	1.1	.9
15							1.6	2.2	4.0	3.1	1.0	.7
16							1.4	1.9	3.2	5.0	.9	.7
17							1.4	1.6	4.2	2.8	.9	.7
18							2.6	1.5	2.4	2.2	.9	.6
19							27	1.4	2.2	1.9	.9	.6
20							13.0	1.2	1.9	1.8	1.4	.6
21							16.3	11.7	1.6	1.5	.9	.7
22							6.3	3.4	1.4	1.9	.8	.6
23							5.7		1.4	1.5	1.3	.6
24							4.0		1.2	1.9	1.4	.6
25							6.0	[a] 2.1	1.1	2.4	1.2	.5
26							9.2		.9	1.4	3.9	.5
27							32		.8	1.2	2.6	.5
28							45	60	.8	7.4	5.2	.5
29							7.3		.8	9.6	2.1	.4
30							73		.7	1.8	1.6	.4
31							192		.6		1.4	

Daily discharge, in million gallons a day, of Kaaiea Stream near Kailua, Maui, 1922–1928—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1922-23												
1	0.4	0.7	0.7	1.4	2.6	2.2	0.5	1.1	1.6	5.8	2.8	1.6
2	.4	1.6	.9	1.9	1.9	1.4	.8	.8	1.5	16.7	2.6	1.3
3	.4	9.0	.9	4.4	2.2	1.5	2.6	.7	10.5	3.0	5.2	1.5
4	.4	2.4	1.3	4.4	2.8	1.4	1.6	.7	3.7	3.0	2.4	7.0
5	.5	1.4	2.8	8.4	11.7	1.2	.9	.7	1.9	2.6	2.1	2.6
6	.4	1.2	1.3	6.4	22	1.1	1.6	.7	2.1	1.8	8.5	1.6
7	.4	1.8	5.0	5.8	63	1.0	2.2	.6	2.1	18.3	2.4	1.4
8	.4	7.0	1.5	3.2	23	.9	1.7	.6	8.4	6.8	1.9	1.2
9	1.0	12.6	2.8	2.2	5.2	.8	2.3	17.8	4.6	2.8	1.8	1.0
10	.5	7.2	58	1.9	3.5	.8	3.6	35	3.9	2.2	1.4	1.0
11	.5	7.2	11.7	1.6	2.6	.7	3.2	3.7	2.6	6.7	1.2	.9
12	.6	4.7	3.5	1.5	5.0	.7	125	2.8	2.1	3.4	1.1	1.4
13	.4	2.4	2.4	1.3	2.8	1.0	45	3.0	1.6	2.1	1.1	2.4
14	.4	2.1	2.0	1.1	7.0	.7	130	1.5	1.5	5.3	1.0	4.6
15	.4	1.9	7.7	1.2	4.1	.7	26	1.3	1.4	2.1	1.1	2.9
16	.4	1.6	1.9	5.1	7.2	.6	4.3	1.1	1.3	1.8	2.4	3.5
17	.4	1.4	1.9	1.6	3.6	.6	30	1.0	1.2	6.6	3.1	4.5
18	.5	1.4	6.2	2.4	2.6	.6	90	.9	1.1	14.7	2.1	2.4
19	.5	4.9	3.7	1.8	2.4	.6	34	45	1.4	8.5	3.2	1.9
20	.4	1.6	4.5	1.3	1.8	.6	96	13.8	1.0	8.1	1.8	1.6
21	.4	1.4	3.0	1.2	1.9	.5	5.4	15.7	.9	3.6	1.6	1.4
22	.6	1.4	2.1	53	1.5	.5	3.5	3.5	2.7	6.9	4.2	1.3
23	.5	1.1	1.8	14.2	1.3	.5	2.8	59	10.8	2.8	3.3	1.0
24	.7	1.1	1.5	5.4	1.1	.5	2.2	3.0	4.9	2.2	2.5	1.0
25	2.7	1.0	1.3	4.0	44	.5	1.6	2.1	7.3	1.9	4.7	1.1
26	1.5	.9	1.3	4.2	14.5	.9	1.4	6.2	4.8	12.4	2.2	1.2
27	1.0	.8	1.6	2.6	3.8	.6	1.4	2.8	35	7.4	2.2	1.1
28	2.8	.9	1.3	2.1	2.1	.5	1.1	2.1	4.5	7.0	1.9	1.3
29	.8	1.5	1.1	3.8	1.6	.5	1.0		2.4	4.7	1.8	1.6
30	.7	.9	.9	2.1	1.4	.5	1.0		2.1	5.9	1.9	1.4
31	.8	.8		2.1		.6	1.0		2.1		2.2	
1923-24												
1	1.3		0.7	0.9	2.6	0.7	9.0	0.6	8.5	0.8	7.3	0.8
2	1.2	[a] 1.2	.7	.8	2.1	3.8	5.2	.6	13.5	.8	5.5	.8
3	1.4		.7	.8	1.6	22	2.8	.6	12.8	1.2	3.0	.7
4	2.3		.6	1.0	1.5	14.8	2.1	.6	7.6	1.0	2.4	.7
5	1.5	[a] 2.9	.6	1.6	69	2.4	1.5	.6	4.0	.8	1.9	.7
6	1.9		.9	4.9	6.9	9.6	1.4	.5	2.6	.8	1.8	.6
7	2.4		.9	1.1	4.2	27	1.2	.5	2.1	2.9	1.5	.6
8	3.0		.6	.9	3.5	4.6	1.3	.5	2.1	6.9	1.4	.6
9	9.3		1.1	.8	3.2	2.4	2.7	.5	1.5	6.1	1.3	.6
10	5.9	[a] 1.6	.7	.7	2.4	17.0	1.2	.5	1.4	5.2	1.3	.5
11	3.2		.6	.7	2.4	6.4	2.0	.4	1.4	2.6	1.1	.5
12	3.9	[a] 15	31	.7	17.2	12.2	2.5	8.4	1.2	6.5	1.1	.5
13	8.6	2.4	5.9	.7	13.3	17.0	2.8	168	1.4	4.2	75	1.9
14	5.3	1.6	1.8	.6	2.8	4.5	2.2	66	1.2	6.9	92	.8
15	5.5	1.4	1.3	1.0	2.7	45	1.6	21	1.0	12.1	4.5	.6
16	3.0	1.2	1.1	.8	8.1	36	1.9	3.6	1.1	3.2	15.6	4.0
17	4.2	2.4	1.0	.6	2.4	28	1.2	3.5	1.0	2.2	4.3	4.8
18	2.6	29	1.8	.7	2.2	75	1.1	1.8	1.1	2.6	2.4	.7
19	4.0	3.8	48	15.1	1.8	27	1.0	1.6	8.1	1.9	1.9	.6
20	[a] 3.5	2.4	20	8.2	1.5	7.4	.9	1.4	1.9	1.5	1.5	.6
21		1.9	4.8	10.1	1.5	4.0	.9	1.2	1.4	1.5	1.4	.6
22	[a] 19	1.5	2.6	5.1	1.4	2.6	.8	1.1	1.2	3.5	1.4	.6
23		1.4	1.9	2.2	1.5	2.1	.8	2.2	1.1	1.9	1.3	.6
24		1.3	1.6	1.6	1.2	1.9	.7	3.0	1.4	1.6	1.3	.6
25		1.1	1.4	1.4	1.1	1.6	.7	4.8	1.1	1.4	1.8	.7
26	[a] 3.7	1.0	1.3	1.2	1.1	1.4	.7	4.5	1.0	13.9	1.4	.6
27		1.0	1.3	65	1.1	1.2	.7	10.3	.9	44	1.0	.6
28		.9	1.2	22	1.4	1.1	.7	2.6	2.0	8.2	1.0	.5
29		.9	1.0	23	1.0	1.0	.7	2.6	1.8	4.5	.9	.5
30	[a] 1.8	.8	1.0	12.7	.9	1.2	.7		1.0	15.6	.9	.5
31		1.0		3.5		31	.6		1.0		.8	

[a] Estimated mean.

Daily discharge, in million gallons a day, of Kaaiea Stream near Kailua, Maui, 1922–1928—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1924–25												
1	0.5	5.0	0.9	1.1	1.5	8.3	1.0	0.6	0.5	7.1	5.3	2.4
2	.5	3.9	.9	1.0	1.4	2.4	2.3	.6	.4	4.8	3.7	2.8
3	.5	2.8	.8	.9	1.1	1.9	.8	.5	1.8	4.0	2.2	16.2
4	.5	10.2	.7	3.6	1.1	1.5	1.1	.5	1.3	4.2	2.3	23
5	.4	4.2	.7	1.7	1.0	1.3	1.3	.5	.7	8.2	3.4	8.6
6	.4	2.6	.6	1.0	1.0	1.2	2.4	.5	.6	[b] 4.2	2.2	6.2
7	.4	2.2	.8	.9	1.1	1.1	1.5	.5	.6	12.0	2.1	3.5
8	.9	5.9	.6	.8	1.1	1.0	8.4	.5	.5	4.0	1.9	2.8
9	.7	4.4	.6	.9	[c] 1.0	.9	6.8	9.4	.5	4.9	2.1	2.4
10	.5	4.0	.6	.9	[c] .9	.9	5.2	25	1.7	5.2	2.4	1.9
11	.4	6.1	.6	3.5	[c] .8	.9	3.9	2.4	5.0	7.4	1.9	1.6
12	1.1	2.8	.6	1.5	[c] .7	3.1	2.2	1.6	1.1	4.2	2.1	4.0
13	1.2	2.2	.6	1.2	.7	2.3	1.6	6.9	.8	4.2	2.2	3.5
14	.7	1.8	.5	1.0	.7	1.2	1.4	4.1	.7	2.6	1.6	8.0
15	2.9	3.0	.5	2.1	.7	1.0	1.2	2.2	.7	6.9	1.8	13.7
16	12.6	7.3	.5	72	.6	.9	1.0	1.6	.6	10.7	1.5	3.2
17	3.4	8.5	.5	3.2	.6	.8	1.0	1.3	.6	34	3.4	2.8
18	3.5	4.0	.5	7.5	.6	.7	.9	1.0	19.6	6.9	7.7	3.0
19	2.6	3.0	.5	5.8	.6	.8	2.0	.9	16.9	4.0	7.0	3.5
20	27	2.2	.5	3.3	64	.7	1.4	.8	7.7	2.8	2.8	2.2
21	23	2.4	.8	3.2	201	1.2	.9	.7	48	2.2	2.2	1.9
22	8.0	1.8	.5	13.3	17.6	.7	1.0	.7	12.2	2.1	15.4	1.6
23	2.6	1.6	.5	17.2	3.2	.6	1.8	.7	3.7	1.6	5.4	1.5
24	1.9	1.5	2.2	28	2.4	.6	1.3	.6	2.4	1.5	3.2	1.4
25	1.6	1.4	6.6	11.0	1.8	.6	.9	.6	1.9	1.4	2.4	1.2
26	1.4	1.3	114	3.7	1.5	.5	.7	.5	12.2	3.5	2.2	2.7
27	3.0	1.2	12.3	3.0	1.4	.5	.7	.5	42	1.6	2.1	3.5
28	2.2	1.1	2.8	2.1	3.3	.5	.8	.5	8.8	1.4	3.3	20
29	2.4	1.0	1.8	2.1	3.0	.5	.8	-------	41	4.3	2.2	3.6
30	4.2	1.0	1.4	2.2	14.0	.5	.7	-------	22	1.9	2.8	30
31	2.4	.9	-------	1.8	-------	.5	.6	-------	4.9	-------	3.0	------
1925–26												
1	3.7	2.8	9.4	1.6	0.8	1.1	4.9	1.0	0.6	12.0		1.0
2	2.4	5.4	4.8	1.2	.9	1.0	.9	.6	.6	1.0		.7
3	1.9	2.2	3.5	4.2	1.5	.9	.7	.6	.6	.7		.7
4	1.5	4.9	2.6	1.4	2.0	.7	2.1	.6	.5	.6	[a] 0.8	.6
5	1.3	26	2.2	1.9	4.4	.7	.9	.6	.5	.5		.6
6	1.2	14.8	1.9	2.5	2.9	.7	.7	.5	.5	1.1		.6
7	2.1	6.4	1.6	2.0	30	.7	.7	.6	.5	.9	5.6	.6
8	1.3	3.5	1.4	3.0	12.1	.6	.6	.5	.5	.6	6.3	.5
9	1.0	2.6	1.7	2.1	9.8	.7	.6	.8	.5	.5	1.8	.5
10	1.0	2.1	1.6	4.1	3.5	.6	.7	4.2	.5	.5	1.1	.8
11	3.2	1.8	11.6	2.2	2.6	.6	3.0	2.4	.5	.4	3.8	7.6
12	1.3	1.6	6.9	1.6	2.1	.6	.8	.8	.5	[b] 5.1	5.0	19.9
13	1.1	1.3	3.4	1.5	5.2	.6	.7	.6	.5	2.6	1.5	25
14	.9	1.4	2.4	1.3	4.8	.6	.6	.6	.4	1.1	1.3	7.8
15	.9	1.2	1.8	1.2	9.6	.7	.7	.7	.4	1.0	1.1	2.2
16	.8	2.7	1.5	1.1	11.2	.7	1.1	.5	.5	1.0	1.0	1.9
17	1.5	1.4	1.5	1.0	18.8	.5	.7	27	.4	[b] 6.9	.9	1.5
18	1.8	1.1	3.0	.9	5.6	.5	.6	8.2	.4	2.4	.7	1.2
19	.9	1.9	2.7	1.0	6.2	2.5	.6	2.1	.5	[b] 2.5	.7	1.2
20	1.3	1.7	2.0	1.0	3.0	.7	.5	1.4	.4	[b] 4.4	.7	1.0
21	2.4	2.5	2.4	.9	2.2	.6	37	1.5	.4	[b] 1.4	.7	.9
22	1.2	10.0	1.4	.9	1.9	.5	2.9	1.0	4.0	1.2	.7	.8
23	.9	4.8	1.3	.7	1.6	.5	1.4	.8	1.2	1.8	.7	.7
24	.9	2.4	1.2	11.0	7.7	.5	.9	1.1	.5	5.5	.6	.7
25	1.3	5.4	1.0	1.9	2.8	.6	.8	.8	.4		1.2	.7
26	.9	21	.9	1.8	1.8	.5	.7	.7	.4		.9	.6
27	15.4	58	.8	1.3	1.5	.5	.7	.8	.5	[a] 1.2	.7	.6
28	2.8	7.7	.7	1.1	1.3	.4	.7	.7	.5		.7	.6
29	11.0	13.1	1.0	.9	1.2	.4	1.0	-------	.5		2.2	.5
30	2.1	8.2	9.9	.9	1.5	.4	1.2	-------	.4		6.2	.5
31	4.8	17.0	-------	.8	-------	7.8	1.2	-------	.5	-------	2.0	------

[a] Estimated mean. [b] Partly estimated. [c] Interpolated.

Daily discharge, in million gallons a day, of Kaaiea Stream near Kailua, Maui, 1922–1928—Continued

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1926-27												
1	0.5	2.8	1.6	1.1	0.9	0.6	0.7	1.4	6.7	11.0	1.9	2.1
2	.5	6.8	1.4	.9	.8	.6	14.4	1.2	2.1	4.0	1.6	2.5
3	.5	13.0	1.2	.8	.7	.6	224	1.0	4.4	3.4	1.5	4.2
4	.5	2.2	1.1	.8	.7	.6	15.5	.9	15.4	2.2	1.8	1.9
5	.4	52	1.1	8.1	.8	.6	4.0	.8	3.7	2.1	2.6	2.1
6	.6	3.0	.9	10.7	.7	1.0	3.2	.7	7.8	1.5	3.0	7.9
7	1.3	1.8	1.3	2.8	.7	.8	11.2	.7	6.4	1.3	11.2	6.4
8	.6	1.8	1.2	1.6	.6	.6	9.0	.7	3.5	1.1	6.4	2.4
9	2.3	1.4	.9	2.6	.6	.5	2.8	.7	2.1	1.6	4.1	2.8
10	.9	1.5	.7	2.2	.6	.6	1.9	.6	1.6	1.2	7.7	2.4
11	.7	1.1	.7	1.5	.6	.5	1.9	.6	1.4	9.3	2.8	1.9
12	.6	1.0	.8	1.2	1.0	.6	49	.6	1.3	2.6	2.8	1.5
13	.7	3.9	5.0	1.1	.9	.6	6.1	.5	1.4	1.8	2.2	1.4
14	.6	34	1.3	1.0	102	.5	2.6	.5	1.3	25	1.8	1.3
15	.7	2.4	.9	.9	4.2	.5	1.8	.5	1.1	12.6	37	1.2
16	.6	2.6	.8	.9	2.1	.5	1.5	1.1	1.1	27	20	4.3
17	.6	8.1	.7	1.4	1.9	.5	1.3	.6	2.3	43	6.0	3.2
18	.5	2.8	.7	1.2	1.2	.7	1.2	.5	2.7	18.3	3.5	1.6
19	.5	1.9	12.9	1.6	1.9	1.1	1.0	.5	1.2	40	2.8	1.4
20	.5	10.2	2.0	.9	1.5	.6	1.0	.5	1.0	66	2.2	1.3
21	.5	27	1.2	.8	1.8	1.9	4.6	.5	.8	13.6	2.1	1.1
22	2.4	6.5	1.1	.8	1.1	.6	4.1	.5	.9	11.1	1.9	1.0
23	.7	3.5	1.1	1.0	.9	3.0	1.5	.4	1.8	4.9	1.6	1.0
24	.7	2.8	1.9	1.0	.8	1.0	1.6	3.5	2.4	7.8	1.4	1.0
25	1.1	3.3	3.4	.8	2.0	4.7	6.6	23	1.3	4.5	1.3	.9
26	.6	1.8	1.5	.7	1.8	4.5	5.6	5.7	1.6	5.7	1.1	.8
27	1.2	1.9	2.0	.7	.9	2.0	2.2	2.6	1.1	4.5	1.4	.7
28	1.4	3.2	5.8	4.6	.8	1.3	2.1	4.5	1.0	3.0	2.5	.7
29	.7	2.4	1.8	1.5	.8	1.0	2.2	-------	1.4	2.6	2.6	.7
30	.7	2.2	1.3	1.0	.7	.8	1.6	-------	1.2	2.7	2.5	.8
31	1.6	2.5	-------	.9	-------	.7	1.4	-------	21	-------	1.8	-------
1927-28												
1	0.6	1.9	2.2	1.3	0.7	3.1	1.5					1.0
2	.6	5.9	1.8	1.8	.6	3.6	1.3	[a] 16			[a] 4.7	.9
3	.6	3.2	1.6	1.2	.6	6.8	1.2			[a] 1.9		.8
4	.6	2.4	1.4	1.0	.5	2.1	1.3					.8
5	1.3	1.8	1.3	1.0	.5	1.5	1.6	[a] 4.7	[a] 6			.9
6	.9	2.0	26	.8	.5	5.7	1.1			[a] 15	[a] 3.6	2.5
7	.7	4.2	20	.8	.5	9.9	.9					.9
8	6.0	19.6	12.2	3.4	3.2	68	1.0					.7
9	9.7	8.3	3.5	2.7	.8	4.4	1.0					.6
10	12.8	4.6	5.0	1.1	.6	2.2	.8	[a] 1.8		[a] 3.0		.7
11	9.1	13.7	3.8	.9	3.7	1.8	1.4				[a] 30	2.6
12	12.2	7.3	2.2	2.9	1.3	2.7	5.9					1.7
13	4.2	4.4	1.8	1.1	.8	3.1	8.8					.7
14	3.5	4.0	2.7	1.0	.7	1.8	5.9	[a] 10		[a] 12		1.2
15	2.1	2.8	2.6	.9	.6	1.5	2.4					2.2
16	1.6	3.4	1.6	.7	.6	2.1	49		[a] 4		[a] 2.4	.9
17	1.5	2.6	1.4	.7	62	2.0	4.4			[a] 2.1		.7
18	1.5	5.1	1.3	.6	89	3.1	4.8					10.4
19	1.4	4.6	1.1	.7	9.2	8.9	6.4					1.8
20	1.3	15.3	1.0	2.7	3.9	9.0	4.8					1.3
21	1.8	3.7	.9	1.1	3.5	4.5	9.9	[a] 1.9		[a] 1.3	[a] 1.3	1.3
22	1.8	2.5	.8	1.8	3.0	20	3.0					1.4
23	3.2	3.9	.7	1.2	2.7	4.2						1.0
24	1.8	14.1	6.3	1.9	3.2	2.8	[a] 7.5					2.5
25	1.8	5.3	2.6	3.1	9.6	22						3.5
26	12.8	4.4	2.5	1.3	13.0	4.2	[a] 2.2		[a] 7.5	[a] 8	[a] 12	12.1
27	6.2	4.2	4.3	1.0	5.3	15.9		[a] 9				4.7
28	4.5	3.2	2.4	.9	3.0	21						3.6
29	11.0	9.3	1.8	.8	2.2	3.0	[a] 12		[a] 4.6		[a] 2.2	4.3
30	3.0	4.0	1.4	.7	1.8	1.9		-------		[a] 20		12.3
31	2.2	3.0	-------	.7	-------	1.6		-------				-------

[a] Estimated mean.

Monthly discharge, in million gallons a day, of Kaaiea Stream near Kailua, Maui, 1922–1928

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
1922						
January	192	1.4	16.0	24.8	495	1,520
February	93	1.2	9.77	15.1	274	840
March	93	.6	13.9	21.5	431	1,320
April	14.3	.7	3.58	5.54	107	330
May	5.9	.8	1.94	3.00	60.0	185
June	1.6	.4	.77	1.19	23.0	71
The period (181-days)	192	.4	7.68	11.9	1,390	4,270
1922–23						
July	2.8	0.4	0.70	1.08	21.8	67
August	12.6	.7	2.77	4.29	85.9	264
September	58	.7	4.55	7.04	137	419
October	53	1.1	4.95	7.66	154	471
November	63	1.1	8.34	12.9	250	768
December	2.2	.5	.81	1.25	25.2	77
January	130	.5	20.1	31.1	624	1,910
February	59	.6	8.11	12.5	227	697
March	35	.9	4.29	6.64	133	408
April	18.3	1.8	5.90	9.13	177	543
May	8.5	1.0	2.51	3.88	77.7	239
June	7.0	.9	1.96	3.03	58.7	180
The year	130	.4	5.40	8.36	1,970	6,040
1923–24						
July			4.56	7.06	141	434
August	29	0.8	3.02	4.67	93.6	287
September	48	.6	4.60	7.12	138	424
October	65	.6	6.14	9.50	190	584
November	69	.9	5.45	8.43	164	502
December	75	.7	13.3	20.6	412	1,270
January	9.0	.6	1.73	2.68	53.6	165
February	168	.4	10.8	16.7	314	961
March	13.5	.9	2.88	4.46	89.4	274
April	44	.8	5.54	8.57	166	510
May	92	.8	7.74	12.0	240	736
June	4.8	.5	.91	1.41	27.4	84
The year	168	.4	5.54	8.57	2,030	6,230
1924–25						
July	27	0.4	3.66	5.66	113	348
August	10.2	.9	3.77	5.06	101	311
September	114	.5	5.18	8.01	155	477
October	72	.8	6.50	10.1	202	618
November	201	.6	11.0	17.0	330	1,010
December	8.3	.5	1.28	1.98	39.6	122
January	8.4	.6	1.86	2.88	57.6	177
February	25	.5	2.36	3.65	66.2	203
March	48	.4	8.43	13.0	261	802
April	34	1.4	5.46	8.45	164	503
May	15.4	1.5	3.35	5.18	104	319
June	30	1.2	6.09	9.42	183	561
The year	201	.4	4.87	7.54	1,780	5,450

Monthly discharge, in million gallons a day, of Kaaiea Stream near Kailua, Maui, 1922–1928—Continued

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
1925–26						
July	15.4	0.8	2.41	3.73	74.8	229
August	58	1.1	7.64	11.8	237	727
September	11.6	.7	2.94	4.55	88.1	271
October	11.0	.7	1.90	2.94	59.0	181
November	30	.8	5.35	8.28	160	493
December	7.8	.4	.92	1.42	28.4	88
January	37	.5	2.28	3.53	70.6	217
February	27	.5	2.20	3.40	61.7	189
March	4.0	.4	.62	.96	19.1	59
April	12.0	.4	2.10	3.25	62.9	193
May	6.3	.6	1.71	2.65	52.9	163
June	25	.5	2.75	4.25	82.5	253
The year	58	.4	2.73	4.22	997	3,060
1926–27						
July	2.4	0.4	0.83	1.28	25.7	79
August	52	1.0	6.82	10.6	211	649
September	12.9	.7	1.94	3.00	58.3	179
October	10.7	.7	1.84	2.85	57.1	175
November	102	.6	4.53	7.01	136	417
December	4.7	.5	1.10	1.70	34.1	105
January	224	.7	12.5	19.3	388	1,190
February	23	.4	1.98	3.06	55.3	170
March	21	.8	3.32	5.14	103	316
April	66	1.1	11.2	17.3	335	1,030
May	37	1.1	4.62	7.15	143	440
June	7.9	.7	2.08	3.22	62.5	191
The year	224	.4	4.41	6.82	1,610	4,940
1927–28						
July	12.8	0.6	3.95	6.11	122	376
August	19.6	1.8	5.64	8.73	175	537
September	26	.7	3.95	6.10	118	363
October	3.4	.6	1.35	2.09	41.8	128
November	89	.5	7.59	11.7	228	699
December	68	1.5	7.88	12.2	244	750
January	49	.8	6.38	9.87	198	607
February			4.33	6.70	126	385
March			1.59	2.46	49.2	151
April			3.97	6.14	119	366
May			7.62	11.8	236	725
June	12.3	.6	2.67	4.13	80.0	246
The year			4.75	7.35	1,740	5,330

SPRECKELS DITCH BELOW KAAIEA GULCH, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder 1,000 feet below intake in Kaaiea Stream and 2 miles by road and trail southeast of ditch superintendent's house at Kailua.

RECORDS AVAILABLE.—December, 1917, to June, 1928.

EXTREMES.—Maximum discharge during year, 87 million gallons a day (135 second-feet) Dec. 8 (gage height, 4.64 feet); minimum, 0.1 million gallons a day (0.2 second-foot) Mar. 23 (gage height, 0.31 foot).

1917–1928: Maximum discharge, 110 million gallons a day (170 second-feet) Jan. 16, 1921 (gage height, 5.65 feet) and May 16, 1924 (gage height, 5.45 feet); no flow occasionally when water is turned out of ditch.

REMARKS.—Records fair except those for estimated periods, which are poor. Ditch diverts water for irrigation from all streams between Nuaailua and Kailua Streams; east of Puohokamoa Stream it diverts above Koolau ditch and west of Puohokamoa Stream it diverts below.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.2	0.4	0.7	0.6	0.2	1.6	0.7		0.2	0.6	0.9	0.6
2	.2	1.6	.6	1.0	.2	2.3	.5		.2	.9	.6	.6
3	.2	1.0	.6	.4	.2	1.6	.3	[a]3.1	.2	.4	3.7	.5
4	.2	.5	.4	.4	.2	.9	.6		.2	.3	2.2	.4
5	.5	.3	.4	.4	.1	.8	1.0		.2	.2	2.0	.5
6	.4	[a].4	8.4	.4	.1	2.0	.3		.2	9.3	1.7	1.5
7	.2		6.4	.4	.1	4.2	.2		.2	24	1.0	.4
8	2.0		7.7	.9	1.9	25	.2	[a].6	.3	6.2	.8	.2
9	2.1		1.3	1.4	.4	4.2	.5		.3	1.8	.6	.2
10	3.4	[a]2.7	1.3	.6	.2	1.6	.2		.3	1.3	3.0	.1
11	3.2		1.5	.6	.7	1.2	.6		.2	1.0	4.3	
12	3.8		.6	1.7	.2	1.9	1.1	[a]1.8	.2	.8	9.9	
13	1.6		.6	.5	.2	1.6	2.4		.2	.6	41	[a].2
14	1.5		.7	.4	.2	.7	2.7	5.5	.1	6.2	8.5	
15	.9		.7	.4	.2	.5	1.0		.1	1.2	2.5	
16	.8	[a]1.1	.5	.3	.2	.7	13.7		.1	.5	1.5	.1
17	.7		.5	.2	11.3	.4	2.3		.1	.4	1.2	.1
18	.9		.4	.2	22	.6	3.2		.1	.6	.9	
19	.6		.4	.2	6.5	7.6	4.3		.1	2.4	.6	
20	.6	[a]3.5	.4	.2	2.0	3.6		[a].5	.1	2.1	.7	[a].7
21	.6	[a]1.0	.4	.3	1.4	1.9	[a]2.3		.1	.2	.5	
22	.6		.4	.7	1.3	11.1			.1	.2	.4	
23	1.4	1.9	.3	.4	1.1	1.9			.1	.2	.4	.2
24	.6	5.2	2.1	.6	1.8	1.1			.5	.2	.3	.4
25	1.1	4.2	1.4	1.3	3.8	13.3	[a]1.1	1.5	.7	.2	.6	1.9
26	4.8	2.5	1.2	.4	4.9	1.9		.3	4.0	.2	6.1	6.6
27	1.8	1.9	2.2	.2	2.3	9.0		.3	1.8	.2	4.6	3.3
28	1.0	1.5	.9	.2	1.4	12.6		.2	1.9	.2	2.0	1.3
29	1.8	2.7	.6	.2	1.3	2.5	[a]2.8	.2	.9	.2	.9	2.7
30	.6	1.3	.6	.2	.9	1.4		-------	1.7	10.2	.6	5.6
31	.6	.9	-------	.2	-------	1.2		-------	1.3	-------	.6	-------

Month	Discharge			Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	4.8	0.2	1.25	1.93	38.9	119
August	-------	-------	1.72	2.66	53.4	164
September	8.4	.3	1.47	2.27	44.2	135
October	1.7	.2	.51	.79	15.9	48
November	22	.1	2.24	3.47	67.3	206
December	25	.4	3.90	6.03	121	371
January	13.7	.2	2.01	3.11	62.3	191
February	5.5	-------	1.14	1.76	33.2	102
March	4.0	.1	.54	.84	16.7	51
April	24	.2	2.43	3.76	72.8	224
May	41	.3	3.37	5.21	105	321
June	6.6	.1	1.06	1.64	31.7	98
The year	41	.1	1.81	2.80	662	2,030

[a] Estimated mean.

CENTER DITCH BELOW KOLEA RESERVOIR, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder about 200 feet below intake from Kolea Reservoir spillway, one-half mile below intake in Waikamoi Stream, and 1¾ miles southeast of Kailua.

RECORDS AVAILABLE.—March, 1918, to June, 1928.

EXTREMES.—Maximum discharge during year, 96 million gallons a day (149 second-feet) Nov. 17(gage height, 5.72 feet); minimum, 0.8 million gallons a day (1.2 second-feet) Mar. 20–24 (gage height, 0.90 foot).

1918–1928: Maximum discharge, 96 million gallons a day (149 second-feet) Nov. 17, 1927 (gage height, 5.72 feet); ditch dry Dec. 4, 1918, and Jan. 16, 1919.

REMARKS.—Records good for ordinary stages; fair for estimated periods (Nov. 23 to Jan. 14 and Jan. 20 to Feb. 11), extremely high stages, and when affected by débris in ditch. Receives the flow of Manuel Luis ditch and diverts water from all streams between Waikamoi and Kailua Streams. Regulated by head gates and spillways.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.8	14.0	8.7	4.4	4.0				4.4	20	13.2	2.9
2	1.7	29	9.5	6.6	3.5		5	34	7.2	9.6	3.7	8.4
3	1.6	22	9.5	4.1	3.4				1.7	7.5	25	4.9
4	1.6	13.9	4.8	3.7	3.3	14			1.7	1.7	29	2.3
5	2.9	7.2	6.2	3.7	3.0			7.5	1.6	1.6	29	2.3
6	2.2	6.1	52	3.3	2.5				1.4	17.7	26	16.6
7	1.9	14.4	70	3.3	2.5				1.4	62	11.6	2.5
8	45	40	53	13.9	12.1	50	3.1		1.4	39	5.9	2.0
9	63	25	29	14.1	3.7				1.4	13.1	4.2	1.8
10	74	37	28	4.0	3.0			3.5	1.4	6.1	14.4	1.8
11	51	54	39	3.4	13.8	19			1.4	4.6	19.6	1.8
12	53	37	25	14.8	3.8			10.0	1.5	3.8	54	3.0
13	30	30	15.3	4.4	2.9		26	23	1.3	3.7	82	1.9
14	21	26	27	4.1	2.6			37	1.2	45	44	1.9
15	8.3	19.5	25	3.7	2.9		18.6	6.8	1.1	23	27	2.2
16	6.3	25	10.0	3.4	3.2	10	66	4.2	1.1	5.3	17.1	1.8
17	5.3	24	6.3	3.3	44		31	4.0	1.0	4.0	8.3	1.5
18	5.7	26	5.5	3.0	75		31	12.9	1.0	3.7	5.0	19.1
19	4.7	24	6.5	3.0	37		31	9.1	1.0	4.1	4.0	7.0
20	4.6	46	10.2	16.1	19.2			3.5	.9	5.0	4.0	2.4
21	8.6	27	4.1	4.7	18.3			2.9	.9	8.0	3.3	2.2
22	9.3	16.9	7.6	6.3	19.7		24	2.4	.9	8.1	2.9	2.1
23	21	25	4.2	4.2				2.5	.8	2.4	2.6	1.9
24	7.3	57	14.1	5.5	16	42		11.2	1.4	2.4	2.4	6.0
25	13.1	35	24	19.5				9.2	3.6	2.2	11.3	21
26	60	31	8.9	5.7	38		6	2.3	70	2.1	42	33
27	47	31	31	4.4				2.0	66	2.3	31	30
28	29	23	19.6	4.0				2.0	18.5	2.2	8.0	25
29	32	32	7.1	3.7	17		28	1.9	2.2	2.1	4.1	25
30	18.4	26	4.6	3.5		18		-------	5.3	38	3.4	28
31	12.9	16.3	-------	3.5	-------			-------	23	-------	3.2	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	74	1.6	20.8	32.2	644	1,980
August	57	6.1	27.1	41.9	840	2,580
September	70	4.1	18.9	29.2	566	1,740
October	19.5	3.0	5.98	9.25	185	569
November	75	2.5	15.3	23.7	459	1,410
December	----------	----------	26.2	40.5	812	2,490
January	66	----------	18.4	28.5	569	1,750
February	----------	----------	10.1	15.6	293	899
March	70	.8	7.35	11.4	228	699
April	62	1.6	11.7	18.1	350	1,080
May	82	2.4	17.5	27.1	541	1,660
June	33	1.5	8.74	13.5	262	805
The year	----------	.8	15.7	24.3	5,750	17,700

NAILILIHAELE STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder 200 feet above Wailoa ditch intake, 700 feet above New Hamakua ditch trail, and 1½ miles south of Kailua.

RECORDS AVAILABLE.—October, 1913, to June, 1918, August, 1919, to June, 1928.

EXTREMES.—Maximum discharge uncertain, owing to missing record; minimum, 2.4 million gallons a day (3.7 second-feet) Mar. 24 (gage height, 0.11 foot). 1913–1918, 1920–1928: Maximum discharge, 1,800 million gallons a day (2,790 second-feet) May 1, 1916 (gage height, 6.3 feet); minimum, 0.45 million gallons a day (0.7 second-foot) July 14, 1920 (gage height, −0.52 foot).

REMARKS.—Records good for ordinary stages, fair for estimated periods (Aug. 16 to Sept. 30 and Dec. 4 to Jan. 8), and poor for high stages. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	4.0	12.9		8.6	5.5	20		34	4.6	15.9	15.6	8.6
2	3.8	28		9.0	5.0	33		44	4.7	17.8	12.7	8.0
3	3.8	17.9	8.5	7.4	4.8	22		34	4.4	9.7	50	7.4
4	3.6	13.9		7.0	4.6			22	4.1	8.4	37	7.2
5	5.9	11.0		6.8	4.4	16	10	16.4	4.0	7.8	42	7.6
6	4.7	10.6		6.3	4.2			13.4	4.0	47	34	20
7	4.0	16.8	70	6.3	4.2			11.5	3.6	111	17.3	9.0
8	37	60		27	15.1	55		10.3	3.6	42	13.9	6.8
9	48	29		16.3	6.5		6.3	9.7	3.6	18.3	12.0	6.1
10	68	27		7.8	4.1		5.7	9.2	3.5	14.2	29	6.3
11	47	59		7.0	24		8.6	7.8	3.5	12.0	58	11.3
12	59	37	28	16.4	9.0		35	14.7	4.1	10.3	90	18.7
13	24	27		7.8	5.5		62	30	3.4	15.2	195	7.2
14	21	21		7.4	4.8		48	44	3.3	99	51	7.6
15	12.9	16.4		6.3	4.1		18.3	11.0	3.3	25	25	11.8
16	11.2			6.1	4.6	19	116	9.0	3.0	15.8	18.6	8.0
17	9.7			5.7	109		32	7.8	2.9	13.2	15.3	6.4
18	9.5			5.2	149		38	7.6	2.8	12.7	13.2	42
19	8.6			5.6	40		42	7.0	2.8	12.2	11.2	14.4
20	8.4		9.5	13.7	19.0		32	6.3	2.8	10.1	11.7	9.5
21	11.0			8.2	17.6		45	5.7	2.8	9.2	9.7	9.7
22	10.7			9.5	17.0		21	5.7	2.7	8.4	9.0	9.7
23	17.3	26		7.4	16.6		31	5.4	2.5	8.0	8.2	8.0
24	10.3			10.3	30		21	15.3	8.2	7.4	7.4	14.4
25	10.1			20	54		14.2	10.1	13.2	6.8	20	28
26	64		20	8.6	66	46	12.2	5.7	58	6.4	53	57
27	41			7.0	30		39	5.2	46	7.2	38	31
28	33			6.3	18.0		23	4.8	21	6.1	19.6	23
29	39			5.9	13.9		34	4.7	8.4	17.1	12.9	27
30	16.1			5.5	12.0		32	-------	27	71	10.3	43
31	12.9		-------	5.2	-------		27	-------	30	-------	9.2	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	68	3.6	21.3	33.0	660	2,030
August	-------	-------	25.9	40.1	804	2,460
September	-------	-------	22.2	34.3	664	2,040
October	27	5.2	8.95	13.8	278	851
November	149	4.1	23.4	36.2	702	2,150
December	-------	-------	31.5	48.7	976	3,000
January	116	5.7	26.6	41.2	823	2,530
February	44	4.7	14.2	22.0	412	1,260
March	58	2.5	9.41	14.6	292	895
April	111	6.1	22.2	34.3	665	2,040
May	195	7.4	30.6	47.3	950	2,910
June	57	6.1	15.8	24.4	475	1,450
The year	195	2.5	21.0	32.5	7,700	23,600

KAILUA STREAM AT HAIKU-UKA BOUNDARY, NEAR KAILIILI, MAUI

LOCATION.—Water-stage recorder at trail crossing 100 feet above Haiku-uka boundary and 2½ miles by trail southeast of Kailiili.

RECORDS AVAILABLE.—July, 1918, to June, 1928.

EXTREMES.—Maximum discharge during year, 208 million gallons a day (322 second-feet) Nov. 17 (gage height, 4.86 feet); minimum, 0.02 million gallons a day (0.03 second-foot) Nov. 15–17 (gage height, 0.58 foot).

1919–1928: Maximum discharge, 386 million gallons a day (597 second-feet) Oct. 16, 1924 (gage height, 7.83 feet); minimum, 0.02 million gallons a day (0.03 second-foot) June 7–10, 1926 (gage height, 0.60 foot).

REMARKS.—Records fair for ordinary stages; poor for extremely high stages and estimated periods (July 1–14 and Dec. 26 to Jan. 20). No diversions.

Daily and monthly discharge, in million gallons a day, 1927–1928

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		1.0	0.6	0.25	0.03	0.06		19.8	0.13	2.2	1.6	0.35
2		1.2	.6	.19	.03	.10		7.1	.13	1.0	.45	.25
3		1.4	.45	.19	.02	1.1		5.8	.13	.45	5.7	.19
4	.1	1.2	.35	.19	.02	.06		2.2	.10	.35	6.8	.19
5		.8	.6	.19	.02	.05		1.4	.10	.35	8.6	.25
6		.6	39	.10	.02	1.1	.2	1.0	.10	26	4.2	.8
7		.8	29	.08	.02	10.2		.8	.08	26	1.0	.25
8		2.9	25	.45	.04	32		.6	.10	6.5	.6	.19
9		6.0	2.5	.19	.02	4.0		.45	.08	1.2	.35	.13
10	14	5.3	1.4	.10	.02	.19		.45	.08	.45	1.0	.13
11		27	9.4	.06	.08	.10		.35	.08	.35	21	.19
12		6.6	2.5	.35	.04	.10		.45	.08	.19	40	.19
13		2.2	1.2	.08	.02	1.1		4.1	.06	.19	70	.13
14	1.5	1.4	5.0	.06	.02	.35	22	23	.08	13.3	10.8	.10
15	.6	1.0	2.7	.05	.02	0.6		1.2	.08	4.3	1.8	.13
16	.35	3.1	1.2	.04	.02	.10		.45	.08	.8	1.0	.10
17	.35	1.8	.8	.04	45	.06		.25	.08	.45	.6	.08
18	.25	1.4	.8	.04	37	.08		.35	.06	.6	.45	.35
19	.19	1.6	.6	.05	3.4	.10	2.8	.45	.06	1.2	.35	.25
20	.19	14.5	.45	.35	.19	1.0		.25	.05	.6	.35	.13
21	.19	2.0	.35	.10	.08	.19	3.4	.19	.05	.45	.35	.19
22	.19	1.2	2.2	.10	.05	3.2	1.6	.19	.05	.25	.25	.13
23	.45	1.4	1.0	.08	.04	.8	5.4	.19	.05	.25	.25	.10
24	.35	15.4	3.9	.06	.03	.13	1.8	1.8	.10	.25	.19	2.4
25	.45	3.0	2.8	.35	3.9	39	1.0	2.2	4.9	.19	6.1	2.5
26	41	4.5	1.2	.06	8.7		.45	.35	80	.13	24	6.8
27	17.2	3.0	5.6	.05	1.3		6.4	.25	44	.19	7.0	2.6
28	2.0	1.4	3.0	.03	.13	7	3.7	.19	4.8	.13	1.4	1.4
29	1.0	1.8	.8	.03	.06		7.8	.13	1.0	.19	.8	1.2
30	.6	1.4	.35	.03	.05		14.5	-------	1.4	14.0	.45	5.5
31	.45	.8	-------	.03	-------		9.2	-------	3.5	-------	.35	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	41	----------	4.50	6.96	140	428
August	27	0.6	3.80	5.88	118	362
September	39	.35	4.84	7.49	145	446
October	.45	.03	.128	.198	3.97	12
November	45	.02	3.35	5.18	100	308
December	39	05	4.43	6.85	137	421
January	----------	----------	5.76	8.91	179	548
February	23	.13	2.62	4.05	75.9	233
March	80	.05	4.57	7.07	142	435
April	26	.13	3.42	5.29	103	315
May	70	.19	7.03	10.9	218	669
June	6.8	.08	.907	1.40	27.2	84
The year	80	----------	3.79	5.86	1,390	4,260

KAILUA STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder just above Wailoa ditch intake, 1¼ miles southwest of Kailua, and 2½ miles by road and trail south of Huelo.

RECORDS AVAILABLE.—December, 1910, to June, 1918, and July, 1919, to June, 1928.

EXTREMES.—Maximum discharge during year, 550 million gallons a day (851 second-feet) Apr. 6 (gage height, 6.45 feet); minimum, 1.3 million gallons a day (2.0 second-feet) Mar. 23–24 (gage height, 1.12 feet).

1910–1928: Maximum discharge, about 1,500 million gallons a day (2,300 second-feet) Feb. 1, 1922 (gage height, 10.5 feet; determined from flood-marks); minimum, 0.07 million gallons a day (0.11 second-foot) June 27, 1921 (gage height, 0.57 foot).

REMARKS.—Records poor. No diversions. Braced figures give estimated mean discharge for periods indicated.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.1	8.0	7.0	4.9	2.9	9.4	7.4		2.5	12.8		
2	1.8	12.4	6.1	4.3	2.9	10.7	6.5		2.5	8.7		
3	1.8	9.9	5.4	4.0	2.9	24	5.6	22	2.4	5.2		
4	1.8	8.2	4.9	3.7	2.6	8.5	5.2		2.2	4.0		
5	2.3	7.0	4.9	3.5	2.5	6.8	5.6		2.1	3.3		
											20	
6	2.1	6.1	109	3.3	2.3	11.0	4.3		2.1	86		
7	1.9	9.5	97	3.2	2.3	43	3.8		1.9	274		
8	44	30	67	9.8	5.6	126	3.7	7	1.8	145		
9	65	16.9	13.3	9.5	3.5	22	3.5		1.8			
10	116	24	12.7	4.2	2.8	10.7	3.3		1.7			6
										10		
11	59	74	21	3.5	13.6	8.7	3.8		1.6			
12	52	31	10.4	7.6	4.9	9.0	29		1.6		140	
13	17.2	18.0	8.2	4.5	3.5	12.0	113	20	1.6			
14	12.4	12.0	18.2	3.8	3.2	9.6	83		1.6	80		
15	8.2	10.4	13.0	3.4	2.9	7.2	15.6		1.5			
											17	
16	6.1	13.4	7.9	3.2	2.5	8.5	135		1.4			
17	5.2	10.7	6.8	3.0	146	7.0	19.7		1.4			
18	4.9	12.7	5.6	2.9	190	8.7	18.6		1.4			
19	4.5	12.9	5.2	2.9	29	12.4	13.3		1.4			
20	4.3	46	4.5	8.1	11.0	17.8	10.2		1.4			
								4.8			6.5	8.5
21	4.7	12.4	4.0	5.2	9.0	12.0	14.9		1.4			
22	5.1	9.0	5.0	4.7	8.7	38	6.8		1.4	5.5		
23	7.4	10.4	5.4	4.2	7.7	14.8	13.5		1.4			
24	5.2	55	14.3	5.1	8.7	9.9	7.2		2.6			
25	4.3	16.0	11.9	11.3	30	125	4.9		8.5			
											28	
26	89	13.4	8.2	5.5	58	28	4.2		162			
27	51	15.2	18.0	3.8	22	85	16.7	3.4	100			22
28	16.0	10.4	12.7	3.5	11.0	143	8.8	3.2	16.8			
29	15.3	16.8	7.0	3.3	8.5	19.9	15.1	2.6	6.3	20	6	
30	8.2	10.4	5.4	3.2	7.0	12.0	25	------	10.4			
31	6.5	8.5	------	2.9	------	9.0	22	------	14.1	------	------	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	116	1.8	20.2	31.3	625	1,920
August	74	6.1	17.8	27.5	551	1,690
September	109	4.0	17.3	26.8	520	1,590
October	11.3	2.9	4.71	7.29	146	448
November	190	2.3	20.2	31.3	608	1,860
December	143	6.8	28.1	43.5	870	2,670
January	135	3.3	20.3	31.4	629	1,930
February	------	------	9.10	14.1	264	810
March	162	1.4	11.6	17.9	361	1,100
April	274	------	28.7	44.4	860	2,640
May	------	------	31.1	48.1	964	2,960
June	------	------	9.78	15.1	294	900
The year	274	1.4	18.3	28.3	6,690	20,500

HOOLAWALIILII STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder just above New Hamakua ditch crossing, 2 miles southwest of Kailua, and 4 miles by road and trail west of Huelo.

RECORDS AVAILABLE.—April, 1911, to June, 1928.

EXTREMES.—Maximum discharge during year, 115 million gallons a day (178 second-feet) Dec. 8 (gage height, 2.73 feet); minimum, 0.5 million gallons a day (0.8 second-foot) Mar. 24 (gage height, 0.53 foot).

1911–1928: Maximum discharge, 485 million gallons a day (750 second-feet) Nov. 21, 1921 (gage height, 4.82 feet); minimum, 0.2 million gallons a day (0.3 second-foot) June 8, 1926 (gage height, 0.46 foot).

REMARKS.—Records good for medium stages, poor for high stages, and fair for estimated periods. No diversions. Discharge partly estimated Nov. 24. Braced figures give estimated mean discharge for periods indicated.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.4	4.4	3.7		1.4	4.4	4.1	4.6	2.0	3.3	3.9	3.3
2	2.4	5.1	3.3		1.4	4.4	3.7	6.8	2.0	3.0	3.5	2.8
3	2.4	4.6	3.0	2.3	1.4	5.1	3.3	6.1	2.2	2.8	6.6	2.6
4	2.4	4.4	2.8		1.4	4.1	3.3	4.6	2.0	2.6	5.8	2.6
5	2.4	3.7	2.8		1.4	3.7	3.3	4.1	2.0	2.3	5.8	2.4
6	2.3	3.7		2.2	1.2	4.1	2.8	3.7	2.0	9.2	5.8	3.0
7	2.2	4.0	14	2.2	1.2	6.4	2.6	3.5	2.0	17.4	4.4	2.6
8	3.0	13.5		2.4	1.8	25	2.3	3.3	2.0	9.9	4.1	2.6
9	3.3	6.7		2.4	1.2	7.7	2.3	3.0	2.0	5.4	3.7	2.3
10	6.7	6.1		2.3	1.4	5.4	2.3	2.8	2.0	4.4	3.9	2.3
11	6.7	9.1		2.3	1.8	4.6	2.4	2.4	2.0	3.9	4.2	2.4
12	8.1	7.7		2.6	1.6	4.6	2.6	3.0	2.0	3.7	10.8	2.6
13	4.8	6.7	5.5	2.3	1.4	4.4	4.1	6.8	1.8	3.9	53	2.3
14	4.4	5.4		2.3	1.2	3.7	5.1	5.6	1.8	10.6	17.1	2.3
15	3.7	4.8		2.0	1.4	3.5	3.5	2.8	1.8	5.1	9.0	2.3
16	3.7	4.6		1.8	1.2	3.5	24	2.4	1.8	4.4	6.4	2.2
17	3.5	4.4		1.8	22	3.3	6.7	2.3	1.7	4.1	5.1	2.2
18	3.3	4.6		1.7		3.3	6.7	2.3	1.6	3.9	4.4	4.5
19	3.3	4.6		1.7		4.6	7.7	2.2	1.4	3.7	3.9	3.9
20	3.3	8.0	2.9	1.7		5.0	7.0	2.0	1.2	3.5	3.9	3.7
21	3.0	4.6		1.7	5.5	4.2	8.5	2.2	.9	3.3	3.5	3.5
22	3.0	4.1		1.8		12.3	5.4	2.2	.9	3.0	3.3	3.0
23	2.7	4.4		1.7		6.4	5.1	2.3	.8	3.0	3.0	2.6
24	3.3	7.7		1.7	3.9	4.6	4.6	3.4	2.1	2.8	2.8	2.0
25	3.8	5.4		2.3	7.6	18.0	3.9	2.4	2.6	2.8	3.5	3.3
26	10.3	4.8	3.4	2.0	13.8	8.3	3.5	2.2	4.6	2.6	6.7	6.7
27	6.4	4.4		1.8	9.9	11.0	4.9	2.2	3.0	2.6	9.0	5.8
28	4.8	4.1		1.7	6.4	22	3.9	2.2	3.0	2.4	5.4	3.9
29	7.6	6.3		1.7	4.8	8.3	4.5	2.0	2.4	2.4	4.6	4.4
30	4.8	4.4		1.6	4.4	6.1	4.4	-------	3.1	9.5	4.1	6.1
31	4.6	4.1	-------	1.6	-------	4.6	4.1	-------	3.5	-------	3.9	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	10.3	2.2	4.18	6.47	130	398
August	13.5	3.7	5.50	8.51	170	523
September	----------	----------	4.86	7.52	146	447
October	----------	1.6	2.03	3.14	62.8	193
November	----------	1.2	4.82	7.46	145	444
December	25	3.3	6.99	10.8	217	665
January	24	2.3	4.92	7.61	153	468
February	6.8	2.0	3.29	5.09	95.4	293
March	4.6	.8	2.07	3.20	64.2	197
April	17.4	2.3	4.72	7.30	142	435
May	53	2.8	6.94	10.7	215	660
June	6.7	2.0	3.21	4.97	96.2	296
The year	53	.8	4.47	6.92	1,640	5,020

HOOLAWANUI STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder just above intake of Wailoa ditch, 2 miles southwest of Kailua, and 4 miles by trail west of Huelo; elevation 1,240 feet.

RECORDS AVAILABLE.—December, 1910, to June, 1928.

EXTREMES.—Maximum discharge during year, 252 million gallons a day (390 second-feet) Dec. 8 (gage height, 532 feet); minimum, 0.8 million gallons a day (1.2 second-feet) Mar. 21–24 (gage height, 0.18 foot).

1910–1928: Maximum discharge, about 550 million gallons a day (851 second-feet) Feb. 1, 1922 (gage height, 8.40 feet); minimum, 0.15 million gallons a day (0.2 second-foot) Oct. 25, 1917 (gage height, 0.19 foot).

REMARKS.—Records good for ordinary stages, fair for estimated period (May 14–23) and high stages. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.5	6.6	4.7	3.0	1.4	7.2	7.4	15.7	1.9	4.9	4.2	3.4
2	1.4	9.7	4.1	2.9	1.4	6.9	6.5	18.7	1.9	4.4	3.3	3.2
3	1.4	7.5	3.8	2.6	1.2	12.6	5.7	15.0	1.8	3.1	9.2	3.0
4	1.4	6.3	3.4	2.5	1.2	5.7	5.6	10.2	1.6	2.7	7.7	2.9
5	2.2	5.4	3.4	2.5	1.1	5.0	5.7	8.2	1.6	2.6	9.2	2.8
6	1.4	5.0	29	2.5	1.1	6.1	4.5	6.8	1.5	28	11.8	3.5
7	1.4	7.0	36	2.5	1.0	15.7	4.1	6.0	1.4	38	5.1	2.6
8	6.4	21	27	5.0	3.4	53	3.8	5.5	1.4	19.7	4.2	2.4
9	11.1	7.7	11.0	4.9	1.4	12.6	3.5	5.2	1.4	8.1	3.6	2.2
10	24	7.7	10.4	2.6	1.2	8.8	3.2	4.8	1.3	6.0	4.0	2.2
11	21	21	9.4	2.3	4.7	7.3	3.8	4.2	1.3	5.0	9.3	2.7
12	22	13.1	6.4	4.2	1.9	8.7	7.5	12.8	1.4	4.3	33	3.0
13	10.4	9.9	5.8	2.3	1.4	8.4	19.0	13.4	1.1	5.3	100	2.1
14	8.3	7.0	7.0	2.2	1.1	6.4	23	17.3	1.2	38	30	2.0
15	6.5	6.0	6.6	2.0	1.4	5.8	8.4	5.0	1.2	8.5		2.2
16	5.4	6.5	5.0	1.9	1.1	6.1	70	4.3	1.0	6.0		1.9
17	4.7	5.7	4.5	1.8	40	5.3	21	3.8	.9	5.1	8.0	1.8
18	4.5	6.5	4.0	1.6	69	5.7	19.0	3.6	.8	4.5		5.4
19	4.1	6.2	3.7	1.7	15.6	7.3	17.4	3.4	.8	4.2		2.8
20	3.8	16.7	3.5	2.2	7.8	8.4	14.2	3.1	.8	3.7		2.2
21	4.1	6.3	3.3	1.8	6.3	6.5	17.5	2.8	.8	3.4	4.2	2.2
22	4.2	5.3	3.8	2.0	5.7	22	10.0	2.6	.8	3.0		2.1
23	5.8	5.9	3.1	1.8	5.3	9.0	12.4	2.8	.8	2.9		1.9
24	4.0	20	7.5	2.0	4.9	6.7	9.2	5.1	3.4	2.7	3.4	2.1
25	5.8	9.1	5.4	3.9	15.9	46	7.2	4.3	3.8	2.5	5.2	3.8
26	28	7.2	4.0	2.2	33	17.7	6.3	2.5	17.3	2.3	14.8	7.9
27	17.5	6.6	6.6	1.7	18.4	30	12.7	2.2	13.4	2.3	12.7	5.1
28	10.8	5.9	5.0	1.6	9.8	58	8.0	2.0	6.5	2.2	5.5	3.6
29	15.1	10.1	3.8	1.5	7.4	21	10.6	2.0	2.9	2.1	4.5	4.0
30	8.3	6.1	3.2	1.4	6.3	12.6	11.9	-------	4.5	19.3	3.9	9.0
31	7.1	5.4	-------	1.4	-------	9.4	10.6	-------	5.6	-------	3.7	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	28	1.4	8.18	12.7	254	778
August	21	5.0	8.72	13.5	270	830
September	36	3.1	7.81	12.1	234	719
October	5.0	1.4	2.40	3.71	74.5	228
November	69	1.0	9.05	14.0	271	833
December	58	5.0	14.3	22.1	442	1,360
January	70	3.2	11.9	18.4	370	1,130
February	18.7	2.0	6.67	10.3	193	594
March	17.3	.8	2.78	4.30	86.1	264
April	38	2.1	8.16	12.6	245	751
May	100	3.3	11.7	18.1	363	1,110
June	9.0	1.8	3.20	4.95	96.0	295
The year	100	.8	7.92	12.3	2,900	8,890

HONOPOU STREAM NEAR HUELO, MAUI

LOCATION.—Water-stage recorder just above New Hamakua ditch crossing, 2½ miles southwest of Kailua, and 4½ miles southwest of Huelo; elevation about 1,250 feet.

RECORDS AVAILABLE.—December, 1910, to June, 1928.

EXTREMES.—Maximum discharge during year, 78 million gallons a day (121 second-feet) May 12 (gage height, 2.50 feet); minimum, 0.4 million gallons a day (0.6 second-foot) Apr. 29 (gage height, 0.11 foot).

1910–1928: Maximum discharge, 658 million gallons a day (1,020 second-feet) Feb. 1, 1922 (gage height, 5.50 feet); minimum, 0.15 million gallons a day (0.23 second-foot) July 14, 1920 (gage height, 0.05 foot).

REMARKS.—Records good. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.5	2.1	2.4	1.5	0.6	3.2	4.2	3.7	0.8	1.4	0.8	1.7
2	.5	3.0	2.1	1.4	.6	3.4	3.6	5.9	.7	1.3	.8	1.6
3	.5	2.1	2.0	1.3	.6	3.6	3.1	4.3	.7	1.0	2.9	1.5
4	.5	1.9	1.9	1.3	.5	2.5	3.1	3.6	.7	.9	1.7	1.4
5	.7	1.7	1.9	1.1	.5	2.1	2.9	3.1	.7	1.0	1.6	1.4
6	.5	1.7	9.5	1.1	.5	2.7	2.3	2.9	.6	5.2	1.7	1.6
7	.5	2.1	11.5	1.1	.5	4.3	2.0	2.6	.6	11.3	1.1	1.3
8	1.5	9.2	9.5	1.5	1.2	18.6	2.0	2.4	.6	5.6	1.1	1.1
9	1.6	3.2	5.1	1.4	.7	5.4	1.7	2.1	.6	3.1	.9	1.0
10	4.1	2.7	5.4	1.0	.5	4.0	1.5	2.0	.5	2.4	1.0	1.0
11	4.1	6.1	4.4	.9	1.3	3.6	1.7	1.7	.5	2.0	1.0	1.2
12	5.3	4.9	3.6	1.5	.7	4.4	2.4	2.3	.6	1.8	6.8	1.3
13	2.5	4.2	3.2	.9	.6	3.8	3.4	4.5	.6	2.5	39	1.0
14	2.0	3.6	3.6	.9	.5	2.9	4.0	4.2	.7	7.5	14.3	1.0
15	1.7	3.1	3.1	.8	.6	2.6	2.3	1.9	.6	2.7	7.0	1.1
16	1.6	3.4	2.5	.8	.5	2.6	23	1.8	.6	2.3	5.1	.9
17	1.5	3.0	2.4	.8	8.5	2.3	6.4	1.6	.5	1.9	4.2	.9
18	1.4	3.2	2.1	.8	19.1	2.5	5.9	1.6	.5	1.7	3.6	3.1
19	1.3	3.1	1.9	.8	5.9	3.1	6.6	1.4	.5	1.4	3.1	1.3
20	1.2	5.4	1.9	.8	3.4	3.1	5.2	1.3	.5	1.2	3.1	1.1
21	1.2	3.0	1.7	.8	2.9	2.5	6.4	1.2	.5	1.0	2.6	1.0
22	1.1	2.7	1.7	.8	2.5	8.7	4.2	1.2	.5	.9	2.4	1.1
23	1.7	2.7	1.5	.7	2.5	3.2	4.4	1.2	.5	.9	2.2	.9
24	1.1	5.7	2.9	.8	2.7	2.9	3.8	2.1	2.0	.8	1.9	1.1
25	2.0	3.6	1.9	1.4	5.1	16.8	3.1	1.2	1.5	.7	2.5	1.7
26	7.3	3.0	1.9	.8	11.2	6.4	2.9	.9	3.0	.7	5.3	3.1
27	3.0	2.7	2.6	.7	6.8	11.2	4.5	.8	1.7	.7	5.6	2.0
28	2.3	2.5	2.0	.7	4.6	22	3.2	.8	1.6	.5	2.7	1.3
29	4.8	4.8	1.6	.7	3.7	8.1	3.8	.8	.9	.5	2.1	1.7
30	2.5	2.9	1.5	.6	3.1	6.0	3.7	------	1.7	5.8	1.9	3.5
31	2.3	2.5	------	.6	------	4.9	3.0	------	1.7	------	1.7	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	7.3	0.5	2.03	3.14	62.8	193
August	9.2	1.7	3.41	5.28	106	324
September	11.5	1.5	3.31	5.12	99.3	305
October	1.5	.6	.98	1.52	30.3	93
November	19.1	.5	3.08	4.77	92.4	284
December	22	2.1	5.59	8.65	173	532
January	23	1.5	4.20	6.50	130	400
February	5.9	.8	2.24	3.47	65.1	199
March	3.0	.5	.89	1.38	27.7	85
April	11.3	.5	2.36	3.65	70.7	217
May	39	.9	4.25	6.58	132	404
June	3.5	.9	1.46	2.26	43.9	134
The year	39	.5	2.82	4.36	1,030	3,170

WAILOA DITCH AT HONOPOU, NEAR HUELO, MAUI

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

RECORDS AVAILABLE.—November, 1922, to June, 1928.

EXTREMES.—Maximum discharge during year, 171 million gallons a day (265 second-feet, Apr. 6–7 (gage height, 5.72 feet); minimum 34 million gallons a day (53 second-feet) Mar. 24 (gage height, 1.89 feet).

1923–1928: Maximum discharge, that of Apr. 6 and 7, 1928; minimum, 12.2 million gallons a day (18.9 second-feet) Jan. 13, 1927 (gage height, 0.94 foot).

REMARKS.—Records good except those estimated, which are fair. Receives the flow of Koolau ditch and diverts water from all streams on east Maui west of Alo Stream. Regulated by spillways and gates.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	51	142	142			142		162	64		144	88
2	48	158	126			154		162	64	a 140	118	81
3	48	150	118			158		162	64		151	78
4	48	146	107			136		158	57		162	74
5	67	128	107	a 85	a 55	114	a 75	154	54	a 90	162	80
6	60	118	162			113		150	54		162	147
7	54	142	166			162		138	51	170	150	94
8	143	162	162			166		130	51	166	138	74
9	158	158	162			162		126	51	154	124	67
10	166	158	162		a 65	148	64	118	48	132	142	67
11	162	162	162	a 110		142	81	107	48	111	144	82
12	162	162	158			147	137	136	60	96	166	109
13	158	162	150			158	166	128	48	96	166	67
14	150	158	158			138	164	162	45	166	166	69
15	134	154	158		a 60	111	154	146	48	158	166	95
16	116	158	142	a 70		a 120	166	126	42	146	162	72
17	107	154	130				166	114	40	126	150	60
18	107	158	122				166	105	40	111	132	140
19	99	158	111				166	101	38	130		123
20	99	162	103		a 160		162	100	37	122		85
21	113	154	99				166	88	38	112	a 100	85
22	118	150	110				162	88	37	88		85
23	145	154	98	a 110		a 150	162	88	36	85		71
24	120	162	115				158	92	39	78	85	88
25	118	158	150		159		142	133	78	71	124	150
26	166	158	141		166		126	88	158	67	162	158
27	162	158	158		162		156	78		74	162	158
28	158	154	154		158		158	71		64	154	154
29	158	158	126	a 75	146		162	67	130	65	131	154
30	150	154	a 113		126	a 110	162	-------		162	107	157
31	142	150	-------		-------		158	-------		-------	96	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	166	48	119	184	3,690	11,300
August	162	118	154	238	4,760	14,700
September	166	98	136	210	4,070	12,500
October	-------	-------	91.0	141	2,820	8,660
November	-------	-------	105	162	3,140	9,670
December	-------	-------	141	218	4,370	13,400
January	166	64	128	198	3,980	12,200
February	162	67	120	186	3,480	10,700
March	-------	36	65.8	102	2,040	6,260
April	170	64	113	175	3,390	10,400
May	166	85	136	210	4,230	12,900
June	158	60	100	155	3,010	9,210
The year	-------	36	117	181	43,000	132,000

a Estimated mean.

NEW HAMAKUA DITCH AT HONOPOU, NEAR HUELO, MAUI

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

RECORDS AVAILABLE.—January, 1918, to June, 1928.

EXTREMES.—Maximum discharge during year uncertain, owing to missing record; minimum, 0.4 million gallons a day (0.6 second-foot) Nov. 5–8 (gage height, −0.23 foot).

1918–1928: Maximum discharge, 134 million gallons a day (207 second-feet) Aug. 5, 1926 (gage height, 5.98 feet); minimum, 0.07 million gallons a day (0.11 second-foot) Aug. 7, 1923 (gage height, −0.23 foot).

REMARKS.—Records good for ordinary stages, fair for high stages, and poor for estimated periods. Diverts from streams between Waikamoi and Halehaku Streams above Center and Lowrie ditches. Regulated by gates and spillways.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	0.4	3.9	4.0	1.3	0.6	18.8		59	0.8	43	[a]7.5	1.5
2	.5	34	1.7	1.9	.5	24		59	.8	24		1.3
3	.5	24	1.5	1.2	.5	46	[a]5	64	.8	1.1		1.2
4	.4	10.8	1.4	1.1	.4	4.6		37	.7	.9		1.2
5	.7	2.1	1.2	1.0	.4	2.0		21	.7	.9	[a]50	2.4
6	.7	.9	63	1.0	.4	13.0		10.8	.7			26
7	.5	9.4	87	1.0	.4	59	[a]2.0	4.1	.6			2.0
8	37	71	78	21	14.2	87		1.5	.7	[a]60		1.2
9	56	30	38	17.6	.8	55		1.5	.6		[a]7.5	1.3
10	71	49	42	1.0	.5	9.6	1.3	1.3	.6			1.7
11	61	61	52	1.0	19.4	6.2	2.5	1.2	.6	[a]2.8		1.7
12	67	61	21	18.5	.7	20	30	15.1	.7		[a]120	10.5
13	38	38	9.6	1.0	.6	34	76	19.4	.6			.9
14	28	25	33	.9	.4	5.8	73	60	.6	[a]70		.9
15	2.8		30	.9	.5	3.0	31	7.8	.6			1.0
16	1.1		9.0	1.1	.5	4.1	87	1.5	.6		[a]15	.9
17	.9		1.8	1.0	57	5.9	64	1.2	.6	[a]1.9		.7
18	1.0	[a]24	1.5	.9	87	12.2	73	10.1	.5			38
19	.8		1.4	.7	64	54	73	1.5	.5		[a]3.4	16.2
20	.7		1.3	8.5	18.0	50	61	1.0	.5			.9
21	1.3		1.2	.8	20	36	70	1.0	.5			.9
22	4.0		3.6	1.3	[b]18.2	78	38	1.0	.5		[a]1.5	.9
23	17.1	[b]25	1.2	.7	[a]15	45	53	1.0	.5			.7
24	2.0	75	17.0	.9	[b]23	17.5	31	15.7	1.7	[a].8	1.3	3.7
25	1.6	52	26	20	58	75	4.0	14.2	3.0		10.6	42
26	68	46	6.3	.9	84	57	2.2	1.0	76		66	63
27	60	42	49	.7	65		52	.9	70		67	57
28	34	23	22	.6	26		42	.9	41		36	43
29	53	53	3.3	.6	6.7	[a]65	57	.8	1.4		3.3	42
30	12.6	33	1.4	.6	2.7		65	-------	21	[a]80	2.0	50
31	19.8	14.9	-------	.5	-------		50	-------	56	-------	1.7	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	71	0.4	20.7	32.0	642	1,970
August	75	.9	31.5	48.7	976	3,000
September	87	1.2	20.3	31.4	609	1,870
October	21	.5	3.55	5.49	110	338
November	87	.4	19.5	30.2	585	1,800
December	-------	2.0	37.0	57.2	1,150	3,520
January	87	-------	34.5	53.4	1,070	3,280
February	64	.8	14.3	22.1	414	1,270
March	76	.5	9.17	14.2	284	872
April	-------	-------	18.5	28.6	556	1,700
May	-------	-------	31.4	48.6	973	2,990
June	63	.7	13.8	21.4	415	1,270
The year	-------	-------	21.3	33.0	7,780	23,900

[a] Estimated mean. [b] Partly estimated.

KAUHIKOA DITCH AT OPANA WEIR, NEAR HUELO, MAUI

LOCATION.—Water-stage recorder a short distance below crossing of Opana Stream and 8 miles by road west of Huelo.
RECORDS AVAILABLE.—January, 1910, to June, 1928.
EXTREMES.—See table of monthly discharge for maximum and minimum daily discharges.
REMARKS.—Record of daily discharge furnished by East Maui Irrigation Co. Diverts water at 900-foot elevation from all streams between Halehaku and Maliko Streams. Regulated by gates.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	2.6	11.4	7.9	4.9	3.2	36	2.4	69	2.2	38	8.8	3.2
2	2.6	59	6.0	5.4	3.2	45	2.4	48	2.1	17.1	3.4	3.0
3	2.5	31	5.6	4.8	3.2	45	3.2	47	2.1	2.4	70	2.9
4	2.5	16.1	5.4	4.6	3.0	8.8	11.3	47	2.0	2.0	62	3.2
5	3.0	6.3	10.5	4.6	3.0	6.4	14.8	44	2.0	2.0	68	3.4
6	2.8	9.1	89	4.4	3.0	26	8.7	50	2.0	35	49	26
7	2.7	31	94	4.5	3.0	76	7.9	24	2.0	93	15.0	3.0
8	63	72	87	40	17.2	91	7.8	14.1	2.0	70	6.8	2.5
9	77	50	32	14.2	4.0	72	7.2	7.9	2.0	19.5	3.8	2.3
10	91	59	70	4.8	3.4	29	6.9	7.3	1.9	5.4	31	2.1
11	72	89	70	4.8	28	20	8.4	6.6	1.9	4.4	36	6.0
12	85	81	38	24	4.2	37	49	24	1.9	3.8	92	7.0
13	65	62	25	5.0	3.6	56	90	48	1.7	15.0	96	2.2
14	31	54	63	4.5	3.4	15.0	51	67	1.6	89	90	2.1
15	6.9	34	38	4.3	3.4	8.1	41	16.8	1.6	44	64	2.1
16	5.4	52	9.9	4.4	3.4	12.7	48	7.2	1.6	9.6	39	1.8
17	4.8	33	7.0	4.4	72	11.5	48	5.4	1.6	4.0	14.1	1.8
18	4.8	50	6.4	4.3	94	21	47	4.2	1.5	3.6	7.4	40
19	4.4	65	6.0	5.1	74	68	47	4.4	1.4	3.9	6.0	6.4
20	4.2	71	5.9	11.4	48	73	47	3.4	1.4	3.3	5.6	2.0
21	7.4	45	5.8	4.4	36	49	48	3.2	1.4	2.9	4.9	1.9
22	6.1	27	12.9	5.1	32	90	47	3.0	1.4	2.5	4.4	1.9
23	27	50	6.5	3.4	26	56	46	3.0	1.4	2.2	4.0	1.8
24	5.8	79	31	4.5	33	30	48	24	4.1	2.2	3.5	10.0
25	17.6	63	30	28	81	34	41	12.1	14.4	2.1	24	38
26	83	63	22	4.6	93	3.6	14.7	2.8	90	1.6	71	62
27	71	58	61	4.2	69	2.4	9.5	2.5	82	1.8	62	42
28	55	39	37	4.0	41	2.4	76	2.4	35	1.7	27	38
29	61	66	6.6	3.8	17.5	2.3	49	2.2	3.6	9.4	5.1	44
30	18.0	43	5.3	3.5	8.2	3.1	48	-------	28	46	3.8	54
31	7.6	26	-------	3.4	-------	2.4	49	-------	52	-------	3.4	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	91	2.5	28.8	44.6	893	2,740
August	89	6.3	48.2	74.6	1,490	4,590
September	94	5.3	29.8	46.1	895	2,740
October	40	3.4	7.53	11.7	233	716
November	94	3.0	27.2	42.1	817	2,500
December	91	2.3	33.3	51.5	1,030	3,170
January	90	2.4	33.1	51.2	1,030	3,140
February	69	2.2	20.7	32.0	600	1,840
March	90	1.4	11.3	17.5	350	1,080
April	93	1.6	17.9	27.7	537	1,650
May	96	3.4	31.6	48.9	981	3,010
June	62	1.8	13.9	21.5	417	1,280
The year	96	1.4	25.3	39.1	9,270	28,500

HAIKU DITCH AT MANAWAI GULCH, NEAR PEAHI, MAUI

LOCATION.—Water-stage recorder in bottom of western branch of Manawai Gulch, just west of Keaaula-Opana bounday and one-fourth mile north of Peahi.

RECORDS AVAILABLE.—January, 1910, to June, 1928.

EXTREMES.—See table of monthly discharge for maximum and minimum daily discharges.

REMARKS.—Record of daily discharge furnished by East Maui Irrigation Co. Regulated by gates at frequent intervals. Diverts water at 250-foot elevation from all streams between Kailua Stream and Maliko Gulch. Braced figure gives estimated mean discharge of period indicated.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.9	37	30	16.8	7.9	27	25	76	18.7	47	19.0	24
2	8.0	60	28	18.9	7.0	35	28	80	16.3	27	16.0	26
3	7.6	36	23	16.8	6.8	42	28	72	7.8	22	53	17.1
4	7.4	23	19.9	15.0	6.5	22	28	24	7.8	9.6	56	15.2
5	12.0	15.9	22	15.1	6.0	19.8	24	12.9	7.0	7.7	56	16.3
6	9.7	16.0	78	14.5	5.9	35	19.0	26	6.8	40	36	26
7	8.2	33	84	14.1	5.8	61	17.2	17.0	6.8	83	25	10.1
8	54	}	81	41	23	94	16.8	15.4	6.6	59	22	8.6
9	63	} 60	58	32	8.2	52	16.4	14.8	6.8	25	20	8.1
10	65		60	14.6	7.2	20	14.2	13.7	6.2	26	35	7.3
11	60	86	64	14.4	23	30	17.1	12.6	6.1	26	35	7.0
12	63	76	42	22	8.9	37	40	25	6.4	27	72	8.5
13	51	55	34	11.4	6.3	38	80	56	5.4	36	116	6.8
14	36	48	56	10.5	5.9	23	64	42	5.2	70	100	6.4
15	20	40	42	9.8	7.8	21	40	18.3	5.2	33	61	7.8
16	16.3	56	24	9.3	7.2	21	107	14.1	4.9	20	38	6.2
17	14.4	53	18.5	8.2	62	19.8	82	13.6	4.8	26	24	5.8
18	17.4	52	21	7.7	84	20	88	24	4.6	16.9	22	38
19	16.9	54	29	8.4	83	63	89	17.6	4.3	22	18.5	21
20	16.4	73	28	19.4	35	62	69	11.8	4.3	19.5	18.0	17.3
21	22	47	31	10.8	29	46	88	16.7	4.4	21	14.5	9.4
22	21	40	22	12.3	29	94	45	24	4.0	15.4	17.7	6.4
23	35	48	42	11.6	26	64	67	23	4.0	8.2	23	5.6
24	16.7	77	41	12.0	30	44	39	45	9.3	7.2	21	15.8
25	31	68	40	27	70	106	22	27	16.7	6.8	37	20
26	75	64	26	11.0	99	38	19.1	17.3	87	6.6	58	51
27	66	64	43	9.3	60	101	61	16.0	72	7.3	46	37
28	50	52	30	8.8	31	105	47	14.1	23	6.8	23	36
29	62	64	17.1	8.2	22	90	73	15.8	8.4	10.0	24	41
30	36	43	15.2	7.6	19.2	39	80	-------	26	62	23	46
31	34	39	-------	7.1	-------	30	64	-------	41	-------	23	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	75	6.9	32.3	50.0	1,000	3,070
August	86	15.9	51.6	79.8	1,600	4,910
September	84	15.2	38.3	59.3	1,150	3,530
October	41	7.1	14.4	22.3	446	1,370
November	99	5.8	27.4	42.4	823	2,520
December	106	19.8	48.4	74.9	1,500	4,600
January	107	14.2	48.3	74.7	1,500	4,600
February	80	11.8	27.1	41.9	786	2,410
March	87	4.0	14.1	21.8	438	1,340
April	83	6.6	26.5	41.0	794	2,440
May	116	14.5	37.2	57.6	1,150	3,540
June	51	5.6	18.4	28.5	552	1,690
The year	116	4.0	32.1	49.7	11,700	36,000

MISCELLANEOUS DISCHARGE MEASUREMENTS

Measurements of streams and ditches on the island of Maui at points other than regular gaging stations are listed below.

Miscellaneous discharge measurements on Maui, 1927–28

Date	Stream	Tributary to—	Locality	*Sec.-ft.*	*Million gallons a day*
Feb. 22	Kapaula intake to Koolau ditch.	Koolau ditch	Nahiku, near ditch trail	2.75	1.78
Feb. 27	East Branch of Kapaula Stream.	Pacific Ocean	Near Nahiku	1.18	.763
Do	do	do	do	2.06	1.33
Do	Development tunnel	Kapaula Stream	Kapaula gaging station	.419	.271
Do	do	do	do	.427	.276
May 25	do	do	do	3.38	2.18
Do	Kapaula	Pacific Ocean	Old intake ditch	1.68	1.09
May 30	East Branch of Honomanu.	Honomanu Stream	Haiku-uka boundary	.530	.343
June 1	Honokahau ditch		Napili	29.4	19.0
Do	do		Above siphon	13.1	8.47
Do	Mahinahina return ditch.		Pioneer Mill Co.'s field No. 33	14.8	9.57
Do	Puukolii Reservoir		Near Puukolii	10.9	7.04

ISLAND OF HAWAII

WAILUKU RIVER AT PUKAMAUI, NEAR HILO, HAWAII

LOCATION.—Water-stage recorder at Pukamaui, three-quarters of a mile above Hilo boarding school ditch intake and 4 miles west of Hilo.

RECORDS AVAILABLE.—April, 1923, to June, 1928.

EXTREMES.—Maximum discharge during year, 2,480 million gallons a day (3,840 second-feet) June 30 (gage height 14.50 feet); minimum, 0.68 million gallons a day (1.05 second-feet) Mar. 22 (gage height, 0.76 foot).

1922–1928: Maximum discharge, that of June 30, 1928; no flow when stream was dry.

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 just above control. Regulated by gate.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		17.8	24	17.8	23	25	38	56	4.5	85	56	5.4
2		17.8	17.8	22	19.7	22	31	44	4.2	62	36	4.9
3	a1.9	15.5	-------	22	20	20	25	42	3.9	24	28	5.1
4		14.4	-------	14.4	11.3	14.4	20	33	3.7	16.6	29	4.8
5		14.4	-------	12.2	8.8	11.3	16.6	26	3.4	14.4	44	4.4
6		11.3	-------	12.2	7.7	9.6	14.4	30	3.1	11.3	44	4.2
7	a7	8.8	-------	10.4	6.8	47	13.3	36	3.1	8.5	28	3.6
8		36	-------	18.7	6.3	19.9	12.2	28	2.8	7.3	25	3.5
9	-------	24	-------	78	6.0	47	22	25	2.6	6.3	19.0	2.9
10	-------	19.0	b106	44	b5.9	31	12.2	17.8	2.5	5.6	43	2.6
11	-------	218	70	25	a155	86	9.6	13.3	2.4	5.3	30	2.5
12	-------	259	45	20	b40	64	11.3	12.2	4.1	4.8	31	5.5
13	-------	81	36	16.6	15.5	74	37	12.2	3.4	6.1	92	3.6
14		38	30	14.4	10.4	104	148	13.3	2.2	12.2	b49	2.7
15	a20		25	10.8	8.4	250	44	19.7	1.6	12.2	a30	2.6
16		a28	20	9.6	7.3	208	75	20	1.5	8.7	22	3.2
17		a18	8.8	65	88	81	11.3	1.6	13.2	14.4	2.5	
18		b28	16.6	7.5	38	70	42	10.4	1.5	17.3	11.3	2.9
19	a10	64	14.4	6.9	22	66	30	10.4	1.3	31	9.6	4.9
20			16.4	6.8	14.4	66	24	11.3	1.1	21	8.7	3.1
21			54	6.6	13.3	245	50	8.8	1.0	10.4	8.0	2.2
22			46	8.9	47	893	91	8.0	.85	8.1	6.9	1.8
23	b10.4		20	13.1	65		51	7.2	.75	7.8	6.1	1.6
24	10.4	a65	23	22	28	a200	44	8.0	.75	6.6	5.6	1.6
25	9.6		35	22	79	725	30	7.5	.85	5.8	5.1	1.6
26	9.6		24	12.2	54	a400	24	6.4	.95	4.8	5.3	1.6
27	30		19.0	8.2	65	177	25	5.8	2.9	4.2	13.3	6.6
28	124	45	59	13.5	42	148	36	5.3	2.7	4.2	14.4	12.2
29	68	53	33	38	32	96	31	4.9	4.2	7.4	7.8	11.3
30	33	45	22	13.3	28	62	72	-------	39	102	6.2	210
31	19.0	30	-------	9.6	-------	49	76	-------	55	-------	5.5	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	124					
August	259	8.8	53.0	82.0	1,640	5,040
October	78	6.6	17.6	27.2	546	1,670
November	-------	5.9	31.5	48.7	945	2,900
December	893	9.6	146	226	4,520	13,900
January	148	9.6	39.9	61.7	1,240	3,800
February	56	4.9	18.4	28.5	534	1,640
March	55	.75	5.27	8.15	163	501
April	102	4.2	17.8	27.5	534	1,640
May	92	5.1	23.7	36.7	734	2,250
June	210	1.6	10.8	16.7	325	990
The period	893	.75	-------	-------	-------	-------

a Estimated mean. b Partly estimated.

HONOLII STREAM NEAR HILO, HAWAII

LOCATION.—Water-stage recorder 500 feet above intake of Hilo Sugar Co.'s upper ditch, 2 miles from end of Kaiwiki road, and 10 miles from Hilo.

RECORDS AVAILABLE.—February, 1924, to June, 1928.

EXTREMES.—Maximum discharge during year, 2,030 million gallons a day (3,140 second-feet) June 30 (gage height, 13.08 feet); minimum, 1.4 million gallons a day (2.2 second-feet) July 3–5 (gage height, 4.34 feet).

1924–1928: Maximum discharge, 3,060 million gallons a day (4,730 second-feet) Nov. 21, 1924 (gage height, 16.5 feet, estimated from flood-marks); minimum, 0.1 million gallons a day (0.2 second-foot) Feb. 9 and Apr. 14, 1926 (gage height, 4.16 feet).

REMARKS.—Records good for ordinary stages except those estimated, which are poor. High-stage records poor. No diversions.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	1.7	15.0	10.2		39						[a]50	4.9
2	1.7	19.8			17.7					[a]46		4.1
3	1.5	15.0			19.8			[a]38				3.9
4	1.4	11.3		13	10.9	[a]14					[a]32	4.4
5	1.7	12.1			8.2							3.7
6	6.5	8.2						21				3.4
7	3.4	6.6		6.6			14	23	[a]3.0		25	3.2
8	10.2	15.9		15.6	[a]6.0			28			21	3.0
9		12.8		110		[a]24		19.3			15.4	2.5
10		11.7		35				13.6		[a]7	51	2.1
11		306		14.1				10.5			24	2.0
12		192		13.2	[a]60			11.3			38	2.3
13		35	[a]44	10.9				11.3			171	2.6
14	15.2	15.4		9.8				11.7			46	2.1
15	9.1	12.4		8.8							19.3	2.0
16	7.5	12.1		7.8		[a]95					15.4	2.6
17	5.6	17.7		7.8							10.5	2.3
18	5.6	12.4	[a]14	6.9	[a]14						7.8	3.5
19	4.9	71		6.1						[a]15	6.6	6.1
20	7.2	176		5.3					[a]1.0		6.1	3.5
21	8.2	36		5.1							6.3	2.6
22	6.3	32	[a]34	8.3			[a]48	[a]9.5		8.2	5.3	2.3
23	5.6	23		14.1						10.9	4.1	2.1
24	5.6	58		29		[a]420				8.2	3.4	3.0
25	5.1	29		29						6.3	3.0	7.8
26	6.9	39		15.9	[a]40					5.3	3.5	54
27	67	46	[a]24	9.8						4.6	[a]12	44
28	163	25		9.0					[a]2.3	4.4		14.1
29	73	29		30		[a]100				6.7	9.4	22
30	22	26		13.6				-------	50	[a]100	6.3	277
31	11.7	13.2	-------	9.8	-------			-------	50	-------	5.3	------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
July	-------	1.4				
August	306	6.6	43.1	66.7	1,330	4,100
October	110	5.1	16.4	25.4	510	1,560
November	-------	-------	25.9	40.1	778	2,380
December	-------	-------	134	207	4,150	12,700
January	-------	-------	34.8	53.8	1,080	3,310
February	-------	-------	16.6	25.7	482	1,480
March	-------	-------	5.13	7.94	159	488
April	100	-------	15.3	23.7	459	1,410
May	171	3.0	23.8	36.8	738	2,260
June	277	2.0	16.4	25.4	493	1,510

[a] Estimated mean.

AWINI DITCH AT EAST HONOKANEIKI GULCH, NEAR NIULII, HAWAII

LOCATION.—Water-stage recorder on Awini ditch at flume across East Honokaneiki Gulch, 4½ miles southeast of Niulii.

RECORDS AVAILABLE.—October, 1927, to June, 1928.

EXTREMES.—Maximum discharge during period, 32 million gallons a day (50 second-feet) Dec. 28 (gage height, 3.51 feet); minimum, 1.7 million gallons a day (2.6 second-feet) Mar. 24 (gage height 1.33 feet).

REMARKS.—Records are fair. Diverts water from all streams between Waikaloa and Honokane streams. Regulated by head gates and spillways.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	6.2	9.2	8.1	8.5	25	7.6	28	19.8	8.0
2	7.6	5.8	10.6	7.6	30	7.1	25	22	6.9
3	7.1	4.7	9.4	7.1	26	6.4	19.2	21	6.6
4	6.2	3.7	6.9	6.2	21	6.2	14.0	24	6.2
5	5.1	2.9	6.4	6.2	20	5.8	13.6	28	6.2
6	4.5	2.7	6.0	5.8	20	5.3	9.0	26	6.2
7	4.2	2.3	6.2	5.2	17.5	5.0	8.7	20	7.1
8	4.4	2.8	20	10.4	16.8	5.2	7.6	16.8	6.2
9	10.4	2.5	15.2	21	16.0	5.3	6.2	13.3	5.2
10	8.5	2.2	10.2	12.4	[a] 15	4.5	5.3	17.6	4.7
11	5.3	15.8	7.6	20		4.5	4.8	14.9	5.0
12	6.2	18.1	6.6	25	17.8	4.8	4.9	29	12.8
13	5.3	13.3	6.2	23	16.0	4.8	18.8	28	6.6
14	3.8	8.0	5.8	23	25	4.2	18.7	23	6.1
15	3.6	5.3	5.0	15.8	16.8	4.0	19.2	21	16.2
16	8.2	4.8	5.9	18.5	12.8	3.8	12.4	16.3	
17	12.2	25	9.3	21	11.8	3.3	11.4	12.8	[a] 15
18	6.0	20	6.2	18.4	15.0	3.0	13.5	12.1	
19	4.4	17.0	10.4	13.5	19.2	2.8	11.4	10.6	
20	15.3	11.8	14.2	10.2	12.8	2.7	9.6	16.0	10.8
21	15.1	9.0	18.4	18.0	10.8	2.6	8.2	17.2	8.0
22	17.1	8.5	11.5	21	13.5	2.2	19.6	17.6	8.6
23	9.7	8.5	14.1	16.0	10.2	2.1	[a] 26	11.6	13.4
24	12.8	8.5	9.6	12.8	13.9	1.9	15.1	9.0	19.2
25	16.0	14.2	8.8	9.6	23	2.6	10.2	9.6	19.1
26	9.7	12.9	22	8.5	14.8	22	8.0	15.4	17.5
27	6.2	13.7	22	21	10.2	23	7.1	13.5	14.5
28	5.2	8.0	27	28	9.0	20	7.1	12.1	9.0
29	7.5	6.6	18.8	26	8.0	19.8	6.6	11.5	15.1
30	6.2	5.8	13.2	28	-------	16.6	24	12.8	21
31	5.0	-------	10.2	28	-------	24	-------	9.6	-------

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
October	17.1	3.6	7.90	12.2	245	752
November	25	2.2	9.12	14.1	274	840
December	27	5.0	11.3	17.5	352	1,080
January	28	5.2	16.0	24.8	496	1,520
February	30	8.0	16.7	25.8	483	1,490
March	24	1.9	7.52	11.6	233	715
April	28	4.8	13.1	20.3	393	1,210
May	29	9.0	17.2	26.6	532	1,640
June	21	4.7	10.9	16.9	326	1,000
The period	30	1.9	12.2	18.9	3,330	10,200

[a] Estimated mean.

EAST HONOKANEIKI INTAKE TO AWINI DITCH AT EAST HONOKANEIKI GULCH, NEAR NIULII, HAWAII

LOCATION.—Water-stage recorder on intake tunnel delivering water from East Honokaneiki Gulch to Awini ditch on west side of the gulch and 4½ miles southeast of Niulii.

RECORDS AVAILABLE.—October, 1927, to June, 1928.

EXTREMES.—Maximum discharge during period, 9.6 million gallons a day (14.9 second-feet) May 11 (gage height, 1.28 feet); minimum, 0.11 million gallons a day (0.17 second-foot) Nov. 3–4 (gage height, 0.05 foot).

REMARKS.—Records fair except those for estimated periods, which are poor. Braced figures give estimated mean discharge for periods indicated. Diverts water from East Honokaneiki Gulch to Awini ditch.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
1		1.0	1.1	1.2	5.2	0.53	0.62	1.8
2		.20	1.4	1.2	5.6	.48	.33	1.1
3		.11	.8	1.0	7.4	.48	2.4	.48
4		.11	.48	1.0	3.9	.48	2.4	1.1
5	0.31	.13	.57	1.0	3.1	.44	1.6	5.8
6	.31	.15	.53	.9	3.9	.44	3.3	5.9
7	.26	.15	.8	.8	3.7	.44	5.6	1.6
8	.8	.15	2.7	1.3	2.2	.44		1.0
9	.9	.18	2.3	2.6	3.2	.44		1.7
10	.44	.18	1.3	1.9	2.5	.40	1.1	2.0
11	.31	1.4	.9	2.8	2.0	.44		3.5
12	.22		.7	3.4		.62		4.0
13	.20	1.2	.66	3.1		.57		
14	.22	.9	.66	3.0		.48	.5	2.4
15	.26	.7	.61		4.1	.40		
16	.9	.66	.7	2.5		.35	1.5	
17	1.8	1.7	1.1	2.6				
18	.57	1.8	.7				1.0	
19	2.4	1.6	1.1	5.4	1.2			
20	1.9	.9	2.1	4.6	1.0	.2	.8	
21	2.8	.8	3.2	4.8	1.4			
22	3.6	2.2	2.0	3.8	1.2		.57	
23	1.3	2.0	1.8	2.1	.8		5.0	
24	2.2	.9	1.2	1.6	2.0		4.1	
25	2.9	1.7	3.4	1.2		2.2	1.4	
26	2.0	1.4	2.3	1.0	1.9	3.5	.9	
27	1.2	1.6	2.5	5.3	1.3	3.4	.7	
28	.9	1.0	2.2	7.0	1.0	2.8	.60	
29	.41	.8	1.7	6.1	.62	2.3	.57	
30	.15	.66	1.4	6.6		1.2	1.7	
31	.24		1.2	5.7				

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
October (27 days)	3.6	0.15	1.09	1.69	29.5	90
November	2.2	.11	.923	1.43	27.7	85
December	3.4	.48	1.42	2.20	44.1	135
January	7.0	.8	2.94	4.55	91.1	280
February	7.4	.62	2.96	4.58	85.8	263
March	3.5		.826	1.28	25.6	79
April		.33	1.96	3.03	58.7	180

KOHALA DITCH AT POLOLU, NEAR NIULII, HAWAII

LOCATION.—Water-stage recorder on open section of ditch in Pololu Valley just below boundary between land of Honokane and land of Pololu, 4 miles south of Niulii, and 2¾ miles above mouth of Pololu Stream.

RECORDS AVAILABLE.—August, 1927, to June, 1928.

EXTREMES.—Maximum discharge during period, 48 million gallons a day (74 second-feet) Apr. 14 (gage height, 3.30 feet); minimum, 1.6 million gallons a day (2.5 second-feet) Sept. 8 (gage height, 0.66 foot).

REMARKS.—Records good except those estimated, which are poor. Regulated by head gates. Receives flow of Awini ditch and diverts from all streams west of Honokane Stream.

Daily and monthly discharge, in million gallons a day, 1927–28

Day	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1		24	16.2	17.1	23	18.5	26	18.5	39	34	18.5
2		22	15.7	13.9	23	16.6	25	17.6	37	37	18.0
3		21	18.5	12.2	19.8	15.7	25	16.9	33	35	16.6
4		19.8	15.7	11.1	16.6	15.7	25	16.6	27	33	16.6
5		18.5	13.9	10.7	18.5	14.8	25	15.7	25	30	16.6
6		19.6	13.0	10.4	14.8	13.9	25	14.8	21	27	21
7		31	13.0	10.1	13.9	13.9	24	14.8	23	27	19.8
8		14.2	13.0	10.1	34	19.4	19.3	14.8	19.8	27	17.6
9		24	20	10.1	33	32	18.7	14.8	17.6	24	15.9
10		23	19.3	9.9	22	22	16.6	13.9	16.6	29	15.7
11		15.4	13.9	24	17.6	29	20	14.8	15.7	24	15.7
12		14.6	16.6	32	15.7	33	25	14.8	15.7	33	24
13		18.6	14.8	22	14.8	27	27	13.9	31	29	18.5
14		19.8	13.0	16.6	13.9	28	31	13.9	40	27	16.6
15		25	12.2	13.0	13.0	27	29	13.0	32	27	31
16		21	16.2	11.3	14.8	23	24	13.0	26	27	28
17		17.9	24	29	18.9	23	25	13.0	23	25	21
18		17.6	15.7	34	15.7	27	29	12.2	24	25	36
19		17.6	13.0	25	18.5	25	30	12.2	22	24	35
20		15.7	29	21	23	21	23	12.2	21	23	24
21		15.7	32	18.8	30	26	22	12.2	18.9	29	18.5
22		14.8	30	29	20	27	25	11.3	17.5	31	18.5
23		14.8	22	27	26	27	21	11.0	41	25	26
24		13.9	28	19.8	[a] 26	24	25	11.0	31	22	32
25		16.6	32	29		21	33	12.2	24	23	35
26		21	22	27	[a] 28	18.5	27	35	19.8	27	29
27		19.8	37	29		22	22	40	17.6	25	27
28	34	32	13.9	18.5		27	19.8	37	17.2	33	21
29	35	28	14.6	15.7		27	19.8	39	17.6	31	23
30	35	19.8	13.9	14.8	25	25		32	38	24	34
31	27		12.2		21	27		40		21	

Month	Discharge				Total run-off	
	Million gallons a day			Second-feet (mean)	Million gallons	Acre-feet
	Maximum	Minimum	Mean			
September	32	13.9	19.9	30.8	597	1,830
October	37	12.2	18.8	29.1	584	1,790
November	34	9.9	19.1	29.6	572	1,760
December	34	13.0	21.7	33.6	672	2,060
January	33	13.9	23.1	35.7	717	2,200
February	33	16.6	24.4	37.8	707	2,170
March	40	11.0	18.5	28.6	572	1,760
April	41	15.7	25.1	38.8	752	2,310
May	37	21	27.7	42.9	858	2,640
June	36	15.7	23.0	35.6	690	2,120
The period	41	9.9	22.1	34.2	6,720	20,600

[a] Estimated mean.

MISCELLANEOUS DISCHARGE MEASUREMENTS

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

Miscellaneous discharge measurements on Hawaii, 1927–28

Date	Stream	Tributary to—	Locality	Gage height	Discharge
				Sec. ft.	*Million gallons a day*
Sept. 17	Umauma No. 2 flume	Canefield	Hakalau	4.30	2.78
Do	Umauma No. 1 flume	do	do	3.82	2.47
May 21	Kokelekele	Wailuku River	At mouth	30.4	19.6
May 23	do	do	do	22.2	14.3
May 21	Wailuku	Pacific Ocean	Elevation 1,150 feet	10.1	6.53
May 23	do	do	do	7.53	4.87
May 21	Kahoama	Wailuku River	At mouth	10.2	6.59
May 23	do	do	do	6.93	4.48
Do	Kapehu	do	do	19.7	12.7
May 24	do	do	do	19.2	12.4
Do	Camp No. 4	do	Elevation 1,130 feet	4.38	2.83

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